

**Trans Mountain Pipeline ULC
Trans Mountain Expansion Project
NEB Hearing Order OH-001-2014
Responses to Information Request from
City of Abbotsford**

Traffic Management**1.01 Increased traffic on alternative routes****Reference:**

- i. A3S1S7 Volume 5B, Socio-Economic Effects Assessment, s.7.2.5.5, PDF p.121, 129, 131-133.
- ii. A3S0Z5 Volume 4A, Project Design & Execution – Engineering. Appendix D, Table 5.1.14, PDF p. 35, 36.
- iii. A3S219 Volume 5D, Socio-Economic Technical Report 10 of 13, PDF p. 6.
- iv. A3S2S3 Volume 6B, Socio-Economic Management Plan (“SEMP”), Appendix C, PDF p. 252, 253.
- v. City of Abbotsford Highway Use Bylaw No. 3644
- vi. City of Abbotsford Street and Traffic Bylaw No. 1536-2006

Preamble:

Reference (i) states that:

- Trans Mountain assumed that alternative routes will be available to road users.
- An increase in traffic on smaller roads used by Project-related vehicles may result in a need for maintenance of these smaller roads. These roads will be maintained by Trans Mountain subject to approval of the road owner.
- Detailed traffic estimates were not available at the time of the Application.
- Detailed traffic estimates will be shared with local governments.

Reference (ii) indicates that the pipeline is proposed to cross a series of roads in the City of Abbotsford beginning east at Boundary Road (RK 1107.959) to Lefevre Road (RK 1137.112). Closure of these roads would divert heavy vehicles and high traffic volumes through residential and school zones.

Reference (iii) indicates that the pipeline would cross two of three key transport corridors in the City of Abbotsford: Highway 1 (RK 1113.6) and Highway 11 (RK 1123.6).

Reference (iv) identifies mitigation measures for traffic issues pre and during construction.

References (v) and (vi) outlines the City’s permit requirements and bylaw regulations for highways, streets and traffic.

The Application does not identify the effect of increased non-Project related traffic being diverted to secondary routes as a result of the Project.

Request:

- a) Please provide a commitment to the City of Abbotsford that Trans Mountain and its contractors will abide by the City's bylaws indicated in Reference (v) and (vi).
- b) Please confirm that traffic management and access control management plans will include City roads.
- c) Please explain why the effect of increased non-Project related traffic is not factored into the Application.
- d) Please explain whether the presence of bedrock was factored into the proposal to use trenchless methods at high traffic routes such as Sumas Mountain Road and how bedrock impacts the feasibility of trenchless methods.

Response:

- a) As a federally regulated entity under the *National Energy Board Act*, if Trans Mountain Pipeline ULC (Trans Mountain) is granted a Certificate of Public Convenience and Necessity, it will proceed to apply for all permits and authorizations that are required by law. Trans Mountain will also continue to work with the City of Abbotsford to understand the applicability of its bylaws and standards to the construction and operation of the Project.
- b) Confirmed. Traffic and Access Management Control Plans will include overall consideration for traffic and access management and control as they affect the use of public roadways, including roads under provincial and municipal authority, which includes City of Abbotsford roads.
- c) The Application identified the potential effect of increase in traffic on highways and access roads during construction. Though not specified in the discussion in Section 7.2.5 of Volume 5B, this potential effect considered the potential for increased Trans Mountain Expansion Project (the Project) traffic as well as increases in non-Project traffic in non-typical areas because of Project-related diversions. The potential for a change in land use patterns related to, amongst other things, alteration of traffic patterns and volumes is also discussed in Section 7.2.4 (Human Occupancy and Resource Use) of Volume 5B. Access and use disruptions will be reduced by using low-impact road crossing construction methods. For example, Trans Mountain will bore under paved and high-use roads, where practical. Where minor roads are crossed that may affect established community use/access routes, Trans Mountain will complete open cut crossing within one day, to the extent practical. Trans Mountain will also develop a Traffic and Access Control Management Plans for the Project and Traffic Control Plans for particular locations or regions, and will develop a communication plan for activities that impact normal traffic flow, such as road closures and detours.
- d) Trans Mountain is aware that there may be possible bedrock and other sub-grade soil conditions that will be factored into the selection of crossing methods determined through the Detailed Engineering and Design Phase of the Project.

Summary of New Commitments:

- Traffic and Access Management Control Plans will include overall consideration for traffic and access management and control as they affect the use of public roadways, including roads under provincial and municipal authority, which includes City of Abbotsford roads.

1.02 Construction on Sumas Mountain Road - Disruption to Commercial Quarry Industry

Reference:

- i. A3S219 Volume 5D, Socio-Economic Technical Reports 10 of 13, PDF p. 59, 60
- ii. A3S0Z5 Volume 4A, Project Design & Execution – Engineering. Appendix D, Table 5.1.14, PDF p. 35, 36.
- iii. A3S2S3 Volume 6B, SEMP, Appendix C, PDF p. 259.

Preamble:

Reference (i) explains how the pipeline corridor is located directly adjacent to and between two quarries on Sumas Mountain (Sumas Shale and Jamieson Quarry, RK 1115.9 to 1117.3).

Reference (ii) identifies where the pipeline crosses City roads. The City is particularly concerned about three major truck crossings located at i) Ward Road between RK 1114.701-1116.477, ii) RK 1116.477 (Ward Road), and iii) 1117.003 (Sumas Mountain Road). Reference (ii) omits the crossing located at Ward Road between RK 1114.701-1116.477, which is located on private property with a statutory right of way in favour of the City of Abbotsford.

Reference (iii) outlines the proposed mitigation measures for disruption of areas used for businesses, including the aggregate industry.

Request:

- a) Please provide a commitment that Trans Mountain and its contractors will keep all three truck crossing routes identified in the Preamble open at all hours during the construction phase of the Project.
- b) Please provide a commitment to the City of Abbotsford that Trans Mountain and its contractors will bore under Sumas Mountain Road to minimize disruption to this high-use road.
 - i) If the presence of bedrock prevents trenchless method at this location, please provide a commitment to work with the City to keep disruption at this location to a minimum.

Response:

- a) Localized Traffic Control Plans (TCPs) will be implemented to minimize disruption, to the greatest possible extent, to the three roadways identified above, and in consultation with municipal representatives of the City of Abbotsford. Consideration to detailed engineering and construction planning is required prior to finalization of Project TCPs. Construction techniques to minimize disruption will be considered as part of detailed engineering and construction planning, including the use of trenchless methods, as may be suitable under acceptable geotechnical conditions, to avoid disturbing these three critical roadways. Trans Mountain can commit to developing TCPs to avoid diverting or delaying quarry truck traffic to residential streets and ensuring no complete closure of these roads during normal quarry operation hours such that access is available to the

maximum extent possible. If open-cut crossing methods are employed on these roadways, Trans Mountain will further commit to consulting with quarry operations representatives to determine an optimum construction schedule, including conducting Project activities during weekends and outside of normal business hours.

- b) Trans Mountain commits to use trenchless method to cross Sumas Mountain Road.
 - i) If for constructability reasons a trenchless crossing cannot be completed, Trans Mountain would commit to installing the crossing on a low traffic day such as a Sunday to keep disruption at this location to a minimum, and to consult and coordinate activities with the City of Abbotsford.

Summary of New Commitments:

- Trans Mountain commits to no complete closure of the two Ward Roads and one Sumas Road crossings in the City of Abbotsford between Sumas Shale and Jamieson Quarry.
- Trans Mountain commits to a trenchless crossing of Sumas Mountain Road.
- If trenchless method is unsuccessful, Trans Mountain commits to consult and coordinate activities with the City of Abbotsford to install the crossing on a low traffic day such as a Sunday to keep disruption at this location to a minimum.

Municipal Infrastructure

1.03 Pipeline Interference with Municipal Infrastructure Servicing

Reference:

- i. A3S1K5 Volume 4B, Project Design and Execution – Construction, s. 3.4.16-17, PDF p. 46, 47.
- ii. A3S0Y8 Volume 4A, Project Design and Execution – Engineering, s. 2.8, PDF p. 34.
- iii. A3S1S7 Volume 5B, Socio-Economic Effects Assessment, PDF p. 135-136.
- iv. National Energy Board Pipeline Crossing Regulations, Part I SOR 88/528 and Part II, SOR 88/529

Preamble:

Reference (i) outlines the pipeline markers and warning signs to be used for Line 2. It also lists the parameters to be stored in GIS data.

It is understood from Reference (ii) that the pipeline will follow the existing Trans Mountain easement; however, the precise sub-surface location of the pipeline must be provided to City employees quickly and efficiently when City employees are required to respond to infrastructure servicing emergencies or upgrades.

Reference (iii) indicates the concern that municipalities will have to obtain permits or permission to construct or install new infrastructure facilities along the existing pipeline right of way as per Reference (iv). Reference (iii) states that to address this concern, Trans Mountain will generate a full inventory of municipal sub-surface linear infrastructure crossings. An inventory of infrastructure crossings does not address the City's concern of the delay and expense involved in obtaining permission for installing infrastructure. The City is also required to maintain road ditches of the pipeline right of way.

Request:

- a) Will Trans Mountain require the City's staff time and resources to inventory the City's linear crossings?
 - i) If so, please provide a commitment to the City of Abbotsford that Trans Mountain will compensate the City for the time and resources it takes the City to locate underground municipal infrastructure for Trans Mountain's contractors and construction personnel pre, during and post construction of the Project.
 - ii) Please provide a commitment that Trans Mountain will reimburse the City for City engineers' time to review and liaise with Trans Mountain on detailed design drawings.
- b) Please explain how the City's concern of delay and expense in obtaining Trans Mountain's permission to install infrastructure will be addressed, including:
 - i) Identify what are Trans Mountain's technical crossing guidelines and permission procedures for City excavation and construction in the pipeline right of way?

- ii) What is the expected turnaround time to obtain permission from Trans Mountain for excavation and construction around the Line 2 pipeline right of way?
- iii) Please provide a commitment that Trans Mountain will provide as-built pipeline centre shape files (digital location data) to the City upon completion of construction of the TMEP.

Response:

- a) Trans Mountain believes that historical practice provides a reasonable approach respecting cost sharing and cost recovery for past, current and future infrastructure development. In general, Trans Mountain believes it is reasonable for the project to reimburse municipalities for any modifications to their existing infrastructure required to accommodate the Project – part of those reimbursements would be expected to include reasonable staff time to plan for and review the Trans Mountain Expansion Project (TMEP) detailed design plans. In the planning and design of the TMEP, Trans Mountain is willing to work with municipalities to accommodate reasonably foreseeable plans for municipal infrastructure including roads and utilities in the design and placement of the pipeline. Once the TMEP is in place, any subsequent design and development of municipal infrastructure would be completed with the pipeline in place and should modifications or relocations of the pipeline be required to accommodate new municipal infrastructure, Trans Mountain would look to the municipality for reimbursement.

Trans Mountain is committed to working cooperatively with municipalities in the development of the TMEP. More specifically, Trans Mountain is prepared to:

- work with municipalities in the planning and engineering, and detailed design to accommodate future growth and minimize potential future impacts to existing infrastructure;
- pay for reasonable costs to inspect, relocate if needed, and protect their infrastructure during pipeline construction;
- work with the municipalities to fulfill federal requirements for pipeline protection including ground disturbance measures imbedded in the NEB crossing regulations; and
- construct the TMEP, and operate it and the existing pipeline in accordance with practices and procedures that are consistent with all other utility service and development infrastructure. There are established rules and protocols that must be met for the protection of the pipeline and municipal infrastructure, including formalized crossing agreements between infrastructure owners. TMPL expects these rules and protocols will not be different than the processes currently used for the protection of the existing operating pipeline and for municipal development in proximity and directly over/under the pipeline.

With the installation of the proposed pipeline, all reasonable costs associated with construction and associated infrastructure changes would be borne by the project, but costs for operations following installation would be in accordance with currently accepted practice and formalized in crossing agreements between infrastructure owners.

- b) i) Kinder Morgan Canada Inc. (KMC), as the operator of the Trans Mountain Pipeline system, has a well established protocol and permitting process for responding to requests for ground disturbance activity within the right-of-way and/or the 30 metre safety zone. KMC's permits and permitting processes are based on regulations required by the National Energy Board for ground disturbance activity within the 30 metre safety zone. If the project is approved, KMC will continue to require third parties to follow our permitting requirements for the expanded pipeline system. KMC has a long working relationship with the City of Abbotsford providing permits and ensuring work done in close proximity to the pipeline is done in a safe manner. KMC will continue that relationship in regards to the expanded pipeline system.
- ii) Upon receipt of a One Call notification, Kinder Morgan Canada Inc. (KMC) will contact the responsible party to confirm site details and timing within 3 working days. The National Energy Board's Regulations require pipeline operators to process complete Proximity/Crossing Permit applications within 10 business days.

