Brown Strachan Associates
Consulting Engineers in Acoustics

Project: 798.102

September 19, 2012
November 6, 2012 (revised)

Concert Properties Ltd.
9th floor, 1190 Hornby Street
Vancouver, BC
V6Z 2K5

Attention: Mr. Farouk Babul

Dear Mr. Babul:

Re: Harbourside Waterfront

Appended is a copy of our report entitled "Harbourside Waterfront - Acoustical Evaluation".

Yours very truly,

BROWN STRACHAN ASSOCIATES

Aaron Peterson, B.A.Sc., EIT

AP//ih/12November/Concert4.ttl

Yaletown Square #2-1290 Homer St. Vancouver Canada V6B 2Y5 Tel: 604 689 0514 Fax: 604 689 2703 bsa@brownstrachan.com

HARBOURSIDE WATERFRONT
ACOUSTICAL EVALUATION

Prepared for:
Concert Properties Ltd.

Aaron Peterson, B.A.Sc. EIT.
David W. Brown, P.Eng.
September 19, 2012
November 6, 2012 (revised traffic vol. on Harbourside)

Brown Strachan Associates
Consulting Engineers in Acoustics

#2 - 1290 Homer St. Vancouver Canada V6B 2Y5 Tel: 604 689 0514 Fax: 604 689 2703 bsa@brownstrachan.com

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Project: 798.102

October 30, 2012
November 6, 2012 (revised)

HARBOURSIDE WATERFRONT - PRELIMINARY ACOUSTICAL EVALUATION

1.0 INTRODUCTION

Brown Strachan Associates have been retained by Concert Properties Ltd. to conduct a preliminary acoustical study as part of the rezoning application for the residential components of the proposed Harbourside Waterfront development at 801-925 Harbourside Drive and 18 Fell Avenue, City of North Vancouver, based on the Hughes Condon Marler Architects preliminary site massing plan dated 22/08/2012, appended.

The terms of reference of this study are to assess noise on the proposed development and to recommend preliminary noise mitigation measures meeting interior design noise level criteria used by the City of North Vancouver, i.e. Canada Mortgage and Housing Corporation (CMHC) criteria, outlined in CMHC's "Road and Rail Noise: Effects on Housing" (NHA 5156 08/86, appended). We have considered noise from local shipyard/industrial sources in the District of North Vancouver to the west, the commercial operations to the north, yacht club/marina activities to the east, the CN Rail line, Coal Harbour float plane activity and future local traffic.

2.0 CRITERIA

The project site has been evaluated with respect to the following design criteria, outlined in CMHC's "Road and Rail Noise: Effects on Housing" (NHA 5156 08/86):

Room	Noise Level
Bedrooms	35 dB
Living, dining, recreation rooms	40 dB
Kitchen, bathrooms, hallways, utility rooms	45 dB
Outdoor recreation areas	55 dB

The Noise Level criteria are the A-weighted 24-hour equivalent sound levels, Leq (24), in decibels (dB), which include consideration of short term single events.

3.0 RECOMMENDATIONS

3.1 Restrictive Covenant/Disclosure

Full disclosure should be made to prospective residents that the property is in an Activity Area, adjacent to various potentially noisy sources, including shipyard and industrial operations in the adjacent District of North Vancouver. These operations could generate significant levels of noise, up to the maximum allowable limits of the applicable Noise Regulation Bylaws, and may be a source of annoyance to some individuals. We recommend reviewing the wording of the proposed disclosure.

3.2 Design Noise Levels

Our recommended design level is Leq(24) = 67 dB at the most exposed locations, including 66 dB for shipyard and industrial operations, etc. (prints appended).

3.3 Exterior Facade Upgrades

Our preliminary evaluation indicates that the architectural design will not be limited by acoustical considerations.

The following are preliminary facade upgrade recommendations, based on a standard 10sq.m. corner bedroom, with full height glazing on two facades. Prior to Building Permit submission, the proposed design and facade construction should be evaluated with reference to CMHC's interior design noise level criteria.

Conventional thermal glazing consisting of 6mm glass - 13mm airspace - 4mm glass (6-13-4, rated OITC 29/STC 36) should be specified as the minimum glazing for all windows on the project, including glazing in all exterior doors (swing or sliding). Upgraded glazing such as laminated glass or other acoustically rated assemblies may be required in some areas. Such requirements should be determined based on building permit drawings.

Wind loading, safety/structural requirements, visual specifications, etc. should be checked for all glazing and may dictate thicker glass than the minimum recommended (possibly strengthened glass). Glazing may require strengthened glass to meet the maximum size requirements of the Code and may have a maximum size limitation to meet visual specifications, structural requirements, etc. (i.e. mullions may be required).

When requested, the supplier should provide test reports to ASTM E 90 for acoustically rated glazing and doors, and confirm that the rated glazing and doors, as installed on site, are equivalent to the tested assemblies and fully conform with specified requirements.

Good quality airtight weatherstrip should be specified for all exterior doors and windows, i.e. windows meeting the CSA A440-00 'A3' air-tightness standard, as referenced in the British Columbia Building Code (BCBC 5.10 & 9.7).

Rooms with conventional spandrel panel or spandrel glass exterior construction may require upgrades (e.g. double interior drywall, resilient channels, etc.), particularly large bedrooms with two exterior walls or facade extending more than one floor. Rooms specified with heavy exterior finishes (e.g. concrete, brick, stone, etc.) are generally acceptable without facade upgrades. Specific facade upgrades should be determined based on building permit drawings.

3.4 Alternate Ventilation

Ventilation details should be designed by a mechanical consultant.

While openable windows and doors are acceptable, our preliminary evaluation of sound transmission through the exterior facade is based on openable windows and doors in the closed position. Alternate ventilation may be required, e.g. air conditioning or continuously rated kitchen and/or bathroom exhaust fans providing the necessary ventilation requirements in accordance with Section 6.2 & 9.32.

Where make-up air is required for alternate ventilation systems, corridor pressurization, natural air leakage of the building envelope, etc., should be considered, e.g. Section 6.2 and A-9.32.3 (check with mechanical). If make-up air ducts from the exterior are also required to meet ventilation requirements, the ducts must provide a minimum noise reduction of 45 dB for exterior noise, e.g. nominally 5 ft. of 4" dia. acoustically lined ductwork or lined flexible connector. Kitchen and bathroom exhaust ducts, or air ducts into non-critical space, do not require lining.

4.0 DISCUSSION

4.1 Method of Evaluation

This preliminary report considers sound insulation, referencing NRC's IBANA-Calc analysis software, related validation studies (see Section 4.6 "Predicted Interior Noise"), windows and doors in the closed position, a reference bedroom with floor to ceiling glazing on two facades, standard room finishes and furnishings.

4.2 Shipyard/Industrial Noise

The Vancouver Shipyard is about 250m west of the project site, with other industrial operations further west. We understand from Mr. Tony Matergio of Vancouver Shipyard (604-990-3348) that their facility operates two maintenance shifts per day (day shift: 7 a.m to 3 p.m, afternoon: 3 p.m to 10 p.m), with most maintenance activity during the day. Mr. Matergio has also advised that their maintenance activities are generally of a continuous nature, the majority of which occur indoors, including sandblasting. Outdoor activities are generally limited to occasional intermittent sources (e.g. steel work, etc.).

