



DECISION

File No. OF-Fac-Oil-T260-2013-03 19
15 February 2018

Mr. David John Huntley
7341 Ridge Dr.
Burnaby, BC V5A 1B4
Email: huntley@sfu.ca

Mr. D. Scott Stoness
Vice President, Regulatory and Finance
Kinder Morgan Canada Inc.
Suite 2700, 300 – 5th Avenue SW
Calgary, AB T2P 5J2
Email regulatory@transmountain.com

Mr. Shawn H.T. Denstedt
Ms. Terri-Lee V. Oleniuk
Osler, Hoskin & Harcourt LLP
Suite 2500, 450 – 1st Street SW
Calgary, AB T2P 5H1
Email regulatory@transmountain.com

Dear Mr. Huntley, Mr. Stoness, Mr. Denstedt, and Ms. Oleniuk:

**Trans Mountain Pipeline ULC (Trans Mountain)
Trans Mountain Expansion Project - Certificate OC-064
Decision for Detailed Route Hearing MH-055-2017
David John Huntley**

1. Background

On 19 May 2016, the National Energy Board (NEB or Board) issued its Report recommending that Governor in Council (GIC) approve the Trans Mountain Expansion Project (TMEP), subject to 157 conditions ([A77045](#)).

The TMEP included twinning the existing 1,147 kilometre long Trans Mountain Pipeline (TMPL) system in Alberta (AB) and British Columbia (BC) with approximately 981 kilometres of new buried pipeline; new and modified facilities, such as pump stations; additional tanker loading facilities at the Westridge Marine Terminal in Burnaby; and reactivating 193 kilometres of existing pipeline between Edmonton and Burnaby. Trans Mountain requested approval of a 150 metre-wide corridor for the TMEP pipeline's general route.

On 29 November 2016, GIC directed the Board to issue the Certificate of Public Convenience and Necessity (Certificate) OC-064 ([A80871](#)), the effect of which was to approve the TMEP, including the proposed 150 metre-wide corridor.

On 3 and 17 March 2017, Trans Mountain applied to the Board for Segment 7 of its TMEP detailed route, submitting the Plan, Profile, and Book of Reference (PPBoR). Under section 34 of the *National Energy Board Act* (NEB Act), Trans Mountain made available for public viewing copies of its PPBoR, served notices on owners of lands proposed to be acquired for the proposed detailed route¹, and published notices in newspapers in the vicinity of the proposed detailed route².

In all detailed route hearings, the Board considers the following issues:

- 1) the best possible detailed route of the pipeline;
- 2) the most appropriate method of constructing the pipeline; and
- 3) the most appropriate timing of constructing the pipeline.³

In its 4 October 2017 Letter of Decision ([A86548](#)), the Board stated that it would not consider the issue of compensation to be paid to landowners as that matter is not within its jurisdiction.

2. Detailed Route Hearing MH-055-2017

Mr. Huntley is the registered owner of lands located at 7341 Ridge Drive, Burnaby, BC (Parcel Identifier [PID]: 000-861-588). Trans Mountain proposes to tunnel under Burnaby Mountain in Segment 7 of the new TMEP pipeline, approximately 330 metres from Mr. Huntley's residence (see Figure 1 and Appendix I). Trans Mountain identified the tract closest to Mr. Huntley's residence as tract 7980 which appears on PPBoR drawing: M002-PM03028-009.

The Board received Mr. Huntley's statement of opposition on 27 April 2017 ([A82936](#)). The Board granted him a detailed route hearing and issued a Hearing Order on 4 October 2017, which assigned him hearing number MH-055-2017 ([A86549](#)). The Hearing Order indicated oral hearings were set to begin in January 2018.

Further to his statement of opposition, Mr. Huntley filed three notices of motion on: 3 November 2017, 19 December 2017, and 22 January 2018 ([A87535](#), [A88783](#) and [A89436](#), respectively). In his motions, Mr. Huntley expressed concerns about service, the hearing scheduling, and various filings of Trans Mountain on the basis that they were of low quality, missing information, and not useful. The Board ruled on all three motions ([A87936](#), [A89397](#), and [A89520](#)).

The oral portion of the detailed route hearing was held on 26 and 30 of January 2018 in Burnaby, BC (transcripts filed as [A89600](#) and [A89677](#)). Trans Mountain presented a panel of witnesses, who Mr. Huntley cross-examined himself and who were also questioned by the Board. Mr.

¹ As required by paragraph 34(1)(a) of the NEB Act.