Trans Mountain is committed to City of Abbotsford input to the detailed engineering and design of Line 2 to minimize impacts and potential delay or disruption to future installation of city infrastructure, including installation of permanent pipeline crossing locations where needed.

- iii) Kinder Morgan Canada has well established protocols and permitting process for responding to requests for ground disturbance activity within the right-of-way and/or the 30 metre safety zone. Our permits and permitting processes are based on regulations required by the National Energy Board for ground disturbance activity within the 30 metre safety zone by pipeline operators. If the Project is approved, Kinder Morgan Canada will continue to require third parties to follow our permitting requirements for the expanded pipeline system. Kinder Morgan Canada has a long working relationship with City of Abbotsford providing permits and ensuring work done in close proximity to the pipeline is done in a safe manner. We will continue that relationship in regards to the expanded pipeline system if the project is approved.

Under the NEB Act Section 86, when a company acquires lands for its operations, they are responsible for any damages directly related to and caused by the acquisition of lands, construction of the pipeline, and inspection, maintenance or repair of the pipeline. Under that Section, compensation related to the installation of a pipeline includes compensation for the acquisition of lands, compensation for damages, and indemnification of land owners from all liabilities related to the company's operations. These requirements would apply to the Trans Mountain Expansion Project.

In general, Trans Mountain would expect to reach voluntary agreements with each municipality outlining the company's responsibilities for municipal infrastructure costs and reimbursements. Trans Mountain would expect these agreements to address roads and utilities. Trans Mountain's practice is to first minimize any potential impacts or damages to the extent practical by using and adapting responsive construction and operations practices; and second, provide mitigation

to reverse or treat any remaining impacts. Should residual impacts or damages remain, Trans Mountain would provide commensurate compensation for damages directly related to and caused by the acquisition of lands, construction of the pipeline and inspection, maintenance or repair of the pipeline. Should adjacent municipalities be of the opinion that the operations related to the TMPL have caused them directly related damages as defined in the NEB Act, TMPL would look to the municipality to provide the company with information and documentation as to the nature and extent of the perceived damages. That information can be provided to the Manager, Land, Trans Mountain Pipeline. Using the information received, through discussions with the municipality, if Trans Mountain determines that damages resulted from the company's operations, it will provide any commensurate compensation due to the affected municipality.

See response to Langley IR No. 1.10a in regard to Trans Mountain's commitment on provision of pipeline centre line shape files.

Summary of New Commitments:

- Trans Mountain is committed to City of Abbotsford input to the detailed engineering and design of Line 2 to minimize impacts and potential delay or disruption to future installation of city infrastructure, including installation of permanent pipeline crossing locations where needed.
- Trans Mountain will provide centre line shape files to the City of Abbotsford.

Parks and Recreational Areas

1.04 Mitigation measures for parks

Reference:

- i. NEB Filing Manual, Table A-3, p. 4A-56
- ii. A3S1S4 Volume 5B, ESA - Socio-Economic, Table 5.4-3, PDF p. 11
- iii. A3S219 Volume 5D, Socio-Economic Technical Report 10 of 13, PDF p. 18; Report 7 of 13 PDF p 12; Report 8 of 13, PDF p. 2.
- iv. A3S1S7 Volume 5B, Socio-Economic Effects Assessment, Table 7.2.4-2, PDF p. 65; A3S2S4 Volume 6B, Pipeline Environmental Protection Plan, Appendix E
- v. A3S2S3 Volume 6B, Pipeline Environmental Protection Plan, PDF p. 64
- vi. City of Abbotsford Parks Bylaw 160-96, Consolidated
- vii. City of Abbotsford Official Community Plan

Preamble:

Reference (i) states that the Application must include the following:

- The assessment of potential impacts on human occupancy and resource use must evaluate recreation and park areas (including local parks) and recognized scenic areas.
- Identify site specific mitigation to address identified effects.
- Project must describe the goals of the applicable local land use plans and the extent to which the project is aligned with such plan
- Project must be assessed for compatibility with local and regional land use and development plans.

Reference (ii) identifies eight municipal parks and trails in the City of Abbotsford through which the pipeline crosses.

Reference (iii) describes how the pipeline crosses areas zoned as parks in the City of Abbotsford and refers to the City's OCP but does not describe how the project is aligned with or compatible with the City's land use plans as required by Reference (i).

Reference (iv) describes the mitigation measures for effects on parks. The table outlining site-specific mitigation measures for terrain features is blank, and states that these measures "will be included prior to construction".

Reference (v) indicates that Trans Mountain will ensure that "any required approvals, licenses and permits that are necessary are in place prior to commencing applicable construction activities".

Reference (vi) outlines the City's prohibitions and regulations with respect to municipal parks.

Reference (vii) outlines the City of Abbotsford's land use plans.

The City is concerned that construction through natural park areas will require clearing and widening disturbance of an additional 27 metres (existing right of way = 18 metres, proposed construction right of way = 45 metres).

Request:

- a) Please explain how the Project is aligned with and compatible with the City of Abbotsford's Official Community Plan.
- b) Please confirm by what date Trans Mountain will provide site-specific mitigation measures for the impact on each of the eight parks and trails in the City of Abbotsford.
- c) Please provide a commitment to the City of Abbotsford that Trans Mountain and its contractors will comply with the City of Abbotsford's Parks Bylaw.
- d) If Trans Mountain will not commit to abiding by the City's bylaws, please provide justification for not doing so.
- e) Please provide a commitment that Trans Mountain will obtain the City's permission prior to clearing any natural park area in the City of Abbotsford beyond the existing 18 metre right of way.

Response:

- a) Land use plans were reviewed for specific mention and consideration of pipeline construction. No restrictions, requirements or considerations specific to pipeline development were identified in the City of Abbotsford Official Community Plan. Over the long-term it is anticipated that the Project will not disrupt land use designations identified along the proposed route and will not impede the City of Abbotsford in meeting any of the objectives set out in the City of Abbotsford Official Community Plan. As a federally regulated entity under the *National Energy Board Act*, if Trans Mountain is granted a Certificate of Public Convenience and Necessity, it will proceed to apply for all permits that are required by law. Trans Mountain will also continue to work with the City of Abbotsford to understand the applicability of its bylaws and standards to the construction and operation of the Project.
- b) As a federally regulated entity under the *National Energy Board Act*, if Trans Mountain is granted a Certificate of Public Convenience and Necessity, it will proceed to apply for all permits that are required by law. Trans Mountain will also continue to work with the City of Abbotsford to understand the applicability of its bylaws and standards to the construction and operation of the Project.

Site-specific mitigation measures for parks and trails within the City of Abbotsford will be identified during detailed engineering phase and finalization of the pipeline construction right-of-way and included in the Pipeline Environmental Protection Plan (Volume 6B) which will be submitted to the NEB a minimum of 90 days before the commencement of construction activities.

- c) Please see the response to the City of Abbotsford IR No. 1.01a.

- d) Please see the response to the City of Abbotsford IR No. 1.01a.
- e) Please see the response to the City of Abbotsford IR No. 1.01a.

Summary of New Commitments:

- [In bullet form, re-statement **new** commitments made in the response. Do not re-statement commitments we have already made in the Application.]

Emergency Response, Risk Management and Public Safety**1.06 Emergency Response – Sumas Pump Station & Sumas Terminal****Reference:**

- i. A3S1S4 Volume 5B, Socio-Economic Setting for Facilities, Table 5.4-3, PDF p. 14-18, 121

Preamble (Heading 1):

Reference (i) indicates:

- The City of Abbotsford offers emergency and protective services for the Sumas Pump Station and Terminal.
- Trans Mountain has an emergency response plan and program for Sumas Pump Station and Terminal
- Trans Mountain will not be changing its response management system to accommodate the expanded operating system at Sumas Pump Station and Terminal
- Trans Mountain anticipates increasing the amount of available emergency equipment (e.g. spill, fire, water/foam systems) to reflect the expansion of facilities.
- The Sumas Pump Station is adjacent to agricultural land
- Callaghan Municipal Park is located 0.5 km away from the Sumas Terminal
- Residences are located 60 m away from the Sumas Terminal

Trans Mountain is relying on the City of Abbotsford's emergency services but is not changing its emergency response management system to accommodate the expanded operating system at Sumas Pump Station and Terminal.

Request:

- a) Please identify the specific type and quantity of emergency equipment that is available at Sumas Pump Station and Terminal, including skimmers, booms, absorbent and fire suppressants.
- b) Please identify what the fire water system upgrade at Sumas Terminal will entail.
- c) Please explain why Trans Mountain is not changing its emergency response management system to accommodate the expanded operating system at Sumas Pump Station and Terminal.

Response:

- a) Kinder Morgan Canada (KMC) uses the Incident Command System (ICS) to manage emergency situations. ICS is an internationally recognized system for managing incidents and does not need to be changed to accommodate the expanded system. In the Application, Volume 7, Section 4.5.1 outlines the current placement of emergency response equipment. Volume 7, Section 4.8.2 outlines the process and consultation for updating the Emergency Response Plans (ERP) which is consistent with National

Energy Board draft condition numbers 42, 52 and 53, and includes a review of equipment and documentation associated with the Emergency Management Program.

- b) The fire protection system for the proposed new storage tank at Sumas Terminal is discussed in Section 3.4.2.9.1, Volume 4A of the Facilities Application. The existing fire protection system includes the following items:

- Fire water cistern and reservoir;
- One fire water pump with a diesel engine driver, one fire water pump with an electric motor driver;
- Hydrants and monitors located throughout the terminal;
- Fire detection equipment on each storage tank;
- Foam delivery system, connected to hydrants, utilizing two fixed foam tanks;
- Foam distribution system to each storage tank.

Upon completion of the proposed expansion, fire protection equipment for the proposed new storage tank is anticipated to include the following items:

- Fire detection equipment;
- Fixed foam tank;
- Foam distribution system;
- Fire monitors.

The fire protection equipment and systems for the proposed tank addition will be finalized during the detailed engineering and design phase.

- c) The Application, Volume 7, Section 4.8 outlines the process to enhance Kinder Morgan Canada's (KMC) existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the NEB's draft conditions 42, 52, 53 and 54.

1.07 Sumas Terminal Safety and Integrity**Reference:**

- i. A3S4V5 Volume 7, Risk Assessment & Management of Pipeline and Facilities Spills, s. 2.2, PDF p. 31
- ii. A3S4V5 Volume 7, Risk Assessment & Management of Pipeline and Facilities Spills, s. 4.8, PDF p. 65

Preamble:

Reference (i) indicates that the TMEP includes works at the Sumas Pump Station and the construction of a new storage tank at the Sumas Terminal. It states: "The safety of TMEP facilities will be assured through proper engineering design, material specification, and consistent application of KMC's FIMP."

Reference (ii) outlines the Province of BC's five minimum requirements before supporting heavy oil pipeline projects in BC. Requirement 3 is: "World-leading practices for land oil spill prevention, response and recovery systems to manage and mitigate the risks and costs of heavy oil pipelines".

Request:

- a) Please provide a copy of the Facility Integrity Management Plan (FIMP) which will apply following upgrades to the Sumas Pump Station and completion of the new Sumas Terminal Facilities or, if not yet prepared, a copy of an equivalent Trans Mountain FIMP.
- b) Please provide a detailed explanation of how the design, construction and operation of the Sumas Pump Station and Sumas Terminal Facility will be world leading as per BC Government Requirement #3 for heavy oil pipelines (Reference (ii)). Please include an international comparison to leading jurisdictions.
- c) When and how will Trans Mountain consult (see definition in Question 1.1) with the City of Abbotsford on the FIMP applicable to the Sumas Pump Station and the Sumas Terminal Facility? If there is no plan to consult with Abbotsford, please explain why.
- d) Will Trans Mountain make a commitment to disclose to the City of Abbotsford and the public as soon as it is available to Trans Mountain, comprehensive facility incident history tracking and analysis information, including leaks, security incidents, near misses, significant equipment malfunctions, and process upset conditions. If not, please explain why not.
- e) Will Trans Mountain make a commitment to obtain the prior agreement of Abbotsford, such agreement not to be unreasonably withheld, to the FIMP for the Sumas Pump Station and the Sumas Terminal Facility. If not, please explain why not.

Response:

- a) See the response to NEB IR No. 1.76.

- b) The design of pump stations and terminals for the Project including Sumas are described in detail in Volume 4A, Sections 3.3 and 3.4 of the Application. These facilities are designed to comply with the latest editions of the applicable codes and standards and regulatory requirements and include such safety features as continuous remote monitoring; pressure and thermal protection; fire and gas detection; an emergency shut down system and; on-site containment.

