

FILE: 16-8330-01/21

REPORT DATE: November 16, 2021 **MEETING DATE:** November 23, 2021
TO: Mayor and Council
FROM: J. Hart, Manager of Major Projects
SUBJECT: **Peer Review of Road and Rail Improvements Project - Noise and Vibration Study and Additional Assessment along the Rail Corridor**

CHIEF ADMINISTRATIVE OFFICER REVIEW/APPROVAL:



RECOMMENDATION(S):

THAT Council:

- A. Receive for information the staff report titled “Peer Review of Road and Rail Improvements Project – Noise and Vibration Study and Additional Assessment along the Rail Corridor” dated November 16, 2021; OR
- B. Other.

PURPOSE

To provide Council with the findings of the Peer Review of BKL’s Road and Rail Improvements Project – Noise and Vibration Study, data collected along the rail corridor in relation to existing rail operations and associated noise and vibration exceedances, and other analysis.

Information Report Decision Report Direction Report

DISCUSSION

Background:

On April 21, 2021, the Vancouver Fraser Port Authority (“port”) released a noise and vibration study conducted by BKL Consultants Ltd. (“BKL”) titled “Pitt Meadows Road and Rail Improvements Project – Noise and Vibration Assessment Summary” (“BKL’s report”). The intent of this study was to establish a baseline that would inform the necessary noise and vibration

mitigation required to mitigate the impacts of the Road and Rail Improvements Project (“Project”).

BKL’s report identified multiple criteria from Health Canada’s *Guidance for Evaluating Human Health Impacts in Environmental Assessment* (2018) (“Noise Guidelines”) and the US Federal Transit Administration’s *Transit Noise and Vibration Impact Assessment* (2018) (“Vibration Guidelines”) that should be considered when reviewing the impacts of proposed infrastructure projects. The thresholds for each criterion are also identified within these guidelines. These criteria are listed below in Table 1.

Category	Criterion	Threshold
Noise	Speech Interference (L_d)	55 dBA
	Sleep Disturbance – Average Outdoor Level (L_n)	40 dBA
	Sleep Disturbance – Peak Outdoor Level (L_{Fmax})	72 dBA
	High Annoyance – Day/Night Equivalent (L_{dn})	75 dBA
	High Annoyance – Low Level Frequency (L_{LF})	70 dB
Vibration	High Annoyance Vibration ($RMS_{1S, max}$)	103 dB, 3dB increase above baseline

With respect to the Noise Guidelines, Vibration Guidelines, the criteria contained within these two documents, and associated mitigation, the port and BKL have asserted that:

- The Noise Guidelines and Vibration Guidelines are to be used for the evaluation of project-related impacts only, not existing conditions;
- Based on the Noise Guidelines and Vibration Guidelines, only project impacts to the high annoyance – day/night equivalent criterion (L_{dn}) requires mitigation;
- Project impacts related to all other criterion identified within the Noise Guidelines and Vibration Guidelines do not require mitigation, only discussion and consideration of such.

After establishing assumptions regarding current and future railway operations, BKL collected noise data along the Canadian Pacific (“CP”) rail corridor, modeled and detailed the noise and vibration levels along the corridor for three different scenarios:

- 2019 existing;
- 2030 no Project;
- 2030 with Project.

The results of the noise data collected and above models were used to create a fourth model, 2030 with Project and Warranted/Supplementary mitigation, which determined the proposed

Warranted and Supplementary mitigation scope to be included as part of the Project. This mitigation scope totals 610m of noise walls along the rail corridor, as shown on Figure 1.



Figure 1 - Road and Rail Improvements Project Proposed Warranted + Supplementary Mitigation Scope (Port, 2021)

The results of BKL's data collection and modeling is summarized below in Table 2, with two key takeaways:

- Many receivers identified within BKL's study area already exceed the criteria thresholds identified by the Noise Guidelines (highlighted in blue);
- The Warranted and Supplementary mitigation scope reduces the number of receivers that exceed the L_{dn} criterion from 33 in the 2030 with Project scenario to 10 in the 2030 with Project and Warranted/Supplementary mitigation scenario. This value is lower than the 24 receivers that exceed this criterion for the 2030 no Project scenario (highlighted in orange). Therefore, it is the port and BKL's assessment that the Project is contributing more mitigation than required per the Noise Guidelines.

