

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

1.01 Water Crossings: Horizontal Directional Drilling and Pipe Wall Thickness

Reference:

- (i) A3S0Z5, Application Volume 4A, Project Design and Execution – Engineering, PDF page 12 (Table 5.1.5)
- (ii) A3S0Y8, Application Volume 4A, Project Design and Execution – Engineering, PDF page 46 (page 4A-18)
- (iii) A3S0Z5, Application Volume 4A, Project Design and Execution – Engineering, PDF page 14 (Table 5.1.6)

Preamble:

Reference (i) states that the proposed pipeline corridor will cross Nathan Creek at RK 1138.0 and the Salmon River at 1147.4.

Reference (ii) states that 84 watercourse crossings were evaluated for the technical feasibility of using horizontal directional drilling. Horizontal directional drilling feasibility assessments will be submitted in the second quarter of 2014 and additional geotechnical and geophysical investigations will be carried out during the detailed engineering and design phase. Trans Mountain submits that early assessments indicate that the horizontal directional drilling crossing technique may be feasible for 21 major watercourses.

Reference (iii) provides a list of those 21 watercourses. Neither the Salmon River nor Nathan Creek is among the list of 21 watercourses for which horizontal directional drilling is indicated as feasible.

Request:

- a. Please explain why the horizontal directional drilling technique is not considered feasible at the Nathan Creek and Salmon River crossings.
- b. Please indicate what construction methods are then proposed to ensure no impacts at either the Nathan Creek or Salmon River crossings, should those crossings be approved.

Response:

- a. Nathan Creek and Salmon River will not be crossed by horizontal directional drill (HDD) technique. The rationale and selection process for a specific crossing technique is specified in Volume 4A, Section 2.11 of the Application.

- b. Isolated trenched pipeline construction methods, inside the least risk biological window (August 1 – September 15) as defined in Technical Report 5C-7 in Volume 5C, Fisheries (British Columbia) Technical Report (Triton Environmental Consultants Ltd. December 2013), are proposed for Nathan Creek (BC-747).

Isolated trenched methods are also recommended for the crossing of the Salmon River (BC-753), which has comparatively higher discharge rates. The crossing's construction is recommended to coincide with the provincial recommended least risk biological window (August 1 – August 31).

Wherever feasible, watercourse crossing construction activities will be timed to occur within the reduced-risk timing windows to avoid causing serious harm to fish in compliance with the *Fisheries Act*. 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 and the Pipeline Environmental Protection Plan (Volume 6B). Mitigation measures are also incorporated within the project design to reduce the spatial scale, duration and intensity of effects to manage the potential for serious harm to fishes and their habitat. These measures include, for example, limiting disturbance areas within riparian areas and implementing minimum riparian setback distances for temporary and permanent facilities.

Trans Mountain is currently undertaking a review of these watercourse crossings with respect to potential for serious harm (Fisheries and Oceans Canada [DFO] Self-Assessment) and will provide a summary of these results to the NEB in Q4 2014. 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 includes a further review of potential effects to species at risk. If the results of the Stage 2 assessment change any of the conclusions presented in the Environmental and Socio-Economic Assessment (Volume 5A of the Application), Trans Mountain will submit an update to the NEB in Q4 2014.

1.02 Water Crossings: Pipe Wall Thickness

Reference:

- (i) A3S0Y8, Application Volume 4A, Project Design and Execution – Engineering, PDF page 51 (page 4A-23)
- (ii) A3S0Z5, Application Volume 4A, Project Design and Execution, Appendix D – Tables, Table 5.1.8 – Preliminary Pipe Wall Thicknesses, PDF page 16
- (iii) A3S0Z5, Application Volume 4A, Project Design and Execution – Engineering, PDF page 12 (Table 5.1.5)

Preamble:

Reference i) states that a risk assessment will be undertaken and it is expected that heavier wall pipe will be specified at specific locations, such as at highway and road crossings and larger watercourse crossings, and for some areas designated as high consequence areas.

Reference (ii) states that the pipe from the Edmonton to Burnaby segment will be constructed using line pipe, heavy pipe, or extra heavy pipe. Reference (ii) also states that heavy pipe will be used for road crossings and watercourse crossings.

Reference (iii) states that the proposed pipeline corridor will cross Nathan Creek at RK 1138.0 and the Salmon River at 1147.4.

Request:

- a) Will Trans Mountain commit to using extra heavy pipe at the Nathan Creek and Salmon River Crossings should those crossings be approved?
- b) If Trans Mountain will not commit to using heavy pipe at those crossings, please explain why not.

Response:

- a) During the Detailed Engineering and Design Phase of the Project, Trans Mountain will determine the segments of the pipeline where heavy wall and extra heavy wall pipe will be used. Generally heavier wall pipe is used at stream and river crossings.
- b) See response to Langley IR No. 1.02a.

1.03 Emergency Response Time

Reference:

- (i) A3S1R5, Application Volume 5B, ESA – Socio-Economic Assessment, PDF page 136
- (ii) A3S1A4, Application Volume 4A, Project Design and Execution - Engineering, PDF page 11

Preamble:

In reference (i), Trans Mountain responds to concerns about safety in the event of a spill by stating that the consequences of a spill would be minimized by quickly shutting down and isolating the damaged section of the pipeline or facility.

The application does not state how fast the response time would be in the event of a spill.

Reference (ii) indicates that the proposed pipeline route runs directly parallel to the Salmon River between RK 1148 and RK 1150.5. Thus, the new pipeline is currently proposed to be located within the Salmon River floodplain, which is difficult to access during winter or wet conditions. During certain rain events, it would not be possible for Township of Langley to stop pumping water from its dyke station. If there is a spill when the land is flooded, bitumen risks spreading along the Salmon River and eventually into Township of Langley's dyke station to be pumped into the Fraser River.

Request:

- a. Please provide Trans Mountain's specific plan for responding to a spill or breach in a section of the pipeline within the Township of Langley, including sections that are under water, including in flood conditions.
- b. Will Trans Mountain's response time be within 10 minutes if a spill, leak or breach of the pipeline is detected? If not, please indicate what the anticipated response time will be in the event of a spill, leak or breach.
- c. Please indicate the volume of bitumen that would escape within the first 10 minutes of a spill, leak or breach of the pipeline or within the anticipated response time.
- d. How would Trans Mountain's response time differ under circumstances where a pipeline is not easily accessible because it is under water?

Response:

- a. 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 Project. The final programs will be developed in a manner consistent with the NEB's draft conditions 42, 52, 53 and 54.
- b. 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.

- c. The term 'bitumen' was used in the information request. Trans Mountain would like to clarify that the product that will be transported by Line 2 is not bitumen, but crude oil, comprising chiefly of diluted bitumen, or dilbit. From a risk perspective, which considers both failure likelihood (spill frequency) and spill consequence, the risk associated with the transportation of dilbit is similar to conventional heavy crude oil.

As stated in Section 3.1.3.2 of Volume 7 of the Application (B18-1):

A significant amount of operating experience with heavy oil pipelines (diluted bitumen [dilbit] and synthetic bitumen [synbit]) has been reported, and is available in the public record. A review of this evidence has been undertaken to provide guidance in establishing estimates of the corrosivity of the product stream, and how that corrosivity will reflect on failure likelihood due to internal corrosion.

Available evidence supports that dilbit (or synbit) are no more corrosive than other conventional heavy crude oils (Alberta Innovates - Comparison of the Corrosivity of Dilbit and Conventional Crudes-2011, National Academy of Science – Effects of Diluted Bitumen on Crude Oil Transmission Pipelines – 2013, Penspen Integrity – Dilbit Corrosivity – 2013).

With respect to the particular properties of diluted bitumen relative to spill behaviour, this was summarized in Section 5.1, Volume 7 "Risk Assessment and Management of Pipeline and Facility Spills" (B18-1):

Laboratory and mesoscale weathering experiments done in the recent past have shown dilbits to have physical properties very much aligned with a range of intermediate fuel oils and other heavy crude oils, depending on the state of weathering... Medium to heavy crude oils and dilbits undergo very similar changes when released to similar settings.

With respect to the question on spill volumes, as documented in Volume 7, Section 3 of the Application, Trans Mountain has completed a modeling exercise along the entire length of Line 2 using assumptions that correspond to a credible worst-case full-bore rupture scenario. The risk (which includes a quantitative evaluation of the likelihood, or frequency of occurrence) associated with this scenario will be provided in Q3 2014 for the entire length of Line 2 in the risk analysis that was committed to in the response to NEB IR No. 1.81a. Modeled worst-case scenario spill volumes along the entire length of Line 2 are provided in Volume 7, Appendix B of the Application, and the results of overland and stream flow modeling of these spill volumes are provided for the full length of Line 2 in Volume 7, Appendix C of the Application. It should be noted that the spill volumes reported in these references represent credible worst-case spills, and the volumes include estimates prior to detection/isolation, as well as drain-down volumes following isolation.

