

Appendix I - Noise Assessment Screening Worksheet

Question 1 – New Activity, Replacement or Expansion

Will the project involve only the replacement of existing equipment or activities or the expansion of a pre-existing facility or activity, or will it involve significant new noise sources or activities?

- Replacement of Existing Equipment or Activities Score 1 point
 - Expansion of Existing Equipment or Activities Score 3 points *similar industrial activity is occurring at neighboring facility
 - New Equipment or Activities Score 5 points
- Score 3

Question 2 – Noise Levels Expected on Project Site

Based on experience with similar operations at the current location or elsewhere, or on your best judgment, do you expect that noise levels within the project site will be:

- Very Low Score 1 point
 - Low Score 2 points
 - Moderate Score 3 points
 - High Score 4 points
 - Very High Score 5 points
- Score 2

Question 3 - Presence of Undesirable Characteristics

Will any of the key activities/sources create ongoing noise which:

- (1). is clearly tonal (hums, whirs, whines).
- (2). is impulsive or has very rapid onset (bumps, bangs, **material handling impacts**, rail car shunting, compressed air release etc.), or
- (3). contains strong low-frequency content (e.g. large diesel engines, large fans or air compressors).

- No Score 0 points
 - Yes, noise will contain one such characteristic Score 3 points
 - Yes, noise will contain two or three such characteristics Score 5 points
- Score 3

Question 4 – Presence of High-Energy Impulsive Noise

Will any activities create ongoing noise which could be classified as “High-energy Impulsive”?

Examples of such sources are limited in the port context but could include the industrial use of explosives or explosive circuit breakers.

- No Score 0 points
 - Yes Score 5 points
- Score 0

Question 5 – Hours/Days of Operation

Will the normal operating schedule be:

- Day Shift only (5 days/week) Score 1 point
 - Day Shift only (7 days per week) Score 2 points
 - Day & Evening Shifts (5 days/week) Score 2 points
 - Day & Evening Shifts (7 days/week) Score 3 points
 - 24-hours per day (5 days /week) Score 4 points
 - 24-hours per day (7 days per week) Score 5 points
- Score 1

Question 6 – Proximity to Noise-Sensitive Areas

How far is the nearest noise-sensitive land use (residences, schools, hospitals, passive parks etc.) from the property line of the project site?

- More than 1,000 m Score 0 points
- 500 to 1,000 m Score 1 point
- 250 to 500 m Score 2 points
- 125 to 250 m Score 3 points
- 60 to 125 m Score 4 points
- less than 60 m Score 5 points

Score 4

Question 7 – Presence of Noise Shielding or Reflection

Will buildings, structures and/or landforms partially or totally screen (that is, interrupt the line of sight and direct hearing) project noise sources from nearby noise receptors? Here consideration should be given to the relative elevations of the noise sources, the noise receivers (ground and upper floors) and the intervening buildings and/or landforms. Noise shielding effects are maximized when intervening buildings and/or landforms are higher and wider than both the noise source area and the noise receiver area. Alternatively, the project may involve construction of a building or other structure that, while not necessarily a significant source of noise itself, reflects noise from other sources towards adjacent noise-sensitive areas. This other noise may originate from project operations or from sources not related to the project, such as other port operations or transportation facilities related sources.

- Substantial, continuous noise shielding Score 0 points
- Substantial, but not total, screening Score 1 point
- Intermittent shielding, e.g., row of smaller, non-adjointing buildings Score 2 points
- Scattered shielding by objects, machinery, stockpiles Score 3 points
- No shielding potential Score 4 points
- No noise shielding and will reflect noise towards sensitive areas Score 5 points

Note: A noise shielding barrier will be constructed along the western property boundary (conceptual cross-section attached Figure 1). This will consist of a 1 to 2 m high lock-block wall behind a constructed soil berm adjacent to material handling noise-producing areas (noted as stockpile area in Figure 1), with a 1 to 2 m high noise-blocking fence placed along the top of the berm. Beyond the berm, Swedish Columner Aspens will be planted along the property line, which can grow to a height of 15 m and a thickness of 3 m, providing additional secondary noise shielding.

