June 20, 2018

National Energy Board
Suite 210, 517 Tenth Avenue SW
Calgary, Alberta T2R 0A8

Attention: Ms. Sheri Young, Secretary of the Board

Dear Ms. Young:

Re: NOVA Gas Transmission Ltd. (NGTL)
2021 NGTL System Expansion Project Application
Board File OF-Fac-Gas-N081-2018-03

Enclosed for filing with the National Energy Board (NEB or Board) is an Application for approvals to construct and operate the 2021 NGTL System Expansion Project (Project).

The Project is a proposed expansion of the NGTL System to receive and deliver sweet natural gas to meet aggregate service requirements. The Project consists of approximately 344 km of pipeline in eight pipeline section loops, three compressor station unit additions and a control valve.

NGTL requests approval of the Application by the second quarter of 2020. This timing would enable Project construction to be completed in time to achieve the commercially required in-service date of April 2021.

Should the Board require additional information with respect to this Application, please contact NGTL’s representatives listed in the Application.

Yours truly,
NOVA Gas Transmission Ltd.

Original signed by

Robert Tarvydas
Director, Regulatory Facilities
Regulatory, Canadian Gas Pipelines

Enclosures

cc: Carolyn Pharand, Director Transmission Projects, Major Projects Management Office
NATIONAL ENERGY BOARD

IN THE MATTER OF the National Energy Board Act, R.S.C. 1985, c. N-7, as amended (NEB Act), and the regulations made thereunder;

IN THE MATTER OF the Canadian Environmental Assessment Act, 2012, S.C. 2012, c. 37, as amended, and the regulations made thereunder;

IN THE MATTER OF an application by NOVA Gas Transmission Ltd. for a Certificate of Public Convenience and Necessity and other related approvals pursuant to Part III and Part IV of the NEB Act.

NOVA GAS TRANSMISSION LTD.

2021 NGTL SYSTEM EXPANSION PROJECT

June 2018

To: The Secretary
National Energy Board
Suite 210, 517 Tenth Avenue SW
Calgary, Alberta T2R 0A8
2021 NGTL SYSTEM EXPANSION PROJECT

NOVA Gas Transmission Ltd. (NGTL) applies to the National Energy Board (Board or NEB), pursuant to sections 52 and 58 of Part III, and Part IV of the NEB Act, for a Certificate of Public Convenience and Necessity (CPCN) and related approvals for the 2021 NGTL System Expansion Project (Project).

Additionally, NGTL requests exemption from the requirements of sections 30(1)(b) and 47(1) of the NEB Act to obtain leave to open (LTO) from the Board before installing tie-ins to existing pipelines and facilities. NGTL also applies for an exemption from the 100% non-destructive examination (NDE) requirement in section 17 of the National Energy Board Onshore Pipeline Regulations (OPR) pursuant to subsections 48(2.1) and 48(2.2) of the NEB Act for certain low-pressure piping systems associated with the Project.

Applicant

1. NGTL is a “company” as the term is defined in the NEB Act.

2. The NGTL System is an integrated natural gas pipeline system comprised of approximately 24,000 km of pipeline, associated compression and other facilities located in Alberta (AB) and British Columbia (BC) (NGTL System). The NGTL System gathers and transports natural gas produced in the Western Canada Sedimentary Basin (WCSB) for delivery to intra-basin and export markets.

3. The NGTL System is subject to federal jurisdiction and regulation by the Board.

4. NGTL is a wholly owned subsidiary of TransCanada PipeLines Limited (TransCanada).

5. TransCanada operates the NGTL System pursuant to an operating agreement between TransCanada and NGTL. TransCanada applies corporate policies in its operation of the NGTL System that are common to TransCanada’s operation of its other federally regulated pipelines, including the TransCanada Mainline and the Foothills System.

2021 NGTL System Expansion Project

6. NGTL seeks approval in this Application to construct and operate the Project. The Project consists of:
   - approximately 344 km of 1,219 mm (NPS 48) pipeline loops in eight sections
   - three compressor station unit additions and related components
   - a control valve
   - mainline valve sites
• launcher and receiver facilities to accommodate pipeline cleaning and in-line inspection
• construction related temporary infrastructure such as access roads, borrow pits/dugouts and stockpile sites
• a cathodic protection system
• temporary access roads
• miscellaneous works, such as pipeline warning signs and aerial markers

7. The Project will expand pipeline capacity to transport gas from areas of increasing natural gas production in the Peace River Project Area (PRPA) to intra-basin and export markets.

8. Detailed maps of the Project are provided in Section 15 of the Application.

9. The Project requires an environmental assessment under the NEB Act and is subject to the Canadian Environmental Assessment Act, 2012 (CEAA 2012). Since the proposed pipelines, in aggregate, exceed 40 km in length and will be regulated by the Board, the Project is a “designated project” under the Regulations Designating Physical Activities.

10. Temporary infrastructure, such as access roads, borrow pits/dugouts, stockpile sites, contractor yards and a construction camp will be required during construction.

11. NGTL seeks approval of the Project in time to meet a commercially required in-service date of April 2021. To meet these dates, Project construction is scheduled to begin in Q3 2020, subject to receipt of regulatory approvals and fulfillment of condition compliance.

12. To achieve the proposed construction schedule and commercially required in-service date for the Project, exemptions from the detailed route process are being sought as part of this Application. The exemptions are for:
   • temporary infrastructure required for construction of the pipeline
   • right-of-way (ROW) preparation activities (including clearing, grading, and stripping) and commencing trenchless crossings in select areas along the proposed route (in aggregate not exceeding 40 km in length)
   • the three compressor station unit additions proposed in this Application
   • the January Creek control valve

13. The estimated cost of the Project is $2.3 billion.
Purpose and Justification

14. The Project is required to increase NGTL System capability to transport gas from areas where supply is growing, and also to meet delivery requirements in areas where market demand is growing. Customers have signed long-term contracts for firm receipt and delivery transportation services that exceed capacity of the NGTL System beginning in 2021.

15. The Project is supported by NGTL’s forecasts of gas supply and demand for the NGTL System. The forecasted supply and demand growth, combined with aggregate contractual underpinnings, demonstrate that the applied-for facilities will be used and useful over their economic life.

Transportation Services and Tolls

16. NGTL will provide services that utilize the Project under the terms and conditions established in the NGTL Gas Transportation Tariff (NGTL Tariff or Tariff), as amended from time to time.

17. NGTL proposes to treat the costs for the Project on a rolled-in basis, and to determine the tolls for services in accordance with the NGTL toll design methodology in effect, and as approved, at any given time.

Application Content

18. NGTL provides in this Application information required for consideration of a CPCN and other approvals, in accordance with sections 52 and 58 of Part III, and Part IV of the NEB Act, and as outlined in the Board’s Filing Manual. It also provides information required under subsection 19(1) of CEAA 2012.

Supporting Material

19. In support of this Application, NGTL provides and relies on the information attached to this Application and any additional information that it might file, as directed or permitted by the Board.

Relief Requested

20. NGTL requests that the Board:
   • issue a report recommending the issuance of a CPCN, pursuant to section 52 of the NEB Act, authorizing construction and operation of the Project
   • issue an exemption from the requirements of sections 30(1)(b) and 47(1) of the NEB Act to obtain LTO from the Board before installing certain tie-ins for the Project
• issue an exemption from the 100% NDE requirement in section 17 of the OPR pursuant to subsections 48(2.1) and 48(2.2) of the NEB Act for certain low-pressure piping systems associated with the Project

• issue an order, pursuant to section 58 of the NEB Act, exempting NGTL from the requirements of subsections 31(c), 31(d) and 33 of the NEB Act in relation to:
  • temporary infrastructure required for construction of the pipeline
  • ROW preparation activities (including clearing, grading, and stripping) and commencing trenchless crossings in select areas along the proposed route (in aggregate not exceeding 40 km in length)
  • the three compressor station unit additions proposed in this Application

For clarity, these activities will only be undertaken after the CPCN has been issued for the entire Project and after any applicable conditions for the section 58 activities are satisfied

• issue an order pursuant to Part IV of the NEB Act affirming that:
  • prudently incurred costs required to provide service on the applied-for facilities will be included in the determination of the NGTL System revenue requirement
  • the tolls for services on the applied-for facilities will be calculated using the same methodology used to calculate tolls for services on the NGTL System, as determined through Board order from time to time
  • grant such further and other relief as NGTL might request or the Board might consider appropriate

Respectfully submitted,

Calgary, Alberta
June 20, 2018

NOVA Gas Transmission Ltd.

Original signed by

_______________________________
Robert Tarvydas
Director, Regulatory Facilities
Regulatory, Canadian Gas Pipelines

Please direct all communications related to this Application to:
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# CHAPTER 3 – COMMON INFORMATION REQUIREMENTS

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</thead>
<tbody>
<tr>
<td>4.1</td>
<td><strong>Description of the Project</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>The project components, activities and related undertakings.</td>
<td>Sections 1, 7 and 9</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>The project location and criteria used to determine the route or site.</td>
<td>Sections 7.1 and 9.4.1</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>How and when the project will be carried out.</td>
<td>Sections 8 and 9</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Description of any facilities, to be constructed by others, required to accommodate the proposed facilities.</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>An estimate of the total capital costs and incremental operating costs, and changes to abandonment cost estimates.</td>
<td>Application, Section 1.6 and 6.3</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>The expected in-service date.</td>
<td>Application, Sections 1.5, 2, 4 and 5</td>
<td></td>
</tr>
</tbody>
</table>

#### 4.2 Economic Feasibility, Alternatives and Justification

##### 4.2.1 Economic Feasibility

1. Description of the economic feasibility of the project. | Sections 2, 4 and 6.5 |

##### 4.2.2 Alternatives

1. Describe the need for the project, other economically-feasible alternatives to the project examined, along with the rationale for selecting the applied for project over these other possible options. | Sections 2 and 4.4 |

2. Describe and justify the selection of the proposed route and site including a comparison of the options evaluated using appropriate selection criteria. | Sections 4.4, 7.1 and 9.4.1 |

3. Describe the rationale for the chosen design and construction methods. Where appropriate, describe any alternative designs and methods evaluated and explain why these other options were eliminated. | Sections 4.4, 7.8 and 9 |

##### 4.2.2 Justification

1. Justification for the proposed project. | Application and Section 2 |
## GUIDE A – A.1 ENGINEERING

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.1.1 Engineering Design Details</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Fluid type and chemical composition.</td>
<td>Section 7.3</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Line pipe specifications.</td>
<td>Section 7.4</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Pigging facilities specifications.</td>
<td>Section 7.5.3</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Compressor or pump facilities specifications.</td>
<td>Section 9.4</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Pressure regulating or metering facilities specifications.</td>
<td>Sections 7.5.4 and 9.4.5</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Liquid tank specifications or other commodity storage facilities.</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>7.</td>
<td>New control system facilities specifications.</td>
<td>Section 7</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Gas processing, sulphur or LNG plant facilities specifications.</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>9.</td>
<td>Technical description of other facilities not mentioned above.</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>10.</td>
<td>Building dimensions and uses.</td>
<td>Section 9 and Appendix 9-1</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>If project is a new system that is a critical source of energy supply, a description of the impact to the new system capabilities following loss of critical component.</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>A.1.2 Engineering Design Principles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Confirmation project activities will follow the requirements of the latest version of CSA Z662.</td>
<td>Sections 1.3, 7.2 and 9.3</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Provide a statement indicating which Annex is being used and for what purpose.</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>3.</td>
<td>Statement confirming compliance with OPR or PPR.</td>
<td>Sections 1.3, 7.2 and 9.3</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Listing of all primary codes and standards, including version and date of issue.</td>
<td>Sections 7.2 and 9.3</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Confirmation that the project will comply with company manuals and confirm manuals comply with OPR/PPR and codes and standards.</td>
<td>Sections 1.3, 7.2 and 9.3</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Any portion of the project a non-hydrocarbon commodity pipeline system? Provide a QA program to ensure the materials are appropriate for their intended service.</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Filing No.</td>
<td>Filing Requirement</td>
<td>In Application? References</td>
<td>Not in Application? Explanation</td>
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</tbody>
</table>
| 7.        | If facility subject to conditions not addressed in CSA Z662:  
|           | • Written statement by qualified professional engineer  
|           | • Description of the designs and measures required to safeguard the pipeline | Appendix 7-4 |  |
| 8.        | If directional drilling involved:  
|           | • Preliminary feasibility report  
|           | • Description of the contingency plan | Section 7.7  
|           | Appendix 8-2  
|           | Appendix 8-3  
|           | Appendix 8-4  
|           | Appendix 8-5  
|           | Appendix 8-6  
|           | Appendix 8-7  
|           | Appendix 8-8 |  |
| 9.        | If new materials are involved, provide material supply chain information, in tabular format. | Section 7.2.4 |  |
| 10.       | If reuse of materials is involved, provide an engineering assessment in accordance with CSA Z662 that indicates its suitability for the intended service. | N/A |  |

**A.1.3 Onshore Pipeline Regulations**

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Designs, specifications programs, manuals, procedures, measures or plans for which no standard is set out in the OPR.</td>
<td>Sections 7, 8 and 9</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>A quality assurance program if project non-routine or incorporates unique challenges due to geographical location.</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
| 3.        | If welding performed on a liquid-filled pipeline that has a carbon equivalent of 0.50% or greater and is a permanent installation:  
|           | • Welding specifications and procedures  
|           | • Results of procedure qualification tests | N/A |  |

**GUIDE A – A.2 ENVIRONMENT AND SOCIO-ECONOMIC ASSESSMENT**

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.2.5</td>
<td>Description of the Environmental and Socio-Economic Setting</td>
<td>ESA Sections 5-20</td>
<td></td>
</tr>
<tr>
<td>Filing No.</td>
<td>Filing Requirement</td>
<td>In Application? References</td>
<td>Not in Application? Explanation</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
</tbody>
</table>
| 2.        | Describe which biophysical or socio-economic elements in the study area are of ecological, economic or human importance and require more detailed analysis taking into account the results of consultation (see Table A-1 for examples), Where circumstances require more detailed information in an ESA, see:  
  i. Table A-2 – Filing Requirements for Biophysical Elements; or  
  ii. Table A-3 – Filing Requirements for Socio-Economic Elements. | ESA Sections 4.1, 4.2 and 5-20 |  |
| 3.        | Provide supporting evidence (e.g., references to scientific literature, field studies, local and traditional knowledge, previous environmental assessment and monitoring reports) for:  
  • information and data collected;  
  • analysis completed;  
  • conclusions reached; and  
  • the extent of professional judgment or experience relied upon in meeting these information requirements, and the rationale for that extent of reliance. | ESA Sections 4.2, 4.3 and 5-20 |  |
| 4.        | Describe and substantiate the methods used for any surveys, such as those pertaining to wildlife, fisheries, plants, species at risk or species of special status, soils, heritage resources or traditional land use, and for establishing the baseline setting for the atmospheric and acoustic environment. | ESA Sections 5-20 |  |
| 5.        | Applicants must consult with other expert federal, provincial or territorial departments and other relevant authorities on requirements for baseline information and methods. | ESA Sections 3 and 5-20 |  |

A.2.6 Effects Assessment

Identification and Analysis of Effects

| 1.        | Describe the methods used to predict the effects of the project on the biophysical and socio-economic elements, and the effects of the environment on the project. | ESA Section 4 |  |
### Mitigation Measures

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Predict the effects associated with the proposed project, including those that could be caused by construction, operations, decommissioning or abandonment, as well as accidents and malfunctions. Also include effects the environment could have on the project. For those biophysical and socio-economic elements or their valued components that require further analysis (see Table A-1), provide the detailed information outlined in Tables A-2 and A-3.</td>
<td>ESA Sections 5-22</td>
<td></td>
</tr>
</tbody>
</table>

### Evaluation of Significance

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>After taking into account any appropriate mitigation measures, identify any remaining residual effects from the project.</td>
<td>ESA Sections 5-22</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Describe the methods and criteria used to determine the significance of adverse effects, including defining the point at which any particular effect on a valued component is considered &quot;significant&quot;.</td>
<td>ESA Sections 4.3 and 5-22</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Evaluate the significance of residual adverse environmental and socio-economic effects against the defined criteria.</td>
<td>ESA Sections 5-22</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Evaluate the likelihood of significant residual adverse environmental and socio-economic effects occurring and substantiate the conclusions made.</td>
<td>ESA Sections 5-22</td>
<td></td>
</tr>
</tbody>
</table>

### A.2.7 Cumulative Effects Assessment

#### Scoping and Analysis of Cumulative Effects

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Identify the valued components for which residual effects are predicted, and describe and justify the methods used to predict any residual effects.</td>
<td>ESA Sections 5-20</td>
<td></td>
</tr>
<tr>
<td>Filing No.</td>
<td>Filing Requirement</td>
<td>In Application? References</td>
<td>Not in Application? Explanation</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>2.</td>
<td>For each valued component where residual effects have been identified, describe and justify the spatial and temporal boundaries used to assess the potential cumulative effects.</td>
<td>ESA Sections 5-20</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Identify other physical facilities or activities that have been or will be carried out within the identified spatial and temporal boundaries for the cumulative effects assessment.</td>
<td>ESA Sections 5-20</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Identify whether the effects of those physical facilities or activities that have been or will be carried out would be likely to produce effects on the valued components within the identified spatial and temporal boundaries.</td>
<td>ESA Sections 5-20</td>
<td></td>
</tr>
</tbody>
</table>
| 5.        | Where other physical facilities or activities may affect the valued components for which residual effects from the applicant’s proposed project are predicted, continue the cumulative effects assessment, as follows:  
- Consider the various components, phases and activities associated with the applicant’s project that could interact with other physical facilities or activities.  
- Provide a description of the extent of the cumulative effects on valued components.  
- Where professional knowledge or experience is cited, explain the extent to which professional knowledge or experience was relied upon and justify how the resulting conclusions or decisions were reached. | ESA Sections 5-20           |                                 |

**Mitigation Measures for Cumulative Effects**

| 1.        | Describe the general and specific mitigation measures, beyond project-specific mitigation already considered, that are technically and economically feasible to address any cumulative effects. | ESA Sections 5-20           |                                 |

**The Applicant’s Evaluation of Significance**

<p>| 1.        | After taking into account any appropriate mitigation measures for cumulative effects, identify any remaining residual cumulative effects. | ESA Sections 5-20           |                                 |</p>
<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Describe the methods and criteria used to determine the significance of remaining adverse cumulative effects, including defining the point at which each identified cumulative effect on a valued component is considered “significant”.</td>
<td>ESA Sections 4.4 and 5-20</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Evaluate the significance of adverse residual cumulative effects against the defined criteria.</td>
<td>ESA Sections 5-20</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Evaluate the likelihood of significant, residual adverse cumulative environmental and socio-economic effects occurring and substantiate the conclusions made.</td>
<td>ESA Sections 5-20</td>
<td></td>
</tr>
</tbody>
</table>

A.2.8 Inspection, Monitoring, Follow-up and Operation

<p>| | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Describe inspections plans to ensure compliance with biophysical and socio-economic commitments, consistent with sections 48, 53, and 54 of the OPR.</td>
<td>ESA Section 24</td>
<td>ESA Appendix A</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Describe the surveillance and monitoring program for the protection of the pipeline, the public and the environment, as required by Section 39 of the OPR.</td>
<td>ESA Sections 24 and 25</td>
<td>ESA Appendix A</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Consider any particular elements in the Application that are of greater concern and evaluate the need for a more in-depth monitoring program for those elements.</td>
<td>ESA Sections 24 and 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>For CEAA designated projects, identify which elements and monitoring procedures would constitute follow-up under the CEAA 2012.</td>
<td>ESA Section 25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table A-1 Circumstances and Interactions Requiring Detailed Biophysical and Socio-Economic Information

<table>
<thead>
<tr>
<th>Circumstances and Interactions</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical and meteorological environment</td>
<td>ESA Section 5</td>
</tr>
<tr>
<td>Soil and soil productivity</td>
<td>ESA Section 6</td>
</tr>
<tr>
<td>Vegetation</td>
<td>ESA Section 7</td>
</tr>
<tr>
<td>Water quality and quantity</td>
<td>ESA Section 8</td>
</tr>
<tr>
<td>Fish and fish habitat, including any <em>Fisheries Act</em> Authorization offsetting measures that are required</td>
<td>ESA Section 9</td>
</tr>
<tr>
<td>Wetlands</td>
<td>ESA Section 10</td>
</tr>
<tr>
<td>Wildlife and wildlife habitat</td>
<td>ESA Section 11</td>
</tr>
<tr>
<td>Species at Risk or Species of Special Status and related habitat</td>
<td>ESA Section 12</td>
</tr>
<tr>
<td>Air emissions</td>
<td>ESA Section 13</td>
</tr>
<tr>
<td>Greenhouse gas (GHG) emissions</td>
<td>ESA Section 14</td>
</tr>
<tr>
<td>Acoustic environment</td>
<td>ESA Section 15</td>
</tr>
<tr>
<td>Human occupancy and resource use</td>
<td>ESA Section 16</td>
</tr>
<tr>
<td>Filing No.</td>
<td>Filing Requirement</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Heritage resources</td>
<td>ESA Section 17</td>
</tr>
<tr>
<td>Navigation and navigation safety</td>
<td>ESA Section 18</td>
</tr>
<tr>
<td>Traditional land and resource use</td>
<td>ESA Section 19</td>
</tr>
<tr>
<td>Social and cultural well-being</td>
<td>ESA Section 20</td>
</tr>
<tr>
<td>Human health and aesthetics</td>
<td>ESA Section 20</td>
</tr>
<tr>
<td>Infrastructure and services</td>
<td>ESA Section 20</td>
</tr>
<tr>
<td>Employment and economy</td>
<td>ESA Section 20</td>
</tr>
</tbody>
</table>

**GUIDE A – A.3 ECONOMICS**

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.3.1 Supply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>A description of each commodity.</td>
<td>Section 3</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>A discussion of all potential supply sources.</td>
<td>Sections 3.1 and 3.2</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Forecast of productive capacity over the economic life of the facility.</td>
<td>Sections 3.1 and 3.2</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>For pipelines with contracted capacity, a discussion of the contractual arrangements underpinning supply.</td>
<td>Section 5.2</td>
<td></td>
</tr>
</tbody>
</table>

<p>| A.3.2 Transportation Matters                                                                                          |                             |                                 |
| Pipeline Capacity                                                                                                     |                             |                                 |
| 1.        | In the case of expansion provide:                                                 | Sections 2, 3, 4 and 5      |                                 |
|           | - Pipeline capacity before and after and size of increment                        |                             |                                 |
|           | - Justification that size of expansion is appropriate                             |                             |                                 |
| 2.        | In case of new pipeline, justification that size of expansion is appropriate given available supply. | Sections 2, 3, 4 and 5      |                                 |
| Throughput                                                                                                           |                             |                                 |
| 1.        | For pipelines with contracted capacity, information on contractual arrangements. | Section 5                   |                                 |
| 2.        | For non-contract carrier pipelines, forecast of annual throughput volumes by commodity type, receipt location and delivery destination over facility life. | N/A                        |                                 |</p>
<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application? References</th>
<th>Not in Application? Explanation</th>
</tr>
</thead>
</table>
| 3.        | If project results in an increase in throughput:  
- theoretical and sustainable capabilities of the existing and proposed facilities versus the forecasted requirements  
- flow formulae and flow calculations used to determine the capabilities of the proposed facilities and the underlying assumptions and parameters                                                                                                                                                      | Section 4                   |                                 |
| 4.        | If more than one type of commodity transported, a discussion pertaining to segregation of commodities including potential contamination issues or cost impacts.                                                                                                                                                                                                   | N/A                          |                                 |

### A.3.3 Markets

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Provide an analysis of the market in which each commodity is expected to be used or consumed.</td>
<td>Section 3.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Provide a discussion of the physical capability of downstream facilities to accept the incremental volumes that would be delivered.</td>
<td>Sections 3.3 and 4.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### A.3.4 Financing and Financial Resources

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Evidence that the applicant has the ability to finance the proposed facilities.</td>
<td>Section 6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Evidence that the applicant can manage the potential costs associated with the risks and liabilities that arise during construction and operation, including a product release.</td>
<td>Section 6.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Estimated toll impact for the first full year that facilities are expected to be in service.</td>
<td>Section 6.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Confirmation that shippers have been apprised of the project and toll impact, their concerns and plans to address them.</td>
<td>Section 5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Information on abandonment costs and the set-aside and collection of them.</td>
<td>Section 6.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Additional toll details for applications with significant toll impacts.</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### A.3.5 Non-NEB Regulatory Approvals

<p>| | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Confirm that all non-NEB regulatory approvals, required to allow the applicant to meet the construction schedule and planned in-service date and to allow the facilities to be used and useful, are or will be in place.</td>
<td>Section 1.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>If any of the approvals referred to in 1. may be delayed, describe the status of those approval(s) and provide an estimation of when the approval is anticipated.</td>
<td>Section 1.11</td>
<td>All approvals will be in place before the start of construction activities.</td>
<td></td>
</tr>
</tbody>
</table>
## GUIDE A – A.4 LANDS

<table>
<thead>
<tr>
<th>Filing No.</th>
<th>Filing Requirement</th>
<th>In Application?</th>
<th>Not in Application?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.4.1 Land Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1. | • Width of right-of-way and locations of any changes to width  
    • Locations and dimensions of known temporary work space and drawings of typical dimensions  
    • Locations and dimensions of any new lands for facilities | Sections 11.3 and 11.4  
Appendix 4-1  
Appendix 7-1 | |
| **A.4.2 Land Rights** | | | |
| 1. | The type of lands rights proposed to be acquired for the project. | Sections 11.1 and 11.5 | |
| 2. | The relative proportions of land ownership along the route of the project. | Sections 11.1 and 11.2 | |
| 3. | Any existing land rights that will be required for the project. | Section 11 | |
| **A.4.3 Land Acquisition Process** | | | |
| 1. | The process for acquiring lands. | Section 11.5 | |
| 2. | The timing of acquisition and current status. | Section 11.5.1 | |
| 3. | The status of service of section 87(1) notices. | Section 11.5.1 | |
| **A.4.4 Land Acquisition Agreements** | | | |
| 1. | A sample copy of each form of agreement proposed to be used pursuant to section 86(2) of the NEB Act. | Appendices 7-6, 7-7, 7-8 and 7-9 | |
| 2. | A sample copy of any proposed fee simple, work space, access or other land agreement. | Section 11.8 and Appendix 7-7 | |
| **A.4.5 Section 87 Notices** | | | |
| 1. | A sample copy of the notice proposed to be served on all landowners pursuant to section 87(1) of the NEB Act. | Appendices 7-2, 7-3, 7-4 and 7-5 | |
| 2. | Confirmation that all notices include a copy of *Pipeline Regulation in Canada: A Guide for Landowners and the Public*. | Section 11.5 | |
| **A.4.6 Section 58 Application to Address a Compliant** | | | |
| 1. | The details of the complaint and describe how the proposed work will address the complaint. | N/A | |
1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

In this section NGTL provides an overview description of the Project, including:
- main Project components
- engineering design considerations
- preliminary cost estimates and scheduling information
- the economic benefits of the Project
- engagement with stakeholders, landowners and Aboriginal communities
- environmental and socio-economic assessment
- non-NEB regulatory permits and authorizations
- discussion of future decommissioning and abandonment requirements

1.2 REQUIREMENT FOR NEW FACILITIES

The Project is an expansion of the NGTL System that will increase NGTL System capability to receive increasing supply from the west side of the NGTL System and deliver gas to the increasing market demand on the east side of the NGTL System.

The Project facilities are required to meet aggregate Firm Transportation-Delivery (FT-D) and Firm Transportation-Receipt (FT-R) service contract commitments, with a commercially required in-service date of April 2021, as well as aggregate forecast requirements, for the transportation of sweet natural gas between receipt and delivery points throughout the NGTL System.

The Project represents specific facilities that NGTL has determined are necessary to accommodate these incremental contract commitments, as well as the aggregate forecast requirements.

1.3 MAIN PROJECT COMPONENTS

The Project is comprised of the following main components:
- approximately 344 km of 1,219 mm (NPS 48) pipeline loops in eight sections:
  - Grande Prairie Mainline Loop No. 4 – Valhalla Section - 36 km
  - Grande Prairie Mainline Loop No. 3 – Elmworth Section - 46 km
  - Grande Prairie Mainline Loop No. 2 – Karr Section - 57 km
  - Grande Prairie Mainline Loop No. 2 – Deep Valley Section - 69 km
  - Grande Prairie Mainline Loop No. 2 – McLeod River Connection Section - 14 km
• Edson Mainline Loop No. 4 – Robb Section - 42 km
• Edson Mainline Loop No. 4 – Dismal Creek Section - 32 km
• Edson Mainline Loop No. 4 – Brewster Section - 49 km

• three (3) compressor station unit additions at the following existing NGTL sites:
  • Nordegg Compressor Station (Nordegg Unit C6 Addition)
  • Didsbury Compressor Station (Didsbury Unit B7 Addition)
  • Beiseker Compressor Station (Beiseker Unit A3 Addition)

• launcher and receiver facilities for cleaning and in-line inspection (ILI)

• a control valve (January Creek control valve) and associated pipeline tie-ins to safely facilitate the flow of gas from the January Creek Lateral to the Western Alberta System.

Temporary infrastructure, such as access roads, travel lanes, stockpile sites, borrow pits/dugouts, contractor yards and a construction camp, will be required during construction. See Section 1.5 Section 58 Activities, for additional information on construction-related temporary infrastructure.

For locations of the main Project components, see Figure 1-1.
Figure 1-1: Project Overview
For an overview map of the Project, see Appendix 15-1 and for the detailed pipeline route maps, see Appendix 15-2.

1.4 ENGINEERING DESIGN

The Project will be designed, constructed and operated in accordance with the requirements of the \textit{National Energy Board Onshore Pipeline Regulations} (OPR) and \textit{Canadian Standards Association} (CSA) Z662-15. If there are any inconsistencies between the OPR and CSA Z662-15, the OPR will govern. For more information, see Sections 7.2 and 9.2.

1.5 SECTION 58 ACTIVITIES

In addition to infrastructure needed for the pipeline sections, compressor station unit additions, the January Creek control valve and mainline valve sites, NGTL proposes to commence construction of temporary infrastructure required for the Project as well as ROW preparation activities and commencing trenchless crossings in select areas (in aggregate not exceeding 40 km in length) under section 58 of the NEB Act, subject to regulatory approvals. These activities will only be undertaken on limited sections of the Project ROW after the CPCN has been issued for the entire Project and after any applicable conditions for the section 58 activities are satisfied.

The temporary infrastructure required includes stockpile sites, contractor yards, access roads and travel lanes, borrow pits/dugouts, laydown yards, contractor yards, and a construction camp.

A stand-alone environmental protection plan (EPP) is planned to support the activities proposed under section 58 of the NEB Act and would be submitted to the Board in advance of the activities.

1.6 PROJECT SCHEDULE

The commercially required in-service date for the Project is April 2021, and NGTL anticipates delivery and stockpiling of pipe and other materials to take place in advance of construction. Subject to regulatory approval for the section 58 activities, work on temporary infrastructure is scheduled to begin prior to pipeline construction.

The proposed schedule enables construction activities to occur primarily during the winter season to take advantage of frozen ground conditions for access to and along the pipeline ROWs, and the proposed schedule will help reduce overall environmental effects associated with caribou restricted activity periods and migratory bird nesting periods, as well as timing restrictions associated with watercourse crossings.
Opportunities that arise to optimize construction scheduling will also be evaluated on an ongoing basis.

For the preliminary Project schedule, see Figure 1-2. Preliminary engagement started for certain Project components in Q3 and Q4 2017 as depicted in light blue.

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
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<tbody>
<tr>
<td>Preliminary Project Planning</td>
<td></td>
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<tr>
<td>Aboriginal and Stakeholder Engagement</td>
<td></td>
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<tr>
<td>Environmental and Engineering Field Work</td>
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<tr>
<td>Landowner Engagement and Acquisition</td>
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<tr>
<td>Traditional Knowledge (TK) Studies</td>
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<tr>
<td>Regulatory Review Process</td>
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<tr>
<td>Alberta Provincial Regulatory Approvals</td>
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<tr>
<td>Detailed Route Approval Process</td>
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<tr>
<td>Detailed Engineering and Construction Planning</td>
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<tr>
<td>Compression Construction and Commissioning</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Pipeline Construction and Commissioning</td>
<td></td>
<td></td>
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</tbody>
</table>

Figure 1-2: Preliminary Project Schedule

1.7 ESTIMATED CAPITAL COST

For an estimate of the Project capital cost in 2021 dollars, see Table 1-1.

<table>
<thead>
<tr>
<th>Component</th>
<th>Capital Cost ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline</td>
<td>1,951</td>
</tr>
<tr>
<td>Compression</td>
<td>356</td>
</tr>
<tr>
<td>Total</td>
<td>2,307</td>
</tr>
</tbody>
</table>

Note: Estimated AFUDC is included in these costs.
1.8 ECONOMIC BENEFITS

An economic effects analysis was prepared by Wood Environment and Infrastructure Solutions (Wood) and completed using an Input-Output Model to understand the potential economic effects of the Project. The economic effects analysis estimated the economic effects of the $2.3 billion Project capital expenditure during construction in Canada (from 2020 through to commissioning in 2021) and operational expenditures in Canada on an annual basis (see Section 20.5 of the Environmental and Socio-Economic Assessment [ESA]).

During construction, the Project is estimated to directly increase Alberta’s Gross Domestic Product (GDP) by $386 million. The total economic impact (direct, indirect and induced) on Alberta would be $1,221 million in GDP and $817 million in labour income. During operations, the Project would contribute approximately $580 thousand annually to Alberta’s GDP.

During operations, the Project is estimated to contribute a total of approximately $5 million per year in property taxes to the County of Grande Prairie, Greenview County, Yellowhead County, Clearwater County, Mountain View County and Rocky View County, Alberta. The Project is also estimated to generate approximately $4.6 million in federal and $3.7 million in provincial tax revenue during operations.

1.9 STAKEHOLDER ENGAGEMENT

TransCanada’s stakeholder engagement program is being used for the Project. A description of the Program is provided in Section 12: Stakeholder Engagement. Stakeholder engagement activities to date have included:

- early and ongoing public notification of the Project
- identifying stakeholders, initiating dialogue, attending community meetings
- maintaining ongoing stakeholder engagement and dialogue
- distributing Project updates and communication materials (including information on the process for providing the Board with comments)
- addressing questions and concerns

NGTL has contacted the following stakeholders as part of its public engagement efforts for the Project:

- landowners and land users
- key officials at all three levels of government (municipal, provincial and federal)
- community leaders
- business development officers in rural municipalities
- emergency response service organizations
- other interested parties (e.g., synergy groups)
Stakeholder feedback raised during consultation activities are summarized in Section 12.5.

Engagement activities will continue through the regulatory and construction phases of the Project, after this Application is filed. The primary focus will be on responding to specific questions or concerns and following up with previously engaged stakeholders.

During operations, ongoing engagement activities for the Project will be conducted in accordance with the provisions of TransCanada’s Public Awareness (PA) Program. For a description of the PA Program, see Section 10.1.6: Public Awareness Program.

1.10 ABORIGINAL ENGAGEMENT

The Aboriginal Engagement Program for the Project is guided by TransCanada’s Aboriginal Relations Policy and is designed to assist NGTL in planning the Project.

The goal of the Aboriginal Engagement Program for the Project is to provide Project information and seek feedback from Aboriginal groups in order to anticipate, prevent, mitigate and manage conditions that have the potential to affect Aboriginal groups. NGTL strives to meet this goal by:

- establishing a practical approach for the implementation of Project-specific engagement activities
- initiating engagement activities as soon as possible in the planning of the Project
- providing clear, relevant and timely information to potentially affected Aboriginal groups
- responsively closing the loop in engagement activities and addressing, as appropriate, the concerns raised by each potentially affected Aboriginal group

The Program includes all potentially affected Aboriginal groups that, through NGTL’s Aboriginal engagement process, have expressed an interest in the Project.

The design of NGTL’s engagement program is consistent with the NEB’s guidance on consultation as set out in its Filing Manual.

For an outline of the Aboriginal Engagement Program, the potentially affected Aboriginal groups engaged on the Project, and outcomes of the engagement program up to May 17, 2018, see Section 13: Aboriginal Engagement.

1.11 ENVIRONMENTAL AND SOCIO-ECONOMIC MATTERS

The ESA for the Project was prepared under the guidance provided by the NEB Filing Manual and the requirements of CEAA 2012.
The ESA is supported by existing data sets, publicly available literature, field reconnaissance, previous project experience in the region, environmental field studies and includes a Project-specific EPP. The EPP will be updated as additional mitigation measures are identified during detailed design, and through ongoing field work and engagement programs.

The ESA considered both residual and cumulative effects in respect of the biophysical and socio-economic elements that the Project interacts with. A portion of the Deep Valley Section of the Project will parallel NGTL’s existing Grande Prairie Mainline for approximately 44 km within the Little Smoky Caribou Range. The Project is predicted to result in residual effects that will contribute to the pre-existing significant adverse cumulative effects on woodland caribou. To mitigate the effects of the Project, NGTL has developed a Preliminary Caribou Habitat Restoration and Offset Measures Plan (CHR&OMP). Implementing the CHR&OMP aims to offset these effects, with the goal of complying with the federal Recovery Strategy for Woodland Caribou.

Based on the observations and analysis in the ESA, the Project is not expected to have or contribute to any other significant adverse effects on biophysical or socio-economic elements, provided the mitigation identified in the ESA are effectively implemented.

NGTL accepts the findings of the ESA and will adhere to the recommendations and mitigation identified in the ESA. The ESA can be found as Volume 3 of this Application. Volume 4 contains the supporting appendices to the ESA, including the EPP. The environmental alignment sheets (EASs) form Volume 5 of this Application.

1.12 NON-NEB REGULATORY PERMITS AND AUTHORIZATIONS

All non-NEB regulatory permits and authorizations are planned to be in place, as required, to meet the construction schedule and in-service dates for the Project.

For a preliminary list of federal non-NEB regulatory permits and authorizations, including anticipated submission dates and approval timing, see Table 1-2, and for Alberta regulatory authorities, see Table 1-3. NGTL will comply with relevant and applicable provincial and municipal laws, to the extent those laws do not conflict with or frustrate the purpose and intention of any federal approval for the Project.

The information in these tables may be updated as design and planning for the Project progresses and to reflect the outcome of ongoing discussions with various regulators. The tables do not include other construction permits (e.g., electrical and building permits) that will be obtained by the construction contractors.
Table 1-2: Preliminary List of Federal Regulatory Approvals and Authorizations

<table>
<thead>
<tr>
<th>Department</th>
<th>Authority</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisheries and Oceans Canada (DFO)</td>
<td>Subsection 35(2) of the Fisheries Act</td>
<td>Under the Memorandum of Understanding (MOU) between the NEB and DFO, the NEB will assess potential effects of the Project on fish or fish habitat and aquatic SAR. If the NEB determines that a project could result in serious harm to fish or fish habitat, or adverse effects on SAR, the NEB will notify DFO that a <em>Fisheries Act</em> and/or SARA permit might be required.</td>
</tr>
</tbody>
</table>

Note:
1. Responsibility for Inland Fisheries and Transport Canada permitting were transitioned to the NEB under MOU’s.

Table 1-3: Preliminary List of Alberta Regulatory Approvals and Authorizations

<table>
<thead>
<tr>
<th>Department</th>
<th>Authority</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta Environment and Parks</td>
<td>Public Lands Act</td>
<td>Surface dispositions for pipeline ROW and facility sites i.e., DPLs (Department Pipeline Agreement) and DLOs (Department License of Occupation), and temporary access on Crown land.</td>
</tr>
<tr>
<td></td>
<td>Forest and Prairie Protection Act</td>
<td>License approval to burn cleared debris.</td>
</tr>
<tr>
<td></td>
<td>Water Act</td>
<td>Notification under the <em>Water Act Code of Practice for Pipelines and Telecommunications Lines Crossing a Waterbody.</em> Notification under the <em>Water Act Code of Practice for Watercourse Crossings.</em></td>
</tr>
<tr>
<td></td>
<td>Environmental Protection and Enhancement Act (EPEA)</td>
<td>Registration under the <em>Environmental Protection and Enhancement Act Code of Practice for the Release of Hydrostatic Test Water from Hydrostatic Testing of Petroleum Liquid and Gas Pipelines (GoA 1999).</em></td>
</tr>
<tr>
<td>Alberta Culture and Tourism</td>
<td>Historical Resources Act</td>
<td>Alberta Culture and Tourism research permit. Clearance under the <em>Historical Resources Act.</em></td>
</tr>
</tbody>
</table>

1.13 DECOMMISSIONING OR ABANDONMENT

Prior approval from the Board and other applicable authorities will be required before any future decommissioning or abandonment activities are initiated. The decision to decommission or abandon pipelines or facilities will be influenced by future service requirements.

In addition, since the Project is a designated project under CEAA 2012, this Application includes a preliminary decommissioning or abandonment plan for the Project (see Appendix J of the ESA). A preliminary assessment of future decommissioning or abandonment activities, including determination of significance following mitigation, is provided in the ESA.
1.14 APPLICATION STRUCTURE AND CONTENTS

The Application contains 15 sections, as follows:

Section 1: Executive Summary

Section 1 provides a description of the Project, including its location, scope, preliminary schedule, costs, stakeholder and Aboriginal engagement programs, environmental and socio-economic assessment, non-NEB regulatory authorizations, as well as decommissioning or abandonment activities.

Section 2: Need and Necessity

Section 2 describes the need for the Project and demonstrates its economic feasibility, based on supply, markets and transportation contracts.

Section 3: Markets and Supply

Section 3 provides an overview of the gas supply available to the Project and an outlook for the North American gas markets that can be accessed through the NGTL System and connecting pipelines.

Section 4: System Design

Section 4 provides an overview of the system design planning process that was used to determine the optimum facility set for the Project. Facility alternatives that were considered but not selected are also identified and the rationale for NGTL’s facility selection is explained.

Section 5: Transportation

Section 5 provides an overview of the transportation contracts supporting the Project and the transportation access and contracting process that was used for the Project. The commercial third-party notification process is also described and presentation materials provided.

Section 6: Tolls and Financing

Section 6 provides an analysis of the expected cost of service (COS) and toll impact of the Project on the NGTL System. It includes cost estimates for future decommissioning or abandonment of the Project, financing information with current credit rating reports for TransCanada and a financial assurance plan.

Section 7: Pipeline

Section 7 provides the engineering design details, specifications and typical drawings for the pipeline components of the Project. Information is provided on routing, gas
composition, valve locations, procurement, geotechnical data and watercourse crossings. Preliminary plans for early ROW preparation activities are also outlined, as is NGTL’s approach to establishing pipeline integrity during design.

Section 8: Pipeline Construction

Section 8 provides pipeline construction information, including strategy, procedures, timing and sequencing. Information on personnel safety and accommodation is also provided.

Section 9: Compression

Section 9 provides the engineering design details, specifications, survey plans and preliminary plot plans for the compressor station unit additions included in the Project.

This section also describes the construction and commissioning of the compressor station unit additions, including construction activities, strategy and schedule, safety, emergency response, inspection and monitoring.

Section 10: Operations

Section 10 describes the processes and procedures that will be employed to ensure the safe, reliable and efficient operation of the Project. In particular, Management Systems and Programs required under the OPR are outlined.

Section 11: Land Matters

Section 11 describes the permanent and temporary land requirements for the Project facilities and outlines the procedures and schedules for obtaining the land rights and temporary workspace (TWS) requirements. Landowner consultation activities and outcomes are also summarized.

Section 12: Stakeholder Engagement

Section 12 provides an overview of TransCanada’s ongoing stakeholder engagement program for the Project. Sample copies of letters, information brochures and open house materials are also provided.

Section 13: Aboriginal Engagement

Section 13 describes the Aboriginal Engagement Program for the Project. It includes the principles and goals of the program, methodology for engagement, process for integrating appropriate mitigation in Project plans and future planned engagement activities. The approach to obtaining and incorporating Traditional Knowledge (TK) in the Project is described, and community engagement is summarized.
Section 14: Environmental and Socio-Economic Matters

Section 14 provides a summary of the need for and scope of the ESA, along with the approach, findings and conclusions of the ESA for the Project. A description of the consultation with environmental regulatory agencies is also included.

Section 15: Foldout Maps

Maps are provided in Section 15, including a wall-sized Project overview map and detailed route maps. The maps show the location of major Project components and existing infrastructure, including public and private roads.

1.15 SUPPLEMENTAL INFORMATION

The information in this Application is based on preliminary design, supported by initial results from field investigations, engagement and consultation programs. Supplemental field studies are ongoing to confirm findings, and to refine mitigation and Project design. As a result, NGTL will provide updated and supplemental information, as appropriate, throughout the regulatory review process.

For ease of reference, NGTL has developed a preliminary schedule of anticipated supplemental reports (see Table 1-4).

<table>
<thead>
<tr>
<th>Supplemental Filing</th>
<th>Target Filing Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heritage Resources</td>
<td>September 2018</td>
</tr>
<tr>
<td>Aquatics</td>
<td>September 2018</td>
</tr>
<tr>
<td>Soils</td>
<td>September 2018 (subject to landowner consultation)</td>
</tr>
<tr>
<td>Vegetation and Wetlands</td>
<td>September 2018</td>
</tr>
<tr>
<td>Wildlife</td>
<td>September 2018</td>
</tr>
<tr>
<td>Geotechnical Reports</td>
<td>September 2018</td>
</tr>
<tr>
<td>Stakeholder Engagement update</td>
<td>September 2018</td>
</tr>
<tr>
<td>Aboriginal Engagement update</td>
<td>September 2018</td>
</tr>
<tr>
<td>Consultation with environmental agencies update</td>
<td>September 2018</td>
</tr>
</tbody>
</table>
2.0 NEED AND NECESSITY

This section provides the justification for the Project, including a discussion of the need that is addressed by the Project.