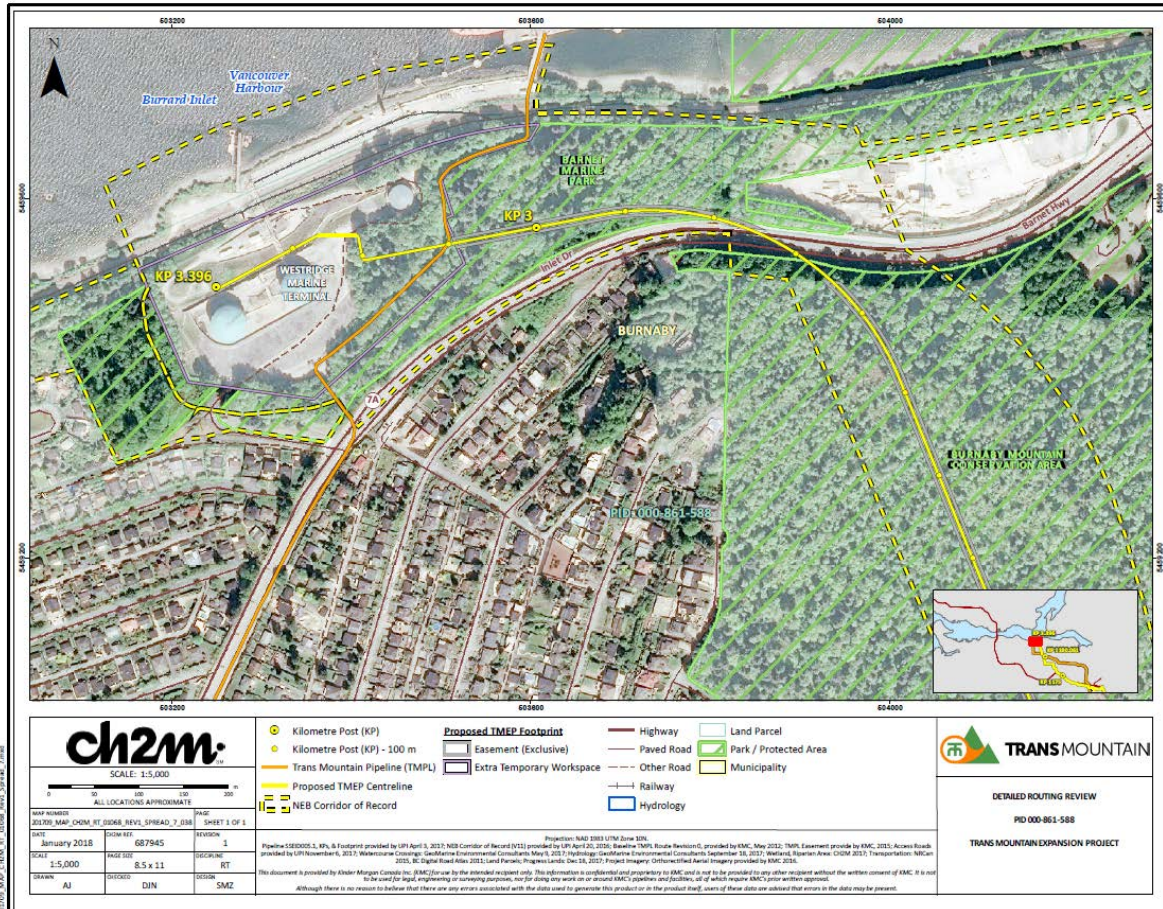
² As required by paragraph 34(1)(b) of the NEB Act.

³ As set out in subsection 36(1) of the NEB Act.

Huntley participated in all stages of the oral portion of the hearing, including answering questions from the Board.

Regarding current land use, Mr. Huntley indicated that he resides near the northern end of the proposed tunnel route under Burnaby Mountain.

Figure 1 – Map of Mr. Huntley’s Property⁴



3. Proposed Detailed Route

Trans Mountain filed the map in Figure 1, which marks the relevant part of the proposed detailed route through the tunnel. It also marks Mr. Huntley’s residence, identified on the map by its PID. Trans Mountain indicated in its evidence that the proposed detailed route passes approximately 330 metres from Mr. Huntley’s property and, at that location, the tunnel will be approximately 108 metres below the ground surface.

⁴ Figure 1 is a map filed by Trans Mountain as part of its evidence for detailed route hearing MH-055-2017 (A89011-12).

