

NOISE IMPACT STUDY – Project: 17132.02

**Law Quarry Extension
Noise Impact Study**
Wainfleet, ON

Prepared for:

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July 6, 2023



Revision History

Version	Description	Author	Reviewed	Date
--	Initial Report	KC	DF	May 26, 2022
R1	Removal of Receptor R16 Additional clarity regarding worst-case operating scenario	KC	DF	May 25, 2023
R2	Additional clarity regarding noise control item #5, removed illustration of sub-phases within Phases 2 and 4.	KC	DF	July 6, 2023

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1 Introduction

Waterford Group is applying for a Category 4 Class “A” licence for the proposed Law Quarry Extension located at part of Lots 6 and 7, Concession 2, Township of Wainfleet, Regional Municipality of Niagara, Ontario. The proposed extraction area consists of approximately 76.5 Hectares (HA).

Aercoustics Engineering Limited (Aercoustics) has been retained to prepare a Noise Impact Study for the proposed Law Quarry Extension. The purpose of this study is to provide noise control recommendations for the aggregate quarry operations to satisfy the Ministry of the Environment, Conservation, and Parks (MECP) noise guidelines.

This report and associated noise controls have been revised to indicate the non-noise sensitive nature of the dwelling at R16, which was purchased by the operator. This included the removal of Berm A and associated renaming of subsequent berms, as well as the removal of initial noise control items 8, 11 to 17, and 18a, with remaining noise control items renumbered accordingly.

Sound level limits for the aggregate quarry noise on the nearby noise-sensitive receptors were first established based on the noise guidelines of the MECP. The noise impact predictions of the aggregate quarry operations on the nearby noise-sensitive receptors were then established. Where the predicted sound levels were found to exceed the applicable MECP sound level limits, noise control measures were recommended to satisfy these limits.

Figure 1 provides a key plan showing the location of the aggregate quarry. A site plan is provided as Figure 2, illustrating the aggregate quarry area and the locations of nearby receptors. Noise control recommendations are provided in Appendix A.

2 Site Description

The proposed aggregate quarry will be a westward extension of the Existing Law Quarry (Licence Nos. 4464 & 607541). The proposed Law Quarry Extension is situated immediately north of Ontario Highway 3, which represents a major source of road traffic during daytime hours. The surrounding land uses are primarily agricultural, with some institutional land uses nearby, as well as industrially zoned lands to the east and southeast.

Figure 1 provides a key plan showing the location of the proposed Law Quarry Extension and surrounding area. The existing single-family dwellings in the vicinity of the quarry, as well as the two institutionally zoned places of worship, are identified as receptors R01 through R17. One vacant lot located to the south of the proposed aggregate quarry is zoned to permit noise sensitive uses such as dwellings that could introduce new receptors. This potential noise-sensitive vacant lot has been accounted for in this assessment by Receptor VL18, which represents a two-storey dwelling. The location of the vacant lot has

been determined in accordance with the MECP's Noise Pollution Control Publication, NPC-300 "*Environmental Noise Guideline – Stationary and Transportation Sources – Approvals and Planning*" (MECP, August 2013). The location of each receptor is identified in Figure 2.

The proposed Law Quarry Extension addressed in this Noise Impact Study consists of operations within the lands of each phase identified in Figure 2. These operations include excavation, processing (crushing and screening), and aggregate haulage/shipping. It is understood that the proposed quarry extension will also make use of some operations within the Existing quarry. Specifically, the aggregate wash plant and associated loader activity has been included in this assessment. A cumulative annual tonnage of 800,000 tonnes is to be removed from the lands of the Existing Law Quarry and the proposed Law Quarry Extension.

3 Noise Criteria

3.1 Acoustical Classification

The appropriate noise criteria for the receptors in the vicinity of the proposed Law Quarry Extension were based on the MECP Noise Pollution Control publication NPC-300.

Points of reception R13 through R15 have an acoustical environment consistent with the Class 3 (Rural) designation as defined by the MECP Publication NPC-300. In a Class 3 area, the background sound levels during the daytime (07:00 to 19:00) are defined by natural sounds with little to no road traffic. Receptors R01 through R12 and R17 are situated more closely to Ontario Highway 3, a major source of road noise. Accordingly, Receptors R01 through R12 and R17 have an acoustical environment consistent with the Class 2 (Urban) designation, defined by man-made noise sources during the daytime and by natural sounds in the evening and nighttime periods.

Receptor VL18 is an assumed two-storey dwelling located on a vacant lot to the south of the proposed extension. The placement of this vacant lot receptor is consistent with NPC-300 and is consistent with the adjacent developments which share the same access road (Rathfon Road). In consideration that the ambient acoustical environment in the vicinity of VL18 is dominated by man-made noise, it is anticipated that any future dwelling at this location would be considered to be in a Class 2 area.

3.2 Non-Noise Sensitive Receptors

There is a dwelling situated on the lands of the proposed Law Quarry Extension, to the immediate west of Biederman Road, which is not considered a noise-sensitive receptor according to NPC-300. It is a single-family dwelling which is located on lands owned by the proposed Law Quarry Extension operator. Accordingly, this location has not been considered in the study.

Similarly, a second dwelling approximately 200 m west of Biedermann Road (previously referred to as receptor R16) is also now owned by the proposed operator and is planned to remain vacant. All noise controls previously associated directly with this dwelling have been removed in this revised report.

The Licensee will retain ownership or control of and will vacate houses within additional lands owned or controlled by applicant for the duration of the extraction operation. If the houses are occupied or the properties sold the licensee shall notify MNRF immediately and provide mitigation necessary to ensure provincial noise, air, and ground vibration and dust limits are satisfied.

3.3 MECP Sound Level Limits

The applicable limits for noise from a stationary source at a noise-sensitive point of reception (receptor) in a Class 2 (Urban) and a Class 3 (Rural) area are outlined in Table 1.

Table 1 - NPC-300 Exclusion Limits for Stationary Sources - Hourly L_{Aeq}

Time of Day	Class 2 (Urban)	Class 3 (Rural)
Daytime (07:00 – 19:00)	50*	45*
Evening or Nighttime (19:00 – 07:00)	45*	40*

* or background sound level, if higher

The noise from a stationary source should not exceed these limits during any one-hour period.

At some points of reception in the vicinity of the proposed Law Quarry Extension, the lowest background sound level is expected to be higher than the exclusion limits listed above. Noise level calculations were performed in accordance with the MECP Guidelines and by the Guidelines of the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT). Calculations were conducted using the MECP's Road and Rail Traffic Noise Prediction Model STAMSON to establish predicted ambient noise levels in the vicinity of the noise-sensitive receptors. Road traffic predictions were based on an Annual Average Daily Traffic (AADT) for Highway 3 provided by the Ministry of Transportation. This AADT was then broken down into an hourly distribution and the worst-case (lowest volume) daytime traffic hour was used for the noise level predictions.

Calculations were performed for Receptors R01 through R10 which show that these receptors are subject to ambient sound levels which exceed the MECP exclusion limits provided in Table 1. For simplicity and conservatism, these ambient noise prediction calculations were based on the maximum setback distance from the road centreline for any of receptors R01, R03 through R08 and R10. Separate calculations have been performed for R02 and R09 which do not have operable windows facing the roadway. A conservative receptor height of 1.5 m has been used for road traffic calculations at all receptor locations.

It is possible that Receptors R11, R17, and VL18 are also subject to ambient sound levels exceeding the MECP exclusion limits, however, for simplicity and conservatism, the minimum daytime exclusion limits have been used for these receptors. Similarly, the minimum nighttime exclusion limits have been used at all points of reception. Sample calculations of the road traffic predictions are provided in Appendix B.

A summary of the applicable sound level limits used in this environmental noise impact study is provided in Table 2.

Table 2 - Applicable Sound Level Limits for Stationary Sources - Hourly L_{Aeq}

Receptor	Receptor Height (m)	Sound Level Limit during Quarry Operating Times (07:00 – 19:00)
R01	1.5	56
R02	1.5	56
R03	4.5	56
R04	1.5	56
R05	1.5	56
R06	4.5	56
R07	4.5	56
R08	4.5	56
R09	1.5	53
R10	1.5	56
R11	4.5	50
R12	2.5	50
R13	4.5	45
R14	1.5	45
R15	1.5	45
R17	2.5	50
VL18	4.5	50

4 Aggregate Quarry Operations

The site plans for the proposed Law Quarry Extension outline the phases of extraction as well as the direction of operations in each phase. In general terms, the nature of the work consists of the following:

- site preparation and rehabilitation
- extraction and processing; and
- shipment off-site.

4.1 Hours of Operation

The proposed hours of operation are from 07:00 to 19:00, Monday to Sunday, excluding statutory holidays. At no time shall blasting, extraction, processing, or shipping take place on a statutory holiday. Equipment maintenance may take place outside of these normal operating hours. The proposed hours of operation are summarized below in Table 3.

Table 3 - Operating Hours of Law Quarry Extension

Time of Day	Day of Week	Operations
07:00 – 19:00	Monday to Sunday	Full Operation – Extraction, Processing, Loading & Shipping

4.2 Site Preparation and Rehabilitation

Site preparation includes the construction of berms and visual screens specified on the site plan. Topsoil and overburden will be removed. This work will be done primarily with bulldozers, scrapers, trucks, loaders, and excavators. Rehabilitation phases will involve similar equipment in establishing the final grading for the site.

The site preparation and rehabilitation work described above is not part of the daily operation of the quarry and are of short duration. These construction activities are not considered in the noise control analysis. The equipment used for these activities must satisfy the noise emission requirements of the MECP document NPC-115 “*Construction Equipment*”. By defining a maximum permissible noise emission for construction equipment, rather than directly limiting the noise impact at a sensitive point of reception, the MECP recognizes that construction is a temporary and largely unavoidable source of noise.

In order to minimize the noise impact associated with the construction activities, it is suggested that operations should be restricted to the daytime hours. When possible, site preparation should be conducted during the fall, winter, or spring months when there is a reduced level of extraction and when residential windows are more likely to remain closed.

4.3 Extraction, Processing & Transport

The maximum annual tonnage to be removed from each of the existing Law Quarry and the proposed Law Quarry Extension is 400,000 tonnes per site, for a combined maximum of 800,000 tonnes across both licences. The quarry extension will operate with a portable processing plant which follows the working face, except where noted otherwise in the noise controls.

Aggregate will be extracted using two (2) front end loaders at the working face. Material will be transported directly into the portable processing plant. Processed materials will be stored in stockpiles in the vicinity of the processing area. Two shipping loaders will be used in the processing area to load highway trucks with finished aggregate product for transport to market. Some portion of the processed materials will be transported to the

Wash Plant situated on the existing Law Quarry. This washed material will then be stored in stockpiles and then loaded onto highway trucks for transport to market. The wash plant is not planned to operate within the proposed quarry extension.

4.4 Equipment

The extraction, processing, and shipment equipment operating in the proposed quarry is limited to:

- One (1) Quiet Rock Drill
- Two (2) Extraction Loaders
- Two (2) Shipment Loaders.
- One (1) Processing Plant
- One (1) Wash Plant (located in existing quarry)
- One (1) Wash Plant Loader (located in existing quarry)
- 30 Highway truck trips/hr (60 passes/hr)
- 20 Off-Road truck trips/hr (40 passes/hr)

The single Processing Plant may consist of multiple pieces of equipment for purposes such as crushing, screening, and washing. Since the noise predictions considered a single worst-case location for all the plant equipment, the distribution of the plant equipment is permitted at various locations. However, the combined sum sound power from all equipment locations must be less than or equal to the permitted sound power for the Processing Plant, and any local noise controls specific to the Processing Plant shall apply at each location.

The quiet rock drill must be designed for use in noise sensitive areas, which typically requires that the drill be equipped with an enclosed tower and a down-the-hole drill head. If the drill is of the percussive type, it should be equipped with a down-the-hole, rather than top-down hammering mechanism.

5 Noise Prediction and Controls

5.1 Noise Prediction Methodology

The proposed aggregate quarry operations, as described above, have been modelled using DataKustik's noise prediction software *CadnaA*. This modelling is based on established noise prediction methods outlined in the ISO 9613-2 standard entitled "*Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method and calculation*".

The noise predictions are based on the predictable worst-case noise impact for each of the aggregate quarry operation areas at each noise-sensitive receptor. This represents a design case where the quarry is operating at full capacity with all of the equipment operating simultaneously and at locations where the noise impact is highest for each

receptor. It is expected that a majority of the quarry operations would occur in other areas of the site, resulting in lower associated noise impacts. Noise associated with the extension quarry operations but located within the existing quarry was included in the model.

Noise levels were predicted using existing topography under conditions of downwind propagation, generally with hard ground modelled in the quarry area and soft ground conditions elsewhere. Appendix C contains sample stationary noise source calculations.

Where noise predictions have indicated the potential of exceedance of the applicable sound level limits, noise control measures have been established to satisfy these limits.

5.2 Aggregate Quarry Noise Sources

The reference sound levels used for the aggregate quarry equipment are outlined in Table 4. A site visit to the existing Law Quarry was conducted on August 30, 2017 by Aercoustics personnel. Noise measurements were taken of the Processing Plant as well as the Wash Plant. It is understood that the Processing Plant measured at the existing quarry will be used within the Extension Quarry, and that the Wash Plant will remain in the Existing Quarry. The assumed sound levels for other quarry equipment were based on Aercoustics' measurements of similar equipment at other aggregate operations.

Table 4 - Reference Sound Pressure Levels of Aggregate Quarry Equipment

Equipment	Reference Sound Pressure Level at 30m (dBA)
Portable Processing Plant (crushing, screening & washing)	87
Quiet Rock Drill	73
Shipping Loader	67 ¹
Extraction Loader	70
Highway Truck – 25 km/hr	65
Off-Road Truck – 30 km/hr	75

¹ – The shipment loaders were assumed to operate at a 50 % duty cycle.

