

Environmental Noise Control Study – Stationary Noise Component Proposed Residential Development

910 March Rd
Ottawa, Ontario

Prepared for Canadian Rental Development Services

Report PG6416-2 dated April 17, 2024

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1.0 Introduction

Paterson Group (Paterson) was commissioned by Canadian Rental Development Services to conduct a Stationary Noise Review for the proposed residential development to be located at 910 March Road located within the City of Ottawa. It should be noted that Paterson's report was solely prepared to review the stationary noise source of commercial fluid coolers (Direct Coil fluid cooler or equivalent) affixed to the roofs of the proposed residential buildings and its effects on the neighbouring residential houses and the outdoor living areas associated with the proposed development.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes acoustical recommendations for the design and construction of the subject development as they are understood at the time of this report's writing.

This study has been conducted according to the City of Ottawa document - Engineering Noise Control Guidelines (ENCG), dated January 2016, and the Ontario Ministry of the Environment Guideline NPC-300.

2.0 Background

It is understood that the proposed development will consist of two residential buildings (Building A and Building B). The residential development will consist of 391 residential units and 3 commercial units. Associated walkways, driveways, parking areas, and landscaped areas are further anticipated. Outdoor living areas consisting of at-grade amenity areas, terraces, and balcony terraces are also anticipated at the proposed residential buildings.

3.0 Methodology and Noise Assessment Criteria

Stationary Noise

Stationary noise sources include sources or facilities that are fixed or mobile and can cause a combination of sound and vibration levels emitted beyond the property line. These sources may include commercial air conditioner units, generators, and fans. Facilities that may contribute to stationary noise may include car washes, snow disposal sites, transit stations and manufacturing facilities. In this situation, the stationary noise source consists of commercial fluid coolers affixed to the rooftops of the proposed residential buildings.

The impact of stationary noise sources is directly related to the subject site's location within the urban environment. The proposed residential development can be classified as Class 2 by provincial guidelines and outlined in the ENGC, meaning “suburban areas of the city outside of the busy core where the urban hum is evident but within the urban boundary”.

Table 1 - Guidelines for Stationary Noise - Class 2		
Time of Day	Outdoor Point of Reception	Pane of Window
7:00-19:00	50	50
19:00-23:00	45	50
23:00-7:00	-	45
Standards taken from Table 3.2a; Guidelines for Stationary Noise - Steady and Varying Sound		

If the sound level limits are exceeded the following Warning Clause may be referenced:

Table 2 – Warning Clauses for Sound Level Exceedances	
Warning Clause	Description
Warning Clause Type E	"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible."
Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines - NPC-300	

4.0 Analysis

It is understood that the proposed residential buildings will contain rooftop mechanical units that has the potential to be beyond acceptable levels for the residents of the proposed buildings and the surrounding residential dwellings. The exposed rooftop mechanical units will be Direct Coil Fluid Coolers Model FC09AV6D216T5 or equivalent as specified by the Canadian Rental Development Services . Based on conversations with the client it is understood that there will be a total of two rooftop units.

A standard “unit”, with typical power levels specified within Predictor-LimA was utilized for the analysis. The following table outlines the equipment sound power levels in decibels (dBA) that were used in the analysis. According to the Fluid Cooler specifications provided by the client, the units will create 68 dBA of sound from the fans. The data chosen in Predictor-LimA is slightly higher to ensure a conservative approach.

Table 3 – Equipment Sound Power Levels (LwA)									
Description	Frequency (Hz)								
	63	125	250	500	1000	2000	4000	8000	LwA
dBA Level	67.80	76.80	83.80	86.8	85.80	83.30	78.80	71.80	91.46
Values for Fluid Cooler [dB(A)] as per Predictor LimA									

Predictive noise analysis was completed using Predictor-Lima Version 2021.1. Predictor-LimA is a state-of-the-art environmental noise modeling software using International Standards Organization (ISO) standard 9613 parts 1 and 2.

