

May 26, 2021

File: 3134-20A-R1

R.F. Binnie & Associates  
300-4940 Canada Way  
Burnaby, BC  
V5G 4K6

Attention: Bindu Chembrakkalathil

Dear Bindu,

**Re: Portside Blundell Road Improvements  
Environmental Noise Review**

## Introduction

The Portside Blundell Road Improvements Project (the project) proposes a widening of Blundell Road to four-lanes from No.8 Road to west of York Road and a new overpass at the intersection of Portside Road and Blundell Road in Richmond. The purpose of the project is to improve road traffic conditions by improving capacity by widening Blundell Road and eliminating the existing at-grade rail crossing at Portside Road.

As part of the Project planning process, the Vancouver Fraser Port Authority (VFPA) have requested a review of the expected change in noise levels in the surrounding community. BKL have been retained to undertake the noise assessment for the project. This document outlines the findings of the assessment.

## Methodology

The VFPA requested a review of expected change in the community noise levels that may results from the project. Typically, a noise impact assessment for projects under the jurisdiction of VFPA is undertaken in accordance with VFPA's *Project & Environmental Review (PER) Guidelines – Environmental Noise Assessment* (the guidelines), issued July 2015. Therefore, these guidelines were used to assess potential project-related change in community/ambient noise levels.

BKL reviewed the documents summarized in Table 1 (overleaf) to develop the noise model for the Project.

## Project Description

Access to part of the Fraser Richmond Industrial Lands (FRIL) area is via Portside Road and Blundell Road. Currently, there is an at-grade rail crossing just south of Blundell Road on Portside Road. The 2018 data from the Bunt report indicated that there can be 45 crossing closures a day to allow for rail traffic movements across Portside Road; the crossing closures often result in significant delays for

road traffic. The goal of the project is to reduce road traffic delays in this area by widening the section of Blundell Road that is west of No. 8 Road from two lanes to four lanes, elevating Blundell Road and Portside Road to overpass the railway line, and closing the at-grade rail crossing at Portside Road.

Table 1: Input Documents

Document	Issued By	Issue Date	Information
<i>Greater Vancouver Gateway 2030 – Portside Blundell Road Improvement Project</i>	R.F. Binnie & Associates Ltd.	November 2020	Proposed design for the Project
<i>Portside Blundell Road Improvements Basis for Design Hour Volumes Memo issued (Parsons report)</i>	Parsons	January 2020	2029 traffic volumes
<i>Extract of Hopewell Distribution Centre Traffic Impact Study (Bunt report)</i>	Bunt & Associates Ltd.	February 2019	2018 traffic counts for Blundell Road and Portside Road

The project and adjacent sites are zoned for industrial use. The closest existing residential receptor is located on No. 7 Road; approximately 1 km from the project boundary. The closest non-industrial land to the project boundary is agricultural zoned land which is at least 250 metres from the project boundary. The project and closest non-industrial areas are shown in Figure 1.