No significant industrial activity was observed during visits to the project site. Sample daytime measurements conducted near the southwest corner of the property, with a view to the shipyard and other distant industrial operations to the west, indicate an existing average daytime noise level of 55.5 dBA (Fig. 1, appended), including float plane operations and other local sources (e.g. pedestrian conversations, dogs, etc.). We

understand from Mr. Matergio that our sample daytime measurements at the project site are representative of typical shipyard operations. An informal survey of pedestrians also indicated the measured levels are representative of typical shipyard and industrial operations at the project site.

To account for increased noise during busy periods and possible louder maintenance activities closer to the project site, we have analysed shipyard/industrial noise based on the 60/55 dBA (day/night) "continuous" sound level limits for Activity Areas, defined in both the City of North Vancouver Noise Control Bylaw and the Noise Regulation Bylaw of the District (Bylaws 5819 & 7188), or Leq(24) = 58 dB at the closest adjacent property (prints and analysis appended). This maximum allowable level is considered consistent with the measured daytime sound level at the southwest corner of the property, which includes many local and distant sources (Fig. 1, appended).

To account for possible intermittent noise (i.e. up to 3 min. in any 15 min. period), we have used an Leq(24) = 61 dB at the closest point of reception on site, which allows for equal contributions of continuous and possible intermittent noise, equivalent to about 70 dBA for two hours of intermittent operations per day (prints appended).

Other local commercial/marine properties (e.g. commercial operations to north, Burrard Yacht Club, Mosquito Creek Marina, etc.) have also been evaluated based on an Leq(24) = 61 dB design level, or 66 dB for three equivalent noise sources at the most exposed locations at the proposed development (prints appended).

4.3 Traffic Noise

We understand from Mr. David Williams (Transportation Technologist, City of North Vancouver) that City measured traffic volume data are unavailable for Harbourside Drive. As a result, design traffic volumes have been based on the appended 10,600 vehicles per day projection provided by Mr. Paul Dorby (Senior Transportation Planner, Bunt & Associates Engineering Ltd.), which we understand considers increased traffic associated

with the proposed development. We have used 3% heavy vehicles based on Harbourside Drive being a designated bus route.

Future traffic noise levels have been derived from statistical tables, developed by NRC, in the Canada Mortgage and Housing Corporation (CMHC) publication "Road and Rail Noise: Effects on Housing" (NHA 5156, 08/86). These tables have been used on numerous housing site assessments throughout the Lower Mainland, including recent studies in North Vancouver, with good correlation between measured and calculated levels (typically +/-1dB for normal traffic conditions). Based on our evaluation, the calculated design traffic noise level is Leq(24) = 63 dB at the north property line (printout: "North-2", appended).

4.4 Train Noise

The existing CN Rail line is approximately 300m north of the project site. While we have been unable to confirm current train movement data along the CN line, previous studies in this area indicate 8-12 train movements per day. Site observations indicate occasional distant whistles (less than 10 seconds).

For design, we have evaluated the project site based on 16 train movements per day, each with three locomotives and 100 cars per train travelling at 10mph (or less). To account for possible whistle noise at the proposed development, we have used an equivalent 10 second train whistle at each of the four crossings in the general vicinity.

Train noise levels are derived from statistical tables contained in CMHC's "Road and Rail Noise: Effects on Housing" (pages 35-50). Based on our evaluation, the calculated train noise level is 57 dB (Table 2, appended). Shielding effects from existing intervening buildings may be offset by reflections and have not been included.

To the west of the project site, at nominally 1000m, is an existing railyard. While no significant railyard activity noise was observed during our site visits, we have evaluated possible railyard activity noise referencing measured data near the New Westminster

railyard (Fig. 2, appended). Based on our evaluation, the calculated railyard noise is Leq(24) = 51 dB at the project site, for 8 hours of operation per day.

4.5 Float Planes

Our sample site measurements include float plane operations leaving Coal Harbour in downtown Vancouver. Observed departures from Coal Harbour were on a north/east heading, making a wide lefthand turn over the water, between Stanley Park and the development site.

We understand there are about 60 scheduled departures per day during the summer months (Harbour Air and West Coast Air, schedules appended). We also understand there are numerous charter flights, etc., during the summer. Based on previous float plane studies in Coal Harbour, we have evaluated the project site based on 200 departures per day (daytime only).

Measurements conducted near the southwest corner of the project site indicate float planes flying near the site are in the order of 69 dBA (avg. 20 sec. Leq, Graph: A-1, appended). During our site measurements, float plane landings, taxiing, idling, etc. were considered insignificant sources. Based on our evaluation, the calculated float plane noise level is Leq(24) = 56 dB for 200 departures/day. To account for possible reflection effects from existing and future buildings, we recommend a design float plane noise level of 56 dB at all facades.

4.6 Predicted Interior Noise

Our preliminary evaluation of sound transmission through the exterior facade is based on a reference bedroom with floor to ceiling glass on two facades. Interior noise predictions have been calculated referencing NRC's IBANA-Calc analysis software, related validation studies, source data normalized for the future design conditions and facade transmission loss data for conventional facade components. A sample calculation is summarized in Table 1 (appended) and includes the absorption typical of furnished rooms

(e.g. bed/furniture, carpet, etc.). Table 1 shows the sound level transmitted through each facade and compares the total sound to the design criterion.