As summarized in Volume 1 Section 4.3 of the Application, Trans Mountain's existing emergency management program for the entire pipeline system and the response plans within it are being updated with input from emergency responders, to reflect the increased emergency response requirements arising from the Project. Trans Mountain is actively involved in, and supportive of, the multi-stakeholder 'intentions paper' process led by British Columbia designed to strengthen provincial emergency preparedness and response. Trans Mountain supports the efforts of British Columbia to enhance provincial agency capabilities. Ensuring such things as geographic information system data is more effectively shared and developed; first responder training is increasingly coordinated; and, the incident command system can be implemented in the case of an emergency are examples of advancements in this area. Engagement in regard to emergency response for the Trans Mountain system is currently underway with Aboriginal groups and engagement will continue as the emergency management program updating and development continues, and interest in involvement from Aboriginal groups is received and considered. Trans Mountain is also committed to ensure it maintains the federally mandated liability coverage levels for its operations.

Trans Mountain is not aware of, and does not have access to, the information necessary to respond to the second part of the question comparing to other jurisdictions.

- c) The Facilities Integrity Management Plan (FIMP), a requirement of the NEB, is a management system to ensure the integrity and safe operations of facilities.

Trans Mountain is committed to respectful, transparent and collaborative interactions with communities, and will continue to engage with the City on all aspects of its operations and proposed expansion project. Trans Mountain would be pleased to meet with the City of Abbotsford to review its pipeline integrity plans for the Trans Mountain Expansion Project at a mutually workable time, and to understand and mitigate their concerns where possible.

Trans Mountain remains committed to engaging with communities, including continuing to share updated project information and addressing questions and concerns about the proposed Trans Mountain Expansion Project as they arise.

- d) Please refer to the responses to the following information requests:

- Eliesen M IR No. 1.10a
- NEB IR No. 1.70a
- NEB IR No. 1.70b

- e) Please see the response to the City of Abbotsford IR No. 1.07c.

As a federally regulated entity under the National Energy Board Act, if Trans Mountain Pipeline ULC (Trans Mountain) is granted a Certificate of Public Convenience and Necessity, it will proceed to apply for all permits that are required by law. Trans Mountain will also continue to work with the City of Abbotsford to understand the applicability of its bylaws and standards to the construction and operation of the Project.

As indicated in City of Abbotsford IR No. 1.07c, Trans Mountain is committed to consulting on the FIMP, but Trans Mountain will not seek agreement or approval on the FIMP. The FIMP is regulated through the NEB with regulations provided through the Onshore Pipeline Regulations, and subject to regular audit. The OPR mandates operation in compliance with CSA Z662, Oil and Gas Pipeline Systems, and the elements of the FIMP meet the requirements of the standard. The FIMP program is a key element of Trans Mountain's Integrated Safety and Loss Management System.

1.08 Effect on Emergency Services during Operations Phase not Considered**Reference:**

- i. A3S1S7 Volume 5B, Socio-Economic Effects Assessment, s. 7.2.5.4, PDF p. 142
- ii. NEB Filing Manual, Table A-3, p. 4A-60
- iii. A3S1S4 Volume 5B, Socio-Economic Setting for Facilities, Table 5.4-3, PDF p. 14-18, 121

Preamble:

Reference (i) states that the effect of the Project on emergency, protective and social services during the operations phase was “scoped out” because Trans Mountain is not changing its emergency response regime.

Reference (ii) requires the Applicant to describe the need for government expenditures for new or expanded services or infrastructure (including emergency services) arising out of project-related effects.

Trans Mountain relies on the City’s emergency and protective services as indicated in Reference (iv), is expanding its operations, but is not expanding its emergency response regime or considering the impact on the City in this regard.

Request:

- a) Please explain why the expansion of the Project and its resultant effect (including the need for government expenditures) on the City’s emergency, protective and social services are not considered.

Response:

- a) The potential effects on emergency, protective and social services during the operations phase of the Trans Mountain Expansion Project (TMEP, or the Project) were considered in the socio-economic effects assessment in the Application, Volume 5B, but were not carried through the assessment for several reasons. Firstly, as discussed in the Application Section 7.2.3 of Volume 5B, residual effects on population and demographics are limited to the construction phase and thus are concluded to be short-term in duration, isolated in frequency and reversible. While the capacity and throughput of the Trans Mountain Pipeline system would be expanded during the operations phase, the incremental operations workforce and associated population effect will be marginal. As such, no Project-related contribution to increased population-based demand pressure on local or regional emergency, protective and social services during the operations phase would occur.

Secondly, and with regards to emergency response requirements of the expanded system, Trans Mountain Pipeline ULC (Trans Mountain) will continue to use the framework of Kinder Morgan Canada’s (KMC) mature and effective Emergency Management Program. The Emergency Management Program is based on a combination of regulatory compliance, operational need, industry best practice, and lessons learned. It is embedded within the management system framework provided by

the Integrated Loss Management System and the Environment, Health and Safety (EHS) Management System. Key elements include regularly reviewed Emergency Response Plans (ERPs), response equipment, and regular desktop training and field deployment exercises, which contribute to a highly trained response staff and response readiness within the organization. The Incident Command System (ICS), central to the response framework, is designed to adapt to changing operational circumstances. The ICS is used to provide a structured and consistent approach to management of any pipeline emergency and provides seamless integration with third parties through a Unified Command structure. The City of Abbotsford's participation in any response is based on the established Unified Command structure attached to ICS.

KMC will continue its established procedures to monitor and measure performance on a regular basis. This will include interfacing with community, such as Abbotsford, emergency response services. For example, as part of existing operations, KMC regularly conducts reviews of its ERPs. When conducting a major update to an ERP, KMC makes contact with agencies that could reasonably be expected to participate in an incident response for input on the procedures used during a response. KMC invites outside agencies, including the City of Abbotsford, to participate in training, deployment and table-top exercises to determine the working relationships of the organizations. This type of engagement with local agencies will continue during operations of the Project.

Given the prospect of system expansion, KMC's Emergency Management Program is under review. Application Volume 7, Section 4.8 outlines the process to enhance KMC's existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of TMEP. The final programs will be developed in a manner consistent with the National Energy Board's draft conditions 42, 52, 53 and 54. Any update to the Emergency Management Program, as with current operations, will include input from City of Abbotsford emergency management with clear definition of roles and responsibilities.

Further information on Trans Mountain's operations and maintenance emergency preparedness and response program is found in Section 10 of Volume 4C and in Section 4.0 of Volume 7.

Regarding potential effects on emergency, protective and social services during the construction phase (as assessed in Section 7.2.5 of Volume 5C), Trans Mountain is committed to ongoing consultation to identify potential effects and additional mitigation, including consultation with the City of Abbotsford, emergency responders, local police services, social services and other relevant services as appropriate. Trans Mountain has completed an initial round of engagement with first responders. Trans Mountain held a workshop for Fraser Valley First Responders on February 14, 2014 in Chilliwack. More information about this engagement will be filed as part of Consultation Update #2. Trans Mountain plans to continue to engage with local and regional emergency response providers as part of construction planning.

Offsets to potential increased City of Abbotsford costs will include increased tax revenues for the provision of public services and infrastructure as deemed required in

the context of general population-based and industrial demand. Trans Mountain also commits to coordinated training exercises specific to the pipeline with inclusion of City of Abbotsford staff.

1.09 Location of Spill Response Facilities

Reference:

- i. A3S4V5 Volume 7, Risk Assessment & Management of Pipeline and Facility Spills, s. 4.5.1, Table 4.5.1, PDF p. 34
- ii. S1Q8 Volume 5A, Biophysical – Environmental Setting for Facilities, Table 6.1-14, PDF p. 12

Preamble:

Reference (i) indicates that there are seven Oil Spill Containment and Recovery response units placed along the existing TMPL route. The City of Abbotsford is situated between the Burnaby and Hope OSCAR stations.

Reference (ii) describes how the Sumas Pump Station is located in an area of high seismic activity.

The City of Abbotsford is hosting Trans Mountain's pump station, and terminal/tank farm in an area of high seismic activity but there is no OSCAR station located in Abbotsford.

Request:

- a) Please provide a commitment to the City of Abbotsford that Trans Mountain will install an OSCAR station located in the City's boundaries.
- b) If Trans Mountain will not commit to this request, please provide justification for not installing an OSCAR station in the City of Abbotsford.

Response:

- a) As noted within the Application, Trans Mountain Pipeline ULC owns and maintains seven Oil Spill Containment and Recovery (OSCAR) units. These are placed in strategic locations along the existing pipeline right-of-way. As part of the Project, the need for additional OSCAR units and the most effective location for placement of the additional OSCARs will be determined.

The Application, Volume 7, Section 4.8 outlines the process to enhance Kinder Morgan Canada's (KMC) existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the NEB's draft conditions 42, 52, 53 and 54.

- b) Please refer to the response to the City of Abbotsford IR No. 1.09a.

1.10 Risk Assessment Information Disclosure**Reference:**

- i. A3S4V5 Volume 7, Risk Assessment & Management of Pipeline and Facility Spills, s. 1.2, PDF p. 29

Preamble:

In Reference (i), Trans Mountain states:

“Volume 7 provides a comprehensive overview of the measures to prevent oil spills, risks related to oil spills, emergency response in the event of a spill, fate and behaviour of spills in both fresh and brackish water, the ecological and human health risks associated with a spill for both terrestrial and a Westridge marine spill, and a detailed assessment of KMC’s financial capacity to respond to a spill.”

Request:

- a) Has Trans Mountain provided any information or records regarding risk assessment and management of pipeline and facility spills to the governments of Canada, British Columbia or Alberta, their ministries and government agencies that is not set out in Volume 7?
- b) If so, please provide an index and electronic access to such information and records to Abbotsford.

Response:

- a) Kinder Morgan Canada Inc. (KMC) has provided this information to various government agencies during its operating history. The National Energy Board performs regular comprehensive audits on the Pipeline Protection, Integrity and Environment, Health and Safety Management Systems included in KMC’s Integrated Safety and Loss Management System KMC also submits detailed incident reports to the Government of Canada following each reportable incident.
- b) Trans Mountain has provided all documentation in relation to the Project either through the original submission or subsequent submissions. Company information and records not related to the Project are not relevant to one or more of the issues identified in the National Energy Board’s List of Issues for the Trans Mountain Expansion Project.

1.11 Measures to Prevent and Mitigate Oil Spills

Reference:

- i. A3S4V5 Volume 7, Measures to Prevent and Mitigate Oil Spills, s. 2.0, PDF p. 30
- ii. A3S2H2 Volume 5D, Socio-Economic Technical Report 1 of 13, Table 2.1-1
- iii. A3S219 Volume 5D, Socio-Economic Technical Report 10 of 13, PDF p. 28.

Preamble:

In Reference (i), Trans Mountain outlines its goal with respect to the prevention and mitigation of spills.

The prevention of spills and the mitigation of any unavoidable spills is also of paramount importance to Abbotsford, Aboriginal communities, landowners, government agencies (e.g., regulators and municipalities), stakeholders, and the general public.

However, this section gives no indication of the level of effort that will be applied by Trans Mountain and its employees, contractors, sub-contractors, and agents to achieve this goal.

Reference (ii) indicates that the City of Abbotsford communicated its concern to Trans Mountain about two prior spills from Trans Mountain's tank farm/terminal facilities on Sumas Mountain Road.

Reference (iii) states that the two prior spills at Sumas Mountain "have made the local community highly sensitized to the pipeline and potential environmental issues".

Request:

- a) Will Trans Mountain, Kinder Morgan, Kinder Morgan Canada and its employees, contractors, subcontractors and agents make a commitment to apply "best efforts" to the prevention of spills, and if unavoidable, to the mitigation of spills on the TMEP? If not, please explain why not.

Response:

- a) Kinder Morgan Canada Inc. (KMC), as the operator of the Trans Mountain Pipeline, and its employees, contractors, subcontractors and agents, as part of the commitment to provide a spill prevention and response system, will apply "best efforts" to the prevention of spills, and if unavoidable, to the mitigation of spills on the Project.

The Application, Volume 7, Section 4.8 outlines the process to enhance KMC's existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the NEB's draft conditions 42, 52, 53 and 54.

1.12 Oil Spill Risk Assessments

Reference:

- i. A3S4V5 Volume 7, Oil Spill Risk Assessments, s. 3.0 and 3.1.1, PDF p. 35-36

Preamble:

Reference (i) refers to the risk-based design approach and states: “Using a risk-based design approach enables the pipeline and facilities design teams to identify primary drivers of risk, and to mitigate the risk to be as low as reasonably practical (OPR)(NEB 1999).

Additionally, Reference (i) says: An example of a measure to reduce consequence would be the relocation of a valve to reduce potential outflow in an HCA; an example of measure to reduce the probability of failure would be extra depth of cover to reduce the potential for third-party damage.”

Request:

- a) Describe, with representative Abbotsford examples, how the above risk-based design approach factors cost , e.g., cost of extra valves, into decisions with respect to pipeline, pumping station and facility design.
- b) Provide information setting out the relationship between varying depths of cover, construction and operation costs, and potential for third-party damage for representative kilometres of pipeline within Abbotsford municipal boundaries. Please set out all assumptions.
- c) Provide information setting out the relationship between valve location, volume of potential outflow into HCA's, and construction and operating costs within Abbotsford municipal boundaries. Please set out all assumptions.