Table 2 – Assessment Criteria Thresholds and Quantity of Receivers Exceeding Currently and in the Future					
Assessment Criteria	Health Canada Threshold	Number of receivers Exceeding Criteria (597 Receivers)			
		2019 Existing	2030 No Project	2030 With Project	2030 With Project and Warranted/Supp Mitigation
Speech Interference (L_d)	55 dBA	371 (62.1%)	454 (76.0%)	457 (76.5%)	438 (72.9%)
Sleep Disturbance – Average (L_n)	40 dBA	591 (99.0%)	591 (99.0%)	591 (99.0%)	591 (99.0%)
Sleep Disturbance – Peak (L_{FMax})	72 dBA	397 (66.5%)	397 (66.5%)	397 (66.5%)	375 (62.8%)
High Annoyance – Day/Night (L_{dn})	75 dBA	6 (1.0%)	24 (4.0%)	33 (5.5%)	10 (1.7%)
High Annoyance – Low Frequency (L_{LF})	70 dB	117 (19.6%)	117 (19.6%)	117 (19.6%)	97 (16.2%)
High Annoyance Vibration (RMS_{1S, max})	103 dB, 3dB increase above baseline	N/A	N/A	1 (0.16%)	1 (0.16%)

Procurement:

Considering the above and to ensure due diligence, staff brought a report to Council on May 18, 2021, requesting the approval of a budget of \$75,000 to procure an independent acoustical consultant to complete the following scope of work:

- Conduct a peer review of BKL’s report for the Project;
- Collect additional noise and vibration data along the rail corridor to supplement the data already collected and assess the conditions with a focus on existing railway operations;
- Review and provide feedback on the proposed mitigation for the Project.

Staff reached out to three acoustical consultants and awarded the scope of works to RWDI Air Inc. (“RWDI”) due to their considerable knowledge and experience with environmental noise, acoustics, and vibration data collection and analysis, including experience with rail projects.

RWDI’s Peer Review of BKL’s Report:

RWDI’s peer review of BKL’s report focused on several key aspects, including:

- Application of noise and vibration standards and applicable criteria;
- Modelling techniques and assumptions;
- Assessment of existing and future noise;
- Assessment of existing and future ground-borne vibration; and
- Potential additional concerns.

Following their review of BKL’s report, RWDI generated a peer review summary (Attachment A) containing an analysis of BKL’s report, including a list of 6 key findings and 16 secondary findings. Key findings were defined as primary feedback that RWDI had after reviewing BKL’s report, while secondary finding were questions, clarifications, or lower priority feedback that RWDI identified.

Upon completion, RWDI’s peer review summary was shared with BKL. RWDI, BKL, the City, and the port then met to discuss the 22 findings identified by RWDI. Following these discussions, BKL provided a response memo to RWDI’s findings (Attachment E). Table 3 below summarizes RWDI’s 6 key findings, as well as BKL’s response to each key finding:

Table 3 – RWDI’s Key Findings and BKL Responses		
Key Finding	RWDI Key Finding and Recommendation	BKL Response to RWDI’s Key Findings
1	The severity of health effects should be discussed and evaluated. Existing conditions should be considered when assessing for mitigation	BKL’s study was conducted to quantify and assess Project-related environmental noise and vibration impacts only. While existing conditions were measured and analyzed, the focus was on assessing the potential changes between 2030 no Project and 2030 with Project scenarios. There was no intention to assess potential health effects associated with existing conditions nor non-Project related road and rail traffic growth. The Noise Guidelines is to assess Project-related impacts only
2	Since the 70 dB “rattle criterion” (L_{LF}) is exceeded, Health Canada may suggest the implementation of feasible mitigation measures	
3	It is typical for the 75 dBA (L_{dn}) threshold to be considered absolute and mitigation would be recommended at a minimum to all residences predicted to exceed it	
4	Additional mitigation should have been considered within the study area to minimize the effects associated with other health effect criteria	
5	A community communication plan and complaint resolution process should be recommended as part of a mitigation plan	BKL will incorporate RWDI’s recommendation into their revised assessment
6	Feasible mitigation for vibration should be considered at dwellings that are currently not in excess of the FTA threshold for ‘infrequent’ event activity but are predicted to be for ‘occasional’ event activity for the 2030 no Project and 2030 with Project scenario threshold	Forecast existing annual average events are 38 including freight and commuter traffic; hence, the threshold for “occasional events” was used for the existing scenario

Both RWDI’s key findings BKL’s responses within Table 3 have been condensed for conciseness and clarity.