The predictable worst-case noise impacts were evaluated based on the Quiet Rock Drill operating at-grade, extraction loaders operating at the top of the first lift, and processing equipment operating at the quarry floor.

5.3 Recommended Noise Controls

The recommended noise controls presented in this section and in Appendix A have been determined, through noise impact predictions, to be effective in limiting the noise impact from the aggregate quarry activities to levels which comply with the MECP sound level limits. It should be noted that there may be other effective noise controls that could replace or revise those put forth in this report. Prior to the implementation of any changes to the

noise controls, appropriate studies should be undertaken to demonstrate that the MECP Sound level limits will be satisfied.

An acoustic barrier is required to be solid, with no gaps or openings, and shall satisfy a minimum area density of 20 kg/m². Such a barrier may take the form of a pit face, stockpile, acoustic fence, ISO container(s), some combination of these, or any other construction satisfying the requirements of an acoustic barrier.

No additional noise controls would be required to address the potential dwelling at Receptor VL18. The noise controls consider the vacant lot receptor listed above, with the location of vacant lot receptors determined using the guidance of NPC-300. If a dwelling is constructed on a noise-sensitive zoned lot in a materially different location than the receptor location shown, the noise control requirements should be reviewed and revised as required by a qualified acoustical consultant. The qualified consultant should confirm and account for the assumed location, assumed equipment noise levels, ambient acoustical classification, and type of construction of the new dwelling.

Refer to Figures 3 through 13 for requirements at each of Phases 1a to 5. These requirements include an illustration of the timing and implementation of noise controls such as local processing plant acoustical barriers. The Figures 3 and 6 to 13 also provide an indication of the areas within the Quarry extension where equipment operation must be altered, as described in Appendix A.

Refer to Appendix A for a comprehensive summary of the recommended noise controls for the proposed Law Quarry Extension.

5.4 Predicted Sound Levels with Controls

The predicted worst-case noise levels produced by operations within the proposed Law Quarry Extension area are summarized in Table 5 below.

Table 5 - Law Quarry Extension - Worst Case Predicted Sound Levels and Criterial - Hourly L_{EQ} (dBA)

Point of Reception	Extraction, Processing, and Shipping Operations (07:00 – 19:00)	
	Daytime Sound Level Limit	Maximum Predicted Sound Level
R01	56	51
R02	56	51
R03	56	53
R04	56	54
R05	56	53
R06	56	54
R07	56	55

Extraction, Processing, and Shipping Operations (07:00 – 19:00)		
Point of Reception	Daytime Sound Level Limit	Maximum Predicted Sound Level
R08	56	55
R09	53	52
R10	56	51
R11	50	47
R12	50	47
R13	45	45
R14	45	45
R15	45	45
R17	50	47
VL18	50	49

With the incorporation of the recommended noise controls, the predicted noise impact will satisfy the MECP sound level limits at all receptor locations.

5.5 Cumulative Noise Impact

The predictable worst-case operation of the quarry was designed to satisfy the MECP sound level limits. This represents an operating condition when the equipment in the quarry is positioned such that the noise impact at a given noise-sensitive receptor is highest. This generally occurs when the quarry's extraction operation is at a location in the quarry that is closest to the receptor. This condition will only occur for a small portion of the quarry's operational life. For the other portion of the quarry's operational life, the predicted noise level will be lower.

Given the timing of operations and setback distances of the existing Law Quarry, and other commercial operations, it is unlikely that their respective operation cycle will occur where noise impact is highest at the same receptor at the same time.

In the unlikely event that this overlap of worst-case operation occurs between the two sites, a combined noise level of 3 dB above the sound level limits is possible at some receptors. In environmental noise, a change in sound level of 3 dB is perceived as minor and represents a change in sound level that most people would just barely notice. This analysis assumes that the existing Law Quarry is designed with the same MECP noise limits.

6 Truck Traffic Noise on Haul Route

The noise impact of truck traffic on public roadways is not addressed by the MECP in their noise guidelines. However, the MECP requires consideration of the noise impact in choosing the off-property haul route.

The aggregate material from the proposed Law Quarry Extension will be shipped to market through the existing Law Quarry via the existing entrance. Trucks leaving site with aggregate material will then exit onto Highway 3 moving east or west using the existing haul routes.

Since the quarry extension truck traffic will use the same haul routes, no significant change in truck trips is expected to occur compared to the operation of the existing Law Quarry.

With this, the proposed haul route is not expected to cause an objectionable increase in road traffic noise and is considered the preferred haul route in the context of noise impact.

7 Conclusion

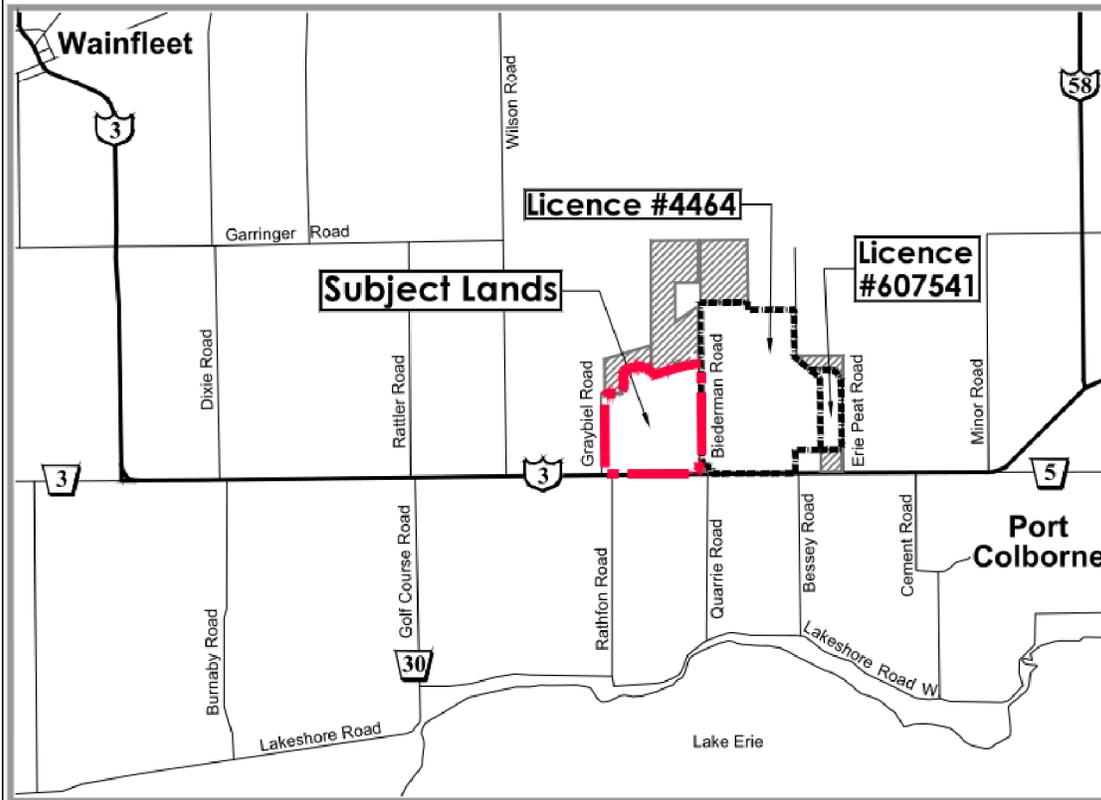
Aercoustics has conducted a noise impact study for the proposed Law Quarry Extension. The purpose of this noise impact study was to provide noise control recommendations for the quarry operations to satisfy the MECP noise guidelines. Figure 2 provides a site plan outlining the aggregate quarry areas and the locations of nearby receptors.

Sound level limits were developed based on the MECP noise guidelines. Calculations were then carried out to determine the worst-case noise impact for each phase of the aggregate quarry operation, at each noise-sensitive receptor. Where noise predictions indicated the potential of exceedance of the MECP sound level limits, noise control recommendations were provided.

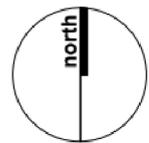
Appendix D provides a summary of the qualifications of the authors.

With the implementation of the recommended noise controls, the proposed aggregate quarry operation is predicted to satisfy the MECP noise guidelines.

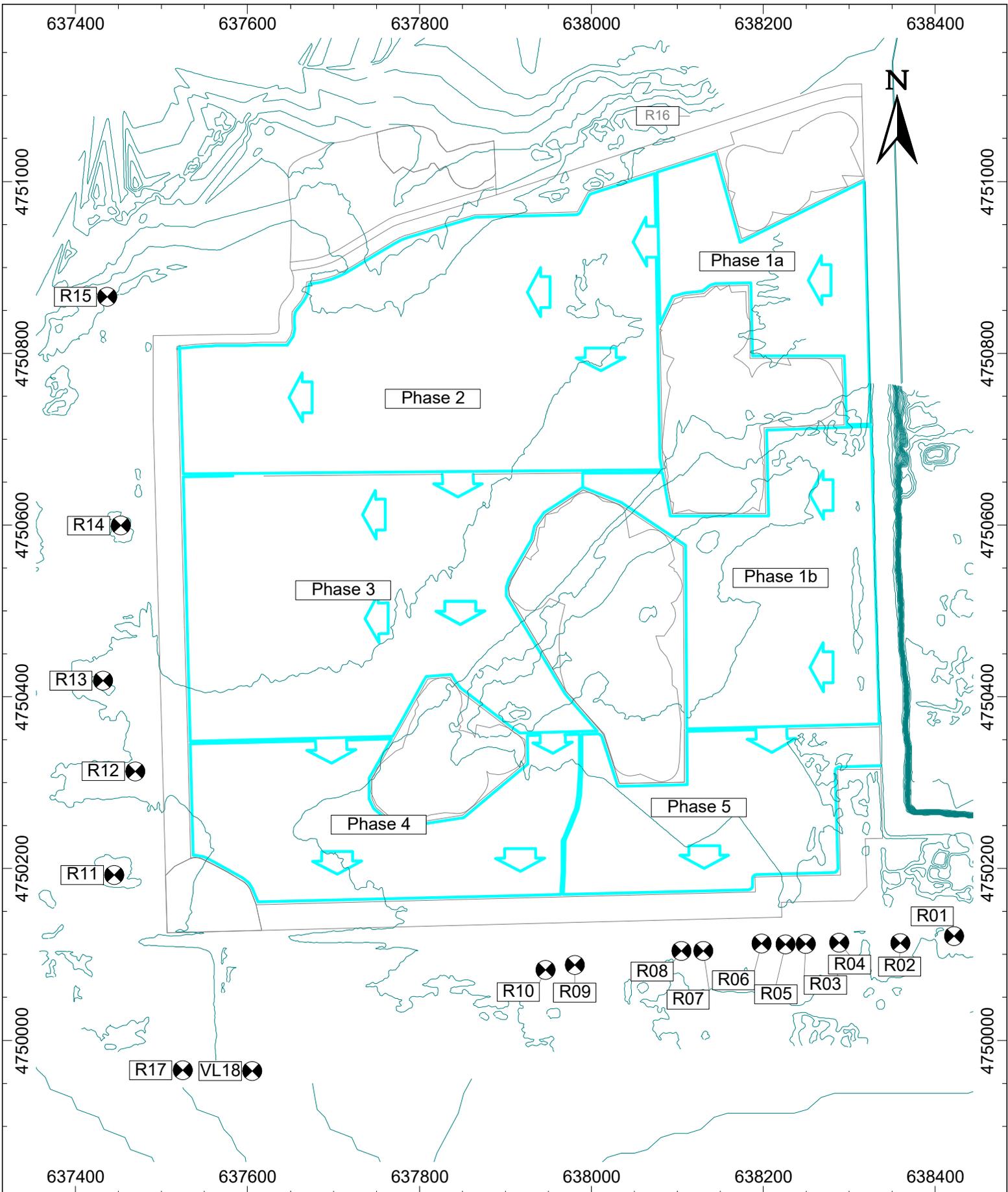
Key Plan



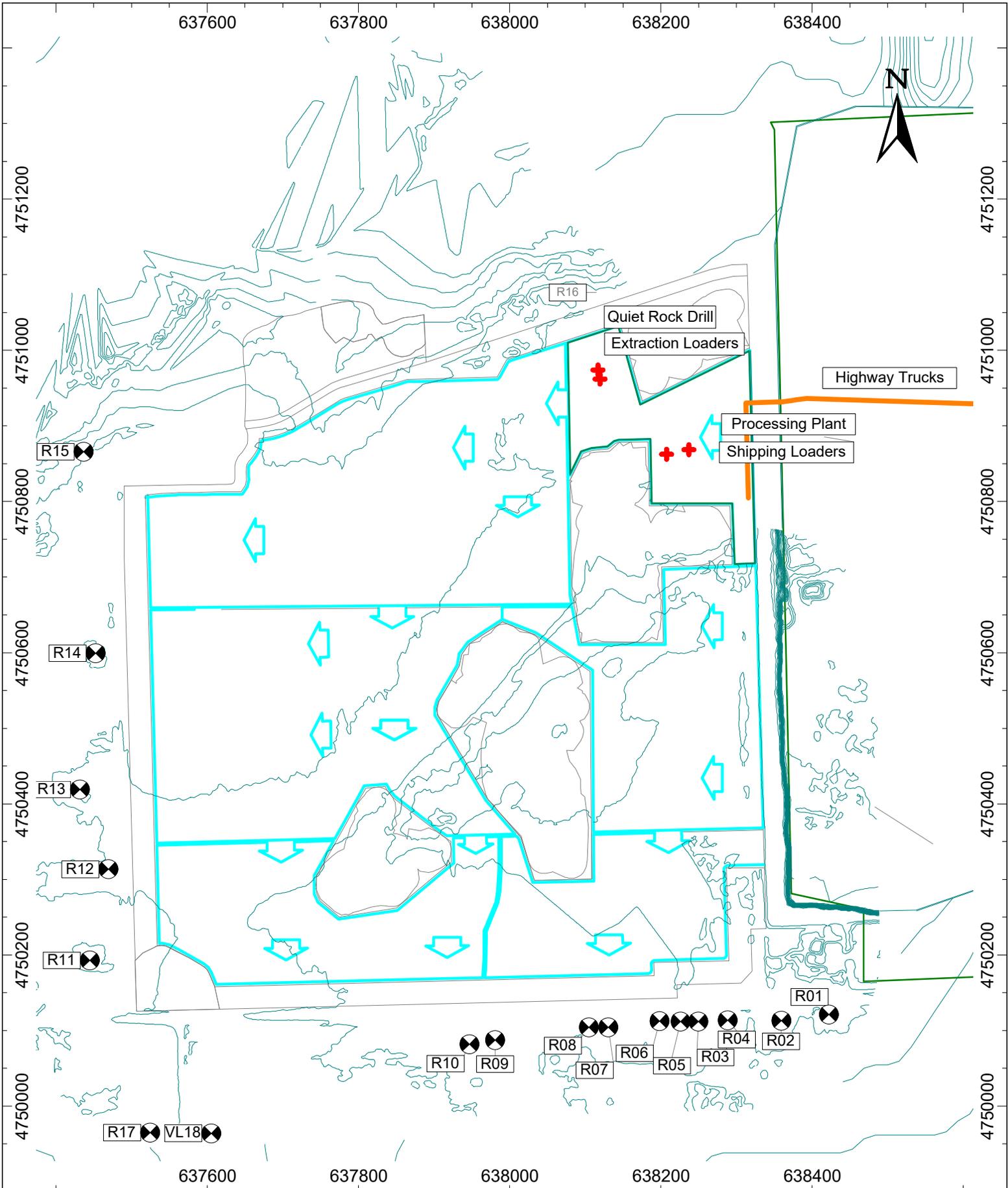
-  Boundary of Area to be Licensed
-  Licensed Lands Owned by Applicant
-  Additional Lands Owned by Applicant