To provide context, it is useful to first provide background on the commercial constructs that guide the daily operation of the NGTL System, as well as the design and planning processes that guide the long-term system requirements.

2.1 THE COMMERCIAL CONSTRUCT OF THE NGTL SYSTEM

NGTL currently provides a unique and high-value commercial feature referred to as the NOVA Inventory Transfer (NIT) (see Figure 2-1). The NIT construct aggregates all natural gas supplies, storage, intra-basin markets and interconnected pipelines to the NGTL System at a single, integrated transaction hub by contracting receipt and delivery functions separately with a balancing account situated between the functions.

NGTL receipt services allow shippers to bring gas on the NGTL System and aggregate those supplies into a single account referred to as the NIT account. Likewise, NGTL provides delivery services which allow shippers to remove gas from NIT accounts and off the NGTL System for deliveries to intra-basin markets, storage or interconnecting pipelines. Shippers can buy and sell inventories amongst NIT accounts at any time contingent upon daily account balances equalling zero \(^1\) (receipts + NIT purchases = NIT sales + deliveries). This allows delivery shippers to source gas through NIT that is physically received from any receipt point on the NGTL System and for receipt shippers to commercially access any market. Balanced accounts result in a balanced System, meaning gas on the System equals gas off the System.

![Figure 2-1: NIT Market on the NGTL System](image)

\(^1\) Shippers may hold small balances within a tolerance zone.
The physical flows from one point on the NGTL System to another are based on the physical receipts and deliveries nominated by shippers and authorized by NGTL. The design of the NGTL System ensures that the overall flows on the System are able to meet aggregate requirements on a peak day.

2.2 THE NGTL SYSTEM DESIGN PROCESS

The NGTL System transports gas from many geographically diverse receipt points and moves it through pipelines that generally increase in capacity as they approach the major delivery points. The NGTL System is designed to meet the peak day design flow requirements of its customers.

NGTL’s facility design must ensure facilities are appropriately sized to meet flow requirements. The system design methodology developed to achieve this objective is described further in Section 4: System Design.

2.2.1 Identifying and Triggering Facilities

On an annual basis, NGTL reviews its pipeline system based on supply and demand forecasts, as described in Section 4: System Design. When the forecast requirement exceeds the existing pipeline capability, facility solutions are identified to address the capability shortfall. These facility solutions are then compared using economic and operating criteria to determine the most appropriate facility solution. The selection of facilities is usually determined based on the lowest cumulative present value cost of service (CPVCOS).

NGTL develops a facility requirement list for five years or more into the future for the entire NGTL System. By identifying the long-term facility requirements, NGTL is better able to minimize costs and place appropriate facilities into service when required. Long-term planning is intended to minimize effects on stakeholders, landowners, Aboriginal communities and the environment by reducing the need of having to return repeatedly to loop and expand facilities.

When assessing potential facility solutions, NGTL examines the options to lease capacity on existing facilities owned by others (through a Transportation by Others arrangement or TBO), whether existing facilities owned by others can be purchased, or whether construction of new facilities is the most appropriate solution. If it is determined that a build option is the most appropriate, NGTL assesses what facilities are required to meet the forecast requirements.

The result of this annual process is consolidated into the NGTL annual plan document provided as Appendix 5-5. This information is shared with the Tolls, Tariff, Facilities and Procedures Committee (TTFP), is posted on the NGTL customer express website, and ultimately informs subsequent applications for approval of new facilities.
When commercial arrangements that support the need for a project are finalized, NGTL files an application to construct the identified facilities. Future facilities identified as part of the long-term planning process might or might not ultimately be required as the longer-term forecasts become more certain and commercial contracts requiring the capacity are executed. To determine the appropriate size of facilities, NGTL relies on its supply and demand forecast. NGTL sizes the proposed facilities to ensure that the pipeline system can transport the expected peak flow requirements.

2.3 NEED FOR THE PROJECT

The Project is driven primarily by Western Canada Sedimentary Basin (WCSB) producers seeking increased access to markets and the ability to compete for downstream market share. Many plays in the WCSB, such as the Montney and Duvernay compete favourably with other basins serving these markets. The Project will provide incremental capacity allowing WCSB gas to compete and capture increased market share and growth and will provide producers the needed ability to diversify their market portfolio within and beyond NGTL intra-basin demand.

NGTL has identified the need for a number of facilities to meet the aggregate receipt and delivery requirements across the System following the processes described further in Section 4: System Design. The Project facilities are commercially required to be in-service by April 2021 to enable NGTL System capability to transport gas from areas where supply is growing, as well as to meet delivery requirements in areas where there is existing and growing market demand.
Figure 2-2 illustrates the Supply and Demand growth areas of the NGTL System. Supply in the PRPA is growing and requires capacity to move gas to markets in eastern Alberta and for export requirements at the East Gate (EGAT), which consists of the Empress and McNeill export delivery locations. The Empress export delivery point is where the NGTL System interconnects with the TransCanada Mainline that serves Eastern Canadian, North Eastern United States (U.S.) and mid-Western U.S. Markets. The McNeill export delivery point is where the NGTL System delivers to the Foothills Pipe Lines Ltd. (Foothills) System, Zone 9, in Saskatchewan, which transports gas to southern Saskatchewan markets and mid-Western U.S. markets via the Northern Border Pipeline. The Project facilities, combined with the rest of the NGTL System, will enable NGTL to transport existing and incremental supply from the PRPA, as well as to meet existing and incremental market demand in eastern Alberta and through interconnecting pipelines at the EGAT.
2.3.1 NGTL System Throughput Growth and Contracts

Supply as well as intra-basin and export markets on the NGTL System are growing. This expected throughput growth is described in Section 3: Supply and Markets and is supported by the recent open seasons and the resulting shipper contracts described in Section 5: Transportation. Most of the supply growth is occurring in the PRPA with delivery growth primarily at the EGAT with some delivery growth developing intra-basin.

Supply distribution on the NGTL System is changing as a result of supply growth in the PRPA. The trend for gas to be produced in the Northwest section of the NGTL System is a result of economic supply in Northwest Alberta and Northeast BC replacing declining and less economic supply in Southern Alberta and Northeast Alberta. This supply distribution trend is graphically represented in Figure 2-3.

![Figure 2-3: NGTL Supply Distribution]

<table>
<thead>
<tr>
<th>Peace River Area</th>
<th>2013: 6.4 Bcf/d, 63% of System Supply</th>
<th>2017: 8.6 Bcf/d, 76% of System Supply</th>
<th>2021: 11.3 Bcf/d, 85% of System Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>North of Bens Lake Area</td>
<td>2013: 0.3 Bcf/d, 3% of System Supply</td>
<td>2017: 0.2 Bcf/d, 2% of System Supply</td>
<td>2021: 0.1 Bcf/d, 1% of System Supply</td>
</tr>
<tr>
<td>Central Area</td>
<td>2013: 3.4 Bcf/d, 34% of System Supply</td>
<td>2017: 2.5 Bcf/d, 22% of System Supply</td>
<td>2021: 1.9 Bcf/d, 14% of System Supply</td>
</tr>
</tbody>
</table>

2.3.2 Conclusion

The facilities applied for in this Application are commercially required to be in-service by April 2021 to provide transportation capability to allow NGTL to continue to meet the existing and future supply and market requirements for WCSB gas. The migration of supply into the more prolific Montney, Deep Basin, and Duvernay supply areas has resulted in a geographic shift in the supply distribution on the NGTL System, and thus the requirement for incremental facilities to transport this
supply to growing markets at existing locations. Based on NGTL’s forecast of supply and markets, as well as the contractual commitments that underpin the Project, the applied-for facilities will be used and useful throughout the economic life of the Project.
3.0 MARKETS AND SUPPLY

This section provides an overview of the gas markets and supply on the NGTL System to be served by the Project. The forecasts are annual averages, which when adjusted to peak values, form the basis for the design flows that are used in facility design. Design flows are discussed in Section 4: System Design.

The geographic locations on the NGTL System where supply and markets are growing, and what is available locally, are relevant considerations when designing the NGTL System. Figure 2-2 illustrates the areas on the NGTL System where supply and markets are growing. Supply is currently concentrated in the PRPA, or west portion of the NGTL System, while the markets are spread between the North and East and Mainline Project Areas, or the east portion of the NGTL System. This growing separation of supply and markets results in new facilities being required to meet aggregate system demands.

The average annual outlooks of supply, market volumes and NGTL System throughput volumes reported in this section are understood to be within a range of outcomes due to factors such as changing market conditions and the pace of WCSB supply development. However, the facilities proposed in this Application are required to meet the aggregate peak day needs of NGTL shippers which are based on firm service contracts and are not expected to change even if average annual throughputs may vary. Average annual levels reported here assume that the proposed facilities are in place.

3.1 MARKETS

NGTL has developed a forecast of gas that the NGTL System is expected to deliver to export and intra-basin markets. Figure 3-1 shows NGTL’s forecast for these markets.
3.1.1 Export Demand

Recent successful open seasons conducted by NGTL for service at export points as discussed in Section 5: Transportation, have resulted in an increased export forecast. The resulting demand increases in the short term then stabilizes for the remainder of the forecast period. The combined total exports from both the EGAT and the Alberta/British Columbia (ABC) export points increase from approximately 196 $10^6\text{m}^3/\text{d}$ (6.9 Bcf/d) in 2017/18 to approximately 212 $10^6\text{m}^3/\text{d}$ (7.5 Bcf/d) by 2029/30. Liquefied natural gas (LNG) exports to the BC west coast, which are projected to start-up in mid-2024 and mid-2028, make up the remainder of the forecasted export demand. Total exports, including LNG, are forecasted to reach approximately 287 $10^6\text{m}^3/\text{d}$ (10.1 Bcf/d) by 2029/30. Table 3-1 and Figure 3-2 illustrate the exports breakdown.

<table>
<thead>
<tr>
<th>Gas Year</th>
<th>Intra-Basin 1</th>
<th>EGAT</th>
<th>Alberta/BC</th>
<th>LNG 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$10^6\text{m}^3/\text{d}$</td>
<td>Bcf/d</td>
<td>$10^6\text{m}^3/\text{d}$</td>
<td>Bcf/d</td>
</tr>
<tr>
<td>2009/10</td>
<td>74</td>
<td>2.6</td>
<td>139</td>
<td>4.9</td>
</tr>
<tr>
<td>2010/11</td>
<td>85</td>
<td>3.0</td>
<td>136</td>
<td>4.8</td>
</tr>
<tr>
<td>2011/12</td>
<td>111</td>
<td>3.9</td>
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<td>2012/13</td>
<td>119</td>
<td>4.2</td>
<td>111</td>
<td>3.9</td>
</tr>
<tr>
<td>2013/14</td>
<td>124</td>
<td>4.4</td>
<td>130</td>
<td>4.6</td>
</tr>
<tr>
<td>2014/15</td>
<td>127</td>
<td>4.5</td>
<td>124</td>
<td>4.4</td>
</tr>
</tbody>
</table>
### Table 3-1: Export and Intra-Basin Demand Served by NGTL (cont'd)

<table>
<thead>
<tr>
<th>Gas Year</th>
<th>Intra-Basin 1</th>
<th>EGAT</th>
<th>Alberta/BC</th>
<th>LNG 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$10^6$m$^3$/d</td>
<td>Bcf/d</td>
<td>$10^6$m$^3$/d</td>
<td>Bcf/d</td>
</tr>
<tr>
<td>2015/16</td>
<td>132</td>
<td>4.7</td>
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<td>2016/17</td>
<td>142</td>
<td>5.0</td>
<td>117</td>
<td>4.1</td>
</tr>
<tr>
<td>2017/18</td>
<td>155</td>
<td>5.5</td>
<td>129</td>
<td>4.5</td>
</tr>
<tr>
<td>2018/19</td>
<td>162</td>
<td>5.7</td>
<td>123</td>
<td>4.4</td>
</tr>
<tr>
<td>2019/20</td>
<td>164</td>
<td>5.8</td>
<td>122</td>
<td>4.3</td>
</tr>
<tr>
<td>2020/21</td>
<td>172</td>
<td>6.1</td>
<td>128</td>
<td>4.5</td>
</tr>
<tr>
<td>2021/22</td>
<td>174</td>
<td>6.1</td>
<td>132</td>
<td>4.7</td>
</tr>
<tr>
<td>2022/23</td>
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<td>2027/28</td>
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<td>4.8</td>
</tr>
<tr>
<td>2028/29</td>
<td>196</td>
<td>6.9</td>
<td>137</td>
<td>4.8</td>
</tr>
<tr>
<td>2029/30</td>
<td>203</td>
<td>7.2</td>
<td>137</td>
<td>4.8</td>
</tr>
</tbody>
</table>


Note:
1. Intra-Basin includes small borders and fuel.
2. LNG exports from Canada remain a potential future market during this period however the timing and quantity of such volumes remain uncertain.

Source: TransCanada 2018

---

**Figure 3-2: Export Market Demand**
NGTL has also prepared a long-term natural gas demand outlook for each region the Project may potentially serve with a broader view of the North American gas market. This North American gas demand outlook has been prepared by considering all natural gas sectors, which include residential, commercial, industrial and natural gas use within the electrical generation industry. In addition, a forecast of future LNG exports has been included in the supply/demand balance for North America. The overall outlook was developed based on an internal assessment of factors including:

- historical growth rates
- new and/or anticipated trends
- government policy
- project announcements
- aggregate customer confidential information
- internal analyses and assessments

Table 3-2 provides NGTL’s forecast for provinces located east of Alberta that could potentially be served via the EGAT.

Table 3-2: Canadian Domestic Demand served through the EGAT (2010 to 2030)\(^1,2\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Local Distribution Companies (Residential, Commercial)</th>
<th>Industrial</th>
<th>Electric Generation</th>
<th>Other (^3)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(10^6)m(^3)/d Bcf/d</td>
<td>(10^6)m(^3)/d Bcf/d</td>
<td>(10^6)m(^3)/d Bcf/d</td>
<td>(10^6)m(^3)/d Bcf/d</td>
<td>(10^6)m(^3)/d Bcf/d</td>
</tr>
<tr>
<td>2010</td>
<td>54 1.9</td>
<td>45 1.6</td>
<td>14 0.5</td>
<td>3 0.1</td>
<td>116 4.1</td>
</tr>
<tr>
<td>2011</td>
<td>57 2.0</td>
<td>45 1.6</td>
<td>17 0.6</td>
<td>3 0.1</td>
<td>122 4.3</td>
</tr>
<tr>
<td>2012</td>
<td>51 1.8</td>
<td>45 1.6</td>
<td>17 0.6</td>
<td>3 0.1</td>
<td>116 4.1</td>
</tr>
<tr>
<td>2013</td>
<td>57 2.0</td>
<td>51 1.8</td>
<td>14 0.5</td>
<td>3 0.1</td>
<td>125 4.4</td>
</tr>
<tr>
<td>2014</td>
<td>62 2.2</td>
<td>51 1.8</td>
<td>11 0.4</td>
<td>3 0.1</td>
<td>127 4.5</td>
</tr>
<tr>
<td>2015</td>
<td>59 2.1</td>
<td>48 1.7</td>
<td>14 0.5</td>
<td>3 0.1</td>
<td>125 4.4</td>
</tr>
<tr>
<td>2016</td>
<td>54 1.9</td>
<td>54 1.9</td>
<td>11 0.4</td>
<td>3 0.1</td>
<td>122 4.3</td>
</tr>
<tr>
<td>2017</td>
<td>57 2.0</td>
<td>57 2.0</td>
<td>8 0.3</td>
<td>3 0.1</td>
<td>125 4.4</td>
</tr>
<tr>
<td>2018</td>
<td>57 2.0</td>
<td>54 1.9</td>
<td>11 0.4</td>
<td>3 0.1</td>
<td>125 4.4</td>
</tr>
<tr>
<td>2019</td>
<td>57 2.0</td>
<td>57 2.0</td>
<td>11 0.4</td>
<td>3 0.1</td>
<td>127 4.5</td>
</tr>
<tr>
<td>2020</td>
<td>57 2.0</td>
<td>57 2.0</td>
<td>11 0.4</td>
<td>3 0.1</td>
<td>127 4.5</td>
</tr>
<tr>
<td>2021</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>14 0.5</td>
<td>3 0.1</td>
<td>133 4.7</td>
</tr>
<tr>
<td>2022</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>17 0.6</td>
<td>3 0.1</td>
<td>136 4.8</td>
</tr>
<tr>
<td>2023</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>20 0.7</td>
<td>3 0.1</td>
<td>139 4.9</td>
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<td>2024</td>
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<td>3 0.1</td>
<td>136 4.8</td>
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<td>142 5.0</td>
</tr>
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<td>2026</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>20 0.7</td>
<td>3 0.1</td>
<td>139 4.9</td>
</tr>
<tr>
<td>2027</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>20 0.7</td>
<td>3 0.1</td>
<td>139 4.9</td>
</tr>
<tr>
<td>2028</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>17 0.6</td>
<td>3 0.1</td>
<td>136 4.8</td>
</tr>
<tr>
<td>2029</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>17 0.6</td>
<td>3 0.1</td>
<td>136 4.8</td>
</tr>
<tr>
<td>2030</td>
<td>57 2.0</td>
<td>59 2.1</td>
<td>20 0.7</td>
<td>3 0.1</td>
<td>139 4.9</td>
</tr>
</tbody>
</table>
The combined total Canadian domestic demand served by the EGAT is projected to increase from approximately 125 $10^6$ m$^3$/d (4.4 Bcf/d) in 2018 to approximately 139 $10^6$ m$^3$/d (4.9 Bcf/d) by 2030. Most of this growth is expected to come from the electrical generation sector which accounts for 60% of this increase in projected demand.

NGTL’s forecast of U.S. demand by sector is tabulated in Table 3-3. The export points on the NGTL System via the EGAT and ABC can serve these markets in the U.S. This demand is projected to increase from approximately 2,283 $10^6$ m$^3$/d (80.6 Bcf/d) in 2018 to approximately 2,904 $10^6$ m$^3$/d (102.5 Bcf/d) by 2030. This includes U.S. LNG exports that increase from approximately 93 $10^6$ m$^3$/d (3.3 Bcf/d) in 2018 to approximately 394 $10^6$ m$^3$/d (13.9 Bcf/d) by 2030.

### Table 3-3: U.S. Natural Gas Demand (2010 to 2030)$^1$

<table>
<thead>
<tr>
<th>Year</th>
<th>LDC (Residential, Commercial)</th>
<th>Industrial</th>
<th>Electric Generation</th>
<th>Other $^2$</th>
<th>LNG Exports</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10$^6$ m$^3$/d</td>
<td>Bcf/d</td>
<td>10$^6$ m$^3$/d</td>
<td>Bcf/d</td>
<td>10$^6$ m$^3$/d</td>
<td>Bcf/d</td>
</tr>
<tr>
<td>2010</td>
<td>618</td>
<td>21.8</td>
<td>530</td>
<td>18.7</td>
<td>572</td>
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</tr>
<tr>
<td>2011</td>
<td>615</td>
<td>21.7</td>
<td>544</td>
<td>19.2</td>
<td>586</td>
<td>20.7</td>
</tr>
<tr>
<td>2012</td>
<td>550</td>
<td>19.4</td>
<td>561</td>
<td>19.8</td>
<td>705</td>
<td>24.9</td>
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<td>2013</td>
<td>643</td>
<td>22.7</td>
<td>578</td>
<td>20.4</td>
<td>635</td>
<td>22.4</td>
</tr>
<tr>
<td>2014</td>
<td>671</td>
<td>23.7</td>
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<td>21.0</td>
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<td>2015</td>
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<td>21.7</td>
<td>584</td>
<td>20.6</td>
<td>745</td>
<td>26.3</td>
</tr>
<tr>
<td>2016</td>
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<td>771</td>
<td>27.2</td>
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<td>612</td>
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<td>722</td>
<td>25.5</td>
</tr>
<tr>
<td>2018</td>
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<td>21.6</td>
<td>620</td>
<td>21.9</td>
<td>771</td>
<td>27.2</td>
</tr>
<tr>
<td>2019</td>
<td>615</td>
<td>21.7</td>
<td>626</td>
<td>22.1</td>
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<td>27.0</td>
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<tr>
<td>2020</td>
<td>618</td>
<td>21.8</td>
<td>640</td>
<td>22.6</td>
<td>813</td>
<td>28.7</td>
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<tr>
<td>2021</td>
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<td>21.8</td>
<td>654</td>
<td>23.1</td>
<td>824</td>
<td>29.1</td>
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<tr>
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<td>23.6</td>
<td>813</td>
<td>28.7</td>
</tr>
<tr>
<td>2023</td>
<td>626</td>
<td>22.1</td>
<td>677</td>
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<td>635</td>
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<td>24.4</td>
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<td>29.2</td>
</tr>
<tr>
<td>2026</td>
<td>640</td>
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<tr>
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<td>663</td>
<td>23.4</td>
<td>691</td>
<td>24.4</td>
<td>895</td>
<td>31.6</td>
</tr>
</tbody>
</table>
These North American markets are expected to have sufficient demand to absorb supply from the applied-for facilities over the long-term. NGTL expects demand for natural gas across North America to increase from approximately $2,574 \times 10^6$ m$^3$/d (90.9 Bcf/d) in 2018 to approximately $3,366 \times 10^6$ m$^3$/d (118.8 Bcf/d) by 2030.

### 3.1.2 Intra-Basin Demand

NGTL intra-basin demand growth is primarily associated with increased gas-fired electrical generation and gas required for oil sands projects. Gas fired electrical generation is expected to grow as more coal generation is retired. Total intra-basin demand is expected to grow from $144 \times 10^6$ m$^3$/d (5.1 Bcf/d) in 2017/18 to $191.1 \times 10^6$ m$^3$/d (6.7 Bcf/d) in 2029/30. Together, the electric generation and oil sands sectors represent approximately 80% of intra-basin growth through the forecast period. More modest increases are expected in the refining and upgrading sectors, and in residential/commercial loads. Figure 3-3 illustrates the forecasted sectorial breakdown of the demand forecast.

Table 3-3: U.S. Natural Gas Demand (2010 to 2030)$^1$(cont’d)

<table>
<thead>
<tr>
<th>Year</th>
<th>Natural Gas Demand (10^6 m^3/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>$2,574 \times 10^6$</td>
</tr>
<tr>
<td>2030</td>
<td>$3,366 \times 10^6$</td>
</tr>
</tbody>
</table>

Note:
1. The numbers in this table may not add because of rounding.
2. Other category includes Pipeline fuel and LNG facility fuel in the years they are assumed to be operational.

Source: TransCanada 2018

Figure 3-3: NGTL Intra-Basin Sectorial Demand
3.2 WCSB SUPPLY FORECAST

NGTL has prepared a long-term WCSB supply forecast that incorporates conventional and unconventional gas resources. NGTL has also estimated the share of WCSB gas supply that will be transported on the NGTL System after considering total WCSB supply and the flows expected on other pipeline systems that transport gas production from the WCSB. Figure 3-4 illustrates the key WCSB gas supply areas situated relative to the NGTL System.

The Project will not be sourcing gas supply from a specific location or play, but rather will provide transportation access to growing supply sources from unconventional and tight conventional plays in the WCSB. These plays have attractive economics.
because of their higher liquids content than other plays within the WCSB, which enables economic supply with the current lower gas price environment.

NGTL expects conventional supply to continue to decline over time, with supply contributions from unconventional plays to increase as shown in Figure 3-5. The total gas supply is expected to steadily grow from the current 449 $10^6$ m$^3$/d (15.8 Bcf/d) to approximately 637 $10^6$ m$^3$/d (22.5 Bcf/d) by 2030. There are slight ramp ups in supply in 2024 and 2028, which are driven by expected BC LNG export projects, which are forecasted to start in those respective years.

![Figure 3-5: WCSB Supply Outlook](image)

3.3 NGTL SUPPLY FORECAST

NGTL System supply represents a portion of total WCSB supply with the allocation of gas supply among pipelines being determined by a number of factors including proximity to source, transportation tolls, service levels and access to markets. NGTL expects continued decline of conventional production areas and the receipt growth to continue to come from the western portion of the NGTL System where most of the unconventional supply is found. NGTL’s supply forecast follows the WCSB forecast of increasing over the forecast period to 2030 with increases in 2024 and 2028 before stabilizing at around 490 $10^6$ m$^3$/d (17.3 Bcf/d) for the remainder of the forecast period. NGTL’s forecast of WCSB and NGTL System supply is provided in Table 3-4. Figure 3-6 shows the NGTL System supply forecast.
### Table 3-4: WSCB Supply and NGTL System Supply

<table>
<thead>
<tr>
<th>Gas Year</th>
<th>WCSB Supply</th>
<th>NGTL System Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10^6m^3/d</td>
<td>Bcf/d</td>
</tr>
<tr>
<td>2009/10</td>
<td>404.7</td>
<td>14.3</td>
</tr>
<tr>
<td>2010/11</td>
<td>401.9</td>
<td>14.2</td>
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<tr>
<td>2011/12</td>
<td>389.4</td>
<td>13.7</td>
</tr>
<tr>
<td>2012/13</td>
<td>388.8</td>
<td>13.7</td>
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<td>2013/14</td>
<td>398.6</td>
<td>14.1</td>
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<td>2014/15</td>
<td>414.8</td>
<td>14.6</td>
</tr>
<tr>
<td>2015/16</td>
<td>423.4</td>
<td>14.9</td>
</tr>
<tr>
<td>2016/17</td>
<td>430.7</td>
<td>15.2</td>
</tr>
<tr>
<td>2017/18</td>
<td>448.7</td>
<td>15.8</td>
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<td>16.2</td>
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<tr>
<td>2019/20</td>
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<tr>
<td>2021/22</td>
<td>491.6</td>
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<td>2022/23</td>
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<td>2023/24</td>
<td>521.5</td>
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<td>2025/26</td>
<td>577.2</td>
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</tr>
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<td>2026/27</td>
<td>583.3</td>
<td>20.6</td>
</tr>
<tr>
<td>2027/28</td>
<td>607.1</td>
<td>21.4</td>
</tr>
<tr>
<td>2028/29</td>
<td>635.8</td>
<td>22.4</td>
</tr>
<tr>
<td>2029/30</td>
<td>636.7</td>
<td>22.5</td>
</tr>
</tbody>
</table>
Figure 3-6: NGTL System Supply
4.0 SYSTEM DESIGN

This section provides an overview of system design matters for the Project, including:

- a summary of the facilities selected to meet flow requirements
- the design basis for the facility selection
- the rationale for selecting the applied-for facilities
- an evaluation of alternatives that were examined

4.1 DESCRIPTION OF THE PROPOSED FACILITIES

As described in Section 2: Need and Necessity and Section 3: Supply and Markets, the NGTL System is experiencing both a geographical shift and an increase in gas supply in the Northwest portion of the System, combined with increased market demand at intra-basin and export locations, resulting in increasing demands on the System. The Project will increase NGTL System capability to meet the increasing market demand on the System as well as accommodate the shifting receipts from the PRPA.

The facilities consist of eight NPS 48 pipeline section loops totalling approximately 344 km, three compressor station unit additions and one control valve which have been designed to satisfy expected flow requirements (Design Flows), and are commercially supported by aggregate contracts, as described in Section 5: Transportation.

4.2 OVERALL PROJECT DESIGN

NGTL followed its established facility planning process in the design of the Project. For details on the process, see Appendix 4-1: Facility Design Methodology (FDMD).

The majority of the incremental delivery requirements as part of the Project are to the EGAT. Figure 4-1 shows the EGAT as well as the three simulated areas of the NGTL System. Figure 5-2 in the Transportation section illustrates the history as well as forward looking information for the EGAT.

The majority of the receipts on the NGTL System are currently produced in the PRPA. The PRPA is shown in Figure 4-1 and is defined as being Northwest of James River and West of NGTL’s Meikle River Compressor Station. Figure 5-3 in Section 5: Transportation illustrates the history as well as forward looking information for the PRPA.

The proposed pipelines and facilities that comprise the Project were designed to meet both incremental flow requirements at receipt points in the PRPA and incremental deliveries to intra-basin locations and at the EGAT, while also satisfying design conditions throughout the entire NGTL System. NGTL identified the System Flow
Within (SFW) condition, when total system receipts and deliveries (total system throughput) are at their maximum level for the season, as the constraining design condition and used it to establish design flows for use in hydraulic simulations. The incremental facilities required to transport the design flows formed the basis for the Project components. Analysis of the System Flow Through (SFT) condition, where system deliveries are at a seasonal minimum value, did not result in any facility requirements and is therefore not discussed as part of this Application.

4.2.1 Design Flows

Facility requirements are determined through analysis of hydraulic simulations. The key input for the simulations are the Design Flows. Design Flows represent flow conditions during peak days, when facility requirements are at their maximum. Since Design Flows dictate the facility requirements, it is important to discuss how they were developed for the Project.

The Design Flows used for hydraulic analysis were determined using the following four steps:

- Step 1: The Peak System Demand was established based on the peak demand forecast
• Step 2: The Peak System Receipt was established based on the average receipt forecast
• Step 3: Peak receipts were matched with peak deliveries
• Step 4: Further refinement of the distribution of Receipt Design Flow within the PRPA

These steps are further detailed below:

• Step 1: The Peak System Demand was established based on the peak demand forecast
  • Peak system demand was established by first determining the total level of peak intra-basin demand. This determination was based on the peak demand forecast provided in Section 3: Supply and Markets. The export requirements were then added to this peak forecast of intra-basin demands. This sum represents the highest level of system demand to be designed for.

• Step 2: The Peak System Receipt was established based on average receipt forecast
  • Total Peak System Receipts in the Project Areas of the NGTL System were established based on the average day receipt forecast provided in Section 3: Supply and Markets. The distribution of these receipts was obtained by then applying peaking factors to the annual average receipt forecast. These peaking factors are based on NGTL’s experience with flows on the NGTL System and reflect the historically observed amount by which peak values exceed average flows.

• Step 3: Peak receipts matched with peak deliveries
  • To avoid unnecessarily overbuilding the System, NGTL designs to the lesser of the Peak Receipt and Peak Delivery NGTL levels established in Steps 1 and 2. As defined in the Section 3.5.1 of the FDMD (Appendix 4-1), Supply-Demand Balancing is applied if the peak receipt level exceeds the peak delivery level. Since this was the case, the receipts across the System were prorated so the total receipts match the established peak total System demand, (i.e., what NGTL actually expects to flow). The end result constitutes the Receipt Design Flows for all the areas of the NGTL System.

• Step 4: Further refinement of the distribution of Receipt Design Flow within the PRPA
  • With the total Receipt Design Flow for all areas of the NGTL System established in Step 3, the distribution of receipts within the PRPA was further refined. Since the PRPA provides the majority of System receipts, it is important to account for the variability in receipt distribution within the PRPA. The PRPA receipt distribution was established by applying an 85% factor to the contracts in the area West of Saddle Hills Compressor Station,
and adjusting the remainder of the PRPA receipts proportionally down until the total volume matches the total PRPA Design Flow established in Step 3. The use of the 85% factor in the area West of Saddle Hills Compressor Station is based on historically observed utilization of contracts in that area.

This approach ensures that the proposed facilities can transport the required flows from the most constrained location on the NGTL System to downstream markets, while not unnecessarily overbuilding the System.

### 4.3 DESIGN CONDITION ANALYSES

Hydraulic simulations identified capability shortfalls across the NGTL System. Design Flow requirements could not be met with existing or other planned facilities, and shortfalls will occur under the SFW design condition without the Project components. The Project, therefore, was designed to address the shortfalls under the design condition, as described in Sections 4.3.1 and 4.3.2.

#### 4.3.1 EGAT Export Point Design Flows

As described in Section 4.2.1, the prevailing design condition for the PRPA is the SFW Design condition: when total system deliveries are at their maximum. All system deliveries, intra-system and exports alike, constitute total System deliveries. However, EGAT represents a large portion of the total NGTL System deliveries and is a location where significant interest for additional deliveries has been contracted. As shown in Figure 4-2, by the summer of 2021 the EGAT Delivery Design Flow has increased to $144.1 \times 10^6$ m$^3$/day (5.4 PJ/d), exceeding the Summer 2020 Capability of $114.9 \times 10^6$ m$^3$/day (4.3 PJ/d) by $29.3 \times 10^6$ m$^3$/day (1.1 PJ/d). The proposed facilities increase the capability to $145.2 \times 10^6$ m$^3$/day (5.5 PJ/d), meeting the Delivery Design Flow.
4.3.2 Peace River Project Area Design Flows

As described in Section 4.2.1, the Receipt Design Flow in the PRPA occurs when total system deliveries are at their maximum. Figure 4-3 shows by the summer of 2021 the PRPA Design Flow has increased to $375.4 \times 10^6$ m$^3$/day (13.3 Bcf/d), exceeding the Summer 2020 Capability of $320.7 \times 10^6$ m$^3$/day (11.3 Bcf/d) by $54.7 \times 10^6$ m$^3$/day (1.9 Bcf/d). The proposed facilities increase the capability to $375.8 \times 10^6$ m$^3$/day (13.3 Bcf/d), meeting the Receipt Design Flow.
4.4 FACILITY ALTERNATIVES

The NGTL facility planning process includes the evaluation of facility alternatives. The Project is a suite of discrete facilities meant to serve a common purpose. As such, alternatives to the Project can be categorized at both the collective (the suite of facilities) and individual (each discrete facility) levels. The most economically feasible alternatives at the collective and individual levels are compared in subsections 4.4.1 and 4.4.2.

4.4.1 Collective Facilities Alternative

The facility set selected that forms the basis for the Project is referred to as the “South Build”, while the alternative facility set considered is referred to as the “North Build”.

The South Build maximizes existing routes and facilities to transport the Design Flows required and uses incremental facilities to transport the remainder along the Grande Prairie Mainline (GPML) and the Edson Mainline (EDSML) South and East towards the EGAT and other intra-basin delivery points.

The North Build would also maximize existing routes and facilities to transport the Design Flows, but would use incremental facilities to move additional gas first north along the Northwest Mainline (NWML), and then East along the North Central Corridor (NCC) into and through the North and East Project Areas. Figure 4-4 illustrates the flow paths of the collective alternatives.
Gas from the PRPA requires additional facilities to reach the EGAT. Both alternative flow paths parallel different parts of the existing NGTL System and terminate at the EGAT.

Table 4-1 compares the facilities and costs associated with the collective facility alternatives. The South Build represents the shortest physical route connecting the supply to the demand growth areas. This is reflected in Table 4-1 which shows the facilities and costs comparison of the two alternatives. The South Build was selected based on its significantly lower capital.

Table 4-1: Collective Alternatives Comparison

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Pipeline Facilities</th>
<th>Compression Facilities</th>
<th>Capital Cost ($ Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>820 km NPS 48</td>
<td>6 Units – 150 MW Total</td>
<td>4.7</td>
</tr>
<tr>
<td>South</td>
<td>344 km NPS 48</td>
<td>3 Units – 90 MW Total</td>
<td>2.3</td>
</tr>
</tbody>
</table>

4.4.2 Individual Facilities Alternatives

With the South Build selected, NGTL began the individual facility selection process by considering TBO arrangements or the purchase of existing assets. No feasible alternatives of this nature were identified and new build alternatives were then considered.
Hydraulic analysis determined the most constrained parts of the existing NGTL System while transporting the Design Flows through the routes identified by the South Build. These constraints were evidenced by high frictional pressure losses. Likewise, the least constrained parts of the existing NGTL System were identified by lower frictional pressures losses. Pipeline looping was selected to overcome the greatest capacity constraints. Compression was selected in the areas that were less constrained to maximize the existing available pipeline capacity. This approach enables a selection of proposed facilities that represents the greatest increase in system capability at the least cost. As per Appendix 4-1, when comparing installation of compression versus pipeline loop, pipeline loop is more economic if the flow in the existing pipelines results in excessive friction losses.

The power ratings for the compressor unit additions, and the diameters and lengths of the pipeline loops, were selected to meet Design Flow requirements over the long term and to minimize outage impacts on the NGTL System.

As described in Appendix 4-1, the most efficient diameter for a pipeline loop is a diameter at least as large as the effective diameter of the existing pipeline or pipelines being looped. A larger diameter may be required in order to meet the long-term Design Flows, otherwise the most efficient solution is to match the diameter to the existing pipeline. For the pipeline components of the Project, NPS 48 pipe was selected on this basis. NGTL evaluated compressor unit sizing requirements and determined that 30 MW was the appropriate size given the flow and power requirements for the three proposed compressor station unit additions.

4.5 SCHEMATICS

A summary of the hydraulic analysis for the Project is represented schematically in Figure 4-5. To correlate the schematic with the NGTL System, the geographical locations of the pipeline corridors depicted in the schematic are highlighted in Figure 4-6.
Figure 4-5: Schematic of NGTL System Flow-Within Design Flow Requirements
Figure 4-6: Pipeline Corridors Represented in Schematics
5.0 TRANSPORTATION

This section describes the transportation access processes, contractual transportation commitments that support the Project, and the Project notifications that were issued to industry and commercial third parties.

As described in Section 2: Need and Necessity, the NGTL System has been progressively growing in recent years to meet the desire for economic WCSB gas to access existing and new markets.

NGTL provides FT-D Service and FT-R Service which are contracted separately and independent of one another within the NGTL System. FT-D Service or Delivery Service can be described as firm service moving gas off the NGTL System. FT-R Service or Receipt Service can be described as firm service moving gas on the NGTL System.

Delivery Service on the NGTL System is broken into three service groups:

- Group 1 Delivery Point (FT-D1) Service which interconnects with major downstream pipelines for natural gas leaving the WCSB
- Group 2 Delivery Point (FT-D2) Service which is designed to serve Industrial customers in the WCSB
- Group 3 Delivery Point (FT-D3) Service which is designed for service to Utility customers who in turn provide natural gas deliveries to Residential, Commercial and small Industrial customers

The NGTL System was fully contracted for FT-D Service in most market areas as of September 2017 and fully contracted for FT-R Service in the most presently active supply areas since May 2015. Figure 5-1 demonstrates the evolution of NGTL firm contracting since 2010.
Under this contracted condition, in order to accommodate incremental firm service, facility additions are required. As part of the NGTL System Design Annual Plan cycle, facilities were identified that would add incremental capacity to the NGTL System with a commercially required in-service date of April 2021. The proposed Project would serve to increase capacity on the NGTL System required to meet existing and incremental receipt (FT-R) and delivery (FT-D1, FT-D2 and FT-D3) service contracts.

The Project components will provide incremental capacity allowing WCSB gas to compete with other supply basins in North America, providing access to Eastern Canadian and U.S. markets and affording shippers the opportunity to diversify their market portfolio within and beyond the WCSB.

The Project is supported by existing aggregate demand from both intra-basin and export markets, with incremental long-term delivery commitments executed at the EGAT and intra-basin delivery locations.

### 5.1 TRANSPORTATION ACCESS

#### 5.1.1 Group 1 Delivery Point (FT-D1) Transportation Access

Group 1 Delivery Point (FT-D1) Service on the NGTL System that requires facility additions is allocated through a binding Expansion Capacity Open Season process as
outlined in Appendix A of the NGTL Tariff. Prospective Customers are required to submit an NGTL Tariff - Appendix A Bid Form and, consistent with Tariff specifications, capacity allocation is based first on term length and second on service commencement date. Further details on this process are outlined in Section 5.2.1.

5.1.2 Group 2 and Group 3 Delivery Point (FT-D2 and FT-D3) and FT-R Transportation Access

Transportation access and contracting for Group 2 and Group 3 Delivery Point Service (FT-D2 and FT-D3) and Receipt Point Service (FT-R) related to the Project is consistent with NGTL’s historical practice and allocated based on requests for service. On an ongoing basis, NGTL receives requests for service from existing and prospective customers with an interest in connecting deliveries or receipts to the NGTL System. To request service, a customer submits an Application for Service (AFS) to NGTL specifying volume, location and timing (see Appendix 5-1 for the NGTL Delivery AFS and Appendix 5-2 for the NGTL Receipt AFS).

Group 2 and Group 3 Delivery Point (FT-D2 and FT-D3) and FT-R Service capacity on the System is allocated on a first come, first served basis. NGTL processes requests for service within an area until the capacity of that area has been fully subscribed. When service requests exceed the available capacity of an area, new requests for service are held in a queue by NGTL and facility requirements are identified. Once the available capacity associated with a set of expansion facilities is confirmed, a Project Expenditure Authorization (PEA) and associated Schedule(s) of Service are offered to customers. Customers may accept, decline, or request modified service based on the terms and conditions of the PEA (e.g., requesting adjustments to volumes or billing commencement dates).

5.2 FIRM TRANSPORTATION COMMITMENTS

The Project is required to enable NGTL to serve existing firm transportation commitments and incremental long-term firm transportation service contracts resulting from the processes described in Section 5.1.

Figure 2-2 illustrates the geographical areas on the NGTL System that are relevant to the Project. The demand for incremental delivery service occurs at the EGAT and intra-basin locations on the NGTL System. The increase in intra-basin delivery demand within the fully contracted area shown in Figure 2-2 includes growth in the oil sands, gas-fired electrical generation and utility loads.

The predominant receipt area on the NGTL System is the PRPA.

NGTL executed incremental contracts that provide the commercial support for the Project. These contracts are summarized in Table 5-1.
Table 5-1: Quantity of Firm Transportation Agreements

<table>
<thead>
<tr>
<th>Service</th>
<th>Quantity</th>
<th>Start Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT-D1</td>
<td>12.7 $10^6$m$^3$/d</td>
<td>480 TJ/d</td>
</tr>
<tr>
<td></td>
<td>13.4 $10^6$m$^3$/d</td>
<td>505 TJ/d</td>
</tr>
<tr>
<td>FT-D2 and FT-D3</td>
<td>2.8 $10^6$m$^3$/d</td>
<td>107 TJ/d</td>
</tr>
<tr>
<td>FT-R</td>
<td>17.6 $10^6$m$^3$/d</td>
<td>622 MMcf/d</td>
</tr>
</tbody>
</table>

5.2.1 Firm Transportation Delivery (FT-D) Commitments

In total, the Project will be able to accommodate an incremental 1,091,900 GJ/d of FT-D Service contracts at the EGAT.

Firm Transportation Group 1 Delivery Point (FT-D1) Service

Following the prescribed allocation procedure for Expansion Capacity at FT-D1 locations as outlined in Appendix A of the NGTL Tariff, on December 18, 2017, NGTL posted a notice of Open Season for export capacity. The Expansion Capacity Open Season for FT-D1 Service at EGAT was held from January 2, 2018 to January 31, 2018. This Open Season was fully subscribed by shippers, thus demonstrating the need and commercial support for the Project. The export Expansion Capacity offered in association with this Project totals 985,000 GJ/d with a commercially required in-service date of April 2021. Of that amount, 480,000 GJ/d has a commencement date of November 1, 2020, prior to the Project in-service by making use of available seasonal winter capacity in the winter of 2020/21. The remaining 505,000 GJ/d has a commencement date of April 1, 2021. For a depiction of the EGAT design capacity see Figure 5-2.

Figure 5-2: EGAT Design Capacity
Consistent with the NGTL Tariff specifications for the Expansion Capacity Open Season bid process, the requested term of service was required to be a minimum term of eight years, which consists of five years of primary term and the remainder of the requested term length being secondary term. A total of 12 bids were allocated capacity through the January 2018 Open Season with a weighted average term of 25.6 years.

Individual Open Season bids are considered commercially sensitive and confidential to both NGTL and NGTL customers. Open Season bid quantities have been aggregated, and bid term length for a given service commencement date averaged, to protect the confidentiality of customers awarded capacity through the Open Seasons.

**Firm Transportation Group 2 and Group 3 Delivery Point (FT-D2 and FT-D3) Service**

In addition to the Expansion Open Season at the EGAT, 11 customers executed contracts for an incremental 106,900 GJ/d of intra-basin (FT-D2 and FT-D3) service commencing on April 1, 2021. The Tariff requirement when other new facilities are required for intra-basin (FT-D2 and FT-D3) delivery service is that the term of service is a minimum of eight years, with a primary term of five years and a secondary term of three years commencing at the conclusion of the five-year primary term.

FT-D2 and FT-D3 contracts are considered commercially sensitive and confidential to both NGTL and NGTL customers. Contract quantities have been aggregated to protect the confidentiality of customers that were allocated capacity.

**5.2.2 Firm Transportation Receipt (FT-R) Commitments**

**Contract Term**

The current standard FT-R contract term in constrained areas of the NGTL System is a minimum of eight years and commits shippers to the equivalent of 75% of the contract volumes for a primary term of five years, and a secondary term of three years commencing at the conclusion of the five-year primary term. The remaining 25% of the contract has a minimum eight-year secondary term.

The FT-R contracts supporting the Project are the aggregate contract levels at the meter stations within the PRPA shown in Figure 5-1. The aggregate contracts associated with supply in the PRPA originate from all current and proposed receipt stations in the PRPA. The FT-R contract profile for the PRPA, showing existing and incremental contracts as well as design flows and system capacity, is shown on Figure 5-3.
From July 2017 to February 2018, customers requested to contract for incremental FT-R in the PRPA and fully contracted areas. This resulted in FT-R contracts being executed by 17 customers, causing the aggregate level of FT-R in the PRPA to increase by $17.6 \times 10^6 \text{m}^3/\text{d}$ ($622 \text{MMcf/d}$) with a commercially required in-service date of April 2021.

5.3 THIRD-PARTY NOTIFICATION

5.3.1 Tolls, Tariff, Facilities and Procedures Committee

The TTFP has over 100 members and facilitates the effective, efficient and timely exchange of information among involved parties, and proactively addresses issues related to the tolls, Tariff, facilities and operating procedures of the NGTL System. As an integral part of the process, NGTL provides notice of capacity capital projects to the TTFP on an on-going basis.