Response:

- a) As committed to in NEB IR No. 1.81a, Trans Mountain will submit a risk assessment for Line 2 in Q3 of 2014. As described in the response to Allan R IR No. 1.17I, this risk assessment is being undertaken in support of a risk-based design so that mitigation measures may be incorporated into the design to address the principal risks. The risk-based design process is ongoing, and a list of specific mitigation measures is not yet available, however the types of risk mitigation measures that will be considered in the risk-based design process include both failure prevention and spill mitigation measures to ensure that risk is managed to levels that are As Low As Reasonably Practicable (ALARP). Inherent within the ALARP principle is acknowledgement that risk is associated with virtually all human endeavours. The management of risk to levels that are commensurate with ALARP requires a systematic means of identifying and measuring risks, along with the associated drivers of risk so that risk-appropriate means can be selected to manage those risks. Given the starting assumption that zero risk is impossible to achieve, the ALARP principle recognizes the diminishing levels of return associated with the implementation of risk mitigation techniques. In a world with limited

resources available to manage risk, the management of risk to ALARP entails the mitigation of the greatest levels of risk with those limited resources until a level of diminishing returns is achieved. Therefore, the implementation costs of mitigation measures are a key consideration.

The risk based design methodology does not directly input cost into the risk assessment and decision making process, but cost is an indirect outcome of the decisions made. An example that would apply would be to reduce risk of third party damage to ALARP, an alternative would be deeper burial of the pipeline which would be associated with higher cost tied to increased depth of cover.

- b) As committed to in the response to NEB IR No. 1.81 a, Trans Mountain will submit a risk assessment for Line 2 in Q3 2014. The relationship between depth of cover and the potential for 3rd Party Damage will be described in the risk report that will be submitted at that time. The relationship between depth of cover and construction costs depends on a number of factors, such as installation method and soil condition, whereas there is no significant relationship between depth of cover and operating costs.
- c) The map series showing the results of overland and stream flow modeling of potential full-bore ruptures can be found in Appendix C of Volume 7 of the Application (B18-4 through B18-12). Details of the outflow methodology and assumptions for outflow modeling are found in Section 3 of Volume 7 of the Application (B18-1), while the methodology and assumptions of the spill extent mapping are in the report in Appendix D, Simulations of Hypothetical Oil Spills from the Trans Mountain Expansion Project Pipeline – P1 V6 Route (B18-13).

Please refer to response to NEB IR No. 1.96c where Trans Mountain has committed to provide graphs of spill volumes and valves in relation to high consequence areas in Q3 2014. The detailed construction and operating costs will not be made available but the unit cost for each automated mainline block valves adds an estimated \$800,000 of direct cost.

Summary of New Commitments:

- Provide a description of the relationship between depth of cover and the potential for 3rd Party Damage in the risk report that will be submitted in Q3 2014.
- Provide City of Abbotsford a copy of the graphs to be submitted to NEB in response to NEB IR No. 1.96c in Q3 2014.

1.13 Oil Spill Risk Assessments for Pipeline – Failure Frequency Estimating - Geohazards

Reference:

- i. A3S4V5 Volume 7, Oil Spill Risk Assessments, s. 3.1.2 and 3.1.4, PDF p. 47, 42.

Preamble:

Reference (i) outlines the principal threats to the TMEP. It states that "Over the last 60 years, the existing TMPL pipeline has operated in a corridor where statistically few significant geohazard events have occurred."

Additionally: "Hydrotechnical hazards, such as from flooding and scour at river or stream crossings, remain present, but with appropriate design (**such as through adopting the 1:200 year flood event to determine the necessary depth of cover, plus implementation of an ongoing inspection program**), the impact of these hazards can be mitigated and the risk reduced." (emphasis added)

Request:

- a) Please provide a copy of the TMEP geohazard assessment for the portion of the pipeline within Abbotsford municipal boundaries, or if not yet prepared, a copy of the TMEP geohazard assessment for the portion of the existing Trans Mountain pipeline within Abbotsford municipal boundaries.
- b) Please explain in detail how climate change is factored into the TMEP geo hazard assessment.

Response:

- a) Geohazard assessment will be iterative and ongoing throughout detailed design as additional site specific information on individual geohazard sites are investigated. A preliminary geohazard assessment is currently being completed and will be provided as part of the risk assessment on Line 2 referred to in NEB IR No. 1.81a.
- b) The Environmental and Socio-economic Assessment describes the potential effects of the environment acting on the Project in Section 7.10 of Volume 5A including environmental conditions such as hydrotechnical hazards, geotechnical hazards, seismic hazards, wildfires, changing climate and sea level rise. Potential effects of the changes to the Project caused by the environment and recommended mitigation measures are provided in Table 7.10.-1 of Volume 5A. Engineering has considered sea level rise in design of the Westridge Marine Terminal. In addition, pump stations will be equipped with vibration monitoring equipment.

The assessment of an extreme flood event in Section 7.10.4 of Volume 5A considers that the pipeline will be designed to withstand a 1 in 200 year flood event. This design is supported by the Route Physiography and Hydrology report in Appendix I of Volume 4A (BGC Engineering Inc. November 2013), which provides estimated peak flows for

various return periods at major rivers. The notable watercourse crossings will be designed for scour and bank stability to meet the conditions of a 1 in 200 year flood event and, as such, the proposed pipeline will be sufficiently buried, or otherwise protected, to ensure its long-term integrity.

The exact impacts of climate change via changes in temperature, rainfall intensities and volumes, and the associated changes in runoff and sediment transport with respect to pipeline integrity remain uncertain. This is especially true considering the spatial distribution of the pipeline and multiple climatic or physiographic regions that the proposed pipeline crosses. Some regions may experience reduced precipitation amounts and increases in rainfall intensity, while others decreasing precipitation volume but increases in intensities. The amount of change can presently only be approximated. Third order effects to geohazards such as in how far changes in precipitation pattern affect stream scour or landslide activity are even more complicated. Therefore applying a single value adjustment to individual geohazards to represent unknown conditions in the future is overly simplistic.

Trans Mountain realizes that changes to climate during operations of the Project may manifest in several ways, including occurrence of a higher frequency of extreme hydro-climatic events. Trans Mountain will adaptively manage potential residual effects associated with changing climate through the Natural Hazards Management Program. As part of this, climate and stream flow data at various intervals, and if necessary, adjust current pipeline protection.

Summary of New Commitments:

- Provide City of Abbotsford a copy of preliminary geohazard assessment to be submitted to NEB as part of the Risk Assessment filed with NEB IR No. 1.81a.

1.14 Oil Spill Risk Assessments for Pipeline – High Consequence Area Definition**Reference:**

- i. A3S4V5 Volume 7, High Consequence Area Definition, s. 3.1.5 , PDF p. 42-3.

Preamble:

Reference (i) sets out a definition of High Consequence Areas (HCAs) and includes a list of these type of areas.

Request:

- a) Please provide detailed information, maps and shape files setting out the categories, sensitivity ranking and geographic extent of HCA's within Abbotsford municipal boundaries.
- b) Explain in detail the rationale Trans Mountain uses for deciding that the threshold for high consequence should be at least 1,000 people per square mile.
- c) Explain in detail how Trans Mountain defines the term "concentrated population" for the purposes of defining an HCA.
- d) Explain in detail how Trans Mountain defines First Nation lands for the purposes of defining an HCA.

Response:

- a) Please refer to the detailed spill maps, which are provided in Appendix C of Volume 7 of the Application (B18-4 through to B18-12).

As committed to in the response to NEB IR No. 1.81a, Trans Mountain will submit a risk assessment for Line 2 in Q3 2014. Detailed risk results will be provided at that time.

- b) Please refer to the response to NEB IR No. 1.92c.
- c) Please refer to the response to NEB IR No. 1.92c.
- d) The definition used by Trans Mountain for First Nation lands corresponds to Indian Reserves, as specified by the Indian Act as a "tract of land, the legal title to which is vested in Her Majesty, that has been set apart by Her Majesty for the use and benefit of a band." Geospatial data is sourced through Natural Resources Canada.

1.15 Oil Spill Risk Assessments for Pipeline – Spill Outflow Modelling, Spill Extent Mapping, Consequence Scoring, and Risk Scoring

Reference:

- i. A3S4V5 Volume 7, Spill Outflow Modelling Sections 3.1.6 -3.1.9, PDF p. 43
- ii. Province of BC. "Submission of the Province of British Columbia to Joint Review Panel for the Enbridge Northern Gateway Project", (May 31st, 2013). PDF, p. 8, p. 30-32. Located at: http://www.env.gov.bc.ca/main/docs/2013/BC-Submission-to-NGP-JointReviewPanel_130531.pdf

Preamble:

Reference (i) outlines the assumptions used in the oil spill risk assessment, including the time interval of ten minutes of oil spill release prior to pump shut-down, the period of draindown.

In Reference (ii), the Province of British Columbia raised a variety of concerns regarding pipeline spills, including, but not limited to:

- a) smaller spills could still have a significant environmental effect and could pose a higher risk as they are more frequent (paragraph 23);
- b) lack of precise leak detection threshold (paragraph 93);
- c) lack of clarity regarding external leak detection methods (paragraph 96); and
- d) unwillingness to commit to 10 minute automatic shutdown rule (paragraph 98).

The City of Abbotsford considers spill modeling a critical aspect of pipeline oil spill risk assessment and management and seeks clarity regarding Trans Mountain's plans.

Request:

- a) Please provide an outflow model for small and medium size oil spills and calculate outflow volumes on a 25 m interval along the portion of the pipeline within the City of Abbotsford municipal boundaries.
- b) Please provide spill extent mapping for the small and medium size oil spills analyzed under a) above.
- c) Please provide detailed preliminary consequence scoring and risk scoring for each kilometre of pipeline within the City of Abbotsford municipal boundaries.
- d) What leak detection threshold will be utilized for the TMEP?
- e) What are the external leak detection options and which ones will be utilized and why for the portion of the pipeline within the City of Abbotsford municipal boundaries?
- f) Is the 10 minute shutdown rule the shortest shutdown time rule in use in the world today?

- g) Please explain the cost and impacts of implementing a 5 minute shutdown rule.
- h) Will Trans Mountain make a commitment to an automatic 10 minute shutdown rule? If not, please explain why not.

Response:

- a) The outflow results contained in the Application are based on assumption that represent what Trans Mountain consider to be a credible worst-case scenario, which serves as the basis of the risk assessment. The credible worst case analysis also serves to inform the review and enhancement of Trans Mountain's emergency management program with considerations including potential spill size, location, and high consequence area (HCA) receptors. Beyond this credible worst-case scenario, there are limitless combinations of spill scenarios involving spill magnitudes of lesser magnitude and or involving varying degrees of resolution. The modeling of each of these scenarios would be resource intensive and not helpful.
- b) Please refer to the response to the City of Abbotsford IR No. 1.15a.
- c) As committed to in NEB IR No. 1.81a, Trans Mountain will submit a risk assessment for Line 2 in Q3 2014. Detailed risk results will be provided at that time.
- d) Trans Mountain has developed and implemented a systematic approach to leak detection. A Computational Pipeline Monitoring (CPM) system is used in combination with other monitoring methods, such as surveillance patrols, regular inline inspections using smart pigs and smart ball tools (acoustical leak detection) technology, Control Centre Operator monitoring (SCADA), and scheduled line balance calculations.

Within the CPM system, the thresholds are dynamic over time and location. For this reason, there is no single defined "threshold level" that would generate alarms that can be stated. It is changing constantly as it is calibrated to the flow dynamics in the pipeline and various factors affecting accuracy of the instrumentation readings.

While not prescribed, Trans Mountain generally follows the Recommended Practice API RP 1130, Computational Pipeline Monitoring for Liquids. This includes testing on an annual basis to confirm the effectiveness of the leak detection CPM. The testing verifies the sensitivity and accuracy of the leak detection system. Weekly checks of the CPM system are also performed and documented to ensure the system is operating within design specifications.

The system to be installed for Line 2 is described in the Application, Volume 4A, Section 2.3, and will generally be in accordance with Annex E of CSA Z662, Oil and Gas Pipeline Systems. The Project will include implementation of a real-time transient, computational pipeline leak detection (CPM) system similar to that currently in service on the existing TMPL system. The Project will use latest technological advancements and equipment selection to reduce detection thresholds to the extent practical.