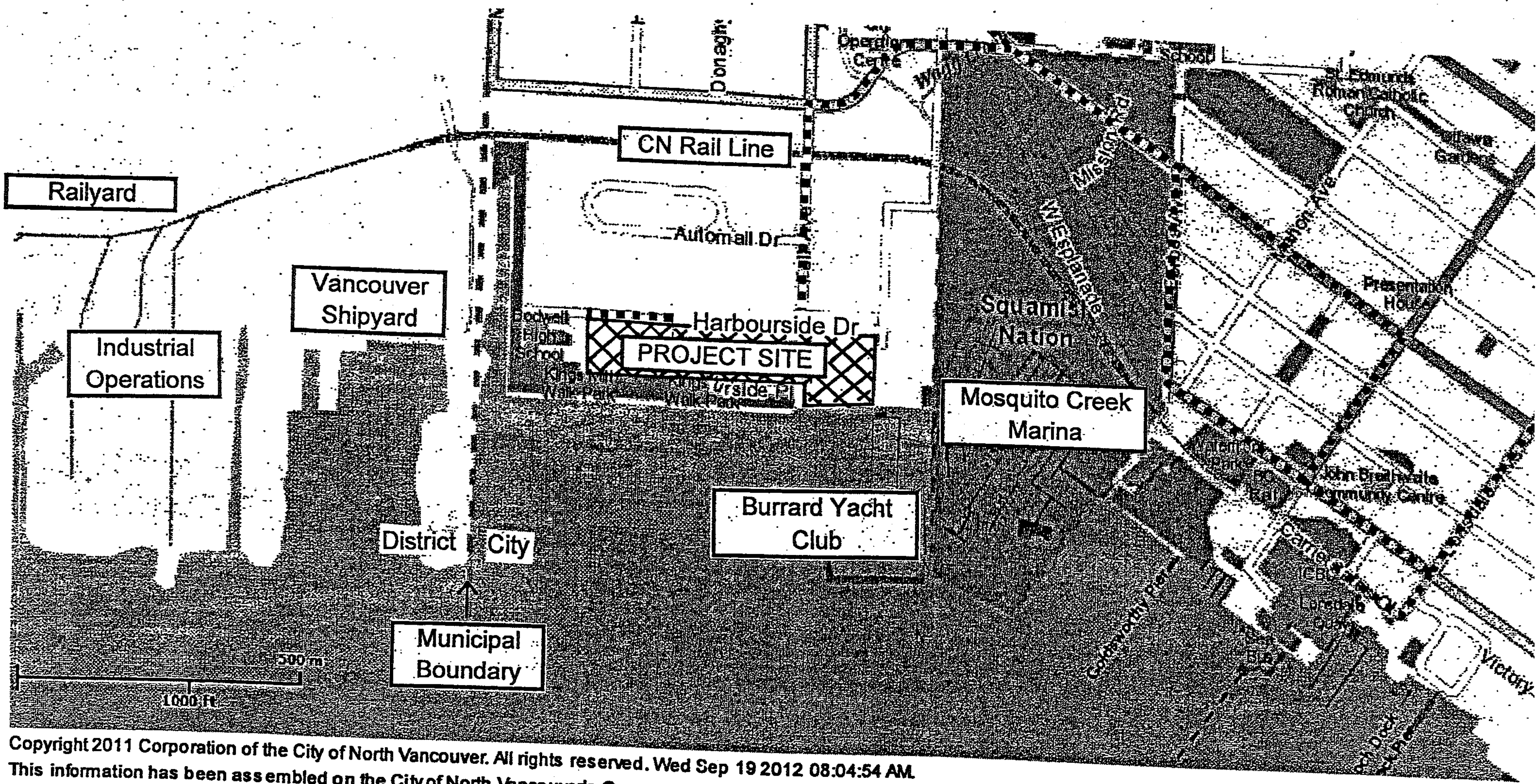
This preliminary report, or future review of any related documentation (e.g. window/door shop drawings, restrictive covenants, etc.), is not a certification of on-site noise levels or any aspect of the construction details. Our review does not include other potential concerns such as privacy between suites (e.g. BCBC 5.9 & 9.11), isolation of common/amenity areas from suites, plumbing noise, mechanical/electrical noise, single event peak levels, unusual float plane, industrial or traffic activities, construction related activity, public utilities noise, emergency sources, non-acoustical items (e.g. infiltration of precipitation, mould, mildew or other fungus), etc.

Coordination of acoustical recommendations, field reviews and letters of assurance should be provided by the Registered Professional of Record of the project.

5.0 CONCLUSION

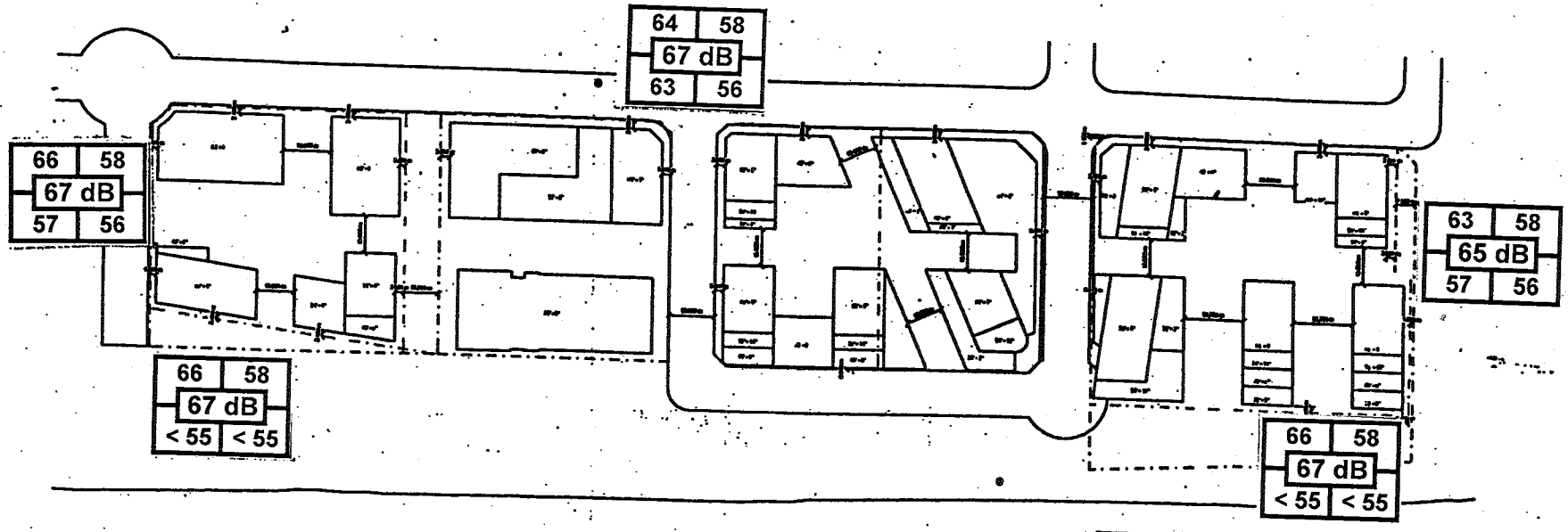
Our preliminary evaluation indicates the proposed Harbourside Waterfront development, at 801 - 925 Harbourside Drive and 18 Fell Avenue, City of North Vancouver, can be designed to meet CMHC's interior design noise level criteria used by the City of North Vancouver. The architectural design will not be limited by acoustical considerations. During the building permit phase, the proposed facade component design for the individual parcels should be evaluated with reference to the design criteria.

APPENDIX



This information has been assembled on the City of North Vancouver's Geographic Information System. Data provided herein s derived from a number of sources with varying levels of accuracy. The City of North Vancouver disclaims all responsibility for the accuracy or completeness of information contained herein.

EXTERIOR DESIGN NOISE LEVELS, Leq(24)



CONCERT PROPERTIES LTD.
Re: Harbourside Waterfront
BSA No.: 798.102

HCMA

Harbourside

Site Plan

A100

PROJECT: 798.102
CONCERT PROPERTIES LTD.

22-AUG-12

TABLE 1: HARBOURSIDE WATERFRONT, NORTH VANCOUVER
Typical Interior Noise Level Calculation
(Analysis ref. NRC's IBANA-Calc)

#/UNIT ELEM	LOCATION / SUITE	ROOM TYPE	EST. ROOM ABSORP (A) sq.m	FACE	EXTERIOR NOISE LEVEL (dB)		FACADE AREA (S) sq.m	S/A	S/A (dB)	TYPE OF FACADE	NOISE REDUCT'N (dB)	INTERIOR LEVEL (dB)	CRITERION (dB)	MARGIN (dB)
1.	Reference Suite (SW corner) 10 sq.m. room	Corner Bedroom	12.5	South	67	Window:	8.0	0.64	-1.9	G33	34.9	32.1	**6-13-4 thermal glazing**	
				West/East (incl. poss. refl.)	67	Window:	8.0	0.64	-1.9	G33	34.9	32.1	**6-13-4 thermal glazing**	
											TOTAL Lp=	35	35	0

Noise reduction data ref: NRC's IBANA-Calc, related validation studies, source spectrum eq. to typical traffic.