On November 14, 2017, NGTL presented the NGTL System design process and design criteria to the TTFP (see Appendix 5-3).
On December 4, 2017, NGTL presented the 2017 Annual Plan, which included the preliminary design of the Project, to the TTFP (see Appendix 5-4). The presentation included discussion of capacity shortfall, capital cost estimates and the date required for service.

The 2017 Annual Plan was posted on the NGTL Customer Express website on December 15, 2017, and all TTFP members were notified of the posting at that time (see Appendix 5-5).

On February 27, 2018, NGTL filed the Project Description for the Project with the NEB and provided a copy to the MPMO. NGTL provided notification of the filing to the TTFP on April 27, 2018.

On April 10, 2018, NGTL presented a Facility Notification for the Project to the TTFP which included estimated toll impacts (see Appendix 5-6). No concerns regarding the Project were raised at this meeting. NGTL continues to provide information and answer questions on the Project to TTFP members.

5.3.2 Other Parties

In addition to the TTFP communications, NGTL has notified other commercial third parties about the Project using a variety of communications tools, including a news release dated February 15, 2018, as well as postings on the TransCanada website and the NGTL Customer Express website. NGTL has also referenced the Project in various presentations to industry forums.

5.3.3 Industry Communication

NGTL provided industry notification through a posting of the NGTL 2017 Annual Plan (see Appendix 5-5) on the NGTL Customer Express website in December 2017. The bulletin communicated the timelines for receiving AFS to allow NGTL to design, apply for, construct and place into service facilities required to meet the aggregate requests on the NGTL System. This approach ensured all shippers had access to the same information to allow them to make decisions regarding their incremental transportation requirements on the NGTL System.

NGTL posted notice of the Expansion Capacity Open Season on December 18, 2017 (see Appendix 5-7), and provided notice of the results of the Expansion Capacity Open Season in the form of an NrG Expressway notification (see Appendix 5-8), as well as a TransCanada media advisory in February 2018 (see Appendix 5-9). The notification and media advisory communicated the fully subscribed open season and executed binding agreements for 1.0 Bcf/d of expansion capacity for firm service that will commence in November 2020 and April 2021. The media advisory also notified industry of the executed contracts for incremental firm receipt service totaling $17.6 \times 10^6$ m$^3$ (622 MMcf/d) beginning in April 2021.
5.4 CREDIT AND FINANCIAL ASSURANCES

This section describes the creditworthiness of customers and financial assurance requirements.

5.4.1 Creditworthiness Determination

NGTL assesses the creditworthiness of customers to determine if financial assurances are required to support their contractual obligations.

To determine the creditworthiness of customers on this Project, NGTL followed its creditworthiness assessment process. This process is based on a review of information including, but not limited to:

- Financial statements, both audited year-end and quarterly
- Geographic and operational diversity of company assets and cash flows
- Corporate family structure
- Credit rating agency opinions

In addition, NGTL assesses the adequacy of financial assurances, if required, which may change over time as a result of changes in the creditworthiness of a customer and/or a change in its financial assurance provider.

5.4.2 Financial Assurances

NGTL’s financial assurance requirements are prescribed in the NGTL Tariff. NGTL may require a customer to provide financial assurances of up to 70 days’ worth of all rates, tolls, charges and other amounts payable to NGTL for receipt service. For delivery service, NGTL may require a customer to provide financial assurances up to 70 days’ worth of all rates, tolls, and charges, plus an additional one month for each remaining year of term up to a maximum of 12 months’ worth of all rates, tolls, charges and other amounts payable to NGTL.
6.0 TOLLS AND FINANCING

This section addresses tolling and financial matters associated with the Project, including the proposed tolling treatment of the Project as part of the NGTL System. Estimated cost of service (COS) and rates impact of the Project on NGTL System tolls, abandonment cost estimates for the Project, financing capacity and the financial assurances plan are also provided.

6.1 TOLL METHODOLOGY

The Project is an expansion of the NGTL System that is required to meet the aggregate demand for receipt and delivery service on the NGTL System. The Project facilities will be fully integrated with the rest of the NGTL System and used to provide transportation services pursuant to the Tariff. As a result, NGTL proposes to roll in the cost of the Project’s facilities to the rate base for the rest of the NGTL System and to apply the existing NGTL System toll methodology, which may change from time to time, to the Project.

The NGTL System tolling methodology is a cost-based toll methodology that reflects the integrated nature of the NGTL System where all system facilities are collectively used to provide service. As such, the capital costs associated with the Project will be added to the rate base of the NGTL System, and that rate base and the prevailing toll design will be used as the basis for setting the revenue requirement and tolls.

The NGTL System existing toll methodology was considered by the Board in the RHW-1-2010 proceeding and approved through Order TG-04-2010. This tolling methodology begins with the calculation of the annual revenue requirement for the NGTL System. From this, revenue for non-transportation and full-path transportation services are deducted, producing a net transportation revenue requirement. This net transportation revenue requirement is split into two functions: transmission and metering. As part of the toll design, the net transmission revenue requirement is allocated (50% / 50%) between receipt and delivery services.

This allocation of transmission costs between Receipt and Delivery customers underscores the importance of both services and highlights the fundamental framework of the NGTL System – that receipt customers put gas onto the NGTL System as a whole (i.e., gas received on the system is considered to be at the NIT hub) and delivery customers take gas off the System as a whole (i.e., gas delivered off the system is considered to be from the NIT hub). For more information on the NIT hub see Section 2: Need and Necessity.
6.2 **TARIFF**

There are no Tariff amendments associated with the Project. The Project, in conjunction with the rest of the NGTL System, will be used to provide transportation services in accordance with the Tariff in effect.

6.3 **ESTIMATED IMPACT ON COST OF SERVICE AND TOLLS**

NGTL undertook an analysis of the costs and revenues associated with the Project to determine the incremental cost to provide service as contracted, as well as the estimated impact to tolls on the NGTL System.

The estimated Project COS and toll impacts are based on the capital costs, contract demand, and economic assumptions summarized in Section 6.3.1 through 6.3.3.

6.3.1 **Estimated Capital Cost for the Project**

For the estimated capital cost for the Project, see Table 6-1.

<table>
<thead>
<tr>
<th>Component</th>
<th>Capital Cost ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline</td>
<td>1,951</td>
</tr>
<tr>
<td>Compression</td>
<td>356</td>
</tr>
<tr>
<td>Total</td>
<td>2,307</td>
</tr>
</tbody>
</table>

6.3.2 **Economic Parameters**

The overall impact of the Project on the existing COS is evaluated using the economic parameters shown in Table 6-2.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Equity</td>
<td>10.1</td>
</tr>
<tr>
<td>Deemed Common Equity</td>
<td>40.0</td>
</tr>
<tr>
<td>Return on Debt</td>
<td>5.2</td>
</tr>
<tr>
<td>Income Tax Rate</td>
<td>27.0</td>
</tr>
<tr>
<td>OM&amp;A as a Percentage of Capital</td>
<td>1.0</td>
</tr>
<tr>
<td>Municipal Tax as a Percentage of Capital</td>
<td>0.5</td>
</tr>
<tr>
<td>Depreciation Rates</td>
<td></td>
</tr>
<tr>
<td>Pipeline</td>
<td>2.6</td>
</tr>
<tr>
<td>Compressor Stations</td>
<td>4.1</td>
</tr>
<tr>
<td>Escalation Rate for OM&amp;A and Municipal Tax</td>
<td>2.5</td>
</tr>
</tbody>
</table>
6.3.3 Cost of Service and Toll Impacts

The results of the annual COS analysis related to the capital costs in Table 6-1 are presented for the years 2021 through 2025 in Table 6-3, which summarizes the capital cost, incremental rate base, and COS associated with the Project capital expenditures.

The expected increase in NGTL’s annual revenue requirement as a result of the Project expenditures is approximately $271 million in 2022, the first full year the Project is in-service.

Table 6-3: Cost of Service ($000s)

<table>
<thead>
<tr>
<th>Proposed Project</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month in Service</td>
<td>April</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Capital Cost (2021$)</td>
<td>2,307,269</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Incremental Rate Base</td>
<td>1,707,504</td>
<td>2,228,053</td>
<td>2,163,214</td>
<td>2,098,377</td>
<td>2,033,541</td>
</tr>
<tr>
<td>OM&amp;A</td>
<td>17,305</td>
<td>23,650</td>
<td>24,241</td>
<td>24,847</td>
<td>25,468</td>
</tr>
<tr>
<td>Depreciation</td>
<td>48,655</td>
<td>64,886</td>
<td>64,886</td>
<td>64,886</td>
<td>64,886</td>
</tr>
<tr>
<td>Municipal Taxes</td>
<td>8,652</td>
<td>11,825</td>
<td>12,120</td>
<td>12,423</td>
<td>12,734</td>
</tr>
<tr>
<td>Greenhouse Gas Costs</td>
<td>16,695</td>
<td>27,825</td>
<td>27,825</td>
<td>27,825</td>
<td>27,825</td>
</tr>
<tr>
<td>Return</td>
<td>121,745</td>
<td>158,860</td>
<td>154,237</td>
<td>149,614</td>
<td>144,991</td>
</tr>
<tr>
<td>Income Tax</td>
<td>4,767</td>
<td>(16,393)</td>
<td>(10,192)</td>
<td>(4,756)</td>
<td>5</td>
</tr>
<tr>
<td>Total COS</td>
<td>217,828</td>
<td>270,652</td>
<td>273,118</td>
<td>274,840</td>
<td>275,910</td>
</tr>
</tbody>
</table>

For the estimated toll impacts related to the incremental COS, the incremental receipt contract demand, and the incremental delivery contract demand, see Table 6-4. These toll impacts are calculated by comparing tolls inclusive and exclusive of the costs and contract quantities of the Project facilities.

The incremental FT-R contracts increase to a total 17.6 $10^6 m^3/day (622 MMcf/d) starting April 2021. The incremental FT-D contracts increase to a total 1,092 TJ/d starting November 2020 through April 2021.

Table 6-4: 2021 NGTL System Expansion COS and Toll Impacts

<table>
<thead>
<tr>
<th></th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental COS ($Millions)</td>
<td>218</td>
<td>271</td>
<td>273</td>
<td>275</td>
<td>276</td>
</tr>
<tr>
<td>Incremental Receipt Contract Demand (MMcf/d)</td>
<td>396</td>
<td>615</td>
<td>622</td>
<td>622</td>
<td>622</td>
</tr>
<tr>
<td>Incremental Delivery Contract Demand (TJ/d)</td>
<td>939</td>
<td>1,092</td>
<td>1,092</td>
<td>1,092</td>
<td>1,092</td>
</tr>
</tbody>
</table>
Table 6-4: 2021 NGTL System Expansion COS and Toll Impacts (cont'd)

<table>
<thead>
<tr>
<th>Illustrative Toll Impacts (¢/Mcf/d)</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Firm Receipt</td>
<td>1.24</td>
<td>1.36</td>
<td>1.35</td>
<td>1.39</td>
<td>1.38</td>
</tr>
<tr>
<td>Average Firm Delivery</td>
<td>0.61</td>
<td>0.81</td>
<td>0.84</td>
<td>0.86</td>
<td>0.89</td>
</tr>
<tr>
<td>Total Toll Impact</td>
<td>1.85</td>
<td>2.18</td>
<td>2.19</td>
<td>2.24</td>
<td>2.27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Illustrative Toll Impacts ($/10^3m^3/d)</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Firm Receipt</td>
<td>0.44</td>
<td>0.48</td>
<td>0.48</td>
<td>0.49</td>
<td>0.49</td>
</tr>
<tr>
<td>Average Firm Delivery</td>
<td>0.21</td>
<td>0.29</td>
<td>0.30</td>
<td>0.30</td>
<td>0.31</td>
</tr>
<tr>
<td>Total Toll Impact</td>
<td>0.65</td>
<td>0.77</td>
<td>0.77</td>
<td>0.79</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Note:
1. Contract Demand amounts are annual averages.
2. Average Firm Delivery toll impact represents the average of all three FT-D groups.

NGTL notes that the full-path rate impact associated with the Project is an approximate toll increase of 2¢/Mcf over the first five years.

The Project is one of several NGTL System expansions from 2019 to 2021, which together include a capital cost of $4.9 billion, 3.4 Bcf/d of incremental receipt contract demand, and 2.8 Bcf/d of delivery contract demand. Though the isolated impact of the Project in Table 6-4 shows an approximate 2¢/Mcf toll increase over the first five years, the planned NGTL System expansion projects that would come into service during the 2019-2021 timeframe have an approximate combined increase of 1¢/Mcf to the NGTL full path tolls.

In addition, NGTL has also considered the impact of the Project on fuel and determined that it would serve to marginally lower the NGTL System fuel ratio.

6.4 ABANDONMENT COST ESTIMATE

As required by the NEB Filing Manual,1 NGTL provides an Abandonment Cost Estimate (ACE) for the Project as calculated in accordance with the methodology prescribed in the Board’s MH-001-2012 Decision. The estimated ACE for the Project is $46.9 million,2 which represents approximately 1.9% of the ACE for the entire NGTL System.

There will also be a commensurate impact on the Annual Contribution Amount (ACA) and abandonment surcharge calculations on the NGTL System. These impacts will be reflected in periodic updates of ACE filed with the Board, as required by the

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2 The Board approved all Group 1 companies’ revised ACEs as filed in September 2016 by Letter Decision on April 18, 2018. NGTL’s total ACE expressed in 2016 dollars was $2,535.3 million.
MH-001-2012 Decision, and in annual ACA calculation filings. The ACA and abandonment surcharge for the NGTL System reflect a collection period of 30 years, which was implemented in compliance with the MH-001-2013 decision.

6.5 FINANCING CAPACITY

TransCanada will fund Project construction through a combination of predictable cash flows generated from operations, new senior debt, as well as subordinated capital in the form of additional preferred shares and hybrid securities, the issuance of common shares and portfolio management.

TransCanada’s liquidity, access to capital markets and strong financial position provide significant financial flexibility. As of March 31, 2018, TransCanada and other subsidiaries of TransCanada Corporation had approximately $1.3 billion of cash on hand, $7.9 billion of undrawn committed credit facilities and three well supported commercial paper programs.

Over the past five years ending December 31, 2017, TransCanada and TransCanada Corporation have generated $23 billion in cash from operations and raised $43 billion in the debt and equity capital markets to support a $28 billion capital program, $9 billion in net acquisitions, repay $19 billion in debt maturities and pay $9 billion in dividends.

As of March 31, 2018, TransCanada Corporation’s consolidated capital structure consisted of 51% senior debt (net of cash), 10% junior subordinated debt, 6% preferred shares and 33% common equity.

TransCanada and TransCanada Corporation have been assigned “A-“ level investment grade credit ratings by Moody’s Investor Service, Inc. and Fitch Ratings, and by DBRS Limited (DBRS). Standard and Poor’s (S&P) Global Ratings has assigned a rating of “BBB+”.

Refer to the following appendices for copies of the recent rating agency reports issued by the four credit rating agencies:

- Appendix 6-1 – Moody’s Investor Service Credit Opinion report on TransCanada PipeLines Limited dated March 15, 2018
- Appendix 6-2 – S&P Global Ratings report on TransCanada Corporation, TransCanada PipeLines Limited dated May 1, 2018
- Appendix 6-3 – Fitch Ratings report on TransCanada PipeLines Limited and TransCanada Corporation dated April 5, 2017
- Appendix 6-4 – DBRS report on TransCanada Corporation and TransCanada PipeLines Limited dated June 9, 2017
For a copy of TransCanada’s 2017 Annual Report, see Appendix 6-5.

6.6 FINANCIAL ASSURANCES PLAN

TransCanada will have the financial resources to ensure that it can financially sustain management of all potential risks including those liabilities that may arise from an accident or malfunction during the construction or operation of the Project.

The Pipeline Financial Requirements Regulations of the NEB Act specifies that federally regulated companies that operate natural gas pipelines of certain sizes and maximum operating pressures are subject to certain levels of absolute financial liability and they must demonstrate that they have sufficient financial resources to meet these requirements. TransCanada as a regulated entity under the NEB Act currently operates existing natural gas pipelines that fall within the definition of a Gas Class 1 Absolute Liability Class under the regulations. TransCanada currently maintains access to at least $200 million in financial resources to respond, in the unlikely event of an incident involving its facilities, including the Project when it comes into service.

A number of financial instruments may be used to maintain the required level of financial resources, including but not limited to:

- ready cash or cash reserves
- line of credit
- third-party liability insurance
- parental guarantee
- access to commercial paper market
- access to the debt and equity capital markets

TransCanada’s strong credit metrics and corporate reputation allow for continuous access to capital markets providing ample liquidity when required.

For a description of the safety features engineered into the design of the Project’s facilities, refer to Section 7: Pipeline, Section 8: Pipeline Construction and Section 9: Compression. For a description of how potential risks associated with the operation of the Project’s facilities will be managed, see Section 10: Operations.
Chapter 7: Pipeline

7.0 PIPELINE

This section provides Project information on pipeline routing, design, engineering and integrity management. This information is based on preliminary design and is supported by initial results from field investigation and engagement programs. Refinements may be made as additional data is collected and assessed, and as engineering progresses through detailed design. Section 8 provides information on pipeline construction.

7.1 ROUTING OVERVIEW

The Project includes the addition of new pipeline sections to the existing Grande Prairie Mainline (GPML) and to the existing Edson Mainline (EDSML) in the PRPA of the NGTL System. Overall, the proposed route for each section parallels the existing GPML and EDSML facilities. Locating the route adjacent to these existing pipelines is not always feasible and requires new non-parallel ROW at some locations along the route.

The design method described in Section 4.4.2: Individual Facilities Alternatives determined which sections of the GPML and the EDSML to loop, and the location of connections of each loop section was determined by the locations of the existing mainline facilities, such as mainline block valves (MLV). Adding loop sections, therefore, generally limits the area for routing consideration to the areas on either side of the existing pipelines, as well as constraining the locations where connections to the existing NGTL System can be made. A summary of the routing considerations for each section is included in Section 7.1.3: Project Component Tie-Ins and Routing.

For a general overview map, see Appendix 15-1 and for detailed pipeline route maps, see Appendix 15-2.

7.1.1 Route Selection Criteria

NGTL’s route selection process considers and balances several criteria when evaluating route options, including the following, where practical or feasible:

- minimizing length to reduce overall environmental and socio-economic footprint
- ensuring pipeline sections and facilities are economical to construct and operate
- paralleling existing linear disturbances to:
  - minimize the fragmentation of land parcels by introduction of infrastructure to areas in which it currently does not exist
  - maximize the amount of TWS on existing ROWs
  - minimize the amount of new (non-parallel and non-overlapping) ROW required
- minimize potential effects on environmental resources (e.g., native plant communities and wildlife habitat) and agricultural operations
- ensuring public safety
- minimizing the number, and ensuring the construction feasibility, of watercourse, road, rail and utility crossings
- considering and avoiding sensitive environmental features (e.g., wetlands, riparian areas, and watercourse crossings) and sites with known occurrences of provincially or federally listed wildlife and plant species (habitat features for species of management concern, provincially listed species at risk, species and habitats for species listed under the Committee on the Status of Endangered Wildlife in Canada [COSEWIC] or the federal Species at Risk Act [SARA])
- avoiding terrain subject to geotechnical issues such as areas of unstable slopes, problem soils, or known seismic activity
- avoiding lands of designated status, such as parks, protected areas, cemeteries and historic, archaeological or heritage sites
- avoiding concentrated areas of rural residences and urban developments
- considering input received from potentially affected landowners, stakeholders and Aboriginal groups through various engagement activities

7.1.2 Pipeline Route Selection

A description of the proposed routing for each section is included in Section 7.1.3. At this stage in Project planning, approximately 319 km (93%) of the proposed pipeline route parallels existing NGTL ROW or other existing linear disturbances such as pipelines, roads and electrical power lines.

7.1.3 Project Component Tie-Ins and Routing

Grande Prairie West Area

The Grande Prairie West Area includes two pipeline sections that will connect to the existing GPML:
- GPML Loop No. 4 - Valhalla Section (Valhalla Section)
- GPML Loop No. 3 - Elmworth Section (Elmworth Section)

Valhalla Section

The Valhalla Section is a pipeline loop section of approximately 36 km of 1,219 mm (NPS 48) OD pipe with tie-in points at MLV GPM120 and MLV GPM143. The Valhalla Section runs parallel to the existing GPML, generally on the east side, which will maximize the amount of TWS that can be located on the existing ROW. Minor
route deviations proposed to cross to the west side of the existing GPML and back again are necessary to:

- avoid a wet, flooded area (one deviation)
- accommodate tie-ins at the existing mainline valve sites (two deviations)

**Elmworth Section**

The Elmworth Section is a pipeline loop section of approximately 46 km of 1,219 mm (NPS 48) OD pipe with tie-in points at MLV GPM85 and MLV GPM115. In addition to the location constraints presented by the two tie-in points, the Elmworth Section includes a third constraint presented by determining a suitable location to achieve a trenchless crossing of the Wapiti River.

For the Elmworth Section, the proposed route runs parallel to the existing GPML for approximately 11 km, and parallel to other existing linear infrastructure for approximately 24 km. The route deviations for this Section are necessary to accommodate a feasible trenchless crossing location of the Wapiti River, while still adhering to the route selection criteria and minimizing the overall length of this section.

**Grande Prairie South Area**

The Grande Prairie South Area includes three pipeline sections that will connect to the existing GPML:

- GPML Loop No. 2 - Karr Section (Karr Section)
- GPML Loop No. 2 - Deep Valley Section (Deep Valley Section)
- GPML Loop No. 2 - McLeod River Connection Section (McLeod River Connection Section)

**Karr Section**

The Karr Section is a pipeline loop section of approximately 57 km of 1,219 mm (NPS 48) OD pipe with tie-in points at MLV GPM60 and MLV GPM80.

The proposed route for the Karr Section runs parallel to the existing GPML, however, a third-party ROW is abutted to each side of the existing GPML ROW at GPM60. A comparison was made between a route on the east side of the existing GPML and a route on the west side of the existing GPML. There are more areas on the west side in which a new ROW could be abutted to the existing GPML ROW, which would allow for TWS within the existing ROW to be used during construction. However, a route on the west side would also require more deviations to avoid existing infrastructure, which would increase the requirement for new non-parallel ROW, and create fragmented land parcels.
A proposed route on the east side of the existing GPML is adjacent to other existing pipeline ROWs, would require less deviations than the west side route, and requires less new non-parallel ROW (approximately 6 km of non-parallel ROW on the east side versus approximately 13 km on the west side). Although there is less opportunity for using existing GPML ROW for TWS on the east side route, for the reasons identified above it is the overall preferred route.

Proposed deviations from the parallel route on the east side of the existing GPML are required to:

- avoid existing infrastructure (five deviations)
- cross to the west side of the existing GPML and align to a location suitable for a trenchless crossing of the Smoky River (one deviation)

**Deep Valley Section**

The Deep Valley Section is a pipeline loop section of approximately 69 km of 1,219 mm (NPS 48) OD pipe with tie-in points at MLV GPM30 and MLV GPM60, and a tie-in point midway at MLV GPM40.

The proposed route for the Deep Valley Section starts at MLV GPM30 on the west side of the existing GPML to avoid NGTL’s Berland River Compressor Station located on the east side. The route crosses to the east side of the existing GPML to maximize the amount of TWS on the existing ROW.

Proposed deviations from the parallel route on the east side of the existing GPML are required to:

- avoid existing infrastructure (six deviations)
- avoid a steep side-slope area with potential slope instability (one deviation)
- have a straight alignment for a proposed trenchless crossing of the Simonette River

**McLeod River Connection Section**

The McLeod River Connection Section is a pipeline loop section of approximately 14 km of 1,219 mm (NPS 48) OD pipe between MLV GPM27 and MLV GPM28. The proposed route for the McLeod River Connection Section will be on the east side of the existing GPML, which will maximize the amount of TWS on the existing ROW, except for deviations that are required to avoid existing infrastructure (two deviations).
Edson South Area

The Edson South Area includes three pipeline sections that will connect to the existing EDSML:

- EDSML Loop No. 4 - Robb Section (Robb Section)
- EDSML Loop No. 4 - Dismal Creek Section (Dismal Creek Section)
- EDSML Loop No. 4 - Brewster Section (Brewster Section)

Robb Section

The Robb Section is a pipeline loop section of approximately 42 km of 1,219 mm (NPS 48) OD pipe between MLV ED100 and MLV ED110. The proposed route for the Robb Section will be on the east side of the existing EDSML, which will maximize the amount of TWS on the existing ROW, except for proposed deviations that are required to:

- align the proposed route to be roughly perpendicular for a road crossing (one deviation)
- avoid existing infrastructure (three deviations)
- have a straight alignment for a proposed trenchless crossing of the McLeod River

Dismal Creek Section

The Dismal Creek Section is a pipeline loop section of approximately 32 km of 1,219 mm (NPS 48) OD pipe between MLV ED90 and MLV ED100. The proposed route for the Dismal Creek Section will be on the east side of the existing EDSML, which will maximize the amount of TWS on the existing ROW, except for proposed deviations that are required to:

- align the proposed route to be roughly perpendicular for a crossing of Dismal Creek (one deviation)
- avoid existing infrastructure (one deviation)
- have a straight alignment for a proposed trenchless crossing of the Pembina River

Brewster Section

The Brewster Section is a pipeline loop section of approximately 49 km of 1,219 mm (NPS 48) OD pipe between MLV ED60 and MLV ED80 (at NGTL’s Nordegg Compressor Station). The proposed route for the Brewster Section will be on the east side of the existing EDSML, which will maximize the amount of TWS on the existing ROW, except for proposed deviations that are required to:

- align the proposed route to be roughly perpendicular for a road crossing (one deviation)
- avoid existing infrastructure (three deviations)
• have a straight alignment and a suitable setback from the river bank for a proposed trenchless crossing of the North Saskatchewan River

For the approximate lengths of both parallel and non-parallel ROW for all pipeline sections, see Section 11: Land, Table 11-2.

**January Creek Control Valve**

The January Creek control valve scope is a proposed 406 mm (NPS 16) crossover, approximately 80 m in length, from the January Creek Lateral (NPS 30) to the Western Alberta System Mainline (Edson Section; NPS 30). The crossover will serve to provide an additional flow path for gas leaving the Edson area by connecting the Western Alberta System Mainline (MOP of 6,178 kPa) to the Edson Mainlines via the January Creek Lateral (MOP of 7,550 kPa). Since there is a pressure differential between the two existing systems, the scope includes an NPS 10 pressure control valve, and an independent slam-shut isolation valve that will limit the pressure-communication between the lines and eliminate any potential over-pressure of the downstream system. The crossover is planned to be near the existing JAN30 valve site.

A preliminary process flow diagram of the January Creek control valve is provided in Appendix 7-1.

**7.2 ENGINEERING DESIGN STANDARDS**

The Project will be designed, constructed and operated in accordance with CSA Z662-15, the OPR and the TransCanada specifications listed in Section 7.2.2.

**7.2.1 Industry Standards**

For current industry standards applicable to the Project, see Table 7-1. The final list of applicable specifications and standards will evolve as Project planning progresses through detailed design and as individual specifications and procedures are added, updated or replaced to incorporate legislative and regulatory changes, and technological advances.

<table>
<thead>
<tr>
<th>Standard 1,2</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Gas Association (CGA) OCC-1-2013 (June 2013)</td>
<td>Recommended Practice, Control of External Corrosion on Buried or Submerged Metallic Piping Systems</td>
</tr>
<tr>
<td>CSA Z662-15 (June 2015)</td>
<td>Oil and Gas Pipeline Systems</td>
</tr>
<tr>
<td>CSA Z245.1-14 (9th edition)</td>
<td>Steel Pipe</td>
</tr>
<tr>
<td>CSA Z245.11-17 (8th edition)</td>
<td>Steel Fittings</td>
</tr>
<tr>
<td>CSA Z245.12-17 (8th edition)</td>
<td>Steel Flanges</td>
</tr>
<tr>
<td>CSA Z245.15-17 (9th edition)</td>
<td>Steel Valves</td>
</tr>
</tbody>
</table>
Table 7-1: Industry Standards for Pipeline and Facilities (cont’d)

<table>
<thead>
<tr>
<th>Standard 1,2</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA Z245.20-14 (7th edition)/Z245.21-14</td>
<td><strong>External Fusion Bond Epoxy Coating for Steel Pipe/ External Polyethylene Coating for Pipe</strong></td>
</tr>
<tr>
<td>CSA S16-14 (8th edition)</td>
<td>Steel Structures</td>
</tr>
<tr>
<td>CSA A23.3-14 (12th edition)</td>
<td>Design of Concrete Structures</td>
</tr>
<tr>
<td>CSA G40.20-13/G40.21-13</td>
<td>Structural Quality Steel</td>
</tr>
<tr>
<td>CSA A23.1-14</td>
<td>Concrete Materials and Methods of Concrete Construction</td>
</tr>
<tr>
<td>CSA A23.2-14</td>
<td>Test Methods and Standard Practices for Concrete</td>
</tr>
<tr>
<td>CSA 22.1</td>
<td>Canadian Electrical Code Part I and II</td>
</tr>
<tr>
<td>CGA OCC-1-2013</td>
<td><strong>Recommended Practice, Corrosion Control for Buried or Submerged Metallic Piping Systems</strong></td>
</tr>
<tr>
<td>CSA 22.1-12</td>
<td>Canadian Electrical Code Part I and II, Safety Standard for Electrical Installation</td>
</tr>
</tbody>
</table>

Note:
1. The standards in this table are current to May 2018.
2. The CSA standards in this table often incorporate other CSA standards and publications from other organizations, e.g., American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM), American Petroleum Institute (API), International Organization for Standardization (ISO), Canadian General Best Standards Board (CGSB), National Association of Corrosion Engineers (NACE), Steel Structures Painting Council (SSPC), and Manufacturers Standardization Society (MSS).

7.2.2 TransCanada Specifications and Standards

The Project will be designed, constructed and operated in accordance with the TransCanada specifications and standards listed in Table 7-2. All TransCanada specifications comply with the OPR and industry codes and standards.

The specifications listed are subject to change as Project planning progresses through detailed design and as individual specifications are added, updated or replaced to incorporate legislative and regulatory changes, and technological advances.

TransCanada has established internal processes that monitor external and internal standards, codes, specifications and procedures to ensure its facilities are constructed and operated in compliance with industry standards. Where there is no existing Canadian standard that applies to the product, equipment or facility, TransCanada bases the internal specifications on recognized industry standards, such as API, ASTM or ASME. If discrepancies exist between TransCanada and industry standards, the more stringent requirements will be followed.
Table 7-2: Preliminary List of Company Specifications and Standards

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>EDMS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corrosion Prevention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TES-CP-COM</td>
<td>Cathodic Protection Commissioning Specification</td>
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<td>TES-FITG-SAD</td>
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<td>Blowdown Sizing and Venting Times Standard</td>
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Table 7-2: Preliminary List of Company Specifications and Standards1 (cont’d)

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<td>TES-ME-STRPA-GL</td>
<td>Pipe Stress Engineering Analysis and Design of Pipeline Assemblies</td>
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<td><strong>Civil / Structural</strong></td>
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<td>Facility Earthwork</td>
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<td>TES-CI-STEEL-GLE</td>
<td>Structural Steel and Miscellaneous Metals Specification</td>
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<td>Compaction Control Measures for Pipeline Excavations Specification</td>
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<td>TES-CT-GEN-GL</td>
<td>Pipeline Construction Specification</td>
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<td>TES-ME-HDD-GL</td>
<td>Horizontal Directional Drilling Specification</td>
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<td>TES-CT-THSSP-GL</td>
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<td>Specification for Deformation In-Line Inspection Technologies</td>
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<td>TED-INT-LR</td>
<td>Launcher and Receiver Installation and Initial Assessment Technical Directive</td>
<td>8098412</td>
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<td>TES-PROJ-EXC</td>
<td>Excavation Specification</td>
<td>5890120</td>
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<td>TES-PROJ-ROW</td>
<td>Right-of-Way Specification</td>
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<td><strong>Welding</strong></td>
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<td>TES-INSERV-CSA</td>
<td>Welding on In-service Pipelines Specification</td>
<td>3886791</td>
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<td>TES-WELD-PL</td>
<td>Welding of Pipelines and Tie-ins</td>
<td>3670960</td>
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<td>TES-WELD-STRU</td>
<td>Shielded Metal Arc Welding on Structural Steel</td>
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<td>TES-WL-AS-GL</td>
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<td><strong>Nondestructive Examination</strong></td>
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<td>Radiographic Examination of Welds</td>
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<td>TES-NDT-UT</td>
<td>Ultrasonic Examination of Girth Welds</td>
<td>1001829033</td>
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Note:
This table provides a preliminary list of the TransCanada standards and specifications that will be used for the Project. A final list of applicable standards and specifications will evolve as Project planning progresses through detailed design, and as individual specifications and standards are added, updated or replaced to incorporate legislative and regulatory changes, and technological advances.
7.2.3 Quality Management Program

TransCanada has developed and implemented a Quality Management System, which defines the processes used to control and monitor quality throughout the life cycle of a project. This includes a project execution plan, quality management plan and other relevant documents, procedures, work instructions, forms, templates and associated records identified by the processes as requiring control.

Quality management ensures a consistent quality approach in design, procurement of materials and services, and construction of pipeline projects. The quality objectives established for this Project are as follows:

- engineering designs are clearly documented, consistent with acceptable design standards in accordance with operating performance requirements
- all work complies with applicable legislation, permitting requirements and generally accepted engineering practices
- equipment and materials procured and installed are consistent with the engineering design
- documentation providing objective evidence of conformance to the requirements is maintained and records retained

To comply with TransCanada’s proprietary quality management system and the requirements specified by the NEB where appropriate, TransCanada will provide technical oversight for pipeline engineering and technical activities, and will also ensure coordination with prime contractors and other third-party engineering consultants to ensure that TransCanada’s engineering specifications and project requirements are met.

All purchased items and contracted services will be obtained from suppliers and contractors of assessed capabilities who have been pre-qualified in accordance with TransCanada’s internal supplier management and pre-qualification procedures or have been pre-qualified by a prime contractor to TransCanada. Documentation received for each purchase will be recorded and reviewed by the applicable subject matter expert to ensure they meet project requirements. Evidence of this review will be retained as part of the permanent project records.

During construction, each prime contractor will be responsible for ensuring the work performed is in accordance with contract documents, Project design, applicable standards, specifications and procedures, and the Project-specific quality plan. TransCanada inspectors will monitor all construction activities to ensure compliance.

Design changes during construction will be managed in accordance with the appropriate change management procedures and in accordance with TransCanada’s standard engineering practices. Supplier surveillance will be in accordance with the
approved quality plan and Inspection and Test Plan (ITP), which defines the levels of inspection required based on the criticality of materials/equipment purchased. The quality plan/ITP will define the applicable material/equipment specification surveillance checklists to be used for surveillance activities. Before purchase order execution, NGTL will identify the preferred inspection agency, and as necessary, the qualified company representative to conduct the inspection.

### 7.2.4 Pipe Procurement

TransCanada has an established line pipe supply base with more than 20 pre-qualified mills in North America and overseas. TransCanada has long-term pipe purchase agreements with direct or indirect suppliers that cover approximately half of those pipe mills. TransCanada has pre-qualified the pipe mills and coating plants based on technical merit. Pipe procurement is complemented with technical pre-production meetings and an onsite quality surveillance program during pipe manufacturing and coating application.

### 7.3 GAS TYPE AND COMPOSITION

The composition of the natural gas to be transported by the Project will meet the NGTL Tariff. For expected average composition of the sweet natural gas to be transported by the Project, see Table 7-3.

<table>
<thead>
<tr>
<th>Element</th>
<th>Symbol</th>
<th>Percentage</th>
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<tr>
<td>Nitrogen</td>
<td>N₂</td>
<td>0.62</td>
</tr>
<tr>
<td>Helium</td>
<td>He</td>
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</tr>
<tr>
<td>Carbon Dioxide</td>
<td>CO₂</td>
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</tr>
<tr>
<td>Methane</td>
<td>C₁</td>
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<tr>
<td>Ethane</td>
<td>C₂</td>
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<td>Propane</td>
<td>C₃</td>
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<td>iso-butane</td>
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<td>0.22</td>
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<td>C₅N</td>
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<td><strong>Total</strong></td>
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7.4 PIPELINE SECTION COMPONENTS

Project pipeline components include pipeline, valves, launcher and receiver sites, CP facilities, and communications and controls equipment, as required (see Table 7-4). No metering facilities are required for the Project.

For the preliminary process flow diagrams for the Project, see Appendix 7-2. The diagrams show the major components, including interconnections to existing pipelines, piping, valves, launcher and receiver sites, and compressor stations.

<table>
<thead>
<tr>
<th>Pipeline Section</th>
<th>Class Location</th>
<th>NPS</th>
<th>Pipe Diameter (mm)</th>
<th>Pipe Length (km)</th>
<th>Maximum Operating Pressure (kPa)</th>
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<tr>
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<tr>
<td>Valhalla Section</td>
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<td>1,219</td>
<td>36</td>
<td>8,450</td>
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<tr>
<td>Elmworth Section</td>
<td>Class 1</td>
<td>48</td>
<td>1,219</td>
<td>46</td>
<td>8,450</td>
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<tr>
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<tr>
<td>Karr Section</td>
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<td>57</td>
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<td>Robb Section</td>
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<td>8,690</td>
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<td>406</td>
<td>0.08</td>
<td>7,550</td>
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Note:
1. Final class location determination will be completed during detailed design.

For the estimated pipe specifications for the Project, see Table 7-5.

<table>
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<tr>
<th>Pipeline Section</th>
<th>Estimated Length (m)</th>
<th>Pipe Diameter (mm)</th>
<th>Material Grade (MPa)</th>
<th>Minimum Wall Thickness (mm)</th>
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<td>483</td>
<td>17.8</td>
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<tr>
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<td>17.8</td>
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Table 7-5: Preliminary Line Pipe Lengths by Wall Thickness\(^1\) (cont’d)

<table>
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<th>Estimated Length (m)</th>
<th>Pipe Diameter (mm)</th>
<th>Material Grade (MPa)</th>
<th>Minimum Wall Thickness (mm)</th>
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<td>Edson South Area</td>
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<td>13.7</td>
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<tr>
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<tr>
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<td>483</td>
<td>18.3</td>
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</tr>
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<td>Line Pipe</td>
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<td>N/A</td>
<td>N/A</td>
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<tr>
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<td>N/A</td>
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<td>406</td>
<td>414</td>
<td>14.3</td>
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Note:
1. Final selection of materials for valves, fittings and assembly piping will be determined during detailed design in accordance with NGTL specifications. Material grade will meet or exceed minimum requirements. Other CSA Z662-15-compliant or higher grades of steel could be used depending on material availability and in accordance with NGTL specifications. All values, including but not limited to pressure, length, grade, coating and wall thickness, are based on preliminary design and are subject to change.

7.4.1 Valve Locations

Block valves are typically spaced at 32 to 38 km intervals along the pipeline to facilitate operational and isolation activities. Valve locations are typically positioned near existing facilities or near roadways where using existing access is possible. Crossover valves are typically located upstream and downstream of block valves. These crossover valves connect two parallel pipelines and are used to manage flow on the NGTL System. For preliminary valve locations, see Table 7-6. Valve locations will be finalized in the detailed design phase to optimize the location based on accessibility and areas used for pre-existing facilities. Final mainline block valve spacing will adhere to TransCanada specifications, as well as to applicable industry standards.
Table 7-6: Preliminary Mainline Block and Crossover Valve Locations

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Preliminary Northing</th>
<th>Preliminary Easting</th>
<th>UTM</th>
<th>LSD</th>
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<td>6156682.65</td>
<td>351727.8095</td>
<td>11U</td>
<td>NE 29-75-09 W6</td>
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<td>NPS 48 Mainline Block Valve Assembly (GPM143-4-BV)</td>
<td>6156682.65</td>
<td>351727.8095</td>
<td>11U</td>
<td>NE 29-75-09 W6</td>
</tr>
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<td>Two NPS 36 crossovers to existing NPS 36 GPML Loop No.3 (GPM143-3-U4 and GPM143-3-D4)</td>
<td>6156682.65</td>
<td>351727.8095</td>
<td>11U</td>
<td>NE 29-75-09 W6</td>
</tr>
<tr>
<td>One NPS 36 crossover to existing NPS 36 GPML Loop No.3 (GPM120-3-U4)</td>
<td>6123170.149</td>
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<td><strong>Elmworth Section</strong></td>
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<td>NPS 48 Mainline Block Valve Assembly (GPM87-3-BV)</td>
<td>364335.00m</td>
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<td>11U</td>
<td>SE 10-70-08 W6</td>
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<td><strong>Karr Section</strong></td>
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<td>6077156.122</td>
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<td>415179.8115</td>
<td>11U</td>
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<td>415179.8115</td>
<td>11U</td>
<td>NW 25-65-03 W6</td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (GPM60-2-BV)</td>
<td>6038007.033</td>
<td>428836.4094</td>
<td>11U</td>
<td>NW 28-63-01 W6</td>
</tr>
<tr>
<td>Two NPS 42 crossovers to existing Latornell Compressor Station (GPM60-2-1SS-LTL, GPM60-2-2SS-LTL, GPM60-2-1SD-LTL And GPM60-2-2SD-LTL)</td>
<td>6038007.033</td>
<td>428836.4094</td>
<td>11U</td>
<td>NW 28-63-01 W6</td>
</tr>
</tbody>
</table>
Table 7-6: Preliminary Mainline Block and Crossover Valve Locations (cont'd)

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Preliminary Northing</th>
<th>Preliminary Easting</th>
<th>UTM</th>
<th>LSD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deep Valley Section</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (GPM40-2-BV)</td>
<td>6012774.768</td>
<td>446814.3463</td>
<td>11U</td>
<td>SW 10-61-26 W5</td>
</tr>
<tr>
<td>Two NPS 36 crossovers to existing NPS 42 GPML Loop (GPM40-1-U2 and GPM40-1-D2)</td>
<td>6012774.768</td>
<td>446814.3463</td>
<td>11U</td>
<td>SW 10-61-26 W5</td>
</tr>
<tr>
<td><strong>Robb Section</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPS 48 Launcher Isolation Valve Assembly (GPM10-4-ST)</td>
<td>5920928.208</td>
<td>538264.8543</td>
<td>11U</td>
<td>NW 27-51-17 W5</td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (GPM10-4-BV)</td>
<td>5920928.208</td>
<td>538264.8543</td>
<td>11U</td>
<td>NW 27-51-17 W5</td>
</tr>
<tr>
<td>One NPS 42 (GPM10-2-U4) and one NPS 36 (GPM10-2-D4) crossover to existing NPS 48 GPML Loop No. 2</td>
<td>5920928.208</td>
<td>538264.8543</td>
<td>11U</td>
<td>NW 27-51-17 W5</td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (ED106-4-BV)</td>
<td>5921368.411</td>
<td>537663.4344</td>
<td>11U</td>
<td>SW 34-51-17 W5</td>
</tr>
<tr>
<td>Two NPS 42 crossovers to existing Swartz Creek Compressor Station (ED106-4-1SS-SZC and ED106-4-1SD-SZC)</td>
<td>5921368.411</td>
<td>537663.4344</td>
<td>11U</td>
<td>SW 34-51-17 W5</td>
</tr>
<tr>
<td><strong>Dismal Creek Section</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (ED100-4-BV)</td>
<td>5899903.755</td>
<td>550838.1133</td>
<td>11U</td>
<td>NW 23-49-16 W5</td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (ED90-4-BV)</td>
<td>5875468.743</td>
<td>569204.5951</td>
<td>11U</td>
<td>SW 03-47-14 W5</td>
</tr>
<tr>
<td>One NPS 36 (ED90-3-U4) and one NPS 42 (ED90-3-D4) crossover to existing NPS 48 Edson Mainline Loop 3</td>
<td>5875468.743</td>
<td>569204.5951</td>
<td>11U</td>
<td>SW 03-47-14 W5</td>
</tr>
<tr>
<td>NPS 48 Receiver Isolation Valve Assembly (ED90-4-RT)</td>
<td>5875468.743</td>
<td>569204.5951</td>
<td>11U</td>
<td>SW 03-47-14 W5</td>
</tr>
</tbody>
</table>
Table 7-6: Preliminary Mainline Block and Crossover Valve Locations (cont’d)

<table>
<thead>
<tr>
<th>Valve Type</th>
<th>Preliminary Northing</th>
<th>Preliminary Easting</th>
<th>UTM</th>
<th>LSD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brewster Section</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPS 48 Launcher Isolation Valve Assembly (ED80-4-ST)</td>
<td>5841865.879</td>
<td>587273.3063</td>
<td>11U</td>
<td>SW 20-43-12 W5</td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (ED80-4-BV)</td>
<td>5841865.879</td>
<td>587273.3063</td>
<td>11U</td>
<td>SW 20-43-12 W5</td>
</tr>
<tr>
<td>Two NPS 42 crossovers to existing Nordegg Compressor Station (ED80-C-1SS-NDG, ED80-C-1SD-NDG, ED80-4-3SS-NDG, ED80-4-3SD-NDG)</td>
<td>5841865.879</td>
<td>587273.3063</td>
<td>11U</td>
<td>SW 20-43-12 W5</td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (ED70-4-BV)</td>
<td>5841865.879</td>
<td>587273.3063</td>
<td>11U</td>
<td>SW 20-43-12 W5</td>
</tr>
<tr>
<td>Two NPS 36 crossovers to existing NPS 48 EDSML Loop No. 3 (ED70-3-U4 and ED70-3-D4)</td>
<td>5841865.879</td>
<td>587273.3063</td>
<td>11U</td>
<td>SW 20-43-12 W5</td>
</tr>
<tr>
<td>NPS 48 Mainline Block Valve Assembly (ED60-4-BV)</td>
<td>5801903.6</td>
<td>613650.5936</td>
<td>11U</td>
<td>SE 14-39-10 W5</td>
</tr>
<tr>
<td>Two NPS 42 crossovers to existing Vetchland Compressor Station (ED60-C-2SS-VET (NPS 48 valve), ED60-C-2SD-VET (NPS 48 valve), ED60-4-2SS-VET, ED60-4-2SD-VET)</td>
<td>5841865.879</td>
<td>587273.3063</td>
<td>11U</td>
<td>SW 20-43-12 W5</td>
</tr>
<tr>
<td>NPS 48 Receiver Isolation Valve Assembly (ED60-4-RT)</td>
<td>5801903.6</td>
<td>613650.5936</td>
<td>11U</td>
<td>SE 14-39-10 W5</td>
</tr>
<tr>
<td><strong>January Creek Control Valve</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPS 16 Side Valve Assembly (JAN30-0-2SV0-WAS)</td>
<td>5950317.637</td>
<td>567433.5988</td>
<td>11U</td>
<td>NE 27-54-14 W5</td>
</tr>
<tr>
<td>NPS 16 Side Valve Assembly (JAN30-0-3SV0-WAS)</td>
<td>5950317.637</td>
<td>567433.5988</td>
<td>11U</td>
<td>NE 27-54-14 W5</td>
</tr>
<tr>
<td>NPS 10 Control Valve (JAN30-0-CV)</td>
<td>5950317.637</td>
<td>567433.5988</td>
<td>11U</td>
<td>NE 27-54-14 W5</td>
</tr>
</tbody>
</table>

Note: All locations are preliminary, and will be confirmed during detailed design.
7.4.2 Minimum Depth of Cover

The proposed pipeline sections will generally have a minimum depth of cover of 0.9 m. Depth of cover will vary in the following circumstances:

- agricultural lands will have a minimum depth of cover of 1.2 m
- valve site locations will have a minimum depth of cover of 1.1 m
- road crossings will have a minimum depth of cover of 1.5 m or as agreed to with the relevant statutory authority or third-party owner, whichever is greater
- buried utility and foreign pipeline crossings, above or below the pipeline, will have a minimum clearance of 0.3 m or as agreed to with the third-party owner, whichever is greater
- the minimum depth of cover for pipeline crossings of watercourses with defined beds and banks will be 1.8 m. Increased depth of cover might be required at locations where there is a potential for scouring of the watercourse bed. The requirement for increased depth of cover will be evaluated as engineering design and construction planning progresses.