For the analysis, it is assumed that the terrain is relatively flat. A hard, reflective surface was utilised for the proposed development and the neighbouring area.

Thirty-six (36) reception points were selected for the analysis. The reception points were located at the designated outdoor living spaces for the proposed development and the neighbouring residential buildings. It should be noted that no meteorological corrections were performed for the analysis.

5.0 Discussion

Stationary Noise

The exterior noise levels due to rooftop equipment sources were analysed with the Predictor-LimA Version 2021.1 software at the reception points. The input and output data of the Predictor-LimA modelling can be found in Appendix 4, and the summary of the results can be found in Table 4.

Reception Point	Height Above Grade (m)	Receptor Location	Noise Levels (dBA)	
			Day	Night
REC 1	1.5	Residential Dwelling	23.32	23.32
	4.5		21.46	21.46
REC 2	1.5	Residential Dwelling	23.30	23.30
	4.5		21.44	21.44
REC 3	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 4	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 5	1.5	Residential Dwelling	22.50	22.50
	4.5		20.82	20.82
REC 6	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 7	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 8	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 9	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
RED 10	1.5	Residential Dwelling	23.65	23.65
	4.5		22.01	22.01
REC 11	1.5	Residential Dwelling	19.68	19.68
	4.5		18.11	18.11
REC 12	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 13	1.5	Residential Dwelling	23.13	23.13
	4.5		21.60	21.60
REC 14	1.5	Residential Dwelling	17.55	17.55
	4.5		16.17	16.17
REC 15	1.5	Residential Dwelling	17.46	17.46
	4.5		16.08	16.08
REC 16	1.5	Residential Dwelling	22.83	22.83
	4.5		21.44	21.44

Table 4 – Exterior Noise Levels due to Rooftop Mechanical Units – Stationary Noise				
Reception Point	Height Above Grade (m)	Receptor Location	Noise Levels (dBA)	
			Day	Night
REC 17	1.5	Residential Dwelling	22.46	22.46
	4.5		20.85	20.85
REC 18	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 19	1.5	Residential Dwelling	n/a	n/a
	4.5		n/a	n/a
REC 20	1.5	Residential Dwelling	26.88	26.88
	4.5		25.60	25.60
REC 21	4.5	2 nd Floor Patio (south)	n/a	n/a
REC 22	19.50	7 th Floor Patio (south)	n/a	n/a
REC 23	22.50	8 th Floor Patio (south)	n/a	n/a
REC 24	25.50	9 th Floor Patio (south)	n/a	n/a
REC 25	25.50	9 th Floor Patio (east)	n/a	n/a
REC 26	22.50	8 th Floor Patio (east)	n/a	n/a
REC 27	19.50	7 th Floor Patio (east)	n/a	n/a
REC 28	16.50	6 th Floor Patio (east)	n/a	n/a
REC 29	13.50	5 th Floor Patio (east)	n/a	n/a
REC 30	13.50	5 th Floor Patio (north)	n/a	n/a
REC 31	16.50	6 th Floor Patio (north)	n/a	n/a
REC 32	19.50	7 th Floor Patio (north)	n/a	n/a
REC 33	19.50	7 th Floor Patio (west)	n/a	n/a
REC 34	16.50	6 th Floor Patio (west)	n/a	n/a
REC 35	1.5	1 st Floor Patio (north)	n/a	n/a
REC 36	1.5	Outdoor Living Area	34.17	34.17

* n/a - Indicating a negligible dBA value.

6.0 Conclusion

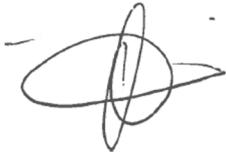
The anticipated noise levels from the proposed equipment for the proposed residential development is considered acceptable while the mechanical equipment is in operation. Therefore, additional noise mitigation measures will not be required.

7.0 Statement of Limitations

The recommendations made in this report are in accordance with our present understanding of the project. Our recommendations should be reviewed when the project drawings and specifications are complete.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Canadian Rental Development Service or his agent(s) is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.



Otilia McLaughlin B.Eng.