With respect to RWDI’s 16 secondary findings, after discussions, RWDI and BKL came to a level of agreement and/or understanding for the majority of the findings. BKL has committed to implement, consider, and/or clarify the following items in their updated model and report:

- Health Canada complaint criteria, and consideration of mitigation of this criteria;
- Open windows criteria results;
- Expansion of the study area;
- Re-evaluation and explanation of impulsive noises from the Vancouver Intermodal Facility (“VIF”);

- Reference velocities;
- Pass-by events and sound metrics;
- Noise sources within the study area;
- Train counts; and
- Train building activity time.

There were, however, several secondary findings that RWDI and BKL did not come to a level of agreement and/or understanding. These differences of opinion can be found in Table 4:

Table 4 – RWDI’s Secondary Findings where RWDI and BKL Reach Different Conclusions		
Consideration	RWDI’s Assessment	BKL’s Assessment
Considering the Canadian Transportation Agency Guidelines	Should be considered	Should not be considered, is not applicable
Train counts and pass-by criteria	The actual train count is lower than BKL’s report, and therefore the occasional pass-by event criteria used by BKL may not be correct	Forecast existing annual average events meet the threshold for occasional pass-by events criteria was used
Selection of SRM II (Dutch) as the rail propagation model	A North American model such as US FTA / FRA model may have been a more applicable choice	SRM II has been used in previous projects successfully and the model matched well to measured sound metrics in Pitt Meadows
Ground Conditions for Vibration	Where ground conditions are unknown, it is typical to use ‘worst case’ soil conditions	BKL found good correlation between the site measurements and predicted levels assuming standard soil conditions
Data collection for LFmax and RMS_{1s,max} criterion	RWDI used the absolute highest values recorded at the monitoring station within the 14 day monitoring period	BKL used the average of six train pass-bys over the entire monitoring period

Both RWDI and BKL’s assessments within Table 4 have been condensed for conciseness and clarity.

After completion of RWDI’s peer review, discussions, and BKL’s response memo, the key takeaway is that RWDI and BKL have differences of opinion with respect to:

- Considering existing conditions when evaluating future Project impacts and associated mitigation
- Application of Noise Guidelines and Vibration Guidelines with respect to existing conditions and receivers exceeding various criterion
- The level of discussion and consideration of mitigation required for the criterion identified in the Noise Guidelines and Vibration Guidelines , for both current conditions and Project impacts, excluding high annoyance day/night noise criterion (L_{dn});
- Consideration of the Canadian Transportation Agency Guidelines when considering Project noise and vibration impacts and mitigation.

Staff were anticipating this difference of opinion, as:

- The Noise Guidelines, Vibration Guidelines, and Canadian Transportation Agency Guidelines are all 'guidelines' rather than legislation or regulation, which facilitates the possibility for a difference in opinion;
- Key terminology within these guidelines such as “discuss severity” and “consider mitigation” are not defined in a way that limits the possibility of different interpretation;
- L_{dn} is the only criterion within the Noise Guidelines where it is explicitly stated that mitigation of project impacts is required.

These differences of opinion between BKL and RWDI also directly ties back to the port's previous assertion that per the Noise Guidelines and Vibration Guidelines, mitigation associated with the Project:

- Shall not directly address existing noise and vibration conditions;
- Shall not directly address noise and vibration conditions created by increased growth into the future, which would occur with or without the Project;
- Shall mitigate the impacts of the Project to receivers that have noise levels increased over the threshold for the high annoyance day/night noise criterion (L_{dn});
- Shall not necessarily address impacts of the Project to receivers that have noise levels increased over the threshold for speech interference (L_d), sleep disturbance average (L_n), sleep disturbance peak (L_{dn}), high annoyance vibration ($RMS_{1s,max}$), and high annoyance low frequency noise (L_{LF}) criteria.

With respect to pursuing noise mitigation to address existing noise exceedences, staff have identified three options that could lead to achieving further mitigation, including two options that are fully independent from the Project. These options are outlined in the “Pursuing Mitigation to Address Existing Exceedences” section of this report.