References:

Alberta Innovates Energy and Environmental Solutions. 2011. Comparison of the Corrosivity of Dilbit and Conventional Crude. September 2011.

Penspen Integrity. 2013. State of the Art Report, Dilbit Corrosivity. February 2013.

The National Academies. 2013. Transportation Research Board Special Report 311, Effects of Diluted Bitumen on Crude Oil Transmission Pipelines.

- d. This does not effect the response time described in the response to Township of Langley IR No. 1.03b.

1.04 Location of Spill Response Facilities

Reference:

- (i) A3S4V5, Application Volume 7, Risk Assessment & Management of Pipeline and Facility Spills, PDF p. 61

Preamble:

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

Request:

- a. Please provide a commitment to Township of Langley that Trans Mountain will install an OSCAR station within the Township of Langley's boundaries.
- b. If Trans Mountain will not commit to this request, why not?

Response:

- a. 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 see response to Langley IR 1.04a.

1.05 Location of Mainline Block Valves

Reference:

- (i) A3S2S4, Volume 6B, Pipeline Environmental Protection Plan, PDF page 5
- (ii) A3S1L4, Volume 5A, ESA – Biophysical, PDF page 34
- (iii) A3S0Z5, Volume 4A, Project Design and Execution – Engineering, PDF page 23 (Table 5.1.12)

Preamble:

Reference (i) states that 86 automated mainline block valves will be installed for emergency shutdown and isolation of pipeline segments.

However, reference (i) also states on PDF page 82 that the number and locations of mainline block valves have not yet been determined.

Reference (ii) states that the location of the mainline block valves will be determined using site selection criteria set forth in section 4.3.2 (Volume 5A). There is no section 4.3.2 in Volume 5A.

Reference (iii) contains Table 5.1.12, which has a preliminary list of valve locations. Reference (iii) indicates that there will potentially be only one valve in Township of Langley, located at RK 1143.6.

The proposed pipeline corridor traverses both environmentally sensitive and populated areas as well within the Township of Langley. Township of Langley finds it unacceptable for only a single mainline block valve to be located within its borders. Mainline block valves are necessary to protect Township of Langley's groundwater and the Salmon River Floodplain.

Request:

- a. Please provide Township of Langley with the site selection criteria referenced in reference (ii).
- b. Table 5.1.12 implies that the valve locations indicated are preliminary and thus subject to change. By when does Trans Mountain anticipate knowing the exact location of the mainline block valves?
- c. Please confirm that all mainline block valves will be automated.
- d. Does Trans Mountain plan to locate any mainline block valves within the Township of Langley?
- e. Will Trans Mountain commit to locating mainline block valves (1) at the border of Township of Langley and Surrey, (2) at the border of Langley and Abbotsford, and (3) at RK 1148 and at RK 1150.5, the approximate location of the corridor segment that will run adjacent to the Salmon River?

Response:

- a. The selection criteria for establishing the location of mainline block valves (MLBVs) are actually referenced in Volume 5A, Section 4.4.2 and not in Volume 5A, Section 4.3.2 of the Application. Location of mainline block valves will be further informed by the Risk Based Design which will incorporate the oil spill analysis provided in Volume 7, Appendix B, Oil Spill Outflow Model Results and Appendix C, Overland and Stream Flow Modelling of Potential Full Bore Rupture.
- b. The exact location of the mainline block valves (MLBVs) will be established by the end of the Detailed Engineering and Design Phase of the Project.
- c. All mainline block valves (MLBVs) in the Township of Langley will be automated.
- d. The locations of mainline block valves (MLBVs) will be finalized during the Detailed Engineering and Design Phase of the Project using the criteria in Volume 5A, Section 4.4.2 and Volume 4A, Section 3.2.15.1 of the Application. This could result in one or more MLBVs being located within the Township of Langley.
- e. 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 but not municipal boundaries in the selection process of the location of MLBVs. The response to Langley IR No. 1.05b provides information on when valve locations will be finalized. Trans Mountain is willing to meet with representatives of the Township of Langley to share information on mainline block valve locations as the detailed engineering design is progressed.

Summary of New Commitments:

- Trans Mountain is willing to meet with representatives of the Township of Langley to share information on mainline block valve locations as the detailed engineering design is progressed.

1.06 Emergency Response: Seismic Activity

Reference:

- (i) A3S0Y8, Application Volume 4A, Project Design and Execution – Engineering, Section 2.9.3 Seismic Hazards, PDF page 40, (page 4A-12)
- (ii) A3S1F7, Application Volume 4A, Project Design and Execution – Engineering, Appendix J, Seismic Assessment Desktop Study Report, PDF page 4

Preamble:

Reference (i) states that the route for the proposed pipeline corridor was selected so as to avoid or minimize exposure to seismicity, sedimentation and erosion. However, the entire Metro Vancouver Region is in an earthquake-prone area, and a major earthquake event is likely to occur in or around Township of Langley during the lifetime of the pipeline.

Reference (ii) shows a map of the historical seismic activity around the proposed pipeline corridor. According to this map, there has been significant historical earthquake activity in the Lower Mainland.

Request:

- a. Please detail Trans Mountain's plan for responding to an earthquake that compromises the pipeline.
- b. What is Trans Mountain's plan for a situation in which there are multiple failures, breaches, ruptures or spills at different segments of the pipeline, all of which must be responded to at the same time?

Response:

- a. Kinder Morgan Canada (KMC) plans for credible worst case scenarios, examples of which can be found in the Application, Volume 7, Sections 7 and 8. Section 2.9.3, Volume 4A of the Application briefly describes the principles to be used in the seismic design of the new pipelines and facilities (including pump stations and terminals) proposed as part of the Project. Please see Volume 7, Section 4 for a description of KMC's Emergency Management Program. The emergency response plans are comprehensive in their application regarding hazards and potential emergency situations on the Trans Mountain Pipeline System and this includes checklists for earthquake response.

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.

- b. Please refer to the response to the Township of Langley IR No. 1.06a.

1.07 Cost Recovery in the Event of an Emergency Response

Reference:

- (i) A3S4V5, Application Volume 7, Risk Assessment and Management of Pipeline and Facility Spills, PDF page 61-62 (page 7-34 to 7-35), PDF page 64 (page 7-37)

Preamble:

Volume 7 discusses Trans Mountain's plans for emergency response generally. In reference (i), Trans Mountain anticipates relying in part on outside agencies and groups to participate in an emergency response.

Request:

- a. To what extent will Trans Mountain rely on Township of Langley's emergency response services in the event of an emergency?
- b. In what circumstances will Township of Langley be expected to be a part of the unified command structure for a pipeline or facility spill or incident?
- c. Please confirm that Trans Mountain will coordinate with Township of Langley emergency services to the satisfaction of the municipality in developing emergency response plans for pipeline and facility incidents within the Township, including training of Trans Mountain and local responders (including municipal emergency workers).
- d. Please confirm that Trans Mountain will compensate Township of Langley for its costs in developing the response plans above, and for all additional training and expenses incurred by the Township to implement those plans.
- e. If Township of Langley incurs costs in responding to an emergency as a result of a spill, rupture or breach at the pipeline, how will Township of Langley be compensated for those costs?
- f. Will Trans Mountain commit to compensating Township of Langley fully for any costs incurred in responding to a pipeline emergency such that Township taxpayers will not be adversely affected by the pipeline project?

Response:

- a. Kinder Morgan Canada Inc. (KMC) expects to work co-operatively with the Township of Langley (Langley) first / emergency responders in the unlikely event of an emergency occurring which impacts Langley. The needs for fire, police and health services greatly depend on the type of emergency. KMC does not have the authority to order evacuation, and/or conduct the evacuation of public/private places, nor does it have the authority to close roads, redirect traffic, public transit and other transportation related infrastructure. KMC anticipates working collaboratively with the local first responders through an Incident Command System (ICS) structure to coordinate these and other activities in the unlikely event the need arises.

KMC uses the ICS for incident planning which is adaptable to different emergency scenarios and allows for quick identification of resources, and a method of procurement. The current planning method calls for the replacement of municipal services with private firms as early as possible, with the approval of Unified Command. It is KMC's preference to enter into a Unified Command with the municipal, provincial and federal agencies to ensure a safe and thorough response to any emergency. KMC is committed to a timely and safe response to any incident and has a proven history of procuring the resources required at the time of the event.