For typical depth of cover drawings and typical engineering drawings, see Appendix 7-3, which include:

- minimum requirements for pipe ditches
- foreign pipeline and utility crossings
- road crossings
- watercourse crossings

7.5 PIPELINE CORROSION CONTROL ELEMENTS AND FACILITIES

7.5.1 Pipe Coatings

The primary coating for the external surface of the below ground pipe will be fusion-bonded epoxy (FBE). Field girth welds will be protected with a liquid applied coating.

An additional mechanical protection system, such as sand padding or rock shield will be used if large and/or angular backfill material is encountered. Abrasion-resistant coating will be used where pipe is installed using boring, HDD or other methods that could cause abrasion to the coating during installation.

Below-ground assembly piping will be protected with a liquid applied coating. Above-ground piping will be primed and painted.
7.5.2 Cathodic Protection

In addition to the pipe coating, CP will be provided through impressed current CP systems, which may consist of existing CP systems as well as new CP systems if required, and will include groundbeds and rectifiers as determined during detailed design.

Where practicable, the rectifiers and groundbeds will be located at sites where a convenient source of electrical power exists. Sacrificial anodes may also be used at specific locations, which will be identified during detailed design.

CP test leads will be installed, where required, along the pipeline and at road, foreign pipeline and utility crossings. This will allow the effectiveness of the operation of the CP system to be monitored through operations and demonstrate compliance to applicable code requirements.

7.5.3 Launcher and Receiver Facilities

NGTL will install launchers and receivers on the pipeline sections, for the purposes of ILI, during construction. For facility specifications on launcher and receiver facilities for ILI of Project pipeline sections, see Table 7-7.

<table>
<thead>
<tr>
<th>Table 7-7: ILI Facilities Specifications¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Valhalla Section</strong></td>
</tr>
<tr>
<td>Pipe Outside Diameter</td>
</tr>
<tr>
<td>Pipe Material Type and Grade</td>
</tr>
<tr>
<td>Pipe Wall Thickness</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
</tr>
<tr>
<td>Pig Trap Locations</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Pig Trap Pressure Rating</td>
</tr>
<tr>
<td>Description of Pig Trap Closure Device</td>
</tr>
<tr>
<td>Description of Corrosion Control Elements and Facilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Karr, Deep Valley and McLeod River Connection Sections</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Outside Diameter</td>
</tr>
<tr>
<td>Pipe Material Type and Grade</td>
</tr>
<tr>
<td>Pipe Wall Thickness</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
</tr>
</tbody>
</table>
Table 7-7: ILI Facilities Specifications1 (cont’d)

<table>
<thead>
<tr>
<th>Item</th>
<th>Pipe</th>
<th>Barrel Piping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karr, Deep Valley and McLeod River Connection Sections (cont’d)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pig Trap Locations</td>
<td>Launcher – NW 26-67-05 W6, to be installed at NGTL’s Gold Creek Compressor Station</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Receiver - NW 21-55-20 W5M</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Will be installed as part of another project in 2019.</td>
<td></td>
</tr>
<tr>
<td>Pig Trap Pressure Rating</td>
<td>8,690 kPa</td>
<td></td>
</tr>
<tr>
<td>Description of Pig Trap Closure Device</td>
<td>End Closure, Horizontal, NPS 56, PN 100, M45C, To Match 25.4 mm Wall Thickness and Grade 483</td>
<td></td>
</tr>
<tr>
<td>Description of Corrosion Control Elements and Facilities</td>
<td>Launcher facilities are located above ground and will be primed and painted to prevent atmospheric corrosion.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robb and Dismal Creek Sections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe Outside Diameter</td>
<td>NPS 48 (1,219 mm)</td>
<td>NPS 56 (1,422 mm)</td>
</tr>
<tr>
<td>Pipe Material Type and Grade</td>
<td>Grade 483 (per TES-MA-SAWPI-GL)</td>
<td>Grade 483 (per TES-MA-SAWPI-GL)</td>
</tr>
<tr>
<td>Pipe Wall Thickness</td>
<td>18.3 mm</td>
<td>25.4 mm</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
<td>8,690 kPa</td>
<td></td>
</tr>
<tr>
<td>Pig Trap Locations</td>
<td>Launcher - NW 27-51-17 W5 to be installed at GPM 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Receiver - SW 03-47-14 W5 to be installed at ED90</td>
<td></td>
</tr>
<tr>
<td>Pig Trap Pressure Rating</td>
<td>8,690 kPa</td>
<td></td>
</tr>
<tr>
<td>Description of Pig Trap Closure Device</td>
<td>End Closure, Horizontal, NPS 36, PN 100, M45C, To Match 25.4 mm Wall Thickness and Grade 483</td>
<td></td>
</tr>
<tr>
<td>Description of Corrosion Control Elements and Facilities</td>
<td>Launcher and receiver facilities are located above ground and will be primed and painted to prevent atmospheric corrosion.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brewster Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe Outside Diameter</td>
<td>NPS 48 (1,219 mm)</td>
<td>NPS 56 (1,422 mm)</td>
</tr>
<tr>
<td>Pipe Material Type and Grade</td>
<td>Grade 483 (per TES-MA-SAWPI-GL)</td>
<td>Grade 483 (per TES-MA-SAWPI-GL)</td>
</tr>
<tr>
<td>Pipe Wall Thickness</td>
<td>18.3 mm</td>
<td>25.4 mm</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
<td>8,690 kPa</td>
<td></td>
</tr>
<tr>
<td>Pig Trap Locations</td>
<td>Launcher - SW 20-43-12 W5 to be installed at ED80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Receiver - SE 14-39-10 W5 to be installed at ED60</td>
<td></td>
</tr>
<tr>
<td>Pig Trap Pressure Rating</td>
<td>8,690 kPa</td>
<td></td>
</tr>
<tr>
<td>Description of Pig Trap Closure Device</td>
<td>End Closure, Horizontal, NPS 36, PN 100, M45C, To Match 25.4 mm Wall Thickness and Grade 483</td>
<td></td>
</tr>
<tr>
<td>Description of Corrosion Control Elements and Facilities</td>
<td>Launcher and receiver facilities are located above ground and will be primed and painted to prevent atmospheric corrosion.</td>
<td></td>
</tr>
</tbody>
</table>

Note:
1. ILI facility specifications and locations are preliminary and will be confirmed during detailed design.

7.5.4 Pressure Control and Overpressure Protection

The pressure control (PC) and overpressure protection (OPP) design of the Project will comply with the requirements of the OPR and CSA Z662-15, including Clause
4.18: Pressure Control and Overpressure Protection OPP of Piping, and Clause 10.9.5: Pressure Control, Pressure Limiting and Pressure Relieving Systems of CSA.

Table 7-6 provides the Maximum Operating Pressure (MOP) for each Project component, which is consistent with the MOP for the NGTL System pipeline they will directly connect to. PC and OPP at the NGTL facilities meet CSA Z662-15 design standards and design, operation and maintenance philosophy for regular inspection, assessment and testing at the required intervals to ensure the facilities are adequate to meet capacity and reliability requirements. NGTL follows procedures to ensure that all facilities are in good operational condition, and set to function at the operating pressure. In addition, the PC and OPP systems operate and monitor independently, automatically and continuously.

NGTL has mandated that all new and upgraded receipt customer OPP systems and devices are reviewed and accepted as conforming to CSA Z662-15. NGTL will not permit a new or upgraded receipt connection to be available for service until OPP information has been reviewed, verified and accepted as meeting CSA Z662-15.

NGTL has implemented an annual receipt OPP verification process. The verification process requires all customers to send OPP information (including maintenance records, and calibration and functional testing records) to NGTL for review and verification annually. This process requires the customer to ensure that systems are in good operating condition, set to function at the correct pressure, and that the PC and OPP systems are inspected, assessed and tested at the required regulatory intervals. Any changes made by the receipt customer to their PC and OPP systems, devices, and set points are captured and validated by this program. NGTL’s OPP design and operating philosophies meet the intent and purpose of NEB Safety Advisory SA 2012-01.

**GPML Loop No. 4 (Valhalla Section)**

The Valhalla Section will have a licensed MOP of 8,450 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the Valhalla Section include:

- GPML (Huallen Section) with a licensed MOP of 8,450 kPa
- GPML Loop (Valhalla and Huallen Sections) with licensed MOP of 8,450 kPa
- GPML Loop No. 2 (Progress Section) with a licensed MOP of 8,450 kPa
- The proposed GPML Loop No. 2 (Huallen Section) with a proposed licensed MOP of 8,450 kPa
- GPML Loop No. 3 (Valhalla Section) with a licensed MOP of 8,450 kPa
• Albright Lateral Extension with a licensed MOP of 8,450 kPa

Since all the facilities within the hydraulically significant area (within pressure limiting boundaries like compressor stations or existing laterals) share common licensed MOPs, no additional OPP is required between the identified facilities. No other pressure sources were identified in the area to potentially over pressure the Valhalla Section of the Project.

**GPML Loop No. 3 (Elmworth Section)**

The Elmworth Section will have a licensed MOP of 8,450 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the Elmworth Section include:

• NGTL’s Pipestone Compressor Station, containing PC and OPP systems that meet CSA Z662-15 standards with a licensed MOP of 8,450 kPa
• GPML (Elmworth and Huallen Sections) with a licensed MOP of 8,450 kPa
• GPML Loop (Elmworth and Beaverlodge Sections) with a licensed MOP of 8,450 kPa
• GPML Loop No. 2 (Elmworth Section) with a licensed MOP of 8,450 kPa
• The proposed GPML Loop No. 2 (Huallen Section) with a licensed MOP of 8,450 kPa
• The proposed GPML Loop No. 3 (Elmworth Section 1) with a proposed licensed MOP of 8,450 kPa

Since all the facilities within the hydraulically significant area (within pressure limiting boundaries like compressor stations) share common licensed MOPs, no additional OPP is required between the identified facilities. No other pressure sources were identified in the area to potentially over pressure the Elmworth Section of the Project.

**GPML Loop No. 2 (Karr Section)**

The Karr Section will have a licensed MOP of 8,275 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the Karr Section include:

• NGTL’s Gold Creek Compressor Station, containing PC and OPP systems that meet CSA Z662-15 standards, with a licensed MOP of 8,450 kPa. The Gold Creek Compressor Station represents a break in licensed MOP between lines on
either side of the station; as such, the station discharge, as well as PC and OPP devices within the station and pipeline crossovers lines, will ensure pressure between lines on either side of the station are appropriately limited to match the licensed MOP of the downstream systems, 8,275 kPa, as required by CSA Z662. The Project bypass connection will require new PC and OPP systems.

- GPML (Northern Section) with a licensed MOP of 8,275 kPa
- GPML Loop (Smoky River and Karr Sections) with a licensed MOP of 8,275 kPa
- NGTL’s Latornell Compressor Station, containing PC and OPP systems that meet CSA Z662-15 standards with a licensed MOP of 8,275 kPa

As noted in the bullets above, the facility bypass and connection between GPML Loop No. 3 upstream of the Gold Creek Compressor Station (MOP of 8,450 kPa) will require installation of new OPP equipment to limit the potential pressure-communication to the new 8,275 kPa section downstream of the facility. PC and OPP devices will include, but not be limited to:

- Programmable Logic Control (PLC) systems including pressure monitoring and upstream PC (via control of the upstream compressor station discharge pressure) limiting the pipeline to a pressure of no greater than 8,275 kPa when the facility bypass is in use
- independently-functioning, automated, gas-hydraulic powered high pressure shut down devices (pressure set point of 8,275 kPa) at the valve interfaces between these facilities.

Since all the remaining facilities within the hydraulically significant area (within pressure limiting boundaries like compressor stations) share common licensed MOPs, no additional OPP is required between the identified facilities. No other pressure sources were identified in the area to potentially over pressure the Karr Section of the Project.

**GPML Loop No. 2 (Deep Valley Section)**

The Deep Valley Section will have a licensed MOP of 8,275 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the Deep Valley Section include:

- NGTL’s Latornell Compressor Station, containing PC and OPP systems that meet CSA Z662-15 standards with a licensed MOP of 8,275 kPa
- GPML (Northern and Southern Sections) with a licensed MOP of 8,275 kPa
- GPML Loop (Karr and Wildhay Sections) with a licensed MOP of 8,275 kPa
The proposed GPML Loop No. 2 (Bronson and Hornbeck Sections) with a proposed licensed MOP of 8,275 kPa

NGTL’s Berland River Compressor Station, containing PC and OPP systems that meet CSA Z662-15 standards with a licensed MOP of 8,275 kPa

Since all the facilities within the hydraulically significant area (within pressure limiting boundaries like compressor stations) share common licensed MOPs, no additional OPP is required between the identified facilities. No other pressure sources were identified in the area to potentially over pressure the Deep Valley Section of the Project.

**GPML Loop No. 2 (McLeod River Connection Section)**

The McLeod River Connection Section will have a licensed MOP of 8,275 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the McLeod River Connection Section include:

- GPML (Southern Section) with a licensed MOP of 8,275 kPa
- GPML Loop (Wildhay Section) with a licensed MOP of 8,275 kPa
- The proposed GPML Loop No. 2 (Bronson and Hornbeck Sections) with a proposed licensed MOP of 8,275 kPa

Since all the facilities within the hydraulically significant area (within pressure limiting boundaries like compressor stations) share common licensed MOPs, no additional OPP is required between the identified facilities. No other pressure sources were identified in the area to potentially over pressure the McLeod River Connection Section of the Project.

**EDSML Loop No. 4 (Robb Section)**

The Robb Section will have a licensed MOP of 8,690 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and TransCanada commits to ensuring systems meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the Robb Section include:

- GPML Loop (Sundance Section) with a licensed MOP of 8,275 kPa. NGTL commits to confirm that the PC and OPP devices between the existing systems, which function to limit pressure between the new pipeline scope and present assets of differing MOP, are compliant with the requirements of CSA Z662.
- GPML Loop No. 2 (McLeod River Section) with a licensed MOP of 8,275 kPa. NGTL commits to confirm that the PC and OPP devices between the existing
facilities, which function to limit pressure between the new pipeline scope and present assets of differing MOP, are compliant with the requirements of CSA Z662. One new tie-in to the existing system will require new OPP to limit pressure between the facilities.

- EDSML Loop No. 3 (Robb Section) with a licensed MOP of 8,690 kPa.
- NGTL’s Swartz Creek Compressor Station, containing PC and OPP systems that meet CSA Z662 standards with a licensed MOP of 8,690 kPa. Furthermore, PLC systems, valve control systems, and compressor station logic is in place to prevent possible back flow to lower pressure systems.
- NGTL’s Wolf Lake Compressor Station, containing PC and OPP systems that meet CSA Z662 standards with a licensed MOP of 8,690 kPa.

As noted in the bullets above, the connection between GPML Loop No. 2 (MOP of 8,275 kPa) and the Robb Section will require installation of new OPP equipment to limit the potential pressure-communication. PC and OPP devices will include:

- pressure monitoring and upstream PC (via control of the upstream compressor station discharge pressure) limiting the pipeline to a pressure of no greater than 8,275 kPa
- independently-functioning, automated, gas-hydraulic powered high pressure shut down devices (pressure set point of 8,275 kPa) at the valve interfaces between these systems.

All other facilities within the hydraulically significant area (within pressure limiting boundaries like compressor stations) share common licensed MOPs, or have existing code-compliant PC and OPP devices between existing facilities of uncommon MOP, and require no additional OPP between the identified facilities and the new line. No other pressure sources were identified in the area to potentially over pressure the Robb Section of the Project.

**EDSML Loop No. 4 (Dismal Creek Section)**

The Dismal Creek Section will have a licensed MOP of 8,690 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the Dismal Creek Section of the Project include:

- NGTL’s Wolf Lake Compressor Station, containing PC and OPP systems that meet CSA Z662 standards with a licensed MOP of 8,690 kPa.
- EDSML Loop No. 2 (Wolf Lake Section) with a licensed MOP of 6,450 kPa. NGTL confirms existing PC and OPP devices, compliant with the requirements of CSA Z662, are in place between the existing systems that will function to limit pressure between the Project and existing assets of differing MOP.
• EDSML Loop No. 3 (Dismal Section) with a licensed MOP of 8,690 kPa.

Since all facilities within the hydraulically significant area (within pressure limiting boundaries like Compressor Stations) share common licensed MOPs, or have existing code-compliant PC and OPP devices between existing facilities of uncommon MOP, and require no additional OPP between the identified facilities and the new line. No other pressure sources were identified in the area to potentially over pressure the Dismal Creek Section of the Project.

**EDSML Loop No. 4 (Brewster Section)**

The Brewster Section will have a licensed MOP of 8,690 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the Brewster Section include:
• NGTL’s Nordegg Compressor Station, containing PC and OPP systems that meet CSA Z662-15 standards with a licensed MOP of 8,690 kPa.
• EDSML Loop No. 2 (Nordegg Section) with a licensed MOP of 8,690 kPa.
• EDSML Loop No. 3 (Brewster Section) with a licensed MOP of 8,690 kPa.
• NGTL’s Vetchland River Compressor Station (Unit 2), containing PC and OPP systems that meet CSA Z662-15 standards with a licensed MOP of 8,690 kPa.

Since all the facilities within the hydraulically significant area (within pressure limiting boundaries like Compressor Stations) share common licensed MOPs, no additional OPP is required between the identified facilities. No other pressure sources were identified in the area to potentially over pressure the Brewster Section of the Project.

**January Creek Control Valve**

The January Creek control valve scope will have a licensed MOP of 7,550 kPa. The adequacy and effectiveness of new and existing PC and OPP systems have been evaluated and meet the requirements of the OPR and CSA Z662-15.

The pressure boundaries for the January Creek control valve scope include:
• January Creek Lateral with a licensed MOP of 7,550 kPa.
• Western Alberta System Mainline (Edson Section) with a licensed MOP of 6,178 kPa.

The connection between the systems noted in the bullets above will require installation of new PC and OPP equipment to limit the potential
pressure-communication between the existing 7,550 kPa and 6,178 kPa sections. PC and OPP devices will include:

- pressure control via a dedicated pressure control valve, which is the focus of the section scope, limiting the pipeline to a pressure of no greater than 6,178 kPa.
- independently-functioning, automated, gas-hydraulic powered, high pressure shut down devices (pressure set point no greater than 6,795 kPa) on the downstream isolation valve following the control valve.

All other facilities within the hydraulically significant area (within pressure limiting boundaries like compressor stations) share common licensed MOPs, or have existing code-compliant PC and OPP devices between existing facilities of uncommon MOP, and require no additional OPP between the identified facilities and the new line. No other pressure sources were identified in the area to potentially over pressure the January Creek control valve portion of the Project.

### 7.5.5 Pipeline Integrity

In developing its projects, NGTL considers and designs for potential pipeline integrity threat categories as defined by ASME B31.8S Managing System Integrity of Gas Pipelines.

Initial threat identification for the Project was conducted before detailed design. Pipeline threat identification considers the following nine threat categories managed by TransCanada’s Integrity Management Program (IMP).

1. Time-dependent threats:
   - a. external corrosion
   - b. internal corrosion
   - c. stress corrosion cracking

2. Static or resident threats:
   - a. manufacturing-related defects
   - b. welding or fabrication related
   - c. equipment failures

3. Time-independent threats:
   - a. mechanical damage
   - b. incorrect operations
   - c. weather-related and outside force

During the hazard identification process, a qualitative assessment of potential threats, including those listed above, is conducted using the design basis and route selection criteria. Potential Project-specific issues identified for threat management during the
hazard identification process are used to inform recommendations for design, construction and management of operating concerns.

Mitigation of integrity concerns are considered during route selection, detailed design, fabrication, construction and pre-commissioning of the pipeline. This process allows operational management and performance experience to be incorporated in the early stages of the project development.

Specific threat management measures to be employed on the Project include the following:

- installing launcher and receiver facilities to allow ILI of the pipeline.
  A high-resolution commissioning caliper tool will be used during Project pre-commissioning to inspect for construction related defects and indications of dents or ovalities in the pipeline.
- conducting above ground cathodic protection surveys to identify areas of pipe coating damage
- performing baseline ILI using magnetic flux leakage and high-resolution caliper tool as per TED-INT-LR Launcher and Receiver Installation and Initial Assessment Technical Directive. Thereafter, the pipeline will be managed according to the IMP.

Before the Project transitions to operations, the threat identification will be updated to incorporate Project development data. The updated threat identification will provide input for integration of the asset in the IMP. The terms and conditions of the transfer of care and control of the pipeline to operations are documented through a project turnover memorandum.

7.6 TERRAIN, GEOTECHNICAL AND HYDROTECHNICAL ASSESSMENTS

A desktop terrain mapping and geohazard assessment will be conducted along the alignment of each of the pipeline sections (see Table 7-8). The assessment will be based on mapping collected from various sources, including LiDAR, satellite imagery and published surficial geology maps. The terrain mapping process provides delineation of areas of the ground that have a defined depositional environment and/or geomorphological process. A terrain unit that describes the primary expected geological deposit at the surface will be assigned to each approximate area after an on-site investigation is completed. The geotechnical reports will be provided to the Board in supplemental filings.
Table 7-8: Location and Timing of Geotechnical Investigations

<table>
<thead>
<tr>
<th>Project Pipeline Section</th>
<th>Geotechnical Assessment Details</th>
<th>Timing for Geotechnical Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grande Prairie West</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Valhalla Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Elmworth Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Grand Prairie South</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Karr Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Deep Valley Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>McLeod River Connection Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Edson South Area</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Robb Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Dismal Creek Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
<tr>
<td>Brewster Section</td>
<td>Assess proposed valve site locations, fitting locations, major road crossings and subsurface conditions for trenchless crossings</td>
<td>Q2-Q3 2018</td>
</tr>
</tbody>
</table>

The geotechnical and hydrotechnical assessments focus on the following key design issues:

- stability of significant slopes along the proposed pipeline routes (geotechnical assessments will include a review of the history of landslides and the potential for reactivation of old slides along the route)
- scour and erosion potential at watercourse crossings
- subsurface conditions for watercourse crossings using trenchless methods. Geotechnical assessments will include determining the stratigraphy and its
variation at the proposed crossing site (in particular, the existence of gravel and cobble layers in the drill path). Important factors also include fracture characteristics in bedrock, potential underground cavities and significant changes in boundaries of subsurface units. For preliminary findings of subsurface conditions at the crossings, see the preliminary trenchless feasibility studies in Appendix 8-2 to Appendix 8-8.

- areas of potential stress concentrations, such as areas of thick organic deposits

For confirmation from a qualified professional engineer that the Project has been, and continues to be, assessed and designed for the potential effects of those conditions not specifically addressed in CSA Z662-15, see Appendix 7-4.

### 7.6.1 Geohazards

The terrain assessment, consisting of desktop studies and site reconnaissance, is underway to identify the key areas of concern along the route. Geological hazards evaluated in the assessment include potential landslides, debris flow, fluvial scour and significant slopes.

Geohazards identified along the proposed pipeline section ROWs will be addressed through site-specific mitigation where required.

Where required, mitigation measures for design and construction can include:

- micro re-routes to avoid unstable slopes
- detailed geotechnical investigation to understand the nature of instability if it is not possible to avoid the area
- implementation of slope stabilization measures, including horizontal drains and/or toe buttress, where applicable
- implementation of erosion protection measures, particularly at toe areas of watercourse crossings
- diligent effort during construction to avoid reactivating old slides
- selection of heavy wall pipe to accommodate additional strains potentially induced by slides where they cannot be avoided
- selection of low-friction backfill, where required and applicable, to minimize the impact of potential hill slides
- selection of reduced depth of cover to minimize the impact of potential slides and to facilitate strain relief if necessary

If required during operations, mitigation measures can include:

- detailed geotechnical investigation and engineering assessment to understand the nature of the slides and their potential impact on pipe integrity
• monitoring ground movement and/or pipe strains during pipeline operation
• assessment of pipeline deformation using ILI data
• implementation of slope stabilization measures, including horizontal drains and/or toe buttress, where applicable
• strain relief, where necessary
• pipe realignment, including placing pipeline on surface with mechanisms to accommodate ground sliding

7.6.2 Organic Terrain and Muskeg

The preliminary terrain analysis identifies the areas of organic terrain, muskeg terrain, general soil units and drainage conditions. This information is used to determine the requirements for buoyancy control in areas of potential muskeg along the pipeline routes. A standalone field program might be implemented to verify and assess in more detail the organic terrain along the alignment in order to determine constructability through the area. Investigation might be required to characterize and delineate the limits and thicknesses of organic units at identified locations of concern. This investigation will include sample collection for laboratory testing to provide detailed information about the thickness and lateral extent of organic deposits along the routes. Mitigation measures will be implemented in organic terrain locations that pose risk to the pipeline sections.

Ground-truthing studies may be undertaken starting in Q2/Q3 2018. These studies may include ground-penetrating radar and sample collection to provide more detailed information about the thickness and lateral extent of organic deposits along the pipeline routes. These studies will supplement information from previous pipeline construction in these sections.

Buoyancy-control requirements for the pipeline sections will be determined during the detailed engineering design phase. NGTL expects that standard buoyancy-control measures will be used for the Project, which can include:

• continuous concrete coating
• swamp (saddle) weights
• river (bolt-on) weights
• screw anchors

7.7 PIPELINE WATERCOURSE CROSSINGS

Watercourse crossings for each proposed pipeline section have been identified through a desktop review and will be confirmed by aquatic studies. Generally, an isolated crossing or trenchless crossing method will be used depending on the flows in a watercourse during the time of construction.
An isolated crossing method will be used for watercourses with open water or under-ice flow that can be handled by isolation equipment. Isolation methods, such as using dams and pumps or flumes, divert flow around or across a construction zone to allow trench excavation, pipe installation and backfilling to occur away from flowing water.

Open cut crossings are generally used if the flow or watercourse conditions at the time of construction do not allow implementation of practical flow isolation or if flow isolation is not required.

A trenchless method (e.g., HDD) is generally used for watercourses with high flow, water depth and channel width that cannot be effectively isolated. HDDs can be installed in a number of different geotechnical conditions and avoid instream works and ditching activities in the beds and banks of suitable watercourses.

Trenchless crossings are proposed for the Wapiti River, Smoky River, Simonette River, Little Smoky River, McLeod River, Pembina River and North Saskatchewan River. For preliminary trenchless feasibility studies, see Appendix 8-2 to Appendix 8-8.

For more information on watercourse crossing construction, see Section 8.8.4: Watercourse and Road Crossing Construction.
8.0 PIPELINE CONSTRUCTION

This section provides a description of the pipeline construction plans for the Project, including:

- construction procedures and execution
- safety
- quality
- inspection and monitoring
- construction schedule

The information in this section is based on preliminary design. Construction plans will be further developed during detailed design and will incorporate input from the selected construction prime contractors.

8.1 PIPELINE CONSTRUCTION STRATEGY

It is anticipated that one construction spread will be required for each of the following individual or grouped Project pipeline sections:

- Valhalla Section and Elmworth Section (Grande Prairie West Area)
- Karr Section (Grande Prairie South Area)
- Deep Valley Section and McLeod River Connection Section (Grande Prairie South Area)
- Robb Section and Dismal Creek Section (Edson South Area)
- Brewster Section (Edson South Area)

The final number of construction spreads will be confirmed following the completion of detailed engineering and constructability studies. The direction of construction is generally from south to north for each pipeline section.

8.1.1 Construction Contracts

Several prime contractors are expected to be retained for Project construction.

NGTL will award separate contracts for portions of the Project work outside the scope of the prime contractor construction contracts, such as construction surveying, inspection and NDE.

8.2 CONSTRUCTION SCHEDULE

To meet the construction schedules and commercially required in-service date, NGTL proposes to commence construction of temporary infrastructure required for the Project as well as certain ROW preparation activities (i.e., proposed section 58 ROW
preparation activities) in Q3 2020 before pipeline construction, subject to regulatory approval and fulfillment of applicable condition compliance. The temporary infrastructure required includes stockpile sites, contractor yards, access roads and travel lanes, borrow pits/dugouts, and laydown yards. Existing cleared areas and established sites will be used where feasible and practicable depending on proximity to each Project component.

Clearing and pipeline construction activities will progress in a manner that will avoid applicable wildlife timing restrictions where feasible. If this is not feasible, NGTL will work with the applicable agencies to develop mitigation.

Early ROW preparation activities will allow for the following:

- reduce scheduling risks associated with adverse weather conditions
- ROW access and site preparation to facilitate trenchless drilling operations and mitigate equipment and crew availability constraints
- provide scheduling flexibility to meet construction scheduling requirements

Construction activities are anticipated to be carried out in both frozen and unfrozen conditions. The timing of final cleanup and reclamation activities will depend on seasonal access to the pipeline ROWs and will typically be completed within 12 months of construction. The pipeline ROW will be assessed during spring/summer following construction to evaluate reclamation requirements.

For a preliminary construction schedule, see Figure 8-1.

### 8.3 CONSTRUCTION RESOURCES

Construction will require personnel with various skills, ranging from entry-level labourers to highly skilled trades, and include inspection and project management staff. The average size of the construction workforce is expected to be approximately 1,890 workers with a peak of approximately 2,920 workers. Additional information is provided in Section 20.5 of the ESA.

The demand for personnel and equipment will provide contracting and employment opportunities for qualified local and Aboriginal businesses and individuals. For the preliminary Project schedule, see Figure 8-1. Preliminary engagement started for certain Project components in Q3 and Q4 2017 as depicted in light blue.
8.3.1 Construction Camps and Project Workforce Accommodations

Based on preliminary construction planning, NGTL does not expect that camps will be utilized for construction of the pipeline components of the Project. Sufficient accommodation capacity exists in the Project component areas. However, should the prime contractors, in consultation with NGTL, determine camps are needed, camp locations will be chosen based on ease of access to the facility or major roads, avoidance, to the extent practical, of areas of native vegetation, wildlife habitat, or archaeological or heritage resources, or other environmentally, socially or culturally sensitive areas and preference for previously disturbed sites.

8.4 CONSTRUCTION ACCESS

Construction access will maximize the use of existing public roads as well as privately owned and maintained all-season and seasonal industry roads. New temporary access to the pipeline section ROWs will be minimized to the greatest extent possible.

Neither highways nor publicly or privately owned all-season roads are expected to require timber or vegetation clearing. Access through seasonal winter roads may require brushing to ensure safe use. At this time, no Project-related upgrades to the existing private roads are expected.
In addition to the use of existing roads and limited development of new temporary access, a travel lane will be installed in the pipeline construction ROW. Its surface will be prepared to safely accommodate the movement of construction vehicles and equipment. Ongoing maintenance of the travel lane will be required throughout the construction seasons.

Construction vehicles will use existing bridges, where available and feasible. In their absence, other techniques will be used to cross watercourses with defined banks that might be encountered along the travel lane and during construction of approaches to the pipeline. The crossing method will be determined by NGTL and will reflect conditions at the time of construction as well as applicable regulatory requirements. Examples include snow bridges, culverts and temporary clear-span bridges.

8.5 CONSTRUCTION LOGISTICS

Project construction logistics will involve moving equipment, materials and supplies by truck and/or rail to staging areas, stockpile sites and to the ROW. In addition to the equipment and materials required for construction, fuel and other supplies will be procured locally or transported from major distribution centres for use onsite.

8.6 CONSTRUCTION SAFETY

During construction, the prime contractor for each Project component will have overall responsibility for health and safety at their worksite. This includes:

- protecting the general public and employees of TransCanada, the prime contractor, subcontractors, suppliers, any other contractors and visitors
- protecting and preserving NGTL property and the property of all third parties on, along, adjacent to or near the site from damage resulting from performance of any work, and exercise suitable precautions necessary to prevent damage thereto
- developing a Site Specific Safety Plan (SSSP) that outlines how the prime contractor will implement, measure and review its Health, Safety and Environment (HSE) processes onsite
- implementing all applicable health and safety laws and regulations, including all applicable orders, directives, codes, guidelines, permits, licences and municipal bylaws
- monitoring activities at the site to ensure that the health and safety system is functioning properly and providing records to verify that the health and safety system is functioning
- implementing a task hazard assessment process (e.g., Job Safety Analysis) that breaks tasks down into steps, identifies the hazards associated with each step and identifies the appropriate control measures for the identified hazards
ensuring all personnel (contractors, employees, NGTL representatives, visitors) complete a site-specific orientation before site access

- using proper personal protective equipment, as required

- stopping work activity immediately and notifying supervisors of unsafe conditions or acts

- in the event of an incident of elevated severity (e.g., major or critical) or of incidents where there was an elevated potential for severity, immediately stopping site activities that might obscure investigation evidence, completing a thorough investigation and preparing a written report identifying root causes and corrective measures

- reporting all incidents, including near-hits/misses and learning opportunities

- developing a site-specific traffic management plan

- developing a site-specific Emergency Response Plan (ERP)

- developing a Project-specific safety inspection and audit program in conjunction with NGTL

- having procedures in place to increase safety awareness and heighten the level of planning associated with all high-risk activities

- ensuring that required first aid services, equipment and supplies are available at the worksite

- ensuring equipment is inspected and maintained in a safe operating condition as specified by regulations and the manufacturer

NGTL will develop a Safety Management Plan (SMP) that provides details on the roles and responsibilities of the project/construction management teams and other, relevant safety information associated with the Project. Additionally, the OHS Standards for Prime/General Contractors outlines key safety guidelines for the prime contractor to consider when developing their SSSP so that a collaborative commitment to Project safety is achieved.

Where required, NGTL, in coordination with the prime contractor, will obtain safe work permits and complete an incident report consistent with the OPR.

For more information on the processes, procedures and systems for the safe, reliable and efficient operation of the Project see Section 10: Operations.

### 8.6.1 Emergency Response during Construction

Before construction, the prime contractor for each Project component will be responsible for developing and implementing an ERP to cover potential emergencies at their worksite and while travelling and hauling to and from their worksite during construction. This plan will be communicated during the site-specific safety
orientation before accessing the site. NGTL will consult with regional emergency response agencies to ensure that appropriate communications, understanding and cooperation are in place for the Project during construction. This will ensure that the construction ERPs appropriately link into the plans maintained by other affected agencies.

For additional information on Emergency Preparedness and Response during operations, see Section 10: Operations.

### 8.6.2 Construction and Environmental Inspection

Construction inspectors are responsible for reviewing, understanding and ensuring that the prime contractor is constructing the pipeline sections in compliance with contract documents, the Project design, applicable standards, specifications and TransCanada’s quality management system.

Environmental inspectors will be responsible for ensuring that environmental mitigation measures are followed during construction.

Individuals responsible for inspecting the pipeline and facility construction activities will be retained before construction activities start and will possess the necessary qualifications.

### 8.7 QUALITY MANAGEMENT – CONSTRUCTION

All purchased items and contracted services will be obtained from suppliers and contractors who have been pre-qualified by TransCanada’s internal supplier management and pre-qualification procedures.

During construction, the prime contractor for each Project component will be responsible for ensuring the work being performed is completed in accordance with contract documents, the Project design, applicable standards, specifications and the project-specific quality plan.

Design changes during construction will be managed in accordance with the appropriate change management procedures and in accordance with TransCanada’s standard engineering practices.

### 8.8 PIPELINE CONSTRUCTION ACTIVITIES

Pipeline construction activities will include, but are not limited to:

- surveying
- clearing
- upper surface material removal and salvage
• grading
• trenching
• pipe stringing, bending and welding
• non-destructive examination
• coating
• pile driving at valve sites
• road and foreign line crossing
• watercourse crossings
• lowering-in
• buoyancy control
• backfilling
• pipeline cleaning
• pressure testing of pipeline components
• fencing at valve sites
• cleanup and reclamation

8.8.1 Right-of-Way, Site Preparation and Grading

After topsoil or surface material is salvaged, irregular ground surfaces will be graded where required to provide a safe work surface. This would also include grading of any TWS as required. This will be completed using graders, excavators and bulldozers. There will be a number of other construction techniques, e.g., steep slope construction, designed for specific locations along the proposed route.

The pipeline section ROWs will be cleared in accordance with the EPP. Grading requirements along the ROW will vary from no grading in flat or low muskeg areas, to grade cuts in some localized areas. Grading will depend on factors such as slope angles, soil types and ice content. Grading of the ROW will be performed to the extent necessary to accommodate field pipe bending limits and ensure the safe movement of pipe, equipment and personnel along the ROW.

Where applicable, topsoil/strippings conservation will be performed to ensure that topsoil is stripped, stockpiled and replaced in a manner that prevents the loss of topsoil, mixing with subsoil or degradation of soil quality.

For typical drawings that show ROW and TWS use during construction, see Appendix 11-1.

8.8.2 Stringing, Welding, Bending, Coating and Non-destructive Examination

In general, pipe will be trucked from local stockpile sites and strung along the ROW.

For the pipeline to conform to the profile of the centreline, a bending machine will be used to bend the pipe along the ROW. The individual pipe joints will then be lined up, clamped in place and welded by either mechanical or manual welding methods.
Welding requirements will be determined during detailed design. The joining program and NDE of welds will comply with the requirements of the OPR and CSA Z662-15. All welds will undergo NDE and, once validated, will be coated as per Section 7.5: Pipeline Corrosion Control Elements and Facilities.

8.8.3 Trenching, Installation and Backfill

Once the centreline of the pipeline has been staked, a single trench using conventional open trench pipeline construction methods will be created. Hydraulic excavators and/or trenching machines will be used to excavate the trench to the specified dimensions determined during detailed design. Open trench installation will take place in accordance with the procedures described in the EPP. For the minimum depth of cover over the pipe, see Appendix 7-3: Typical Pipeline Engineering Drawings.

Measures such as the installation of rock shielding or wood lagging may be used, as required, to ensure that the pipe and pipe coatings are not damaged during lowering-in and backfill operations. After the joined pipeline is lowered into the trench, the pipe will be covered with suitable backfill material. In frozen conditions, the settlement of backfill materials will depend on, among other things, the ice content of the soil placed in the trench. Ditch settlement in areas with high-ice-content soils could be offset with varying amounts of suitable material obtained along the construction ROW.

At any given time during pipeline construction activities, the length of open trench will be reduced, to the extent practical, to minimize environmental, socio-economic and safety concerns. The trench might be slightly wider where required (e.g., rocky terrain or where buoyancy control is required).

8.8.4 Watercourse and Road Crossing Construction

NGTL’s process for selecting watercourse crossing locations and techniques was developed using industry-accepted design and installation practices, upgraded to reflect site-specific assessments and Fisheries and Oceans Canada (DFO) Measures to Avoid Causing Harm to Fish and Fish Habitat, and AEP Water Act Codes of Practice to avoid and minimize potential effects on fish and fish habitat. The criteria that NGTL typically balances in selecting a pipeline crossing method are the site-specific environmental parameters, watercourse characteristics, fisheries values, constructability, social and economic considerations and operational and pipeline integrity aspects.

The proposed pipeline routes cross portions of the Peace, Athabasca and North Saskatchewan River basins and cross a total of 157 watercourses and potential fish bearing drainages: 27 named and 130 unnamed. The locations of all potential watercourse crossings are identified in Appendix E, Table E-2 of the ESA.
Both trenchless and trenched watercourse crossing techniques are being proposed for the Project. The following sections describe the watercourse crossing methods considered.

**Isolated Crossings**

An isolated crossing method is a form of open cut crossing that will be used for watercourses with open water or under-ice flow that can be handled by isolation equipment. Isolated methods, using dams and pumps or flumes, divert flow around or across a construction zone to allow trench excavation, pipe installation and backfilling to occur away from flowing water. Silted water is typically left in the trench during these activities and then pumped onto a nearby vegetated or snow-filled area, rather than back into the watercourse.

Isolated methods are generally considered feasible at crossing sites where:

- watercourse flows are less than 4 m³/s
- channel widths are less than 100 m
- water depths are less than 2 m

Given the relatively small size and low flows of many of the proposed crossings, NGTL has a high level of confidence that, if required, isolated crossing methods will be successful.

**Open Cut Crossings**

The open cut crossing method is preferred for minor watercourses and drainages where flow is expected to be absent for the duration of in-stream activities. Any water collected from the excavation will be discharged to an upland area or otherwise filtered to reduce the amount of sediment being discharged back into the watercourse.

The open cut method requires additional TWS, but has a smaller footprint than other construction methods and involves reduced construction periods.

In addition to minor watercourses and drainages, the open cut method is also considered to be the contingency method for watercourses proposed to be crossed using trenchless methods.

**Trenchless Crossings**

Trenchless crossing methods are generally considered for watercourses with sensitive and/or high-value fisheries (e.g., coldwater sport fish and Species at Risk Act [SARA] species), and/or with flows, water depths and channel widths that cannot be effectively isolated. Based on NGTL’s crossing selection process for the Project, the following watercourse crossings will be constructed using trenchless methods:

- Wapiti River
• Smoky River
• Simonette River
• Little Smoky River
• McLeod River
• Pembina River
• North Saskatchewan River

For the preliminary feasibility reports for trenchless crossings, see Appendix 8-1 to Appendix 8-7.

A trenchless crossing method will also be used for the following major road crossings:

• Highway 11 (Brewster Section)
• Highway 734 (Karr Section)
• Highway 672 (Valhalla Section)
• Highway 59 (Valhalla Section)

The design for each of these road crossings will be completed during detailed engineering. Other roads will be crossed using NGTL’s typical road crossing design, which meets the requirements of Z662-15, and is applicable for bored crossing techniques and open cut crossing techniques.

### 8.8.5 Pipeline Cleaning and Pressure Testing

The pipeline will be cleaned with cleaning pipeline inspection gauges (pigs) to remove construction debris. This debris will be collected and disposed of by following applicable regulations. Pre-fabricated components, such as aboveground risers, valve assemblies and elbow fittings with associated piping, will be tested in accordance with the pressure testing requirements in Clause 8 of CSA Z662-15, before arrival onsite.

Preliminary review indicates there are several potential water sources suitable for hydrostatic testing of the pipeline sections. A hydrostatic test plan will be prepared during detailed design and submitted to the Board before hydrotesting of the pipeline sections.

Water for hydrostatic testing will be drawn from permitted sources and, after use, will be disposed of along the pipeline section ROWs in accordance with the applicable regulatory requirements. A mixture of water and glycol or methanol may be used for hydrostatic testing of above ground piping or where a risk of freezing exists. Any hydrostatic test medium other than water will be disposed of in accordance with applicable regulations.
8.8.6 Cleanup and Reclamation

General machine cleanup will begin along the pipeline ROW following backfill activities. In winter construction areas, final cleanup will be completed during the next winter period under frozen conditions to allow for one seasonal thaw period to occur after machine cleanup and initial operations. Examples of additional cleanup measures include replacing surface material and installing erosion-control measures.

Poor weather or unsuitable ROW conditions could delay final cleanup and ROW reclamation, until more suitable conditions exist. Watercourse crossings will be reclaimed in accordance with all applicable regulatory requirements. The ROW and TWS will be reclaimed as necessary and as soon as practical on completion of final cleanup.

8.9 LTO EXEMPTION REQUEST

Construction of the Project involves several tie-ins to existing pipelines and facilities. In order to preserve construction schedules and minimize outages on operating facilities, NGTL is requesting LTO exemption for 23 tie-ins. The technical details of these tie-ins are provided below.