Score 0

The highest potential impulse noise will occur at the height of a dump truck bed (approximately 1 to 1.5 m) within the stockpile area as soil is loaded. The proposed barrier will effectively and continuously shield receptors located on the second story (approximately 4 or 5 m) of the nearest resident (2nd floor approximately 100 m from the noise source) from material handling impact noise as well as residences located further away from the property.

If the impulse noise source is located 1.5 m above ground at a distance 100 m from a receptor located on a 2nd story balcony or at a 2nd story window (5 m above ground, net of 3.5 above the noise source), trigonometry shows that the angle of incline to the receptor is 2 degrees:

$$\theta = \tan^{-1} 3.5/100$$

The maximum distance between such impulse noises on the property and the noise shielding barrier will be approximately 30 m. The required height above ground of the barrier is then given as:
 $(\tan 2^\circ \cdot 30) + 1.5 = 2.5 \text{ m}$

The height of the constructed barrier will exceed the required height for effective substantial and continuous noise shielding.

Question 8 – Baseline Noise Environment

How would you rate the **baseline** (pre-project) **noise environment** within the **noise sensitive area** nearest the project site?

- Very noisy (near busy highway, busy port, airport, heavy industry) Score 1 point
- Noisy (near busy arterial road, light industrial area, urban core) Score 2 points
- Moderately noisy (near collector road, suburban residential) Score 3 points
- Quiet (suburban residential away from collector roads) Score 4 points
- Very Quiet (rural residential, well away from industry or main roads) Score 5 points

Score 2

Question 9 – Population Potentially Exposed to Project Noise

Approximately how many residences or other noise sensitive land uses are located within 500 m

- 5 or less Score 1 point
- 5 to 15 Score 2 points
- 16 to 40 Score 3 points
- 41 to 100 Score 4 points
- more than 100 Score 5 points