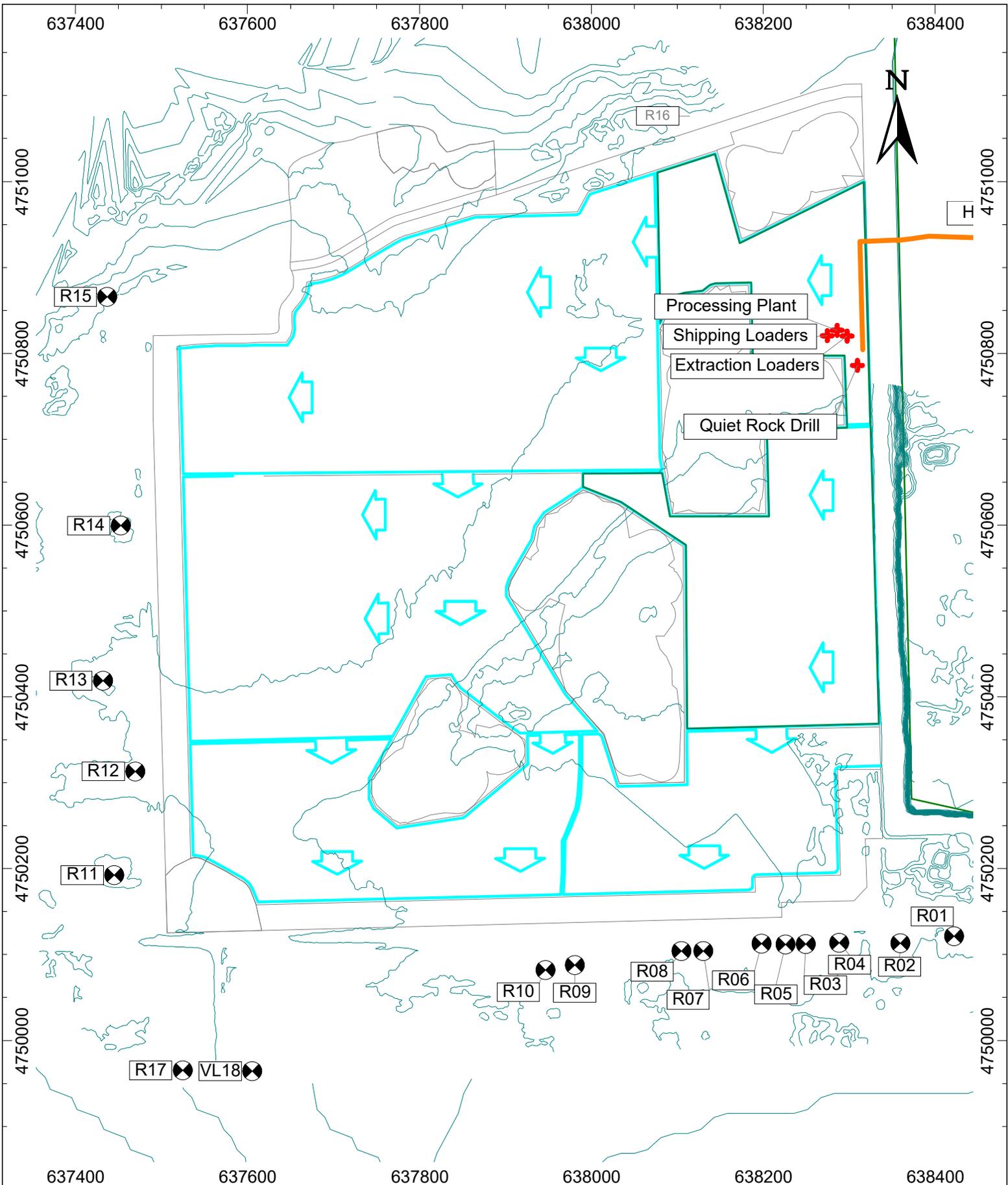
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	Scale: NTS Drawn by: KC Reviewed by: DF Date: July 6, 2023 Revision: 1			



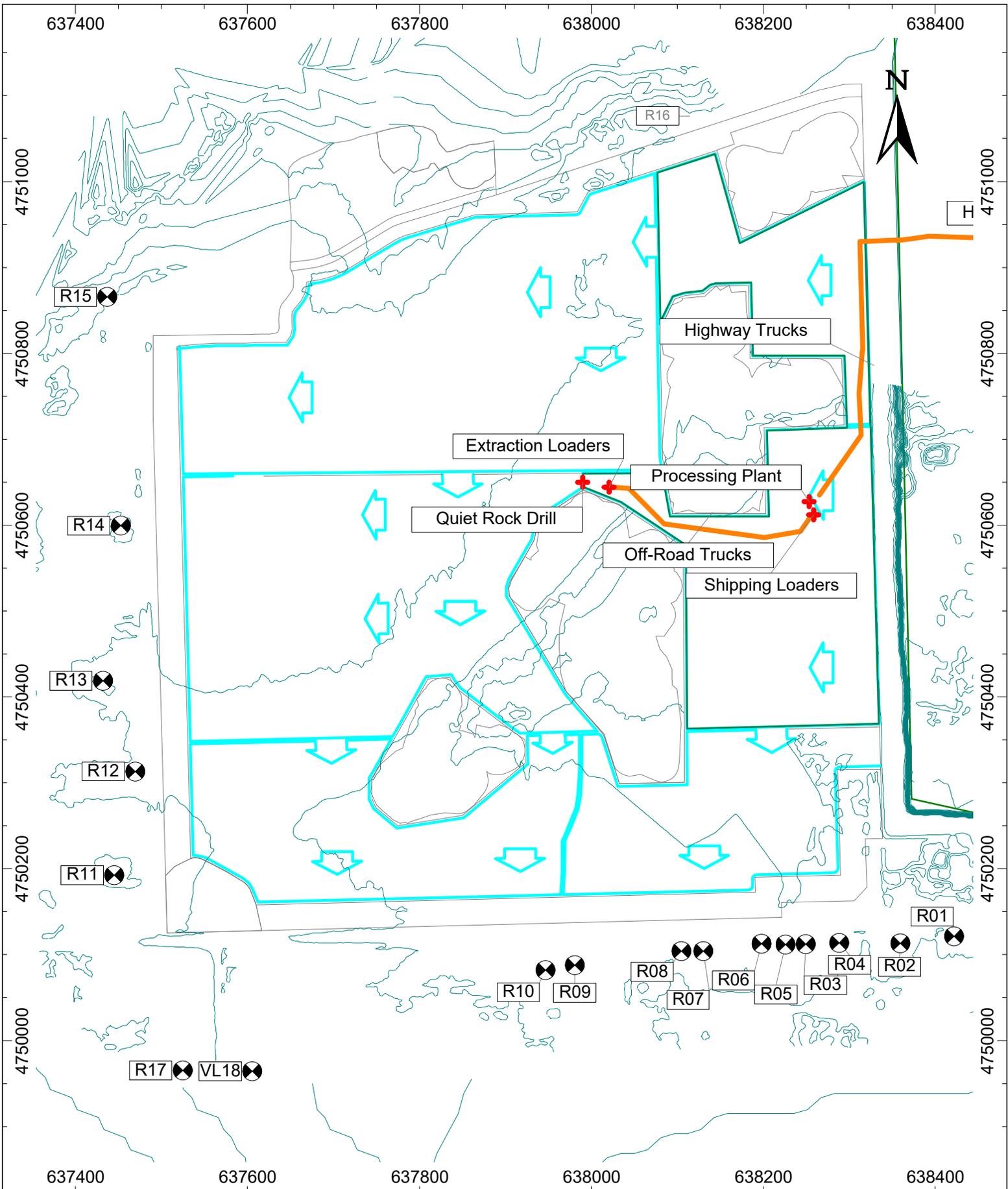
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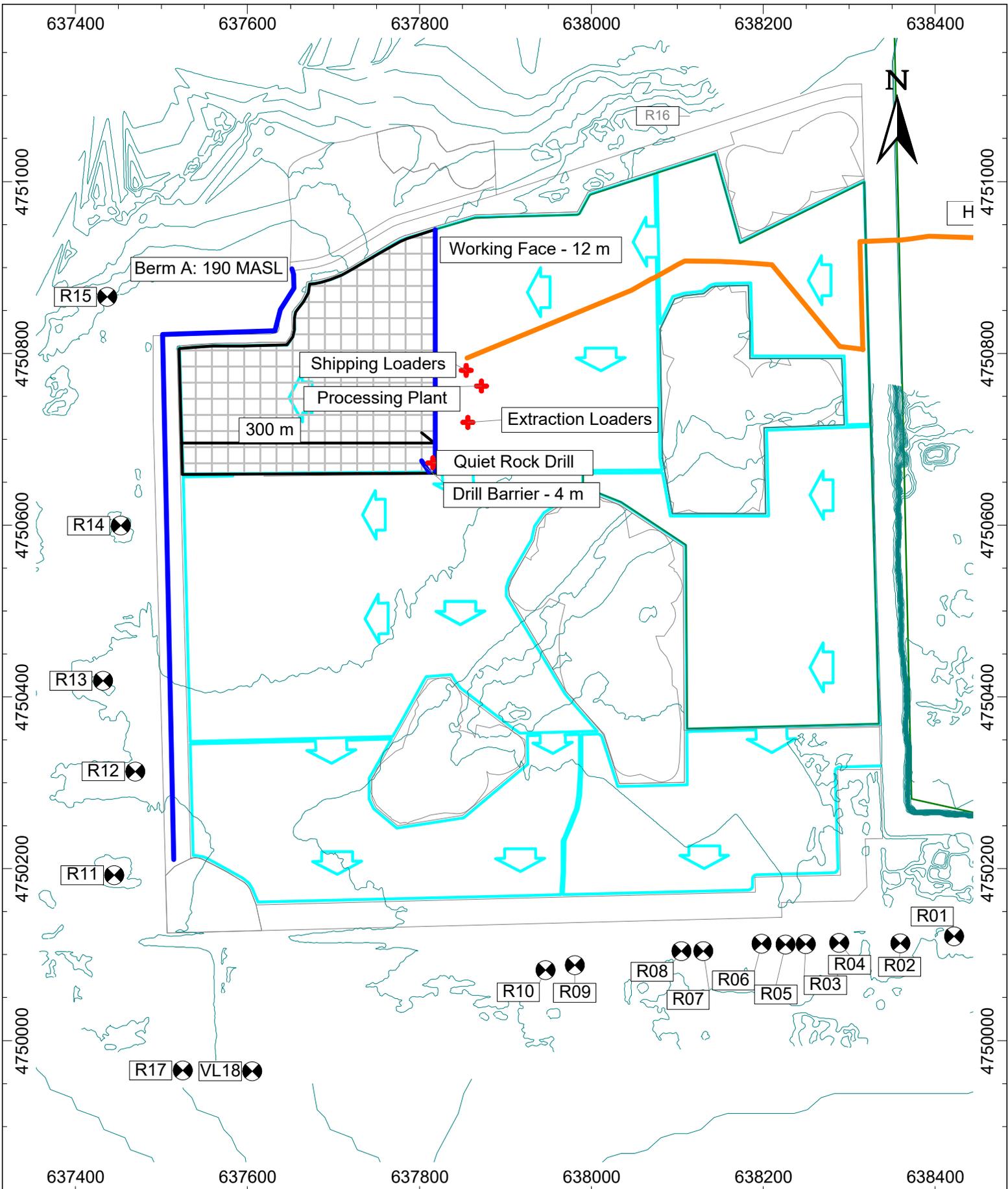
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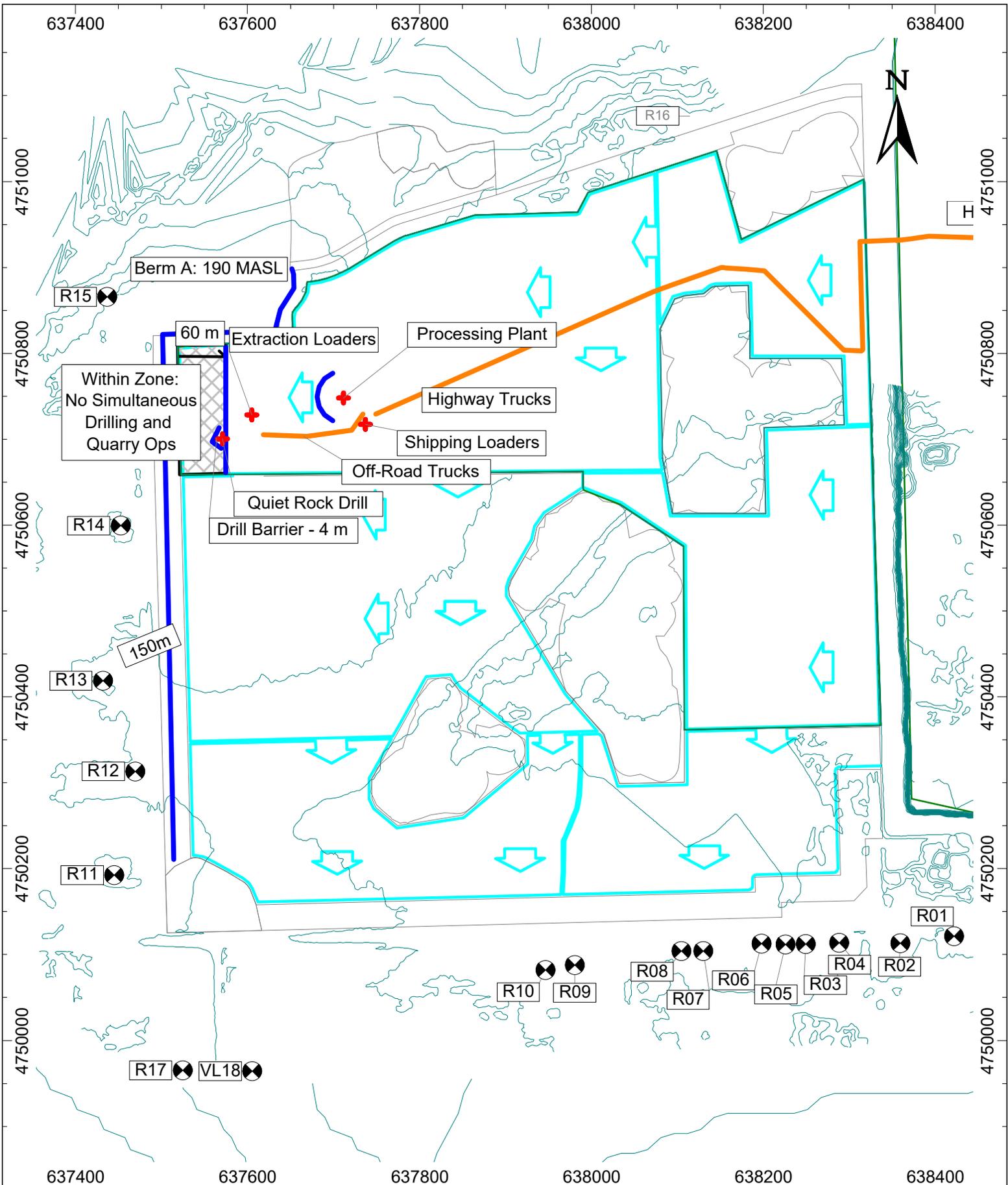
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		Figure Title	<h1>Figure 4</h1>
		Noise Control Implementation - Phase 1b (1/2)	