Stephanie A. Boisvenue, P.Eng.

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APPENDIX 1

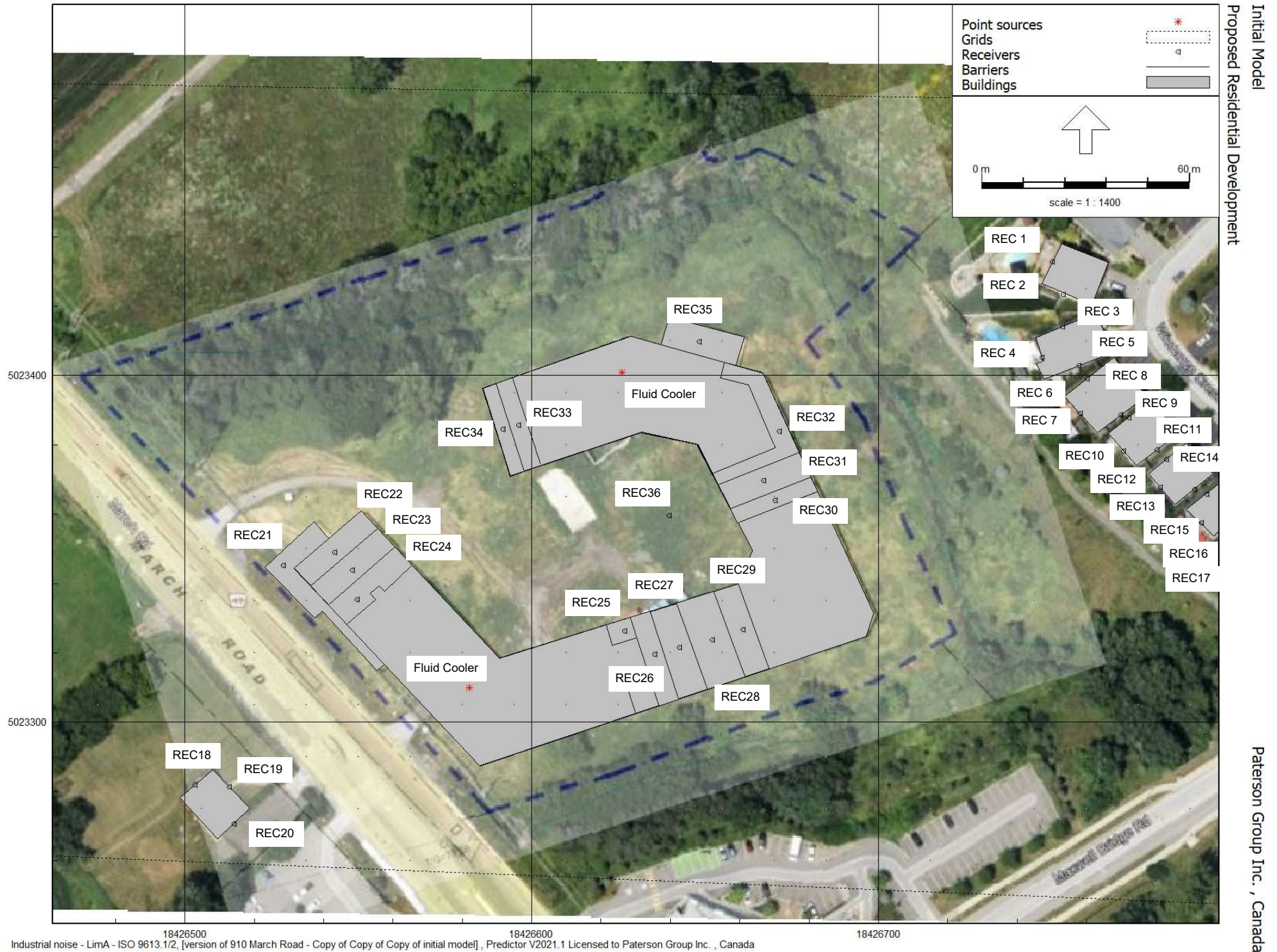
Figure 1 - Model of Proposed Residential Development