G29: Standard thermal glazing.
G30: 5-11-3 thermal glazing (OITC 26, STC 32)
G32: 5-13-3 or 6-9-4 thermal glazing (OITC 28, STC 35)
G33: 6-13-4 or 6Lam-9-4 thermal glazing (OITC 29, STC 36/37)
G34: 6Lam-11-4 thermal glazing (OITC 30, STC 37)
G36: 6Lam-13-5 thermal glazing (OITC 32, STC 39)

W34: Standard exterior construction meeting Code requirements.
W36: with 2x interior GWB, or equivalent.
W37: with 1x interior GWB on resilient channels.
W39: with 2x interior GWB on resilient channels.
W45: Heavy ext. finish (e.g. Brick, stucco, etc), airspace, OSB on standard exterior construction, or equivalent.

slD27: Standard sliding glass door with standard thermal glazing (OITC 24, STC 29)
slD30: Sliding glass door w. 6/4 thermal glazing (OITC 27, STC 32).
slD31: Sliding glass door w. 6Lam/4 thermal glazing (OITC 28, STC 33).
swD29: Standard exterior swing door with standard thermal glazing (OITC 26, STC 32)
swD32: Swing door with 6/4 thermal glazing (OITC 29, STC 36)
swD33: Swing door with 6Lam/4 thermal glazing (OITC 31, STC 38)

File: c:\2012\08Aug\Harbourside\Table1B\.pln

PROJECT: 798.102 22-AUG-12

EVALUATION OF INDUSTRIAL/SHIPYARD & OTHER COMMERCIAL NOISE
(Based on City of North Vancouver By-law # 5819 & District By-law #7188)

		Maximum Permissible Sound Levels (Activity Area, dBA) [1] @ Point of Reception
Daytime: (0700-2000), dBA		60
Nighttime: (2000-0700), dBA		55
Corr'n for equiv. 24 Hr Leq:	Day:	-3
	Night:	-3
Equiv. Leq(24):	Day:	57
	Night:	52
Max. permissible indust./shipyard noise @ project site	Leq(24):	58
Equiv. contrib. from intermittent noise (non-continuous) [2]		+3
Leq(24) at SW corner of project: (no shielding).	Leq(24):	61
Allowance for possible industrial and other commercial work: [3]		+5
Design Leq(24) for industrial, shipyard and commerical noise:		66 dB

Notes:

(1) Continuous sound: more than 3 minutes in any 15 minute period.
Non-Continuous sound considered up to 3 minutes in any 15 minute period.
Specified levels are consistent for both By-laws (5819 & 7188, appended).

(2) Based on discussions with Mr. Tony Matergio (Vancouver Shipyard, 604-990-3348), typical shipyard noise will primarily be 'Continuous' noise sources, as defined under the By-law.
For design, we have included a further equivalent contribution for non-continuous noise (+3 dB), to allow for possible intermittent noise. Design Leq(24) noise based on clear line of sight to noise sources.

(3) e.g. industry to west, Burrard Yacht Club and Mosquito Creek Marina.

Sample daytime measurements conducted near the southwest corner of the project site indicate 55.5 dBA (Leq, Fig. 1, appended).

Brown Strachan Associates
Consulting Engineers in Acoustics

BSA CMHC ROAD AND RAIL NOISE v4.3g
RUN DATE: 30-OCT-12
File: north-2

CONCERT PROPERTIES LTD. PROJECT NUMBER: 798.102
Future traffic noise level at facades along Harbourside Drive.

	Harbourside	
POSTED SPEED..	50 kph	42.5
VOLUME PER DAY	10600	40.3
% OF TRUCKS...	3.0%	1.8
DISTANCE.....	12.0m	4.0
GROUND EFFECT.	(N)	0.0
INCLUDED ANGLE	180 deg	0.0
GRADIENT.....	0.0%	0.0
INTERSECTION..	(N)	0
BARRIER EFFECT	#1 (N)	0.0
		62.6dB

TOTAL TRAFFIC NOISE LEVEL: 63dB Leq (24hr)