- b. 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 Incident Command System (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'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. Trans Mountain is committed to working with the Township of Langley 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.

- c. Kinder Morgan Canada'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.

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.

- d. Please refer to the response Langley IR No. 1.07c and Langley IR No. 1.07e.
- e. Trans Mountain Pipeline ULC (Trans Mountain) confirms it is liable to pay the costs of damages resulting from its construction and operation activities. For additional information, please see the response to NEB IR No. 1.08e.
- f. Please refer to the response to Township of Langley IR No. 1.07e.

1.08 Groundwater Contamination

Reference:

- (i) A3S4V6, Application Volume 7, Risk Assessment and Management of Pipeline & Facility Spills, PDF page 19
- (ii) Compass Resource Management Ltd. 2009. Township of Langley Water Management Plan: Final Report

Preamble:

Reference (i) identifies the need to move quickly to remove pooled oil and affected surface materials in the event of a spill. Reference (i) states that without treatment or removal, oil would be a long-term source of groundwater contamination should it reach the water table. Reference (i) also states that during the detailed engineering phase, Trans Mountain will complete a pipeline risk assessment and evaluate the need for additional mitigation measures (e.g., valve spacing, deeper burial or thicker-walled pipe) to reduce threats and associated risk to aquifers.

Reference (ii) states that Township of Langley relies heavily on groundwater for agricultural, commercial, industrial and residential uses. Approximately 80% of the Township of Langley's water supply comes from municipal and private wells. Township of Langley purchases some of its water from Metro Vancouver. Should there be a spill of such a magnitude that the groundwater is rendered non-potable, the Township would be required to purchase additional water from Metro Vancouver, as well as provide municipal infrastructure to those residents currently on private wells. Furthermore, Township farmers rely extensively on groundwater for irrigation purposes.

Request:

- a. Please provide a commitment that Trans Mountain will consult with the Township of Langley in determining, to the satisfaction of the Township of Langley, what additional mitigation measures are required in final pipeline detailed design to protect the groundwater and aquifers in the Township.
- b. Will Trans Mountain commit to designing the sections of the pipeline that cross aquifers in the Township of Langley so that they will not leak?
- c. If Trans Mountain will not commit to designing a leak proof pipeline, please indicate how much contamination it is expected that the pipeline will create over its lifetime.
- d. Will Trans Mountain commit to providing potable water and irrigation water within the Township of Langley should an aquifer be compromised by the pipeline?
- e. If so, will Trans Mountain commit to the appointment of an independent monitor to assess whether an aquifer has been compromised by the pipeline?

Response:

- a. Trans Mountain is committed to respectful, transparent and collaborative interactions with communities. Trans Mountain will continue to engage with the community, including continuing to share updated Project information and addressing concerns about the proposed Trans Mountain Expansion Project as they arise. Specific mitigation measures, as required, will be developed in detailed design. Trans Mountain commits to consult with the Township of Langley on its mitigation measures that will be incorporated into the detailed design and engineering to protect groundwater and aquifers.

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. Risk-based design is an iterative approach that evaluates and prioritizes risks, and their associated risk drivers, and then establishes mitigation measures to be incorporated into the design to address the principal risks. Because risk-based design is a process that focuses on identifying and pre-empting risk, it is a more rigorous approach than more traditional design approaches that don't incorporate the findings of specific risk assessments to identify and pre-empt risks.

- b. See response to Langley IR No. 1.08a. Trans Mountain will commit to designing and constructing the pipeline, employing risk based design to manage risks following the principle of As Low as Reasonably Possible (ALARP), though the risk can never be zero. Design factors will be considered that assess the relative threats to the pipeline and incorporate the necessary mitigation such as thicker wall pipe or increased depth of cover as two examples.
- c. No spill is acceptable to Trans Mountain. Trans Mountain will design, construct, and implement programs in accordance with industry best practices and regulatory criteria to prevent pipeline releases. Trans Mountain would treat any release as an emergency and would immediately respond to address and remediate the contamination.

Trans Mountain believes improvements in pipeline design and construction will result in a low probability for pipeline leaks or ruptures and resulting contamination. This topic was addressed in a paper presented at the International Pipeline Conference in Calgary in 2012 (IPC2012-90072). As discussed in that paper and attached in Langley IR No. 1.08c Attachment1:

One of the challenges of employing a quantitative risk assessment on a new pipeline is that industry failure statistics are not directly applicable to modern pipeline designs, materials, and operating (i.e., assessment) practices. A review of industry failure statistics indicates that the vast majority of pipeline failures occur on pipelines that were installed in the 1970s or earlier (1, 2). These pipelines were largely developed prior to the advent of several risk-critical technologies, such as:

- *High-performance coating systems, such as three-layer coatings and fusion bonded epoxy coating systems,*
- *Design-phase identification of interference effects and development of mitigation plans through diagnostic testing of cathodic protection systems, and*
- *Design-phase identification of internal corrosion threat factors and the design of mitigation plans through internal corrosion modeling.*
- *Design-phase identification of geotechnical threats, and mitigation through threat avoidance*

Because of these factors, the use of historical incident data is not a sound foundation for estimating failure frequency in modern pipelines.

Other characteristics of modern pipelines that are fundamental in the enhancement of integrity, and that will be employed on Trans Mountain Line 2 include:

- Continuous casting of steel slabs;
- Thermomechanical Controlled Processing (TMCP) technology for skelp production;
- High Strength Low Alloy (HSLA) steel design;
- Low sulphur steels;
- Inclusion shape control;
- High toughness steels;
- Implementation of quality systems and the use of highly constrained process control variables during pipe manufacture;
- Highly-constrained welding processes;
- Non-destructive inspection of girth welds; and,
- Implementation of Quality Management Systems during design, construction and operations

Reference:

Mihell, J.N., September, 2012, Risk Assessment of Modern Pipelines, Calgary, Alberta.

- d. 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.

Should an event, such as the one suggested, arise, Trans Mountain's practice would be to first minimize any potential impacts or damages to the extent practical by using and adapting response and operations practices; and second, provide mitigation to reverse or treat any impacts. Trans Mountain believes that through these measures, most impacts will be managed. Should residual impacts or damages remain, Trans Mountain would expect to reach voluntary agreements with the District or Municipality outlining the company's responsibilities for the provision of water, the manner in which water would be provided and any further remediation work required. Trans Mountain would also

expect to provide commensurate compensation for damages directly related to and caused by the acquisition of lands, construction of the pipeline and inspection, operation, maintenance or repair of the pipeline. Should the District or adjacent landowners 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 affected parties 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, if Trans Mountain determines that damages resulted from the company's operations, it will provide any commensurate compensation due to the affected party.

- e. In the event there is a spill along the proposed pipeline within the Township of Langley, Trans Mountain is prepared to work with the Township to identify a mutually agreed upon independent monitor to assess whether an aquifer has been compromised.

Summary of New Commitments:

- Trans Mountain commits to consult with the Township of Langley on its mitigation measures that will be incorporated into the detailed design and engineering to protect groundwater and aquifers.
- Trans Mountain will commit to designing and constructing the pipeline, with risk based design employed to manage risks following the principle of As Low as Reasonably Possible (ALARP)

1.09 Invasive Species

Reference:

- (i) A3S2S3, Application Volume 6B, Pipeline Environmental Protection Plan, Appendix C, PDF pages 291-314 (pages C-87 to C-110)

Preamble:

Reference (i) states that plants listed as invasive under the BC Forest and Range Practices Act must be managed to prevent their introduction or spread.

Reference (i) states that along the construction right-of-way, Trans Mountain will “remove problem vegetation when adjacent to or crossing a wetland or watercourse (i.e., river) and replace it with compatible low-growing plant species that will out-compete problem vegetation.”

Township of Langley is concerned about the spread of invasive species during the construction phase.

Request:

- a. Will Trans Mountain commit to removing all invasive plant species from the final pipeline corridor, not just where adjacent to or crossing a wetland or watercourse?
- b. If not, please explain why Trans Mountain will not so commit.
- c. Will Trans Mountain commit to ensuring that all construction equipment is free of invasive species seeds or debris?
- d. If not, please explain why Trans Mountain will not so commit.
- e. Please provide a long-term management plan for monitoring invasive species along the pipeline right-of-way for the construction phase as well as the operational life of the project through decommissioning.