Valhalla Section

Construction of the Valhalla Section requires three crossover tie-ins to the NPS 36 GPML Loop No. 3. One of these tie-ins will be completed by hot tap method to maintain continued gas flow to existing customers during construction of the Valhalla Section. Two of the tie-ins will be completed by installing pre-tested tee assemblies during a brief planned outage. The hot tap will require six non-pressure tested welds (four on the split tee and two on the power gas riser) and each tee installation will require three non-pressure tested welds.

The crossover tie-in assemblies are as follows:

GPM143-3-U4 (hot tap)
- NPS 36 x 36 split-tee
- NPS 36 F x F valve
- NPS 1 ½ Power Gas Riser Assembly

GPM143-3-D4 (tee)
- NPS 36 x 36 welded tee fitting
- Approximately 10 m of NPS 36 pipe
- NPS 36 W x F valve

GPM120-3-U4 (tee)
Karr Section

Construction of the Karr Section requires two crossover tie-ins to the NPS 42 GPML Loop. These tie-ins will be completed by hot tap method to maintain continued gas flow to existing customers during construction of the Karr Section. Once the tie-ins are installed, the assemblies will become instantaneously pressurized. The hot taps will require six non hydrotested welds each (four on the split tee and two on the power gas riser).

The crossover tie-in assemblies are as follows:

GPM70-1-U2
- NPS 42 x 36 split-tee
- NPS 36 F x F valve
- NPS 1 ½ Power Gas Riser Assembly

GPM70-1-D2
- NPS 42 x 36 split-tee
- NPS 36 F x F valve
- NPS 1 ½ Power Gas Riser Assembly

The Karr Section also requires two tie-ins to the existing suction and discharge piping at NGTL’s Latornell Compressor Station. The pre-tested tie-in assemblies will be installed during a brief and opportune station outage and provide NGTL the ability to bring the Karr Section into service without significant operational outages, thereby minimizing potential effects on existing NGTL customers. Each tee installation will require three non-pressure tested welds.

The tie-in assemblies are as follows:

GPM60-2-1SS-LTL
- NPS 42 x 42 welded tee fitting
- Approximately 10 m of NPS 42 pipe
- NPS 42 W x F valve

GPM60-2-1SD-LTL
- NPS 42 x 42 welded tee fitting
- Approximately 10 m of NPS 42 pipe
- NPS 42 W x F valve
Deep Valley Section

Construction of the Deep Valley Section requires two crossover tie-ins to the NPS 42 GPML Loop (Berland River Section). These tie-ins will be completed by hot tap method to maintain continued gas flow to existing customers during construction of the Project. Once the tie-ins are installed, the assemblies will become instantaneously pressurized. The hot tap will require six non-pressure tested welds (four on the split tee and two on the power gas riser).

The crossover tie-in assemblies are as follows:

GPM40-1-U2
- NPS 42 x 36 split-tee
- NPS 36 F x F valve
- NPS 1 ½ Power Gas Riser Assembly

GPM40-1-D2
- NPS 42 x 36 split-tee
- NPS 36 F x F valve
- NPS 1 ½ Power Gas Riser Assembly

Robb Section

Construction of the Robb Section requires two crossover tie-ins to the NPS 48 GPML Loop No. 2 (McLeod River Section). These tie-ins will be completed by hot tap method to maintain continued gas flow to customers during construction of the Project. Once the tie-ins are installed, the assemblies will become instantaneously pressurized. The hot tap will require six non-pressure tested welds (four on the split tee and two on the power gas riser).

The crossover tie-in assemblies are as follows:

GPM10-2-U4
- NPS 48 x 42 split-tee
- NPS 42 F x F valve
- NPS 1 ½ Power Gas Riser Assembly

GPM10-2-D4
- NPS 48 x 36 split-tee
- NPS 36 F x F valve
- NPS 1 ½ Power Gas Riser Assembly

The Robb Section also requires tie-ins to the existing suction and discharge piping at NGTL’s Swartz Creek Compressor Station. The pre-tested tie-in assemblies will be
installed during a brief and opportune station outage and provide NGTL the ability to bring the Robb Section into service without significant operational outages, thereby minimizing potential effects on existing NGTL customers. Each tee installation will require three non-pressure tested welds and the installation of the single valve will require two non-pressure tested welds.

The tie-in assemblies are as follows:

ED106-C-1SS-SZC
- NPS 48 W x F valve
- Approximately 5 m of NPS 48 pipe

ED106-4-1SS-SZC
- NPS 48 x 42 welded tee fitting
- Approximately 10 m of NPS 48 pipe
- Approximately 5 m of NPS 42 pipe
- NPS 42 W x F valve

ED106-C-1SD-SZC
- NPS 48 W x F valve
- Approximately 5 m of NPS 48 pipe

ED106-4-1SD-SZC
- NPS 48 x 42 welded tee fitting
- Approximately 10 m of NPS 48 pipe
- Approximately 5 m of NPS 42 pipe
- NPS 42 W x F valve

Dismal Creek Section

Construction of the Dismal Creek Section requires two crossover tie-ins to the NPS 48 EDSML Loop No. 3 (Dismal Creek Section). These tie-ins will be completed by hot tap method to maintain continued gas flow to customers during construction of the Project. Once the tie-ins are installed, the assemblies will become instantaneously pressurized. The hot tap will require six non-pressure tested welds (four on the split tee and two on the power gas riser).

The crossover tie-in assemblies are as follows:

ED90-3-U4
- NPS 48 x 36 split-tee
- NPS 36 F x F valve
- NPS 1 ½ Power Gas Riser Assembly
ED90-3-U4
• NPS 48 x 42 split-tee
• NPS 42 F x F valve
• NPS 1 ½ Power Gas Riser Assembly

**Brewster Section**

Construction of the Brewster Section requires two crossover tie-ins to the NPS 48 EDSML Loop No. 3 (Brewster Creek Section). These tie-ins will be completed by hot tap method to maintain continued gas flow to existing customers during construction of the Project. Once the tie-ins are installed, the assemblies will become instantaneously pressurized. The hot tap will require six non-pressure tested welds (four on the split tee and two on the power gas riser).

The crossover tie-in assemblies are as follows:

ED70-3-U4
• NPS 48 x 36 split-tee
• NPS 36 F x F valve
• NPS 1 ½ Power Gas Riser Assembly

ED70-3-D4
• NPS 48 x 36 split-tee
• NPS 36 F x F valve
• NPS 1 ½ Power Gas Riser Assembly

The Brewster Section also requires tie-ins to the existing suction and discharge piping at NGTL’s Nordegg Compressor Station and tie-ins to the existing suction and discharge piping at the existing NGTL Vetchland Compressor Station. The pre-tested tie-in assemblies will be installed during a brief and opportune station outage and provide NGTL the ability to bring the Brewster Section into service without significant operational outages, thereby minimizing potential effects on existing NGTL customers. Each tee installation will require three non-pressure tested welds and the installation of the single valve will require two non-pressure tested welds.

**Nordegg Compressor Station Connection**

Connections are required to tie the Brewster Section into the suction and discharge of the compressor station as well as connect the Brewster Section to the NPS 48 EDSML Loop No. 3 (Brewster Creek Section).

The tie-in assemblies are as follows:

ED80-C-1SS-NDG


- NPS 48 W x F valve
- Approximately 5 m of NPS 48 pipe

ED80-4-3SS-NDG
- NPS 48 x 42 welded tee fitting
- Approximately 10 m of NPS 48 pipe
- Approximately 5 m of NPS 42 pipe
- NPS 42 W x F valve

ED80-C-1SD-NDG
- NPS 48 W x F valve
- Approximately 5 m of NPS 48 pipe

ED80-4-3SD-NDG
- NPS 48 x 42 welded tee fitting
- Approximately 10 m of NPS 48 pipe
- Approximately 5 m of NPS 42 pipe
- NPS 42 F x F valve

**Vetchland Compressor Station Connection**

Connections are required to tie the Brewster Section into the suction and discharge of NGTL’s Vetchland Compressor Station as well as connect the Brewster Section to the NPS 48 EDSML Loop No. 3 (Brewster Creek Section).

The tie-in assemblies are as follows:
- ED60-C-2SS-VET
  - NPS 48 W x F valve
  - Approximately 5 m of NPS 48 pipe

ED60-4-2SS-VET
- NPS 48 x 42 welded tee fitting
- Approximately 10 m of NPS 48 pipe
- Approximately 5 m of NPS 42 pipe
- NPS 42 W x F valve

ED60-C-2SD-VET
- NPS 48 W x F valve
- Approximately 5 m of NPS 48 pipe

ED60-4-2SD-VET
- NPS 48 x 42 welded tee fitting
• Approximately 10 m of NPS 48 pipe
• Approximately 5 m of NPS 42 pipe
• NPS 42 F x F valve

**January Creek Control Valve**

The control valve installation at January Creek requires tie-ins to the NPS 30 Western Alberta System Mainline and the NPS 30 January Creek Lateral. These tie-ins will be executed by hot tap method to maintain continued gas flow to customers during construction of the January Creek Control Valve. Once the tie-ins are installed, the assemblies will become instantaneously pressurized. The hot tap will require six non-pressure tested welds.

**JAN30-0-2SV0-WAS**
• NPS 30 x 16 full encirclement reinforcing saddle
• NPS 16 W x F valve

**JAN30-0-3SV0-WAS**
• NPS 30 x 16 full encirclement reinforcing saddle
• NPS 16 W x F valve

**Safety Considerations and Rationale for Exemption Request**

All pipe, fittings and valves for the tie-ins of the pipeline will be prefabricated. All pipe, tees and valves will be hydrotested in the shop with the testing witnessed by a TransCanada representative before installation. All crossover valves will remain closed until LTO is granted for the applicable Section.

The welds listed for each tie-in cannot be pressure tested in the field because they are final tie-in welds, but the integrity of these welds will be verified in accordance with industry accepted methods and standards.

Field weld inspection will involve both a visual inspection and NDE that includes one or more of radiographic, ultrasonic, magnetic particle, or liquid penetration examination, depending on the size and type of weld, in accordance with TransCanada’s specifications. Inspectors are required to monitor the welding on site, verify that safe practices are implemented, and record welding parameters as part of their inspection to ensure that welding is conducted in conformance with the qualified welding procedures.

TransCanada has processes and safeguards in place to ensure safe construction, such as applicable inspections and testing. NGTL submits that an exemption from the LTO requirement for the tie-in assemblies would not compromise the safety of employees, the public or the environment.
NGTL confirms the shop tests for the tie-in assemblies will comply with the required time duration and pressure testing requirements of CSA Z662-15. NGTL proposes to file the shop test information for the tie-in assemblies as part of the LTO application for each applicable pipeline Section.

**Relief Sought**

Pursuant to subsection 58(1) of the NEB Act, NGTL seeks an exemption from the requirements of paragraph 30(1)(b) and subsection 47(1) of the NEB Act to obtain LTO from the Board for the tie-ins described above. NGTL proposes to file an LTO application for the balance of each applicable pipeline Section with the Board after construction is completed.

**8.10 COMMISSIONING**

Upon successful completion of hydrotecting, the pipeline sections will be prepared for commissioning and start-up. Commissioning will be conducted by qualified NGTL personnel.
9.0 COMPRESSION

This section provides details regarding the compression facilities required as part of the Project. The information is based on preliminary design and is supported by initial results from hydraulic modelling and field investigation programs. Revisions and refinements are expected as additional data are collected and assessed, and as engineering progresses through detailed design.

9.1 FACILITY OVERVIEW

The Project involves the installation of three (3) additional compressor units at existing NGTL compressor stations. One 30 MW (ISO-rated power output) gas turbine compressor package and associated systems will be located at the following existing NGTL sites:

- Nordegg Compressor Station (Clearwater County)
- Didsbury Compressor Station (Mountain View County)
- Beiseker Compressor Station (Rocky View County)

For the total footprints of the compressor stations, including the proposed unit additions, see the preliminary Plot Plans in Appendix 9-1 and Section 11: Land.

The compressor packages will be equipped with dry low-emission reduction technology and noise-attenuation equipment, and will be housed in new compressor buildings within fully fenced compressor station yards. Additional prefabricated, skid-mounted buildings will be erected on pilings and used to house the power generator units, electrical and mechanical equipment, air system, utility gas equipment and station personnel, as required. Suction and discharge yard piping will be installed to connect the compressor station unit additions to the existing NGTL System pipeline components.

For detailed information on the proposed compression facilities, see Table 9-1.

<table>
<thead>
<tr>
<th>Compressor Component</th>
<th>Legal Location</th>
<th>Total New Power Rating (MW)</th>
<th>Construction Start Date</th>
<th>In-Service Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordegg Unit C6 Addition</td>
<td>SW 20-43-12 W5M</td>
<td>1 x 30.0</td>
<td>Q3 2020</td>
<td>Q2 2021</td>
</tr>
<tr>
<td>Didsbury Unit B7 Addition</td>
<td>NW 28-30-2 W5M</td>
<td>1 x 30.0</td>
<td>Q3 2020</td>
<td>Q2 2021</td>
</tr>
<tr>
<td>Beiseker Unit A3 Addition</td>
<td>NE 24-27-25 W4M</td>
<td>1 x 30.0</td>
<td>Q3 2020</td>
<td>Q2 2021</td>
</tr>
</tbody>
</table>
9.2 COMPRESSION PROJECT COMPONENTS

Based on the preliminary design, the proposed unit additions will each include the following key systems and components, subject to changes on completion of detailed engineering:

- aerial coolers to cool the discharge gas
- one new steel frame compressor building designed with noise attenuation equipment with capacity to house the gas turbine compressor package
- a skid-mounted electrical/control building to contain the motor control centre, station control panel and uninterruptible power supply
- a skid-mounted mechanical building to house air compressors, air dryers, air receiver and interconnecting piping
- a skid-mounted mechanical building to house the glycol heating system (i.e., boilers, pumps, an expansion tank and interconnecting piping)
- a skid-mounted personnel building will be used to house the supervisory control data acquisition system (SCADA) and provide general office space, where required
- one skid-mounted building to house the auxiliary power generating unit
- a utility gas enclosure
- a heated storage building for spare parts and equipment storage, where required

9.3 ENGINEERING DESIGN STANDARDS

The compressor station unit additions will be designed, constructed and operated in accordance with CSA Z662-15 and the OPR, as well as other industry standards and TransCanada specifications.

9.3.1 Industry Standards

In addition to CSA Z662-15, various other industry codes and standards will be used in the design, construction and operation of the compression components of the Project. For a list of the major codes and standards, see Table 9-2.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Standard Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEB</td>
<td>OPR</td>
</tr>
<tr>
<td>CSA</td>
<td>CSA Z245.1-18 Steel Pipe</td>
</tr>
<tr>
<td>CSA</td>
<td>CSA Z245.11-17 Steel Fittings</td>
</tr>
<tr>
<td>CSA</td>
<td>CSA Z245.12-17 Steel Flanges</td>
</tr>
<tr>
<td>CSA</td>
<td>CSA Z245.15-17 Steel Valves</td>
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</table>
Table 9-2: Industry Standards for Compression Station Facilities (cont’d)

<table>
<thead>
<tr>
<th>Organization</th>
<th>Standard Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA</td>
<td>CSA B51-14 Boiler, Pressure Vessel and Pressure Piping Code</td>
</tr>
<tr>
<td>CSA</td>
<td>CSA B149.1-15 Natural Gas and Propane Installation Code</td>
</tr>
<tr>
<td>CSA</td>
<td>C 22.1-18 Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations</td>
</tr>
<tr>
<td>ASME</td>
<td>ASME B31.3-2016 Process Piping</td>
</tr>
<tr>
<td>ASME</td>
<td>Boiler and Pressure Vessel Code, Section VIII, Division 1, 2017 Pressure Vessels</td>
</tr>
<tr>
<td>ASME</td>
<td>National Building Codes of Canada (NBC 2015)</td>
</tr>
</tbody>
</table>

Note:
1. The CSA standards in this table often incorporate other CSA standards and publications from other organizations (e.g., ASME, ASTM, API, ISO, CGSB, NACE, SSPC and MSS).

9.3.2 TransCanada Specifications and Standards

For a current list of applicable TransCanada specifications and standards, see Table 9-3. The final list of applicable specifications and standards will evolve as compressor station planning progresses through detailed design and as individual specifications are added, updated or replaced to incorporate legislative and regulatory changes, and technological advances.

Table 9-3: Preliminary List of Company Specifications and Standards

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>EDMS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials</strong></td>
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<tr>
<td>TES-MATL-MD1</td>
<td>Piping System Materials for Pipeline, Compression and Metering Facilities</td>
<td>3764909</td>
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<tr>
<td>TES-MATL-COMP</td>
<td>Material Requirements of Pressure Containing Equipment Components Specification</td>
<td>8071725</td>
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<tr>
<td>TES-MA-SAWPI-GL</td>
<td>Double Submerged Arc Welded Pipe Specification</td>
<td>3776714</td>
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<tr>
<td>TES-MA-EWPI-GL</td>
<td>Electric-Welded Pipe Specification</td>
<td>3670788</td>
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<tr>
<td>TES-MA-FITG-GL</td>
<td>Carbon Steel Butt-Welding Fittings Specification</td>
<td>3671270</td>
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<td>TES-MA-FLGEC-GL</td>
<td>Carbon Steel Butt-Welding Flanges Specification</td>
<td>3671966</td>
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<tr>
<td>TES-MA-VALV-G</td>
<td>Steel Valves for Gas Service Specification</td>
<td>1001891682</td>
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<td>TES-FITG-T01</td>
<td>Instrument Tube Fitting, Instrument Pipe Fitting and Tubing Material Specification</td>
<td>3697116</td>
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<td>TES-FITG-EC1</td>
<td>End Closure Specification</td>
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<tr>
<td>TES-FITG-CIF</td>
<td>Contoured Insert Fittings Specification</td>
<td>4424021</td>
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<tr>
<td>TES-ORIF-OP1</td>
<td>Specification for Orifice Plates</td>
<td>3769908</td>
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<tr>
<td><strong>Welding/NDE</strong></td>
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<tr>
<td>TES-WELD-STRU</td>
<td>Welding Procedure Specification for Shielded Metal Arc Welding on Structural Steel</td>
<td>3696371</td>
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<tr>
<td>TES-WELD-PL</td>
<td>Welding of Pipelines and Tie-ins</td>
<td>3670960</td>
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<tr>
<td>TES-WL-AS-GL</td>
<td>Welding of Assemblies and Station Piping Specification (CAN)</td>
<td>3670962</td>
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<tr>
<td>TES-NDT-UT</td>
<td>Ultrasonic Examination of Girth Welds Specification</td>
<td>1001829033</td>
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<tr>
<td>TES-NDT-RT</td>
<td>Radiographic Examination of Welds</td>
<td>3671368</td>
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<td>TEP-ME-CLOS-GL</td>
<td>Closure Weld Procedure</td>
<td>3670675</td>
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## Table 9-3: Preliminary List of Company Specifications and Standards (cont’d)

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>EDMS Number</th>
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<tr>
<td><strong>Welding/NDE (cont’d)</strong></td>
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<tr>
<td>TES-DV23-0517</td>
<td>Welding and Pipe Weld Inspection</td>
<td>3784436</td>
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<tr>
<td><strong>Coating</strong></td>
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<tr>
<td>TES-CO-FBE-GL</td>
<td>External Fusion Bond Epoxy for Steel Pipe Specification</td>
<td>3670892</td>
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<tr>
<td>TES-CO-PAINT-GL</td>
<td>Paint Systems for Above Ground Facilities (Coastal and Non-Coastal)</td>
<td>3694704</td>
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<td><strong>Mechanical</strong></td>
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<td>TEN-PRES</td>
<td>Pressure Testing Standard (CDN)</td>
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<td>Pipeline and Facility Piping Pressure Testing Procedure</td>
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<td>Tubing and Fittings</td>
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<td>TES-ME-FBT-GL</td>
<td>Flange Bolt Tightening Specification</td>
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<td>TES-ME-PV1-GLE</td>
<td>Pressure Vessels Specification</td>
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<td>TES-ME-VOP-G</td>
<td>Gas Hydraulic and Gas Pneumatic Operator Specification</td>
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<td>TES-CI-CIDES-GLE</td>
<td>Civil Design Specification (CAN-US)</td>
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<tr>
<td>TES-CI-STDES-GLE</td>
<td>Structural Design Specification (CAN-US-MEX)</td>
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<tr>
<td>TES-CI-FGEO-GLE</td>
<td>Facility Geotechnical Investigation Specification</td>
<td>8040021</td>
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<td>TES-CI-FSURV-GLE</td>
<td>Facility Survey Specification (CAN-US)</td>
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<td>Structural Steel and Miscellaneous Metals Specification (CAN)</td>
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<td>TES-CI-PRESB-GLE</td>
<td>Pre-Engineered Metal Skid Building Specification (CAN)</td>
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<td>TES-CI-EARTH-GLE</td>
<td>Facility Earthwork Specification (CAN-US)</td>
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<td>TES-CI-SPILE-GLE</td>
<td>Driven Steel Pile Specification (CAN-US)</td>
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<td><strong>Cathodic Protection</strong></td>
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<tr>
<td>TEN-CP-DESIGN-GL</td>
<td>Corrosion Prevention Design Standard (CAN US MEX)</td>
<td>1003455877</td>
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</table>
9.4 COMPRESSION FACILITIES

9.4.1 Facility Locations

The locations of the proposed compressor station unit additions have been determined by NGTL based on assessing system requirements, engineering, environmental considerations and landowner, stakeholder and Aboriginal consultation.

For preliminary locations resulting from this assessment, see Table 9-4. For access maps and survey plans see Appendix 9-2 and Appendix 9-3, respectively.

<table>
<thead>
<tr>
<th>Component</th>
<th>Easting</th>
<th>Northing</th>
<th>UTM</th>
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<tbody>
<tr>
<td>Nordegg Unit C6 Addition</td>
<td>587233.23</td>
<td>5841794.97</td>
<td>11U</td>
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<tr>
<td>Didsbury Unit B7 Addition</td>
<td>691265.49</td>
<td>5720084.73</td>
<td>11U</td>
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<td>Beiseker Unit A3 Addition</td>
<td>334029.35</td>
<td>5688353.56</td>
<td>12U</td>
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</table>

Station locations will continue to be refined through detailed design, geotechnical studies, environmental assessments, and ongoing consultation programs.

9.4.2 Piping Design

For the piping materials for the new compressor station unit additions, see Table 9-5.

Auxiliary and utility piping will be specified per TransCanada material specification TEN-MATL: Materials Standard.

<table>
<thead>
<tr>
<th>Component</th>
<th>Location Factor</th>
<th>Design Pressure [kPa(g)]</th>
<th>Pipe Diameter (mm)</th>
<th>Wall Thickness (mm)</th>
<th>Grade (MPa)</th>
<th>Pipe Material Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordegg Unit C6 Addition</td>
<td>0.625</td>
<td>9,560</td>
<td>NPS 48</td>
<td>26.2</td>
<td>483</td>
<td>TES-MA-SAWPI-GL CSA Z245.1-18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NPS 30</td>
<td>16.4</td>
<td>483</td>
<td></td>
</tr>
<tr>
<td>Didsbury Unit B7 Addition</td>
<td>0.625</td>
<td>9,560</td>
<td>NPS 48</td>
<td>26.2</td>
<td>483</td>
<td>TES-MA-SAWPI-GL CSA Z245.1-18</td>
</tr>
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<td>NPS 42</td>
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<td>483</td>
<td></td>
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<td></td>
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<td></td>
<td>NPS 30</td>
<td>16.4</td>
<td>483</td>
<td></td>
</tr>
<tr>
<td>Beiseker Unit A3 Addition</td>
<td>0.625</td>
<td>9,560</td>
<td>NPS 48</td>
<td>26.2</td>
<td>483</td>
<td>TES-MA-SAWPI-GL CSA Z245.1-18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NPS 42</td>
<td>23.0</td>
<td>483</td>
<td></td>
</tr>
</tbody>
</table>

9.4.3 Pipe Coatings

The station pipe coating will follow the TransCanada specifications listed in Table 9-5. The primary coating for the external surface of the below-ground pipe will be Fusion Bond Epoxy (FBE). Girth welds will be coated in the field and will be
protected with field-applied epoxy coating. Below ground assembly piping will be protected with a suitable liquid-applied epoxy coating. Above ground piping will be primed and painted, and acoustically insulated.

9.4.4 Station Flows and Associated Inlet Pressures

For preliminary estimates for the minimum and maximum station flows, as well as the maximum station pressures, see Table 9-6.

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum Flow (10^3 m^3/d)</th>
<th>Maximum Flow (10^3 m^3/d)</th>
<th>Maximum Operating Pressure (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordegg Unit C6 Addition</td>
<td>115,847</td>
<td>126,897</td>
<td>8,690</td>
</tr>
<tr>
<td>Didsbury Unit B7 Addition</td>
<td>59,760</td>
<td>92,062</td>
<td>8,690</td>
</tr>
<tr>
<td>Beiseker Unit A3 Addition</td>
<td>69,188</td>
<td>92,582</td>
<td>8,690</td>
</tr>
</tbody>
</table>

9.4.5 Pressure Control and Overpressure Protection

In the event of overpressure, the compressor stations will be protected by the following employed OPP levels:

- the recycle (anti-surge) valve will be connected downstream of the compressor unit discharge valve and upstream of the unit discharge check valve. The recycle valve will increase the flow through the compressor as required to maintain the operating point away from surge by circulating more gas flow and reducing compressor head.

- the equipment as provided by the vendor will monitor actual inlet flow and differential pressure across the compressor through a pressure differential transmitter, and is equipped with algorithms to detect and avoid surge.

- the station pressure control will be maintained by increasing or decreasing the compressor speed. The station suction and discharge pressure will be monitored using pressure transmitters. The station pressure set points are set by TransCanada Gas Control.

- a self-contained and independent station discharge pressure-relief device will provide the last level of station overpressure protection.

NGTL will verify that the OPP system design contains:
• OPP design drawings, including a process and instrument diagram or as-built drawings

• planned maintenance programs for OPP devices and systems, including its frequency and type of maintenance

• operational philosophy that details all reasonable emergency scenarios that could apply to the OPP system, such as loss of power or valve failure (i.e., NGTL will ensure the pressure control system and the OPP system operates independently so that a failure in one system does not cause the other system to become inoperative)

• OPP device calibration and maintenance records

With respect to verification and monitoring of OPP, NGTL ensures that the maintenance programs and their frequency meet the requirements of CSA Z662-15.

The OPP system will be automatic and continuously operating without relying on manual intervention.

### 9.4.6 Compression Station Unit Addition Schematics

Each compressor unit addition will have a compressor building installed as a free-standing, steel, rigid-frame structure, supported by reinforced concrete grade beams and piles, completed with acoustically designed walls and roof, and which will incorporate fire and gas detection systems. The auxiliary buildings will be skid-mounted and supported on steel-driven piles. The buildings will be completed with heating and ventilation equipment.

At all three stations, the station discharge pressure-relief device will be installed upstream of the station discharge isolation valve, will be sized for compressor maximum flow rate at the station design pressure, and pressure relief functionality will be set at the station design pressure. Preliminary Process Flow Diagrams and preliminary Plot Plans for the compressor station unit additions are provided as follows:

- Appendix 9-1: Unit Addition Preliminary Plot Plans
- Appendix 9-4: Unit Addition Preliminary Process Flow Diagrams

### 9.4.7 Boiler and Pressure Vessels

The following boiler and pressure vessels will be installed as part of the unit additions:

- the fuel gas system will include new fuel gas filter separators and a new fuel gas coalescing filter
- the utility gas system will include a new odorant tank and utility gas heaters
- all new pressure vessels listed above will be built to TransCanada’s specification for pressure vessels TES-ME-PV1-GLE
- the glycol heating system will include natural gas boilers

9.4.8 Station Suction Scrubbers

The suction scrubbers for the high-pressure gas systems will be a swirl/centrifugal type designed to handle the maximum design flow. The scrubbers will have automated liquid control to allow for accumulated liquids to be drained to an above ground storage tank.

9.4.9 Emergency Shutdown System

An emergency shutdown (ESD) pushbutton will be installed at all exit doors in the compressor building and near the scrubber. Perimeter ESD pushbuttons will be added to all fence gates and tied-in to the single fence ESD. The site ESD pushbutton at the control panel in the control building will trigger a station ESD. Fire or gas detection in the compressor building will also trigger a station ESD. As such, the ESD system can be initiated from multiple locations throughout the compressor stations and at each egress point from the compressor stations.

The ESD system will trigger the following hard-wired functions during a station ESD:
- the gas will be blocked out of the station by the triggered closure of both station suction side valve and discharge side valve, isolating the station from the mainline. Subsequently, the discharge blowdown valve will be triggered open to blow down the station piping.
- the gas compressor units will be triggered to stop immediately and depressurized throughout the station piping. The units will be completed with a control system that allows multiple types of shutdowns based on different events or scenarios (e.g., one level of shutdown will bring the unit to a complete stop as quickly as possible while maintaining auxiliaries, such as the lube oil system).

The blowdown valve(s) and blowdown piping will be installed in a location to discharge gas at a safe distance from the compressor building, auxiliary equipment and the surrounding area.

The ESD system will be capable of isolating the compression facility from the pipeline and depressurizing the compression facility.

The ESD system will be powered by an uninterruptible power supply (UPS) system, but will be wired fail safe, so that in the event of power loss it will isolate and depressurize the facility to put it into a safe state.
The ESD design will be finalized during detailed engineering.

9.4.10 Corrosion Control Elements and Facilities

The compressor station piping and facilities will be cathodically protected by impressed current CP systems. The systems will include appropriately located and sized anode groundbeds and power sources (i.e., rectifiers and thermoelectric generators) as determined by detailed design. The CP systems will be designed in conjunction with the upstream and downstream pipeline system. In addition, sacrificial anodes might be used at specific locations.

9.4.11 Power Type and Source

The power type and source for the unit additions will be comprised of the following:

- an electrical transformer to provide station power from the electrical utility provider (to be validated during detailed design)
- an Auxiliary Power Unit (APU) generator, including a generator unit in a new skid-mounted auxiliary building
- 24- and 120-volt direct current UPS system located in the electrical skid building
- 120 Volts – Alternating Current (VAC) VAC UPS System located in the electrical skid building
- 600 VAC 3P UPS System located in the Unit Local Control Building
- Alternating Current electrical three-phase power switchgear, motor control centre (MCC) and distribution
- electrical, control and communication wiring, lighting panel and grounding

9.4.12 Communications

The compressor stations will communicate telemetry information to the TransCanada Operations Control Centre using satellite or wireless cellular radio. Types of data include gas quality, temperature and pressure information.

9.5 UNIT ADDITION CONSTRUCTION

This subsection provides an overview of the construction plans for the compressor station unit additions, including:

- construction procedures and execution
- safety
- inspection and monitoring

Information on the compressor station unit addition construction workforce, as well as the likely construction timing and sequencing, is also provided.
The information in this subsection is based on preliminary planning. Construction plans will be further developed during detailed design and will incorporate input from the selected construction contractors.

9.5.1 **Construction Strategy**

At this stage in preliminary planning, NGTL plans to hire prime contractor(s) to complete site clearing (if required), rough grading, fabrication and main construction of the compressor station unit additions.

9.5.2 **Construction Contracts**

NGTL is currently evaluating contracting strategies. At this stage, the preliminary construction strategy involves choosing prime contractor(s) through a competitive bidding process.

9.5.3 **Construction Procedures and Execution**

NGTL will use conventional construction methods and industry best practices when constructing the compressor station unit additions.

Construction activities will include:

- installation/use of temporary workspace trailers
- surveying
- site preparation, including clearing where necessary
- grading
- piling
- installing foundations
- installing compressor buildings and units
- installing generators
- installing auxiliary buildings and equipment
- piping and pressure testing
- conducting electrical work
- installing the instrumentation system
- installing controls
- commissioning
- conducting pre-startup safety review
- conducting final site cleanup

Construction will be conducted in accordance with the applicable TransCanada specifications, standards and with the EPP, as provided in the ESA.

9.5.4 **Construction Safety**

During construction, the prime contractor(s) will have overall responsibility for health and safety at the work site. A Project-specific construction SMP will be developed
and implemented. The OHS Standards for Prime/General Contractors outlines key safety requirements for the prime contractors to use when developing their SSSPs to ensure a collaborative commitment to Project safety is achieved.

NGTL will review each prime contractor’s SSSP before construction to ensure compliance with TransCanada and regulatory requirements. The prime contractor(s) will also prepare a security plan and ERP. These will be reviewed by NGTL before construction starts for each unit addition. Applicable content of the SMP, SSSP and ERP will be included in site orientations and copies will be made available onsite for the duration of construction.

Qualified Construction Managers will be appointed to fulfill the requirements of the construction safety program. The construction managers will be authorized to halt any construction activity if the work is not being performed in a manner that meets all applicable safety policies and standards.

Where required, the construction managers will coordinate obtaining all safe work permits. All personnel will be required to complete a prime contractor safety orientation before working on the work site.

Safety requirements will include a daily safety meeting (or meetings), led and documented by each respective prime contractor, as well as the use of incident reporting forms and procedures that will include near-hit reporting. Where required, a detailed incident report form from the OPR will also be completed. TransCanada will inspect or audit the prime contractor(s) to ensure strict compliance with the Contract.

For additional safety information during operations, see Section 10: Operations.

9.5.5 Construction Inspection

Construction of the compressor station unit additions will be supervised and inspected by qualified TransCanada construction inspectors to ensure compliance with all applicable legislation, standards and codes, and with conditions issued as part of any regulatory authorizations. Inspection staff will be onsite during the entire construction phase.

9.5.6 Construction Schedule

The construction of the compressor station unit additions is expected to take approximately 10 to 12 months per unit addition. Subject to regulatory approval, the main construction of the proposed compressor station unit additions is proposed to begin in Q3 2020 and be complete by Q2 2021.
9.5.7 Construction Resources

Construction of the compressor station unit additions will require personnel with various skills, ranging from entry-level labourers to highly skilled trades and supervisory personnel. During peak construction, each unit addition will require approximately 200 personnel.

9.5.8 Construction Camps and Accommodations

Construction of the Nordegg compressor station unit addition will require a temporary construction camp, located nearby the existing Nordegg Compressor Station within an area previously used as a camp. All camp facilities will be removed after the unit addition is in-service.

Construction of the Didsbury and Beiseker compressor station unit additions are not anticipated to require temporary construction camps. Existing accommodation in nearby towns are anticipated to be used (to be confirmed prior to construction).

9.5.9 Access Plan

Based on current information, no new access roads will be required to the compressor station unit additions. Existing access to the sites will be maintained and expanded, as required, for construction purposes.

9.5.10 Quality Management

NGTL will provide technical oversight for engineering and technical activities, and will also ensure coordination with prime contractors and other third-party engineering consultants to ensure that TransCanada’s engineering specifications are met.

All purchased items and contracted services will be obtained from suppliers and contractors that have been pre-qualified in accordance with TransCanada’s internal supplier management and pre-qualification procedures.

Moving into construction, the prime contractors for the unit additions will be responsible for ensuring the work being performed is in accordance with contract documents, the project design, applicable standards, specifications and the project-specific quality plan. NGTL inspectors will monitor activities, such as site mobilization, excavation, piling, welding, backfilling and grading, to ensure compliance.

Design changes during construction are managed in accordance with the appropriate change management procedures and in accordance with TransCanada’s standard engineering practices.
9.5.11 Joining Program

All welding and NDE testing of welds will be conducted in accordance with the requirements of CSA Z662-15, the OPR, and the welding procedures and specifications in Table 9-3.

The prime contractor(s) for the unit additions will conduct welding in accordance with their own welding procedures, approved by NGTL prior to any hot work being performed. Fabrication and assembly of welded pipe spools will take place at the contractor’s fabrication shop and final fit-up welds will be conducted at the site. NGTL will hire an independent third-party to conduct the NDE on all welds required for the Project.

9.5.12 Nondestructive Examination

For all high-pressure gas piping designed to CSA Z662-15, NGTL will use 100% NDE coverage. For all other piping systems, NGTL will select material and designs joints in accordance with ASME B31.3-2016: Chemical Plant and Petroleum Refinery Piping, as referenced in Clauses 4.14.2.11, 5.1.1, 7.2.4 and 8.1.7 of CSA Z662-15. NGTL will ensure that joints are examined in accordance with Clause 7.10.3 of CSA Z662-15.

The NDE for facility piping will be carried out in accordance with TransCanada specifications TES-WL-AS-GL and TES-NDT-RT and, where applicable, TES-NDT-UT. All butt joint welds will be inspected visually and radiographed or ultrasonically tested for 100% of their circumference. All fillet welds are to be inspected for 100% of their circumference using magnetic particle inspection or, for non-magnetic welds, a liquid penetrant inspection process. For lower-risk auxiliary piping systems, NGTL proposes to conduct NDE on 15% of production welds per day during construction. This conforms to CSA Z662-15, Clause 7.2.5, and would not compromise the safety of the public or company personnel, nor would it affect the company policy of ensuring that all piping is pressure-tested before being placed into service.

NGTL will hydrostatically pressure test all high-pressure natural gas components of the installed facilities (including the yard piping) in accordance with the requirements of section 8 of CSA Z662-15 before placing them in-service.

For the auxiliary systems proposed for 15% NDE coverage, see Table 9-7. These systems operate at low stress levels and, generally, have instrumentation that shuts down the system and limits any leaks if a release incident occurs.
Table 9-7: Piping Systems Specifications, Design Pressure and NDE Coverage

<table>
<thead>
<tr>
<th>Piping System</th>
<th>TransCanada Specification</th>
<th>Design Code</th>
<th>Design Pressure (kPag)</th>
<th>NDE Coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument Air</td>
<td>TES-MATL-MD1, Table 12</td>
<td>ASME B31.3</td>
<td>1035</td>
<td>15</td>
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<tr>
<td>Glycol/Water Heating</td>
<td>TES-MATL-MD1, Table 11</td>
<td>ASME B31.3</td>
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<td>Potable Water</td>
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<td>ASME B31.3</td>
<td>550</td>
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<td>Lube Oil</td>
<td>TES-MATL-MD1, Table 7</td>
<td>ASME B31.3</td>
<td>1500</td>
<td>15</td>
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<tr>
<td>Vents</td>
<td>TES-MATL-MD1, Table 11</td>
<td>N/A</td>
<td>N/A</td>
<td>15</td>
</tr>
</tbody>
</table>

Note:
1. See TransCanada specification for NDE testing.

9.5.13 LTO Exemption: Tie-in Assemblies

Construction of the compressor station unit additions will be conducted in several phases. Each compressor station unit addition will require installation of tie-in connections to the existing pipeline system, and then subsequent construction of each unit addition. Once design is sufficiently advanced for the tie-in assemblies, NGTL anticipates seeking an exemption from the requirement of Sections 30(1)(b) and 47(1) of the NEB Act to obtain LTO from the Board for certain compressor station tie-in assemblies.

9.5.14 Commissioning

Once integrity validation has been successfully completed, the unit additions will be prepared for commissioning and startup. Commissioning will be conducted by qualified NGTL representatives and/or third-party service providers.

9.5.15 Emergency Response

The prime contractor for each unit addition will prepare a field ERP that will be reviewed by NGTL and will be implemented in the event of an emergency during construction.

For additional information during operations, see Section 10.1.1: Emergency Preparedness and Response.
10.0 OPERATIONS

This section provides a description of the processes, procedures and systems for the safe, reliable and efficient operation of the Project.

10.1 OPERATING STANDARDS AND DOCUMENTATION

NGTL will operate the Project in accordance with all applicable legislation, codes and standards, including the OPR and CSA Z662-15, and approval conditions. The TransCanada Operational Control Centre in Calgary monitors and controls NGTL System operations.

10.1.1 Emergency Preparedness and Response

NGTL confirms that emergency management during Project construction will be governed by the Project-specific ERPs, and during operations by TransCanada’s overarching Emergency Management Corporate Program Manual and related operating procedures. As part of Project consultation activities NGTL provides information concerning Emergency Preparedness and Response to potentially affected stakeholders, landowners and Aboriginal communities, and NGTL publishes its Emergency Management Corporate Program Manual in accordance with NEB Order AO-001-MO-006-2016. In the event of an operational emergency TransCanada’s comprehensive Emergency Response Program would be activated. TransCanada employees and contractors receive training for emergency events and if there is an incident, will work closely with landowners and impacted persons or groups, as well as authorities and emergency responders to manage the incident.

10.1.2 Security Management Program

Security management, during operation, will be governed by TransCanada’s Corporate Security Program Manual, Policy, and TransCanada Operating Procedures (TOPs) which adhere to the CSA Z246.1 standard for security management and, subsequently, the OPR. This includes, but is not limited to, procedures related to security threats, physical security and cyber security.

TransCanada’s Corporate Security Program Manual will govern security management during construction and operations. However, the prime contractor(s) will also be responsible for developing a security management plan for construction and will monitor its effectiveness.

10.1.3 TransCanada Operational Management System

TransCanada’s Operational Management System (TOMS) applies to all of TransCanada’s assets including the proposed Project. TOMS coordinates TransCanada’s Mandated Programs which encompass the programs identified in the
OPR. Mandated Programs also apply the requirements of TOMS that are based on regulatory requirements and industry management system standards to structure and manage Mandated Program activities. Through the “plan, do, check, act” continual improvement cycle of TOMS, risks are assessed and addressed through identifying goals, objectives and targets for risk reduction or performance improvement. Additionally, TOMS is refined over time through assurance and management review activities where corrective and preventative actions are identified and implemented, and any necessary modifications are implemented through TransCanada’s Management of Change Framework. By implementing TOMS in support of a strong safety culture, TransCanada’s projects are designed, constructed, operated and decommissioned or abandoned in a manner that provides for the safety and security of the public, TransCanada personnel and physical assets, and the protection of property and the environment.

10.1.4 Operating Procedures

To address both routine and non-routine pipeline system maintenance, the existing comprehensive registry of TOPs and associated systems will be used for the Project. TOPs are designed to:

- describe how work is to be accomplished (e.g., resources required and work instructions)
- identify specific competency requirements, where appropriate
- identify documentation requirements
- provide references to applicable health, safety and/or environmental requirements

10.1.5 Third-Party Damage Prevention Program

TransCanada’s Damage Prevention Program is implemented in order to prevent Mechanical Damage. Mechanical Damage is damage to the pipe wall or coating (e.g., dent, gouge, scrape, ovality, chip or scratch) caused by mechanical or non-mechanical equipment including excavators, agricultural equipment and hand operated tools.

This program educates all staff, contractors and third parties who engage in ground disturbance-related activities to promote safe excavation best practices and compliance with applicable regulations. The Damage Prevention Program defines company requirements for aerial patrol, signage, one call notification membership and training protocols for employees who engage in planning or supervising ground disturbance activities.

TransCanada’s Public Awareness (PA) Program, an integral component of the Damage Prevention Program, is designed to increase awareness of pipeline safety.
10.1.6 Public Awareness Program

Once the Project is placed in-service, the stakeholder, landowner and Aboriginal engagement programs for the Project will be transitioned to TransCanada’s existing PA Program and the regional community and Aboriginal relations resource for the remaining lifecycle of the asset. Stakeholders include the affected public, landowners, Aboriginal groups, contractors, emergency responders and public officials.

The PA Program is intended to increase awareness of pipeline safety and, thereby, protect the public, environment and NGTL facilities. It targets the potentially affected stakeholders, landowners and Aboriginal groups engaged through Project planning and construction phases.

The goals of the PA Program are to:

- protect the public from injury
- protect the installed pipelines and facilities
- minimize third-party damage to pipelines and facilities
- provide the following information to landowners, stakeholders and Aboriginal communities that might be affected by the pipelines and facilities:
  - location of company facilities
  - product information to increase awareness
  - contact information for the Company
  - leak detection and awareness
  - steps to take in the event of an emergency
- ensure that emergency response service agencies understand TransCanada’s emergency response procedures and how to work together during an emergency
- inform contractors of requirements for working on or near NGTL System facilities
- maintain contact with the public, contractors and emergency service agencies that might interact with Company representatives, or that might be affected by Company facilities or operations

The PA Program includes an annual pipeline safety mailing to potentially affected Aboriginal communities, landowners, contractors, emergency responders and local public officials, and a biennial mailing to the potentially affected public. The affected public are defined as residents, landowners and persons whose addresses are located in the affected public awareness area of coverage along the pipeline ROW and may include:

- occupants, residents or tenants
- farmers
- homeowner’s associations or groups
• neighborhood organizations
• power plants
• businesses
• industrial facilities

At a regional level, dedicated regional community and Aboriginal relations specialists develop and implement annual plans specific to their area that assess individual regional risks and define supplemental engagement activities, such as an information sharing session, to help mitigate these risks. Messaging and engagement strategies are tailored to the respective audience and, at a minimum, include information about how to recognize the signs of a pipeline leak and the importance of calling for a locate request before beginning any ground disturbance activity or crossing the pipeline.

Ongoing contact with the public provides NGTL with an opportunity to obtain information concerning safety, security and/or potential threats relating to its operations, changes to contact information, and ultimately enables all relevant interested persons to be informed and work together to achieve safety.

10.1.7 Integrity Management

NGTL will implement TransCanada’s comprehensive IMP to monitor and ensure the integrity of the Project. The program uses advanced inspection and mitigation techniques applied within a comprehensive risk based methodology. Risk assessment is used to identify potential integrity threats and initiate inspection and mitigation activities, while results from advanced inspections for known or suspected integrity threats are used to develop specific integrity maintenance activities. Implementation of the IMP will be used in the operations phase to:

• reduce the potential for adverse environmental effects
• protect the installed pipelines and facilities
• maintain reliability
• ensure the safety of the public and Project personnel

Preventative maintenance programs will be incorporated in the design and operation of the pipeline components of the Project, including:

• aerial patrols
• internal inspections
• cathodic protection monitoring
• pipeline markers at roads and pipeline watercourse crossings
11.0 LAND MATTERS

This section describes the land requirements for the Project, NGTL’s process for acquiring the land rights required, and NGTL’s consultation with landowners and occupants.