Brown Strachan Associates
Consulting Engineers in Acoustics

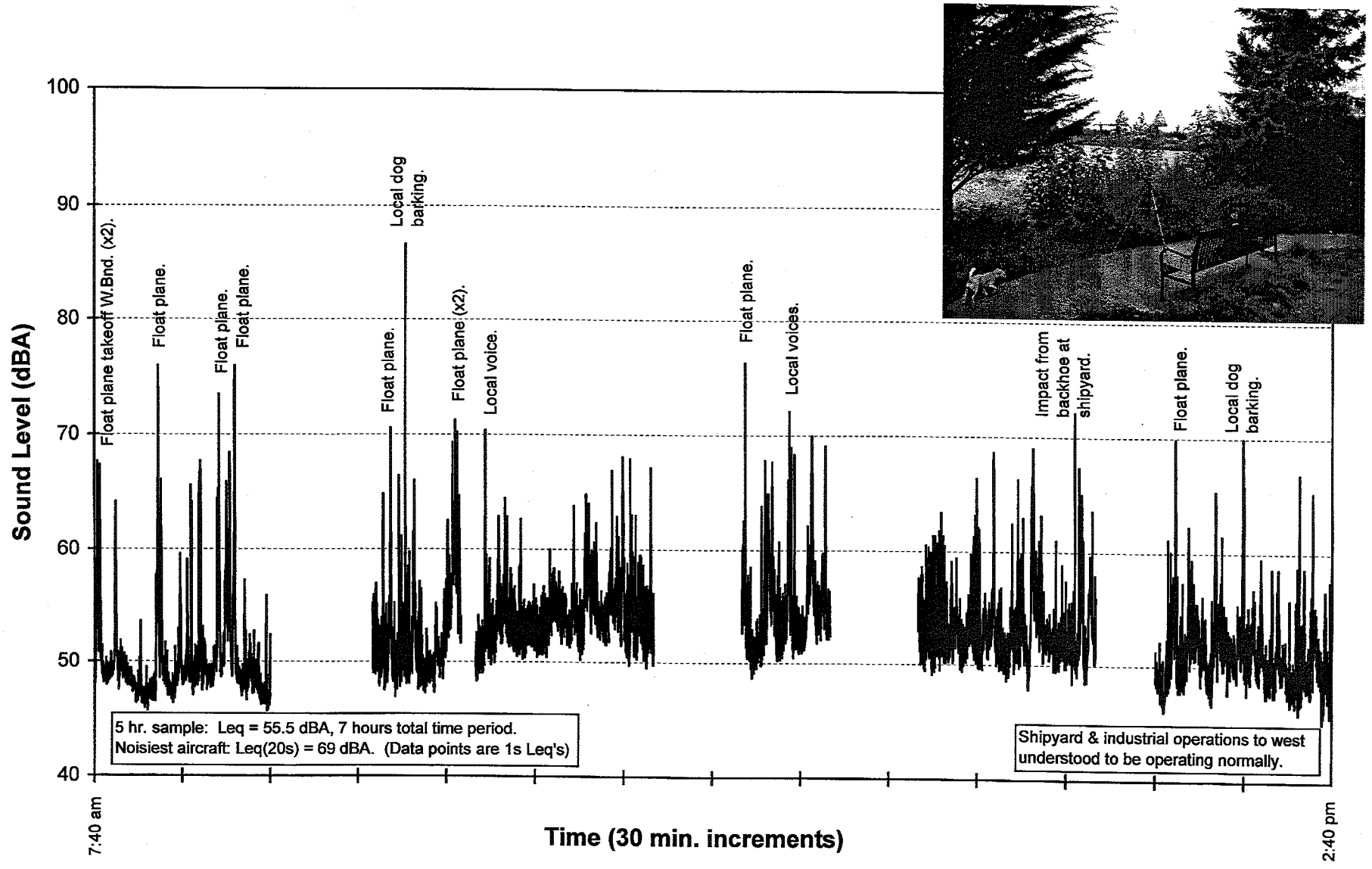
PROJECT: 798.102 15-AUG-12

TABLE 2: **CMHC TRAIN NOISE EVALUATION**

FREIGHT TRAIN ACTIVITY ON CN LINE	DATA	NOISE LEVEL (dB)
NO. OF TRAINS/DAY (Movements)	16	(Norm.: 8-12, ref. 821.111)
AV. NO. OF LOCOS./TRAIN	3	
AV. NO. OF CARS/TRAIN	100	
SPEED OF TRAINS (mph)	10	
DISTANCE TO TRACKS (m)	300	(Nom. to nearest)
NUMBER OF CROSSINGS	4	
REFERENCE ENGINE NOISE @ 30m / 80km/h. (48 loco's/day, 33 cars/loco).		66
CORR'N: UP TO 34 km/h		-5
ENGINE NOISE @ 30m		61
WHEEL-RAIL NOISE @ 30m (1600 cars/day, up to 27 km/h)		56
ENGINE + WHEEL RAIL NOISE @ 30m.		62
CORR'N: FOR DIST. TO TRACKS (300 m)		-10
SUM OF ENGINE + WHEEL RAIL NOISE		52
NOMINAL WHISTLE NOISE (UP TO 320m TO CROSSING) (300 m FROM TRACKS)		41
CORR'N: TRAIN SPEED / # OF TRAINS per DAY		17
POSSIBLE WHISTLE NOISE (Cont. for 400m up to crossing)		58
CORR'N FOR EQUIV. 10 SEC. WHISTLE/MOVEMENT		-9
CORR'N FOR 4 CROSSINGS		6
DESIGN WHISTLE NOISE		55
DESIGN FREIGHT TRAIN NOISE (24 hr. Leq)		57
DESIGN RAILYARD ACTIVITY (Fig. 2, appended)		51
TOTAL DESIGN TRAIN/RAILYARD NOISE, Leq(24)		58

FIG. 1: Measured samples of existing daytime sound level at test location.

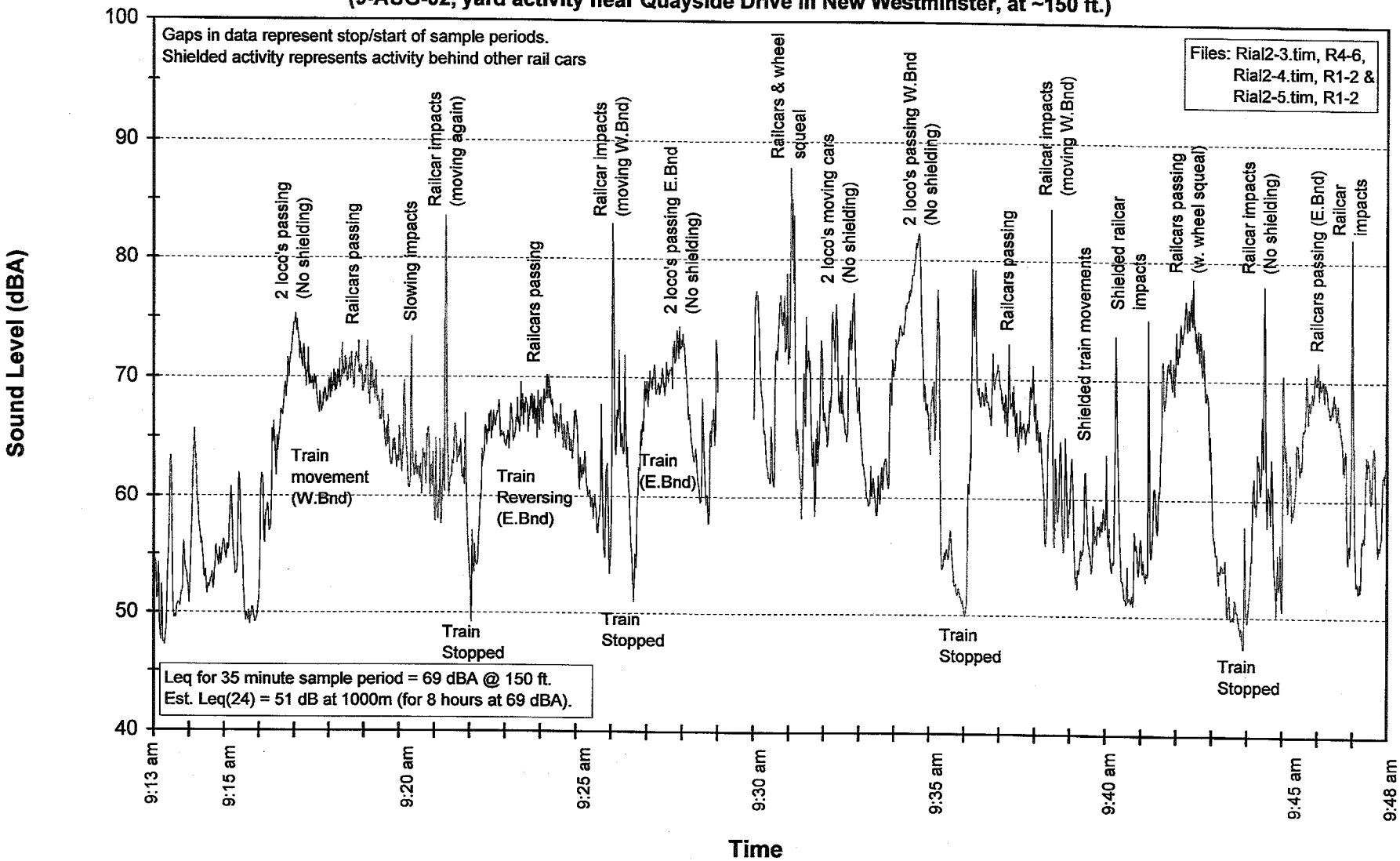
(Wednesday August 8, 2012, approx. 28m south of SW corner of property line.)