Response:

- a. Trans Mountain has committed to managing and controlling invasive plants both during construction and operations of the Project. One of the options for managing and controlling invasive plant species is removal. However, there are other management options that will be considered depending on the species involved, the type and density of the invasive species to be controlled, the location of the invasive species relative to residential areas, sensitive environmental features (e.g., wetlands, rare plants), etc. Refer to the Application, Section 7.0 of Volume 6B (the Pipeline Environmental Plan) as well as Section 14.0 of Appendix C of Volume 6B (the Weed and Vegetation Management Plan) for additional information regarding vegetation management during construction and operations of the Project.
- b. Please see Trans Mountain’s response to Langley IR No. 1.09a.

- c. Trans Mountain will ensure that all construction equipment is free of invasive species seeds or debris when it arrives on the construction right-of-way. General pipeline construction mitigation measures regarding weeds and vegetative debris that may be applicable to the pipeline throughout all phases of construction are outlined in the Application, Section 7.0 of the Pipeline Environmental Protection Plan (Volume 6B) as well as the Weed and Vegetation Management Plan (Section 14.0 of Appendix C of Volume 6B). These mitigation measures will be implemented, as warranted, by Trans Mountain, its Contractors and subcontractors prior to and during construction.
- d. Please refer to the response to Langley IR No. 1.09c.
- e. Kinder Morgan Canada Ltd.'s (KMC's) Integrated Vegetation Management Plan (IVMP) applies to all the KMC pipeline rights-of-way, facilities and access roads. KMC uses principles of the integrated vegetation management plan (IVMP) to manage problem vegetation with chemical, cultural (tree plantings), biological, manual, mechanical treatment methods. Vegetation includes grasses species, broadleaf species, woody tree and shrub species, and noxious/invasive species. The control of noxious weeds designated within British Columbia is legislated under the *BC Weed Control Act and Regulations*. The IVMP was developed in accordance to Section 58 of the *Integrated Pest Management Regulation* (BC Reg. 604/2004).

Elements of (IVMP):

1. Prevention – seeding/fertilizing disturbed areas from operation maintenance to reduce the potential of noxious/invasive weed establishment. Other preventative measures include: reducing established populations and the spread of noxious/invasive weeds on KMC property, preventing the spread to non-infested areas by requiring vehicles traveling to and from weed-infested by ensuring that noxious/invasive plant parts are removed from vehicles and equipment.
2. Identification of species - accurate identification of vegetation on or adjacent to KMC right-of-way or facilities by qualified environmental professionals.
3. Monitoring - Incidental monitoring of noxious/invasive plant populations during scheduled patrols, inspections or maintenance activities on the pipeline right-of-way and the facilities.
4. Injury (treatment) thresholds – categories are adopted from plant committees and agencies and are used to establish injury (treatment) thresholds, treatment methods and priorities. The location, density, growth stage, plant category (degree of invasiveness) and site risk levels of the noxious/invasive species are recorded during monitoring events. The noxious/invasive weeds are put into categories that are used to establish treatment thresholds and treatment methods (priorities). Third party consulting or in house personnel are utilized to provide recommendations for site conditions observed and if treatment is required.

5. Treatment options - control may or may not be required, depending on the plants growth stage, physical location and degree of invasiveness. Chemical/biological/manual/mechanical treatment methods are based site observations and recommendations from the qualified environmental professional. Treatment method selection differs depending on the species of concern.
6. Treatment evaluation - documented efforts used to meet the specific requirements that different regulatory bodies expect KMC to maintain and be available when requested to demonstrate the adequacy and effectiveness of treatments implemented during vegetation management activities.

KMC also has put efforts into maintaining partnerships with the regional district that the right-of-way and facilities go through currently with reviewing the regional districts strategies and working with the councils to reduce weed containment lines in way of treating weeds along the right of way, facilities and associated access roads. KMC was a sponsor for the 2014 Invasive Species Forum showing support for all of the councils across BC. KMC makes an effort to attend spring and fall council meetings were feasible.

The plan was prepared to comply with all guidelines outlined for operations in British Columbia. The overall goal is of the IVMP is to prevent the spread of weeds and over time, eradicate or at minimum, reduce or control weeds to a level that is equivalent to the level observed in adjacent lands with similar land use. KMC may provide funding for programs to manage noxious weeds and invasive plants on the right-of-way or facilities where the cause is attributable to company activity. The funding supports services retained for qualified environmental professionals or invasive plant council members for site inspections to provide recommendations based on site observations and follow up measures if any are required. Certain situations call for active contribution of adjacent landowners/stakeholders/occupants to participate collectively in managing large infestations that are not solely attributable to KMC activities.

1.10 Location of Pipeline Markers

Reference:

- (i) A3S1K5, Application Volume 4B, Project Design and Execution – Construction, PDF page 47
- (ii) A3S2S6, Application Volume 6C, Facilities Environmental Protection Plan, PDF page 269

Preamble:

Reference (i) states that Pipeline markers and warning signs will be installed at highway and road crossings; navigable and major watercourse crossings; railway crossings; foreign facility crossings; wetlands; and fence lines.

Reference (ii) indicates that pipeline markers may not mark the exact location of the pipeline.

Township of Langley is concerned about safety and infrastructure impacts with the installation of pipeline markers only at intervals for the segment of the pipeline running through the Township.

Request:

- a. Will Trans Mountain commit to continuous, accurate and readily accessible identification of the pipeline through physical markers?
- b. If so, how does Trans Mountain propose to mark the path of the pipeline?
- c. If Trans Mountain will not commit to informing Township of Langley and its residents of the exact location of the pipeline as described at a), please explain why not.

Response:

- a. No, Trans Mountain will not provide continuous markers. As outlined in reference (i) “Signage for the Line 2 pipeline will be developed and installed in accordance with CSA Z662, the legislative requirements of other appropriate regulatory authorities, and the Trans Mountain specifications and drawings.” As-built surveys of the pipeline installation and pipeline right-of-way will be carried out in accordance with Application Volume 4B, section 3.4.10 and GIS shape files will be made available to the municipality.
- b. Trans Mountain proposes to mark the path of the pipeline as per the Application, Volume 4B, Section 3.4.16 Pipeline Markers and Warning Signs.
- c. Please see response to Langley IR No. 1.10a on Trans Mountain's commitment to provide as-built data to Township of Langley and our response to Langley IR No. 1.10b to fulfill CSA Z662, legislative and other applicable regulatory requirements, on marking the exact location of the pipeline.

Summary of New Commitments:

- Trans Mountain commits to provide municipalities as-built shape files on location of TMEP Line 2.

1.11 Ecological Compensation Plan

Reference:

- (i) A3S1R5, Application Volume 5B, ESA – Socio-Economic Assessment, PDF page 134

Preamble:

In reference (i) Trans Mountain states that Trees, stumps, brush, and other vegetation will be cleared from the construction right-of-way, temporary work sites, and permanent facilities that are not located on existing, previously cleared easements.

Reference (i) also states that every effort will be made to minimize any negative effects to landowners that result from tree removal.

Township of Langley will permanently lose vegetation and habitat along the right- of-way to provide access to the pipeline.

Request:

- a. How will Trans Mountain compensate the Township of Langley and landowners for the loss of vegetation and habitat that will occur as a result of tree removal?

Response:

- a. 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'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. Trans Mountain believes that through these measures, most impacts will be managed. 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 landowners be of the opinion that the operations related to the Trans Mountain Pipeline have caused them directly related damages as defined in the NEB Act, Trans Mountain would look to the affected parties 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, if Trans Mountain determines that damages resulted from the company's operations, it will provide any commensurate compensation due to the affected party.

1.12 Existing Township Infrastructure and Future Planning

Reference:

- (i) A3S0Z5, Application Volume 4A, Project Design & Execution – Engineering, Table 5.1.14, PDF page 36
- (ii) A3S0Z5, Application Volume 4A, Project Design & Execution – Engineering, Table 5.1.17, PDF page 83
- (iii) A3S1S7, Application Volume 5B, ESA – Socioeconomic, PDF pages 127, 135-136
- (iv) A3S2J3, Application Volume 5D, ESA Socio-Economic Technical Reports, PDF page 5

Preamble:

Reference (i) indicates where the proposed pipeline corridor will cross roads within Township of Langley boundaries.

Reference (ii) indicates where the proposed pipeline corridor will cross Township of Langley utilities.

The proposed pipeline corridor will cross a number of roads and utilities within Township of Langley. Thus, the construction phase of the TMEP will uncover aging infrastructure; uncovering this infrastructure risks artificially accelerating the need to replace it.

In reference (iii), Trans Mountain anticipates that limitations to future municipal linear infrastructure planning will be minimal—i.e. “not significant”.

However, reference (iii) also acknowledges that limitations to future municipal linear infrastructure will occur as a result of the TMEP.

