

Geotechnical
Engineering

Environmental
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Materials Testing

Building Science

Archaeological Services

Environmental Noise Control Study

Proposed Development
The Meadows - Phase 4 - Ottawa

Prepared For

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1.0 Introduction

Paterson Group (Paterson) was commissioned by Tamarack (Nepean) Corporation to conduct an environmental noise control study for the proposed development to be located at The Meadows Phase 4, in the City of Ottawa.

The objective of the current study is to:

- ❑ Determine the primary noise sources impacting the site and compare the projected sound levels to guidelines set out by the Ministry of Environment and Climate Change (MOECC) and the City of Ottawa.

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

It is understood that the proposed development will consist of single houses, townhouses and stacked townhouse units. The stacked townhouse units will not have any outdoor living areas associated with it, but the single houses and townhouses will. Proposes roadways and landscaped areas are also anticipated. An Environmental Noise Impact Assessment - The Meadows In Half Moon Bay - Phase 4 - 3680 Greenbank Road was completed by IBI Group under Report Project: 12054-5.2.2 in December 2017. This report is an analysis of the surface transportation noise for this phase of the development. Therefore, this report is solely for the stationary noise source identified as the Costello Pit.

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 mineral aggregate pit.

The impact of stationary noise sources are 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 ENG, meaning "a suburban areas of the City outside of the busy core where the urban hum is evident but within the urban boundary."

Table 4 - 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
<input type="checkbox"/> 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 3 - 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."
<input type="checkbox"/> Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines - NPC-300	

4.0 Analysis

The stationary noise source consisting of the Constello Pit was identified within the 300 m radius from the proposed development. Upon conversation with the owner of the existing Costello Pit, two facts were identified. The first fact states that all mineral extraction within the western portion of the pit has been completed. A line indicating this portion of the pit is noted on the Initial Model figure included in Appendix 1. This is significant as it increases the worst case distance between the existing equipment and the proposed development. The other fact is that the Costello Pit will be terminating the mineral extraction over the entire pit within the next 5-7 years. Therefore, 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 pit is closed.

The noise sources were modelled with as the worst case indicator as specified by the Owner of the neighbouring Costello pit. It is understood that mineral extraction has been completed in the easternmost area. A line indicating the easternmost location of the proposed excavation equipment is noted on the drawing included in Appendix 1.

The equipment utilized in the analysis is representative of the equipment that is used for mineral extraction. The equipment consists of an excavator, two loaders, a screener, an idling truck, and a truck route into and out of the existing Costello Pit. A break down of the frequency's and sound levels of this equipment is included in Appendix 1.

Upon review of the proposed grading plan, it is understood that there will be some stacked townhouses along Pastel Way that will not include any outdoor living areas. A reception point was included in this proximity in order to determine the levels at the pane of glass. Otherwise, reception points were selected to obtain a broad definition of the noise levels at the outdoor living areas in addition to the pane of glass at both the first and second level of the proposed houses.

Upon review of the proposed grading plan and of the review of the surface transportation noise study, it is understood that a 2.2 m high sound barrier placed above a 1 m high berm is to be placed along the proposed Greenbank Road realignment and behind a portion of Block 65 on Jackdaw Avenue. This sound barrier has been included in the analysis. The initial analysis indicated that the southernmost units exceeded 50 dBA in the rear yard. Therefore, additional analysis was completed extending this 2.2 m high sound barrier across the southern property line.

The existing pit is the only stationary noise source located within the proximity of the proposed development. The analysis was completed with specialized noise software: Predictor-Lima Version 11.21. Five (5) reception points were selected within the 300 m proximity radius for our analysis. The reception points were selected at both a 1.5 m and 4.5 m elevations, so that both pane of glass and outdoor living areas could be interpolated. The results of these reception points are included in Appendix 1.

5.0 Discussion

Results of the analysis can be found in Appendix 1. Reception points were analyzed at a 1.5 m and 4.5 m elevation. Due to the proximity of the stationary noise source, it is recommended that the 2.2 m high sound barrier wall be extended along the southern property line. This sound barrier will limit all noise in the outdoor living areas to a maximum value of 50.5 dBA. This value marginally exceeds the overall limit of 50 dBA and is considered negligible.