4. Location of the Route

Views of Trans Mountain

In selecting its 150 metre-wide corridor and detailed route for the new TMEP, Trans Mountain established a hierarchy of routing principles, which Trans Mountain set out in its written evidence and spoke to in the hearing. Trans Mountain said that the detailed route was developed in accordance with these routing principles, but noted that generally within the City of Burnaby, co-locating the expansion with the existing pipeline was not practicable because of the development that had taken place since the existing pipeline was installed. Trans Mountain said it also used feedback from landowners, stakeholders, and various levels of government and Aboriginal communities to optimize the proposed TMEP corridor.

Trans Mountain said the tunnel routing option was developed in response to input from community members who expressed concerns about additional infrastructure in the streets of the Westridge neighbourhood, access, and egress from the Westridge neighbourhood during construction. In Trans Mountain's view, the alignment through the Burnaby Tunnel minimized impacts upon Burnaby residents within the Westridge community.

Trans Mountain also explained additional factors that affected the tunnel route, including the shape, depth, location, curve, and the geometric configuration of the tunnel. Trans Mountain said that there were also geohazards that had to be avoided and that the overall length of the tunnel needed to be minimized in order to manage the duration of the construction.

Trans Mountain repeated that it had followed all NEB requirements, including providing the NEB Landowner Guide to people along the route, as it had stated in the OH-001-2014 Certificate hearing for the TMEP. Trans Mountain said that its route information was publically available, and that the original TMEP application (including the tunnel) was available at the Metrotown Library and the PPBoR was available at the Board of Trade. Trans Mountain also provided a hard copy of the PPBoR to Mr. Huntley directly.

Trans Mountain argued that it reviewed and seriously considered Mr. Huntley's opposition and evidence and remained of the view that the proposed route is the best possible route on these lands.

Views of Mr. Huntley

Mr. Huntley's main concern was the potential for vibration from tunneling activities to affect residents in proximity to the tunnel route, including himself. Mr. Huntley initially estimated that his residence is 200 metres from the northern end of the proposed tunnel, though he indicated that lack of access to accurate maps meant he did not know the exact distance. Mr. Huntley requested that the tunnel be placed much further from residential communities but did not propose a specific route.

5. Methods of Construction

Views of Trans Mountain

Trans Mountain's view is that neither noise nor vibration will be noticeable at Mr. Huntley's property due to the distance of 330 metres between the tunnel and his residence. Trans Mountain said it conducted a series of investigations along the tunnel route including bore holes, geophysics, and exposure mapping, to inform an interpretation of the geology of Burnaby Mountain. Over the vast majority of the tunnel route, the tunnel will be in rock, specifically conglomerate. With this information, and data from two scientific papers filed in the hearing (referred to as the "Wilson paper" and the "Hiller paper")⁵, Trans Mountain predicted that the potential vibration at Mr. Huntley's residence would be a maximum of approximately 0.01 mm per second (mm/s), less than the nighttime vibration limit of 0.41 mm/s suggested in the Wilson paper.

Trans Mountain also noted that the Hiller paper found, in assessing the risks due to a tunneling project, it is beneficial to be able to define a corridor outside of which it is not necessary to undertake vibration assessment and that, based on practical experience, a corridor width of 200 to 250 metres is appropriate in urban environments. Overall, Trans Mountain concluded that both papers show vibration at Mr. Huntley's residence would not be noticeable, and on that basis, it did not believe a specific study was required. Trans Mountain also stressed that this review was in direct response to information that Mr. Huntley provided in his evidence.

Trans Mountain stated that despite the low levels of vibration anticipated from tunneling activities, in recognition of the concerns raised by Mr. Huntley and the concern in general, it is developing a vibration monitoring (or management) program. Specifically, Trans Mountain committed to monitoring vibrations in the Westridge neighbourhood to ensure it meets applicable regulations, and said that it would place monitoring devices (microphones and geophones) and move them as needed to appropriately detect vibrations. Trans Mountain confirmed that Mr. Huntley's residence would be within the monitored area and that it would measure and manage the vibration with an aim to avoid nuisance effects during the project construction.

Trans Mountain said that it could provide the plan to the Board before the tunnel boring activity begins. Trans Mountain also agreed to implement the complaints process it uses for other aspects of construction activities to those who may wish to seek information or make complaints about vibration-related effects, including Mr. Huntley.

⁵ [A89318](#) Hiller, D. 2011. The prediction and mitigation of vibration impacts of tunnelling. Paper Number 5, Proceedings of ACOUSTICS 2011.

[A89319](#) Wilson, S.H., Brown, T. and Romero, V. 2011. Ground-borne vibration measurements of drill-and-blast excavation, sheet pile installation Ground-Borne Vibration Measurements of drill-and-blast excavation, sheet pile installation, and TBM excavation in sandstone and shale mélange. 2011 Rapid Excavation and Tunneling Conference Proceedings.