11.1 GENERAL LAND INFORMATION

The pipeline components for the Project require a total length of approximately 344 km of ROW as well as associated TWS. The new ROW and TWS are located on both private (freehold) land and provincial Crown land in Alberta. There are three compressor station unit additions, to be located at existing compressor stations, with one (Nordegg) located on provincial Crown land, and the other two (Didsbury and Beiseker) located on private (freehold) land. Each unit addition is anticipated to require additional lands as outlined in Table 11-4. There is also the addition of the January Creek control valve, which is located on provincial Crown land, and is anticipated to be within the confines of an existing NGTL ROW.

11.2 IDENTIFICATION OF LANDOWNERS AND OCCUPANTS

As NGTL developed the proposed pipeline section routes and locations for the compressor station unit additions, Project maps were used to identify all lands potentially affected by the Project. Surface Public Land Standing Report searches were completed to provide information on the Crown lands relating to all disposition holders that have an interest in the lands. Title searches were completed through Alberta Land Titles to obtain information relating to all potentially affected private (freehold) lands, including identification of landowners and registered occupants. NGTL also identified unregistered occupants by gathering information from landowners regarding who customarily occupies their land. This land data was then included in a Project Line List, forming the basis of consultation and land acquisition activities.

As outlined in Table 11-1, approximately 20% of all parcels traversed by the pipeline components are private (freehold) land and approximately 80% are provincial Crown land.

<table>
<thead>
<tr>
<th>Land Type</th>
<th>Number of Parcels</th>
<th>Approximate Percentage of Land Parcels Crossed</th>
<th>Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private (Freehold)</td>
<td>114</td>
<td>20</td>
<td>89.4</td>
</tr>
<tr>
<td>Provincial (Crown)</td>
<td>471</td>
<td>80</td>
<td>254.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>585</strong></td>
<td><strong>100</strong></td>
<td><strong>344</strong></td>
</tr>
</tbody>
</table>
NGTL has identified 75 landowners and 10 occupants that are potentially affected by the Project.

NGTL has also determined that land users such as trappers, guide/outfitters, snowmobile clubs and grazing tenure holders might also be affected by the Project. NGTL has identified:

- 29 Registered Trapping Areas
- 63 guide/outfitters
- 7 Grazing Lease Holders

As discussed in Section 11.9 and Section 12: Stakeholder Engagement, these landowners and occupants have been provided with Project information. As discussed in Section 7: Pipeline, input received from these stakeholders has and will continue to be considered as part of the routing process.

### 11.3 RIGHT-OF-WAY REQUIREMENTS

For the majority of the length of the pipeline components, a minimum construction ROW (including permanent ROW and TWS) of approximately 32 m will be utilized to provide for safe and efficient workspace for construction.

NGTL requires a permanent ROW of varying widths along the proposed route for operations and maintenance purposes. Standard permanent ROW width is 18 m, however, in areas where pipeline components parallel an existing NGTL ROW, the permanent ROW will, where possible, be reduced.

Where feasible, the pipeline components parallel existing linear disturbances, such as existing NGTL ROW or other pipelines, roads and electrical power lines. Routing the pipeline components parallel and adjacent to these existing linear disturbances allows NGTL to minimize incremental environmental, stakeholder, and landowner effects, through reduction of the size of the new non-parallel permanent ROW required for the pipeline, and facilitates efficient operations and maintenance of the pipeline. At this stage in Project planning, approximately 319 km (93%) of the proposed pipeline route parallels existing NGTL ROW or other existing linear disturbances.

Table 11-2 provides the parallel ROW and non-parallel ROW distances by pipeline section.
### Table 11-2: Parallel ROW and Non-Parallel ROW

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Approximate Parallel ROW¹,² (km)</th>
<th>Approximate Non-Parallel ROW¹,² (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grande Prairie West Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grande Prairie Mainline Loop No. 4 (Valhalla Section)</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>Grande Prairie Mainline Loop No. 3 (Elmworth Section)</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td><strong>Grande Prairie South Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grande Prairie Mainline Loop No. 2 (Karr Section)</td>
<td>51</td>
<td>5</td>
</tr>
<tr>
<td>Grande Prairie Mainline Loop No. 2 (Deep Valley Section)</td>
<td>66</td>
<td>3</td>
</tr>
<tr>
<td>Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section)</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td><strong>Edson South Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edson Mainline Loop No. 4 (Robb Section)</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Edson Mainline Loop No. 4 (Dismal Creek Section)</td>
<td>30</td>
<td>2</td>
</tr>
<tr>
<td>Edson Mainline Loop No. 4 (Brewster Section)</td>
<td>48</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>319</td>
<td>25</td>
</tr>
</tbody>
</table>

Note:
1. Includes pipeline and access road parallels. Pipelines paralleled include NGTL System and other pipelines.
2. The numbers have been rounded.

In addition to the typical minimum construction ROW of approximately 32 m, additional TWS will be required in certain locations to accommodate:

- safety
- material laydown areas and staging areas
- areas of increased depth of cover
- crossings (e.g., roads, railroads, pipelines, utilities and watercourses with defined banks)
- pipeline deflection areas
- surface material depth and stripping procedure
- timber clearing and storage
- access
- slip-bore locations
- trenchless crossing locations
- final tie-in weld locations
- areas where geotechnical or environmental conditions warrant additional TWS

For typical sketches of the ROW and TWS configurations proposed for the pipeline components, see Appendix 11-1. The proposed permanent ROW and preliminary
TWS requirements for the pipeline components are shown in Appendix 8-1. An estimated 77 ha of permanent ROW will be required for the pipeline components, with an estimated 13.8 ha of new permanent land required for the compressor station unit additions. An estimated 95 ha of TWS will be required for construction of the pipeline components.

The TWS requirements for the pipeline components are subject to refinement as the Project proceeds through detailed engineering. In addition, before the start of construction, NGTL and the prime contractor(s) will complete an additional assessment of lands required for construction activities. Once this assessment is completed, additional TWS may be required on a site-specific basis, which will be finalized in the field before, and potentially during construction. These areas, if needed, are expected to be located within the lands assessed in the ESA. In the event that TWS is required outside lands assessed in the ESA, NGTL will conduct a desktop review and field studies if necessary, apply any necessary mitigation as detailed in the EPP, and obtain any necessary permits or authorizations prior to construction.

TWS lands will not be required for NGTL’s operational needs and will, therefore, be returned to the provincial Crown or the landowner after construction, cleanup and final reclamation.

For a breakdown of the estimated land requirements for permanent land rights and TWS for the Project, see Table 11-3.

<table>
<thead>
<tr>
<th>Land Type</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent ROW (pipelines)</td>
<td>77</td>
</tr>
<tr>
<td>TWS (pipelines)</td>
<td>95</td>
</tr>
<tr>
<td>Compression</td>
<td>13.8</td>
</tr>
<tr>
<td>Total</td>
<td>185.8</td>
</tr>
</tbody>
</table>

### 11.4 PROJECT FACILITY REQUIREMENTS

#### 11.4.1 Valve sites

Mainline valves will be installed at intervals as required along the proposed pipeline sections and will be located within the permanent ROW. Additional TWS will be required at these sites during construction. The permanent valve sites will be fenced to ensure the safety and protection of the asset and public, as well as protection of the environment.
Access to valve sites will be via the permanent ROW or permanent or temporary access roads during both construction and operations.

11.4.2 Launcher and Receiver Lands

Permanent launcher and receiver site requirements will be assessed for each pipeline component and will be located within a fenced area within the boundaries of the permanent pipeline ROW. For a preliminary list of launcher and receiver locations, see Table 7-9.

11.4.3 Cathodic Protection Land Requirements

The pipeline components will share the CP system that currently protects the NGTL System. Upgrades to the existing CP system may be needed and will be evaluated as detailed design progresses, including investigation of potential AC mitigation where required. New test stations will be installed at appropriate intervals and locations along the Project to monitor the effectiveness of the applied CP current.

Compressor station CP requirements will be determined during detailed design.

11.4.4 Stockpile Sites and Contractor Yards

Stockpile sites and contractor yards will be required for construction of the pipeline sections. NGTL is currently investigating potential locations for stockpile sites and contractor yards should they be required, and will use existing disturbed areas where feasible, to minimize effects on previously undisturbed areas.

11.4.5 Third-Party Agreements

Where the pipeline sections cross or are adjacent to other existing linear facilities or developments, or road access is required, NGTL will seek to obtain the necessary agreements, consents and approvals from each third-party owner in accordance with requirements of the applicable legislation.

11.4.6 Compressor Station Unit Addition Requirements

Compressor Station Site Lands

The estimated land requirements for the compressor station unit additions, see Table 11-4.
Table 11-4: Compressor Station Unit Additions Land Requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Legal Description</th>
<th>Additional Area Required (ha)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nordegg Unit C6 Addition</td>
<td>SW 20-43-12 W5M</td>
<td>5.0</td>
<td>Provincial (Crown)</td>
</tr>
<tr>
<td>Didsbury Unit B7 Addition</td>
<td>NW 28-30-2 W5M</td>
<td>6.9</td>
<td>Private (Freehold)</td>
</tr>
<tr>
<td>Beiseker Unit A3 Addition</td>
<td>E 24-27-25 W4M</td>
<td>1.9</td>
<td>Private (Freehold)</td>
</tr>
</tbody>
</table>

All three compressor station unit additions will require expansion of the existing compressor sites, as detailed below.

Nordegg compressor station unit addition: the existing compressor station will be expanded to the west on Crown land within SW 20-43-12 W5M to accommodate the additional 5.0 ha for the unit addition. Although TWS is not currently anticipated to be required for this unit addition, in the event that TWS is required NGTL will look to utilize nearby existing pre-disturbed areas currently held under a Crown disposition by NGTL.

Didsbury compressor station unit addition: the existing compressor station will be expanded to the east on private (freehold) land within NW 28-30-2 W5M to accommodate the additional facilities and avoid existing pipeline infrastructure on the west side of the existing compressor station. The Didsbury compressor station unit addition will require the purchase in fee simple or lease of approximately 6.9 ha. TWS is not anticipated to be required for the construction of this unit addition.

Beiseker compressor station unit addition: the existing compressor station will be expanded to the west on private land within E 24-27-25 W4M to accommodate the additional facilities. The Beiseker compressor station unit addition will require the purchase in fee simple or lease of approximately 1.9 ha.

11.5 PROCESS FOR ACQUIRING LAND RIGHTS

NGTL confirms that the land acquisition process for the Project will comply with the applicable sections of the NEB Act, including sections 86 and 87.

Notices pursuant to section 87(1) of the NEB Act will be served on owners of lands proposed to be acquired for the Project, as defined in sections 75 and 85 of the NEB Act. For sample section 87(1) notices for acquisition of pipeline ROW on Crown and private (freehold) lands, see Appendix 11-2 and Appendix 11-3, respectively. For sample section 87(1) notices to be served for private (freehold) land proposed to be acquired by an Option to Purchase or a Lease see Appendix 11-4 and Appendix 11-5,
respectively. When serving such notices, NGTL will include copies of the NEB publication *NEB Landowner Guide*.

For a sample of the Grant of Right-of-Way to be used to acquire ROW on private (freehold) lands see Appendix 11-6.

For a sample of the Temporary Work Space Agreement to be used to acquire TWS on private (freehold) lands, see Appendix 11-7.

For a sample of the Option to Purchase and the Lease (freehold) agreements for acquisition of land, see Appendix 11-8 and Appendix 11-9, respectively.

### 11.5.1 Proposed Land Acquisition Schedule

NGTL anticipates commencing the land acquisition process for permanent and temporary land rights, including serving section 87(1) notices, in Q4 2018. NGTL anticipates completing land acquisition in Q4 2019. The submission of applications for Crown dispositions is anticipated to occur in Q3/Q4 2019. Table 11-5 provides a preliminary land acquisition schedule. NGTL anticipates that all land rights will be acquired and crossing agreements obtained in advance of the scheduled construction.

<table>
<thead>
<tr>
<th>Dates</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 2017</td>
<td>Commenced title searches and prepared line lists.</td>
</tr>
<tr>
<td>September 2017</td>
<td>Commenced initial engagement with landowners regarding survey access, issued survey notifications and obtained Survey Acknowledgement Forms from all landowners that would voluntarily sign regarding specific Project pipeline sections.</td>
</tr>
<tr>
<td>September 2017 to Ongoing</td>
<td>Consultation with landowners and occupants.</td>
</tr>
<tr>
<td>February 2018</td>
<td>Filed Project Description.</td>
</tr>
<tr>
<td>February 2018</td>
<td>Provided Project information packages to landowners and occupants.</td>
</tr>
<tr>
<td>June 2018</td>
<td>Filed Project Application.</td>
</tr>
<tr>
<td>June 2018</td>
<td>Project Open Houses.</td>
</tr>
<tr>
<td>Q4 2018</td>
<td>Prepare and serve section 87(1) notices.</td>
</tr>
<tr>
<td>Q4 2018 to Q4 2019</td>
<td>Acquire land rights.</td>
</tr>
<tr>
<td>Q1 2020 to Q3 2020</td>
<td>Obtain third-party agreements.</td>
</tr>
<tr>
<td>Q3 2020</td>
<td>Anticipated construction start.</td>
</tr>
</tbody>
</table>

### 11.6 COMPENSATION FOR LAND RIGHTS

NGTL’s objective is to reach voluntary and reasonable agreements with landowners for land rights, including agreement on the compensation payable for such rights. When NGTL and a landowner cannot agree on compensation, either party may apply
to the Minister of Natural Resources Canada to receive the services of a negotiator or to have the matter settled by arbitration as provided for in sections 88 to 103 of the NEB Act.

11.7 DAMAGES

Section 75 of the NEB Act requires NGTL to do as little damage as possible to landowners’ property as a result of its activities, and to make full compensation to landowners for all damages sustained by them in the manner provided for in the NEB Act.

11.8 SURVEY ACCESS

In September 2017, NGTL began approaching landowners, for certain pipeline sections of the Project, to obtain survey access to complete the environmental, geotechnical, and other surveys required to support the Application. NGTL presented landowners with survey acknowledgement forms that described the survey work and gave landowners an opportunity to note any site-specific issues on the property for NGTL to consider when carrying out the survey work, as well as any specific timing or notification issues with respect to the survey work.

NGTL is pursuing survey access to lands for environmental, geotechnical, and other surveys required to support the Application. Additional biophysical and archaeological investigations are anticipated to take place in Q2/Q3 2018 (see Section 1.15). NGTL will consult with landowners should any additional surveys be required.

11.9 LANDOWNER CONSULTATION AND CONCERNS

This section describes:

- the principles, goals and scope of NGTL’s landowner consultation program for the Project
- NGTL’s landowner consultation activities to date
- concerns that have been raised by landowners and NGTL’s response to those concerns
- NGTL’s plans for ongoing consultation

In this section, reference to landowners includes occupants where appropriate.
11.9.1 Principles and Goals

NGTL applies TransCanada’s landowner guiding principles on its projects to guide how all TransCanada employees and contractors are required to conduct themselves when working with landowners. For a copy of the Working with Landowners – Our Guiding Principles document, see Appendix 11-10.

In addition to the stakeholder engagement principles and goals set out in Section 12, the goals of landowner consultation are to:

- identify and address Project-related landowner questions and concerns
- support the acquisition of land rights necessary for the construction, operation and maintenance of the Project

11.9.2 Landowner Consultation Activities

For details of the stakeholder engagement process, which included the notification and engagement of landowners, see Section 12: Stakeholder Engagement.

As noted in Section 11.8, NGTL began approaching landowners to obtain survey access for the pipeline sections in September 2017. Contact was made to provide information about the Project and to obtain survey access for environmental, geotechnical, and other surveys. NGTL began consulting with adjacent and nearby landowners surrounding the Didsbury and Beiseker compressor station unit addition locations in February 2018, and NGTL will consult with the Crown regarding the Nordegg compressor station unit addition.

Throughout the regulatory process and construction phase, NGTL will continue to consult with landowners to identify and address questions and concerns, and to acquire the necessary land rights.

11.9.3 Landowner Questions and Concerns

A number of questions and concerns have been raised by landowners potentially affected by the Project since NGTL began landowner consultation in September 2017. NGTL will continue to engage with landowners to address these and any other additional questions or other concerns. Table 11-6 outlines landowners concerns to date, and NGTL’s responses.

<table>
<thead>
<tr>
<th>Landowner Concern</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline routing</td>
<td>NGTL will develop and implement route adjustments if feasible and implement mitigation to avoid or reduce effects.</td>
</tr>
</tbody>
</table>
Table 11-6: Landowner Concerns (cont’d)

<table>
<thead>
<tr>
<th>Landowner Concern</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental effects, water crossings and environmentally sensitive areas</td>
<td>In constructing any pipeline project, NGTL’s intent is to avoid or minimize the potential for effects on the land and the environment. Extensive effort goes into collecting and analyzing site specific information about the land and the environment, along with many discussions with provincial government ministries, landowners, and other stakeholders to understand potential effects and to develop an effective EPP. NGTL will develop and implement route adjustments where feasible to avoid or reduce effects and will implement mitigation consistent with the EPP for the Project.</td>
</tr>
<tr>
<td>Limitations or effects on current or future planned or approved land use</td>
<td>NGTL will develop and implement route adjustments where feasible to avoid or reduce such effects. Landowners will be compensated for demonstrated residual effects on land use in accordance with the NEB Act. The regulation under the NEB Act of certain types of activities in proximity to the pipeline, such as excavations and the use of explosives, that potentially pose a risk to the public, environment and property, and potential uses of the easement that are incompatible with operation of the pipeline, will be discussed with landowners.</td>
</tr>
<tr>
<td>NEB process and right of entry orders</td>
<td>NGTL provides information and required notices under the NEB Act outlining NEB processes and landowners’ rights thereunder. NGTL seeks to work with landowners to reach mutually satisfactory agreements to avoid the need for contested right of entry and compensation processes under the NEB Act.</td>
</tr>
<tr>
<td>Notice of survey activities, survey acknowledgment forms and damages as a result of survey activities</td>
<td>NGTL, as part of its broader consultation activities, discusses with landowners any requirements to access their lands to conduct surveys, examinations and other necessary arrangements to fix the site and identify the lands potentially required for the pipeline, and seeks a signed survey acknowledgement from the landowner confirming such access and the requirement to compensate for any resulting damages in accordance with the NEB Act. Prior notice of access to the lands is provided to landowners.</td>
</tr>
</tbody>
</table>

11.9.4 Ongoing Consultation

Landowner consultation and land rights acquisition will continue throughout the regulatory process.

Throughout the construction phase, NGTL will maintain contact with landowners and occupants to address Project-related issues and concerns, and to implement agreed-on mitigation or avoidance strategies.

Once the Project is in-service, responsibility for ongoing landowner relations will be transitioned to NGTL operations. Regionally-based NGTL liaisons will continue to build and maintain relationships with landowners and occupants. As construction completion of the Project nears, TransCanada’s PA personnel will work in collaboration with the Project team to integrate these new assets into the PA Program. For more information on the PA Program, see Section 10.1.6.
12.0 STAKEHOLDER ENGAGEMENT

This section describes NGTL’s stakeholder engagement program for the Project. The overriding principle underpinning the stakeholder engagement program is that stakeholders will be engaged in a fair, honest, open, consistent and timely manner by NGTL representatives, and will have the opportunity to provide input into NGTL’s Project planning.

This section outlines the principles and goals that TransCanada used in designing its stakeholder engagement program, describes how that program is being implemented for the Project as it evolves, and summarizes the feedback received to date.

For a description of the landowner consultation for the Project, see Section 11: Land, and for the Aboriginal engagement program, see Section 13: Aboriginal Engagement. Environmental regulatory consultation is summarized in Section 14: Environmental Matters.

12.1 PRINCIPLES AND GOALS

The purpose and goals of the stakeholder engagement program for this Project are to:

- formally introduce the Project to stakeholders
- understand and respect stakeholders’ capacity to consult
- actively seek and consider comments on:
  - pipeline routing and facility site selection
  - potential environmental and socio-economic effects
  - mitigation, to address potential adverse Project effects
  - enhancement measures, where appropriate, to improve potential positive socio-economic effects
- identify and respond to questions and concerns
- provide stakeholders with ongoing Project updates, including communication about the proposed Project and the anticipated regulatory schedule and planned application to the Board
- consider stakeholder questions or concerns for incorporation as part of Project planning
- facilitate ongoing communications that continue through the construction and operations phases to ensure future stakeholder questions or concerns, if any, are addressed in a timely manner
12.2 DESIGN AND METHODOLOGY

The stakeholder engagement program was designed and implemented by NGTL in accordance with the principles of TransCanada’s stakeholder engagement framework, as well as community relations and communications best practices. The program is designed to:

- foster positive relationships with stakeholders
- provide opportunities for stakeholder input into the Project planning and development process
- provide information for stakeholders that reduces uncertainty and increases clarity

The stakeholder engagement program is undertaken in a phased approach and implemented using open communication and participatory stakeholder involvement practices. The phases of the program include:

- identification of stakeholders and development of notification materials
- notification and engagement
- transition of Project from construction to operations

12.2.1 Identification of Stakeholders and Development of Notification Materials

The first phase of engagement involves identifying potentially interested and affected stakeholders in the Project area and developing engagement materials, including letters, maps and information fact sheets that will be used for notification purposes. NGTL identifies those stakeholders potentially affected by, or have a potential interest in, the Project before implementing an engagement program. NGTL compiles an initial list of potential stakeholders through a combination of:

- desktop research
- TransCanada and NGTL’s own operating experience in the area
- personal contacts with and referrals from stakeholders

Stakeholders are encouraged to identify other potentially interested stakeholders for inclusion in the stakeholder engagement program.

Since the process of identification is ongoing and continues throughout the evolution of the project, the stakeholder list is regularly updated. In addition, stakeholders can self-identify by contacting the Project email account or toll-free telephone number referenced in Section 12.3.3.

NGTL initially identified the following stakeholders for the Project:

- landowners and occupants whose lands are traversed by the Project
- adjacent landowners and occupants
- land users (e.g., guides, outfitters and trappers)
- members of the public
- municipal leaders and representatives (e.g., regional districts and municipalities)
- elected officials (i.e., provincial and federal)
- government agencies and representatives
- non-government organizations
- synergy groups
- emergency responders

12.2.2 Notification and Engagement

The notification and engagement phase focuses on public disclosure of the Project and solicitation of stakeholder input, using several engagement activities and communication tools. During this phase, NGTL seeks to:

- identify and address stakeholder questions and concerns
- provide clear, relevant and timely information about the Project
- provide an opportunity for stakeholders to provide feedback on the Project
- answer stakeholder questions about NGTL/TransCanada and the Project
- foster relationships between NGTL and communities along the proposed route
- inform stakeholders about the Board’s regulatory review process
- ensure the Board’s engagement process requirements are met or exceeded

NGTL’s engagement continues throughout the regulatory process and Project construction.

12.2.3 Transition to Operations

The third phase of engagement will begin as the Project components transition from construction to operations. Any ongoing stakeholder questions or concerns related to Project construction or operations are managed through NGTL’s regionally based liaisons, which will continue to build and maintain relationships through consistent and ongoing communication with stakeholders. TransCanada’s PA Program will be implemented for the Project, as described in Section 10.1.6.

12.3 ENGAGEMENT TOOLS AND ACTIVITIES

An important component of NGTL’s stakeholder engagement program is to provide timely and current information. Project information is regularly produced, updated and distributed through hand delivery, mail, email and postings on the Project website. A toll-free telephone number and email address are also available to enable ready contact. The following sections outline some of the communication tools used.

12.3.1 Print Materials

A number of general information print materials were developed for the Project and used in mailouts, presentations, responses to inquiries, media backgrounders and will be used at planned open houses. These materials include:
12.3.2 Media Relations

Along with TransCanada’s community outreach program, TransCanada has a media relations program with a dedicated media line (403-920-7859 and 800-608-7859) and email address (communications@transcanada.com) to respond to incoming media inquiries in a timely and efficient manner.

12.3.3 Project Website, Email and Telephone Number

NGTL launched a Project website (www.transcanada.com/en/operations/natural-gas/2021-ngtl-system-expansion) which went live to the public on February 23, 2018. The website provides an overview of the Project, including routing and maps, as well as information on Project schedule, environment, safety and emergency response.

Through the website, stakeholders are encouraged to email any inquiries to the Project email (2021ngtl@transcanada.com), which is monitored regularly by a Project representative.

NGTL has also established a toll-free telephone number (1-855-895-8754), which is listed on the Project website.

12.3.4 Engagement Activities

In addition to the tools discussed above, NGTL also uses the following:

- personal contact with stakeholders including face-to-face meetings
- synergy group participation
- newspaper and radio advertisements
- open house engagements
- Project information distribution by mail or email
- media releases
- digital media posts
- TransCanada program brochures (e.g., Aboriginal Relations, Stakeholder Engagement) and the NEB brochure Information for Proposed Pipeline or Power Line Projects that Involve a Hearing
For sample copies of the following Project materials provided to stakeholders through engagement activities, see Appendix 12-1 through Appendix 12-7:

- letters to stakeholders (Appendices 12-1 and 12-2)
- Project Fact Sheet (Appendix 12-3)
- TransCanada’s Stakeholder Engagement Commitment Statement (Appendix 12-4)
- TransCanada brochure: *Working with Landowners* (Appendix 11-10)
- NEB brochure: *Information for Proposed Pipeline or Power Line Projects that Involve a Hearing* (Appendix 12-5)
- TransCanada brochure: *Your Safety, Our Integrity* (Appendix 12-6)
- Aboriginal Relations and Stakeholder Engagement brochures (Appendix 13-2)

For stakeholder activities undertaken to date for the Project, see Section 12.4.

### 12.4 IMPLEMENTATION OF THE ENGAGEMENT PROGRAM

NGTL’s notification and engagement activities for the Project and feedback received from stakeholders to date are summarized in the following sections.

#### 12.4.1 Overview

Initial implementation of the phased stakeholder engagement program began in August 2017 for certain Project components. In January 2018, broad engagement on all proposed Project components began and is ongoing. Formal Project notification emails or hard-copy letters (depending on stakeholder preference) were sent to identified stakeholders on February 14, 2018, and included a Fact Sheet, high-level summary of the proposed Project, and a map of regional survey areas for contemplated expansion activities. NGTL extended open offers to meet with regional and local municipalities to further discuss the Project materials provided.

The Project Description was filed with the Board on February 27, 2018 and NGTL provided notice and a link to copies of the filing to stakeholders on March 1, 2018. NGTL continues to engage with stakeholders to provide updated Project information and to address any questions or concerns that arise. Engagement activities and further planned activities are summarized in the sections below.

#### 12.4.2 Meetings with Local Government Stakeholders

From August 2017 to May 2018, NGTL met with representatives from six municipal districts and counties and an additional six municipalities regarding proposed Project components to provide information on the Project, and to understand and address their questions and concerns. Meetings were held with representatives from the following regional governments:
At the request of counties and municipal districts, NGTL made Project presentations to the County of Grande Prairie on January 8, 2018, Clearwater County on January 23, 2018, and Yellowhead County on April 24, 2018. NGTL met directly with administration for the Municipal District of Greenview No. 16 on January 9, 2018.

NGTL’s council presentations and meetings with administration departments introduced the Project and explained TransCanada’s natural gas transmission pipelines and the need for additional energy infrastructure. NGTL representatives:

- described the role of the NEB
- described TransCanada’s stakeholder engagement program
- described TransCanada’s landowner notification and consultation
- described the components, locations, and timing of proposed Project activities
- explained essential components of TransCanada’s safety, integrity and maintenance programs

Local government representatives from municipal districts, counties and municipalities were generally interested in information on:

- proposed pipeline routes and facility locations
- potential positive socio-economic effects on their community
- effects on local infrastructure
- proposed increase in NGTL System capacity and primary markets for increased natural gas volumes
- workforce size and accommodations
- Project and regulatory timelines
- pipeline characteristics, maintenance and safety
In keeping with TransCanada’s commitment to ongoing engagement, Project representatives also participated in municipal conferences to provide information about the Project, receive feedback and answer any questions. Over the course of Project engagement so far, these conferences have provided Project representatives with an opportunity to connect with existing stakeholders as well as meet newly elected municipal officials and other individuals representing municipalities and organizations that may have an interest in the Project.

NGTL participated in the Alberta Association of Municipal Districts and Counties Spring Conference in Edmonton, Alberta on March 19, 2018 with a tradeshow booth and had NGTL staff on hand to answer questions about the Project from delegates representing municipalities from across Alberta. NGTL also hosted a reception for municipal stakeholders at the Federation of Canadian Municipalities (FCM) Conference in Halifax, Nova Scotia on June 2, 2018 with Project representatives on-hand to answer questions about the Project.

### 12.4.3 Synergy Group Engagement

In order to collect feedback on the Project and share information more broadly with interested community members, NGTL has participated in regional synergy groups, which are forums where multi-stakeholder roundtable discussions cover industrial development and regionally specific interests and issues. Synergy groups identified as being potentially interested in the Project have been provided with Project information and presentations regarding proposed Project activities.

NGTL has participated in the following synergy groups on behalf of the Project:

- West Central Stakeholders Group, covering proposed Project components in Clearwater County
- Yellowhead Synergy Group, covering proposed Project components in Yellowhead County
- Central Mountainview Advisory Group, covering the proposed Project component in Mountain View County
- Wapiti Area Synergy Partners, covering proposed Project components north and South of the Wapiti River in the County of Grande Prairie and Municipal District of Greenview No. 16.

### 12.4.4 Open Houses

On February 13, 2018, NGTL participated in a multi-stakeholder open house event hosted by the Wapiti Area Synergy Partners group in Wembley, AB to provide attendees with information about the Project.
NGTL is planning Project-specific Open House events in June 2018 which will be open to the public, providing an opportunity for participants to ask questions and provide feedback on the Project. The Open House events are planned to take place in:

- Wembley, AB
- Edson, AB
- Rocky Mountain House, AB

Open house attendees will be able to learn more about the Project through discussions with NGTL representatives and by reviewing Project information displays and handouts. Attendees will be encouraged to ask questions and raise any questions or concerns they might have.

### 12.5 STAKEHOLDER FEEDBACK

Engagement with the general public, including community members, landowners, occupants and other stakeholders has been accomplished through direct engagement with interested parties, synergy group participation, the Project telephone line and email address, and Project representation at community events.

For a general summary of the primary topics of discussion with stakeholders along with NGTL’s general responses, see Table 12-1.

**Table 12-1: Summary of Topics of Discussion with Stakeholders**

<table>
<thead>
<tr>
<th>Primary Topic</th>
<th>Specified Interest(s)</th>
<th>NGTL Response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Construction</td>
<td>Right of Way (ROW) construction - width, required temporary workspace, visual effects. Watercourse crossing locations and planned crossing methods.</td>
<td>NGTL provided general information about ROW construction, including its plan to communicate with potentially affected stakeholders on temporary workspaces. Visual effects of the ROW on the public during construction will be generally limited to road crossings. NGTL indicated on maps its proposed locations for crossing major waterbodies, and indicated that an inventory of watercourse crossings would be provided in the Environmental and Socio-Economic (ESA) Assessment. In addition, for watercourse crossings, NGTL indicated that the preferred crossing method for a</td>
</tr>
</tbody>
</table>

### Table 12-1: Summary of Topics of Discussion with Stakeholders (cont’d)

<table>
<thead>
<tr>
<th>Primary Topic</th>
<th>Specified Interest(s)</th>
<th>NGTL Response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Construction (cont’d)</td>
<td>crossing location was based on location-specific considerations, but often for major watercourse crossings, trenchless watercourse crossing methods are preferred.</td>
<td></td>
</tr>
<tr>
<td>Environment Matters</td>
<td>Species of interest to the public, including trumpeter swan, trout, and small mammals. Weed management, reclamation practices and land use after construction.</td>
<td>NGTL indicated verbally that in the ESA and related field studies, potential effects to wildlife would be considered. NGTL confirmed that the Project does not directly cross trumpeter swan habitat. NGTL provided information on an existing community investment partnership with Trout Unlimited Canada. NGTL provided general information verbally to interested stakeholders on its reclamation process, including weed management, and pointed to information in the Project Fact Sheet on land use after construction.</td>
</tr>
<tr>
<td>Community Matters</td>
<td>Traffic management, potential effects on community infrastructure and resources, potential effects on recreational land user groups. Capacity of small, local governments with limited staff resources to assess applications and consult through council presentations and meeting requests.</td>
<td>NGTL indicated that traffic management would be considered as part of the ESA and that consideration would be given to the potential effects on communities. Additionally, NGTL committed to working with any recreational land user groups to answer questions they might have about the Project. NGTL has made efforts to share information in a way that is consistent with communities’ preferences, including electronic notifications. For example, presentations made to local governments have provided updates and information on multiple topics to reduce the number of meeting requests and the frequency of independent meetings.</td>
</tr>
</tbody>
</table>
Table 12-1: Summary of Topics of Discussion with Stakeholders (cont’d)

<table>
<thead>
<tr>
<th>Primary Topic</th>
<th>Specified Interest(s)</th>
<th>NGTL Response(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Project Effects</td>
<td>TransCanada’s general level of activity in western Alberta.</td>
<td>NGTL has provided Project information to regional municipal stakeholders, along with information on the timing and location of other projects proposed by NGTL.</td>
</tr>
<tr>
<td>Economic Matters</td>
<td>Local contracting and hiring opportunities available through the Project.</td>
<td>NGTL provided information in the Project Fact Sheet on community benefits, and indicated that TransCanada has a Diverse and Local Supplier process to track project spending in communities as well as a vendor registration process for interested community businesses. NGTL has been in contact with larger regional chambers of commerce to communicate on the Project and economic opportunities and benefits. NGTL has also committed to hosting contractor open houses in partnership with interested chambers of commerce to discuss the Project.</td>
</tr>
<tr>
<td>Land Matters</td>
<td>Timing of land acquisition, necessity of crossing agreements to traverse pipeline ROW.</td>
<td>NGTL indicated that Land representatives would be reaching out directly to landowners and other relevant third parties to discuss the Project.</td>
</tr>
<tr>
<td>Emergency Response</td>
<td>Pipe integrity, emergency preparedness and response.</td>
<td>NGTL indicated that a construction Emergency Response Plan (ERP) would be developed, and an operational ERP would be updated to cover the assets once commissioned. NGTL also provided high-level information regarding TransCanada’s Emergency Preparedness and Response information provided in the Project Fact Sheet.</td>
</tr>
</tbody>
</table>

Feedback gathered through consultation and engagement with local governments and the general public has been incorporated into ongoing engagement and will continue to be considered for incorporation into Project planning and execution, as appropriate.
12.6 ONGOING STAKEHOLDER CONSULTATION

NGTL will continue to engage stakeholders through all Project phases and respond appropriately, including through the regulatory review process, and until completion of Project construction. Ongoing engagement efforts may include open house notifications, Project updates, and community investment activities. Updates to the Project website and monitoring of the email address and toll-free telephone line will also continue until construction is complete.

Once the Project is in-service, regionally based NGTL liaisons will continue to build and maintain relationships through consistent and ongoing communication with stakeholders. TransCanada’s PA Program will be implemented for the Project as described in Section 10.1.6.
13.0 ABORIGINAL ENGAGEMENT

This section provides information on the Aboriginal Engagement Program for the Project, including:

- the principles and goals of the engagement program
- the design and implementation of the engagement program
- the outcomes of the engagement program inclusive of May 17, 2018
- plans for ongoing engagement

NGTL recognizes that its Aboriginal Engagement Program is complementary to any Crown consultation concerning potential impacts to Aboriginal and treaty rights, and that the NEB’s process can be relied upon by the Crown.

13.1 PRINCIPLES AND GOALS

TransCanada’s Aboriginal Relations Policy (see Appendix 13-2) outlines the guiding principles for the Project’s engagement program and builds on TransCanada’s values of Safety, Integrity, Responsibility and Collaboration. These values guide engagement with Aboriginal groups for all TransCanada business activities. TransCanada’s policies, principles and practices guide the design and implementation of the Aboriginal Engagement Program for the Project.

The goal of the Aboriginal Engagement Program for the Project is to provide Project information and seek feedback from Aboriginal groups in order to anticipate, prevent, mitigate and manage conditions that have the potential to affect Aboriginal groups. NGTL strives to meet this goal by:

- establishing a practical approach for the implementation of Project-specific engagement activities
- initiating engagement activities as soon as possible in the planning of the Project
- providing clear, relevant and timely information to potentially affected Aboriginal groups
- responding to concerns raised and commitments made during engagement activities.

The design of NGTL’s engagement program is consistent with the NEB’s guidance on consultation as set out in its Filing Manual.

13.2 DESIGN AND IMPLEMENTATION OF THE ENGAGEMENT PROGRAM

The Aboriginal Engagement Program is designed to foster productive dialogue and exchange of information with potentially affected Aboriginal groups interested in the Project. It was developed and adapted according to the nature, location and potential
effects of the Project, and to the identified interests, information needs and concerns of Aboriginal groups. While the underlying principles remain the same, the scope and depth of engagement may vary according to the potential for Project-related effects and the identified interests of each Aboriginal group.

Factors that influenced the design of the Aboriginal Engagement Program include the Project scope and location. As described in Section 11, the pipeline components for the Project require a total length of approximately 344 km of ROW and associated TWS. At this stage in Project planning, approximately 319 km (93%) of the proposed pipeline route parallels existing NGTL ROW or other existing linear disturbances such as pipelines, roads and electrical power lines. The new ROW, TWS and compressor station unit additions are located on both freehold land and provincial Crown land in Alberta.

NGTL’s Aboriginal Engagement Program for the Project is carried out according to a four-step process:

- Step 1: Identify potentially affected Aboriginal groups
- Step 2: Establish the engagement approach
- Step 3: Implement engagement program activities
- Step 4: Respond to questions and concerns

These steps, and the activities associated with each, are described in the following sections.

13.2.1 Step 1: Identify Potentially Affected Aboriginal Groups

NGTL initially identified potentially affected Aboriginal groups based on the location of Project components within asserted traditional territories, regional boundaries and/or areas of interest. This initial identification involved desktop research, NGTL’s own operating experience, including past projects in the region, existing agreements and an established network of contacts with Aboriginal groups in the Project area.

Regulator Feedback

The Project Description was filed with the Board on February 27, 2018, which provided NGTL’s identification of Aboriginal groups potentially affected by the Project. To date, NGTL has not received feedback regarding the list of potentially affected Aboriginal groups from the Major Projects Management Office (MPMO). If feedback is provided by the MPMO, NGTL will consider the advice provided as part of its Aboriginal Engagement Program.

Confirmation of Interest

Following initial identification, Aboriginal groups were contacted by NGTL to confirm:
- receipt of the Project notification package
- level of interest in the Project
- the primary point of contact for engagement

The potentially affected Aboriginal groups engaged on the Project components that are within or proximate to their identified traditional territories, regional boundaries and/or areas of interest are provided in Table 13-1.

Table 13-1: Aboriginal Groups Currently Engaged on the Project

<table>
<thead>
<tr>
<th>Name</th>
<th>Grande Prairie West Area</th>
<th>Grande Prairie South Area</th>
<th>Edson South Area</th>
<th>Nordegg Compressor Station unit addition</th>
<th>Didsbury Compressor Station unit addition</th>
<th>Beiseker Compressor Station unit addition</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Nations, Treaty 4</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Nekaneet First Nation</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>First Nations, Treaty 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander First Nation</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexis Nakota Sioux Nation</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enoch Cree Nation</td>
<td>x</td>
<td>x</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ermineskin Cree Nation</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Louis Bull Tribe</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montana First Nation</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O’Chiese First Nation</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paul First Nation</td>
<td>x</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saddle Lake Cree Nation</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Samson Cree Nation</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Sunchild First Nation</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>First Nations, Treaty 7</td>
<td></td>
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<tr>
<td>Blood Tribe</td>
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<tr>
<td>Pikani Nation</td>
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<td>x</td>
</tr>
<tr>
<td>Siksika Nation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

June 2018  
Page 13-3
Table 13-1: Aboriginal Groups Currently Engaged on the Project (cont’d)

<table>
<thead>
<tr>
<th>Name</th>
<th>Grande Prairie West Area</th>
<th>Grande Prairie South Area</th>
<th>Edson South Area</th>
<th>Nordegg Compressor Station unit addition</th>
<th>Didsbury Compressor Station unit addition</th>
<th>Beiseker Compressor Station unit addition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Nations, Treaty 7 (cont’d)</strong></td>
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<tr>
<td>Stoney Nakoda Nations</td>
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<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>TsuuT’ina Nation</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>First Nations, Treaty 8</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Driftpile First Nation</td>
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<td></td>
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<tr>
<td>Duncan's First Nation</td>
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<td>Kapawe’no First Nation</td>
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<td>Sturgeon Lake Cree Nation</td>
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<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td><strong>Non-Treaty First Nations</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Aseniwuche Winewak Nation</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelly Lake Cree Nation</td>
<td></td>
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<td></td>
<td></td>
<td>x</td>
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</tr>
<tr>
<td>Kelly Lake First Nation</td>
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<td></td>
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<td></td>
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<tr>
<td>Nakcowinewak Nation of Canada</td>
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<td></td>
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<tr>
<td>Nose Creek Community</td>
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<tr>
<td><strong>First Nations Organizations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asini Wachi Nehiyawak Traditional Band</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Foothills Ojibway Society</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Mountain Cree (Small Boy Camp)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
Table 13-1: Aboriginal Groups Currently Engaged on the Project (cont’d)

<table>
<thead>
<tr>
<th>Name</th>
<th>Grande Prairie West Area</th>
<th>Grande Prairie South Area</th>
<th>Edson South Area</th>
<th>Nordegg Compressor Station unit addition</th>
<th>Didsbury Compressor Station unit addition</th>
<th>Beiseker Compressor Station unit addition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Métis Organizations, Settlements, and Locals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain Métis Nation Association (Grande Cache Métis Local 1994)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gunn Métis Local 55</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Prairie Métis Settlement</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelly Lake Métis Settlement Society</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marlboro Community Association</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Métis Nation of Alberta</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Métis Nation of Alberta Region 3</td>
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<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Métis Nation of Alberta Region 4</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Métis Nation of Alberta Region 6</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Métis Settlements General Council</td>
<td>x</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

13.2.2 Step 2: Establish the Engagement Approach

Preliminary engagement with Aboriginal groups for certain facility components of the Project (Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) and Grande Prairie Mainline Loop No. 3 (Elmworth Section)) began in Q3 2017 while broader engagement regarding the overall Project began in Q1 2018. Engagement with the Aboriginal groups initially included notification and provision of Project information for their review, and follow-up phone calls and emails to discuss any questions and concerns they may have about Project activities.
On February 14, 2018, initial Project notification packages providing notice of NGTL’s intent to file a Section 52 application with the Board were sent by email and on February 16, 2018, the initial Project notification packages were sent by mail to the potentially affected Aboriginal groups listed above (with two exceptions discussed below). Included with the Project notification packages were:

- Project introduction letter and Project fact sheet, including a Project overview map (Appendix 13-1)
- TransCanada brochure: Aboriginal Relations (Appendix 13-2)
- NEB brochure Information for Proposed Pipeline or Power Line Projects that Involve a Hearing (Appendix 12-5)

Following the initial Project notification, Ermineskin Cree Nation informed NGTL on April 18, 2018 that Mountain Cree (Small Boy Camp) may have an interest in the Project.

Upon review of engagement activities conducted for another project in the region, NGTL identified Asini Wachi Nehiyawak Traditional Band as an Aboriginal group potentially affected by the Project.

Project notification packages providing notice of NGTL’s intent to file a Section 52 application with the Board were sent by email to Mountain Cree (Small Boy Camp) on April 18, 2018 and Asini Wachi Nehiyawak Traditional Band on May 2, 2018.

NGTL engaged in preliminary discussions with the potentially affected Aboriginal groups to understand their specific capacity and resourcing needs. NGTL worked with interested Aboriginal groups to develop a Project-specific work plan and budget. Work plans formalize the engagement activities to be conducted for the Project and the associated funding. Work plans typically define the engagement participation of the interested Aboriginal group and may also include funding provisions for community investment and community capacity development.

Each Aboriginal group may have different processes or means of gathering and sharing information. NGTL tailors its approach to gathering information from groups to meet a group’s specific needs, and where appropriate provides reasonable resources to support participation in Project engagement activities.

13.2.3 Step 3: Implement Engagement Program Activities

Following the initial notifications and preliminary discussions, NGTL implemented a wide range of activities and communication tools to engage Aboriginal groups on the Project. Communication tools have included, but are not limited to:

- regulatory notifications
- maps, shapefiles, KMZ (Google Earth) files
Engagement activities on the Project have included, but are not limited to:

- presentations, technical meetings
- face-to-face meetings
- email, telephone calls, text messages
- map reviews
- site visits
- sharing of Traditional Knowledge (TK), including TK studies
- review of community-specific TK literature review
- discussions on contracting, employment, education and training opportunities
- community investment

NGTL works with each potentially affected Aboriginal group to identify areas of interest and opportunity. Engagement in Project activities may include participation in TK, education and training, community investment, and contracting and employment. These opportunities are described below.