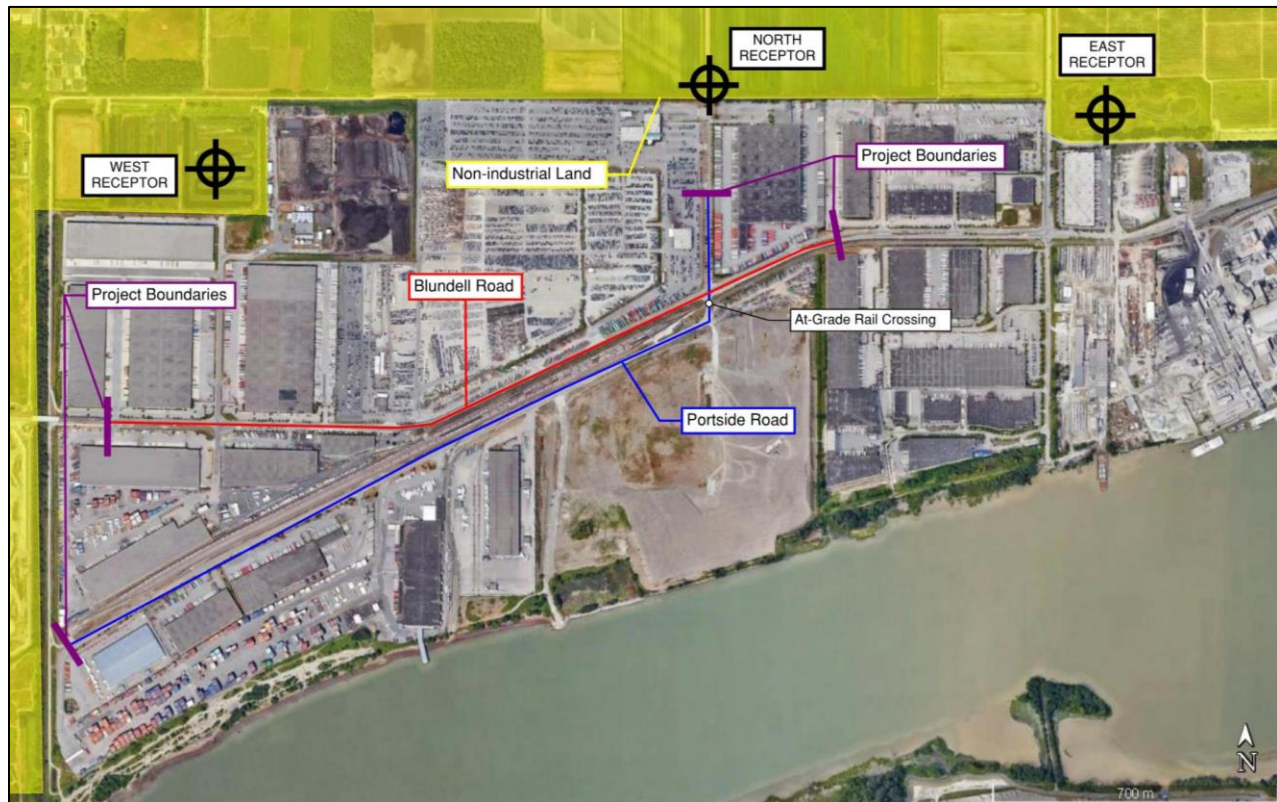


Figure 1: Project Site and Surrounding Area

## Project Boundaries

### Spatial Boundaries

The guidelines refer to noise sensitive land use as “residences, schools, hospitals, passive parks, etc.” and specify that the study area should be selected to capture the leased area associated with the project, the surrounding community that may be impacted, and consideration of consequential activities. While there are no existing noise sensitive receptors that are within approximately 1 km of the project, the City of Richmond agricultural zoning allows for a single detached house on each land parcel. Therefore, representative receptors on agricultural land to the north, east and west of the alignment have been selected for the assessment (as shown in Figure 1).

To quantify project noise, only the roads located within the project boundaries were modelled. This is consistent with how road traffic projects are modelled for BC Ministry of Transportation and Infrastructure highway projects.

### Temporal Boundaries

For an assessment in accordance with the guidelines, the noise environment for the following scenarios are required to be considered:

- existing conditions;
- the future (horizon year) with the project; and
- the future (horizon year) without the project.

Typically, the existing conditions year is selected as the current year. However, as a result of restrictions associated with the Covid-19 pandemic, typical year-to-year growth rates have been disrupted. Therefore, the unadjusted 2018 traffic count data was selected to predict existing noise conditions. The 2018 traffic volumes are considered to be the most relevant representative of the traffic volumes for the existing conditions projection.

The guidelines suggest that the assessment of the project should be conducted for the first year where full operational capacity is achieved. A technical memo to forecast the future traffic volumes for the project was issued by Parsons in January 2020. This memo provided the projected traffic volumes for 2029 assuming all future proposed developments in the FRIL area are completed by 2029. Therefore, we have used 2029 as the horizon or future year for the assessment. We understand that the future traffic volumes will be driven by proposed developments within the FRIL, and not by the improvements proposed by the project. Therefore, Binnie has advised us to assume that the future traffic volumes with and without the project will be the same.

The assessment is based on weekday traffic data as that was the traffic information provided. The Parsons memo indicates that the traffic volumes are significantly lower for weekends compared to weekdays as traffic in the area is primarily associated with industrial activity within the FRIL. Therefore, completing the assessment using the weekday traffic volumes is the conservative approach.

## Assessment Criteria

The guidelines state that the following metrics could be considered for a noise impact assessment:

- Average day-evening-night level ( $L_{den}$ )
- Nighttime levels ( $L_n$ )
- Percentage of highly annoyed people (%HA)
- Maximum noise level ( $L_{AFmax}$ )
- Weekday/weekend levels
- Low frequency noise level ( $L_{LF}$ )

The guidelines state that the following metrics would be considered during the PER application review:

- The increase in community noise exposure (expressed in term of the Total Rated Annual Average Noise Level) associated with the operation of a project and the associated number of residents likely to be Highly Annoyed;
- When the post-project noise environment is predicted to exceed  $L_{den}$  75 dBA; and
- When the Low-Frequency Noise level ( $L_{LF}$ ) is expected to exceed 75 dB.