Views of Mr. Huntley

Mr. Huntley raised concerns about the intensity of vibrations from drilling activity from the tunnel boring machine at the tunnel near his residence. Mr. Huntley said that he had a bad experience from vibration during excavation at the lot next door to his home and that drilling of the tunnel has the potential for a comparable experience that would be intolerable.

Mr. Huntley requested that:

- information be provided to him as to how much vibration he can expect to experience;
- if it is anticipated that vibration is noticeable in residential areas, that the detailed route be rejected or the use of the particular machine not be permitted;
- if, despite an anticipation of no noticeable vibration, during actual tunnelling the residents find that vibration is intolerable, the Board order that the drilling be stopped immediately;
- if during actual tunnelling nearby residents find vibration is noticeable but tolerable, that drilling activities be restricted to normal working hours and a respite day be considered;
- hard copies of relevant documents, including the NEB Landowner Guide, be provided to each landowner in advance of interactions with Trans Mountain; and
- Trans Mountain make it clear to each landowner what dispute resolution mechanisms exist with Trans Mountain in an appeal process to the Board.

Mr. Huntley expressed a general dissatisfaction with Trans Mountain's consultation process, including frustration at the lack of information Trans Mountain provided on vibration intensity estimates throughout the process, and that they produced an estimate only during the oral portion of his hearing.

Mr. Huntley acknowledged that there is sparse information in the scientific literature on the subject of vibration from tunnel boring. When asked for his opinion on Trans Mountain's proposed vibration monitoring program, Mr. Huntley said that, as far as he could tell the use of geophones which Trans Mountain planned to use for measurement are probably sufficient for measurement but he did not know for sure. He said since he did not have details of the plan, he could not comment on it. He suggested that Trans Mountain's plan could be sent out to the scientific community for comment. He also said that the oral hearing was the first time Trans Mountain had raised the possibility of such a program and it was the first time they had taken his information seriously.

Mr. Huntley requested that Trans Mountain conduct a comprehensive set of vibration measurements in residential areas close to the tunnel during tunneling activities. Mr. Huntley asked for the results to be made available to the public as soon as possible for comment and requested that the Board impose substantial penalties for non-compliance.

6. Timing of Construction

Views of Trans Mountain

With respect to the tunnel boring operations, Trans Mountain said that excavation and supporting work is planned to occur Monday to Friday from 7:00 am for 20 hours until 3:00 am the next morning. Routine maintenance work on equipment will then be conducted Monday to Friday between 3:00 am and 7:00 am. Work may also occur on Saturdays between the hours of 9:00 am and 8:00 pm for maintenance when it is required.

Views of Mr. Huntley

As noted above, Mr. Huntley said that if residents find the vibration is noticeable but tolerable, drilling should be confined to normal working hours as defined by the City of Burnaby for construction. Mr. Huntley would prefer further restrictions, such as a respite day on Wednesdays, and no drilling before 8 am.

7. Summary of Commitments

During the hearing process, Trans Mountain's commitments included, but were not limited to:

- Undertake vibration management and monitoring within the Westridge community related to the tunnel boring machine using geophones and microphones
- Undertake an assessment of baseline vibration levels.
- Ensure Mr. Huntley's residence would be within the monitored area.
- Make available information on vibration and noise monitoring program as part of the construction notification program.
- Make available the complaints management system for vibration-related complaints, if any.
- Review the Ontario Ministry of Environment vibration-related regulations, and the BC WorkSafe and Health Canada guidelines, and adopt the more stringent of those guidelines.
- Provide the monitoring plan to the Board prior to the commencement of boring activities.
- Identify additional mitigation measures Trans Mountain can implement if vibration effects are experienced, such as changing the timing of drilling activities, reducing the speed of the cutter head and operating at a different thrust.
- Bring to the Board any changes that are required to its currently filed or outstanding condition filings as a result of this proceeding.

8. Board Views and Decision for Detailed Route Hearing MH-055-2017

The Board appreciates the time spent by Mr. Huntley and Trans Mountain in discussing their concerns at the detailed route hearing. The Board appreciates the time taken by Mr. Huntley to provide an additional useful scientific article relevant to the issue of vibration.

To the extent that some of Mr. Huntley's concerns during the oral hearing related to past notice of motion decisions already ruled on by the Board, the Board does not intend to engage in further reconsideration of those rulings. In addition, issues about consultation during the previous certificate hearing are outside the scope of this hearing.