Sharing of Traditional Knowledge

NGTL works with interested Aboriginal groups to collect and incorporate TK information into Project planning, as appropriate. NGTL understands TK to be knowledge held and contributed to by a group of people through generations of living in close contact with nature. It may consist of traditional ecological knowledge (TEK) and traditional land use (TLU) and forms part of a larger body of information which encompasses knowledge about cultural, environmental, economic, political and spiritual inter-relationships, which is typically identified by, and gathered through, engagement with Aboriginal groups. Through the collection of TK with interested groups, NGTL seeks to:

- identify and consider potential adverse effects of the Project on the current use of lands and resources for traditional purposes
- incorporate TEK and TLU in Project planning
- identify concerns about the Project
- propose measures to avoid, mitigate or otherwise manage potential adverse Project effects on Aboriginal interests

In addition to receiving TK through ongoing engagement, NGTL provides participating Aboriginal groups the opportunity to collect Project-specific TK independently or with the support of environmental consultants to meet a group’s specific needs. Protocol agreements for the collection of Project-specific TK are developed between NGTL, its environmental consultants and each participating Aboriginal group with consideration to the guidance provided in the NEB Filing.
Manual and the Canadian Environmental Assessment Agency’s *Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the Canadian Environmental Assessment Act, 2012*. Information submitted by Aboriginal groups which is identified as confidential will not appear on the public record but will be used to inform the development of mitigation strategies.

The status of the TK program for the Project is provided in Table 13-2. The results of the TK program have been incorporated throughout the ESA for the Project. NGTL will continue to evaluate and assess additional TK information as it is made available by Aboriginal groups. In addition to its TK program, NGTL will continue to document and address, where feasible, TK information and related concerns identified by Aboriginal groups during activities associated with the Project’s broader Aboriginal Engagement Program.

**Table 13-2: Status of the Traditional Knowledge Studies Being Completed by Each Participating Aboriginal Group**

<table>
<thead>
<tr>
<th>Aboriginal Group</th>
<th>Interest in Conducting a Study</th>
<th>Method of Study</th>
<th>Status of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexander First Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Report received November 24, 2017 for the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section). Final report received May 4, 2018, for Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition.</td>
</tr>
<tr>
<td>Alexis Nakota Sioux Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Underway</td>
</tr>
<tr>
<td>Aseniwuche Winewak Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Duncan’s First Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Underway</td>
</tr>
</tbody>
</table>
Table 13-2: Status of the Traditional Knowledge Studies Being Completed by Each Participating Aboriginal Group (cont’d)

<table>
<thead>
<tr>
<th>Aboriginal Group</th>
<th>Interest in Conducting a Study</th>
<th>Method of Study</th>
<th>Status of Study</th>
</tr>
</thead>
</table>
| East Prairie Métis Settlement             | Yes                            | Independent     | Final report received February 8, 2018 for Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section).  
|                                           |                                |                 | Underway for Grande Prairie Mainline Loop No. 3 (Elmworth Section).                                |
| Enoch Cree Nation                        | Yes                            | Independent     | Pending agreement with NGTL on appropriate scope and costs.                                         |
| Ermineskin Cree Nation                   | Yes                            | Independent     | Pending agreement with NGTL on appropriate scope and costs.                                         |
| Gunn Métis Local 55                      | Yes                            | Independent     | Underway Flyover Interim TK report received on April 24, 2018.                                     |
| Horse Lake First Nation                  | Yes                            | Independent     | Final report received November 8, 2017 for Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) and January 25, 2018 for the Grande Prairie Mainline Loop No. 3 (Elmworth Section).  
|                                           |                                |                 | Pending agreement with NGTL on appropriate scope and costs for outstanding sections.                |
| Kelly Lake Cree Nation                   | Yes                            | Independent     | Underway for Grande Prairie Mainline Loop No. 3 (Elmworth Section).                                
|                                           |                                |                 | Pending agreement with NGTL on appropriate scope and costs for outstanding sections.                |
| Kelly Lake Métis Settlement Society      | Yes                            | Independent     | Final report received November 20, 2017 for Grande Prairie Mainline Loop No. 3 (Elmworth Section).  

Table 13-2: Status of the Traditional Knowledge Studies Being Completed by Each Participating Aboriginal Group (cont’d)

<table>
<thead>
<tr>
<th>Aboriginal Group</th>
<th>Interest in Conducting a Study</th>
<th>Method of Study</th>
<th>Status of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louis Bull Tribe</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Métis Nation of Alberta Region 3</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Métis Nation of Alberta Region 6</td>
<td>Yes</td>
<td>Independent</td>
<td>Underway</td>
</tr>
<tr>
<td>Montana First Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Mountain Métis Nation Association (Grande Cache Métis Local 1994)</td>
<td>Yes</td>
<td>Independent</td>
<td>Final report received on December 11, 2017 for Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section). Final report received on December 22, 2017 for Grande Prairie Mainline Loop No. 3 (Elmworth Section). Interim report received on April 18, 2018 for the Grande Prairie Mainline Loop No. 2 (Karr and Deep Valley Sections) and the Edson Mainline Loop No. 4 (Robb Section). Final report underway.</td>
</tr>
<tr>
<td>Nakcowinewak Nation of Canada</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>O’Chiese First Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Paul First Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Saddle Lake Cree Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Final report received May 14, 2018 for Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section).</td>
</tr>
<tr>
<td>Samson Cree Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
</tbody>
</table>
Table 13-2: Status of the Traditional Knowledge Studies Being Completed by Each Participating Aboriginal Group (cont’d)

<table>
<thead>
<tr>
<th>Aboriginal Group</th>
<th>Interest in Conducting a Study</th>
<th>Method of Study</th>
<th>Status of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stoney Nakoda Nations</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Sturgeon Lake Cree Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Sucker Creek First Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Pending agreement with NGTL on appropriate scope and costs.</td>
</tr>
<tr>
<td>Sunchild First Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Final report received February 2, 2018 for Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section). Pending agreement with NGTL on appropriate scope and costs for outstanding sections.</td>
</tr>
<tr>
<td>TsuuT’ina Nation</td>
<td>Yes</td>
<td>Independent</td>
<td>Final report received February 6, 2018 for Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section). Pending agreement with NGTL on appropriate scope and costs for outstanding sections.</td>
</tr>
</tbody>
</table>

Education and Training

NGTL recognizes the importance of providing opportunities for Aboriginal participation in the Project. NGTL will provide support and resources to Aboriginal groups to increase their ability to participate in Project activities and to support their long-term goals for skills development and training.

In collaboration with local Aboriginal groups, and in alignment with TransCanada’s Aboriginal Relations Policy (see Appendix 13-2), NGTL has been and will continue working with Aboriginal groups to identify opportunities for capacity development. As part of NGTL’s ongoing engagement program, NGTL will work with Aboriginal groups through their human resource coordinators, economic development and education officers, or other designated responsible representatives, to support the group’s immediate and/or long-term training needs.

Training and capacity development programs which TransCanada and NGTL have supported and sponsored in the past include:

- Literacy and numeracy programs
- Job readiness and life skills programs
- Administration courses for Band staff
- Safety tickets, first-aid and cardiopulmonary resuscitation (CPR) training
- Heavy Equipment Operators training
- Environmental assessment and monitoring courses
- Pre-trades training

NGTL also supports individual community members in achieving their education goals through TransCanada’s Community Scholarships Program. The Program delivers over 500 scholarships to students across North America, including 100 Indigenous Legacy Scholarships specifically for Aboriginal students.

Community Investment

TransCanada has identified three focus areas for community investment:

- Safety: Work with communities to understand how NGTL can support their safety initiatives, including emergency preparedness, accident prevention and education and training.

- Community: Support organizations and community initiatives that bring communities together through initiatives such as cultural preservation, community events, health and wellness, skills development, job readiness and career development.

- Environment: Work with communities to conserve important habitat, protect species at risk and the environment.

NGTL recognizes that each group’s needs and interests are unique. Funding to communities is designed to provide flexibility in the development of initiatives that will support each group’s long-term goals.

NGTL contributes to community investment initiatives with local Aboriginal groups in the Project area and will continue to identify economic opportunities for community investment in all operating regions.

Contracting and Employment

TransCanada’s Indigenous Relations Business Engagement (IRBE) activities for the Project were established to increase the participation of those Aboriginal groups potentially affected by the Project. Business engagement activities seek to provide business opportunities arising from Project-related activities to qualified Aboriginal contractors and suppliers and are designed to:

- assess local Aboriginal group and business capacity and capabilities for contracting and employment opportunities and, as appropriate, align work packages to allow Aboriginal businesses to compete successfully

- where opportunities exist, the Project will work with Aboriginal groups and businesses to help enhance capacity, including Project-related training and employment, if applicable
maximize contracting and employment opportunities for Aboriginal groups and businesses through the Project’s contractors and subcontractors or through direct contracts with the Project. NGTL continues to provide information about IRBE activities to potentially affected Aboriginal groups and businesses, obtain information regarding Aboriginal group interest, capacity and capability relating to the Project, and discuss potential economic participation in the Project to build reciprocal business relationships. Where opportunities exist, NGTL will work with the Aboriginal groups and businesses to help enhance capacity, including Project-related training and employment, if applicable.

13.2.4 Step 4: Responding to Questions or Concerns

Questions or concerns identified by Aboriginal groups during engagement activities are recorded and responded to by NGTL. As part of preparing a response, such questions or concerns will be shared with the appropriate Project technical specialists or designated environmental consultant. Once a response or resolution is developed, it is provided to the Aboriginal group for further comment or dialogue.

NGTL seeks to work collaboratively with Aboriginal groups to address Project-related questions or concerns and to provide information on how their input influenced Project design changes. The mitigation measures identified for the Project were developed by NGTL in collaboration with Aboriginal groups during engagement activities for the Project. NGTL continues to discuss with Aboriginal groups the proposed measures to avoid, mitigate or otherwise manage potential effects of the Project and to address or respond to questions or identified concerns.

The outcomes of these efforts will be considered for incorporation in Project planning, as appropriate, and reported in regulatory filings. Concerns that remain outstanding will also be tracked and reported to the Board as required.

13.3 OUTCOMES OF THE ENGAGEMENT PROGRAM

Project engagement activities, as well as the outcomes of those activities, have been and will continue to be tracked with a response provided, as appropriate. Engagement activity information is collected and managed in a database designed to support this work. Information collected includes the following:

- a list of Aboriginal groups provided with Project-specific information
- a description of how and when information was provided
- dates and locations of activities throughout the engagement process
- a summary of engagement efforts and outcomes, including information on concerns raised, and responses and measures taken to address the concerns
• a description of outstanding concerns and proposed follow-up with Aboriginal groups, if required

13.3.1 Summary of Engagement Activities

This section provides an overview of the engagement activities carried out for the Project with each potentially affected Aboriginal groups up to May 17, 2018.

In addition to the initial Project notification packages provided on February 14 and 16, 2018 to all potentially affected Aboriginal groups (except for Mountain Cree and Asini Wachi Nehiyawak Traditional Band as discussed in Section 13.2.2), the following notifications were provided to each of these potentially affected Aboriginal groups:

• March 2, 2018, Project update to inform of the filing of the Project Description with the Board on February 27, 2018, including Project overview map
• March 12, 2018, Project KMZ files for Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Grande Prairie Mainline Loop No. 3 (Elmworth Section), Grande Prairie Mainline Loop No. 4 (Valhalla Section), and Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections)
• May 1, 2018, Project update describing route revisions, including updated shapefiles and KMZ files
• May 10, 2018, updated Project KMZ files provided for all components of the Project.

NGTL will also provide notice to each potentially affected Aboriginal group of the filing of the Section 52 application within 72 hours, in accordance with the guidance provided in the NEB Filing Manual.

Since providing the initial Project notification package to Driftpile First Nation, Marlboro Community Association, Métis Nation of Alberta, Métis Nation of Alberta Region 4, Mountain Cree (Small Boy Camp), Nekaneet First Nation and Piikani Nation, NGTL followed up with emails and by telephone to verify whether the communities had any questions or concerns related to the Project. NGTL has not received a response from these groups.

Where engagement has occurred in addition to the notifications listed above, summaries of these activities with the respective Aboriginal groups are provided below. These summaries also identify any questions and concerns communicated to NGTL, as well as the actions taken by, or planned to be taken by, NGTL to address those questions and concerns.
Alexander First Nation

NGTL has been sharing information with Alexander First Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017. Alexander First Nation confirmed interest in the McLeod River Connection Section and requested to conduct a TK study. On November 24, 2017, NGTL received Alexander First Nation’s Traditional Land and Resource Use (TLRU) Study for the McLeod River Connection Section.

On February 14, 2018, NGTL provided a notification package to Alexander First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition as Project components of potential interest to Alexander First Nation. On March 8, 2018, NGTL met with Alexander First Nation to discuss the overall Project. At the meeting, Alexander First Nation confirmed their interest in the components of the Project identified by NGTL and requested to complete a TK study and NGTL supported their request.

On April 10, 2018, NGTL requested input from Alexander First Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 24, 2018, Alexander First Nation called to inform NGTL that it would not be able to respond by the requested date and informed NGTL that the reports cited in the literature review were not the most current. Alexander First Nation also noted that the literature review included references to projects that did not include the community. On April 25, 2018, NGTL informed Alexander First Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA. On April 26, 2018, NGTL requested that Alexander First Nation identify and provide any additional sources of TK and traditional land and resource use that Alexander First Nation would like considered for the Project.

On May 4, 2018, NGTL received the final report of Alexander First Nation’s TLRU Study completed for the overall Project. Alexander First Nation noted that the final TLRU Study may be supplemented with further information from the Elders’ meeting planned for mid-May 2018.

NGTL has reviewed the results of Alexander First Nation’s TLRU Study completed for the overall Project in the context of the ESA for consideration and incorporation into Project planning, as appropriate. See Appendix K, Annex A of the ESA: Traditional Knowledge Report - Aboriginal Groups Project-Related Issue Summaries for NGTL’s responses and proposed mitigations measures from the Project EPP that will be provided to Alexander First Nation.
Alexis Nakota Sioux Nation

NGTL has been sharing information with Alexis Nakota Sioux Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On August 28, 2017, Alexis Nakota Sioux Nation confirmed their interest in the McLeod River Connection Section and requested to conduct a TK study. On January 9, 2018 NGTL received a letter of non-objection for the McLeod River Connection Section from Alexis Nakota Sioux Nation.

On February 14, 2018, NGTL provided a notification package to Alexis Nakota Sioux Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition as Project components of potential interest to Alexis Nakota Sioux Nation.

On March 8, 2018, NGTL met with Alexis Nakota Sioux Nation. At the meeting, Alexis Nakota Sioux Nation confirmed their interest in the components of the Project identified by NGTL. Alexis Nakota Sioux Nation advised NGTL the January 9, 2018 letter of non-objection did not apply to the Project because the letter of non-objection was provided for another NGTL project. Alexis Nakota Sioux Nation requested to complete a TK study and NGTL supported their request. Finally, Alexis Nakota Sioux Nation requested information from NGTL with respect to greenhouse gas (GHG) emissions and potential effects to caribou.

On April 10, 2018, NGTL requested input from Alexis Nakota Sioux Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Alexis Nakota Sioux Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

On May 2, 2018, NGTL responded to Alexis Nakota Sioux Nation’s request regarding GHG emissions. NGTL provided a weblink to TransCanada’s Climate Change Fact Sheet and 2017 CDP Climate Change Report.1 NGTL is preparing the information requested regarding potential effects to caribou and will provide it to Alexis Nakota Sioux Nation when the information is available.

To date, Alexis Nakota Sioux Nation has not completed a TK study of the Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition. Upon receipt, the findings of Alexis

Nakota Sioux Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

Aseniwuche Winewak Nation

On August 24, 2017, NGTL confirmed, by phone call, that Aseniwuche Winewak Nation was interested in the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section). Aseniwuche Winewak Nation requested to conduct a TK study. On December 12, 2017, NGTL met with Aseniwuche Winewak Nation. At the meeting, Aseniwuche Winewak Nation requested information regarding training and education opportunities available for the Project. On December 19, 2018, NGTL agreed to support a training program and provide capacity funding to Aseniwuche Winewak Nation. On January 31, 2018, NGTL provided information to Aseniwuche Winewak Nation about TransCanada’s Community Scholarships Program.

On February 14, 2018, NGTL provided a notification package to Aseniwuche Winewak Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr Section, Deep Valley Section and McLeod River Connection), Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as sections of potential interest to Aseniwuche Winewak Nation. On March 15, 2018, NGTL met with Aseniwuche Winewak Nation to discuss the overall Project. At the meeting, Aseniwuche Winewak Nation confirmed their interest in the components of the Project identified by NGTL and requested to complete a TK study. NGTL supported their request.

On April 10, 2018, NGTL requested input from Aseniwuche Winewak Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 16, 2018, Aseniwuche Winewak Nation informed NGTL of their plans to respond to the community-specific TK Literature Review, but to date NGTL has not received a response to the request for input made on April 10, 2018.

On April 24, 2018, NGTL requested confirmation from Aseniwuche Winewak Nation with respect to the scope of the proposed TK study for the Project, but to date NGTL has not received any response to that request.

On April 25, 2018, NGTL informed Aseniwuche Winewak Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA. On April 26, 2018, Aseniwuche Winewak Nation inquired whether they could still provide a response to NGTL’s request regarding the community-specific TK Literature Review. NGTL accepted the request and re-submitted the community-specific TK Literature Review. On May 9, 2018, NGTL requested that Aseniwuche Winewak Nation identify and provide any additional sources of TK and traditional land and resource use information that Aseniwuche Winewak Nation would like considered for the Project, but to date NGTL has not received any response to that request.
NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Aseniwuche Winewak Nation. NGTL will continue to address questions and concerns from Aseniwuche Winewak Nation through its ongoing engagement efforts should any arise.

**Asini Wachi Nehiyawak Traditional Band**

On May 2, 2018, NGTL provided a notification package to Asini Wachi Nehiyawak Traditional Band concerning the overall Project. NGTL identified Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections) as Project components of potential interest to Asini Wachi Nehiyawak.

On May 6, 2018, NGTL received confirmation from Asini Wachi Nehiyawak Traditional Band that their review of the Project information provided to date was in progress. On May 10, 2018, NGTL provided updated Project shapefiles for all facility components of the Project.

On May 14, 2018, Asini Wachi Nehiyawak Traditional Band submitted a letter to inform NGTL that the Project components identified by NGTL were located within their traditional territory. Asini Wachi Nehiyawak Traditional Band required additional information regarding the nature of the ground disturbance required for the January Creek control valve, and the Nordegg, Didsbury and Beiseker compressor station unit additions. Asini Wachi Nehiyawak Traditional Band stated that potential impacts from the Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections) are of concern to them and requested to discuss the Project with NGTL. NGTL is continuing to work to assemble a response to Asini Wachi Nehiyawak Traditional Band and will provide it when available.

**Blood Tribe**

On February 14, 2018, NGTL provided a notification package to Blood Tribe concerning the overall Project. NGTL identified the Beiseker and Didsbury compressor station unit additions as Project components of potential interest to Blood Tribe.

On April 5, 2018, NGTL met with Blood Tribe to discuss the overall Project. At the meeting, Blood Tribe confirmed the Beiseker Compressor Station unit addition was located within their traditional territory. NGTL provided additional information regarding the siting of the Beiseker Compressor Station unit addition on private (freehold) land.

On April 10, 2018, NGTL requested input from Blood Tribe on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive any response to that request. On April 25, 2018, NGTL informed
Blood Tribe that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

On May 16, 2018, NGTL exchanged correspondence with Blood Tribe regarding a meeting to discuss capacity funding. The meeting date has not been confirmed.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Blood Tribe. NGTL will continue to address questions and concerns from Blood Tribe through its ongoing engagement efforts should any arise.

**Driftpile First Nation**

On February 14, 2018, NGTL provided a notification package to Driftpile First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), as Project components of potential interest to Driftpile First Nation.

On April 10, 2018, NGTL requested input from Driftpile First Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive any response to that request. On April 25, 2018, NGTL informed Driftpile First Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Driftpile First Nation. NGTL will continue to address questions and concerns from Driftpile First Nation through its ongoing engagement efforts should any arise.

**Duncan’s First Nation**

On February 14, 2018, NGTL provided a notification package to Duncan’s First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr and Deep Valley Sections) Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Duncan’s First Nation.

On March 16, 2018, Duncan’s First Nation submitted a letter to NGTL confirming interest in the Project. In the letter, Duncan’s First Nation informed NGTL that the proposed Project had the potential to adversely affect their Treaty and Aboriginal rights, and requested to meet with NGTL to discuss the engagement activities planned for the Project. The parties met on March 23, 2018. At the meeting, Duncan’s First Nation reiterated to NGTL that the Project had the potential to adversely affect their Treaty and Aboriginal rights, and they were also concerned with the proposed regulatory application filing schedule. NGTL and Duncan’s First Nation discussed
NGTL’s Aboriginal Engagement Program, the incorporation of TK into the ESA, and the Project schedule.

On April 6, 2018, NGTL met Duncan’s First Nation to discuss the completion of a TK study of the Project components of interest to Duncan’s First Nation. At the meeting, NGTL provided information regarding agreements and capacity funding available for the Project.

On April 10, 2018, NGTL requested input from Duncan’s First Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 25, 2018, NGTL informed Duncan’s First Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA. On April 27, 2018, Duncan’s First Nation responded to advise they did not grant NGTL permission to use the information shared in the community-specific TK Literature Review for the assessment of potential impacts to Duncan’s First Nation’s rights. Duncan’s First Nation stated the information included in their proposed TK study would provide Project-specific information approved and supported by Duncan’s First Nation. NGTL responded to Duncan’s First Nation’s concerns with respect to the community-specific TK Literature Review on May 3, 2018. NGTL provided clarification on the purpose of the community-specific TK Literature Review. NGTL reiterated that the purpose of the community-specific TK Literature Review was to find publicly available TK information in and around the Project area. NGTL also acknowledged that the community-specific TK Literature Review was only one source of information considered for the Project. NGTL informed Duncan’s First Nation that their feedback regarding their community-specific TK Literature Review would be included with the publicly available literature review information in the ESA TK report. NGTL confirmed to Duncan’s First Nation their community-specific TK Literature Review would not be relied on for the Project’s ESA and that NGTL remained committed to considering additional information brought forward concerning Duncan’s First Nation’s TK and land use in the Project area.

On May 10, 2017, NGTL met with Duncan’s First Nation to discuss the status of their TK study. At the meeting, Duncan’s First Nation informed NGTL their study was in progress. To date, NGTL has not received the results of Duncan’s First Nation’s TK study. Upon receipt, the findings of Duncan’s First Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

**East Prairie Métis Settlement**

NGTL has been sharing information with East Prairie Métis Settlement regarding the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.
On September 6, 2017, NGTL met with East Prairie Métis Settlement to discuss the McLeod River Connection Section and confirm their interest. At the meeting, East Prairie Métis Settlement requested to conduct a TK study of the McLeod River Connection Section.

On September 11, 2017, NGTL provided information to East Prairie Métis Settlement regarding Grande Prairie Mainline Loop No. 3 (Elmworth Section). On September 21, 2017, NGTL met with East Prairie Métis Settlement to discuss the Elmworth Section. At the meeting, East Prairie Métis Settlement expressed an interest in completing a TK study.

On February 8, 2018, NGTL received a letter containing the results of their TK study for the McLeod River Connection Section.

On February 14, 2018, NGTL provided a notification package to East Prairie Métis Settlement concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Grande Prairie Mainline Loop No. 3 (Elmworth) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to East Prairie Métis Settlement.

On April 10, 2018, NGTL requested input from East Prairie Métis Settlement on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive any response to that request. On April 25, 2018, NGTL informed East Prairie Métis Settlement that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has reviewed the results of East Prairie Métis Settlement’s TK study completed for the McLeod River Connection Section in the context of the ESA for consideration and incorporation into Project planning, as appropriate. See Appendix K, Annex A of the ESA: Traditional Knowledge Report - Aboriginal Groups Project-Related Issue Summaries for NGTL’s responses and proposed mitigations measures from the Project EPP that will be provided to East Prairie Métis Settlement.

To date, NGTL has not received the results of East Prairie Métis Settlement’s TK study of the Elmworth Section. Upon receipt, the findings of East Prairie Métis Settlement’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with East Prairie Métis Settlement. NGTL will continue to address questions and concerns from East Prairie Métis Settlement through its ongoing engagement efforts should any arise.
Enoch Cree Nation

NGTL has been sharing information with Enoch Cree Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On August 30, 2017 NGTL met with Enoch Cree Nation to discuss the McLeod River Connection Section and confirm their interest in this Project component. At the meeting, Enoch Cree Nation requested to conduct a TK study of the McLeod River Connection Section and NGTL supported their request.

On February 14, 2018, NGTL provided a notification package to Enoch Cree Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition as Project components of potential interest to Enoch Cree Nation.

Between February 19 and March 22, 2018, Enoch Cree Nation and NGTL exchanged correspondence regarding the structure and details of a TK Protocol Agreement, as well as a Band Council Resolution (BCR) to support Enoch Cree Nation’s TK study activities for the Project.

On April 10, 2018, NGTL requested input from Enoch Cree Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive any response to that request. On April 25, 2018, NGTL informed Enoch Cree Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

On May 7, 2018, Enoch Cree Nation informed NGTL a BCR would be provided to NGTL upon Enoch Cree Nation’s Chief and Council’s approval. To date, NGTL has not received Enoch Cree Nation’s BCR. Upon receipt, NGTL expects to execute the TK Protocol Agreement to support Enoch Cree Nation’s TK study for the Project.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Enoch Cree Nation. NGTL will continue to address questions and concerns from Enoch Cree Nation through its ongoing engagement efforts should any arise.

Ermineskin Cree Nation

On February 14, 2018, NGTL provided a notification package to Ermineskin Cree Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections) as Project components of potential interest to Ermineskin Cree Nation.
On April 10, 2018, NGTL requested input from Ermineskin Cree Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 18, 2018, NGTL met with Ermineskin Cree Nation to discuss the Project and to address questions and concerns. At the meeting, Ermineskin Cree Nation confirmed interest in the components of the Project identified by NGTL and requested to complete a TK study. NGTL supported the request.

NGTL did not receive any response to the request for input into the community-specific TK Literature Review from Ermineskin Cree Nation. On April 25, 2018, NGTL informed Ermineskin Cree Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

To date, Ermineskin Cree Nation has not completed a TK study of the Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections). Upon receipt, the findings of Ermineskin Cree Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Ermineskin Cree Nation. NGTL will continue to address questions and concerns from Ermineskin Cree Nation through its ongoing engagement efforts should any arise.

**Foothills Ojibway Society**

On February 14, 2018, NGTL provided a notification package to Foothills Ojibway Society concerning the overall Project. NGTL identified Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition as Project components of potential interest to Foothills Ojibway Society. On February 16, 2018, Foothills Ojibway Society responded to NGTL’s notification package to request a meeting to discuss the Project. NGTL agreed to meet with Foothills Ojibway Society in March 2018. NGTL did not receive confirmation on the meeting date.

On April 10, 2018, NGTL requested input from Foothills Ojibway Society on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Foothills Ojibway Society that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Foothills Ojibway Society. NGTL will continue to address questions and concerns from Foothills Ojibway Society through its ongoing engagement efforts should any arise.
Gunn Métis Local 55

On September 8, 2017, NGTL met with the Gunn Métis Local 55 to discuss the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section). At the meeting, Gunn Métis Local 55 informed NGTL their area of interest had been expanded. NGTL committed to engaging Gunn Métis Local 55 on the expanded area of interest.

On October 6, 2017, NGTL contacted Gunn Métis Local 55 to introduce the Grande Prairie Mainline Loop No. 3 (Elmworth Section) component of the Project.

On October 11, 2017, NGTL met with Gunn Métis Local 55 to discuss the McLeod River Connection Section component of the Project. Gunn Métis Local 55 requested to complete a TK study and NGTL supported their request.

On October 24, 2017, Gunn Métis Local 55 confirmed interest in the Elmworth Section and requested to conduct a TK study. NGTL supported their request.

NGTL and Gunn Métis Local 55 met on January 12, 2018, and discussed logistics for the site visit for the TK study. Gunn Métis Local 55 informed NGTL of their intent to complete their site visit for the TK study in the spring of 2018.

On February 14, 2018, NGTL provided a notification package to Gunn Métis Local 55 concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection), Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section), as Project components of potential interest to Gunn Métis Local 55.

On March 5, 2018, NGTL met with Gunn Métis Local 55 to review the overall Project. At the meeting, Gunn Métis Local 55 advised NGTL they also had an interest in the Edson Mainline Loop No. 4 (Robb Section) and requested to complete a TK study of all the Project components identified. NGTL supported their request.

On April 10, 2018, NGTL requested input from Gunn Métis Local 55 on the community-specific TK Literature Review completed for the Project’s ESA. NGTL received Gunn Métis Local 55’s interim TK report for the Project on April 24, 2018. Gunn Métis Local 55 noted that the interim TK report would be supplemented with further information from field work planned at the end of May 2018. Additionally, Gunn Métis Local 55 provided an edited version of Gunn Métis Local 55’s TK Literature Review document and additional source of TK information to NGTL. NGTL considered the edited version of the community-specific TK Literature Review and additional source of TK information provided by Gunn Métis Local in the Project’s ESA. NGTL is currently reviewing Gunn Métis Local 55’s interim TK report for the Project in the context of the ESA for consideration and incorporation into Project planning, as appropriate.
Horse Lake First Nation

NGTL has been sharing information with Horse Lake First Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017 and the Grande Prairie Mainline Loop No. 3 (Elmworth Section) since September 11, 2017.

Horse Lake First Nation confirmed interest in the McLeod River Connection Section on August 22, 2017 and for the Elmworth Section on September 28, 2017. Horse Lake First Nation requested to conduct TK study for both Sections. NGTL supported their request.

During the McLeod River Connection Section site visit for TK study, Horse Lake requested additional information regarding the Project route, HDD of the Athabasca River, right-of-way width and staging areas. NGTL provided the information requested to Horse Lake First Nation on September 14, 2017. On November 8, 2017, NGTL received the results of Horse Lake First Nation’s TK study for the McLeod River Connection Section. On January 25, 2018, NGTL received the results of Horse Lake First Nation’s TK study for the Elmworth Section.

On February 14, 2018, NGTL provided a notification package to Horse Lake First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr Section, Deep Valley and McLeod River Connection), Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Horse Lake First Nation.

On April 10, 2018, NGTL requested input from Horse Lake First Nation on the community-specific TK Literature Review completed for the Project’s ESA.

On April 23, 2018, NGTL received from Horse Lake First Nation requests for additional information with respect to the engagement activities for the Project, capacity funding, effects to treaty rights, Project shapefiles, Project maps, and route selection.

On April 24, 2018, Horse Lake First Nation responded to NGTL’s April 10, 2018 request for input on the community-specific TK Literature Review completed for the Project’s ESA. Horse Lake First Nation expressed concerns with the timeline proposed by NGTL to receive comments and the adequacy of information provided in the community-specific TK Literature Review. Horse Lake First Nation also advised NGTL that their interest in the Project extended to all components of the Project. NGTL responded to Horse Lake First Nation’s concerns with respect to the community-specific TK Literature Review on May 1, 2018. NGTL acknowledged the concerns expressed by Horse Lake First Nation regarding the adequacy of the information provided in the community-specific TK Literature Review. NGTL
provided clarification on the purpose of the community-specific TK Literature Review. NGTL reiterated that the purpose of the community-specific TK Literature Review was to find publicly available TK information in and around the Project area. NGTL also acknowledged that the community-specific TK Literature Review was only one source of information considered for the Project. NGTL requested that Horse Lake First Nation identify and provide any additional sources of TK and traditional land and resource use information that Horse Lake First Nation would like considered for the Project. NGTL confirmed its commitment to considering additional information brought forward concerning Horse Lake First Nation TK and land use in the Project area.

On May 9, 2018, NGTL provided a response to the information requests made by Horse Lake First Nation on April 23, 2018.

On May 11, 2018, NGTL met with Horse Lake First Nation. At the meeting, Horse Lake First Nation expressed a concern with the capacity funding offered by NGTL for their assessment of potential impacts of the Project to treaty and Aboriginal rights. NGTL informed Horse Lake First Nation the funding offered was consistent with the scope of engagement activities proposed to inform Project planning in accordance with the terms of the existing agreement between NGTL and Horse Lake First Nation. Horse Lake First Nation committed to review the responses to their information requests provided by NGTL on May 9, 2018.

NGTL has reviewed Horse Lake First Nation’s TK study results for the McLeod River Connection Section and the Elmworth Section in the context of the ESA for consideration and incorporation into Project planning, as appropriate. See Appendix K, Annex A of the ESA: Traditional Knowledge Report - Aboriginal Groups Project-Related Issue Summaries for NGTL’s responses and proposed mitigations measures from the Project EPP that will be provided to Horse Lake First Nation.

Kapawe’no First Nation

On February 16, 2018, NGTL mailed a notification package to Kapawe’no First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Kapawe’no First Nation.

On March 28, 2018, NGTL received a letter from Kapawe’no First Nation confirming their interest in the Project. Kapawe’no First Nation stated they reserve the right to meet with NGTL to discuss opportunities for a TK study. To date, NGTL has not received a request from Kapawe’no First Nation to meet to discuss the Project.

On April 16, 2018, NGTL mailed a letter to request input from Kapawe’no First Nation on the community-specific TK Literature Review completed for the Project’s
ESA. On May 2, 2018, NGTL telephoned Kapawe’no First Nation to advise that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA. Kapawe’no First Nation stated their review of the community-specific TK Literature Review was in progress.

On May 7, 2018, Kapawe’no First Nation submitted a letter to NGTL to inform the community-specific TK Literature Review was accurate. Kapawe’no First Nation provided minor revisions to the community-specific TK Literature Review and advised NGTL they had no concerns regarding the Project. NGTL will continue to address questions and concerns from Kapawe’no First Nation through its ongoing engagement efforts should any arise.

**Kelly Lake Cree Nation**

NGTL has been sharing information with Kelly Lake Cree Nation with respect to the Grande Prairie Mainline Loop No. 3 (Elmworth Section) since September 8, 2017.

On October 14, 2018, Kelly Lake Cree Nation confirmed interest in the Project and requested to conduct a TK study of the Elmworth Section. On October 27 and November 20, 2017, NGTL requested an update from Kelly Lake Cree Nation regarding the TK study of the Elmworth Section.

On February 14, 2018, NGTL provided a notification package to Kelly Lake Cree Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Kelly Lake Cree Nation.

On March 1, 2018, Kelly Lake Cree Nation and NGTL met. At the meeting Kelly Lake Cree Nation informed NGTL they also had an interest in Grande Prairie Mainline Loop No. 2 (Karr and Deep Valley Sections) of the Project. Kelly Lake Cree Nation provided an update on the status of the TK study for the Elmworth Section. Kelly Lake Cree Nation committed to provide the results of the TK study to NGTL by April 24, 2018. Kelly Lake Cree Nation requested information regarding training, education, employment and contracting opportunities available for the Project. NGTL provided community investment and capacity development information to Kelly Lake Cree Nation. Kelly Lake Cree Nation also requested information on monitoring opportunities during the Project’s construction and post-construction activities. NGTL is preparing the information requested with respect to monitoring and will provide it to Kelly Lake Cree Nation when the information is available.

On April 10, 2018, NGTL requested input from Kelly Lake Cree Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Kelly Lake Cree Nation that the community-specific TK Literature Review provided for
review would be included and considered in the Project’s ESA. On April 30, 2018, Kelly Lake Cree Nation responded to NGTL’s request and shared additional socio-economic information to be considered for incorporation in Project planning, as appropriate.

To date, NGTL has not received the results of Kelly Lake Cree Nation’s TK study of the Elmworth Section. Upon receipt, the findings of Kelly Lake Cree Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

Kelly Lake First Nation

On February 14, 2018, NGTL provided a notification package to Kelly Lake First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Kelly Lake First Nation.

On April 10, 2018, NGTL requested input from Kelly Lake First Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 19, 2018, Kelly Lake First Nation requested a meeting with NGTL to discuss the community-specific TK Literature Review. NGTL responded and offered to discuss their input to the community-specific TK Literature Review. Kelly Lake First Nation declined NGTL’s offer and informed NGTL they would submit a letter instead. NGTL has not yet received a letter from Kelly Lake First Nation.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Kelly Lake First Nation. NGTL will continue to address questions and concerns from Kelly Lake First Nation through its ongoing engagement efforts should any arise.

Kelly Lake Métis Settlement Society

NGTL has been sharing information with Kelly Lake Métis Settlement Society with respect to the Grande Prairie Mainline Loop No. 3 (Elmworth Section) since September 11, 2017.

On September 21, 2017, Kelly Lake Métis Settlement Society confirmed interest in the Project and requested to conduct a TK study of the Elmworth Section in October 2017. On November 20, 2017, NGTL received the results of Kelly Lake Métis Settlement Society’s TK study.

On February 14, 2018, NGTL provided a notification package to Kelly Lake Métis Settlement Society concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Kelly Lake Métis Settlement Society.
On March 1, 2018, NGTL met with Kelly Lake Métis Settlement Society. At the meeting, NGTL provided information about community investment, capacity development and NGTL’s IRBE activities to Kelly Lake Métis Settlement Society. NGTL committed to continue to provide Project-specific information about business engagement activities to Kelly Lake Métis Settlement Society when the information is available. NGTL requested an updated list of Kelly Lake Métis Settlement Society’s owned and affiliated business and their services for consideration in potential contracting opportunities available for the Project.

On April 10, 2018, NGTL requested input from Kelly Lake Métis Settlement Society on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Kelly Lake Métis Settlement Society that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has reviewed the results of Kelly Lake Métis Settlement Society’s TK study of the Grande Prairie Mainline Loop No. 3 (Elmworth Section) in the context of the ESA for consideration and incorporation into Project planning, as appropriate. See Appendix K, Annex A of the ESA: Traditional Knowledge Report - Aboriginal Groups Project-Related Issue Summaries for NGTL’s responses and proposed mitigations measures from the Project EPP that will be provided to Kelly Lake Métis Settlement Society.

**Louis Bull Tribe**

On February 14, 2018, NGTL provided a notification package to Louis Bull Tribe concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections) as Project components of potential interest to Louis Bull Tribe. On April 9, 2018, NGTL met with Louis Bull Tribe to discuss the Project and to address question and concerns. At the meeting, Louis Bull Tribe advised NGTL they also had an interest in the Grande Prairie Mainline Loop No. 3 (Elmworth Section) and requested to complete a TK study of all the Project components identified for Louis Bull Tribe. NGTL agreed to Louis Bull Tribe’s request.

On April 10, 2018, NGTL requested input from Louis Bull Tribe on the community-specific TK Literature Review completed for the Project’s ESA. On April 16, 2018, Louis Bull Tribe and NGTL exchanged correspondence. Louis Bull Tribe informed NGTL their input to the community specific TK Literature Review would be provided the week of April 22, 2018. NGTL provided a response to Louis Bull Tribe to request that their review of the community specific TK Literature Review be provided to NGTL to ensure their TK information are included and reflected in the ESA. On April 27, 2018, NGTL requested an update from Louis Bull Tribe on the status of their input into the community specific TK Literature Review. On April 30, 2018, Louis Bull Tribe provided a response to NGTL to inform that the
community-specific TK Literature Review was incomplete and inadequate for submission as part of the Project Application. Louis Bull Tribe requested additional engagement on the Project to identify and address gaps on the community-specific TK Literature Review. On May 2, 2018, NGTL responded to Louis Bull Tribe’s concerns with respect to the community-specific TK Literature Review. NGTL acknowledged the concerns expressed by Louis Bull Tribe regarding the adequacy of the information provided in the community-specific TK Literature Review. NGTL provided clarification on the purpose of the community-specific TK Literature Review. NGTL reiterated that the purpose of the community-specific TK Literature Review was to find publicly available TK information in and around the Project area. NGTL also acknowledged that the community-specific TK Literature Review was only one source of information considered for the Project. NGTL requested that Louis Bull Tribe identify and provide any additional sources of TK and traditional land and resource use information that Louis Bull Tribe would like considered for the Project. NGTL confirmed its commitment to considering additional information brought forward concerning Louis Bull Tribe TK and land use in the Project area.

On May 9, 2018, Louis Bull Tribe provided a letter to NGTL to confirm their commitment to the TK study of the Project components of interest to Louis Bull Tribe and to outline their concerns with the overall Project:

- Impacts to rights through loss of valuable habitat for moose, caribou and deer
- loss of culturally significant plant species
- habitat fragmentation
- noise disturbance to wildlife
- cumulative impacts to rights
- increased rate of development

On May 10, 2018, NGTL responded to Louis Bull Tribe’s letter dated May 9, 2018 to reiterate its commitment to support their TK study of the Project components identified. NGTL is preparing a response to address question and concerns raised in the letter and will provide it to Louis Bull Tribe when the information is available.

To date, Louis Bull Tribe has not completed a TK study of the Project components identified. Upon receipt, the findings of Louis Bull Tribe’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

Marlboro Community Association

NGTL has been sharing information with Marlboro Community Association with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.
On February 14, 2018, NGTL provided a notification package to Marlboro Community Association concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections) as Project components of potential interest to Marlboro Community Association.

On April 10, 2018, NGTL requested input from Marlboro Community Association on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Marlboro Community Association that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Marlboro Community Association. NGTL will continue to address questions and concerns from Marlboro Community Association through its ongoing engagement efforts should any arise.

Métis Nation of Alberta

NGTL has been sharing information with Métis Nation of Alberta with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017 and the Grande Prairie Mainline Loop No. 3 (Elmworth Section) since September 11, 2017.

On October 19, 2017, Métis Nation of Alberta informed NGTL of its new process and advised that it will be sending Project notifications to the Métis Nation of Alberta Regions for distribution to the Locals potentially affected by the Project.

On February 14, 2018, NGTL provided a notification package to Métis Nation of Alberta concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Grande Prairie Mainline Loop No. 3 (Elmworth Section), Grande Prairie Mainline Loop No. 4 (Valhalla Section), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and the Didsbury, Beiseker and Nordegg compressor station unit additions as Project components of potential interest to Métis Nation of Alberta.

On April 10, 2018, NGTL requested input from Métis Nation of Alberta on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Métis Nation of Alberta that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Métis Nation of Alberta.
NGTL will continue to address questions and concerns from Métis Nation of Alberta through its ongoing engagement efforts should any arise.

**Métis Nation of Alberta Region 3**

On February 14, 2018, NGTL provided a notification package to Métis Nation of Alberta Region 3 concerning the overall Project. NGTL identified Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), Didsbury and Beiseker compressor station unit additions as Project components of potential interest to Métis Nation of Alberta Region 3.

On April 10, 2018, NGTL requested input from Métis Nation of Alberta Region 3 on the community-specific TK Literature Review completed for the Project’s ESA. On April 24, 2018, NGTL contacted Métis Nation of Alberta Region 3 to confirm receipt of the Project information provided to date. NGTL did not receive a response from Métis Nation of Alberta Region 3. On April 25, 2018, NGTL informed Métis Nation of Alberta Region 3 that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

On April 25, 2018, Métis Nation of Alberta Region 3 contacted NGTL to request a meeting to discuss the Project. On May 2, 2018, NGTL met with Métis Nation of Alberta Region 3 to review the overall Project. At the meeting, Métis Nation of Alberta Region 3 confirmed interest in the Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections) and requested to complete a TK study. On May 16, 2018, NGTL provided additional information to Métis Nation of Alberta Region 3 regarding the proposed route.

To date, Métis Nation of Alberta Region 3 has not completed a TK study of the Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections). Upon receipt, the findings of Métis Nation of Alberta Region 3’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Métis Nation of Alberta Region 3. NGTL will continue to address questions and concerns from Métis Nation of Alberta Region 3 through its ongoing engagement efforts should any arise.

**Métis Nation of Alberta Region 4**

NGTL has been sharing information with Métis Nation of Alberta Region 4 with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On September 6, 2017, NGTL met with Métis Nation of Alberta Region 4 to discuss the McLeod River Connection Section. At the meeting, Métis Nation of Alberta
Region 4 committed to provide information to NGTL on which Métis Nation of Alberta Region 4’s Locals would be interested in the Project. To date, NGTL has not received this information from Métis Nation of Alberta Region 4.

On September 11, 2017, NGTL shared information with Métis Nation of Alberta Region 4 regarding the Grande Prairie Mainline Loop No. 3 (Elmworth Section).

On February 14, 2018, NGTL provided a notification package to Métis Nation of Alberta Region 4 concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Grande Prairie Mainline Loop No. 3 (Elmworth Section), Grande Prairie Mainline Loop No. 4 (Valhalla Section), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections) and Nordegg Compressor Station unit addition as Project components of potential interest to Métis Nation of Alberta Region 4.

On April 10, 2018, NGTL requested input from Métis Nation of Alberta Region 4 on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Métis Nation of Alberta Region 4 that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Métis Nation of Alberta Region 4. NGTL will continue to address questions and concerns from Métis Nation of Alberta Region 4 through its ongoing engagement efforts should any arise.

**Métis Nation of Alberta Region 6**

NGTL has been sharing information with Métis Nation of Alberta Region 6 with respect to the Grande Prairie Mainline Loop No. 3 (Elmworth Section) since September 11, 2017.

On January 17, 2018, Métis Nation of Alberta Region 6 confirmed interest in the Project and requested to conduct a TK study of the Elmworth Section. NGTL supported their request.

On February 14, 2018, NGTL provided a notification package to Métis Nation of Alberta Region 6 concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Métis Nation of Alberta Region 6. On February 28, 2018, NGTL met Métis Nation of Alberta Region 6 to discuss the Project and to answer any questions and concerns. At the meeting, Métis Nation of Alberta Region 6 confirmed interest in the Project components identified and informed NGTL they would conduct a TK study of the Elmworth Section in March 2018. NGTL supported their request for the TK study and provided
information about community investment, capacity development and business engagement to Métis Nation of Alberta Region 6. NGTL requested an updated list of Métis Nation of Alberta Region 6’s owned and affiliated business and their services for consideration in potential contracting opportunities available for the Project.