In reference (iv), Trans Mountain acknowledges that the proposed pipeline corridor crosses both the existing sewer system (approximately RK 1154.6) in Township of Langley as well as areas zoned for expansion of the sewer system (approximately RK 1151.6), in reference to the Township of Langley’s OCP.

Trans Mountain commits in reference (iii) to generating a full inventory of municipal sub-surface linear infrastructure crossings and to continuing its dialogue with communities throughout right-of-way finalization, planning, construction and operations to ensure issues, restrictions and limitations are communicated, understood, and addressed by all affected parties.

As the Township is a rapidly growing community, given the lifespan of the proposed pipeline, it is impossible to know at this time, how many future pipeline crossings either the Township or developer would have to complete as the Township grows and expands its infrastructure network.

Request:

- a. Will Trans Mountain commit to consulting Township of Langley in identifying infrastructure at risk due to premature exposure because of pipeline construction, and to replacing impacted infrastructure as a part of the TMEP?

- b. If Trans Mountain will not commit to replacing this infrastructure, please explain why not.
- c. Will Trans Mountain commit to designing the pipeline within the Township of Langley at a depth that is determined in consultation with and to the satisfaction of the Township so as to minimize cost impacts to the Township in future infrastructure maintenance and construction that will occur in proximity to the pipeline?
- d. Will Trans Mountain commit to obtaining Township of Langley's consent as to pipeline depth where the pipeline either crosses or runs parallel to roads and sub-surface linear infrastructure (e.g. water, sewage, storm drains, etc.)?

Response:

- a. Trans Mountain is committed to respectful, transparent and collaborative interactions with communities. Trans Mountain will continue to engage with the community, including continuing to share updated project information and addressing concerns about the proposed Trans Mountain Expansion Project as they arise. Trans Mountain has recently initiated detailed engineering and design of the Project, and is committed to engage with the Township of Langley as the detailed design progresses. The detailed design will require identification of existing Township of Langley infrastructure, as well as future infrastructure growth plans to the extent that they are known. For municipal infrastructure, design considerations are will be formalized in crossing agreements. In the event of an unforeseen strike or damage to municipal infrastructure, the specifications and contract for the construction work will typically require that any physical damage to existing property caused by construction will be restored to pre-construction condition.
- b. Please see the response to Langley IR 1.12a for Trans Mountain's commitments on impacted infrastructure.
- c. Trans Mountain is committed to respectful, transparent and collaborative interactions with communities. Trans Mountain will continue to engage with the community, including continuing to share updated project information and addressing concerns about the proposed Project as they arise.

Trans Mountain will consult and work with the Township of Langley and is committed to design the pipeline at a depth that is in line with as a minimum:

- Application, Volume 4A, s.3.2.17 Depths of Cover
 - Application, Volume 4A, Appendix C
 - Application, Volume 4A, Appendix D - Table 5.1.13 Minimum Depths of Cover.
- d. Please see response to Langley IR No. 1.12c for Trans Mountain's commitments on working with the Township of Langley and its commitments on design pipeline depths.

Exact pipeline depths will not be available until after detailed engineering and design phase is complete, and during the detailed construction planning process; at the same time, details of all crossing of Township of Langley infrastructure will be formalized in

crossing agreements. Trans Mountain is committed to respectful, transparent and collaborative interactions with the Township of Langley. Trans Mountain will continue to engage with the community, including continuing to share updated project information and addressing concerns about the proposed Trans Mountain Expansion Project as they arise.

Summary of New Commitments:

- Trans Mountain will consult with Township of Langley on pipeline depth proximate to existing and future municipal infrastructure.

1.13 Construction Phase

Reference:

- (i) A3S1S7, Application Volume 5B, Socio-Economic Effects Assessment, PDF page 173 (Table 7.2.7-7)
- (ii) A3S1S7, Application Volume 5B, Socio-Economic Effects Assessment, PDF page 173
- (iii) A3S0Q7, Application Volume 1, Summary, PDF page 68
- (iv) A3S1S9, Application Volume 5B, Socio-Economic Effects Assessment PDF page 71
- (v) A3S1L4, Application Volume 5A, ESA – Biophysical, PDF page 5 and PDF pages 34-36

Preamble:

Reference (i) identifies the entire Metro Vancouver Region as a potential construction hub.

Reference (ii) defines a “construction hub” as “communities where regional material delivery and staging, construction offices, and worker accommodation may occur”.

Reference (iii) states that existing local commercial accommodations will house the workforce to the extent practical for the construction of the pipeline, pump stations, and terminals. And that temporary construction camps will be erected to house workers where local accommodation will not meet the need.

Reference (iv) states that Trans Mountain will try to offset any negative business disruptions with certain mitigation measures including avoiding key business/commercial/residential areas during route finalization and negotiating compensation agreements for directly affected landowners. It also states that Trans Mountain does not anticipate that the TMEP will interfere with any individual community’s employment or economic goals.

Reference (v) mentions site selection criteria that Trans Mountain will apply to determine the locations of sites associated with the pipeline construction, such as staging areas and work camps.

Request:

- a. Please confirm whether or not Township of Langley will serve as a construction hub.
- b. If Township of Langley will be a construction hub, please indicate which activities listed in reference (ii) would occur within Township of Langley.
- c. If construction is to be staged within Township of Langley boundaries, describe what that staging would entail and how it might impact residents and landowners in the area.
- d. If workers are to be housed within Township of Langley boundaries, please describe how Trans Mountain intends to accommodate them.
- e. Please estimate the number of workers from outside the Metro Vancouver area Trans Mountain anticipates housing in Township of Langley for the construction phase.

- f. Please indicate how Trans Mountain intends to consult with Township of Langley leading up to and during the construction phase.
- g. Will Trans Mountain commit to consulting with the Township of Langley to develop a mitigation plan to the satisfaction of the Township to avoid the negative effects contemplated in reference (iv)?
- h. How does Trans Mountain plan to work with Township of Langley to apply the site selection criteria for temporary facilities listed in reference (v)?
- i. What is the duration of the construction phase that Trans Mountain anticipates in Township of Langley?

Response:

- a. Trans Mountain has not yet finalized the location of the construction hubs as the Project is at the initial stage of detailed engineering and design and construction planning. Based on preliminary studies and assessments completed to date, the Township of Langley is geographically suited to serve as a construction hub for the most westerly section of the pipeline. Criteria for selection of a hub includes access to large tracts of land for lease as either a construction office or pipe laydown yard, access to rail siding in the case of a pipe laydown, access to accommodations for non-local workers, and access to the main transportation corridors for the region. Based on this criteria, Trans Mountain feels the Township is a likely candidate as a construction hub, but cannot confirm until detailed design and construction planning is further developed.
- b. Please refer to Township of Langley IR No. 1.13a. If the Township of Langley was selected as a construction hub, staging and regional material delivery, construction offices, and worker accommodation would occur there. The location would serve as the marshalling point for the Contractor workforce that would be estimated to range from 450 to greater than 600 workers.
- c. Staging entails the movement of equipment and workers to/from the construction and pipe laydown yards and to/from the worksite locations. If construction is to be staged within the Township of Langley boundaries, the most significant negative impact would be related to additional traffic from workers and equipment moving to/from the construction yards and to/from the worksites. Positive economic impact would be realized through additional regional spending for material goods, services and accommodations for workers.
- d. Worker accommodation plans are not yet finalized and will be determined during the detailed design and construction planning phase. As noted in Section 7.2.5 of Volume 5B in the Application, Trans Mountain Pipeline ULC (Trans Mountain) will develop a Worker Accommodation Strategy in collaboration with local municipalities which will consider local housing market development during the pre-construction period, evolving rental/commercial accommodation capacity, and preferences of hub communities. Depending on the level of local accommodation and refined workforce

estimates available closer to the commencement of the construction period, Trans Mountain's Worker Accommodation Strategy will explore a range of options including:

- expanding the supply of temporary accommodation by providing long-stay RV spaces (seeking private or local government partnerships);
- pre-booking hotel and motel space;
- renting existing housing/apartment units; and
- establishing temporary construction camps (does not apply to Lower Mainland/Greater Vancouver).

The Worker Accommodation Strategy will address all of the requirements of draft Condition 12, as outlined in the NEB's Letter – Draft Conditions and Regulatory Oversight (April 16, 2014) (NEB 2014) including the location of any temporary camps, and the anticipated number of workers that will be housed. Please refer to the response to NEB IR No. 1.17.

Reference:

National Energy Board. 2014. Draft Conditions and Regulatory Oversight. Hearing Order OH-001-2014. Trans Mountain Pipeline ULC (Trans Mountain) Application for the Trans Mountain Expansion Project (Project). April 16, 2014.