Therefore, for this assessment, we have focused calculating the  $L_{den}$  and  $L_{LF}$  metrics. To account for the first bullet (residents likely to be Highly Annoyed), we will also consider the change in percent highly annoyed between the existing and future scenarios. While the guidelines don't provide quantitative criteria for change in highly annoyed population, we have used the benchmark of a change in percent highly annoyed of 6.5% which is the criteria provided in the 2017 Health Canada document *Guidance for Evaluating Human Health Impacts in Environmental Assessment: NOISE*.

As baseline noise monitoring data has not been collected, we have taken the conservative approach, provided by the Health Canada guideline, of assuming that the ambient  $L_{den}$  level is 45 dBA which is consistent with a quiet rural or quiet suburban residential area. By comparison, the ambient noise level in noisy urban areas near industrial sites is typically 65 to 70 dB  $L_{den}$ . For a baseline ambient level of 45 dBA, the  $L_{den}$  level at which the change in percent highly annoyed would be 6.5% in the future is 60 dBA. Therefore, we have used 60 dBA  $L_{den}$  as the criterion for future noise levels.

## Modelling

### Project Information

The traffic data information that was provided was adjusted to estimate the average weekday traffic volumes and heavy vehicle percentage. The data used in the assessment is summarized in Table 2.

The existing road alignments were traced from aerial images of the project area. The future road alignments and elevations for the above grade roads were taken from the project drawings. All road surfaces were assumed to be asphalt with the exception of the future with project scenario where the elevated sections are assumed to be a concrete surface. This is a conservative approach as a concrete road surface generates higher noise levels than asphalt.

Table 2: Traffic Data

Road Section	Weekday Daily Traffic Volume		Heavy Vehicle %	Speed	
	Baseline (2018)	Future (2029)		Baseline (2018)	Future (2029)
Blundell Road W	5300	17073	50%	50 km/h	50 km/h
Blundell Road E	6400	24114	69%	50 km/h	50 km/h
Portside Road	2473	10046	50%	50 km/h	50 km/h
No. 8 Road	3651	8573	0%	50 km/h	50 km/h

## Model Information

A 3-D noise model was developed using propriety noise modelling software Cadna/A version 2021, implementing road traffic noise prediction standard NMPB 1996. The default ground was assumed to be hard ground, with areas of agricultural land inputted as soft ground. Elevation data was not used as terrain in this area is mostly flat. As NMPB 1996 does not predict noise levels in the 16 Hz to 63 Hz octave bands, the results for the 125 Hz band were multiplied by three to estimate  $L_{LF}$  values.

## Results

The predicted weekday average noise levels for the existing, future no project, and future with project scenarios are presented in Table 3.

Table 3: Predicted Weekday Average Noise Levels

Receptor	Predicted Noise Levels					
	Existing		Future No Project		Future With Project	
	$L_{den}$ (dBA)	$L_{LF}$ (dB)	$L_{den}$ (dBA)	$L_{LF}$ (dB)	$L_{den}$ (dBA)	$L_{LF}$ (dB)
West	53	56	58	62	59	62
North	54	57	59	63	60	63
East	46	51	52	57	53	57

The predicted  $L_{den}$  levels at the all receptors are no greater than 60 dBA for all scenarios; therefore, the predicted noise level for the project are below both the 75 dBA and change in %HA criteria. Further, the predicted  $L_{LF}$  levels are below the 70 dB criterion at all receptor locations.

With the assumptions outlined above, the future noise levels without the project are expected to be up to 6 dBA above the existing noise levels and with the project, the future noise levels are predicted to be 7 dBA above the existing noise levels. The difference between the future noise levels with and without the project is only 1 dBA. This indicates that the primary reason that future noise levels are expected to increase is a result of the increased traffic volumes (when compared to the existing traffic volumes) rather than as a result of the project changes to the road alignment. A change in noise levels of this magnitude is also expected at the industrial receptors.

The predicted project noise levels at these agricultural locations do not exceed the noise criteria and project noise levels at the nearest dwellings and other noise-sensitive land uses would be lower still due to sound attenuation with increased distances. Therefore, no noise mitigation was investigated for the project.

## Summary

The project proposes a widening of Blundell Road from No.8 Road to west of York Road and an overpass of the Portside Road rail-crossing. We have estimated existing noise levels and modelled the future noise levels with and without the project. While the nearest existing noise-sensitive receptors are approximately 1 km away from the project boundary, we conservatively predicted levels at the nearest adjacent agricultural land uses.

The future noise levels are predicted to increase, largely as a result of the traffic growth in the area when compared to the existing conditions. However, the predicted future noise levels in the adjacent agricultural land uses do not exceed the adopted noise criteria and the predicted noise levels at existing sensitive receptors would be lower still. Therefore, potential noise mitigation options for the project were not investigated.

We trust this information is sufficient. Please let us know if you have any questions.

Sincerely,

**BKL Consultants Ltd.**

per:



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