

Environmental Noise Control Study – Stationary Noise Component Proposed Industrial Building

3113 Carp Road
Carp, Ontario

Prepared for Canadian Rental Development

Report PG6422-2 dated May 30, 2023

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1.0 Introduction

Paterson Group (Paterson) was commissioned by Canadian Rental Development to conduct a Stationary Noise Review for the proposed industrial building to be located at 3113 Carp Road, in the City of Ottawa. It should be noted that Paterson's report was solely prepared to review the stationary noise source, which is identified as the adjacent properties (4090 Sand and Gravel Pit).

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 pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

This study has been conducted according to 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

Based on the available conceptual drawings, it is understood that the proposed industrial development will consist of a single-storey commercial warehouse building of slab-on-grade construction along with associated access lanes, delivery areas, parking areas, and landscaped areas. It is further understood that this commercial warehouse will include an office space.

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 an existing sand and gravel pit.

The impact of stationary noise sources is directly related to the location of the subject site within the urban environment. The proposed development can be classified as Class 2 by provincial guidelines and outlined in the ENGC, meaning “a 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

The stationary noise source consisting of the 4090 Sand and Gravel Pit was identified out of the 300 m radius from the proposed development.

It is understood that the northern edge of the 4090 Sand and Gravel Pit property is separated from the southern edge of the potential industrial development by approximately 530 metres. It is understood that the 4090 Sand and Gravel Pit has completed the extraction of the western portion of the pit. The working face is currently at about the midpoint of the site, heading east. Based on the City of Ottawa Official Plan, the 4090 Sand and Gravel Pit is located within the designated Sand and Gravel Resource Area. It may be possible for the aggregate extraction operation at 4090 Sand and Gravel Pit to expand to the east in the upcoming years, but it cannot expand past its north property boundary due to the designated General Rural Area and its south property boundary due to the presence of McGee Side Road. This stationary noise source is considered temporary and all analysis and recommendations made with respect to this stationary noise source can be removed from all deeds of sale once the sand and gravel pit is closed.

The noise sources were modelled as the worst case indicator. The equipment utilized in the analysis is representative of the equipment that is used for sand and gravel excavation. At the time of our site visit, the equipment at 4095 Sand and Gravel Pit consisted of two bulldozers, two loaders, two gravel screeners, one compactor, and three dump trucks into and out of the pit. A break down of the frequency's and sound levels of this equipment are included in Appendix 1.

The 4090 Sand and Gravel Pit is the only stationary noise source near to the proposed development, and it is located out of the 300 m proximity. The analysis was completed with specialized noise software: Predictor-Lima Version 2021.1. Two (2) reception points (REC 1 and REC 2) were selected on the southern and western elevations of proposed single-storey commercial warehouse building for our analysis. The reception points were selected at 1.5 m elevation, so that the pane of glass at the first level of the proposed building could be interpolated. The results of these reception points are included in Appendix 1.

5.0 Discussion

Surface Transportation Noise

Results of the analysis can be found in Appendix 1. Reception points were analyzed at 1.5 m elevation.

Proposed Industrial Building

An analysis was completed for the proposed industrial building, taking into consideration the lot layouts and approximate building alignments. An initial analysis was performed with no sound mitigation measures. If the office is to be located on the south or west elevation, the analysis at the exterior of the proposed building resulted in a maximum value of 52 dBA, which slightly exceeds the 50 dBA limit. If the proposed office is to be located on the northern or eastern elevation, than the noise levels will be below the required 50 dBA.

As per the Environmental Noise Guidelines prepared by the City of Ottawa, the following chart outlines the procedures to follow for exceedances to the stationary noise levels.

Table 3 - Noise Control Measures for New Industrial Building in Proximity to The Stationary Noise Sources at the 4090 Sand and Gravel Pit	
Primary Mitigation Measure in order of Preference	Proposed Mitigation Measure
Insertion of noise insensitive land uses between the source and sensitive receptor	A 530-metre noise insensitive land is inserted between the proposed building and the 4090 Sand and Gravel Pit
Orientation of buildings to provide quiet zones in rear yards, interior spaces and amenity areas	Orientation of building is not required to change for noise mitigation
construction techniques, enhanced construction quality	Standard construction techniques are considered acceptable for the proposed building
earth berms	Earth Berms are not required for noise mitigation
acoustic barriers	Acoustic barriers are not required for noise mitigation

If the proposed office is to be located on the southern or eastern elevation, standard construction building materials are anticipated to be sufficient to provide adequate soundproofing from the neighbouring aggregate pit. Therefore, no additional noise mitigation measures will be required. However, the building should have a provision to include the use of a central air conditioner, to ensure that windows will not need to be opened.

6.0 Conclusion

The anticipated noise level at proposed industrial building is considered acceptable while the 4090 Sand and Gravel Pit is in operation and standard construction materials are utilized to construct the proposed building. Therefore, additional noise mitigation measures will not be required for the proposed office area. However, the building should have a provision to include the use of a central air conditioner, to ensure that windows will not need to be opened.