- e. This level of detail regarding non-regional worker accommodation needs in any particular construction hub is not yet known. As discussed in the response to Township of Langley IR No. 1.13e, the Worker Accommodation Strategy will be developed during the detailed design and construction planning phase in collaboration with municipalities and will provide information on the anticipated number of workers that will require housing. Please refer to the response to NEB IR No. 1.17.
- f. Trans Mountain's engagement is ongoing. Trans Mountain has engaged with the Township of Langley since the Project was announced in the Spring of 2012. Trans Mountain understands that the Township has specific interests related to the proposed project and will continue to work collaboratively with the Township to address concerns as they arise.

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, if needed, will be developed in consultation with the Township 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 Section 1.2.3, Volume 6B, Emergency Response Plans. Also see NEB IR No. 1.15a.

Section 2.5.1, Volume 4B of the Application identifies that Traffic Control Plans (TCP's) will be developed and implemented on all public roadways affected by the project. TCP's

will be developed in consultation with appropriate regulatory bodies, as required, including those at the provincial and municipal level.

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

- g. The Trans Mountain Pipeline ULC (Trans Mountain) Stakeholder Engagement Program is ongoing. Trans Mountain is committed to an open, extensive and thorough public consultation process as outlined in the Application Volume 3A, section 1.3. The program was designed to take into account the unique and varying needs of the communities along the Project corridor, and to be responsive and adaptive to the feedback received through the various stages of the engagement program. Feedback received has been incorporated into the program and has influenced the design of subsequent phases of stakeholder engagement.

Trans Mountain has engaged with the Township of Langley (Township) since the Project was announced in the Spring of 2012. Trans Mountain understands that the Township has specific interests related to the proposed project and will continue to work collaboratively with the Township to address concerns as they arise. It is our objective to develop a mutually agreeable mitigation plan with the Township to avoid the negative effects contemplated in reference (iv).

In keeping with its regulatory obligation to minimize impacts to the extent practicable, Trans Mountain intends to work with any directly impacted businesses to establish access plans, schedule and pipeline alignments that minimize impacts to the businesses to the extent practicable. Should businesses experience lost revenue as a direct result of the construction of the Trans Mountain Expansion Project, Trans Mountain would intend to employ 'actual loss' compensation for any reductions in revenue caused by the construction and operation of the pipeline. In order to determine 'actual loss', Trans Mountain would utilize the services of a finance or accounting professional with expertise in business management. Working with the business, the accountant would assess any net financial impact including lost revenues and associated costs. The accountant would compare revenues and expenses from prior years, examine any other relevant factor which might affect business, and obtain comparative usage and financial information from other similar businesses within the region. Using this information, Trans Mountain, working in conjunction with the business, would determine whether any material reduction in net revenues had occurred. Any compensation for lost revenues would be based upon this assessment.

Trans Mountain is committed to respectful, transparent and collaborative interactions with communities. Trans Mountain will continue to engage with the Township. See Langley IR No. 1.13f and Application Volume 3A, section 1.5.5 for more details about next steps in consulting on construction effects and mitigation measures.

- h. As stated in Section 1.5.1.2 of Volume 2 of the Application, Trans Mountain has committed to work with various municipal agencies with responsibilities related to Project components and impacts. Should it be necessary to locate temporary facilities within the Township of Langley that require the Township's approval, Trans Mountain will consult with the Township to provide the required information as appropriate. Trans Mountain has no plans to locate a work camp in the Township of Langley.
- i. Trans Mountain appreciates the Township of Langley's interest in the anticipated duration of proposed construction in the Township; however, a detailed schedule for the construction has not yet been developed.

The general construction schedule included in the Application (Volume 4B) outlines construction in the Langley Township (part of Spread BC4 and part of BC5) as occurring in all three construction seasons (Summer 2016, Winter 2016/2017 and Summer 2017).

Subject to the outcome of the NEB review process, Trans Mountain anticipates that it will be developing a detailed schedule for construction in the Township of Langley in Q3 2015.

Summary of New Commitments:

- Trans Mountain Pipeline ULC commits to working with the Township of Langley if approval of temporary facilities required.

1.14 Road Closures and Traffic Routing During Construction

Reference:

- (i) A3S0Z5, Application Volume 4A, Project Design & Execution – Engineering, PDF page 36 (Table 5.1.14)
- (ii) A3S1S7, Application Volume 5B, ESA - Socio-Economic, PDF pages 128-133
- (iii) Township of Langley Subdivision and Development Servicing Bylaw 2011 No.4861
- (iv) Township of Langley Guideline for Working on Roadways (**attached**)

Preamble:

Reference (i) indicates where the proposed pipeline corridor will cross roads within Township of Langley boundaries.

Reference (ii) describes the effect on traffic expected during the construction phase.

Reference (iii) imposes requirements for the design, inspection, testing, construction and installation of certain works and services, including obtaining a highway use permit.

Reference (iv) contains Township of Langley guidelines used for typical, scheduled works of a significant duration, such as road construction and pipeline installation.

Request:

- a. Will Trans Mountain commit to leaving open all roads within Township of Langley's borders during the construction phase?
- b. Will Trans Mountain commit to obtaining a Township of Langley highway use permit during the construction phase?
- c. Will Trans Mountain commit to adhering to Township of Langley's Guideline for Working on Roadways?
- d. If Trans Mountain refuses to obtain a highway use permit and/or to adhere to the Guideline for Working on Roadways, please explain why not.
- e. Please assess the impact on residents and local businesses to increased TMEP- related traffic on Township of Langley roads.

Response:

- a. The potential effects associated with traffic related to the Trans Mountain Expansion Project (the Project) are assessed in various parts of Section 7.2 of Volume 5B of the Application. Potential effects associated with increased traffic due to transportation of workers and supplies are anticipated to occur in the Township of Langley. Trans Mountain will have in place a Health and Safety Management Plan and a Worker Code of Conduct to address driving safety and minimum requirements for vehicle operation on the Project as noted in Section 5.0 Volume 4B. Trans Mountain will develop Traffic and Access Control Management Plans (TACMPs) and local Traffic Control Plans (TCPs) to

mitigate effects as indicated in Section 5.3, Volume 4B. Trans Mountain will develop the TACMP for the Project and TCP's for particular construction contracts. Trans Mountain will develop a Communication Plan to ensure stakeholders, including regulatory agencies, emergency response services and the travelling public are informed in a timely manner about events that may impact normal traffic flow, such as road closures and detours. Potential residual effects of traffic management is discussed and characterized in Section 7.2.4 of Volume 4B.

Trans Mountain will develop localized TCPs to ensure safe traffic management on public roadways and will include signage, traffic control devices, and traffic control personnel at Project worksites and worksite accesses. Typical controls include the use of concrete jersey barriers and plastic highway posts delineating lane off-sets, allowing for the movement of two-way traffic. TCPs will meet provincial and municipal requirements and will be developed in consultation with emergency service providers.

Within the Township of Langley, lane closures and detours may be required and would be detailed within TCPs once detailed engineering and construction planning has taken place, with sensitivity to timing that provides least impact. Trans Mountain commits to consulting with the Township of Langley staff as we progress through detailed engineering design and construction planning.

Change in use patterns to traffic during construction may result from short term physical disturbances of land, access roads and/or from alteration of traffic patterns, movements and volumes along highways and roads. Access and use disruptions will be reduced by using low-impact road crossings 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 crossings within one day, to the extent practical.

- b. 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 Township of Langley to understand the applicability of its bylaws and standards to the construction and operation of the Project.
- c. As detailed engineering design and construction planning progress, localized Traffic Control Plans (TCPs) will be completed as part of overall Traffic and Access Management Plans, with finalization of traffic control requirements in consultation with the Township of Langley. At this time, it is anticipated Trans Mountain will use construction techniques and TCPs engineered to meet the Township of Langley Guideline for Working on Roadways.
- d. Please see the response to the Township of Langley IR No. 1.14b.
- e. In keeping with its regulatory obligation to minimize impacts to the extent practicable, Trans Mountain Pipeline ULC (Trans Mountain) intends to work with the Township of

Langley and any directly impacted businesses to establish access plans, schedule and pipeline alignments that minimize impacts to residents and businesses to the extent practicable.

The potential effects associated with traffic related to the Trans Mountain Expansion Project (the Project) are assessed in various parts of Section 7.2 of Volume 5B of the Application. Potential residual effects for residents and local businesses related to traffic are anticipated to be as follows.