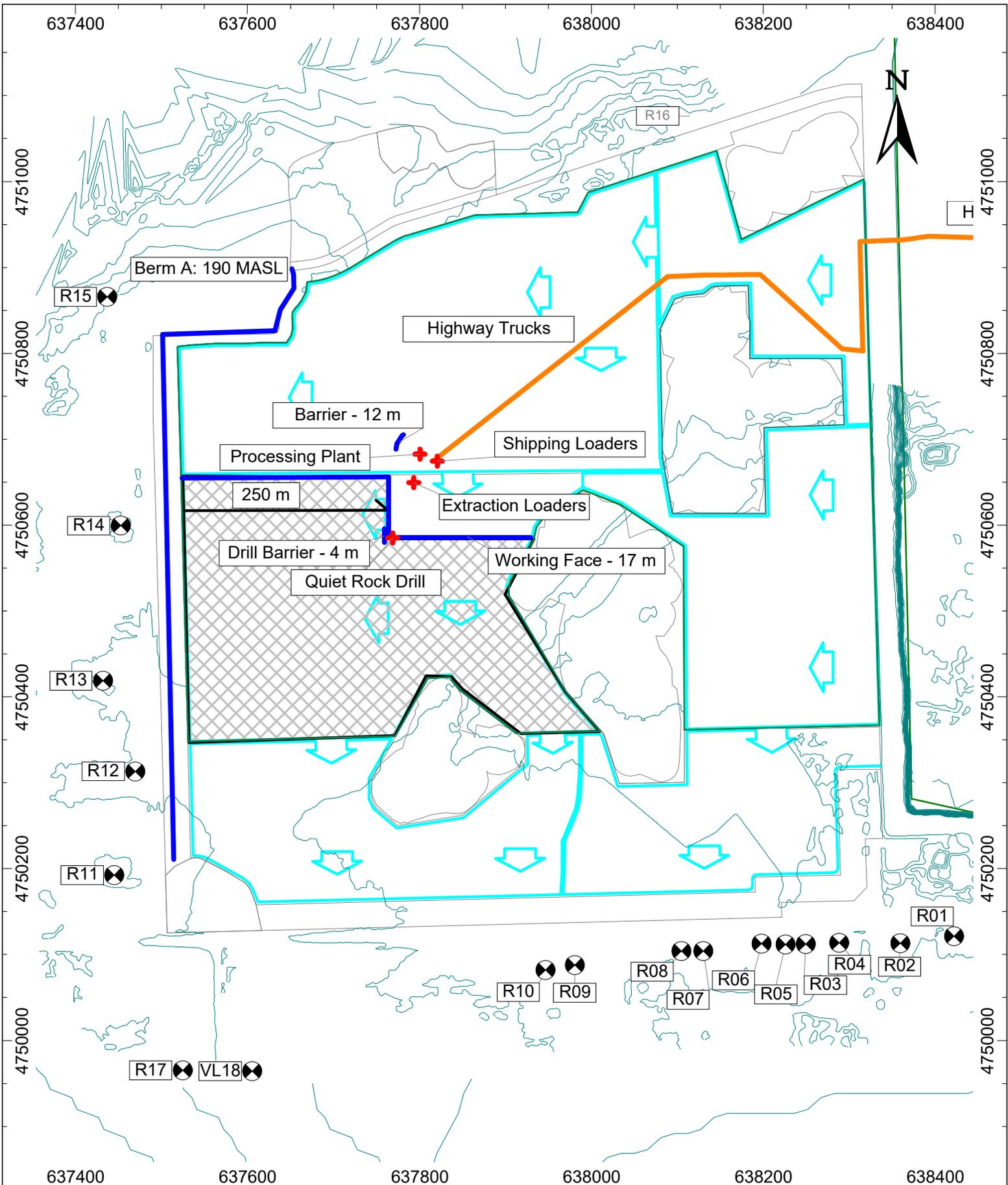
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	Figure Title	
	Noise Control Implementation - Phase 1b (2/2)	Figure 5