RWDI Monitoring of Existing Conditions:

RWDI deployed 6 noise monitors and 5 vibration monitors at 7 locations within Pitt Meadows from June 30 to August 18, 2021. Locations were determined by considering community feedback regarding the placement of BKL's monitors, as well as technical recommendations from RWDI. Data was collected in a 'staggered' fashion, allowing for data to be collected over a wide date range, with each monitoring station collecting at minimum 2 weeks of data at each location. Further information on the data monitor deployment locations can be found in Figure 2 and Table 5 below.



Figure 2 – Noise and vibration monitoring locations (RWDI, 2021)

Table 5 – RWDI Monitor Deployment – Location Details			
Receiver	Location	Monitor(s)	Data Used – Date Range
R1	13071 Kennedy Road	Noise & Meteorological	June 30 – July 14
R2	28-19034 McMyn Ave	Noise & Vibration	July 14 – July 27
R3	19187 Advent Road	Noise	July 21 – August 6
R4	19363 – 121B Ave	Noise & Vibration	July 7 – July 20
R5	12138 McMyn Ave	Noise & Vibration	July 14 – July 27
R6	19649 Poplar Drive	Noise & Vibration	July 7 – July 20
R7	11768 Herring Place	Vibration	August 4 – August 18

Train counts were severely suppressed for the first week of July due to the BC wildfires disturbing CP supply lines in the Interior, but otherwise were relatively consistent at 18 freight trains per day and 6 West Coast Express trains per day. This is a lower quantity of rail traffic compared to the 28 freight trains per day and 10 West Coast Express trains per day counted by BKL in 2019. This difference in the recorded existing activity levels would not substantially change the quantity of receivers currently exceeding the Noise Guideline criterion thresholds. An example of this is shown in Table 9, where the number of receivers exceeding the Noise Guideline criterion

thresholds identified in the existing scenario only marginally increases when the quantity of freight trains per day is increased in the 2030 no project scenario.

Noise data collected by RWDI at 6 locations along the rail corridor is generally in agreement with BKL’s data with respect to the assessment that the existing rail corridor is extremely noisy and several criteria thresholds outlined by the Noise Guidelines are being exceeded by current railway operations. Table 6 and 7 outlines the noise data collected by RWDI and BKL, with red showing threshold exceedances of criteria outlined within the Noise Guidelines.

Location	L _d (dBA)	L _n (dBA)	L _{dn} (dBA)	L _{Fmax} (dBA)	L _{LF} (dB)
R1	59	55	64	73	75
R2	57	56	63	79	86
R3	68	67	74	92	91
R4	62	62	69	89	89
R5	66	66	73	93	88
R6	60	62	68	88	88
Noise Guideline Threshold	55	40	75	72	70

Location	L _d (dBA)	L _n (dBA)	L _{dn} (dBA)	L _{Fmax} (dBA)	L _{LF} (dB) ¹
N1	62	59	66	85	-
N2	64	65	72	83	-
N3	66	65	72	90	-
N4	68	68	75	88	-
N5	65	65	72	90	-
N6	70	69	76	91	-
Noise Guideline Threshold	55	40	75	72	70

1. BKL measured L_{LF} at six monitoring locations, however, BKL missed presenting these numbers within their report. BKL has committed to present these numbers in their updated report, as outlined in the “Additional Works and Next Steps” section. BKL did include this criterion in their models, as shown in Tables 2 and 9. L_{LF} does not require mitigation due to project impacts per the Noise Guidelines, only consideration of such.

When comparing RWDI’s collected data to BKL’s collected data at near identical locations (19187 Advent Road vs 19167 Advent Road), the L_d, L_n, and L_{dn} measurements match very closely – within 1 dBA. There is, however, a difference in the L_{Fmax} and RMS_{1s,max} measurements. This difference is most likely attributed to the fact that BKL used the average level of six randomly selected train pass-bys over the entire monitoring period, while RWDI provided the highest values recorded at their monitoring stations within the entire 14 day period. It is possible that if BKL’s dataset was larger, higher average L_{Fmax} and RMS_{1s,max} values would have been found. A direct comparison between RWDI’s collected data and BKL’s collected data near Harris Road is shown in Table 8.