- Increase in traffic on highways and access roads during construction (refer to Section 7.2.5 of Volume 5B).
- Change in land use patterns during construction and site-specific maintenance (refer to Section 7.2.4 of Volume 5B).
- Sensory disturbances for Aboriginal and non-Aboriginal local residents and land users during construction and site-specific maintenance (refer to Section 7.2.4 of Volume 5B).
- Traffic safety effects (refer to Section 7.2.8 of Volume 5B).
- Reduced business or commercial income due to disruption of business (refer to Section 7.2.7 of Volume 5B).

All of the above effects were concluded to be short-term in duration, isolated in frequency, and reversible. Further, potential residual effects related to traffic safety and reduced business or commercial income were concluded to be of low probability.

Should businesses experience lost revenue as a direct result of the construction of the Project, Trans Mountain would intend to employ 'actual loss' compensation for any reductions in revenue caused by the construction and operation of the pipeline. For further details on this compensation assessment method, please refer to the response to the Langley IR No. 1.13g.

Please see the Socio-Economic Management Plan in Appendix C of Volume 6B for further discussion of mitigation measures to reduce the above and other potential socio-economic effects.

Summary of New Commitments:

- Trans Mountain will consult with the Township of Langley in the development of the traffic and access management plans, and traffic control plans, to mitigate potential negative effects.

1.15 Industrial Areas: Compensation for Loss in Tax Value to Industrial Land

Reference:

- (i) A3S1S7, Application Volume 5B, Socio-Economic Effects Assessment, PDF pages 120-121
- (ii) A3S1S7, Application Volume 5B, Socio-Economic Effects Assessment, PDF page 184

Preamble:

Reference (i) states that Trans Mountain did not evaluate or predict the TMEP's effect on **residential** property values.

Reference (ii) predicts that property taxes in B.C. will increase in the aggregate by \$23.2 million annually as a result of the TMEP.

However, the application does not address directly or indirectly the potential reduction in property values or property taxes applicable to **industrial** lands.

Request:

- a. Please explain why Trans Mountain has not evaluated impacts upon residential property values.
- b. Has Trans Mountain evaluated or predicted the TMEP's effects on industrial property values?
- c. Will Trans Mountain commit to compensating Township of Langley for any reduction in property tax values on its residential and industrial lands caused by the proposed project?

Response:

- a. For discussion on property values, please see the response to Amy C IR No. 1.3g
- b. For discussion on property values, please see the response to Amy C IR No. 1.3g.
- c. Please refer to the response to Amy C IR No. 1.3g for a discussion of the proposed pipeline effects on residential property values. Based on Trans Mountain's research into property values, Trans Mountain does not anticipate an impact to property values, and therefore no consequential impact upon municipal residential taxes. However, Trans Mountain does believe that the Township of Langley will receive significant additional municipal taxes from the Project. For the 2013 tax year, Trans Mountain paid \$367,000 in municipal taxes to the Township of Langley. Based on current rates, the additional tax base increase resulting from the proposed Project would provide an additional \$575,000 to the Township for a combined total annual tax receipt of \$942,000. Overall, Trans Mountain expects the Project will result in the Township of Langley receiving a net benefit in municipal taxes.

1.16 Possible Alternate Route adjacent to the Redwoods Golf Course**Reference:**

- (i) A3S1A4, Application Volume 4A, Project Design and Execution - Engineering, PDF page 11
- (ii) A3S1L4, Application Volume 5A, Environmental and Socio-Economic Assessment – Biophysical, PDF pages 13 & 14

Preamble:

Reference (i) indicates that the proposed pipeline route runs directly parallel to the Salmon River between RK 1148 and RK 1150.5.

Reference (ii) describes the proposed pipeline corridor as crossing farmland in the Salmon River valley. It also states that minor deviations in the Salmon River area are being considered to avoid the Salmon River natural area, including routing the pipeline along a golf course. Township of Langley presumes that the golf course referred to in reference (ii) is the Redwoods Golf Course.

Request:

- a. Township of Langley has an interest in the alignment of the proposed pipeline corridor between RK 1148 and RK 1150.5—the portion of the corridor that is proposed in the Application to pass through the Salmon River floodplain. Township of Langley has read Redwoods Golf Course's Phase One Information Requests and awaits Trans Mountain's response to the questions posed therein.

Response:

- a. Please see the responses to Redwoods Golf IR No. 1.1.1, 1.1.2, 1.1.3, and 1.1.4.

1.17 British Columbia Agricultural Land Commission

Reference:

- (i) A3S2K9, Application Volume 5D, Agricultural Assessment Technical Report, PDF page 13

Preamble:

Reference (i) states that the British Columbia Agricultural Land Commission (ALC) has regulatory authority over agricultural land in BC that is located within the Agricultural Land Reserve (ALR). The ALC has jurisdiction over land use decisions and an order must be issued to approve an application for use of the ALR for utility use. The ALR covers all of the privately-owned farmland and some of the Crown- owned grazing land that is affected by the TMEP in BC.

Reference (i) also states that The ALR designation includes most of the Fraser Valley to Hope, except for Sumas Mountain and the built up areas of the cities of Abbotsford, Chilliwack and Langley and small communities in between.

Reference (i) additionally states that while BC-based energy projects have been required to apply for permits from the ALC, for federally-based projects (e.g., NEB jurisdiction), the ALC does not have jurisdiction or authority to require a permit.

Reference (i) indicates that the ALC wishes to be consulted and given the opportunity to provide constructive input on behalf of agriculture in BC.

Request:

- a. Please confirm whether Trans Mountain intends to seek permission from the ALC to engage in a non-farm use in the ALR.
- b. Please indicate the level of consultation Trans Mountain has already had with the ALC and the outcome of those discussions.
- c. Please indicate whether or not the ALC was consulted in determining the location of the proposed pipeline corridor.
- d. If Trans Mountain has not engaged in consultations with the ALC, please indicate whether, how, and when Trans Mountain plans to do so.

Response:

- a. Please see response to CGLAP IR No. 1.1a.
- b. Three meetings with the ALC took place in 2013; the dates were January 13, 2013, July 15, 2013 and October 13, 2013. The ALC was consulted on soil survey methodologies on all Agricultural Land Reserve lands in British Columbia, including the Fraser Valley as well as soil mitigation measures. The ALC provided information on what they considered to be the potential impacts of the TMEP on agriculture in British Columbia including the Fraser Valley. Trans Mountain provided information to the ALC

staff on how the Project will be carried out on agricultural land and potential agricultural impacts.

Please see response to CGLAP IR No. 1.1a for more information on discussions with the ALC.

- c. The ALC was provided with information regarding the proposed pipeline corridor and Trans Mountain will meet with the ALC prior to the end of 2014 to provide updates on the Project. During the previous meetings, the ALC did not provide comment regarding the location of the proposed pipeline corridor; they did however, provide comments regarding impacts to agriculture and soils. Please refer to the response to CGLAP IR No. 1.1a for more information on consultations with the ALC.
- d. Trans Mountain engaged in consultation with the ALC throughout 2013 and will continue to do so. Please refer to the response to CGLAP IR No. 1.1a.

1.18 The TMEP's Impact on Agricultural Land

Reference:

- (i) A3S2K9, Volume 5D, ESA Socio-Economic Technical Reports, PDF pages 2, 3, 4, 32, 60
- (ii) A3S2S4, Volume 6B, Pipeline Environmental Protection Plan, PDF page 237

Preamble:

Reference (i) identifies agricultural land in the Metro Vancouver Region as being mainly located in the Salmon River Valley near Fort Langley. It also indicates that 9.2 kilometres of the pipeline in the Metro Vancouver Region is in agricultural use.

Reference (i) states that Trans Mountain conducted extensive interviews, workshops and literature reviews in developing its agricultural assessment of the TMEP.

Reference (i) has identified a number of potential effects of the TMEP on agricultural land, including soil disturbance, soil compaction and erosion.

Reference (i) commits to “compensate for unavoidable effects or those effects that cannot be mitigated”.

Reference (i) lists the mitigation measures that Trans Mountain anticipates it will employ to reduce or eliminate soil disturbance and compaction along the proposed pipeline corridor.

Reference (ii) states that some areas of the construction right of way might be susceptible to wind and/or water erosion.

Request:

- a. Has Trans Mountain identified potential adverse impacts on agricultural land within the Township of Langley specifically? If so, please explain what those impacts are anticipated to be.
- b. Has Trans Mountain consulted with or received input from farmers or other interested persons in Township of Langley regarding the anticipated effects of the TMEP on agricultural land within Township of Langley? If so, please provide detail of those communications.
- c. What erosion control measures does Trans Mountain anticipate implementing in agricultural areas specifically, both during and after the construction phase?
- d. Will Trans Mountain commit to compensating Township of Langley farmers for reduced productivity of agricultural land? How will that compensation be calculated?