- e) External leak detection technologies have not been sufficiently developed to demonstrate their viability as reliable leak detection systems for liquid petroleum pipelines. Trans Mountain will consider the application of external leak detection technologies if an effective system becomes commercially available.
- f) See the response to Farquhar E IR No. 1.08a. Trans Mountain cannot confirm if 10 minutes is “the shortest shut down time rule in use in the world today”. Trans Mountain believes that 10 minutes is a conservative value to use for risk analysis purposes. In some scenarios a faster shut down time will be possible and every effort will be made to shut down as quickly as possible in the event of a release.
- g) Implementing a 5 minute shut down time target under all circumstances will not be possible due to leak detection limitations, pipeline hydraulics, mechanical limitations, and human factors. As discussed in City of Abbotsford IR No. 1.15f, in some scenarios a shut down time of less than 10 minutes will be possible.
- h) See Section 7.1.11.5, Volume 4C of the Application for a general discussion on the response to leak alarms. The 10 minute interval described in the Application, Volume 7, Section 3.1.6., was used to calculate the credible worst case (full bore rupture) spill outflow volume. Trans Mountain believes that 10 minutes for such an event is conservative. A trained Control Centre Operator (CCO) would recognize the indications of a large leak in much less than 10 minutes and initiate an immediate shut down. Shut down time following a leak alarm will depend on the time required to determine whether the alarm is a probable false alarm or a probable leak, however, a CCO has the authority and the responsibility to shut down a pipeline if he or she does not believe it can continue to be operated safely. The CCO will not be faulted for shutting down under these circumstances.

Summary of New Commitments:

- Trans Mountain will provide risk assessment results preliminary design to City of Abbotsford in Q3 2014.

1.16 Emergency Preparedness and Response

Reference:

- i. A3S4V5 Volume 7, Planning and Improvements Section 4.8, PDF p. 64-65
- ii. BC Ministry of Environment. "Land Based Spill Preparedness and Response in British Columbia" (Spring 2014). Located at:
http://www.env.gov.bc.ca/epd/codes/spr_eep/response.htm

Preamble:

Reference (i) refers to the following:

- The proposed expansion coincides with a heightened public awareness of hazards associated with transportation of petroleum products.
- Not surprisingly, Trans Mountain's Aboriginal engagement, stakeholder consultation and landowner relations programs identified pipeline safety and emergency response as two of the top concerns specific to the TMEP.
- The Province of BC's five minimum requirements that it deems necessary before supporting heavy oil pipeline projects in BC, including Requirement 3 - World-leading practices for land oil spill prevention, response and recovery systems to manage and mitigate the risks and costs of heavy oil pipelines.
- In addition to Trans Mountain's internal review to enhance the Emergency Management Program, external reviews by the BC and Canadian governments are currently also in progress.

Request:

- a) Please provide a comprehensive listing of proposed changes to the Trans Mountain Emergency Management Program for the TMEP as a result of Trans Mountain's internal review.
- b) Please provide copies of Trans Mountain and KMC's past and any future submissions to external reviews by the BC and Canadian governments whether made directly or through the Canadian Energy Pipeline Association.
- c) Will Trans Mountain support the participation of the City of Abbotsford on any existing or future working groups related to external reviews by the BC and Canadian governments?
- d) Will Trans Mountain make a commitment to mandatory spill response times, providing there is a force majeure provision? If not, please explain why not.
- e) How will Trans Mountain decide in relation to the TMEP whether or not to a) invite Abbotsford to participate in a unified Command or b) Consult with Abbotsford on its Emergency Management Program?

- f) Will Trans Mountain make a commitment to the review of its TMEP Emergency Management Program and all related programs by an independent panel of experts prior to construction and every 5 years after that, such report to be made public? [discuss terms of reference] If not, please explain why not.
- g) Will Trans Mountain make a commitment to immediately notify Abbotsford of a Level 1, 2, or 3 emergency? If not, please explain why not.
- h) Will Trans Mountain consult (see definition in Question 1) Abbotsford on any proposed new Trans Mountain Emergency Response Plans (ERPs), supporting documents, and spill response resources?
- i) Please provide a summary of the terms and conditions of KMC's \$750 million spill liability insurance and provide the City of Abbotsford with a copy of the insurance policy.
- j) Please outline Trans Mountain's funding programs (and their terms and conditions) available to the City of Abbotsford to cover the costs of preparing for and responding to heavy oil spills.
- k) In what circumstances will the City of Abbotsford be expected to be part of the unified command structure for a pipeline or facility spill or incident?
- l) Please confirm that Trans Mountain will coordinate with the City of Abbotsford emergency services to the satisfaction of the municipality in developing emergency response plans for pipeline and facility incidents within the City, including training of Trans Mountain and local responders (including municipal emergency workers).
- m) Please confirm that Trans Mountain will compensate the City for its costs in developing the response plans described above, and for all additional training and expenses incurred by the City to implement those plans.

Response:

- a) Kinder Morgan Canada (KMC) maintains a number of documents as part of the Emergency Management Program (EMP) including, but not limited to emergency response plan's (ERP), control point manuals, field guide manuals and Incident Command System (ICS) Guide. The ERP manuals are comprehensive in their application regarding hazards and potential emergency situations on the Trans Mountain System. Trans Mountain will file up-dated EMP documents with the National Energy Board consistent with draft condition 49, 52, 53 and 54.
- b) The information request is not relevant to one or more of the issues identified in the National Energy Board's List of Issues for the Trans Mountain Expansion Project.
- c) The Application, Volume 7, Section 4.8.2 outlines the process to enhance Kinder Morgan Canada's (KMC) existing emergency management programs as they relate to

the Trans Mountain Pipeline system, which is consistent with NEB draft condition no. 42. Trans Mountain is committed to working with the City of Abbotsford with respect to the Project and current operations to ensure the safety of the public that live and work near KMC facilities.

KMC would not oppose the City of Abbotsford's participation on workgroups related to external reviews by the BC and Canadian governments.

- d) A report of a release related to the Trans Mountain terminals or pipelines received by the control centre would result in the immediate shut down of pumps, closure of valves, and dispatch of field operations personnel to investigate the report. The maximum response time for field operations personnel to arrive on site is not defined. Field personnel are stationed strategically along the pipeline in order to be able to respond promptly to issues that arise anywhere along the pipeline route.
- e) The Application, Volume 7, Section 4.3.1 outlines the response organization and the three-tiered response structure (Table 4.3.1) used by Kinder Morgan Canada (KMC). KMC invites local authorities that are impacted by an emergency event to participate in the ICS response organization. The directly impacted local authority is invited to participate in Unified Command. Unified Command is responsible for overall management of the incident directing incident activities, including development and implementation of overall objectives and strategies.

For those local authorities that do not wish to participate in Unified Command, or are indirectly impacted by the incident, opportunities exist for participation in the ICS organization in many areas depending on training and expertise. Examples of potential areas of participation include: field response labour, security, site control, environment unit, wildlife unit, logistics, catering, supply businesses, etc.

The Application, Volume 7, Section 4.8 outlines the process to enhance KMC existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the NEB's draft conditions 42, 52, 53 and 54. Trans Mountain is committed to working with the City of Abbotsford with respect to the Project and current operations to ensure the safety of the public that live, work and play near our pipeline and facilities.

- f) No. In the Application, Volume 7, Section 4.8 outlines the process to enhance Kinder Morgan Canada's (KMC) existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the NEB's draft conditions 42, 52, 53 and 54.
- g) Kinder Morgan Canada's (KMC) emergency procedures, for all incidents, include notification to emergency services (911 or other emergency number) if there is any chance emergency services will be required and/or if there is any chance of the public being affected by the incident, which includes odour complaints.

- h) The Application, Volume 7, Section 4.8 outlines the process to enhance Kinder Morgan Canada's (KMC) existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the NEB's draft conditions 42, 52, 53 and 54.
- i) It is not clear why a copy of Trans Mountain's insurance policy is required and why the specific terms and conditions of the policy are relevant to the List of Issues identified by the NEB for the Trans Mountain Expansion Project.

Please see the response to NEB IR No. 1.08a-h for a summary of Trans Mountain's spill liability insurance coverage.

- j) Kinder Morgan Canada Inc.'s (KMC) goal is to protect people and the environment. Safety is KMC's priority. KMC has always been committed to working collaboratively with organizations, both public and private, to ensure there is a mutual understanding how the pipeline and/or operations at facilities could impact those organizations. KMC is willing and able to review emergency response plans, share information on our operations, and provide advice on proper response techniques. External agencies are invited to participate in emergency response exercises, continuing education programs, and consultation meetings. KMC covers the costs associated with instruction, but does not currently cover costs associated with attendance, such as responder's wages, benefits and employment costs. KMC also cannot speculate as to the different conditions under which costs may arise as a result of an emergency, but can confirm it is responsible for all of its legal liabilities.

KMC's Emergency Management Program (ERP) is under review. In the Application Volume 7, Section 4.8 outlines the process to enhance KMC's existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the National Energy Board's (NEBs) draft conditions 42, 52, 53 and 54.

- k) Please see response to City of Abbotsford IR No. 1.16e. Please refer to the Application, Volume 7, Section 4, Table 4.3.1.
- l) Please see response to City of Abbotsford IR No. 1.16c. Kinder Morgan Canada Inc. (KMC) regularly conducts emergency response training and exercises in communities along the pipeline in which local emergency services are invited to participate.
- m) Kinder Morgan Canada Inc.'s (KMC) goal is to protect people and the environment. Safety is KMC's priority. KMC has always been committed to working collaboratively with organizations, both public and private, to ensure there is a mutual understanding how the pipeline and/or operations at facilities could impact those organizations. KMC is willing and able to review emergency response plans, share information on our operations, and provide advice on proper response techniques. External agencies are invited to participate in emergency response exercises, continuing education programs, and consultation meetings. KMC covers the costs associated with instruction, but does

not currently cover costs associated with attendance, such as responder wages, benefits and employment costs.

KMC's Emergency Management Program (ERP) is under review. In the Application Volume 7, Section 4.8 outlines the process to enhance KMC's existing emergency management programs as they relate to the Trans Mountain Pipeline system to address the needs of the Project. The final programs will be developed in a manner consistent with the National Energy Board's (NEBs) draft conditions 42, 52, 53 and 54.

1.17 Sumas Lake Canal and Dikes around the Sumas Pump Station: Erosion & Scheduling

Reference:

- i. A3S1Q8 Volume 5A, Biophysical – Environmental Setting for Facilities, Table 6.1-14, PDF p. 12
- ii. A3S0Z5 Volume 4A, Project Design and Execution – Engineering, Appendix D, Table 5.1.5, PDF p. 12; Volume 4A, s. 2.10.2, PDF p.42.
- iii. A3S1K5 Volume 4B, Project Design & Execution – Construction, s. 4.1.1, PDF p. 49.
- iv. A3S2S6 Volume 6C, Facilities Environmental Protection Plan, PDF p. 5, 7, 17, 53, 57, 278
- v. A3S1D8 Volume 4A, Route Physiography and Hydrology, Appendix I (1of15), PDF p. 86, 87
- vi. A3S2C2 Volume 5C, Environmental Technical Reports Fisheries BC 2 of 45, PDF p. 26

Preamble:

Reference (i) describes the location of the earthen dike surrounding the Sumas Pump Station which exists to “prevent flooding of the Fraser River”.

Reference (ii) indicates that the pipeline will cross the Sumas Canal at RK 1110.7, using the isolation method of drilling. Two types of isolated crossing methods are described. The City is concerned with the proposed method of drilling under the Sumas Canal.

Reference (iii) provides a generic description of the scope of construction tasks at all pump facilities.

Reference (iv) explains that an additional pump unit is being added to the Sumas Pump Station, and the existing substation will be upgraded. The construction on the Sumas Pump Station would take place in November – December, 2016 and January – April and June, 2017. It states that erosion and sediment control structures (e.g. subsoil berm and sediment fencing) will be implemented as warranted. The timing of the June freshet is not factored into mitigation measures under scheduling. Trans Mountain has also indicated to the City that construction on the Canal would take place between May to November 2016 and 2017. Mitigation measures were identified for soil “within the facility sites” and were not provided for the Sumas Canal and Dike surrounding the Sumas Pump Station.

Reference (v) describes the climate in the Georgia Depression where the Sumas Canal is located but omits discussion of the June freshet in Abbotsford. The climate stations and hydrometric stations used to predict seasonal precipitation flows omit the City of Abbotsford.

Reference (vi) identifies the Sumas Canal as a fishbearing high sensitivity watercourse.