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 or their 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.



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APPENDIX 1

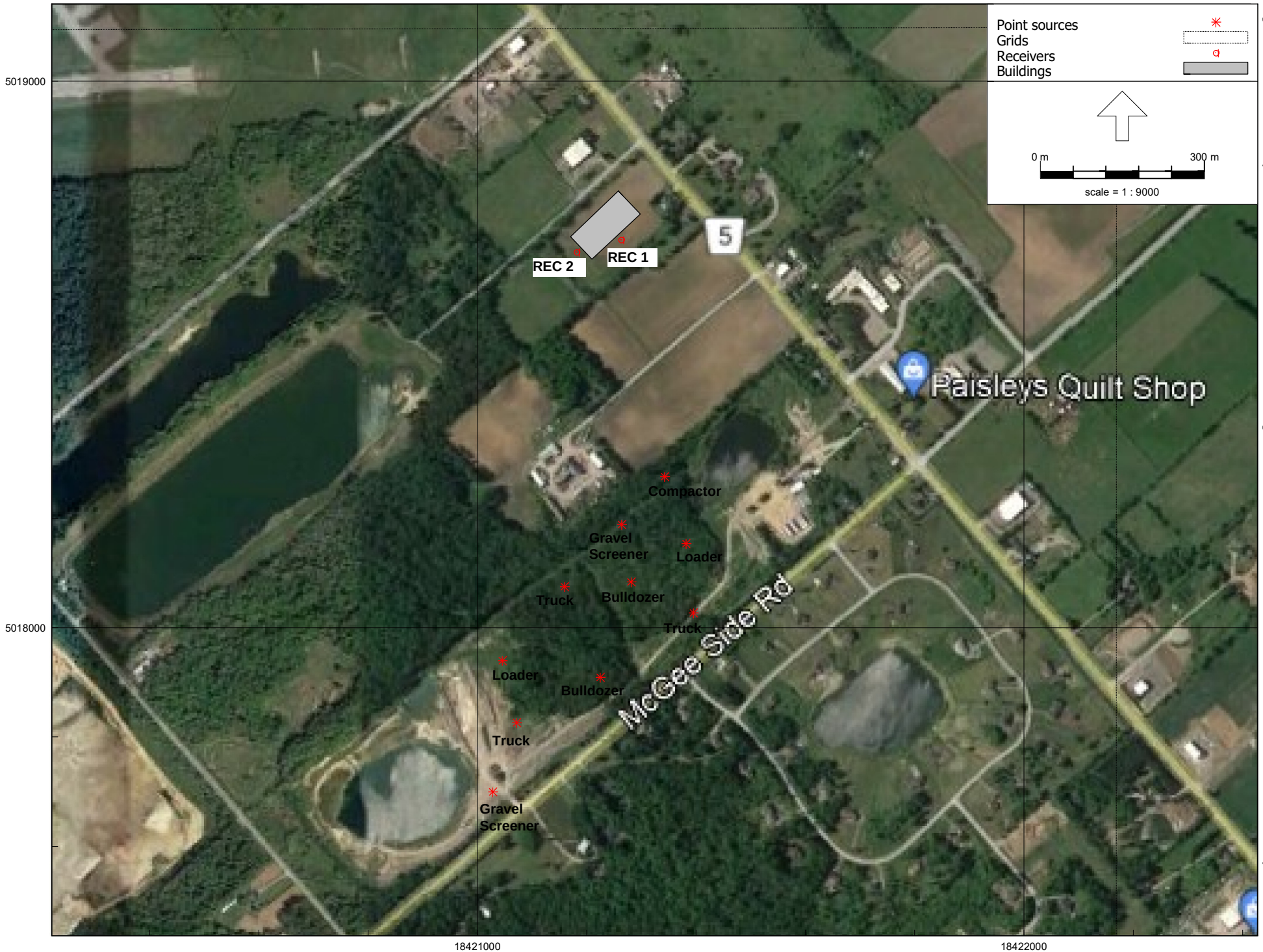
Figure 1 - Model of Proposed Commercial Warehouse Building

Figure 2 - Initial Analysis (Table of Result)

Figure 3 - Initial Analysis (Contour Result)