Response:

- a. All agricultural areas impacted by the proposed Project including those within the Township of Langley were identified and farm use verified using a combination of high resolution aerial maps and on the ground observation. Agricultural use affected by the

proposed Project in the Metro Vancouver Region, including the Township of Langley, has been identified in four categories: natural pasture and grazing areas (not affected); field crops (tame pasture, turf); specialty crops (container nursery); and livestock facilities (poultry, dairy, equestrian and other livestock).

The various types of disturbance the pipeline may create have been analyzed for each land use and this information is provided in the Application, Section 5.0 and Section 6.0 of Technical Report 5D-6 in Volume 5D, Agricultural Assessment Technical Report (McTavish Resource & Management Consultants Ltd. December 2013).

Soils on agricultural land impacted by the proposed Project including the Township of Langley were also surveyed and mitigation measures developed (see Technical Report 5C-2 in Volume 5C, Soil Technical Report [Mentiga Pedology Consultants Ltd. December 2013]).

- b. The Trans Mountain Land Team have either been in contact with the majority of agricultural landowners in the Township of Langley or made several attempts to contact landowners along the proposed pipeline corridor to discuss survey access, soils survey and other landowner concerns. The Trans Mountain Land Team consulted with all landowners along the proposed study corridor through the Township of Langley. There are 161 property parcels crossed by the study corridor(s) in the Township. Based on individual landowner contact on November 16, 2013 two landowners expressed concern about how the pipeline will affect ability to farm. In May 2014, one landowner expressed concern about depth of cover impacting the ability to farm the land. In each case, Trans Mountain documented the concerns and will take these into consideration as it continues to develop the proposed project.

As outlined in the Application, Section 1.3, Volume 3A, Trans Mountain conducted an open, extensive and thorough public consultation process, commonly known as stakeholder engagement. The program was designed to take into account the unique and varying needs of the communities along the Project corridor, and to be responsive and adaptive to the feedback received through the various stages of the engagement program. In addition, the feedback received has been incorporated into the program and has influenced the design of subsequent phases of stakeholder engagement.

During this stakeholder engagement process, Trans Mountain held community open houses and workshops, and met with those with interests in the community to seek input on all aspects of the proposed Project. In the Township of Langley, this included:

- Trans Mountain sought input from the Township of Langley on proposed routing in iterative meetings. Agricultural interests were not documented as an interest during these meetings.
- Trans Mountain held two Open Houses in Langley on November 22, 2013 and April 2, 2014 to provide an opportunity for local residents to learn more about the proposed project, provide information about their concerns and ask questions. Agricultural concerns were not documented as an interest during these events. More

- information about these events can be found in the Application, Volume 3A, Section 1.5 and Consultation Update No. 1 & Errata (Trans Mountain, March 2014) and will be included in Consultation No. 2 to be filed with the National Energy Board in Q3 2014.
- May 22, 2013 – Recognizing the specific interests of the agricultural community, Trans Mountain hosted an Agricultural Environmental and Socio-Economic Assessment workshop in Abbotsford. Langley interests were invited, but no Langley representation participated in the meeting. More information about this workshop can be found in Volume 3A, Sections 1.5.3.4 and 1.5.3.7 of the Application.
 - Trans Mountain held Community Interest workshops to provide information about and seek feedback on the proposed and optimized study corridor in Langley as follows:
 - June 19, 2013 – No agricultural community interest in Langley was identified to participate in this workshop. More information about this workshop is contained in Volume 3A, Section 1.5.3.25 of the Application.
 - April 2, 2014 – A representative from the Salmon River landowner group participated in this workshop. No feedback was documented about agricultural interests at this workshop. More information about this workshop will be included in Consultation Update No. 2 to be filed with the National Energy Board in Q3 2014.
 - Following each of the Community Interest workshops, Trans Mountain provided an online opportunity for feedback. Agricultural issues were not documented as an area of interest in the feedback received.
 - Trans Mountain met with and corresponded with a group representing the Salmon River landowners. In the two meetings with this group (July 16, 2013 and January 22, 2014), they raised the following questions and concerns, to which Trans Mountain responded:
 - how does the pipeline cross drainage courses
 - concern about depth of cover and the ability to operate equipment over the pipe once it is installed (farm machinery is becoming increasingly larger and heavier)
- c. In the Application, Sections 7.0, 8.1, 8.2, 8.6 and 8.7 of Volume 6B (the Pipeline Environmental Protection Plan) as well as the Soil Erosion and Sediment Control Contingency Plan (Section 8.0 of Appendix B of Volume 6B) provide recommended mitigation measures to reduce or avoid impacts to agricultural lands resulting from erosion. Additional information is also provided in the Agricultural Management Plan of Appendix C in Volume 6B. Trans Mountain will conduct a post-construction environmental monitoring (PCEM) program during a period up to the first five complete growing seasons (or during years one, three and five) following commissioning of the Project or as per certificate conditions. The PCEM Program will be initiated following

clean-up, in order to identify any unresolved issues upon the completion of construction. The PCEM Program will include soil erosion monitoring of the effects of wind and water on the construction right-of-way. Section 9.0 of Volume 6A provides additional information on the PCEM Program. Corrective action will be taken until the issues are resolved.

- d. For discussion on compensation, please see response to CGLAP IR No. 1.7b.

1.19 Excavated Material

Reference:

- (i) A3S2S3, Application Volume 6B, Pipeline Environmental Protection Plan, PDF page 89 (page 8-26)
- (ii) A3S1L3, Application Volume 5A, ESA – Biophysical, PDF page 63 (page 2-10)
- (iii) Township of Langley Soil Deposit and Removal Bylaw 2013 No. 4975 and Soil Deposit and Removal Policy 05-779

Preamble:

Reference (i) anticipates replacing excavated materials in the trench during the backfilling phase of construction.

Reference (ii) states that backfill material will generally consist of native-trench spoil material. It further states that displaced subsoil will be crowned over the trench to compensate for settlement and any excess trench soil will be feathered- out over adjacent portions of the construction right-of-way where topsoil or root zone material salvage has occurred.

The current proposed corridor will traverse the Salmon River floodplain, and the method as described in Reference (ii) should not be utilized due to concerns with water displacement and possible drainage impacts. As such, the excess trench soil is likely to be relocated to other properties outside the floodplain.

Reference (iii) requires a Township of Langley soil deposit permit(s) for the temporary or permanent deposit of soil on another property. Additionally, depending on the volume of excavated material to be deposited on each property, Council approval could be required.

Request:

- a. Please provide Trans Mountain's plans for where it will store the excavated material during the construction phase before backfilling.
- b. Will Trans Mountain commit to obtaining permits and approvals from the Township of Langley to store the excavated material if Trans Mountain plans to store it within the Township?

Response:

- a. Where possible, excavated material will be stored on the proposed construction footprint (right-of-way and temporary workspaces) during the construction phase before backfilling. Where there is no opportunity to store excavated material due to space constraints, additional space will be secured from the respective abutting and non-abutting landowners or from the Municipality to allow for the temporary storage of excavated material. Additional storage space will be located as close to the respective worksites as practical.

- b. 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 Township of Langley to understand the applicability of its bylaws and standards to the construction and operation of the Project.

Trans Mountain is committed to respectful, transparent and collaborative interactions with communities. Trans Mountain will continue to engage with the Township of Langley, including continuing to share updated project information, incorporating input and addressing concerns about the proposed Trans Mountain Expansion Project as they arise.

1.20 Public Consultation – Questions from Township of Langley Residents

Reference:

- (i) A3S0R2, Application Volume 3A –Public Consultation, PDF page 32 (3A-3)
- (ii) A3S0R3, Application Volume 3A –Public Consultation, PDF page 37 (3A-82)
- (iii) Questions from Township of Langley Residents (**attached**)

Preamble:

In Reference (i), Trans Mountain states that it designed the TMEP engagement program, in part, to fully understand and address stakeholder concerns. Trans Mountain identifies as a guiding principle the need to “seek local input and understanding of the region, its people, the environment, and reflect local values and attitudes in communications with stakeholders”. Trans Mountain states that its stakeholder engagement program is ongoing.

In Reference (ii), Trans Mountain states that Trans Mountain held a Community Workshop in the Township on June 19, 2013 to provide an opportunity for local residents to provide feedback on the TMEP.

Reference (iii) contains comments and questions Township of Langley has received from residents regarding the TMEP, and it is very important that the Township be able to provide accurate responses to its residents.

Request:

- a. Please respond to the questions contained in Reference (iii).

Response:

- a. Please see Table 1.20A-1 (provided as Langley IR No. 1.20a – Attachment 1), which addresses comments and questions that the Township of Langley received from residents regarding the Project.