Figure 2 - Initial Analysis (Table of Results)

Figure 3 - Initial Analysis (Contour Results)

Item Properties

Figure 1 - Model of Proposed Residential Development



Initial Model
Proposed Residential Development

Paterson Group Inc., Canada

Figure 2 - Initial Analysis (Table of Results)

Paterson Group Inc Table of Results

Proposed Residential Development Stationary Noise Study

Report: Table of Results
 Model: initial model
 LAeq: total results for receivers
 Group: (main group)
 Group Reduction: No

Name Receiver	Description	X	Y	Height	Day	Evening	Night	Lden
REC1_A	Residential Dwelling	18426750.18	5023432.81	1.50	23.32	23.32	23.32	29.72
REC1_B	Residential Dwelling	18426750.18	5023432.81	4.50	21.46	21.46	21.46	27.86
REC10_A	Residential Dwelling	18426770.67	5023378.23	1.50	23.65	23.65	23.65	30.05
REC10_B	Residential Dwelling	18426770.67	5023378.23	4.50	22.01	22.01	22.01	28.41
REC11_A	Residential Dwelling	18426780.39	5023378.56	1.50	19.68	19.68	19.68	26.08
REC11_B	Residential Dwelling	18426780.39	5023378.56	4.50	18.11	18.11	18.11	24.51
REC12_A	Residential Dwelling	18426783.14	5023375.88	1.50	--	--	--	--
REC12_B	Residential Dwelling	18426783.14	5023375.88	4.50	--	--	--	--
REC13_A	Residential Dwelling	18426781.28	5023367.71	1.50	23.13	23.13	23.13	29.53
REC13_B	Residential Dwelling	18426781.28	5023367.71	4.50	21.60	21.60	21.60	28.00
REC14_A	Residential Dwelling	18426791.08	5023367.14	1.50	17.55	17.55	17.55	23.95
REC14_B	Residential Dwelling	18426791.08	5023367.14	4.50	16.17	16.17	16.17	22.57
REC15_A	Residential Dwelling	18426794.73	5023365.71	1.50	17.46	17.46	17.46	23.86
REC15_B	Residential Dwelling	18426794.73	5023365.71	4.50	16.08	16.08	16.08	22.48
REC16_A	Residential Dwelling	18426793.22	5023357.47	1.50	22.83	22.83	22.83	29.23
REC16_B	Residential Dwelling	18426793.22	5023357.47	4.50	21.44	21.44	21.44	27.84
REC17_A	Residential Dwelling	18426801.57	5023358.28	1.50	22.46	22.46	22.46	28.86
REC17_B	Residential Dwelling	18426801.57	5023358.28	4.50	20.85	20.85	20.85	27.25
REC18_A	Residential Dwelling	18426502.95	5023281.84	1.50	--	--	--	--
REC18_B	Residential Dwelling	18426502.95	5023281.84	4.00	--	--	--	--
REC19_A	Residential Dwelling	18426512.89	5023281.30	1.50	--	--	--	--
REC19_B	Residential Dwelling	18426512.89	5023281.30	4.00	--	--	--	--
REC2_A	Residential Dwelling	18426753.25	5023423.46	1.50	23.30	23.30	23.30	29.70
REC2_B	Residential Dwelling	18426753.25	5023423.46	4.50	21.44	21.44	21.44	27.84
REC20_A	Residential Dwelling	18426514.12	5023270.60	1.50	26.88	26.88	26.88	33.28
REC20_B	Residential Dwelling	18426514.12	5023270.60	4.00	25.60	25.60	25.60	32.00
REC21_A	2nd Floor Patio	18426528.44	5023345.18	4.50	--	--	--	--
REC22_A	7th Floor Patio	18426543.20	5023349.02	19.50	--	--	--	--
REC23_A	8th Floor Patio	18426548.33	5023343.89	22.50	--	--	--	--
REC24_A	9th Floor Patio	18426549.61	5023335.34	25.50	--	--	--	--
REC25_A	9th Floor Patio	18426626.79	5023326.36	25.50	--	--	--	--
REC26_A	8th Floor Patio	18426635.56	5023319.52	22.50	--	--	--	--
REC27_A	7th Floor Patio	18426642.61	5023321.66	19.50	--	--	--	--
REC28_A	6th Floor Patio	18426652.02	5023323.80	16.50	--	--	--	--
REC29_A	5th Floor Patio	18426661.00	5023326.79	13.50	--	--	--	--
REC3_A	Residential Dwelling	18426753.10	5023414.03	1.50	--	--	--	--
REC3_B	Residential Dwelling	18426753.10	5023414.03	4.50	--	--	--	--
REC30_A	5th Floor Patio	18426670.26	5023364.04	13.50	--	--	--	--
REC31_A	6th Floor Patio	18426666.79	5023369.62	16.50	--	--	--	--
REC32_A	7th Floor Patio	18426671.47	5023383.96	19.50	--	--	--	--
REC33_A	7th Floor Patio	18426596.31	5023385.62	19.50	--	--	--	--
REC34_A	6th Floor Patio	18426591.63	5023384.57	16.50	--	--	--	--
REC35_A	1st Floor Patio	18426648.27	5023409.76	1.50	--	--	--	--
REC36_A	Outdoor Living Area	18426639.68	5023359.68	1.50	34.17	34.17	34.17	40.57
REC4_A	Residential Dwelling	18426747.18	5023405.28	1.50	--	--	--	--
REC4_B	Residential Dwelling	18426747.18	5023405.28	4.50	--	--	--	--
REC5_A	Residential Dwelling	18426757.79	5023402.77	1.50	22.50	22.50	22.50	28.90
REC5_B	Residential Dwelling	18426757.79	5023402.77	4.50	20.82	20.82	20.82	27.22
REC6_A	Residential Dwelling	18426760.22	5023399.13	1.50	--	--	--	--
REC6_B	Residential Dwelling	18426760.22	5023399.13	4.50	--	--	--	--
REC7_A	Residential Dwelling	18426758.28	5023389.00	1.50	--	--	--	--
REC7_B	Residential Dwelling	18426758.28	5023389.00	4.50	--	--	--	--
REC8_A	Residential Dwelling	18426769.78	5023388.60	1.50	--	--	--	--
REC8_B	Residential Dwelling	18426769.78	5023388.60	4.50	--	--	--	--