File:C:\1aaron\2012\08 Aug\Harbourside\harbour1.xls Figure SUMM

FIG. 2: Measured Sample of Railyard Operations, Design Data for Harbourside Development

(9-AUG-02, yard activity near Quayside Drive in New Westminster, at ~150 ft.)



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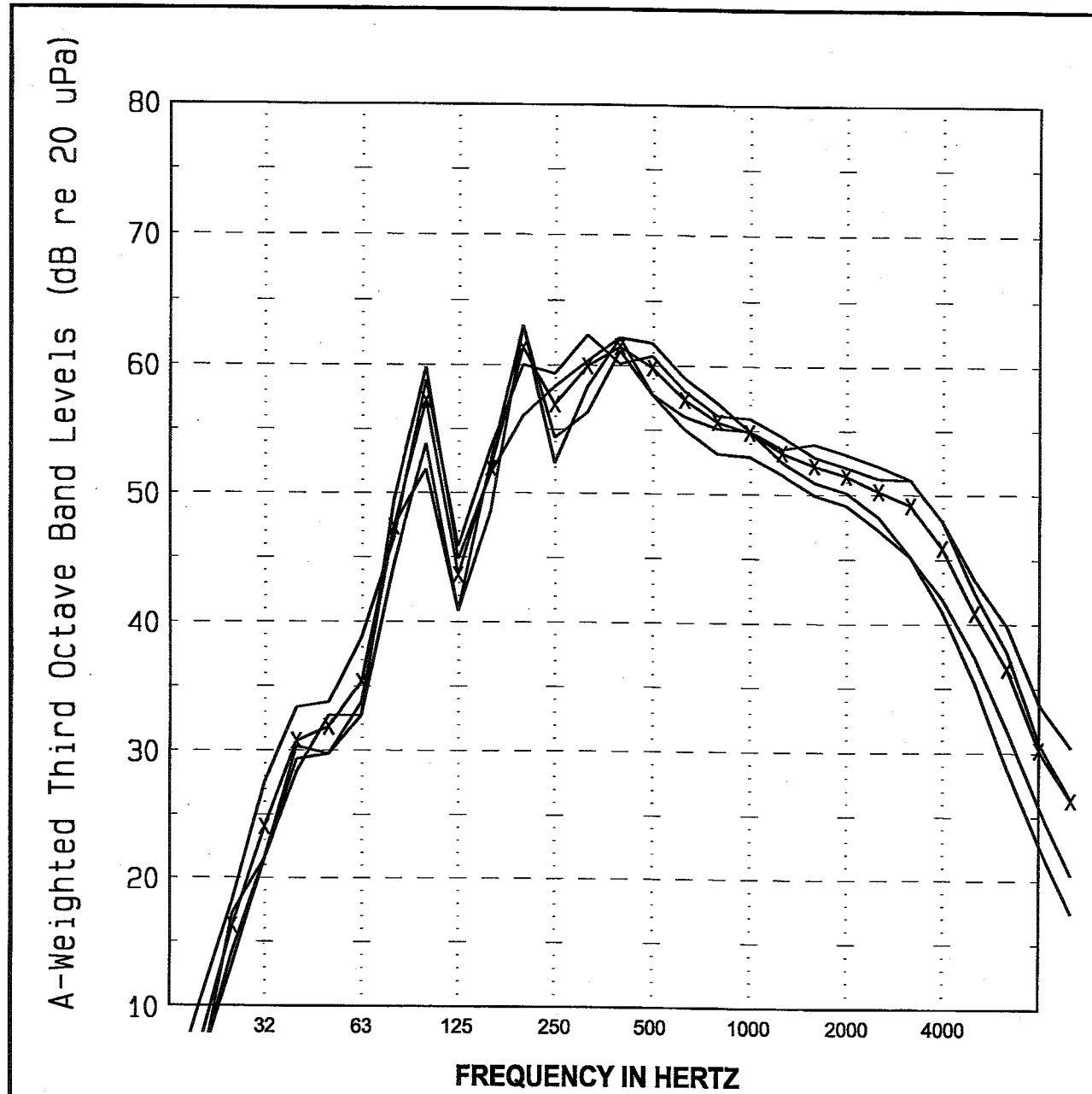


LEGEND

—— Measured samples of float plane noise level during take-offs from Coal Harbour, south of project site.

x——x Average Leq = 69 dBA.

N.B. Measured samples are 20s Leq's. Meas. location near southwest corner of project site.

Leq (24hr) = 56 dBA for 200 flights per day.

PROJECT
CONCERT PROPERTIES LTD.
Re: Harbourside Village.

GRAPH TITLE
Evaluation of float plane noise levels.

GRAPH NUMBER A-1
FILE: FLOAT-1

PROJECT NUMBER	DATE
798.102	8-AUG-12

HARBOUR AIR SEAPLANES

Routes and Schedules

30 DEPARTURES

INCL. WESTCOAST AIR FLIGHTS.

From Vancouver to Victoria

April 09, 2012 - September 09, 2012

Public Holidays will operate on a weekend schedule.

Schedules are subject to change without notice. For most up to date information, please log into our Online Booking System to search for flights required and availability.

FLIGHT NUMBER	DEPART TIME	ARRIVAL TIME	DAY OF WEEK
WCA #323	07:00	07:30	M-F
2030	07:20	07:55	M-F
205	07:40	08:15	M-F
WCA #327	08:00	08:30	DAILY
2050	08:20	08:55	M-F
207	08:40	09:15	DAILY
WCA #331	09:00	09:30	DAILY
2070	09:20	09:55	M-F
209	09:40	10:15	DAILY
2090	10:20	10:55	M-F
211	10:40	11:15	DAILY
2110	11:20	11:55	M-F
213	11:40	12:15	DAILY
215	12:40	13:15	DAILY
WCA #349	13:20	13:55	M-F
217	13:40	14:15	DAILY
2170	14:20	14:55	M-F
219	14:40	15:15	DAILY
WCA #361	15:00	15:30	M-F
2190	15:20	15:55	M-F
221	15:40	16:15	DAILY
WCA #371	16:00	16:30	DAILY
2210	16:20	16:55	DAILY
223	16:40	17:15	M-F
WCA #377	17:00	17:30	DAILY
2230	17:20	17:55	DAILY

From Victoria to Vancouver

April 09, 2012 - September 09, 2012

Public Holidays will operate on a weekend schedule.