Location	L_d (dBA)	L_n (dBA)	L_{dn} (dBA)	L_{FMax} (dBA)	L_{LF} (dB)	RMS_{1s, max} (dB)
BKL N4/V4 – 19167 Advent Rd	68	68	75	88	-	105
RWDI R3 – 19187 Advent Rd	68	67	74	92	91	115 ¹

1. The value presented was taken from RWDI’s R4 vibration monitor as it is the same distance as the comparable BKL vibration monitor. No vibration measurements were taken at R3

With respect to vibration, RWDI found that their monitoring results showed good agreement with the generalized ground surface vibration equation, with the exception of receiver R7, which was found to be significantly higher. RWDI speculates that this difference is likely due to subsurface soil conditions, including the bedrock level. As shown in Table 10, neither RWDI nor BKL shows an increase in receivers exceeding RMS_{1s,max}>103 dBV due to the Project. The City has options that could lead to achieving mitigation that would address existing vibration exceedences. These options are outlined in the “Pursuing Mitigation to Address Existing Exceedences” section of this report.

RWDI Modeling of Existing & Future Conditions:

Informed by the data collected by monitors R1 through R6 within the community, RWDI developed four noise models showing current and predicted noise and vibration levels through the entire corridor for the following scenarios:

- Existing;
- 2030 no Project;
- 2030 with Project;
- 2030 with Project and Warranted/Supplementary mitigation.

These models included the existing barriers within Pitt Meadows, and their assumed impact to receivers within the study area. The models also included consideration of sections of the “barriers” that are only chain-link fences, and therefore do not provide any appreciable noise mitigation. Noise and vibration sources that were considered for the various scenarios included:

- Freight train traffic along the mainline:
 - Existing scenario:
 - Levels based on volumes counted during RWDI’s monitoring (18 daily freight trains);
 - 2030 scenarios:
 - Levels matching volumes presented by the port (56-59 daily freight trains);
- Passenger train traffic (West Coast Express):
 - Existing scenario:
 - Levels based on volumes counted during RWDI’s monitoring (6 daily West Coast Express trains);

- 2030 scenarios:
 - Levels matching volumes presented by the port (10 daily West Coast Express trains);
- Train building / shunting activity:
 - Existing and 2030 no Project scenarios:
 - Activity within VIF and train building on the north mainline track between Harris Road and Golden Ears Way;
 - 2030 with Project and 2030 with Project and Warranted/Supplementary mitigation scenarios:
 - Activity within VIF and train building on the new lead track;
- Train whistle at Kennedy road for the existing and 2030 no Project scenarios;
- Train crossing signal at Harris Road for the existing and 2030 no Project scenarios;
- Harris Road underpass and Kennedy Road overpass for the 2030 with Project and with Project /mitigation scenarios;
- New switches at Harris Road, Kennedy Road and Golden Ears Way for the with Project and with Project/mitigation scenarios;
- Local roadway contributions from Harris Road, Kennedy Road and Golden Ears Way.

Although BKL chose to include receivers within 100m of the mainline track in their study area, RWDI determined that a 400m study area was warranted to fully capture the impacts of rail activities to receivers within the community for both current and future scenarios.

Table 9 below compares the number of receivers exceeding the Noise Guideline thresholds for both the BKL and RWDI modeling for all four scenarios, with Table 10 showing the number of receivers exceeding 103 dBV parameter for vibration. Takeaways of note include:

- For the existing conditions scenario:
 - The amount of receivers exceeding the L_d , L_{FMax} , and L_{dn} criteria is comparable between the RWDI and BKL models;
 - The amount of receivers exceeding the L_n criterion is substantially higher in the RWDI model versus the BKL model. This difference in receivers can likely be attributed to the larger study area modeled by RWDI;
 - The amount of receivers exceeding the L_{LF} criterion is substantially higher in the RWDI model versus the BKL model. The difference in receivers can likely be attributed to the study area and modelling differences;
- For the 2030 No Project and 2030 with Project scenarios:
 - For the L_d criterion, RWDI's model has a larger increase of receivers exceeding the criterion between the existing conditions and 2030 No Project scenario (almost 300), while BKL's model only has a modest increase (under 100);

- Aside from the L_d criterion, the numbers of receivers exceeding the various criterion do not substantially change between the Existing, 2030 No Project, and 2030 With Project scenarios;
- The number of receivers identified by BKL and RWDI as exceeding the L_{dn} criterion, which the Noise Guidelines identify as requiring mitigation, is very close. BKL identifies 9 receivers, while RWDI identifies 10;
- For the 2030 with Project/mitigation scenario:
 - BKL's model shows that the amount of receivers exceeding the L_{dn} criterion is reduced from 33 in the 2030 with Project scenario to 10 in the 2030 with Project/mitigation scenario. This value is lower than the 24 receivers that exceed this criterion for the 2030 no Project scenario. Therefore, it is the port and BKL's assessment that the project is contributing more mitigation than required per the Noise Guidelines;
 - RWDI's model shows that the amount of receivers exceeding the L_{dn} criterion is reduced from 34 in the 2030 with Project scenario to 31 in the 2030 with Project/mitigation scenario. Therefore, in RWDI's model, the proposed barriers would not adequately mitigate the impacts of the Project.