The Board finds that the proposed detailed route using a tunnel boring machine through Burnaby Mountain, 330 metres from Mr. Huntley's residence, is consistent with Trans Mountain's routing criteria to minimize the creation of new linear corridors and that this routing was developed in response to the concerns of Burnaby residents. The Board does not find Mr. Huntley's request to move the tunnel further from community residences to be detailed enough to be of assistance.

From the evidence filed and the representations made during the oral portion of the detailed route hearing, the Board is of the view that Mr. Huntley's main concern with the route is potential nuisance vibration effects from the tunnel boring activities. Mr. Huntley had the opportunity to fully participate in all stages of the hearing, including the oral portion. The Board is satisfied that Trans Mountain has now considered the vibration issue raised by Mr. Huntley. The Board accepts Trans Mountain's conclusion, informed by its analysis of the Wilson and Hiller papers, that the noise and vibration at Mr. Huntley's residence is not anticipated to be discernible. The Board also accepts that geophones are a proper tool to measure vibration impacts.

Despite the low likelihood that vibrations will be noticeable at the residence of Mr. Huntley, the Board accepts Trans Mountain's commitment to develop and file a vibration monitoring program. This would include, per Trans Mountain's commitments, conducting vibration monitoring within the Westridge community. The Board notes that there is a lack of clearly applicable regulations on nuisance vibration and accepts Trans Mountain's commitment to review WorkSafe BC, Health Canada, and Ontario Ministry of Environment regulations and to use the most stringent of these to assist it in setting appropriate measurement and monitoring thresholds. Trans Mountain has also committed to provide the monitoring program to the Board prior to commencement of boring activities. The Board also notes that Trans Mountain committed to making its complaints process available for any potential vibration-related complaints.

The Board recognizes the commitments made in the oral hearing in regards to the vibration monitoring program and directs Trans Mountain to provide its plan to the Board at least 30 days prior to commencement of tunnel boring activities. Further to the commitments made, Trans Mountain should also provide results of vibration monitoring to residents upon their request.

The Board is satisfied that the commitments made by Trans Mountain in regards to vibration monitoring and mitigation during construction will minimize the risk of negative effects to Mr. Huntley and other residents near the tunnel route. The Board encourages Trans Mountain to continue to engage with potentially affected residents, including Mr. Huntley, as this will provide a constructive means for issues to be raised and addressed.

The Board notes that the 150 metre-wide corridor and the tunnel routing option were discussed at length in the original OH-001-2014 Certificate hearing for the TMEP. Trans Mountain has committed to meeting the conditions and commitments it made related to the tunnel during that

hearing. The Board notes that there are extensive views provided on these issues in the NEB Report ([A77045-1](#)), and that the Board imposed numerous conditions.

Regarding the method of construction proposed by Trans Mountain of using a tunnel boring machine, given the scale and engineering constraints of the proposed tunnel, the Board is of the view that this is the most appropriate method, and the only one proposed, to enable the pipeline to be placed in a tunnel. This takes into consideration that in using this method, additional mitigations can be implemented in the unlikely event that objectively measured vibrations are found to be creating any nuisance effects.

With respect to timing, the Board accepts the timing of the work proposed by Trans Mountain and is not persuaded by Mr. Huntley's request to place additional restrictions on the hours of work or to add a respite day. This takes into consideration the already lengthy duration of the boring activity, which would be further lengthened by the restrictions suggested by Mr. Huntley.

Having considered all of the evidence filed on the record by the Parties, the representations made at the oral portion of the detailed route hearing, and the matters described above, the Board finds that the route proposed by Trans Mountain is the best possible detailed route of the pipeline, and the methods and timing of constructing the pipeline are the most appropriate, subject to the commitments made by Trans Mountain.

Any approval by the Board of the PPBoR in closest proximity to Mr. Huntley's residence will include a condition requiring Trans Mountain to list and to fulfill the commitments it made in the course of this detailed route hearing, and update its alignment sheets. Mr. Huntley is entitled to seek remedy from the Board if the commitments are not being fulfilled.

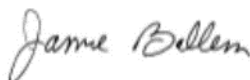
Trans Mountain is reminded that the conditions of approval in Certificate OC-064 apply to the construction and operation of the TMEP in the vicinity of Mr. Huntley's residence.



L. Mercier
Presiding Member



S. Parrish
Member



J. Ballem
Member

Appendix I – Map of Mr. Huntley’s Residence⁶



⁶ This map was created by the NEB for illustrative purposes only.