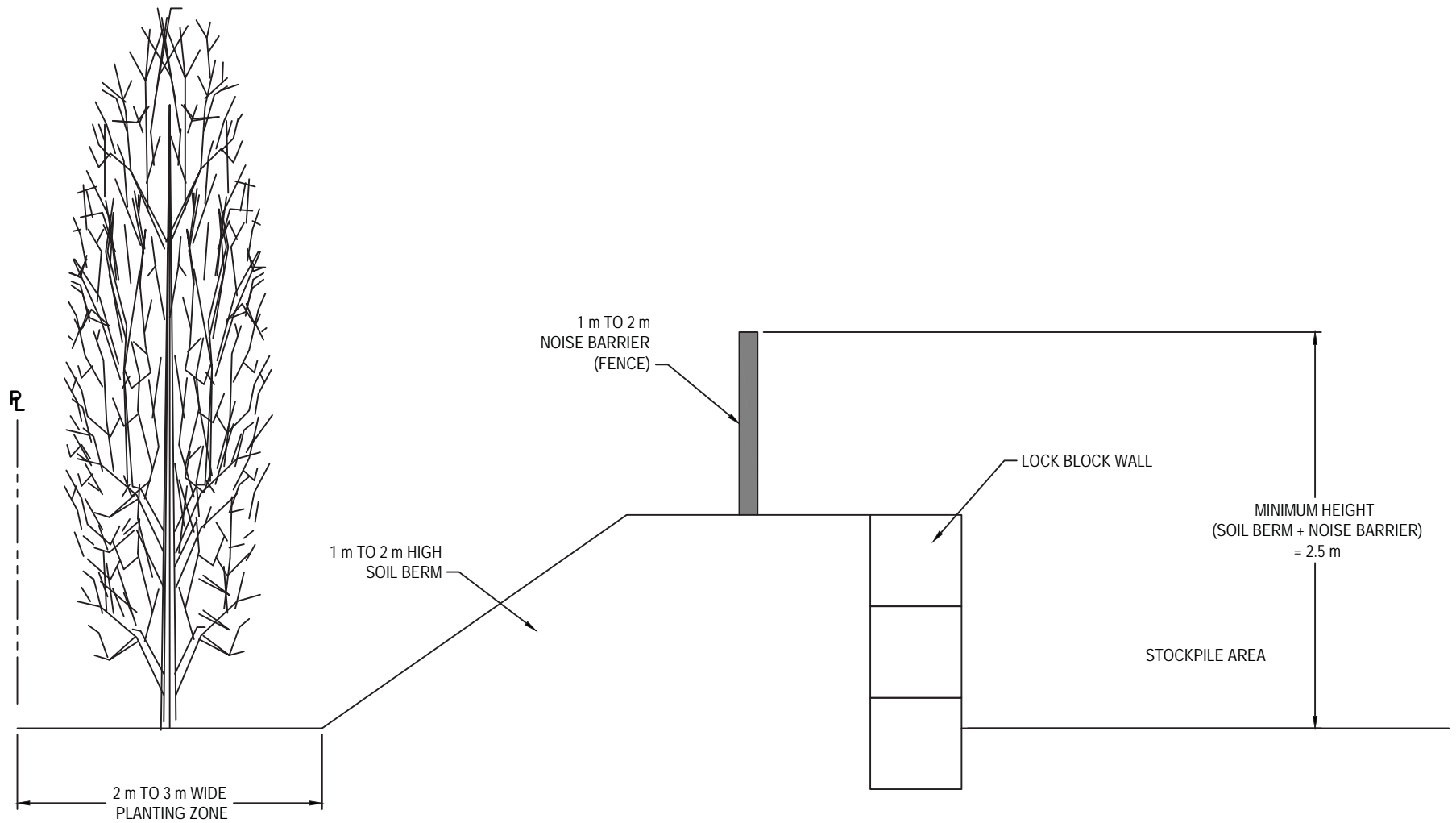
Score 5

Question 10 – Level of Community Concern about Noise

What level of concern (e.g., complaint history) currently exists among residents/users of adjacent noise sensitive lands regarding noise emissions from PMV lands in general and your project site in particular?

- No history of concern or complaints Score 1 point
- Minor concerns have been expressed Score 2 points
- Unknown Score 3 points
- Moderate level of concern, some complaints
- High level of concern/organized complaints

Score **1**



ISSUED FOR USE

LEGEND

NOTES

SCALE: NTS

CLIENT



**DERWENT WAY SOIL TRANSFER AND BARGE FACILITY
ENVIRONMENTAL NOISE ASSESSMENT
FOR PORT METRO VANCOUVER**

**CONCEPTUAL NOISE SHIELDING
ALONG WESTERN BOUNDARY**



PROJECT NO. ENG.VGEO03082-01	DWN RH	CKD TM	REV 1
OFFICE EBA-VANC	DATE March 23, 2017		

Figure 1

Appendix II - Noise Assessment Project Score

No.	Attribute of Project or Project Setting	Score	Importance Weighting	Weighted Score
1	New Activity, Replacement or Expansion	3	1.2	3.6
2	Noise Levels Expected on Project Site	2	1.8	3.6
3	Presence of Undesirable Characteristics	3	1.6	4.8
4	Presence of High Energy Impulsiveness Noise	0	1.6	0.0
5	Hours/Days of Operation	1	1.2	1.2
6	Proximity to Noise Sensitive Areas	4	1.6	6.4
7	Presence of Noise Shielding or Reflection	0	1.8	0.0
8	Baseline Noise Environment	2	1.6	3.2
9	Population Potentially Exposed to Project Noise	5	1.0	5.0
10	Level of Community Concern About Noise	1	1.2	1.2
TOTAL WEIGHTED PROJECT SCORE				29