APPENDIX O

Environmental Noise Assessment

1 INTRODUCTION

The Vancouver Fraser Port Authority (port authority) requires that project proponents undertake an Environmental Noise Assessment (ENA) Screening Study, that may lead to a more detailed technical study as per the Port Authority Project and Environmental Review (PER), Category C and D projects in accordance with the Environmental Noise Assessment Guidelines (July 2015). The Coal Harbour Marina Expansion Project as submitted by the Royal Vancouver yacht Club (RVYC) has been identified as a Category C project under the port authority PER process.

1.1 Project and Environmental Review (PER) Guidelines Environmental Noise Assessment

The ENA submitted herewith follows the requirements presented in the Noise Assessment Guidelines as part of a PER Application Guide. While the guidelines are broad in nature it is recommended that refinement of the scope for the assessment is conducted with input during the preliminary review phase. The overall components of a Noise Assessment include:

- Noise screening procedures
- Record of community interaction
- Identification of prominent noise sources
- Quantification of noise emissions
- Assessment of potential noise impacts
- Development of noise impact mitigation guidelines
- Post project noise monitoring

The noise assessment screening worksheet (in accordance with Appendix I and Appendix II of the guidelines) is presented, as well as a summary of record of community consultation related to noise complaints.

1.2 Sensitive Land Use Receptors and Separation Distances

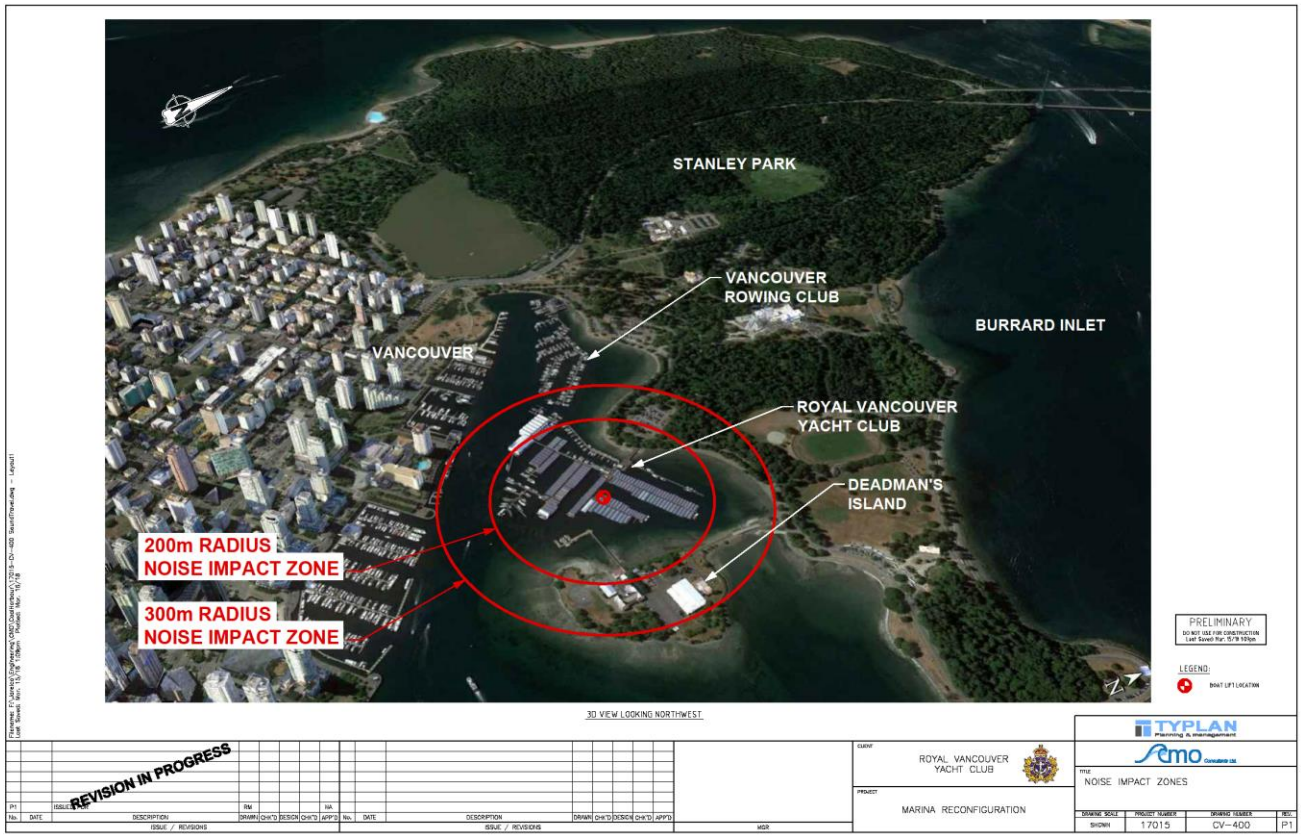
Exhibit 1 provides an orthophoto overview of the marina and surrounding land uses based on the location of the proposed marina expansion site at Coal Harbor, centered on the boat lifts. The noise that is generated within the marina is a function of the use of the boat lifts utilized by members to wash and undertake light maintenance of the vessels. It is noted the exhibit presents a 200 m and 300 m radii from the boat lifts to provide contest regarding distances to sensitive land uses. The distances are derived from the Environmental Protection Agency Environmental Assessment Guidelines for Assessment of Small-Scale Marinas and Boating Facilities (Australia), which states:

“The EPAs Guidelines for Separation Distances (2007) recommend separation distances between developments that may result in noise odor or pollution air emissions and sensitive land uses.