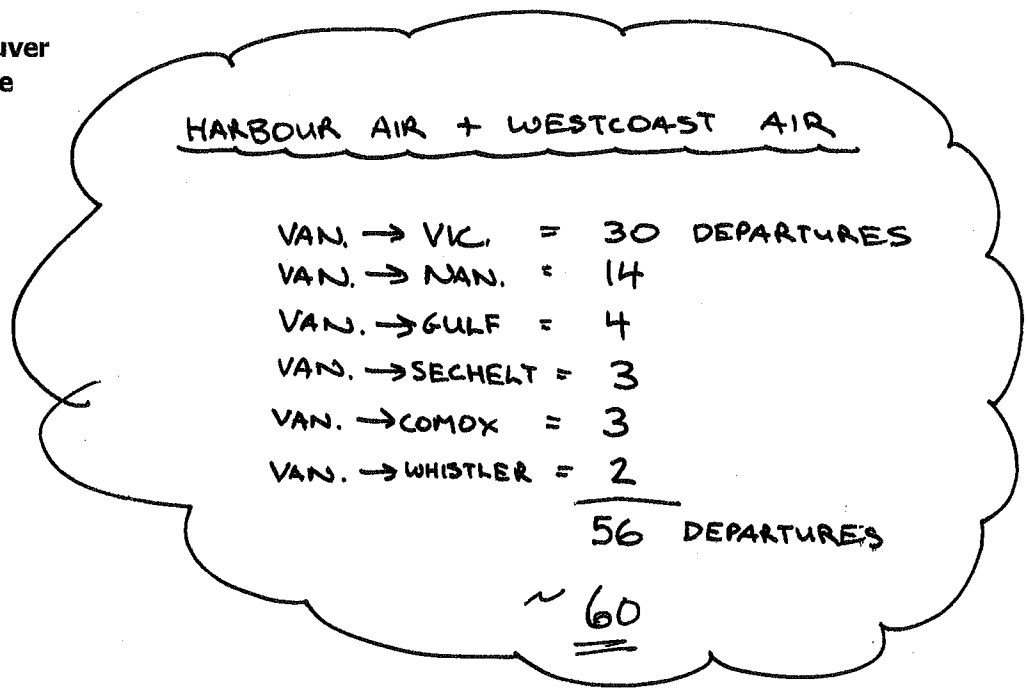
Schedules are subject to change without notice. For most up to date information, please log into our Online Booking System to search for flights required and availability.

FLIGHT NUMBER	DEPART TIME	ARRIVAL TIME	DAY OF WEEK
WCA #322	07:00	07:30	M-F
2020	07:20	07:55	M-F
204	07:40	08:15	M-F
WCA #326	08:00	08:30	DAILY
2040	08:20	08:55	M-F
206	08:40	09:15	DAILY
WCA #330	09:00	09:30	DAILY
2060	09:20	09:55	M-F
208	09:40	10:15	DAILY
2080	10:20	10:55	M-F
210	10:40	11:15	DAILY
WCA #340	11:20	11:55	M-F
212	11:40	12:15	DAILY
214	12:40	13:15	DAILY
2140	13:20	13:55	M-F
216	13:40	14:15	DAILY
218	14:40	15:15	DAILY
WCA #360	15:00	15:30	DAILY
2180	15:20	15:55	M-F
220	15:40	16:15	DAILY
WCA #370	16:00	16:30	M-F
2200	16:20	16:55	DAILY
222	16:40	17:15	DAILY
WCA #376	17:00	17:30	DAILY
2220	17:20	17:55	DAILY
224	17:40	18:15	M-F

225	17:40	18:15	M-F	WCA #380	18:00	18:30	DAILY
WCA #381	18:00	18:30	DAILY	2240	18:20	18:55	DAILY
2250	18:20	18:55	DAILY	226	19:00	19:35	DAILY
227	19:00	19:35	DAILY				

Please note
Check-in is no later than 25 minutes prior to departure time.
Luggage allowance is 25 lbs.
Luggage allowance is 50 lbs between Victoria and Nanaimo to Richmond(YVR)
Luggage allowance is 25 lbs between Victoria and Whistler
Fares are listed in Canadian funds and are subject to HST (harmonized sales tax), fuel surcharge and port/dock fees (where applicable).

604.274.1277 in Vancouver
1.800.665.0212 Toll Free



Karen

It might be helpful for them to refer to this study regarding the rail crossing. It does recommend barrier control at the Bewicke Avenue crossing which would remove the whistle issue at that location. No funding has been sorted for this upgrade and it may come under Concert DCC's.

http://www.cnv.org/attach/2011%2005%2009%20item%2003%20attach%2002.pdf

With regard to traffic noise section, the following provides a snap shot on Harbourside Drive (between Fell and Harbourside Place)

The current two-way vehicle volume on Harbourside Drive is around 470 movements in the PM peak-hour period. It represents 8% of the daily volume, based on the 24-hour count we conducted on Fell Avenue. Hence the all- day flow is around 5,900 vehicles per day.

With the implementation of the rezoning plan, the volume is projected to increase to 850 vehicles on Harbourside Drive in the PM peak-hour period, and this equates to around 10,600 vehicles per day.

The noise engineer can round these figures up if necessary.

He can also quote Bunt and Associates Transportation Study for Harbourside Waterfront.

He can contact me directly with other questions / clarifications.

Regards,
Paul

Paul Dorby, M.Sc. | Senior Transportation Planner
Bunt & Associates Engineering (BC) Ltd.
p 604 685 6427 Ext 229 f 604 685 6579 | www.bunteng.com

From: Karen Marler [mailto:k.marler@hcma.ca]
Sent: Sunday, October 28, 2012 10:25 AM
To: Paul Dorby
Subject: FW: Harbourside Village - draft report

Paul
Please review the Traffic Noise, Train Noise and Float Plane Noise sections – page 5 to 7.
Your comments welcome.

KAREN MARLER
PRINCIPAL, Architect AIBC, AAA, SAA, OAA, FRAIC, LEED® AP

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SUMMARY OF MAXIMUM PERMISSIBLE SOUND LEVELS

as provided in the

Noise Control Bylaw 5819

of the

City of North Vancouver

Bylaw Section		Maximum Sound Level	
303	Quiet Area – night time	45	
	Quiet Area - daytime	55	
304	Mixed Area – night time	50	
	Mixed Area – daytime	55	
305	Activity Area – night time	55	
	Activity Area - daytime	60	
306	Non-continuous Sound – night time	75	
	Non-continuous Sound - daytime	80	
317	Commercial Premises – night time	65	C-weighted
	- daytime	70	C-weighted
307	Construction Noise Levels	85	
	Power Lawnmower, etc. – daytime	77	
308	Vehicles on highways with speed limits:		
	50 m/h or less – under 2200 kg.	70	
	Licensed Net Weight		
	- over 2200 kg.	75	
	Licensed Net Weight		
	Over 50 km/h – under 2200 kg.	75	
	Licensed Net Weight		
	- over 2200 kg.	85	
	Licensed Net Weight		

Sound levels noted in the table are dB(A) **unless otherwise noted, and** measured at the "point of reception".
Night time – 2000 hours of one day to 0700 hours of the following day.
Day time - 0700 hours to 2000 hours of the same day.

For further information or clarification, you are required to refer to the bylaw.

THE CORPORATION OF THE DISTRICT OF NORTH VANCOUVER

BYLAW 7188

A bylaw to regulate or prohibit the making of certain noises in the District of North Vancouver pursuant to s. 724 of the *Municipal Act*, R.S.B.C. 1996 c. 323.