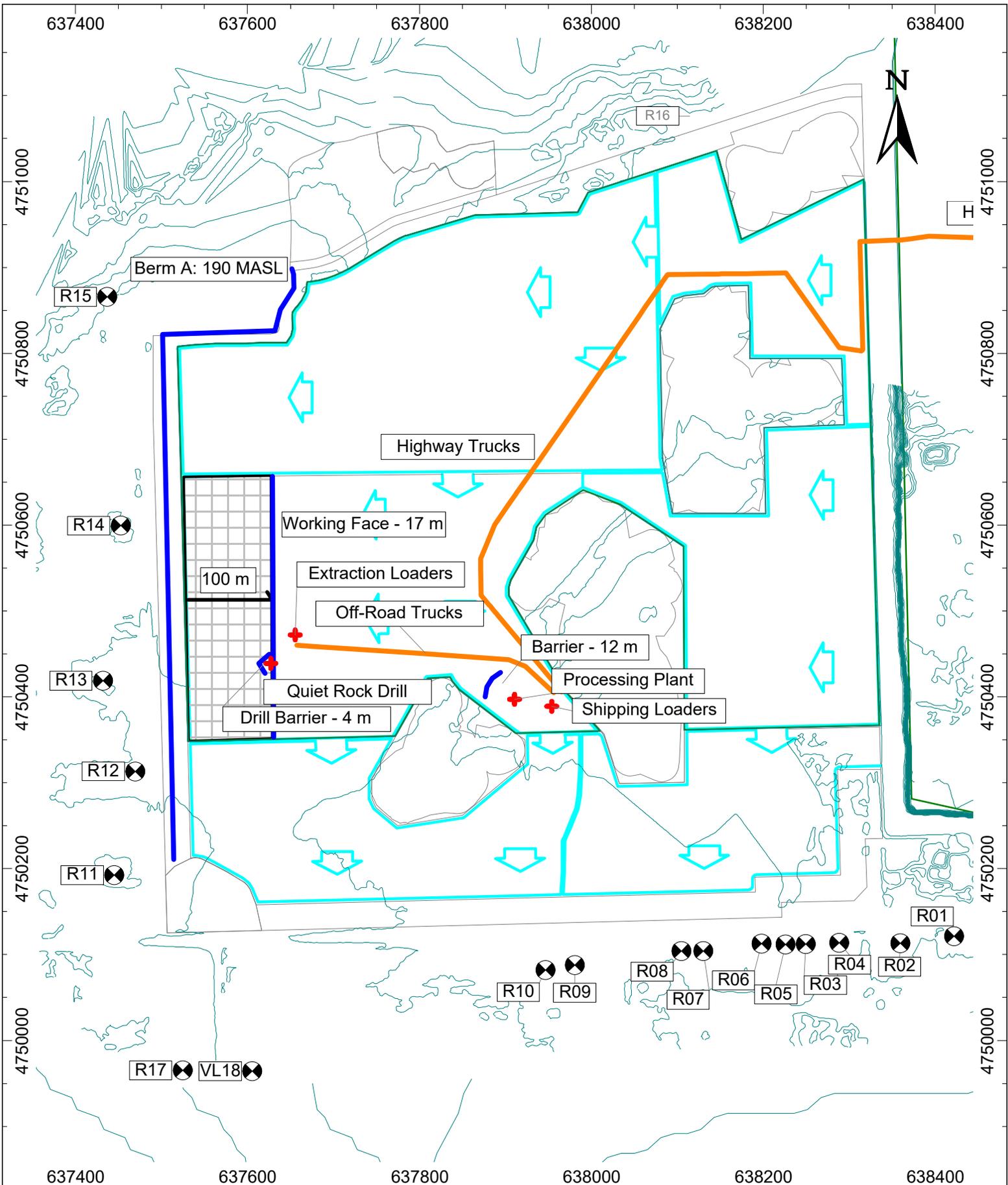
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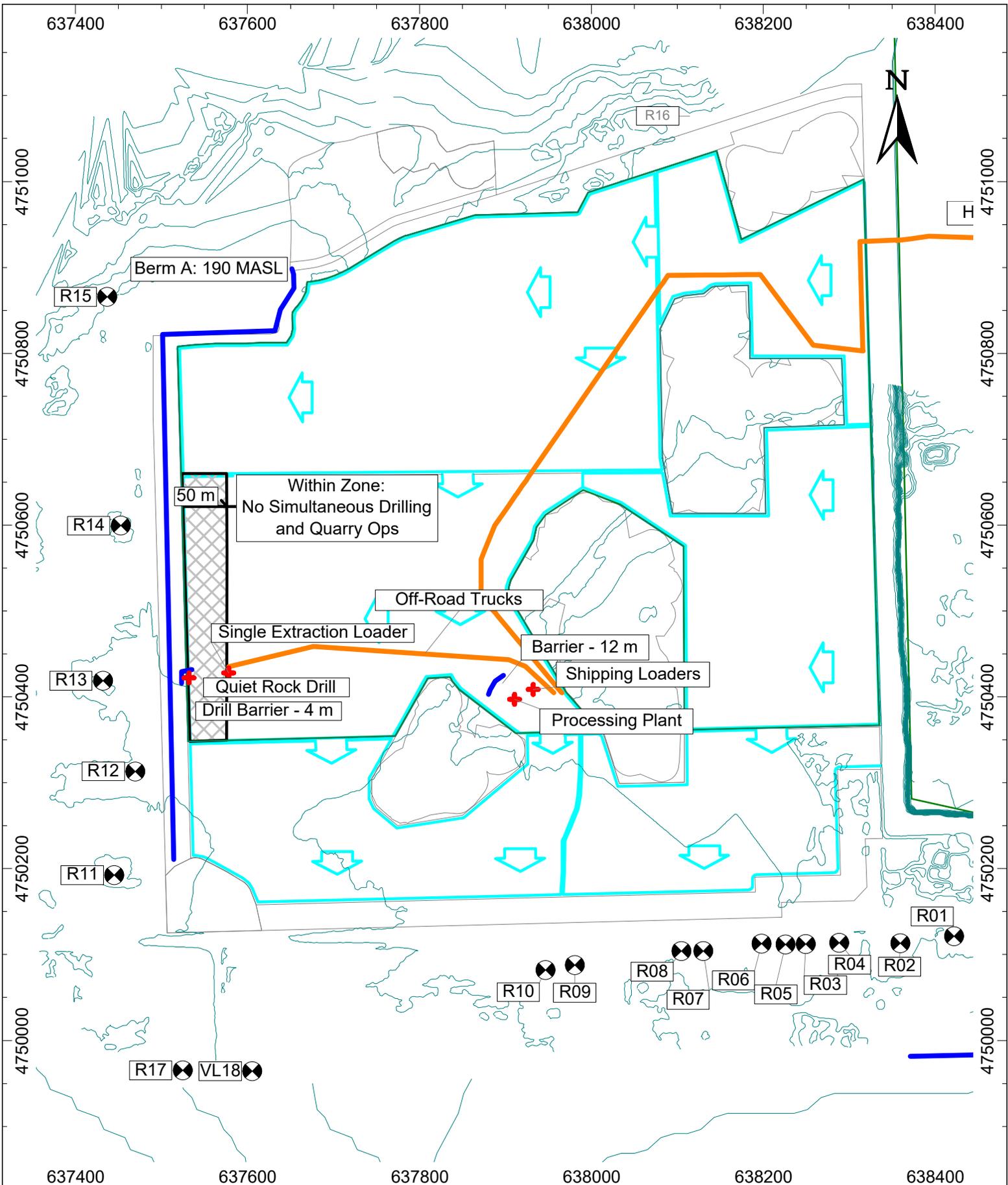
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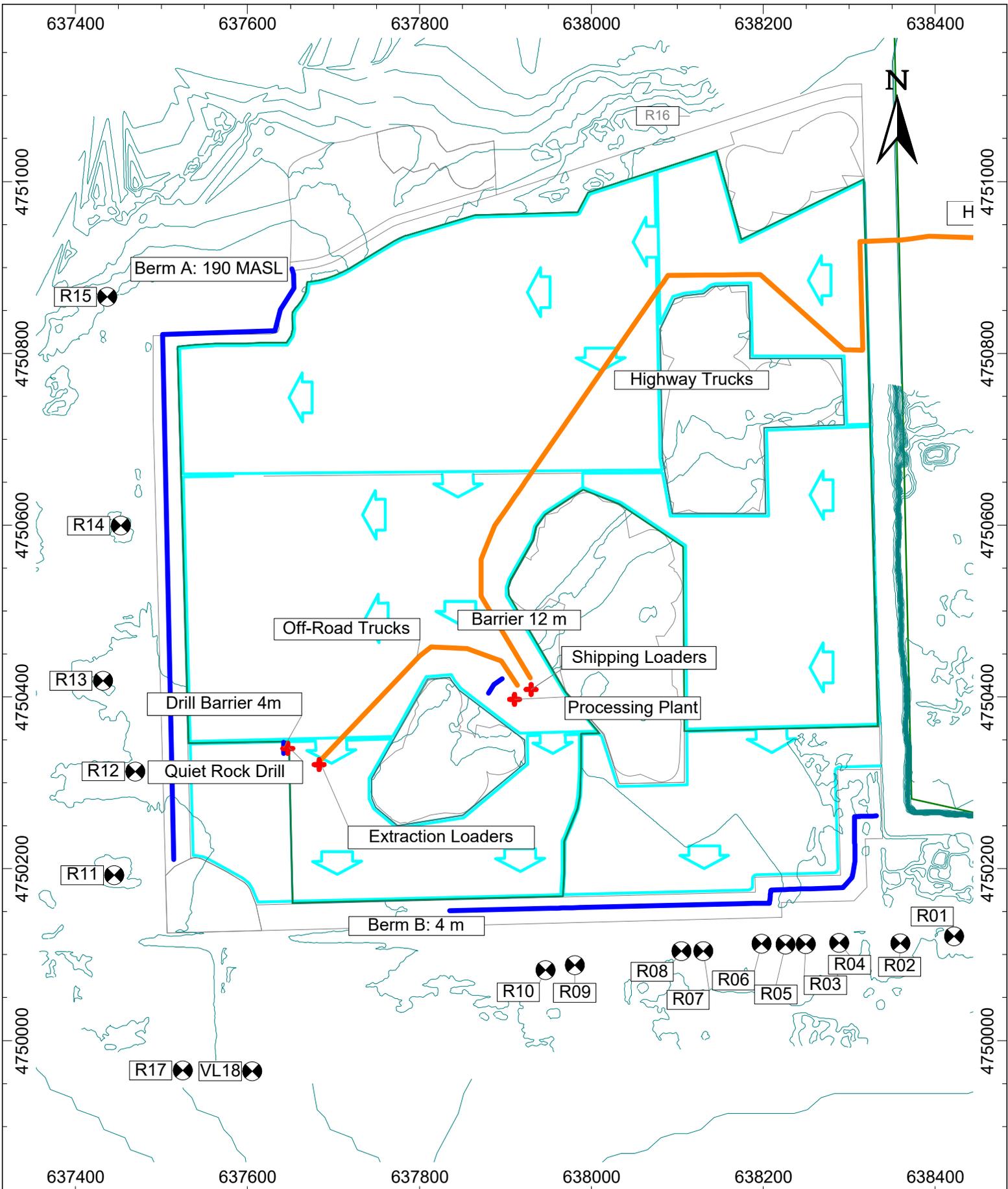
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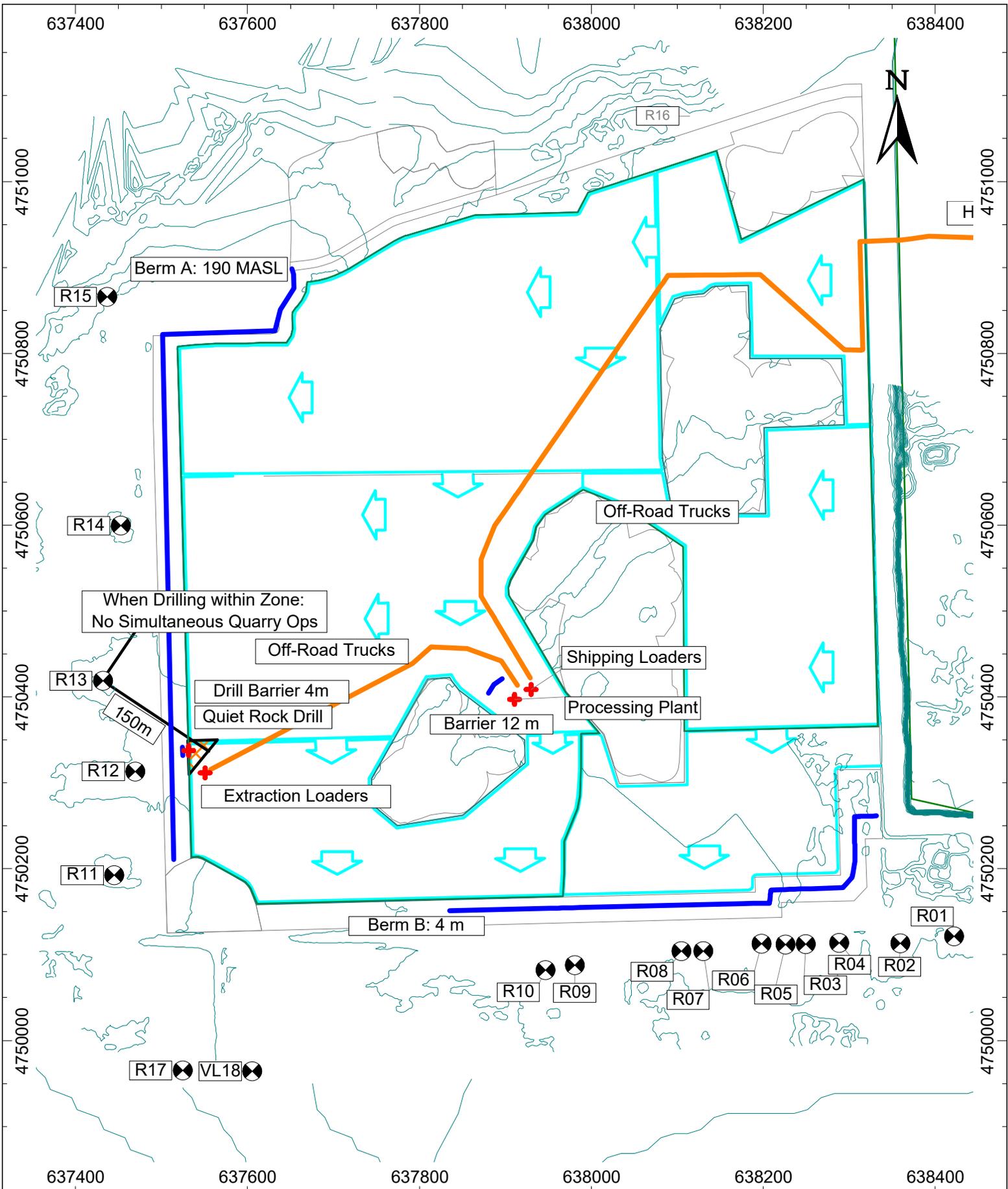
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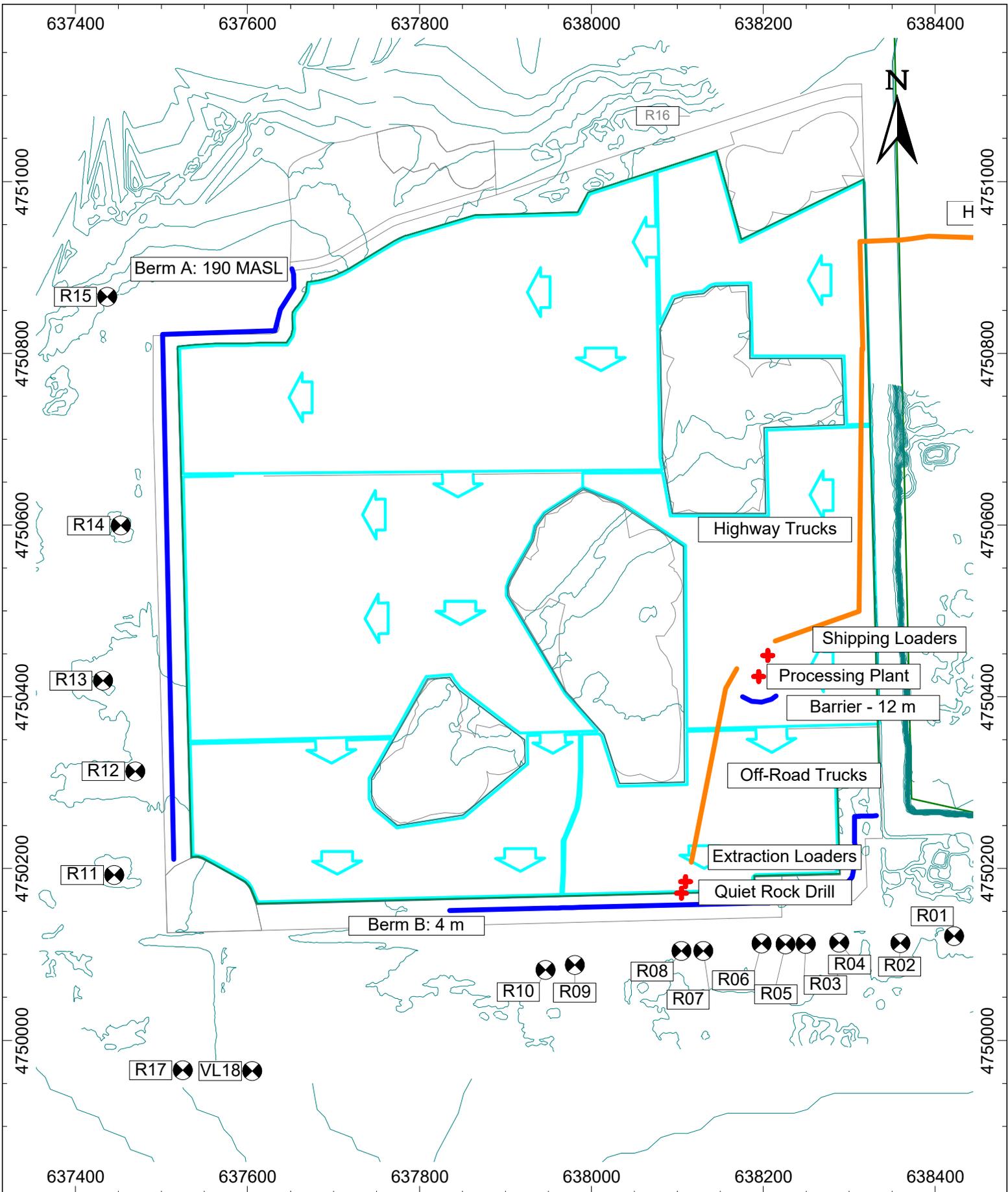
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	Project ID: 17132.02	Project Name Law Crushed Stone - Quarry Extension	Figure 11
	Scale: As Indicated Drawn by: KC Reviewed by: DF Date: July 6, 2023 Revision: 2	Figure Title Noise Control Implementation - Phase 4 (1/2)	



	Project ID: 17132.02	Project Name Law Crushed Stone - Quarry Extension	Figure 12
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	Project ID: 17132.02	Project Name Law Crushed Stone - Quarry Extension	Figure 13
	Scale: As Indicated Drawn by: KC Reviewed by: DF Date: July 6, 2023 Revision: 2	Figure Title Noise Control Implementation - Phase 5 (1/1)	

Appendix A
Noise Control Recommendations

General:

1. The proposed hours of extraction, processing, and shipping operations shall be limited to the daytime hours only (07:00 – 19:00) from Monday through Sunday.
2. The extraction, processing, and shipping equipment operating in the quarry is limited to:
 - One (1) Quiet Rock Drill
 - Two (2) Extraction Loaders
 - Two (2) Shipment Loaders.
 - One (1) Processing Plant
 - Highway Trucks
 - Off-Road Trucks
3. The aggregate quarry equipment shall satisfy the noise emission levels listed in Table A:

Table A: Reference Sound Pressure Levels of Aggregate Quarry Equipment

Equipment	Reference Sound Pressure Level at 30m (dBA)
Portable Processing Plant (crushing, screening & washing)	87
Quiet Rock Drill	73
Shipping Loader	67 ¹
Extraction Loader	70
Highway Truck – 25 km/hr	65
Off-Road Truck – 30 km/hr	75

1 – The shipment loaders were assumed to operate at a 50 % duty cycle.