Item Properties

Figure 1 - Model of Proposed Commercial Warehouse Building



Proposed Industrial Building Initial Analysis

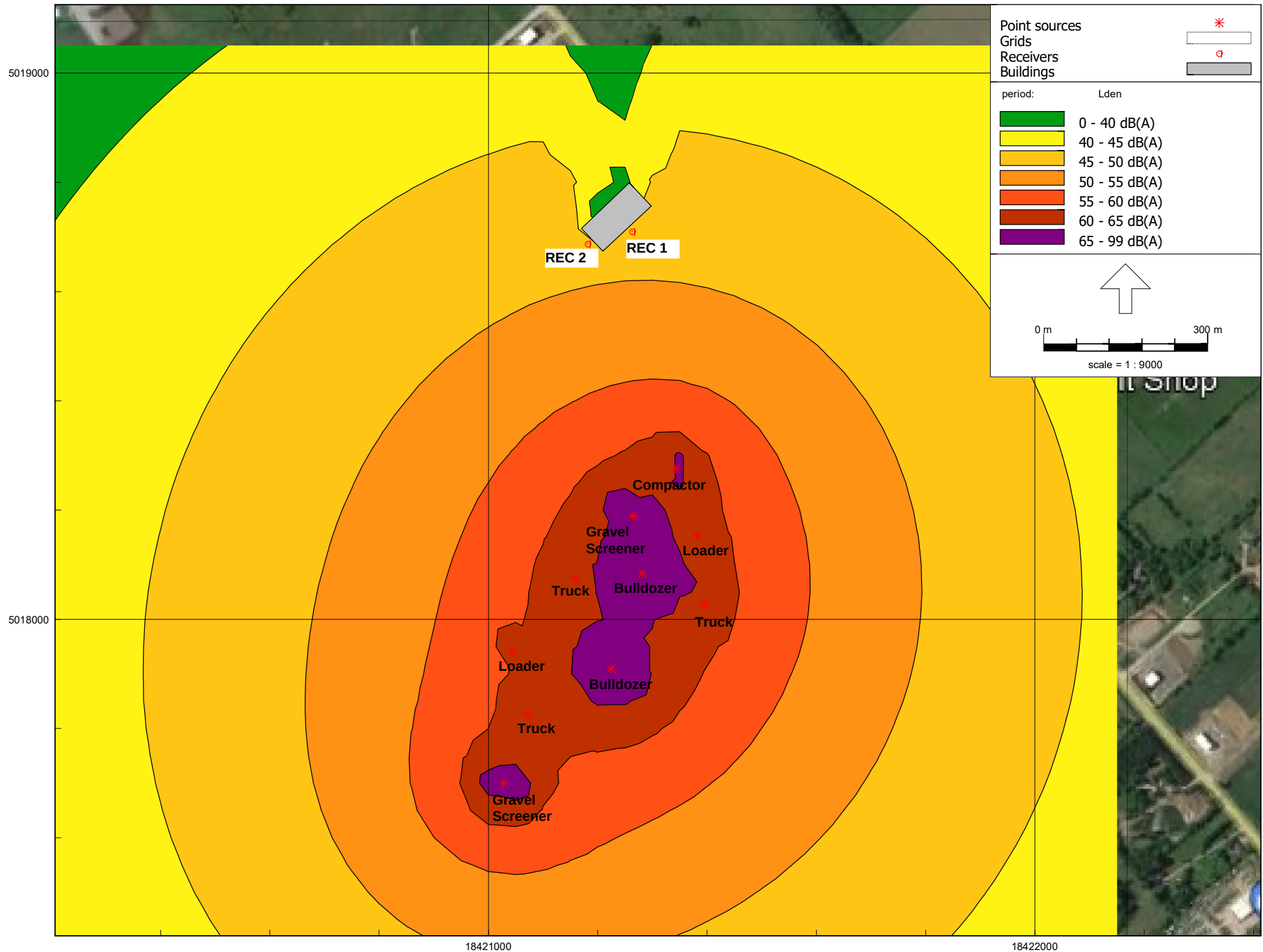
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Figure 2

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
REC 1_A	Receptor 1	18421262.92	5018709.85	1.50	51.7	--	--
REC 2_A	Receptor 2	18421181.71	5018687.25	1.50	51.5	--	--

All shown dB values are A-weighted

Figure 3 - Initial Analysis (Contour Results)



Item Properties Initial Analysis

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

Desc.	No building	No ind.site	Lw 63	Lw 125	Lw 250	Lw 500	Lw 1k	Lw 2k	Lw 4k	Lw 8k
Gravel Screener	No	No	85.80	93.90	98.40	103.80	102.00	103.20	100.00	90.90
Bulldozer	No	No	78.80	97.90	94.40	99.80	110.00	109.20	102.00	93.90
Wheel Loader	No	No	75.80	77.90	83.40	88.80	91.00	89.20	88.00	76.90
Truck	No	No	81.80	87.90	92.40	94.80	97.00	95.20	92.00	84.90
Compactor	No	No	82.80	87.90	91.40	97.80	100.00	101.20	97.00	89.90
Truck	No	No	81.80	87.90	92.40	94.80	97.00	95.20	92.00	84.90
Bulldozer	No	No	78.80	97.90	94.40	99.80	110.00	109.20	102.00	93.90
Wheel Loader	No	No	75.80	77.90	83.40	88.80	91.00	89.20	88.00	76.90
Truck	No	No	81.80	87.90	92.40	94.80	97.00	95.20	92.00	84.90
Gravel Screener	No	No	85.80	93.90	98.40	103.80	102.00	103.20	100.00	90.90