The Council for The Corporation of the District of North Vancouver enacts the following:

Title

1. This bylaw may be cited as **"NOISE REGULATION BYLAW".**

2. **Definitions**

In this bylaw,

"Activity Zone" means any part of the District not within the Quiet Zone;

"Construction Noise" means any noise or sound made by

a) the carrying on of works in connection with the construction, demolition, reconstruction, alteration, or repair of any building or structure,

b) the carrying on of any excavation by machinery or heavy equipment, or

c) the moving or operating of any kind of machine, engine or construction equipment;

(7334)

"Construction Project" means the construction, demolition or reconstruction of a building or structure, or a portion of a building or structure, greater than 500 square feet in area;

(7334)

"Continuous Sound" means any noises or sound continuing for a period of, or periods totalling, three minutes or more of any fifteen minute period, but excludes a Construction Noise;

"Day" means the period of time from 07:00 to 20:00 on each week day or Saturday; and from 09:00 to 20:00 on a Sunday or holiday;

"Daytime Average Sound Level" means the average acoustic energy of Sound Levels measured continuously during the Day, expressed as equivalent sound level (Leq),

"Earth-Moving Equipment" means any Motor Vehicle which is used or designed to be used for the transportation of sand, gravel, rock or other substances of which land is composed and which is operated on that portion of GVWD Property described as all lands that are located within the area bound by the centerline of the BC Hydro rights-of-way as shown on Explanatory Plan 15350 and Explanatory Plan 9219, and a line parallel to and 14 meters west of that BC Hydro centerline as shown shaded on the plan prepared by Parks and Engineering GIS staff and attached as Schedule "A" to this bylaw;

"GVWD Property" means the lands and premises located in the District of North Vancouver and more particularly described in Schedule "B";

building structure, except that the Council may by resolution relax this provision for special events in the municipality;

f) any noises or sounds continuing for any period of time created by Earth-Moving Equipment exceeding a maximum Sound Level of 80 dBA or any noises or sound continuing for any period of time created by Earth-Moving Equipment which causes the Daytime Average Sound Level to exceed 65 dBA (Leq) at the point of reception.

g) construction noise is prohibited in the block bounded by Fromme, Ross, Sunnyhurst, and East 29th Roads, described as:

Lot 22, Blocks 52 and 53, District Lot 2022, Plan 1410 P.I.D. (014-650-975);
Lot 23, Block 52 & 53, District Lot 2022; Plan 1410 P.I.D. (014-651-009);
Lot B (Explanatory Plan 4275) of Lots 1 and 2, Block 52 and 53, District Lot 2022, Plan 1410 P.I.D. (014-651-106);
Lot A (See 228257L) of Lots 24 and 25, Blocks 52 and 53, District Lot 2022, Plan 1410
P.I.D. (011-435-216);
Lot B of Lots 24 and 25, Blocks 52 and 53, District Lot 2022, Plan 1410
P.I.D. (014-651-131);
Lot C (Explanatory Plan 9441), Blocks 52 and 53, District Lot 2022, Plan 1410
P.I.D. (014-651-033);
Lot 5, Blocks 52 and 53, District Lot 2022, Plan 1410 P.I.D. (014-650-941);
Lot 4, Blocks 52 and 53, District Lot 2022, Plan 1410 P.I.D. (004-498-500);
Lot 3, Blocks 52 and 53, District Lot 2022, Plan 1410 P.I.D. (014-650-932);
Lot 6, Except Part in Reference Plan 19657, Blocks 52, District Lot 2022, Plan 1410
P.I.D. (014-650-959);

between the hours of:

7:00 p.m. and 7:00 a.m. weekdays from March 2 to October 15;
7:00 p.m. and 7:30 a.m. weekdays from October 16 to March 1;
1:00 p.m. and 9:00 a.m. Saturdays, year-round; and
all day Sundays and statutory holidays.

(7256)

h) construction noise is prohibited in the blocks bounded by Fromme, Harold, Sunnyhurst and Ross Roads, as outlined in Schedule D, between the hours of 5:30 p.m. and 8:00 a.m. Monday through Friday and all day Saturday and Sunday throughout the time it takes to redevelop the block.

(7279 7256)

i) in addition to the noises or sounds described in subsections 6 a), b), c), d), e), f), g) and h) above;

(7334)

i) any Continuous Sound that exceeds the following Sound Levels at the Point of Reception:

		Sound Level
a.	in a Quiet Zone during the Day	55
b.	in a Quiet Zone during the Night	45
c.	in an Activity Zone during the Day	60
d.	in an Activity Zone during the Night	55;

CMHC's "Road and Rail Noise: Effects on Housing"
(NHA 5156 08/86, ISBN 0-662-11021-0)

Section C — Recommended Levels of Traffic Noise

The acceptance of noise depends on both the characteristics of that noise and the activities of the listeners. The activities most affected by noise fall into two categories, corresponding to two different criteria. For activities similar to speech communication (including listening to radio and television), the first requirement is that the noise level does not interfere significantly with comfortable speech communication or with listening to soft music. The other important category is sleeping: noise, especially at night, should not interfere with normal sleep patterns.

To deal with the fluctuating noise level from road or rail traffic, it is convenient to describe it in terms of the equivalent level (L_{eq}). This is the level of a steady sound having the same energy, at a given time, as the fluctuating sound. For the purposes of this document, the A-weighted 24-hour equivalent sound level is used as the basic noise descriptor. This noise measure has been extensively tested in numerous social surveys. Of the commonly used noise descriptors, it is among the easiest to measure or to predict accurately, and no other descriptor has been shown to provide a significantly better prediction of the community response to noise.

Hereafter "noise level" expressed in decibels (dB) should be taken to mean the A-weighted 24-hour equivalent sound level.

The maximum equivalent level that will not impair sustained conversational speech is 40 dB. Noise above this level causes people to raise their voices and therefore is not acceptable for a quiet indoor environment. In order to hear quieter passages of music, a level of about 35 dB would be preferred. Communication in a slightly raised voice is acceptable in kitchens and bathrooms and usually in outdoor recreation areas.

Sleep arousal and interference with going to sleep depend on the level of noise and on the fluctuations in level or character that occur. A useful criterion is that the maximum levels should not exceed the indoor background level by more than about 5 dB. Quiet interior levels range from 25 to 35 dB. Normally night-time traffic is less than day-time traffic and the 24-hour average level provides a fair measure of maximum night-time levels. The maximum level acceptable in bedrooms is 35 dB.

Outdoor noise levels should be considered as well as indoor because residential areas ought to include some space for outdoor recreation, such as patios, balconies and play areas. Experience indicates that somewhat higher noise levels are generally more acceptable outside than inside. An appropriate outdoor noise level is 55 dB, which would correspond typically to an indoor level of 40 dB. These levels would permit conversation at close range or in a slightly raised voice most of the time. Such background noise may serve the purpose of masking more specific sounds, such as conversation on a neighbour's patio.

To meet these various criteria of acceptable noise levels, the levels given in Table 1 are recommended:

Table 1

Maximum acceptable levels of road and rail traffic noise in dwellings and in outdoor recreation areas.

Room	Noise Level
Bedrooms.....	35 dB
Living, dining, recreation rooms.....	40 dB
Kitchens, bathrooms, hallways, utility rooms.....	45 dB
Outdoor recreation area.....	55 dB