4. The sound emissions of all construction equipment involved in site preparation and rehabilitation activities shall comply with the sound level limits specified in the MECP publication NPC-115 “Construction Equipment”
5. New equipment technology or different configurations may allow proposed changes to any portion of the extraction and processing operations including additional equipment to operate on the site, equipment to be substituted, and/or different berm heights, while still meeting the applicable sound level limits. Changes may be permitted to the site operations and noise controls provided that the changes still meet the sound level limits, as confirmed through documentation prepared by a Professional Engineer specializing in noise control. Prior to any modification, the licensee shall confirm with MNRD whether a site plan amendment is required to permit those proposed changes.

6. The Licensee will retain ownership or control of and will vacate houses within additional lands owned or controlled by applicant for the duration of the extraction operation. If the houses are occupied or the properties sold the licensee shall notify MNRF immediately and provide mitigation necessary to ensure provincial noise, air, and ground vibration and dust limits are satisfied.
7. An acoustic barrier is required to be solid, with no gaps or openings, and shall satisfy a minimum area density of 20 kg/m². It could take the form of a quarry face, stockpile, earth berm, acoustic fence, ISO containers, a combination of these, or any construction satisfying the requirements of an acoustic barrier.
8. The operation shall proceed in three tandem lifts. The total height of the working face, across all lifts, shall be a minimum of 17 m above the quarry floor on which the processing plant is situated. The plant shall be located a maximum of 60 m from the top of rock, unless otherwise noted, and shall be located on the quarry floor as soon as practical in Phase 1b. Extraction shall proceed in the directions outlined on the Operational Plan.
9. Prior to extraction in Phase 2, an acoustic barrier with a minimum top-of-barrier elevation of 190 MASL shall be installed along the west boundary of the property as shown (Berm A) on the Operation Plan. This barrier shall remain in place for the duration of extraction and processing operations within the quarry.
10. Prior to extraction in Phase 4, an acoustic barrier with a minimum top-of-barrier height of 4 m above existing grade shall be installed along the south boundary of the property as shown (Berm B) in the Operation Plan. This barrier shall remain in place for the duration of extraction and processing operations within the quarry.

Phase 2

11. When the Quiet Rock Drill is operating at-grade in Phase 2, an acoustical barrier with a minimum height of 4 m and a minimum length of 15 m shall be erected within 10 m of the Quiet Rock Drill blocking the line of sight between the drill and Receptors R14 and R15.
12. When the Quiet Rock Drill is operating at-grade or at the first bench elevation within 60 m of the west Phase 2 extraction limit, the Quiet Rock Drill shall not operate simultaneously with extraction or processing operations.

Phase 3

13. Extraction Operations within 250 m of the west extraction limit in Phase 3 shall proceed in a westerly direction. Extraction operations greater than 250 m of the west extraction limit shall proceed in a southerly direction.
14. Prior to westward extraction in Phase 3, the Processing Plant shall be located between the sections of unextracted land as shown in the Operation Plan and shall remain there for the duration of Phase 3 extraction. During processing operations in Phase 3, the line of sight to receptors R11 to R15 shall be broken by either:
 - a. An acoustic barrier with a minimum height of 12 m within 30 m of the Processing Plant; or
 - b. Intervening unextracted land with a minimum height of 17 m within 60 m of the Processing Plant.
15. Extraction Operations within 100 m of the west extraction limit of Phase 3 shall be limited to one extraction loader.
16. Once the working face is within 50 m of the west extraction limit of Phase 3, the Quiet Rock Drill may not be operated simultaneously with any processing or extraction activities.
17. When the Quiet Rock Drill is operating at-grade in Phase 3, an acoustical barrier with a minimum height of 4 m and a minimum length of 15 m shall be erected within 10 m of the Quiet Rock Drill blocking the line of sight between the drill and receptors R11 to R15.

Phase 4

18. When the Quiet Rock Drill is operating at-grade in Phase 4, an acoustical barrier with a minimum height of 4 m and a minimum length of 15 m shall be erected within 10 m of the rock drill blocking the line of sight between the drill and receptors R11 to R14.
 19. During extraction of Phase 4, the Processing Plant shall be located between the sections of unextracted land as shown on the Operation Plan and shall remain there for the duration of Phase 4 extraction. The line of sight between the Processing Plant and any of Receptors R11 to R15 shall be broken by either:
 - a. An acoustic barrier with a minimum height of 12 m within 30 m of the Processing plant; or
-

- b. Intervening unextracted land with a minimum height of 17 m within 60 m of the Processing Plant
20. During extraction operations in Phase 4, the Extraction Loaders shall operate behind the working face such that line of sight from the extraction loaders to Receptors R11 to R14 is broken. If the line of sight between extraction loaders and Receptors R11 to R14 is not broken by the working face, the extraction operations shall be limited to a single Extraction Loader.
21. When the Quiet Rock Drill is operating at-grade within 150 m of R13, the Quiet Rock Drill may not be operated simultaneously with any processing or extraction activities.

Phase 5

22. During extraction operations in Phase 5, the Processing Plant shall be located such that the line of sight to Receptors R01 through R14 is broken by either:
- c. An acoustic barrier with a minimum height of 12 m within 30 m of the Processing Plant; or
 - d. Intervening unextracted land with a minimum height of 17 m within 60 m of the Processing Plant.

Appendix B
Sample Road Traffic Calculations

STAMSON 5.0 NORMAL REPORT Date: 19-06-2020 14:11:30
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R10.te Time Period: 1 hours
 Description: Noise impact for R10

Road data, segment # 1: ON-3

```
-----
Car traffic volume : 218 veh/TimePeriod
Medium truck volume : 7 veh/TimePeriod
Heavy truck volume : 7 veh/TimePeriod
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

Data for Segment # 1: ON-3

```
-----
Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 43.00 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: ON-3

 Source height = 1.32 m

ROAD (0.00 + 53.06 + 0.00) = 53.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	65.12	0.00	-7.59	-4.47	0.00	0.00	0.00	53.06

Segment Leq : 53 dBA

Total Leq All Segments: 53 dBA

TOTAL Leq FROM ALL SOURCES: 53 dBA

Kohl Clark

From: Iwona Stasiewicz
Sent: April 30, 2020 8:07 PM
To: Kohl Clark
Subject: FW: Traffic data for Hwy 3 west of Port Colborne/Contact information for MTO South Office

Hey Kohl,

Here is what MTO has for Hwy 3 west of Port Colborne – see below.
i.



Iwona Stasiewicz, Sr.Eng./Arch.Tech.
IwonaS@aercoustics.com
Tel: +1-416-249-3361;2310
Direct: +1-647-946-8981
www.aercoustics.com

From: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Sent: Thursday, April 30, 2020 7:11 PM
To: Iwona Stasiewicz <IwonaS@aercoustics.com>
Cc: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Subject: Re: Traffic data for Hwy 3 west of Port Colborne/Contact information for MTO South Office

To Iwona:

I assume you have received the available latest data from your 2-3 previous data requests, from my colleague Kamal Bangar.

Re your request here for Hwy 3, it is located in Niagara Region, and is in our jurisdiction in MTO Central Region (CR) Traffic Office.

Hwy 3 at Port Colborne / H140 is at MTO location referencing system LHRS 11730 offset 0.0
We do not have AADT data at this location.

However, we have data on either side of it:

on one side, is H3 at Niagara Rd 5 /Killaly St (LHRS 11720 offset 11.5) --- 4.5 km from H3 / Port Colborne
on the other side, is H3 at at 0.1 km east of Townline Rd (LHRS 11740 offset 1.5) --- 3.3 km from H3 / Port Colborne

Year	AADT (2 wy) (H3/ Niagara Rd 5/Killaly)	directional split % (H3/ Niagara Rd 5/Killaly)	AADT (2 wy)_ (H3 / 0.1 k E of Townline)
2012	6950	52 EB	4000
2013	7000	52 EB	5200
2014	6350	51 WB	5150
2015	6950	51 WB	5450
2016	7000	51 WB	5050

---since the 2 points with data is about equal distance from H3 /Port Colborne, you can take the average of the 2, and assign to H3/ Port Colborne.

-- you can then plot the above averaged data points overtime on a graph, and draw the best straight line through the data points, and extend the line to 2019 to get an estimate for data value for 2019 (since we have official data above to only 2016).

regards

Christopher Bee
MTO CR Traffic Office
STIRCS

From: Iwona Stasiewicz <IwonaS@aercoustics.com>
Sent: Thursday, April 30, 2020 12:47 PM
To: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Subject: Traffic data for Hwy 3 west of Port Colborne/Contact information for MTO South Office

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.
Good Afternoon Chris,

Aercoustics needs 24hr hourly counts or AADT for Highway 3 west of Port Colborne.
I believe this is under South Section of MTO? Would you have contact info of the person/department at MTO South Office that provides this kind of data?
Please provide the info.
Best,
Iwona



Iwona Stasiewicz, Sr.Eng./Arch.Tech.

Aercoustics Engineering Ltd.
1004 Middlegate Road, Suite 1100, Mississauga, ON L4Y 0G1
Tel: +1-416-249-3361x2310 Direct: +1-647-946-8981

Appendix C
Sample Stationary Noise Calculations

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	5000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	60.00
Reference Time Night (min)	60.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	
	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	1.00
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Project: Law Quarry Extension
 Project Number: 17132.02

Source ID	Source Name	Point of Reception R01		Point of Reception R02		Point of Reception R03		Point of Reception R04		Point of Reception R05		Point of Reception R06	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
D13_HwyTruck	Highway Trucks	706	17	670	21	613	28	631	26	602	29	590	30
A02_HwyTruck	Highway Trucks	548	38	590	37	662	35	634	37	678	35	698	36
D13_OffRoad	Off-Road Trucks	683	28	629	28	536	29	567	31	517	29	494	31
D13_Plant	Processing Plant	581	41	531	40	443	40	473	41	426	40	405	41
D13_RockDrill	Quiet Rock Drill	940	0	883	0	782	0	817	0	760	0	735	0
D13_SFEL	Shipping Loaders	568	28	520	29	435	28	463	29	418	28	398	28
D13_FEL	Single Extraction Loader	898	29	842	30	742	31	777	31	721	31	696	32
A02_WashPlant	Wash Plant	994	38	1038	37	1109	37	1083	39	1126	36	1144	38
A02_2FEL	Wash Plant Loaders	1014	29	1057	29	1129	28	1102	30	1146	28	1164	29
Total Level [dBA]			45		44		43		45		43		45

Source ID	Source Name	Point of Reception R07		Point of Reception R08		Point of Reception R09		Point of Reception R10		Point of Reception R11		Point of Reception R12	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
D13_HwyTruck	Highway Trucks	551	30	565	30	528	28	533	27	649	32	576	31
A02_HwyTruck	Highway Trucks	754	35	774	35	883	31	914	31	1347	27	1278	22
D13_OffRoad	Off-Road Trucks	438	31	426	31	383	29	377	29	470	32	398	34
D13_Plant	Processing Plant	367	41	352	41	318	40	317	41	509	37	449	35
D13_RockDrill	Quiet Rock Drill	678	0	655	0	560	0	537	0	246	0	126	0
D13_SFEL	Shipping Loaders	364	29	350	29	325	28	327	28	533	26	473	23
D13_FEL	Single Extraction Loader	640	33	618	33	528	35	506	35	271	39	158	39
A02_WashPlant	Wash Plant	1198	37	1217	37	1321	34	1351	34	1719	31	1647	24
A02_2FEL	Wash Plant Loaders	1219	28	1237	28	1341	26	1371	26	1738	23	1666	19
Total Level [dBA]			44		44		43		43		42		42

Source ID	Source Name	Point of Reception R13		Point of Reception R14		Point of Reception R15		Point of Reception R17	
		Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day	Distance to POR (m)	Sound Level at POR (dBA) Day
D13_HwyTruck	Highway Trucks	564	36	526	32	576	34	856	29
A02_HwyTruck	Highway Trucks	1285	29	1247	24	1300	27	1338	27
D13_OffRoad	Off-Road Trucks	359	39	393	35	572	35	555	30
D13_Plant	Processing Plant	479	37	501	38	667	36	579	33
D13_RockDrill	Quiet Rock Drill	100	0	194	0	454	0	457	0
D13_SFEL	Shipping Loaders	501	27	517	24	674	33	603	24
D13_FEL	Single Extraction Loader	147	41	212	38	460	35	466	36
A02_WashPlant	Wash Plant	1646	33	1579	25	1560	30	1761	32
A02_2FEL	Wash Plant Loaders	1665	25	1597	20	1576	23	1781	23
Total Level [dBA]			45		42		42		40