In order to be effective, all sound barriers are to be constructed of solid material with no gaps, cracks, holes or openings and must have a minimum surface weight of 20 kg/m².

All reception points at the pane of glass are below the 55 dBA. Therefore, no additional requirements will need to be specified for the building materials of the proposed units.

Additionally, due to the proximity of the existing stationary noise source, a Warning Clause Type E should be applied to the deeds of sale along the southern side of Jackdaw Avenue and the western portion of Egret Way. The wording of the warning clause should be agreed upon by both the Ministry of Natural Resources and the City of Ottawa. A suggested noise warning clause is as follows:

Purchasers are advised that due to the proximity of the adjacent resource pit operations, sound from the resource pit may, at times, be audible.

6.0 Conclusion

Due to the existing Costello Pit, it is recommended that the 2.2 m high sound barrier wall be extended along the southern property line. In order to be effective, all sound barriers are to be constructed of solid material with no gaps, cracks, holes or openings and must have a minimum surface weight of 20 kg/m².

With this noise mitigation measure in place, the stationary noise will be marginally greater than the 50 dBA the MOECC prescribes. However, due to the proximity of the Costello Pit, a Warning Clause Type E should be on the deed of sale of the units along the southern most edge of Phase 4, within the 300 m radius of influence of the Costello Pit.

As it is understood that the Costello Pit will cease all mineral extraction within the next 7 years, this warning clause is considered temporary and is only applicable while the Costello Pit is within operation.

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 the Tamarack (Nepean) Corporation 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.



Stephanie A. Boisvenue, P.Eng.



Report Distribution:

- ☐ Tamarack (Nepean) Corporation (3 copies)
- ☐ Paterson Group (1 copy)