On March 26, 2018, Métis Nation of Alberta Region 6 initiated their site visit for the TK study of the Elmworth Section. However, due to weather conditions, Métis Nation of Alberta Region 6 ended their site visit earlier than anticipated. On April 16, 2018, Métis Nation of Alberta Region 6 informed NGTL that additional field dates were not required for their assessment and their site visit was complete.

On April 10, 2018, NGTL requested input from Métis Nation of Alberta Region 6 on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Métis Nation of Alberta Region 6 that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

To date, NGTL has not received the results of Métis Nation of Alberta Region 6’s TK study of the Elmworth Section. Upon receipt, the findings of Métis Nation of Alberta Region 6’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Métis Nation of Alberta Region 6. NGTL will continue to address questions and concerns from Métis Nation of Alberta Region 6 through its ongoing engagement efforts should any arise.

**Métis Settlements General Council**

On February 14, 2018, NGTL provided a notification package to Métis Settlements General Council concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr Section, Deep Valley and McLeod River Connection Sections), Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section), as Project components of potential interest to Métis Settlements General Council.

On April 10, 2018, NGTL requested input from Métis Settlements General Council on the community-specific TK Literature Review completed for the Project’s ESA. On May 1, 2018, Métis Settlements General Council responded to NGTL’s request. Métis Settlements General Council stated the information compiled for the community-specific TK Literature Review did not apply to their organization, and provided a link to their website as an additional source of information. On May 1, 2018, NGTL responded to Métis Settlements General Council’s comments with respect to the community-specific TK Literature Review. NGTL provided clarification on the purpose of the community-specific TK Literature Review. NGTL
reiterated that the purpose of the community-specific TK Literature Review was to find publicly available TK information in and around the Project area. NGTL requested that Métis Settlements General Council identify information that is inaccurate and provide additional sources of TK and traditional land and resource use information that Métis Settlements General Council would like considered for the Project. NGTL confirmed its commitment to considering additional information brought forward concerning Métis Settlements General Council TK and land use in the Project area. NGTL provided the Project fact sheet, including a Project overview map to Métis Settlements General Council.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Métis Settlements General Council. NGTL will continue to address questions and concerns from Métis Settlements General Council through its ongoing engagement efforts should any arise.

**Montana First Nation**

NGTL has been sharing information with Montana First Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On September 13, 2017, NGTL met with Montana First Nation to discuss the Project, to address questions and concerns, to and confirm Montana First Nation’s interest in the McLeod River Connection Section. Montana First Nation requested to conduct a TK study and to discuss potential contracting and employment opportunities available for the Project. NGTL committed to continue to provide information about contracting and employment opportunities to Montana First Nation when the information is available.

On February 14, 2018, NGTL provided a notification package to Montana First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr Section, Deep Valley and McLeod River Connection Sections), as Project components of potential interest to Montana First Nation.

On April 10, 2018, NGTL requested input from Montana First Nation on the community-specific TK Literature Review completed for the Project’s ESA.

On April 13, 2018, NGTL met with Montana First Nation to review the overall Project. At the meeting, Montana First Nation advised NGTL they also had an interest in the Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections) and Nordegg Compressor Station unit addition. Montana First Nation requested to complete a TK study of all the Project components identified. NGTL supported their request.
On April 28, 2018, Montana First Nation responded to NGTL’s request regarding the community-specific TK Literature Review. Montana First Nation provided an update on their TLU study and mapping completed for the Government of Alberta Geo-Data project. Montana First Nation advised NGTL the information would be made available to Project proponents. In addition, Montana First Nation provided information on the extent of their Traditional Territory in relation to the Project.

NGTL provided clarification on the purpose of the community-specific TK Literature Review. NGTL reiterated that the purpose of the community-specific TK Literature Review was to find publicly available TK information in and around the Project area. NGTL also acknowledged that the community-specific TK Literature Review was only one source of information considered for the Project. NGTL requested that Montana First Nation identify and provide any additional sources of TK and traditional land and resource use information that Montana First Nation would like considered for the Project.

To date, Montana First Nation has not completed a TK study of the Grande Prairie Mainline Loop No. 2 (Karr Section, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections) and Nordegg Compressor Station unit addition. Upon receipt, the findings of Montana First Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Montana First Nation. NGTL will continue to address questions and concerns from Montana First Nation through its ongoing engagement efforts should any arise.

Mountain Cree (Small Boy Camp)

On April 18, 2018, NGTL provided a notification package to Mountain Cree concerning the overall Project. NGTL identified the Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections) as sections of potential interest to Mountain Cree. On May 1, 2018, NGTL provided a Project update describing route revisions, including updated shapefiles and KMZ files. On May 10, 2018, NGTL provided updated Project KMZ files for all facility components of the Project.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Mountain Cree. NGTL will continue to address questions and concerns from Mountain Cree through its ongoing engagement efforts should any arise.

Mountain Métis Nation Association (Grande Cache Métis Local 1994)

NGTL has been sharing information with Mountain Métis Nation Association with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection
Since September 18, 2017, Mountain Métis Nation Association confirmed interest in McLeod River Connection Section and requested to conduct a TK study. NGTL supported their request.

On November 1, 2017, Mountain Métis Nation Association confirmed interest in the Elmworth Section and requested to conduct a TK study. NGTL supported their request.

On December 11, 2017, Mountain Métis Nation Association provided to NGTL a TK and Use Study containing the results of the McLeod River Connection Section TK study. On December 22, 2017, NGTL received a TK and Use Study containing the results of the Elmworth Section TK study.

On February 14, 2018, NGTL provided a notification package to Mountain Métis Nation Association concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as sections of potential interest to Mountain Métis Nation Association. On March 15, 2018, NGTL met Mountain Métis Nation Association to discuss the Project and to address question and concerns. Mountain Métis Nation Association advised NGTL they also had an interest in the Edson Mainline Loop No. 4 (Robb Section) and requested to complete a site visit and flyover for the TK study of the Project components identified. NGTL supported their request.

On April 10, 2018, NGTL requested input from Mountain Métis Nation Association on the community-specific TK Literature Review completed for the Project’s ESA. On April 11, 2018, Mountain Métis Nation Association provided confirmation that the information provided in the community-specific TK Literature Review was accurate and additional TK would be shared with NGTL upon completion of their TK report.

On April 18, 2018, NGTL received an interim TK report with Mountain Métis Nation Association’s flyover results for the Grande Prairie Mainline Loop No. 2 (Karr and Deep Valley Sections) and the Edson Mainline Loop No. 4 (Robb Section) components of the Project.

NGTL has reviewed the results of Mountain Métis Nation Association’s TK study for the McLeod River Connection Section, Elmworth Section and the interim TK reports for the Karr and Deep Valley Sections and the Robb Section flyover in the context of the ESA for consideration and incorporation into Project planning, as appropriate. See Appendix K, Annex A of the ESA: Traditional Knowledge Report - Aboriginal Groups Project-Related Issue Summaries for NGTL’s responses and proposed
mitigations measures from the Project EPP that will be provided to Mountain Métis Nation Association.

To date, NGTL has not received the final TK report with the results of Mountain Métis Nation Association’s TK study of the Karr and Deep Valley Sections and the Robb Section. Upon receipt, the findings of Métis Nation Association’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

**Nakcowinewak Nation of Canada**

NGTL has been sharing information with Nakcowinewak Nation of Canada with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On September 14, 2017, Nakcowinewak Nation of Canada confirmed their interest in the McLeod River Connection Section and requested to conduct a TK study. On January 9, 2018, Nakcowinewak Nation of Canada postponed the site visit for the TK study due to weather conditions.

On February 14, 2018, NGTL provided a notification package to Nakcowinewak Nation of Canada concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition as Project components of potential interest to Nakcowinewak Nation of Canada.

On March 20, 2018 NGTL met with Nakcowinewak Nation of Canada to discuss the Project and to address question and concerns. At the meeting, Nakcowinewak Nation of Canada confirmed interest in the Project components identified by NGTL and requested to conduct a TK study. NGTL agreed to Nakcowinewak Nation of Canada’s request for a TK study.

On April 10, 2018, NGTL requested input from Nakcowinewak Nation of Canada on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Nakcowinewak Nation of Canada that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

To date, Nakcowinewak Nation of Canada has not completed a TK study of the Karr, Deep Valley and McLeod River Connection Sections, Robb, Dismal Creek and Brewster Sections, and Nordegg Compressor Station unit addition. Upon receipt, the findings of Nakcowinewak Nation of Canada’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.
NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Nakcowinewak Nation of Canada. NGTL will continue to address questions and concerns Nakcowinewak Nation of Canada through its ongoing engagement efforts should any arise.

**Nekaneet First Nation**

On February 14, 2018, NGTL provided a notification package to Nekaneet First Nation concerning the overall Project. NGTL identified the Didsbury and Beiseker compressor station unit additions as Project components of potential interest to Nekaneet First Nation.

On April 10, 2018, NGTL requested input from Nekaneet First Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Nekaneet First Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Nekaneet First Nation. NGTL will continue to address questions and concerns from Nekaneet First Nation through its ongoing engagement efforts should any arise.

**Nose Creek Community**

On February 14, 2018, NGTL provided a notification package to Nose Creek Community concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 3 (Elmworth Section) and Grande Prairie Mainline Loop No. 4 (Valhalla Section) as Project components of potential interest to Nose Creek Community. On March 1, 2018, NGTL met with Nose Creek Community to discuss the Project and to address question and concerns. At the meeting, Nose Creek Community confirmed their interest in the Elmworth Section and Valhalla Section and requested to conduct a TK study. NGTL provided information about community investment, capacity development and business engagement. NGTL requested an updated list of Nose Creek Community’s owned and affiliated business and their services for consideration in potential contracting opportunities on the Project.

On March 26, 2018, Nose Creek Community confirmed the start date of April 8, 2018 to begin the site visit for the TK study. NGTL committed to provide to Nose Creek Community a draft TK Protocol Agreement for the TK study.

On April 10, 2018, NGTL requested input from Nose Creek Community on the community-specific TK Literature Review completed for the Project’s ESA. Nose Creek Community responded to NGTL’s request and provided updated information
regarding community statistics and to confirm the community-specific TK Literature Review was accurate.

On April 11, 2018, NGTL followed-up on the commitment made on March 26, 2018 with respect to the TK Protocol Agreement. NGTL requested confirmation from Nose Creek Community that they were a legal entity in order to enter into an TK Protocol Agreement with NGTL to complete a TK study for the Project. Upon receipt of the information requested on April 11, 2018, NGTL and Nose Creek will continue engagement with respect to their TK study.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Nose Creek Community. NGTL will continue to address questions and concerns from Nose Creek Community through its ongoing engagement efforts should any arise.

O’Chiese First Nation

NGTL has been sharing information with O’Chiese First Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On February 14, 2018, NGTL provided a notification package to O’Chiese First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition as Project components of potential interest to O’Chiese First Nation.

On March 21, 2018, NGTL received a letter from O’Chiese First Nation confirming that the Project was located within their traditional territory. O’Chiese First Nation informed NGTL they harvest and participate in ceremonial and cultural activities in the Project area. O’Chiese First Nation also outlined their concerns about the timeline for the Project application and NGTL’s ability to engage O’Chiese First Nation within the proposed Project schedule. O’Chiese First Nation proposed a budget for their engagement on the Project.

On April 10, 2018, NGTL requested input from O’Chiese First Nation on the community-specific TK Literature Review completed for the Project’s ESA.

On April 11, 2018, NGTL and O’Chiese First Nation met to discuss the Project and to address question and concerns. At the meeting, O’Chiese First Nation made several requests for additional Project information.

On April 20, 2018, O’Chiese First Nation provided a letter in response to NGTL’s community-specific TK Literature Review. O’Chiese First Nation expressed concerns
with the timeline proposed by NGTL to receive comments and the adequacy of information provided in the community-specific TK Literature Review. O’Chiese First Nation also advised NGTL that their interest in the Project extended to all components of the Project. Finally, O’Chiese First Nation stated “Our initial review of the preliminary project information indicates that not only is the project near O’Chiese First Nation Reserve, but the project is primarily on Crown lands and private lands to which O’Chiese First Nation has a right of access. These lands are currently and historically used by O’Chiese First Nation for the preferred execution of our Section 35 rights.”

On April 25, 2018, NGTL met with O’Chiese First Nation to discuss the Project and to address question and concerns. At the meeting, O’Chiese First Nation made several requests for Project information in addition to the requests made on April 11, 2018. O’Chiese First Nation expressed concerns with:

- the adequacy of the Aboriginal Engagement Program
- the adequacy of the information in the Project Description
- the schedule for the Project Application
- the development of the ESA
- completeness of the Project Application without O’Chiese First Nation’s TK
- the level of Project information and the responses provided by NGTL to date
- capacity constraints affecting their ability to review the Project

NGTL responded to O’Chiese First Nation’s concerns with respect to the community-specific TK Literature Review on April 26, 2018. NGTL acknowledged the concerns expressed by O’Chiese First Nation regarding the adequacy of the information provided in the community-specific TK Literature Review. NGTL provided clarification on the purpose of the community-specific TK Literature Review. NGTL reiterated that the purpose of the community-specific TK Literature Review was to find publicly available TK information in and around the Project area. NGTL also acknowledged that the community-specific TK Literature Review was only one source of information considered for the Project. NGTL requested that O’Chiese First Nation identify and provide any additional sources of TK and traditional land and resource use information that O’Chiese First Nation would like considered for the Project. NGTL informed O’Chiese First Nation the information identified in the Literature Review would be relied on in the ESA for the Project and confirmed its commitment to considering additional information brought forward concerning O’Chiese First Nation TK and land use in the Project area.

On May 11, 2018, NGTL received a letter filed by O’Chiese First Nation with the NEB expressing concern regarding NGTL’s engagement efforts for its projects, and also about the manner in which NGTL applies for approval of its projects. NGTL is

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2 NEB Filing ID: A91915-1
preparing a response to address question and concerns raised in the letter and will provide it to O’Chiese First Nation when the information is available.

On May 16, 2018, NGTL provided responses to the information requested by O’Chiese First Nation at the April 11, 2018 meeting. On May 17, 2018, NGTL provided responses to the additional information requested by O’Chiese First Nation at the April 25, 2018 meeting.

**Paul First Nation**

NGTL has been sharing information with Paul First Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On August 24, 2017, Paul First Nation confirmed interest in the McLeod River Connection Section and requested to conduct a TK study. NGTL supported their request.

On February 14, 2018, NGTL provided a notification package to Paul First Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and Nordegg Compressor Station unit addition as Project components of potential interest to Paul First Nation.

On April 10, 2018, NGTL requested input from Paul First Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 10, 2018, Paul First Nation responded to NGTL’s request. Paul First Nation expressed concerns with the adequacy and completeness of the information provided in the community-specific TK Literature Review. Paul First Nation requested Project maps and confirmation from NGTL that the Project’s potential effects would be assessed using methods in compliance with the CEAA 2012.

On April 11, 2018 NGTL discussed with Paul First Nation their intent to conduct a TK study for the Karr, Deep Valley and McLeod River Connection Sections as well as the Robb, Dismal Creek and Brewster Sections. NGTL supported their request and Paul First Nation committed to provide a TK study proposal to NGTL. On May 17, 2018, NGTL received Paul First Nation’s proposal for a TK study. NGTL is currently reviewing Paul First Nation’s TK proposal and will provide a response to Paul First Nation.

On April 23, 2018, NGTL provided a response to Paul First Nation’s April 10, 2018 email. NGTL reiterated that the purpose of the community-specific TK Literature Review was to find publicly available TK information in and around the Project area. NGTL requested that Paul First Nation identify the information in the community-specific TK Literature Review that is incorrect and provide additional
sources NGTL should consider in the ESA by April 27, 2018. Finally, NGTL reiterated the offer to facilitate a Project-specific TK study with Paul First Nation and provided the Project fact sheet, including the Project map.

On May 8, 2018, NGTL provided a response to Paul First Nation regarding CEAA 2012. NGTL informed Paul First Nation that an environmental assessment was required under both the NEB Act and CEAA 2012 pursuant to Section 46 of the Regulations Designating Physical Activities.

On May 13, 2018, Paul First Nation completed the TK study for the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section). To date, NGTL has not received the results of Paul First Nation’s TK study. Upon receipt, the findings of Paul First Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Paul First Nation. NGTL will continue to address questions and concerns from Paul First Nation through its ongoing engagement efforts should any arise.

**Piikani Nation**

On February 14, 2018, NGTL provided a notification package to Piikani Nation concerning the overall Project. NGTL identified the Beiseker Compressor Station unit addition as the Project component of potential interest to Piikani Nation.

On April 10, 2018, NGTL requested input from Piikani Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Piikani Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Piikani Nation. NGTL will continue to address questions and concerns from Piikani Nation through its ongoing engagement efforts should any arise.

**Saddle Lake Cree Nation**

NGTL has been sharing information with Saddle Lake Cree Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On August 30, 2017, NGTL met with Saddle Lake Cree Nation to confirm Saddle Lake Cree Nation’s interest in the Project. Saddle Lake Cree First Nation requested to
conduct a TK study of the McLeod River Connection Section. Saddle Lake Cree Nation completed the TK study in the fall of 2017.

On February 14, 2018, NGTL provided a notification package to Saddle Lake Cree Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections) as Project components of potential interest to Saddle Lake Cree Nation.

On April 10, 2018, NGTL requested input from Saddle Lake Cree Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Saddle Lake Cree Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

On May 14, 2018, NGTL received the results of Saddle Lake Cree Nation’s TK study for McLeod River Connection Section. NGTL is currently reviewing the results of Saddle Lake Cree Nation’s TK study in the context of the ESA for consideration and incorporation into Project planning, as appropriate.

**Samson Cree Nation**

NGTL has been sharing information with Samson Cree Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On November 14, 2017, NGTL met with Samson Cree Nation via teleconference. Samson Cree Nation confirmed interest in the Project and requested to conduct a TK study of the McLeod River Connection Section. NGTL supported Samson Cree Nation’s request.

On February 14, 2018, NGTL provided a notification package to Samson Cree Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), Edson Mainline Loop No. 4 (Robb Section, Dismal Creek and Brewster Sections) and the Nordegg, Didsbury and Beiseker compressor station unit additions as Project components of potential interest to Samson Cree Nation. Samson Cree Nation and NGTL met on April 20, 2018 to discuss the Project and address question and concerns. Samson Cree Nation confirmed their interest in the Project components identified and requested to conduct a TK study. NGTL supported their request.

On April 10, 2018, NGTL requested input from Samson Cree Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Samson Cree Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.
To date, Samson Cree Nation has not completed a TK study of Project components identified. Upon receipt, the findings of Samson Cree Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Samson Cree Nation. NGTL will continue to address questions and concerns from Samson Cree Nation through its ongoing engagement efforts should any arise.

**Siksika Nation**

On February 14, 2018, NGTL provided a notification package to Siksika Nation concerning the overall Project. NGTL identified the Beiseker and Didsbury compressor station unit additions as Project components of potential interest to Siksika Nation. Following the Project notification, Siksika Nation and NGTL exchanged emails to schedule a meeting to discuss the Project and confirm their interest.

On April 10, 2018, NGTL requested input from Siksika Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 11, 2018, Siksika Nation requested that NGTL provide its availability for a meeting in early May 2018. Siksika Nation expressed concern that no meaningful engagement has taken place and it needs to be addressed through a meeting. The community also indicated it would share its concerns with the Board. On April 12, 2018, NGTL emailed Siksika Nation to schedule a meeting for May 3, 2018 to discuss Siksika Nation concerns. On April 27, 2018, Siksika Nation confirmed the meeting.

On April 25, 2018, Siksika Nation submitted a letter to NGTL (dated April 12, 2018) to propose a budget for capacity funding and to express the following concerns with the proposed Project and engagement activities completed to date:

- the Project Notification package provided on February 14, 2018 was not addressed to the Siksika Nation Consultation Officer and did not provide information with respect to the scope of the Project. Siksika Nation also expressed concern regarding the planned regulatory Project application timing
- the Project Description filed with the Board on February 27, 2018, did not provide sufficient details with respect to the scope of the Project, including proposed development and execution of an impact assessment
- the shapefiles provided have limited mapping functionality, and Siksika Nation has requested additional spatial information to understand the scope of the Project
- Siksika Nation stated the timeline proposed by NGTL for the review of the community-specific TK Literature Review completed for the Project’s ESA was unreasonable
On May 2, 2018 NGTL requested to reschedule the May 3 meeting to May 7, 2018. Siksika Nation agreed to NGTL’s request.

On May 7, 2018, NGTL met with Siksika Nation to discuss the Project and provide a response to the questions and concerns raised in the April 11, 2018 email and April 12, 2018 letter. NGTL provided an overview of the proposed regulatory application filing schedule for the Project and NGTL’s Aboriginal Engagement Program. Siksika Nation confirmed their interest in all the components of the Project and outlined additional concerns with the Project:

- potential cultural and political impacts within their traditional territory
- capacity funding
- completeness of the community-specific TK Literature Review and availability of TK for the Project Application
- completeness of the Project Application and ESA

At the meeting, Siksika Nation also made several requests for additional Project information and NGTL requested a detailed budget and workplan from Siksika Nation to support their participation in the Project’s engagement activities.

On May 9, 2018, Siksika Nation submitted a letter to NGTL to reiterate their concerns with the Project. Siksika Nation emphasized their concern with the engagement conducted to date, including the assessment and incorporation of TK information collected by Siksika Nation for the Project. Siksika Nation stated they were not able to identify potential Project’s effects to their rights within the proposed regulatory application filing schedule with their existing TLU information. Siksika Nation also expressed concerns regarding capacity funding. Siksika Nation stated that capacity funding had not been provided to date to facilitate the collection of Project-specific information or to support their participation in Project-specific activities. In response to NGTL’s request made at the May 7, 2018 meeting, Siksika Nation included in the letter a detailed budget and workplan for NGTL’s review and approval. Siksika Nation requested a response from NGTL on the proposed budget by May 11, 2018.

On May 16, 2018, NGTL provided a response to the letter received on May 9, 2018. In its response, NGTL acknowledged Siksika Nation’s concerns regarding of the proposed regulatory application filing schedule for the Project and confirmed NGTL’s commitment to ongoing engagement through all the phases of the Project. NGTL also acknowledged Siksika Nation’s concern with respect to capacity funding. NGTL stated that the Project components located within Siksika Nation’s traditional territory (Didsbury and Beiseker compressor station unit additions) are located on freehold land and are planned to be located at or near the existing compressor sites. NGTL also stated that to date, NGTL was not aware of any access agreements between the land owners and Siksika Nation near or at the existing compressor sites.
NGTL confirmed its commitment to reasonable capacity funding to support Siksika Nation’s participation in Project engagement activities. NGTL informed Siksika Nation it had not approved the budget proposed in their May 9, 2018 letter since it included engagement activities out of scope for engagement on the Didsbury and Beiseker compressor station unit additions. NGTL encouraged Siksika Nation to provide any additional information they had relevant to NGTL’s consideration of potential effects of the Project to be assessed and considered for incorporation into Project planning, as appropriate.

NGTL remains committed to working with Siksika Nation to discuss the Project and to address questions and concerns Siksika Nation has regarding the Project. NGTL understands that Siksika Nation intends to provide comments to the literature review information sent by NGTL on April 10, 2018. NGTL remains committed to sharing Project information and receiving feedback from Siksika Nation for the purpose of identifying potential Project-related impacts on rights and interests within Siksika Nation’s traditional territory and to identify appropriate mitigation.

**Stoney Nakoda Nations**

NGTL has been sharing information with Stoney Nakoda Nations with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

On December 12, 2017, NGTL and Stoney Nakoda Nations met to discuss the Project and to address questions and concerns. Stoney Nakoda Nations confirmed interest in the Project and requested to conduct a TK study of the McLeod River Connection Section. On January 16, 2018, NGTL and Stoney Nakoda Nations met again to discuss the proposed TK study. At the meeting, NGTL requested Stoney Nakoda Nations’ scope of work for the TK study. Stoney Nakoda Nations informed NGTL of their interest in training, education, contracting and employment opportunities available for the Project. Stoney Nakoda Nations requested to conduct a pipe ceremony prior to construction activities. NGTL agreed to the request and committed to notify Stoney Nakoda Nations of the construction activities planned for the McLeod River Connection Section. On January 24, 2018, NGTL provided information to Stoney Nakoda Nations regarding training and education opportunities.

On February 14, 2018, NGTL provided a notification package to Stoney Nakoda Nations concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), and the Didsbury and Beiseker compressor station unit additions as Project components of potential interest to Stoney Nakoda Nations.

On April 10, 2018, NGTL requested input from Stoney Nakoda Nations on the community-specific TK Literature Review completed for the Project’s ESA. On
April 24, 2018, Stoney Nakoda Nations provided a letter to NGTL to object to the Project and to express concerns with the engagement activities completed to date. On April 25, 2018, NGTL informed Stoney Nakoda Nations that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA. On April 30, 2018, NGTL responded to Stoney Nakoda Nations’ letter submitted on April 24, 2018, to provide an overview of the engagement activities completed for the Project, request a meeting to discuss Stoney Nakoda Nations’ concerns and reiterate NGTL’s commitment to its relationship with Stoney Nakoda Nations.

On May 10, 2018, NGTL received a letter from Stoney Nakoda Nations in response to NGTL’s April 30, 2018, letter. Stoney Nakoda Nations expressed the following concerns:

- timing of the proposed regulatory application filing schedule for the Project
- the level Project information provided to date
- lack of engagement on ESA and Aboriginal Engagement Program scope

Proposed scheduled for input into the community-specific TK Literature Review In their letter, Stoney Nakoda Nations committed to provide a response to NGTL’s April 10, 2018 request for input on the community-specific TK Literature Review upon receipt of adequate capacity funding. Stoney Nakoda Nations proposed a budget for their engagement on the Project. NGTL is preparing a response to address question and concerns raised in the letter and will provide it to Stoney Nakoda Nations when the information is available.

To date, Stoney Nakoda Nations has not completed a TK study of the Karr, Deep Valley and McLeod River Connection Sections. Upon receipt, the findings of Stoney Nakoda Nations’ TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

**Sturgeon Lake Cree Nation**

NGTL has been sharing information with Sturgeon Lake Cree Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017. On February 14, 2018, NGTL provided a notification package to Sturgeon Lake Cree Nation concerning the overall Project. NGTL identified Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections) as Project components of potential interest to Sturgeon Lake Cree Nation.

On April 10, 2018, NGTL requested input from Sturgeon Lake Cree Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Sturgeon Lake Cree Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.
On April 19, 2018, Sturgeon Lake Cree Nation and NGTL met to discuss the Project and to address question and concerns. Sturgeon Lake Cree Nation confirmed their interest in the Karr, Deep Valley and McLeod River Connection Sections and requested to conduct a TK study. To date, Sturgeon Lake Cree Nation has not completed a TK study of the Karr, Deep Valley and McLeod River Connection Sections. Upon receipt, the findings of Sturgeon Lake Cree’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

On May 8, 2018, in response to Sturgeon Lake Cree Nation’s request made on April 19, 2018, NGTL provided a summary of the Project information included in the February 14, 2018 notification package.

NGTL has not been made aware of any outstanding Project-specific questions or concerns raised during its engagement activities to date with Sturgeon Lake Cree Nation. NGTL will continue to address questions and concerns from Sturgeon Lake Cree Nation through its ongoing engagement efforts should any arise.

**Sucker Creek First Nation**

On February 14, 2018, NGTL provided a notification package to Sucker Creek First Nation concerning the overall Project. NGTL identified the Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections) as Project components of potential interest to Sucker Creek First Nation.

On April 10, 2018, NGTL requested input from Sucker Creek First Nation on the community-specific TK Literature Review completed for the Project’s ESA. On April 11, 2018, Sucker Creek First Nation responded to NGTL’s request to provide additional TK to be considered for incorporation in Project planning, as appropriate.

On April 18, 2018, NGTL met with Sucker Creek First Nation to discuss the Project and to address question and concerns. Sucker Creek First Nation confirmed interest in the Grande Prairie Mainline Loop No. 2 (Karr Section) and requested to complete a TK study. On April 26, 2018, Sucker Creek First Nation completed the flyover for their TK study of the Karr Section. To date, Sucker Creek First Nation has not completed a site visit of the Karr Section for their TK study. Upon receipt, the findings of Sucker Creek First Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

**Sunchild First Nation**

NGTL has been sharing information with Sunchild First Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.
On August 29, 2017, Sunchild First Nation confirmed interest in the Project and requested to conduct a TK study of the McLeod River Connection Section. On September 25, 2017, Sunchild First Nation completed their TK study. On February 2, 2018, NGTL received the results of Sunchild First Nation’s TK study of the McLeod River Connection Section.

On February 14, 2018, NGTL provided a notification package to Sunchild First Nation concerning the overall Project. NGTL identified the Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), the Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and the Nordegg Compressor Station unit addition as Project components of potential interest to Sunchild First Nation. On February 16, 2018, Sunchild First Nation expressed interest in contracting and employment opportunities available for the Project.

On April 10, 2018, NGTL requested input from Sunchild First Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed Sunchild First Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

NGTL is currently reviewing the results of Sunchild First Nation’s TK study completed for the McLeod River Connection Section in the context of the ESA for consideration and incorporation into Project planning, as appropriate.

**TsuuT’ina Nation**

NGTL has been sharing information with TsuuT’ina Nation with respect to the Grande Prairie Mainline Loop No. 2 (McLeod River Connection Section) since August 21, 2017.

TsuuT’ina Nation confirmed their interest in the McLeod River Connection Section and requested to conduct a TK study. On February 6, 2018, NGTL received the results of TsuuT’ina Nation’s TK study of the McLeod River Connection Section.

On February 14, 2018, NGTL provided a notification package to TsuuT’ina Nation concerning the overall Project. NGTL identified the Grande Prairie Mainline Loop No. 2 (Karr, Deep Valley and McLeod River Connection Sections), the Edson Mainline Loop No. 4 (Robb, Dismal Creek and Brewster Sections), and the Nordegg, Didsbury and Beiseker compressor station unit additions as Project components of potential interest to TsuuT’ina Nation.

On April 10, 2018, NGTL requested input from TsuuT’ina Nation on the community-specific TK Literature Review completed for the Project’s ESA. NGTL did not receive a response to that request. On April 25, 2018, NGTL informed
Tsūt’ina Nation that the community-specific TK Literature Review provided for review would be included and considered in the Project’s ESA.

On May 2, 2018, NGTL met with Tsūt’ina Nation to discuss the Project and to address question and concerns. At the meeting, Tsūt’ina Nation confirmed their interest in Robb, Dismal Creek and Brewster Sections, the Nordegg, Didsbury and Beiseker compressor station unit additions and requested to conduct a TK study for these Project components.

NGTL has reviewed the results of Tsūt’ina Nation’s TK study completed for the McLeod River Connection Section in the context of the ESA for consideration and incorporation into Project planning, as appropriate. See Appendix K, Annex A of the ESA: Traditional Knowledge Report - Aboriginal Groups Project-Related Issue Summaries for NGTL’s responses and proposed mitigations measures from the Project EPP that will be provided to Tsūt’ina Nation.

To date, Tsūt’ina Nation has not completed a TK study of the Robb, Dismal Creek and Brewster Sections, or the Nordegg, Didsbury and Beiseker compressor station unit additions. Upon receipt, the findings of Tsūt’ina Nation’s TK study will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

13.4 PLANS FOR ONGOING ENGAGEMENT

NGTL continues to actively engage with all potentially affected Aboriginal groups consistent with the approach described above. Engagement activities will continue during all Project phases. NGTL will continue to respond to questions and concerns, and ongoing engagement activities will continue with the intent to:

- address any Project-related questions or concerns
- progress work plans that provide capacity funding for communities
- understand interests in employment and contracting opportunities
- continue to gather input through ongoing engagement activities

13.4.1 Pre-Construction and Construction

NGTL will continue to engage with Aboriginal groups potentially affected by the Project during the pre-construction and construction phases, and address questions or concerns in a timely manner should any arise.

13.4.2 Operations

TransCanada’s PA Program will be implemented once the Project is in operations phase (see Section 10.1.6). This program facilitates consistent, ongoing communication about safety, integrity and emergency response with Aboriginal
groups, and key community stakeholders and interested parties, such as landowners, the public, government representatives, and emergency response agencies.
14.0 ENVIRONMENTAL AND SOCIO-ECONOMIC MATTERS

This section summarizes the need for and scope of the effects assessment, along with the approach, findings, and conclusions of the ESA.

Wood Environment and Infrastructure Solutions (Wood) prepared the ESA for the Project on behalf of NGTL. The ESA assesses the Project based on the description of the Project components outlined in Section 1 of this Application.

14.1 NEED FOR EFFECTS ASSESSMENT

The Project involves construction and operations of gas pipeline components over 40 km in length, which therefore requires a CPCN pursuant to Section 52 of the NEB Act. An environmental assessment is required for the Project under both the NEB Act and CEAA 2012 pursuant to Section 46 of the Regulations Designating Physical Activities. The Project’s ESA has been prepared in accordance with both the NEB Filing Manual and CEAA 2012. The NEB is responsible for the assessment of the Project, but other federal authorities, including those with special knowledge or expertise, might provide assistance to the Board.

14.2 SCOPE OF THE PROJECT

Consistent with section 19 of CEAA 2012 and guidance in the NEB Filing Manual, the ESA provides an assessment of potential effects associated with the physical works, undertakings and related activities associated with the Project described below:

- construction and operation of approximately 344 km of pipeline loops and related facilities
- construction and operation of three compressor station unit additions
- construction and operation of one control valve
- construction-related temporary infrastructure

The ESA includes an assessment of the effects associated with construction activities, operations, decommissioning or abandonment activities, accidents and malfunctions and effects of the environment on the Project. The ESA analysis includes determination of significance of any residual effects following mitigation and the significance of cumulative effects.
14.3 SCOPE OF THE ASSESSMENT

The ESA considers the mandatory factors listed in sections 19(1), 5(1) and 5(2) of CEAA 2012, as well as guidelines in the NEB Filing Manual. The scope of the ESA includes construction, operations, and decommissioning or abandonment of the Project.

The ESA is divided into the following sections:

1.0 Introduction: Provides the purpose of the ESA, a description of the scope of the Project and the scope of the ESA, an outline of the ESA, and a summary of the Project team.

2.0 Project Description: Provides a description of the Project purpose, alternative means of carrying out the Project, location, Project components and Project phases.

3.0 Consultation and Engagement: Provides a summary of engagement activities with landowners, stakeholders and Aboriginal groups, conducted in association with preparation of the ESA and the Application.

4.0 Methods: Provides a description of the effects assessment and cumulative effects assessment methods.

5.0 – 20.0

Valued Component (VC)-specific Assessment Sections: provides, for each identified VC, a description of the current environmental and socio-economic conditions present within the study areas; the potential environmental and socio-economic effects, mitigation measures and predicted residual effects of the Project as well as an assessment of their significance; and description of the predicted cumulative effects as well as an assessment of their significance.

21.0 Accidents and Malfunctions: describes the potential effects of accidents and malfunctions during construction and operation of the Project, as well as measures to avoid or reduce those effects.

22.0 Effects of the Environment on the Project: addresses the potential effects of the environment on the Project.

23.0 Summary of Environmental and Socio-Economic Effects Assessment: provides a summary of the ESA in table form.

24.0 Environmental Compliance: provides a description of TransCanada’s environmental policies as well as the environmental inspection and issue
monitoring policies to be applied during the construction and operation of the Project.

25.0 Post Construction Monitoring: provides a description of the post-construction monitoring program and of proposed follow-up programs.

26.0 Conclusion: Provides conclusions related to the significance of predicted residual and cumulative environmental and socio-economic effects associated with the Project.

Appendix A: An Environmental Protection Plan (EPP) – describes the plans to address environmental mitigation and reclamation, chemical and waste management, traffic control management, hydrovac slurry handling, trenchless crossings and contingency plans for any unanticipated circumstances, including spills, effects of adverse environmental conditions and biological, traditional or heritage resource discoveries.

Additional appendices to the ESA include:

Appendix B: Environmental Alignment Sheets
Appendix C: Soil and Soil Productivity Technical Data Report (TDR)
Appendix D: Water Quality and Quantity TDR
Appendix E: Fish and Fish Habitat TDR
Appendix F: Wildlife and Wildlife Habitat TDR
Appendix G: Air Emissions TDR
Appendix H: Acoustic Environment TDR
Appendix I: Preliminary Caribou Habitat Restoration and Offset Measures Plan (CHR&OMP)
Appendix J: Preliminary Decommissioning and Abandonment Plan
Appendix K: Traditional Knowledge Report

14.4 ASSESSMENT METHODOLOGY

The ESA evaluated the potential environmental and socio-economic effects of the construction, operations, and decommissioning or abandonment phases of each component of the Project.

The methodology for this ESA was developed based on the NEB Filing Manual, Release 2017-01, using Guide A: Facilities Applications (NEB Act section 52 and section 58 Applications), Section A.2 (Environmental and Socio-Economic Assessment), and pursuant to CEAA 2012 and involves the following steps:
- determine the environmental and socio-economic VCs and related key indicators that may interact with the Project
- identify the potential interactions between the Project and the VCs
- determine the temporal and spatial boundaries of interactions of the Project and the VCs
- describe the existing environment and socio-economic conditions that represent the baseline conditions in which the Project will be constructed and operated
- assess the potential effects of the Project relative to the baseline conditions. Assessment of Project effects includes identifying the potential effects, the application of mitigation measures, identifying any residual effects, and determining the significance of any residual effects
- for all residual effects, conduct a cumulative effects assessment for the Project in combination with past, present and reasonably foreseeable projects and activities
- identify any follow-up and monitoring programs that will be undertaken to evaluate the effectiveness of planned mitigation and address environmental issues identified during Project operation.

14.5 SPATIAL BOUNDARIES

Spatial boundaries define the geographic extents within which the potential environmental or socio-economic effects of the Project are considered. As such, these spatial boundaries define the study areas for the ESA report, as follows:

- Project Footprint, which is restricted to the areas disturbed by construction activities including the clearing, grading, ditch excavation, log decks, soil stockpiles, work and travel lanes, temporary work and laydown areas and temporary construction camp;
- local study area (LSA) encompasses the area in which both (a) Project-related environmental and socio-economic effects can be estimated or measured with a level of confidence that allows for assessment; and, (b) there is a reasonable expectation that those environmental effects could occur; and
- regional study area (RSA) encompasses the assessment area in which Project-specific environmental and socio-economic effects can be expected to overlap with those of past, present, and reasonably foreseeable future projects and activities. The RSA is intended to provide regional context, and is therefore generally the area in which cumulative effects are assessed.
- The socio-economic study area (SESA) is used for the socio-economic VCs and typically incorporates the regional boundaries of the rural Municipal Districts (MDs) and counties in which the Project facilities are located.
The LSAs and RSAs used in the effects assessment vary by environmental and socio-economic VC.

These spatial areas were used to capture the potential direct and indirect effects of the Project on each VC and its associated key indicators, as well as to understand the context within which the effects are expected to occur. Spatial ecological boundaries are described in the discussions of each applicable VC.

14.6 TEMPORAL BOUNDARIES

The temporal boundaries establish the period(s) for which Project-specific and potential cumulative environmental effects were considered in the ESA. The following temporal boundaries were used for the Project assessment:

- construction – encompasses site preparation and the construction activity period from start of construction to start of operations
- operations – encompasses operations and maintenance activities throughout the life of the Project

At this time, there is no plan to decommission and abandon the Project. However, a preliminary decommissioning and abandonment plan is provided in Appendix J, including an environmental and socio-economic assessment on anticipated activities, as required by the NEB Filing Manual.

14.7 BIOPHYSICAL AND SOCIO-ECONOMIC VCS

The ESA is organized by biophysical and socio-economic components. Where necessary, discussion is broken out by Project component to consider specific biophysical and socio-economic effects associated with the individual components.

The biophysical and socio-economic VCs assessed in the ESA are as follows:

- physical and meteorological environment
- soil and soil productivity
- vegetation
- water quality and quantity
- fish and fish habitat
- wetlands
- wildlife and wildlife habitat
- species at risk
- atmospheric environment
- acoustic environment
- human occupancy and resource use
- heritage resources
- navigation and navigation safety
- traditional land and resource use
- social and cultural well-being
- human health and aesthetics
- infrastructure and services
- employment and economy

Where appropriate and available, TK was incorporated in the consideration and discussion of these VCs.

Effects arising from potential accidents and malfunctions, and effects of the environment on the Project were also considered.

### 14.8 POTENTIAL ENVIRONMENTAL AND SOCIO-ECONOMIC EFFECTS

The effects assessment considers the potential interactions between the Project infrastructure components and activities and the VCs within the identified spatial and temporal boundaries. Project interactions can be direct (i.e., as a result of a Project infrastructure component or activity affecting a VC), or indirect (i.e., as a result of a change to one VC affecting another VC).

Potential effects of the Project on the key indicators are determined by comparing the baseline conditions with those expected to result from the Project.

### 14.9 ESA CONCLUSIONS

#### 14.9.1 Project Effects

Based on the observations in the ESA, the Project is not expected to have a significant adverse effect on any biophysical or socio-economic element provided the mitigation measures identified in the ESA are effectively implemented.

#### 14.9.2 Cumulative Effects

It is recognized that all project-related residual effects that are predicted for a valued environmental or socio-economic component have the potential to contribute to broader regional cumulative effects on that component, even if the stand-alone project effects are considered not significant. An assessment of the Project’s residual effects in combination with the effects of past, present and reasonably foreseeable future projects was completed on the VCs and is presented and discussed in the ESA. The cumulative effects methodology used in the ESA follows the guidance in the NEB Filing Manual and is consistent with best practices offered in the CEA Agency’s

The ESA considered both residual and cumulative effects in respect of the biophysical and socio-economic elements that the Project interacts with. A portion of the Deep Valley Section of the Project will parallel NGTL’s existing Grande Prairie Mainline for approximately 44 km within the Little Smoky Caribou Range. The Project is predicted to result in residual effects that will contribute to the pre-existing significant adverse cumulative effects on woodland caribou. To mitigate the effects of the Project, NGTL has developed a CHR&OMP. Implementing the CHR&OMP aims to offset these effects, with the goal of complying with the federal Recovery Strategy for Woodland Caribou.

14.10 COMMITMENT

NGTL accepts the findings of the ESA and will adhere to the recommendations and mitigation measures identified in the ESA and the EPPs. The EPP (appended to the ESA) forms a portion of the ESA.

To ensure that mitigation measures are followed, NGTL will have qualified environmental inspectors on the Project and will develop an environmental orientation for Project personnel.

14.11 POST CONSTRUCTION MONITORING

NGTL will implement post-construction monitoring (PCM) activities for the Project, which will be used to:

- visually inspect the Project Footprint using ground reconnaissance to capture previously unidentified environmental issues
- evaluate the natural recovery of lands disturbed during pipeline construction
- assess the effectiveness of mitigation practices used during pipeline construction
- evaluate the recovery of ecological function of wetlands disturbed by pipeline construction
- recommend remedial measures, if warranted, to be implemented to address outstanding environmental issues in a timely manner

NGTL will implement PCM activities following final clean up. By initiating activities in year one during the first full growing season after final clean up, issues identified and remedial actions taken during the first year can be assessed, and any residual outstanding issues can be managed during the subsequent year. Preliminary work will involve development of an Environmental Issues List based on a review of relevant
planning, construction and environmental reports and any other documentation of potential issues encountered during construction. The Environmental Issues List will form the basis for inspection and monitoring of issues that were identified during the construction and reclamation phases of the Project. Preliminary work will be followed by ground and/or aerial reconnaissance during the first full growing season after final clean up. During the reconnaissance, NGTL will inspect the ROW to assess the condition of the pipeline ROW and the effectiveness of mitigation and reclamation measures. The Environmental Issues List will be used to document issues as they occur during construction and PCM, and will be updated as issues are resolved. When an environmental issue is identified, the extent of the affected area will be delineated, and where warranted, the affected area will have remedial measures employed to address the issue.

For further details on PCM, see Section 25 of the ESA.

14.12 CONTINUING ENVIRONMENTAL FIELD STUDIES

On-going field surveys are proposed to support construction planning, support preparation of provincial regulatory applications, confirm appropriateness of environmental mitigation measures identified in the ESA and EPP, and, if required, identify additional mitigation measures.

In support of this Application, NGTL plans to submit the results of its 2018 field work in September 2018. For additional information see Table 1-4.

A Historic Resources Application (HRA) and Statement of Justification were submitted to Alberta Culture and Tourism (ACT) for the pipeline sections of the Project on May 2, 2018. A separate HRA will be submitted for the compressor station unit additions. It is expected that ACT will require the completion of a historic resources impact assessment (HRIA) to discover and evaluate historical resources within portions of the Project. NGTL will complete required field studies and all mitigations, as specified under the HRA requirements. HRA clearance will be obtained prior to construction.

14.13 FOLLOW-UP PROGRAM

A follow-up program verifies the effectiveness of mitigation measures following construction and involves applying additional mitigation measures if required.

In practice, follow-up programs are developed where there is uncertainty in the predicted effects or efficacy of mitigation measures. As a Designated Project under CEAA 2012, NGTL has identified the elements and monitoring procedures that require follow-up under CEAA 2012. For further information on follow-up programs, see Section 25 of the ESA.
14.14 ENVIRONMENTAL REGULATORY CONSULTATION

Consultation was initiated in February 2018 with government officials who might be involved in the regulatory reviews, approvals or construction phases of the Project. Their input, issues and concerns were taken into account in planning field assessments and in preparation of the ESA for the Project.

Consultation is planned and underway with provincial and federal regulators to address a variety of matters, including:

- wildlife sensitivities along the Project route
- timing of construction activities
- timing and type of offsets for caribou
- habitat restoration and offsets planning
- key wildlife biodiversity zones
- fisheries and watercourse crossings
- access control on Crown lands in Alberta

NGTL will continue to engage with these agencies and plans to provide the Board with a status update in September 2018 along with results of the 2018 field work.