Receiver: R01
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	45

Receiver Name	Receiver ID	X	Y	Z
Trailer	R01	638421.98 m	4750121.26 m	185.50 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	65.0	0.0	-1.9	4.5	2.2	0.0	0.0	0.0	0.0	0.0	30
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	62.7	0.0	-1.8	4.5	1.8	0.0	0.0	0.0	0.0	0.0	30
A02_HwyTruck	Highway Trucks	638680.5	4750265.4	179.9	0	78	16.7	A	60.4	0.0	-1.3	16.0	1.4	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	60.2	0.0	-1.0	5.4	1.4	0.0	0.0	0.0	0.0	0.0	29
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	60.8	0.0	-0.4	0.0	1.5	0.0	0.0	0.0	0.0	0.0	33
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	67.0	0.0	-1.9	4.5	2.7	0.0	0.0	0.0	0.0	0.0	28
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	69.2	0.0	-1.8	4.4	3.3	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	68.8	0.0	-1.9	4.5	3.2	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	61.8	0.0	-1.7	11.7	1.6	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	63.6	0.0	-1.9	4.5	1.9	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	69.8	0.0	-1.8	4.4	3.5	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	70.0	0.0	-1.9	4.4	3.6	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	69.6	0.0	-1.8	4.4	3.4	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	69.7	0.0	-1.9	4.5	3.5	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	70.0	0.0	-1.9	4.5	3.6	0.0	0.0	0.0	0.0	0.0	17
D13_OffRoad	Off-Road Trucks	637732.0	4750454.9	168.5	0	83	20.4	A	68.7	0.0	0.8	11.1	3.6	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637824.1	4750448.7	168.5	0	83	18.7	A	67.7	0.0	0.3	8.2	3.3	0.0	0.0	0.0	0.0	0.0	22
D13_OffRoad	Off-Road Trucks	637882.7	4750444.7	168.5	0	83	16.3	A	67.0	0.0	0.4	9.0	3.1	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	69.7	0.0	0.6	4.4	3.9	0.0	0.0	0.0	0.0	0.0	24
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	66.3	0.0	0.4	13.6	3.4	0.0	0.0	0.0	0.0	0.0	41
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	66.1	0.0	0.2	10.6	2.3	0.0	0.0	0.0	0.0	0.0	28
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	70.1	0.0	1.3	3.1	3.2	0.0	0.0	0.0	0.0	0.0	29
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	70.9	0.0	-1.3	4.4	4.5	0.0	0.0	0.0	0.0	0.0	38
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	71.1	0.0	-1.4	4.2	3.5	0.0	0.0	0.0	0.0	0.0	29

Receiver: R02
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	44

Receiver Name	Receiver ID	X	Y	Z
Church	R02	638359.44 m	4750113.29 m	185.56 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	638045.4	4750827.4	167.4	0	78	21.9	A	68.8	0.0	-1.3	12.9	3.2	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	65.8	0.0	-1.5	4.4	2.4	0.0	0.0	0.0	0.0	0.0	28
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	63.8	0.0	-1.4	4.6	2.0	0.0	0.0	0.0	0.0	0.0	29
A02_HwyTruck	Highway Trucks	638680.5	4750265.4	179.9	0	78	16.7	A	62.0	0.0	-1.3	15.9	1.7	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	67.6	0.0	-1.6	4.4	2.8	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	61.8	0.0	-0.9	5.9	1.6	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	69.4	0.0	-1.7	4.4	3.4	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	62.4	0.0	-0.5	0.0	1.7	0.0	0.0	0.0	0.0	0.0	31
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	69.2	0.0	-1.7	4.4	3.3	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	63.1	0.0	-1.4	11.0	1.8	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	64.5	0.0	-1.4	4.4	2.1	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	70.1	0.0	-1.7	4.4	3.6	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	70.3	0.0	-1.7	4.4	3.7	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	69.9	0.0	-1.7	4.4	3.5	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	70.1	0.0	-1.7	4.4	3.6	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	70.3	0.0	-1.7	4.4	3.7	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637739.3	4750454.4	168.5	0	83	21.0	A	68.0	0.0	1.0	12.5	3.4	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637834.3	4750448.0	168.5	0	83	18.2	A	66.9	0.0	0.3	9.7	3.1	0.0	0.0	0.0	0.0	0.0	21
D13_OffRoad	Off-Road Trucks	637885.5	4750444.5	168.5	0	83	15.7	A	66.2	0.0	0.3	7.9	2.9	0.0	0.0	0.0	0.0	0.0	21
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	69.1	0.0	0.5	4.6	3.7	0.0	0.0	0.0	0.0	0.0	25
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	65.5	0.0	0.5	15.0	3.1	0.0	0.0	0.0	0.0	0.0	40
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	65.3	0.0	0.1	10.7	2.2	0.0	0.0	0.0	0.0	0.0	29
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	69.5	0.0	1.3	3.1	3.1	0.0	0.0	0.0	0.0	0.0	30
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	71.3	0.0	-1.0	4.6	4.6	0.0	0.0	0.0	0.0	0.0	37
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	71.5	0.0	-1.1	4.3	3.6	0.0	0.0	0.0	0.0	0.0	29

Receiver: R03
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	43

Receiver Name	Receiver ID	X	Y	Z
Bungalo	R03	638249.67 m	4750112.01 m	185.92 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	638037.2	4750815.5	167.4	0	78	22.6	A	68.3	0.0	-1.3	5.2	3.1	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	637918.8	4750461.0	167.4	0	78	21.7	A	64.6	0.0	0.1	13.3	2.2	0.0	0.0	0.0	0.0	0.0	20
D13_HwyTruck	Highway Trucks	638201.8	4750891.9	167.4	0	78	23.5	A	68.9	0.0	-1.4	11.1	3.2	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	66.9	0.0	-1.3	4.3	2.7	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	69.7	0.0	-1.0	4.2	3.5	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	65.4	0.0	-0.9	4.3	2.3	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	68.4	0.0	-1.4	4.3	3.1	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	69.8	0.0	-1.6	4.4	3.5	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	64.1	0.0	-0.9	5.6	2.0	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	64.6	0.0	-0.5	0.0	2.2	0.0	0.0	0.0	0.0	0.0	28
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	64.9	0.0	-0.9	5.3	2.2	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	65.9	0.0	-1.1	4.3	2.4	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	70.6	0.0	-1.4	4.3	3.8	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	70.8	0.0	-1.5	4.3	3.9	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	70.3	0.0	-1.4	4.3	3.7	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	70.7	0.0	-1.6	4.4	3.8	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	70.8	0.0	-1.6	4.4	3.9	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637749.3	4750453.7	168.5	0	83	21.6	A	66.7	0.0	1.1	14.6	3.0	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637848.3	4750447.0	168.5	0	83	17.3	A	65.4	0.0	0.3	12.2	2.7	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637889.5	4750444.2	168.5	0	83	14.7	A	64.8	0.0	0.3	9.9	2.6	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	63.8	0.0	0.6	14.1	2.4	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	68.0	0.0	0.4	5.0	3.4	0.0	0.0	0.0	0.0	0.0	26
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	64.4	0.0	0.3	11.1	2.5	0.0	0.0	0.0	0.0	0.0	18
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	63.9	0.0	0.5	17.3	2.7	0.0	0.0	0.0	0.0	0.0	40
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	63.8	0.0	0.1	12.9	1.9	0.0	0.0	0.0	0.0	0.0	28
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	68.4	0.0	1.4	3.2	2.8	0.0	0.0	0.0	0.0	0.0	31
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	71.9	0.0	-0.9	4.2	4.8	0.0	0.0	0.0	0.0	0.0	37
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	72.1	0.0	-1.1	4.1	3.7	0.0	0.0	0.0	0.0	0.0	28

Receiver: R04
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	45

Receiver Name	Receiver ID	X	Y	Z
2-Storey	R04	638288.56 m	4750113.56 m	188.63 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	638040.3	4750820.1	167.4	0	78	22.3	A	68.5	0.0	-3.0	8.7	3.1	0.0	0.0	0.0	0.0	0.0	23
D13_HwyTruck	Highway Trucks	638201.8	4750891.9	167.4	0	78	23.5	A	68.9	0.0	-3.1	11.1	3.2	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	66.5	0.0	-2.9	4.8	2.6	0.0	0.0	0.0	0.0	0.0	29
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	64.8	0.0	-2.6	4.8	2.2	0.0	0.0	0.0	0.0	0.0	28
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	69.6	0.0	-3.0	4.8	3.4	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	68.1	0.0	-3.2	4.8	3.0	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638680.5	4750265.4	179.9	0	78	16.7	A	63.5	0.0	-2.5	14.8	1.9	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	63.4	0.0	-2.5	5.2	1.9	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	69.6	0.0	-3.4	4.8	3.4	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	63.9	0.0	-2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	31
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	64.3	0.0	-2.6	5.1	2.1	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	65.4	0.0	-2.7	4.8	2.3	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	70.4	0.0	-3.5	4.8	3.7	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	70.6	0.0	-3.5	4.8	3.8	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	70.1	0.0	-3.4	4.8	3.6	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	70.5	0.0	-3.5	4.8	3.7	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	70.6	0.0	-3.5	4.8	3.8	0.0	0.0	0.0	0.0	0.0	17
D13_OffRoad	Off-Road Trucks	637745.7	4750454.0	168.5	0	83	21.4	A	67.1	0.0	-0.8	14.6	3.1	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637843.3	4750447.4	168.5	0	83	17.6	A	65.9	0.0	-1.5	11.3	2.8	0.0	0.0	0.0	0.0	0.0	22
D13_OffRoad	Off-Road Trucks	637888.1	4750444.3	168.5	0	83	15.1	A	65.3	0.0	-1.5	9.0	2.7	0.0	0.0	0.0	0.0	0.0	22
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	64.3	0.0	-1.1	13.7	2.5	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	68.4	0.0	-1.6	5.5	3.5	0.0	0.0	0.0	0.0	0.0	27
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	64.9	0.0	-1.4	10.5	2.6	0.0	0.0	0.0	0.0	0.0	19
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	64.5	0.0	-0.7	17.0	2.9	0.0	0.0	0.0	0.0	0.0	41
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	64.3	0.0	-1.2	13.0	2.0	0.0	0.0	0.0	0.0	0.0	29
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	68.8	0.0	-0.3	4.3	2.9	0.0	0.0	0.0	0.0	0.0	31
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	71.7	0.0	-3.5	4.8	4.8	0.0	0.0	0.0	0.0	0.0	39
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	71.8	0.0	-3.0	4.8	3.7	0.0	0.0	0.0	0.0	0.0	30

Receiver: R05
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	43

Receiver Name	Receiver ID	X	Y	Z
Bungalo	R05	638226.02 m	4750111.71 m	185.93 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	638035.2	4750812.6	167.4	0	78	22.8	A	68.2	0.0	-1.1	4.5	3.0	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	637918.8	4750461.0	167.4	0	78	21.7	A	64.4	0.0	-0.3	10.9	2.1	0.0	0.0	0.0	0.0	0.0	23
D13_HwyTruck	Highway Trucks	638201.8	4750891.9	167.4	0	78	23.5	A	68.9	0.0	-1.4	11.2	3.2	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	67.2	0.0	-1.2	4.3	2.7	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	69.8	0.0	-1.0	4.2	3.5	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	65.7	0.0	-0.9	4.3	2.4	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	68.6	0.0	-1.4	4.3	3.1	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	70.0	0.0	-1.5	4.3	3.6	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	64.6	0.0	-0.8	5.7	2.1	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	65.1	0.0	-0.5	0.0	2.2	0.0	0.0	0.0	0.0	0.0	28
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	65.3	0.0	-0.9	4.6	2.3	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	66.2	0.0	-1.0	4.3	2.5	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	70.7	0.0	-1.3	4.3	3.8	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	70.9	0.0	-1.4	4.3	3.9	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	70.4	0.0	-1.3	4.3	3.7	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	70.8	0.0	-1.5	4.3	3.8	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	71.0	0.0	-1.5	4.3	3.9	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637751.4	4750453.6	168.5	0	83	21.7	A	66.3	0.0	1.1	15.0	2.9	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637851.2	4750446.8	168.5	0	83	17.1	A	65.0	0.0	0.3	12.7	2.6	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637890.4	4750444.2	168.5	0	83	14.4	A	64.5	0.0	0.3	10.5	2.5	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	63.5	0.0	0.6	14.5	2.3	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	67.7	0.0	0.3	5.2	3.3	0.0	0.0	0.0	0.0	0.0	26
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	64.1	0.0	0.3	11.6	2.4	0.0	0.0	0.0	0.0	0.0	18
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	63.6	0.0	0.6	17.8	2.7	0.0	0.0	0.0	0.0	0.0	40
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	63.4	0.0	0.1	13.3	1.9	0.0	0.0	0.0	0.0	0.0	28
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	68.2	0.0	1.4	3.2	2.7	0.0	0.0	0.0	0.0	0.0	31
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	72.0	0.0	-0.9	4.2	4.9	0.0	0.0	0.0	0.0	0.0	36
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	72.2	0.0	-1.0	4.0	3.7	0.0	0.0	0.0	0.0	0.0	28

Receiver: R06
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	45

Receiver Name	Receiver ID	X	Y	Z
2-Storey	R06	638198.15 m	4750112.53 m	188.90 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	638032.7	4750809.0	167.4	0	78	23.0	A	68.1	0.0	-2.6	5.5	3.0	0.0	0.0	0.0	0.0	0.0	27
D13_HwyTruck	Highway Trucks	637918.8	4750461.0	167.4	0	78	21.7	A	64.0	0.0	-1.8	10.7	2.0	0.0	0.0	0.0	0.0	0.0	25
D13_HwyTruck	Highway Trucks	638201.8	4750891.9	167.4	0	78	23.5	A	68.8	0.0	-3.1	11.7	3.2	0.0	0.0	0.0	0.0	0.0	21
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	65.6	0.0	-1.8	10.4	2.4	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	67.5	0.0	-2.9	4.8	2.8	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	69.9	0.0	-2.8	4.8	3.5	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	68.8	0.0	-3.2	4.8	3.2	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	66.1	0.0	-2.4	4.8	2.5	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	70.2	0.0	-3.3	4.8	3.6	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	65.0	0.0	-2.3	5.1	2.2	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	65.5	0.0	-2.1	0.0	2.3	0.0	0.0	0.0	0.0	0.0	29
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	65.7	0.0	-2.4	4.8	2.4	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	66.5	0.0	-2.6	4.8	2.6	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	70.8	0.0	-3.1	4.8	3.9	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	71.0	0.0	-3.2	4.8	3.9	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	70.5	0.0	-3.0	4.8	3.7	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	70.9	0.0	-3.3	4.8	3.9	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	71.1	0.0	-3.3	4.8	4.0	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637753.6	4750453.4	168.5	0	83	21.9	A	66.0	0.0	-0.6	16.1	2.8	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637854.5	4750446.6	168.5	0	83	16.8	A	64.6	0.0	-1.5	13.1	2.5	0.0	0.0	0.0	0.0	0.0	21
D13_OffRoad	Off-Road Trucks	637891.3	4750444.1	168.5	0	83	14.1	A	64.1	0.0	-1.4	11.1	2.4	0.0	0.0	0.0	0.0	0.0	21
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	63.1	0.0	-0.9	15.4	2.2	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	67.4	0.0	-1.6	5.8	3.2	0.0	0.0	0.0	0.0	0.0	28
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	63.7	0.0	-1.3	12.1	2.3	0.0	0.0	0.0	0.0	0.0	19
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	63.2	0.0	-0.6	18.4	2.6	0.0	0.0	0.0	0.0	0.0	41
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	63.0	0.0	-1.0	14.6	1.8	0.0	0.0	0.0	0.0	0.0	28
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	67.9	0.0	-0.2	4.3	2.7	0.0	0.0	0.0	0.0	0.0	32
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	72.2	0.0	-3.4	4.8	4.9	0.0	0.0	0.0	0.0	0.0	38
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	72.3	0.0	-3.0	4.8	3.8	0.0	0.0	0.0	0.0	0.0	29