A separation distance of 100 m is recommended for marinas and boating facilities for fewer than five (5) vessels and 200 m for facilities with between 5-50 vessels. A separation distance of 300 m is recommended where works for the repair and maintenance of vessels with the capacity to handle fewer than five vessels or less than 12 m in length.

While these guidelines differ from noise assessment screening document issued by the Port Authority and presented herewith, the exhibit provides context to the site.

Exhibit 1: Location of Coal Harbour Marina in Relation to Sensitive Land Uses



2 PORT AUTHORITY NOISE IMPACT ASSESSMENT SCREENING PROCEDURE

The port authority Screening Procedure Worksheet is expected to assist in identifying the appropriate level of care and attention to be exercised for noise impacts when planning projects within the port authority lands. Noise screening is required for PER Category C and D reviews.

Table 1 provides a screening overview and submission requirements to support a PER project permit application.

Table 1: Screening Overview Submission Requirements

Project Noise Screening	Information to be provided to Port Authority
Projects defined as PER Category C or D that score below 30 from the noise screening procedure	A copy of the Project Noise Score Appendix II Record of noise complaints
Projects defined as PER Category C or D that score 30 and above from the noise screening procedure	A copy of the Project Noise Score Appendix II An environmental noise assessment report as outlined in this guide

2.1 Noise Assessment Screening Worksheet

The following section provides a description and outline of the Noise Assessment Screening Worksheet followed by the project worksheet score. The worksheet has been compiled by TyPlan Consulting with input from Chris Barnett, Royal Vancouver Yacht Club Asset Manager responsible for the operation of Coal Harbour Marina.

Question 1 – New Activity Replacement or Expansion

Will the project involve 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?

While the project represents both replacement and expansion of floats, piles, and boat sheds along with upgrades to the existing electrical and mechanical systems, the activities that generate noise, specifically the boat lift and limited maintenance that occurs, no additional or increased noise will result from the works. All construction related activities potentially generating noise, such as the building of boat sheds and docks is being undertaken off-site, barged to the site and assembled.

Accordingly, there is no replacement of existing equipment or activities and a score of 1, in accordance with the worksheet requirements is noted.

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 as existing operations will continue as is, therefore a score of 1 is noted in accordance with the worksheet

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).

Noise generators will be the same as currently noted and therefore a score of 0 is noted in accordance with the worksheet.

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 new sources of noise will be evident from the expansion project. A score of 0 is noted in accordance with the worksheet.

Question 5 – Hours/Days of Operation

Will the normal operating schedule be?

While the marina remains open from 6 am till 12 pm, any work related to lifting of vessels and maintenance is restricted to the day shift five (5) days a week. A score of one (1) is noted in accordance with the worksheet.

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?

Stanley Park is located approximately 150 m from the source of noise (boat lifts) and residences and tourist accommodations are located 300 m form the noise source. The nearest sensitive land use (Stanley Park), in which pedestrians and bikers travel along the boardwalk, therefore the score allocated is three (3) points in accordance with the worksheet.

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.

The key point source of noise associated with operating the mechanical lifting of vessels is intermittent (e.g., row of smaller non-adjoining buildings (boat shed) and therefore scoring is two (2) in accordance with the ENA worksheet.

Question 8 – Baseline Noise Environment

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

Quiet (suburban residential away from collector roads) and therefore a score of four (4) is identified in accordance with the ENA worksheet.

Question 9 – Population Potentially Exposed to Project Noise

Approximately how many residences or other noise sensitive land uses are located within 500 m of the project site's property line?

Within 500 m more than 100 residences exist and therefore a score of five (5) is allocated in accordance with the worksheet is identified.

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 Port Authority lands in general and your project site in particular?

There is no history of concern (complaint history). The score of 1 is applied.[1]

[1] Pile driving activities related to new piles will create noise. Noise impacts will be limited via the use of best management practices as outlined in the Construction Environmental Management Plan (CEMP).

2.2 Noise Assessment Project Score

The ratings provided above (worksheet scores) are combined with the importance weighting score outlined in the guidelines by multiplying the scores by importance weighting to obtain a weighted score for each attribute. The totals are then summarized for the total weighted project score as shown in the table below:

Table 2: Noise Assessment Project Score

No	Attribute of Project or Project Setting	Questionnaire Score (Appendix 1)	Importance Weighting	Weighted Score
1	New Activity	1	1.2	1.2
2	Noise Levels Expected on Project Site	1	1.8	1.8
3	Presence of Undesirable Characteristics	0	1.6	0
4	Presence of High Energy Impulsive Noise	0	1.6	0
5	Hours/days of Operation	1	1.2	1.2
6	Proximity to Noise Sensitive Areas	3	1.6	4.8
7	Presence of Noise Shielding or Reflection	2	1.8	3.6
8	Baseline Noise Environment	4	1.6	6.4
9	Population Potentially Exposed to Project Noise	5	1.0	5
10	Level of Community Concern	1	1.2	1.2
	Total Weighted Project Score			**25.2**

3 OBSERVATIONS

The total weighted average score is 25.2, in accordance with the guidelines (refer to Table 1) no further action is required as part of this project permit submission.

4 RECORD OF COMMUNITY INTERACTION

Consultation with both Chris Barnett Marine Asset Manager and Marcus D'Aubin Harbor Master confirmed that there have been no community complaints regarding noise at the Coal Harbor Marina for over 15 years.