Request:

- a) Please provide a commitment to the City of Abbotsford to:
 - i) install erosion and sediment control structures at the Sumas Drainage Canal and Dikes in consultation with the City and to the City’s satisfaction;

- ii) undertake mitigation measures for erosion and sediment control for the earthen dike around the Sumas Pump Station in consultation with the City and to the City's satisfaction;
- b) Please provide a commitment to utilize the trenchless (bore) method of drilling on the Sumas Canal. If Trans Mountain will not commit to the bore method, please explain why not.
- c) Please include the June freshet in the City of Abbotsford in the climate or seasonal flow description and analysis in Reference (v).
- d) Please factor the June freshet, fish life cycle factors and fisheries into the scheduling of construction around the Sumas Canal and Dike.
- e) Please identify how pipeline design will accommodate future dredging of the canal.
- f) Please explain why Reference (i) describes the dike around Sumas Pump Station as existing to prevent flooding to the Fraser River

Response:

- a)
 - i) Trans Mountain commits to consult with the City of Abbotsford on need for erosion and sediment control structures and reclamation of the dikes breached during installation of the proposed pipeline at the crossing of Sumas Drainage Canal.
 - ii) Trans Mountain commits to consult with the City of Abbotsford concerning the earthen dike around the Sumas Pump Station and to implement any necessary mitigation measures.
- b) Trans Mountain has currently proposed an isolated trenched method during low flow (see Appendices A and B of the Technical Report 5C-7 in Volume 5C, Fisheries [British Columbia] Technical Report. Low flow periods (*i.e.*, summer) also coincide with the least risk biological window proposed and, in conjunction with a salvage of fishes from within the isolated section of channel, will avoid causing serious harm to fishes. Mitigation measures considered in the assessment for fish, fish habitat and surface water quality are provided in Table 7.2.7-2 of Section 7.2.7 of Volume 5A as well as Section 8.7.3 of the Pipeline Environmental Protection Plan (Volume 6B).

Trans Mountain will also complete its review of Stage 2 watercourse crossing sites (as outlined in Volume 4A, Project Design and Execution - Engineering) in Q4 2014. This review includes further assessment of potential engineering and environmental concerns including effects to species at risk and species of provincial management concern.

- c) The Sumas Canal is located almost entirely within the Georgia depression. The climatic descriptions provided within Reference (v) are average trends which do vary from year to year. Freshet is caused by a spring melt of snow and ice. Historically, there is limited data showing a build-up of snow and ice which melts in the spring in the Georgia depression to create this type of flow. The exception to this is where catchments cross

physiographic and may have flow regimes dominated by other processes which then appear downstream as freshet flows within the Georgia Depression. The Chilliwack River and Fraser River are notable examples of this. While the Sumas Canal is generally not prone to peak flow events in May and June, high water levels occur during this period due to flow maintenance and occasionally large storm events.

The Sumas Canal is a drainage canal within a low lying area that is connected to the Sumas River via the Barrowtown Pump Station. The proposed Trans Mountain Expansion Project (TMEP) crossing is located roughly 4.5 km upstream of the pump station, which regulates flows via gravity draining floodgates (MWLAP 2004), which are typically closed between May and September to allow proper storage of water for irrigation needs in the summer (MWLAP 2004).

Peak flows in the Lower Mainland are typically associated with large rainfall or rain-on-snow events in the October to December period. It is not known what the extent of the backwater effect of the Barrowtown Pump Station is at the pipeline crossing when the floodgates are closed. However, the floodgates are only closed during the summer period, May to September. The floodgates are closed for irrigation purposes, but also to prevent backwater flooding of the area due to high water levels in the Fraser River and Vedder Canal during the freshet.

Because of the manual operation of the canal, flow data are not available from gauges in the immediate vicinity of the proposed crossing. However, as noted above, high water levels occur through the late spring and summer in response to the operation of the Barrowtown Pump Station and the use of canal water for irrigation.

At a broader scale, a review of the upstream WSC station, Sumas River near Huntingdon (08MH029), was completed in this study and is included in the Georgia Depression description to understand the range of likely flows in this region. This active gauge has been in operation since 1952 and historically, peak flows typically occur between November and February with the exception of 2000 and 1981 when the peak flow was in June. These two June peak flows were relatively small events and while they occurred at the time of freshet flows, they likely occurred in response to rainfall dominated processes. Figure 1.17C-1 below depicts the yearly timing of peak flows for gauge 08MH029 over the period of record. Figure 1.17C-2 provides detailed information on minimum maximum and peak flows observed at 08MH029 for the 60 years of record between 1952 and 2012.

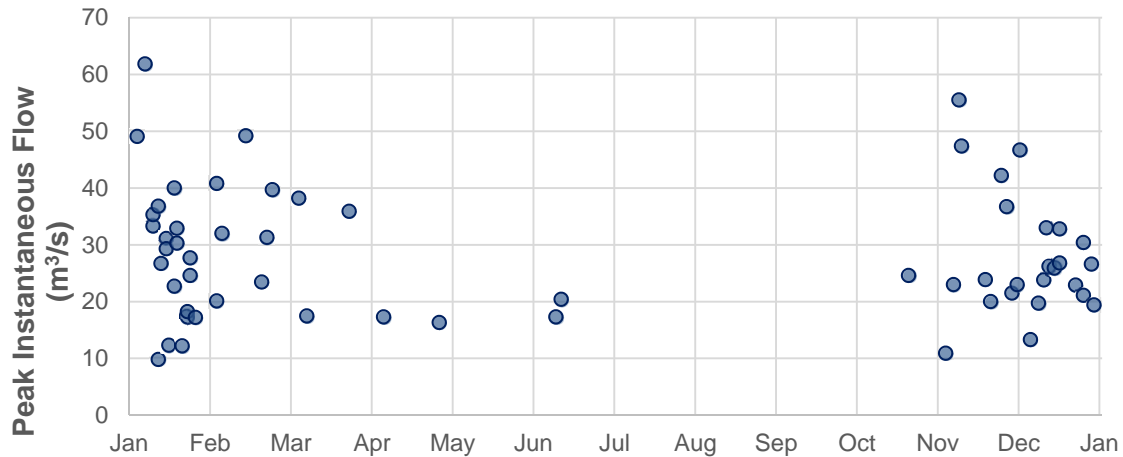


Figure 1.17C-1 Timing of annual peak instantaneous flows corresponding to 60¹ years of data recorded from 1952 to 2012 for Sumas River near Huntingdon (08MH029)²

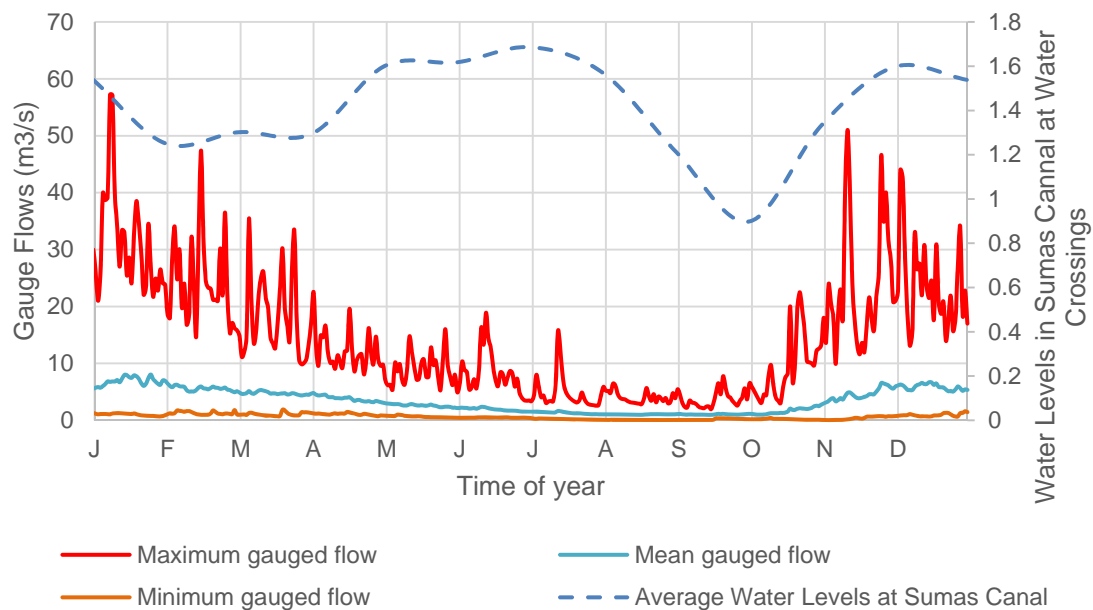


Figure 1.17C-2 Flow statistics corresponding to 60 years of data recorded from 1952 to 2012 for Sumas River near Huntingdon (08MH029) and Water level for Sumas River at Atkinson (08MH093).³

¹ Peak instantaneous data was not available for 1952 or 1969

² <http://www.wsc.ec.gc.ca/applications/H2O/graph-eng.cfm?yearb=&yeare=&station=08MH029&report=daily&data=flow&year=1981> (May 21, 2014)

³ <http://www.wsc.ec.gc.ca/applications/H2O/graph-eng.cfm?yearb=&yeare=&station=08MH029&report=daily&data=flow&year=1981> (May 21, 2014)

http://www.wsc.ec.gc.ca/staflo/index_e.cfm?cname=level_monthly.cfm (May 21, 2014)

Reference:

Ministry of Water, Land & Air Protection. 2004. Summary of Surface Water Quality Sampling on Sumas River and Tributaries. Abbotsford, British Columbia. October 2004.

- d) The "least risk biological window" that exists for the Sumas River and canal is "July 15 - September 15".

See response to City of Abbotsford IR No.1.17b about on-going review of potential construction methodology.

- e) The depth of the pipeline below Sumas Canal will be developed through detailed engineering and design. A typical minimum depth of 1.5m below water crossings is shown in the Typical Drawing for Double Sag Water Crossing found in Appendix C of Application Volume 4A.

Trans Mountain will hold discussion with Sumas Canal owner/operator to establish if there any plans for its development and this will be considered in finalizing crossing depth during detailed engineering and design phase.

- f) As stated in the Application, Section 6.1.14, Table 6.1-14 of Volume 5A, the purpose of the earthen dike surrounding the Sumas Pump Station is to protect the facility from flooding of the Fraser River, not to prevent flooding to the Fraser River.

Summary of New Commitments:

- Trans Mountain will communicate with the City of Abbotsford concerning reclamation of the Sumas Drainage Canal Dike, and any required mitigation to the earthen dike around the Sumas Pump Station.
- Trans Mountain will complete its review of Stage 2 watercourse crossing sites (as outlined in Volume 4A, Project Design and Execution - Engineering) in Q4 2014.

1.18 Pipeline Safety in the City of Abbotsford

Reference:

- i. A3S4V5 Volume 7, Measures to Prevent and Mitigate Oil Spills, s. 2.0, PDF p. 30-31
- ii. BC Ministry of Environment. "Land Based Spill Preparedness and Response in British Columbia" (Spring 2014). PDF p. 3, 6. Located at: <http://www.env.gov.bc.ca/main/west-coast-spill-response-study/>

Preamble:

Reference (i) refers to the importance of the Kinder Morgan Canada (KMC) Integrity Management Programs (IMPs) for pipeline safety and to the KMC Pipeline Protection Program.

As noted in Reference (ii):

"Local governments, First Nations and stewardship groups are playing an increasingly significant role in spill preparedness and response – from acting as first responders, to providing valuable information about local ecological sensitivities. **These groups face direct risks and costs in the event of a spill – and must have opportunities to be fully engaged in risk assessment, planning and preparation, communication, response and recovery activities**" [emphasis added].

The footprint of the TMEP within the city limits of Abbotsford includes construction of 29 kilometres of 900 mm (36") steel pipeline within the right of way for the existing pipeline, adding a 27,800 m³ (6.1 million i.g.) storage tank on Sumas Mountain, and upgrading the pumping facilities at 3434 McDermott Road. Accordingly the municipality must be fully engaged in all aspects of the risk assessment and management of pipeline spills and facility malfunctions.

The City of Abbotsford and its 139,000 residents are not only directly affected by the TMEP, they also have direct experience with facility spills and Kinder Morgan's spill management and response programs.

Over the past 10 years there have been two documented oil spills in and around the Sumas Mountain Facility:

- July 15, 2005: About 210,000 litres (equivalent to 55,500 gallons or 1400 standard bathtubs) of crude leaked from a breach in the pipeline south and outside of Trans Mountain's Sumas Mountain tank storage facility in Abbotsford, BC, polluting the area including Kilgard Creek.
- January 24, 2012: A floating roof vent on a storage tank at the Sumas Mountain tank storage facility in Abbotsford, BC, failed, spilling an estimated 110,000 litres (29,300 gallons, 733 standard bathtubs) of oil. The spilled oil was confined within the containment berms that were designed to capture tank failures. Neighbourhoods (Auguston, Sumas Mt.) nearby reported nausea, headaches and fatigue, and schoolchildren were kept indoors for fear of airborne toxins.

Request:

- a) Please provide a copy of the pipeline IMP for the TMEP or, if not yet prepared, a copy of an equivalent pipeline IMP in use for a Trans Mountain and Kinder Morgan pipeline.
- b) Please provide a copy of the Pipeline Protection Program for TMEP, or if not yet prepared, a copy of an equivalent Pipeline Protection Program in use for a Trans Mountain and Kinder Morgan pipeline.
- c) When and how will Trans Mountain conduct Consultation (see definition in Question 1.1) with the City of Abbotsford on the pipeline IMP and Pipeline Protection Program? If there is no plan to consult with the City of Abbotsford, please explain why.
- d) Please provide a detailed explanation of how the design, construction and operation of the TMEP pipeline will be world leading as per BC Government Requirement #3 for heavy oil pipelines (see Reference (ii)). Please include an international comparison to leading jurisdictions.
- e) Will Trans Mountain make a commitment to disclose to the City of Abbotsford and the public as soon as it is available to Trans Mountain comprehensive pipeline incident history tracking and analysis information, including leaks, security incidents, near misses, significant equipment malfunctions, and process upset conditions. If not, please explain why not.
- f) Will Trans Mountain commit to obtain the prior agreement of City of Abbotsford, such agreement not to be unreasonably withheld, to the pipeline IMP and Pipeline Protection Program for TMEP applicable within the City of Abbotsford municipal boundaries. If not, please explain why not.