Table 9 – Noise - Assessment Criteria Thresholds and Quantity of Receivers Exceeding Currently and in Future

Assessment Criteria	Health Canada Threshold	Number of receivers exceeding criteria - various models							
		Existing		2030 No Project		2030 With Project		2030 With Project and Warranted/Supp Mitigation	
		RWDI	BKL	RWDI	BKL	RWDI	BKL	RWDI	BKL
Speech Interference (L_d)	55 dBA	411	371	701	454	730	457	721	438
Sleep Disturbance – Average (L_n)	40 dBA	3102	591	3102	591	3102	591	3102	591
Sleep Disturbance – Peak (L_{FMax})	72 dBA	430	397	430	397	461	397	449	375
High Annoyance – Day/Night (L_{dn})	75 dBA	4	6	24	24	34	33	31	10
High Annoyance – Low Frequency (L_{LF})	70 dB	1427	117	1427	117	1427	117	1401	97

Table 10 – Vibration - Assessment Criteria Parameter and Quantity of Receivers Exceeding Currently and in Future

Assessment Criteria	Number of receivers exceeding criteria - various models							
	Existing		2030 No Project		2030 With Project		2030 With Project and Warranted/Supp Mitigation	
	RWDI	BKL	RWDI	BKL	RWDI	BKL	RWDI	BKL
High Annoyance Vibration ($RMS_{1s,max}$ >103 dBV)	168	52	168	52	168	52	168	52

With respect to the performance of the Warranted/Supplementary walls, RWDI concurs that placing mitigation walls in the locations identified by the port would reduce the number of receivers exceeding the L_{dn} criteria to a number similar to BKL (10 receivers); however, the mitigation walls would need to be taller to achieve this outcome. All the receivers exceeding the threshold for the L_{dn} criterion have been identified in same locations for both the BKL and RWDI models.

With respect to determining the exact wall height required to mitigate impacts of the Project, the following steps would need to be taken:

- Determining the elevation of CP's new lead track and siding track
 - This would include CP finalizing their design of the siding/lead track and sharing this data with the City/port
 - This will confirm the elevation of the noise sources, namely the switches, wheels, and locomotive stack
- Determining the elevation of the base/top of the proposed walls and receivers
 - This may include removing vegetation within CP's right-of-way to complete survey work, as well as, access to the backyards of numerous residents
- Comparing the two models to observe:
 - How the models are addressing source-barrier-receiver geometry
 - If the type of model used (SRM vs FTA) results in the differences with respect to the effectiveness of the mitigation
 - The elevations assumed for the barriers and top-of-rail
 - The margin of error/accuracy

Some of these tasks require further design and pre-construction work and therefore will be completed as the Project progresses. Staff anticipate that the Project Partnering Agreement will include language that ensures mitigation of the impacts of the Project to receivers that have noise levels increased over the threshold for the high annoyance day/night noise criterion (L_{dn}), per the Noise Guidelines. Although there are certain wall characteristics to be finalized through further design and pre-construction work to ensure that this mitigation is achieved, staff anticipate that these unknowns will be accounted for in the Project Partnering Agreement. Further information on the Project Partnering Agreement will be detailed in a subsequent staff report.

Additional concerns were previously mentioned on the topic of noise with respect to several considerations, including propagation around the ends of segmented walls, continuous vs segmented barriers, sound reflection, reflective vs absorptive barriers, and other items. RWDI has provided staff assurances that all of these factors are considered within their models, and provides further context on these topics within Attachment C.