All shown dB values are A-weighted

Paterson Group Inc
Table of Results

Proposed Residential Development
Stationary Noise Study

Report: Table of Results
Model: Copy of Copy of Copy of initial model
LAeq: total results for receivers
Group: (main group)
Group Reduction: No

Name								
Receiver	Description	X	Y	Height	Day	Evening	Night	Lden
REC9_A	Residential Dwelling	18426772.13	5023387.87	1.50	--	--	--	--
REC9_B	Residential Dwelling	18426772.13	5023387.87	4.50	--	--	--	--

All shown dB values are A-weighted

Figure 2 - Initial Analysis (Contour Results)



Initial Model
Contour Results

Paterson Group Inc., Canada

Paterson Group Inc
Item Properties

Proposed Residential Development
Stationary Noise Study

Model: Copy of Copy of Copy of initial model
version of 910 March Road - 910 March Road
Group: (main group)
Listing of: Point sources, for method Industrial noise - LimA - ISO 9613.1/2

Desc.	Pa(h) (D)	Pa(h) (E)	Pa(h) (N)	Lw 63	Lw 125	Lw 250	Lw 500	Lw 1k	Lw 2k	Lw 4k	Lw 8k
Fluid Cooler	12.0000	4.0000	8.0000	67.80	76.80	83.80	86.80	85.80	83.30	78.80	71.80
Fluid Cooler	12.0000	4.0000	8.0000	67.80	76.80	83.80	86.80	85.80	83.30	78.80	71.80