Response:

- a) Please see the response to NEB IR No. 1.76.
- b) The Pipeline Protection Program for TMEP has not yet been prepared. The programs and standards for operation of the existing Trans Mountain system are proprietary documents and will not be provided.
- c) The Integrity Management Plan (IMP), a requirement of the NEB, is a management system to ensure the integrity and safe operations of its pipelines.

Trans Mountain is committed to respectful, transparent and collaborative interactions with communities, and will continue to engage with the City on all aspects of its operations and proposed expansion project.

Trans Mountain would be pleased to meet with City of Abbotsford to review its pipeline integrity plans for the Trans Mountain Expansion Project at a mutually workable time, and to understand and mitigate their concerns where possible.

Trans Mountain remains committed to engaging with communities, including continuing to share updated project information and addressing questions and concerns about the proposed Trans Mountain Expansion Project as they arise.

- d) The design of pipeline for the Project is described in detail in Volume 4A, Section 3.2 of the Application. The pipeline is designed to comply with the latest editions of the applicable codes and standards and regulatory requirements and includes such safety features as continuous remote monitoring; increased depth of burial in some locations; thicker wall pipe at crossings and some areas designated as high consequence areas; pressure relief systems; remotely operable valves and; corrosion control through the application of external coatings and impressed current cathodic protection system.

As summarized in Volume 1 Section 4.3 of the Application, Trans Mountain's existing emergency management program for the entire pipeline system and the response plans within it are being updated with input from emergency responders, to reflect the increased emergency response requirements arising from the Project. Trans Mountain is actively involved in, and supportive of, the multi-stakeholder 'intentions paper' process led by British Columbia designed to strengthen provincial emergency preparedness and response. Trans Mountain supports the efforts of British Columbia to enhance provincial agency capabilities. Ensuring such things as geographic information system data is more effectively shared and developed; first responder training is increasingly coordinated; and, the incident command system can be implemented in the case of an emergency are examples of advancements in this area. Engagement in regard to emergency response for the Trans Mountain system is currently underway with Aboriginal groups and engagement will continue as the emergency management program updating and development continues, and interest in involvement from Aboriginal groups is received and considered. Trans Mountain is also committed to ensure it maintains the federally mandated liability coverage levels for its operations.

Trans Mountain is not aware of, and does not have access to, the information necessary to respond to the second part of the question comparing to other jurisdictions.

- e) Please see response to Eliesen M IR No 1.10a.
- f) As a federally regulated entity under the *National Energy Board Act*, if Trans Mountain Pipeline ULC (Trans Mountain) is granted a Certificate of Public Convenience and Necessity, it will proceed to apply for all permits and authorizations that are required by law. Trans Mountain will also continue to work with the City of Abbotsford to understand the applicability of its bylaws and standards to the construction and operation of the Project.

As indicated in the response to City of Abbotsford IR No. 1.18c, Trans Mountain is committed to consulting on the Integrity Management Plan (IMP), but Trans Mountain will not seek agreement or approval on the IMP. The IMP is regulated through the NEB with regulations provided through the *Onshore Pipeline Regulations*, and subject to regular audit. The OPR mandates operation in compliance with CSA Z662, Oil and Gas Pipeline Systems, and the elements of the IMP are defined in Annex N. The IMP program is a key element of Trans Mountain's Integrated Safety and Loss Management System.

1.19 Provincial Preparedness and Response Organization (PRO)**Reference:**

- i. BC Ministry of Environment. "Land Based Spill Preparedness and Response in British Columbia" (Spring 2014). PDF p. 10, 12, 15-16. Located at:
<http://www.env.gov.bc.ca/main/west-coast-spill-response-study/>

Preamble:

Reference (i), states:

"The Ministry ultimately intends to require all companies above a defined level of risk to fund and hold membership in a provincially regulated, industry led, non-profit preparedness and response organization."

Request:

- a) Please outline in detail the position of Trans Mountain regarding the establishment of a PRO as set out in the BC Policy Intentions Paper.
- b) Does Trans Mountain agree that industry members must fund 100% of all costs of the PRO? If not, please explain why not.
- c) Does Trans Mountain agree that Trans Mountain has strict liability for any oil spill on the TMEP and must cover all costs for prevention, preparedness, response and recovery of an oil spill? If not, please explain why not.
- d) Please explain what funding mechanisms Trans Mountain has in place to cover costs under c).
- e) Please outline the role and responsibilities that Trans Mountain believes Local Governments, including Abbotsford, should have in a PRO.
- f) Will Trans Mountain make a commitment to be a member of a PRO as set out in the BC Policy Intentions Paper? If not, please explain why not. Alternatively, if Trans Mountains willingness to be a member of such a PRO is subject to pre-conditions, please describe those pre-conditions.

Response:

- a) Kinder Morgan Canada Inc. (KMC) cannot speculate what the BC government will require for the funding and membership of a provincially regulated, industry led, non-profit preparedness and response organization, but can confirm it is responsible for all of its legal liabilities, and will comply with its regulatory obligations.
- b) Please see response to City of Abbotsford IR No.1.19a.

- c) Trans Mountain has liability for any oil spill damages caused by itself and will cover all the costs that are its liability. Trans Mountain currently covers the costs associated with its existing prevention, preparedness, response and recovery related to oil spills.
- d) Please refer to City of Abbotsford IR No. 1.19c and NEB IR No. 1.08c.
- e) The information request is not relevant to one or more of the issues identified in the National Energy Board's List of Issues for the Trans Mountain Expansion Project.
- f) Please see response to City of Abbotsford IR No. 1.19a.

1.20 Pipeline Integrity Compromised Due to Blasting from Quarry Industry

Reference:

- i. A3S219 Volume 5D, Socio-Economic Technical Reports 10 of 13, PDF p. 60

Preamble:

Reference (i) identifies the concern raised by the City of Abbotsford that blasting used in aggregate mining near Sumas Mountain would pose a threat to the integrity of the pipeline.

Request:

- a) Please identify what mitigation measures will be implemented to ensure that blasting in aggregate mining does not threaten pipeline integrity, and what measures will be implemented to ensure the pipeline does not interfere with blasting activity.
- b) Please outline what tests will be conducted post-construction to ensure the integrity of the pipeline is not compromised.

Response:

- a) The proposed TMEP pipeline is directly adjacent to the existing pipeline in the vicinity of the existing two aggregate quarries on Sumas Mountain. The proximity of quarry blasting and anticipated blast induced ground vibrations and pipeline strain will be considered during detailed engineering and design; however, no additional constraints, beyond what is currently applied to the existing pipeline, are anticipated for the new pipeline in this area.
- b) Trans Mountain will monitor the blasting during and post construction to ensure that imposed limits are not exceeded. Following construction a hydrostatic test will be completed to confirm the integrity of the pipeline and a comprehensive integrity program will be implemented as outlined in the Application, Volume 4C, Section 8 to confirm the long term integrity of the pipeline.

1.21 Firehall Access during Construction of Mt. Lehman Rd.**Reference:**

- i. A3S0Z5 Volume 4A , Project Design and Execution – Engineering, Appendix D, PDF p. 36

Preamble:

Reference (i) indicates that the pipeline will cross Mt. Lehman Rd at RK 1131.295, which is through the parking lot of the City's Mt. Lehman firehall.

Request:

- a) Please identify how emergency vehicles will access the Mt. Lehman firehall during construction.
- b) Please provide a commitment that Trans Mountain will use the trenchless (bore) method at this location.
 - i) If the trenchless method is not feasible at this location due to the presence of bedrock, please provide a commitment that Trans Mountain will keep access to the firehall clear 24 hours per day for the City's emergency services.

Response:

- a) Trans Mountain will engage Mt. Lehman Fire Hall and Abbotsford municipal officials to ensure access and egress are available for emergency vehicles during construction. Specific construction techniques to be used will be determined through detailed engineered and construction planning and will be communicated to Abbotsford once definitive plans are available.

Emergency response and traffic management concerns have been noted during initial consultation in the Application, Section 3, Volume 5B. Section 5 of Volume 5B further discusses transportation infrastructure and emergency, protective and social services in the Regional Study Areas (RSAs) including the Fraser Valley region. Impacts and mitigation to infrastructure and services, including roadways, are expanded on in Section 7.2.5 of Volume 5B. Municipal concerns about any impediments to the movement of emergency response vehicles, as well as mitigation techniques to address and/or minimize any adverse effects, are noted in Section 7.2.8 of Volume 5B.

As noted in Section 5.2.3 of Volume 4B, as part of the mitigation to traffic management concerns, Traffic and Access Control Management Plans (TACMPs) will be developed for the Project. Further information on traffic mitigation can be found in Appendix C of the Socio-Economic Management Plan (SEMP), Volume 6B. TACMPs will have an Incident Plan (IP) section that will consider potential impacts to emergency vehicle access and service to the community. TACMPs will include a Public Information Plan (PIP) section to ensure that municipalities, emergency response providers, and the general public are made aware of any potential traffic impacts or disruptions by the Project. The TACMPs will further require development of localized Traffic Control Plans (TCPs), to be completed after detailed engineering and construction planning for the Project.

Specific TCPs for localized areas will be developed in consultation with provincial and municipal representatives and will take into account any community concerns noted in the ongoing consultation process, including emergency vehicle traffic continuity. Emergency vehicle routes to all areas of a community, or procedures to be implemented in an emergency situation, will be available at all times during Project construction as detailed in the TCPs.

- b) Trans Mountain is committed to use trenchless method at Mt. Lehman Rd. and through the parking lot of the City's Mt. Lehman firehall.
 - i) If geotechnical conditions preclude use of trenchless method, Trans Mountain will use construction methods that maintain access to the firehall 24 hours per day for the City's emergency services. Trans Mountain is committed to consult with the City of Abbotsford and its emergency services as it develop its construction plans in this area.

1.22 Locating Existing Pipeline in the Existing Right of Way

Reference:

- i. A3S0Y8 Volume 4A, Project Design and Execution – Engineering, s. 2.8
- ii. A3S1L1 Volume 4C, Project Design and Execution – Operations, s. 8.0

Preamble:

The City of Abbotsford is concerned that the Application does not identify in specifics, how the existing Trans Mountain pipeline will be located during construction by its contractors. For example, without adequate and detailed knowledge as to where the existing pipeline is located, contractors excavating the ground may hit the existing pipeline, creating a spill.

Request:

- a) Please specifically identify how the existing pipeline will be located by Trans Mountain and its contractors including:
 - i) What equipment will be used to locate the existing pipeline?
 - ii) Will the location be identified on a continuous basis or in incremental steps as construction occurs?

Response:

- a) Pre-excavation protocols will adhere to Trans Mountain's Ground Disturbance Plan (GDP) as described in the Application Volume 4B – Project Design and Execution – Construction.
 - i) Trans Mountain will develop Operational Guidelines that will document the measures required during construction to safeguard the existing operating pipeline. The operational guidelines document safe work practices including temporary and permanent marking of the pipeline through the course of construction. The existing pipeline will be initially located and flagged and/or marked (typically paint marked, pickets, or snow fence) using electronic utility locators. Following electronic locating and prior to any ground disturbance, a hydrovac will be used to “daylight” (visual confirmation of location and depth) the existing pipeline at specified intervals and at side bends or crossing locations, with marking of the pipeline with a wooden post on the inside edge of the pipeline. Trans Mountain will also employ both ground disturbance and trade craft inspectors to inspect and ensure safe working distances from the operating pipeline.
 - ii) Locating of the existing pipeline will occur on both a continuous and incremental basis, and will generally follow the construction sequence of the new proposed pipeline construction.

Pipeline Design

1.23 Spacing and Location of Pipeline Valves

Reference:

- i. A3S0Z5 Volume 4A, Project Design & Execution – Engineering. Appendix D, Table 5.1.10, PDF p. 19, Table 5.1.12, PDF p. 23.
- ii. A3S0Y8 Volume 4A, Project Design & Execution – Engineering, s. 3.2.15, PDF p. 52.

Preamble:

Reference (i) indicates that the following valves are proposed for the City of Abbotsford:

- Three Automated MLBV valves located at Sumas Lake Canal RK 1110.6, Sumas Pump Station RK 1113.8 and Upstream Downes Creek RK 1124.8 on Line 2.
- Check valve is located at Downstream McLennan Creek RK 1129.6.