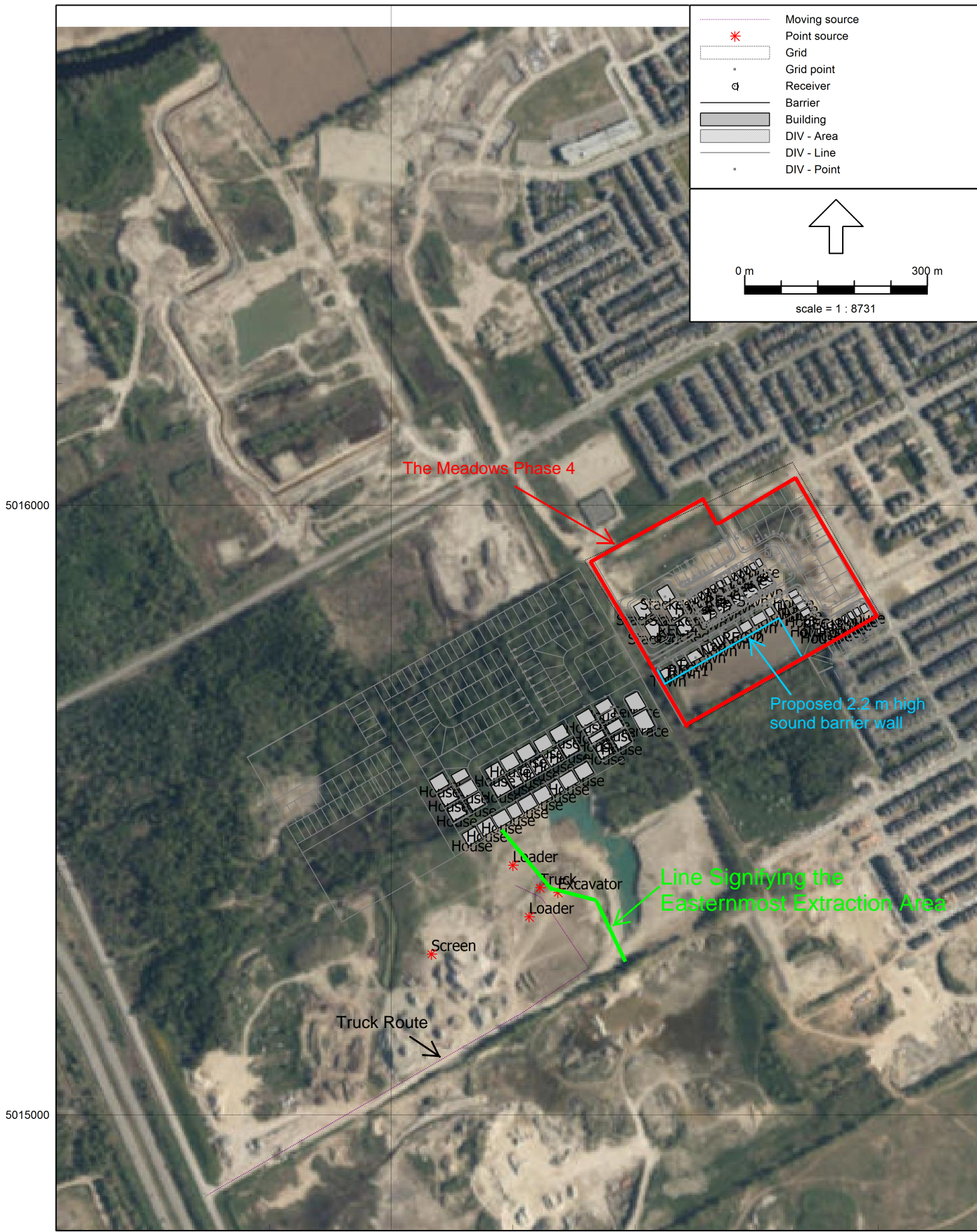
APPENDIX 1

NOISE MODEL

DIAGRAM OF PHASE 4

ITEM PROPERTIES

TABLE OF RESULTS





Model: Copy of initial model
version of Drummond Pit - Drummond Pit
Group: (main group)
Listing of: Moving source, for method Industrial noise - LimA - ISO 9613.1/2

Name	Desc.	ISO H	ISO Terr.	HDef.	Flow(D)	Flow(E)	Flow(N)	Cb(D)	Cb(E)	Cb(N)
Trucks	Heavy Truck	0.75	0.00	Relative	40	--	--	10.04	--	--
Haul Route	Truck route	0.75	0.00	Relative	--	--	--	--	--	--

Model:	Copy of initial model version of Drummond Pit - Drummond Pit										
Group:	(main group)										
Listing of:	Moving source, for method Industrial noise - LimA - ISO 9613.1/2										
Name	Avg. speed	Lw 63	Lw 125	Lw 250	Lw 500	Lw 1k	Lw 2k	Lw 4k	Lw 8k	Red 63	Red 125
Trucks	20	98.20	97.30	91.30	95.00	97.20	101.80	105.70	104.30	0.00	0.00
Haul Route	20	79.10	87.80	91.90	96.50	100.20	97.50	90.50	83.60	0.00	0.00

Item Properties

Phase 4

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

Name	No building	No ind.site	Lw 63	Lw 125	Lw 250	Lw 500	Lw 1k	Lw 2k	Lw 4k	Lw 8k
Excavator	No	No	97.00	102.00	99.00	98.00	97.00	96.00	88.00	80.00
Loader	No	No	109.00	114.00	109.00	100.00	99.00	96.00	97.00	94.00
Loader	No	No	109.00	114.00	109.00	100.00	99.00	96.00	97.00	94.00
Screen	No	No	116.80	110.40	103.00	102.60	101.20	99.10	94.90	90.90
Truck	No	No	76.00	89.80	91.60	97.50	107.70	104.80	100.00	93.20

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

Name					
Receiver	Description	Height	Day	Night	Lden
REC-1_A	Rear Yard - Townhouse	1.50	47.0	47.0	53.4
REC-1_B	Rear Yard - Townhouse	4.50	51.0	51.0	57.4
REC-2_A	Townhouse	1.50	50.5	50.5	56.9
REC-2_B	Townhouse	4.50	53.6	53.6	60.0
REC-3_A	House	1.50	50.1	50.1	56.5
REC-3_B	House	4.50	51.7	51.7	58.1
REC-4_A	Stacked	1.50	51.4	51.4	57.8
REC-4_B	Stacked	4.50	52.3	52.3	58.7
REC-5_A	Reception Point	1.50	41.2	41.2	47.6
REC-5_B	Reception Point	4.50	43.7	43.7	50.1

All shown dB values are A-weighted