Additional Works and Next Steps:

In addition to BKL's commitment to implement, consider, and/or clarify multiple findings found in RWDI's peer review within their updated model and report, BKL also placed 6 additional noise monitors within the rail corridor in late October to collect additional noise data. The port and BKL have emphasized that they are not expecting the data collected to differ from previously collected data, but rather that they were responding to public feedback that areas between Harris Road and Bonson Road were missed in BKL's previous deployment of noise monitors. When considering BKL's additional monitors, there have been 13 different locations within Pitt Meadows where noise and vibration monitors have been deployed.

Further to this additional noise monitoring, the port has conducted a field survey which included information on the heights and composition of the existing walls, and is further assessing ground conditions. All of this data will be compiled and used to update BKL's model, which will be shared with the community in the port's next round of engagement, expected in Winter/Spring of 2022.

Pursuing Mitigation to Address Existing Exceedences:

Although the Project will have a degree of impact on the community with respect to additional noise and vibration (of which mitigation will be applied to receivers that have noise levels increased over the threshold for high annoyance day/night noise criterion due to the project (L_{dn})), the largest impacts are associated with existing rail activities today, as well as, predicted rail volume growth in the future, regardless of the completion of the Project. With the knowledge that many receivers within the community already exceed the various criteria threshold identified by the Noise Guidelines, staff have identified three opportunities to explore with the goal of mitigating existing exceedences:

- Negotiate partial mitigation for existing conditions as part of the Project:
 - This option is currently being discussed as part of the Harris Project Partnering Agreement;
 - It is worth noting that the City's negotiation position is not categorically favorable, as CP is a federally regulated railway governed by the Canada Transportation Act and the Railway Safety Act. Therefore, CP has federal legislative avenues available that would allow them to construct the siding and lead tracks without City approval, as well as, a federal process to pursue in an attempt get an underpass constructed at Harris Road without City approval:
 - Neither a grade crossing agreement nor a subsequent dispute to the CTA if a crossing agreement was not reached would allow the City any opportunity to prevent CP from constructing the lead track, as Section 98 (3) of the *Canada Transportation Act* states that CP doesn't require

approval from the Canadian Transportation Agency (“CTA”) to construct railway lines within their right-of-way;

- CP could submit a dispute resolution request to the CTA with respect to requiring a grade separation at Harris Road due to high levels of road and rail traffic causing safety concerns. This could lead to an evaluation and determination from the CTA that a grade separation is warranted, and a portion of the costs to implement a grade separation could be borne by the City;
- Negotiate mitigation directly with CP, independent of the Project:
 - Prior to any complaint being accepted by the CTA, the Agency has to be satisfied that all collaborative measures identified have been exhausted, otherwise the complaint may be dismissed. This means that the City would have to engage CP in direct communication on the issue of implementing mitigation to address current exceedances, establish meaningful dialogue, exchange proposed solutions, and consider mediation;
- Formally submit a complaint to the CTA:
 - After all collaborative measures have been exhausted as outlined above, a complaint may be submitted to the CTA;
 - The CTA will then review the submissions from the complainant, invite other interested parties to respond and determine if the railway company has caused only such noise or vibration as is reasonable under Section 95.1 of the Canada Transportation Act. Note that exceedances of the Noise Guidelines and Vibration Guidelines does not necessarily mean that the CTA will determine the levels of noise and vibration are unreasonable and that mitigation is warranted;
 - Even if the CTA’s determination is in favor of the City, mitigation barriers may not necessarily be part of the resolution.

COUNCIL STRATEGIC PLAN ALIGNMENT

- Principled Governance Balanced Economic Prosperity Corporate Excellence
 Community Spirit & Wellbeing Transportation & Infrastructure Initiatives
 Not Applicable
-

FINANCIAL IMPLICATIONS

- None Budget Previously Approved Referral to Business Planning
 Other

As mentioned in the body of the report.

PUBLIC PARTICIPATION

Inform Consult Involve Collaborate Empower

KATZIE FIRST NATION CONSIDERATIONS

Referral Yes No

SIGN-OFFS

Written by:

Justin Hart,
Manager of Major Projects

Reviewed by:

Samantha Maki,
Director of Engineering & Operations

ATTACHMENTS:

1. RWDI Memorandum 1 – Noise and Vibration Assessment Summary – Peer Review
2. RWDI Memorandum 2 – Noise and Vibration Monitoring Summary
3. RWDI Memorandum 3 – Modeling, Analysis, and Mitigation Summary
4. RWDI Complete Monitoring Data Set
5. BKL – PMRRI Environmental Noise and Vibration Assessment – Peer Review Responses