Reference (ii) states that final valve site locations will be established during the detailed engineering and design phase. In addition, Trans Mountain indicated to the City that “emergency shut off” valves locations have not been determined yet.

Request:

- a) Please provide a commitment to the City of Abbotsford that Trans Mountain will involve the City in the detailed engineering and design phase to establish the location of valves, including emergency shut off and check valves.
- b) Please explain whether there is a difference in function and design between mainline and emergency shutoff valves.
- c) Please indicate when Trans Mountain will provide to the City proposed valve locations located in the City boundaries for Line 1.

Response:

- a) Trans Mountain will be using the criteria in Volume 5A, Section 4.4.2 and Volume 4A, Section 3.2.15.1 of the Application and taking account of high consequence areas (HCA) and terrain rather than municipal boundaries in the selection process.

As Trans Mountain goes through the iterative process of finalizing location of valves during detailed engineering, Trans Mountain will continue to engage and consult with City of Abbotsford on our plans for locating infrastructure within municipal boundary.

- b) The terms automated Remote Mainline Block Valves (RMBV) and “emergency shutoff valves” can be used interchangeably as they perform the same function. Automated mainline block valves can be either closed locally or remotely through the Control Center SCADA system and in the event of an emergency the pipeline will be shut down and the valve can be closed remotely to isolate the pipeline. Mainline check valves are automated in a sense as they are located on generally ascending topography

downstream of a river crossing (in reference to pipeline flow), and on shutdown of the pipeline the valve will close preventing back-flow through the pipeline.

- c) In respect of Line 1, Trans Mountain is not making any modifications to the pipeline within City boundaries as that segment of Line 1 is not within the TMEP scope as outlined in Section 1.1, Volume 4A of the Application.

Summary of New Commitments:

- Trans Mountain commits to consult with City of Abbotsford on the detailed engineering and design phase for the location of automated mainline block valves and check valves proximate to and within municipal boundaries.

Corridor and Route Selection

1.24 Route Selection through Residential Neighbourhoods

Reference:

- i. A3S219 Volume 5D, Socio-Economic Technical Reports 10 of 13, PDF p. 27

Preamble:

Reference (i) explains how the pipeline crosses two areas zoned as urban residential and one high density city residential area in the City of Abbotsford. The reference states that there has been a “fair amount of development around the existing right-of-way”, and developments are anticipated for Sumas Mountain, including 1500 new homes.

The City is concerned that residents will not be able to access their homes for a period of time during construction. The City is also concerned that these residential zones will be cut off from access to emergency services.

Request:

- a) Please identify the alternative routes that were investigated away from the existing Trans Mountain Pipeline right of way to avoid crossing through built up residential zones in the City of Abbotsford.
- b) Please identify whether access roads specifically within the Cedar Springs development at will be completed with the trenchless (bore) method.
- c) Please provide a commitment that Trans Mountain will use the trenchless (bore) method for all roads in residential zones in the City of Abbotsford.

Response:

- a) The corridor selection process that Trans Mountain adopted for this Project is described in Section 4.2 of Volume 2 and in Section 2.8 of Volume 4A of the Application. As indicated in Section 4.2, Trans Mountain decided early in the Project planning process that the new pipeline segments should be contiguous with the existing 18 m wide Trans Mountain Pipeline (TMPL) easement to the greatest extent practical to minimize environmental and socio-economic effects and facilitate efficient pipeline operations.

Trans Mountain’s pipeline routing specialists conducted a field assessment of the TMPL easement and potential alternative corridors in the Abbotsford area as described below.

- 1) A route south of Sumas Mountain using the BC Hydro right-of-way. This would leave the existing route at RK 1113 and follow the BC Hydro right-of-way through farmland to the base of Sumas Mountain and over the mountain alongside Whatcom Road and then on to Maclure Road after crossing Cassiar Park. The route would then turn north along the eastern boundary of Willband Creek Park to rejoin the existing right of way.

- 2) An extension of the above route was also considered continuing west of Park Lane adjacent to or inside of the BC Hydro right-of-way to a point just west of Clearbrook Road where it turned north proceeding cross country to rejoin the existing TMPL easement at RK 1123.5.
- 3) In order to avoid the Sandy Hills residential area, the land immediately behind the houses on Shearwater Terrace was investigated for a possible route. However, due to steep side slopes it was envisaged that the tree clearance and earthworks to establish a stable right of way would be unacceptable in that location. No feasible route was developed.
- 4) A route using Straiton Road was investigated which would leave the west end of Ledgeview Golf Course, dropping down to Straiton Road where it makes a right angle bend. From the junction with Old Clayburn Road, the route could either go south to rejoin the existing right of way or head west to rejoin it around RK 1123.

Based on the field assessment and application of the routing criteria identified in Volume 2, Section 4.2 and Volume 4A, Section 2.8 of the Application, it was determined that it is feasible to install the Line 2 segments on or adjacent to the existing TMPL easement in the City of Abbotsford.

- b) Section 3.2.20.2, Volume 4A in Application states that road crossings will be bored if they are paved.
- c) See response to City of Abbotsford IR No. 1.24b.

1.25 Route Selection through Ledgeview Golf Course**Reference:**

- i. A3S219 Volume 5D, Socio-Economic Technical Reports 10 of 13, PDF p. 43.
- ii. A3S2S3 Volume 6B, Pipeline Environmental Protection Plan, PDF p. 17.

Preamble:

Reference (i) explains that the proposed pipeline corridor will cross the Ledgeview Golf and Country Club in the City of Abbotsford from approximately RK 1118.9 to RK 1119.8.

Reference (ii) explains that the proposed construction period for Ledgeview Golf Course is Jan-Feb, 2017. The City is concerned that the golf course will lose revenue during this time as golfing is a year-round activity in the City.

Request:

- a) Please identify the alternative route deviations that were considered to avoid crossing through Ledgeview Golf Course.
- b) Please outline whether restoration of the Ledgeview Golf Course will be completed for resumption of regular business by spring, 2017.
 - i) Please explain the timing and method of restoration to the golf course.
 - ii) Will Trans Mountain commit to meeting the specifications of the Ledgeview Golf Course in its restoration methods (for example, type of soil, grass).
- c) Please confirm that Trans Mountain is committing to construction at Ledgeview Golf Course from January to February, 2017.
- d) Please identify how Trans Mountain will compensate the Ledgeview Golf Course for lost revenue during the construction phase.

Response:

- a) See paragraphs 1, 3 and 4 in response to City of Abbotsford IR No. 1.24a.

Trans Mountain's pipeline routing specialists conducted a field assessment of the existing Trans Mountain Pipeline (TMPL) easement and potential alternative corridors in the Abbotsford area as described below.

- 1) The potential alternative corridor 1 described in IR 1.24a using the BC Hydro right-of-way would also serve the purpose of avoiding Ledgeview Golf Course.
- 2) A diversion around the northern boundary of the golf course was considered.

As per response to IR 1.24a, it was determined that it is feasible to install the Line 2 segments on or adjacent to the existing TMPL easement in the City of Abbotsford. There are a number of golf courses crossed in the Trans Mountain system and Trans Mountain believes that pipelines and golf courses are compatible.

- b) In keeping with its regulatory obligation to minimize impacts to the extent practicable, Trans Mountain intends to work with the Ledgeview Golf and Country Club to establish access plans, schedules and pipeline alignments that minimize impacts to the golf course to the extent practicable. This will include involving management and staff to come up with a restoration plan to get the course back to full use as soon as practicable. Should Ledgeview experience lost revenue as a result of the construction of the Trans Mountain Expansion Project, Trans Mountain would intend to employ 'actual loss' compensation for any reductions in golf course revenue caused by the construction and operation of the pipeline.
- i) The timing for construction through Ledgeview golf course will be negotiated with the owners and operators of the golf course to minimize impacts to the use of the golf course, and will be scheduled for winter construction as indicated in City of Abbotsford IR No. 1.25c. Construction and restoration will likely take about 2-3 months.
- The restoration of the course will be to equivalent or better condition than prior to construction and the methods of restoration will be developed in consultation with the course owners and operators. A restoration plan will be developed to inform restoration of the golf course.
- ii) Yes.
- c) Trans Mountain will be planning for winter construction at Ledgeview Golf Course during development of the detailed construction plan and will optimize the schedule to mitigate impacts to operation of the golf course.
- d) In keeping with its regulatory obligation under the NEB Act to minimize impacts to the extent practicable, Trans Mountain intends to work with the Ledgeview Golf and Country Club (Ledgeview) to establish access plans, schedules and pipeline alignments that minimize impacts to the golf course to the extent practicable. Should Ledgeview experience lost revenue as a result of the construction of the Trans Mountain Expansion Project, Trans Mountain would intend to employ 'actual loss' compensation for any reductions in golf course revenue caused by the construction and operation of the pipeline. In order to determine 'actual loss', Trans Mountain would use the services of a finance or accounting professional with expertise in golf course management. Working with Ledgeview, the accountant would assess the financial impact including lost revenues and associated costs. The accountant would compare golf course revenues and expenses for Ledgeview from prior years, examine weather conditions and any other relevant factor which might affect usage, and obtain comparative usage and financial information from other similar golf courses within the region. Using this information, Trans Mountain, working in conjunction with the Golf Course, would determine whether any material reduction in usage and net revenues had occurred. Any compensation for lost revenues would be based upon this assessment.

Summary of New Commitments:

- Trans Mountain will commit to winter construction at Ledgeview Golf Course.
- Trans Mountain will develop a restoration plan for Ledgeview Golf Course.
- Trans Mountain will commit to meeting the specifications of the Ledgeview Golf Course in its restoration methods (for example, type of soil, grass).

Construction Phase**1.26 Communication Plan During Construction****Reference:**

- i. A3S2S3 Volume 6B, Pipeline Environmental Protection Plan s. 4.0; Appendix C

Preamble:

Reference (i) the notification procedures of interested parties for construction of the pipeline. It states that landowners will be given “sufficient time to plan and implement alternative land use decisions”.

The City is concerned that it will receive the vast majority of calls from the public with questions, concerns and complaints, about Trans Mountain’s construction and operations. The City requires a daily, direct, reliable and timely communication link between Trans Mountain on-site staff and City Hall to coordinate responses, logistics and scheduling.

Request:

- a) Please identify what Trans Mountain defines as “sufficient time” and what “alternative land use decisions” will be available to landowners.
- b) Please identify how Trans Mountain will establish a direct communication link to City Hall.

Response:

- a) Sufficient time means a reasonable amount of time developed in consultation with the City and other stakeholders, to permit the stakeholders to be aware of construction impacts enough to plan alternate routes.

Alternate land use decisions means Trans Mountain right-of-way or property purchases decision that are changed from what was previously widely communicated.

Trans Mountain’s engagement is ongoing. Subject to the outcome of the National Energy Board Hearing process, and prior to construction, Trans Mountain will undertake a communications and notification program to ensure locally impacted stakeholders and the public are made aware of potential construction impacts including lane restrictions, road closures and alternate access plans. This communication and notification program will be developed in consultation with the City and its constituents.

Trans Mountain is committed to respectful, transparent and collaborative interactions with communities. Trans Mountain will continue to engage with the City, including continuing to share updated project information and gathering feedback on construction effects and mitigation measures. See the Application, Volume 3A, Section 1.5.5 for more information.

- b) Subject to the outcome of the NEB regulatory process, and prior to construction, Trans Mountain will undertake a communications and notification program to ensure local businesses and members of the public are made aware of potential construction impacts including lane restrictions, road closures and alternate access plans. This communication and notification program, if needed, will be developed in consultation with the City and its constituents. The Communication and Notification Program will include advertisements, public general notices, area specific information handouts, and local signage as described in the Volume 6B, Section 1.2.3 Emergency Response Plans. Also see NEB IR No. 1.15a.

More details regarding the plan for engagement and communications activities conducted prior to and during construction will be provided in Consultation Update No. 2 which will be submitted to the NEB in Q3 2014.

Summary of New Commitments:

- This communication and notification program will be developed in consultation with the City and its constituents.
- More details regarding the plan for engagement and communications activities conducted prior to and during construction will be provided in Consultation Update No. 2 which will be submitted to the NEB in Q3 2014.

1.27 Provision of Detailed Construction Schedule**Reference:**

- i. A3S1K5 Volume 4B, Project Design and Execution – Construction, ss. 2.0-4.0

Preamble:

Reference (i) identifies preliminary and master construction schedules but does not indicate when these schedules will be provided. The City is concerned about having adequate time to coordinate operational activities such as garbage collection, recycling service and maintenance works during construction of the pipeline.

Request:

- a) Please provide a commitment to consult with the City of Abbotsford in the development of the construction schedule for construction within City boundaries.

Response:

- a) Trans Mountain commits to consult with the City of Abbotsford's in the development of the Projects construction schedule within City boundaries.

Summary of New Commitments:

- Trans Mountain commits to consult with the City of Abbotsford's in the development of the Project construction schedule within City boundaries.