Receiver: R07
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	44

Receiver Name	Receiver ID	X	Y	Z
2-Storey	R07	638130.38 m	4750104.08 m	188.68 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637935.9	4750440.6	167.4	0	78	19.7	A	62.8	0.0	-1.6	15.0	1.8	0.0	0.0	0.0	0.0	0.0	20
D13_HwyTruck	Highway Trucks	637889.0	4750496.8	167.4	0	78	17.3	A	64.3	0.0	-2.0	8.1	2.1	0.0	0.0	0.0	0.0	0.0	23
D13_HwyTruck	Highway Trucks	638025.6	4750798.8	167.4	0	78	23.5	A	67.9	0.0	-1.9	6.5	3.0	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	638201.8	4750891.9	167.4	0	78	23.5	A	69.0	0.0	-3.1	11.9	3.3	0.0	0.0	0.0	0.0	0.0	21
D13_HwyTruck	Highway Trucks	638781.8	4750538.6	167.4	0	78	16.3	A	65.1	0.0	-2.2	5.6	2.2	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	70.2	0.0	-2.9	4.8	3.6	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	68.2	0.0	-2.8	4.8	3.0	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	69.4	0.0	-3.0	4.8	3.4	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	67.0	0.0	-2.4	4.8	2.7	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	70.6	0.0	-3.1	4.8	3.8	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	66.1	0.0	-2.2	5.2	2.5	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	66.6	0.0	-2.1	0.0	2.6	0.0	0.0	0.0	0.0	0.0	28
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	66.7	0.0	-2.3	4.8	2.6	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	67.4	0.0	-2.6	4.8	2.8	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	71.2	0.0	-3.1	4.8	4.0	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	71.4	0.0	-3.1	4.8	4.1	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	70.9	0.0	-3.0	4.8	3.9	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	71.4	0.0	-3.1	4.8	4.1	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	71.5	0.0	-3.1	4.8	4.1	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637759.9	4750453.0	168.5	0	83	22.2	A	65.1	0.0	-0.6	17.2	2.6	0.0	0.0	0.0	0.0	0.0	21
D13_OffRoad	Off-Road Trucks	637863.2	4750446.0	168.5	0	83	16.1	A	63.8	0.0	-1.4	14.6	2.4	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637893.8	4750444.0	168.5	0	83	13.2	A	63.4	0.0	-1.3	12.5	2.3	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637931.4	4750428.2	168.5	0	83	13.5	A	62.6	0.0	-0.9	15.5	2.1	0.0	0.0	0.0	0.0	0.0	17
D13_OffRoad	Off-Road Trucks	637948.1	4750412.8	168.5	0	83	13.6	A	62.1	0.0	-0.6	18.0	2.0	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	66.7	0.0	-1.6	6.3	3.0	0.0	0.0	0.0	0.0	0.0	29
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	63.0	0.0	-1.2	13.3	2.2	0.0	0.0	0.0	0.0	0.0	19
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	62.3	0.0	-0.5	19.6	2.4	0.0	0.0	0.0	0.0	0.0	41
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	62.2	0.0	-0.8	14.9	1.7	0.0	0.0	0.0	0.0	0.0	29
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	67.1	0.0	-0.1	4.3	2.5	0.0	0.0	0.0	0.0	0.0	33
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	72.6	0.0	-3.3	4.8	5.1	0.0	0.0	0.0	0.0	0.0	37
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	72.7	0.0	-2.8	4.7	3.9	0.0	0.0	0.0	0.0	0.0	28

Receiver: R08
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	44

Receiver Name	Receiver ID	X	Y	Z
2-Storey	R08	638104.79 m	4750104.26 m	188.62 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637918.8	4750461.0	167.4	0	78	21.7	A	63.1	0.0	-1.7	12.6	1.8	0.0	0.0	0.0	0.0	0.0	24
D13_HwyTruck	Highway Trucks	638022.8	4750794.7	167.4	0	78	23.7	A	67.8	0.0	-1.8	6.7	2.9	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	638201.8	4750891.9	167.4	0	78	23.5	A	69.0	0.0	-3.1	12.0	3.3	0.0	0.0	0.0	0.0	0.0	21
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	64.9	0.0	-2.2	5.7	2.2	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	70.3	0.0	-2.9	4.8	3.7	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	68.4	0.0	-2.8	4.8	3.1	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	69.6	0.0	-2.9	4.8	3.5	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	67.3	0.0	-2.3	4.8	2.8	0.0	0.0	0.0	0.0	0.0	25
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	70.8	0.0	-3.0	4.8	3.9	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	66.5	0.0	-2.2	5.2	2.6	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	66.9	0.0	-2.1	0.0	2.7	0.0	0.0	0.0	0.0	0.0	27
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	67.0	0.0	-2.2	4.8	2.7	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	67.7	0.0	-2.6	4.8	2.9	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	71.3	0.0	-3.0	4.8	4.0	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	71.6	0.0	-3.1	4.8	4.1	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	71.0	0.0	-3.0	4.8	3.9	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638809.5	4750894.3	171.3	0	78	15.4	A	71.5	0.0	-3.0	4.8	4.1	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638800.5	4750923.8	171.3	0	78	14.7	A	71.6	0.0	-3.1	4.8	4.2	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637761.9	4750452.9	168.5	0	83	22.3	A	64.8	0.0	-0.6	17.5	2.6	0.0	0.0	0.0	0.0	0.0	21
D13_OffRoad	Off-Road Trucks	637866.0	4750445.8	168.5	0	83	15.8	A	63.4	0.0	-1.3	15.1	2.3	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637894.6	4750443.9	168.5	0	83	12.8	A	63.0	0.0	-1.3	13.0	2.2	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	62.1	0.0	-0.8	17.0	2.0	0.0	0.0	0.0	0.0	0.0	19
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	66.4	0.0	-1.6	6.7	2.9	0.0	0.0	0.0	0.0	0.0	28
D13_OffRoad	Off-Road Trucks	637908.8	4750441.4	168.5	0	83	10.0	A	62.8	0.0	-1.2	13.6	2.2	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637918.3	4750437.7	168.5	0	83	10.1	A	62.7	0.0	-1.1	14.2	2.1	0.0	0.0	0.0	0.0	0.0	15
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	61.9	0.0	-0.4	20.0	2.3	0.0	0.0	0.0	0.0	0.0	41
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	61.9	0.0	-0.7	15.3	1.6	0.0	0.0	0.0	0.0	0.0	29
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	66.8	0.0	-0.1	4.3	2.5	0.0	0.0	0.0	0.0	0.0	33
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	72.7	0.0	-3.2	4.8	5.1	0.0	0.0	0.0	0.0	0.0	37
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	72.8	0.0	-2.8	4.7	3.9	0.0	0.0	0.0	0.0	0.0	28

Receiver: R09
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	43

Receiver Name	Receiver ID	X	Y	Z
Church	R09	637980.86 m	4750087.59 m	186.01 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637921.0	4750458.4	167.4	0	78	21.5	A	62.5	0.0	-0.2	14.2	1.7	0.0	0.0	0.0	0.0	0.0	21
D13_HwyTruck	Highway Trucks	638005.7	4750770.0	167.4	0	78	24.7	A	67.7	0.0	-0.1	9.5	2.9	0.0	0.0	0.0	0.0	0.0	23
D13_HwyTruck	Highway Trucks	637871.8	4750544.9	167.4	0	78	14.8	A	64.5	0.0	-0.7	6.9	2.1	0.0	0.0	0.0	0.0	0.0	20
D13_HwyTruck	Highway Trucks	637879.7	4750579.6	167.4	0	78	16.3	A	65.0	0.0	-0.8	5.4	2.2	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	71.0	0.0	-1.1	4.2	3.9	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	69.7	0.0	-0.7	4.1	3.5	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	70.6	0.0	-0.8	4.1	3.8	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	71.7	0.0	-1.0	4.2	4.2	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	68.8	0.0	-0.5	4.1	3.2	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	68.2	0.0	-0.3	4.6	3.0	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	68.5	0.0	-0.3	4.0	3.1	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	68.6	0.0	-0.3	4.0	3.1	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	69.0	0.0	-0.7	4.1	3.3	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	72.0	0.0	-1.1	4.2	4.3	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	72.3	0.0	-1.1	4.2	4.4	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	71.7	0.0	-1.1	4.2	4.2	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637755.7	4750453.3	168.5	0	83	22.0	A	63.7	0.0	0.8	15.8	2.3	0.0	0.0	0.0	0.0	0.0	22
D13_OffRoad	Off-Road Trucks	637850.5	4750446.9	168.5	0	83	15.1	A	62.7	0.0	1.0	14.7	2.1	0.0	0.0	0.0	0.0	0.0	17
D13_OffRoad	Off-Road Trucks	637879.8	4750444.9	168.5	0	83	14.3	A	62.4	0.0	0.6	15.4	2.1	0.0	0.0	0.0	0.0	0.0	17
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	61.5	0.0	0.9	17.4	1.9	0.0	0.0	0.0	0.0	0.0	18
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	65.1	0.0	0.3	9.8	2.6	0.0	0.0	0.0	0.0	0.0	25
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	62.1	0.0	0.6	15.0	2.0	0.0	0.0	0.0	0.0	0.0	16
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	61.0	0.0	0.7	20.2	2.1	0.0	0.0	0.0	0.0	0.0	40
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	61.2	0.0	0.5	15.3	1.5	0.0	0.0	0.0	0.0	0.0	28
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	65.4	0.0	1.4	3.3	2.2	0.0	0.0	0.0	0.0	0.0	35
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	73.4	0.0	-0.3	3.9	5.4	0.0	0.0	0.0	0.0	0.0	34
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	73.5	0.0	-0.6	3.8	4.1	0.0	0.0	0.0	0.0	0.0	26

Receiver: R10
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	43

Receiver Name	Receiver ID	X	Y	Z
Bungalo	R10	637946.77 m	4750082.07 m	185.75 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637926.4	4750451.9	167.4	0	78	20.9	A	62.4	0.0	-0.1	15.0	1.7	0.0	0.0	0.0	0.0	0.0	20
D13_HwyTruck	Highway Trucks	638000.0	4750761.8	167.4	0	78	25.0	A	67.7	0.0	-0.1	10.7	2.9	0.0	0.0	0.0	0.0	0.0	22
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	64.3	0.0	-0.5	10.0	2.1	0.0	0.0	0.0	0.0	0.0	19
D13_HwyTruck	Highway Trucks	637874.2	4750566.0	167.4	0	78	11.2	A	64.8	0.0	-0.7	7.5	2.2	0.0	0.0	0.0	0.0	0.0	16
D13_HwyTruck	Highway Trucks	637882.2	4750585.8	167.4	0	78	14.7	A	65.1	0.0	-0.8	5.6	2.3	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	71.2	0.0	-1.1	4.2	4.0	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	70.0	0.0	-0.7	4.1	3.6	0.0	0.0	0.0	0.0	0.0	23
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	70.9	0.0	-0.7	4.1	3.9	0.0	0.0	0.0	0.0	0.0	22
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	71.9	0.0	-0.9	4.1	4.3	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	69.2	0.0	-0.5	4.1	3.3	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638688.9	4750227.5	181.9	0	78	16.4	A	68.6	0.0	-0.3	4.5	3.1	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638722.3	4750200.5	184.4	0	78	16.3	A	68.9	0.0	-0.2	4.0	3.2	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	72.2	0.0	-1.1	4.2	4.4	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638695.2	4750331.9	177.4	0	78	15.2	A	68.9	0.0	-0.3	4.0	3.2	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638691.8	4750449.4	177.9	0	78	15.6	A	69.4	0.0	-0.6	4.1	3.4	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	72.5	0.0	-1.1	4.2	4.5	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638649.6	4750940.4	170.5	0	78	16.1	A	71.9	0.0	-1.1	4.2	4.3	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637745.4	4750454.0	168.5	0	83	21.4	A	63.5	0.0	0.6	14.4	2.3	0.0	0.0	0.0	0.0	0.0	23
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	64.7	0.0	0.3	9.7	2.6	0.0	0.0	0.0	0.0	0.0	26
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	61.6	0.0	0.9	17.5	1.9	0.0	0.0	0.0	0.0	0.0	18
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	62.1	0.0	0.6	15.1	2.0	0.0	0.0	0.0	0.0	0.0	16
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	61.0	0.0	0.7	20.2	2.1	0.0	0.0	0.0	0.0	0.0	41
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	61.3	0.0	0.5	15.3	1.5	0.0	0.0	0.0	0.0	0.0	28
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	65.1	0.0	1.4	3.3	2.1	0.0	0.0	0.0	0.0	0.0	35
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	73.6	0.0	-0.3	3.9	5.5	0.0	0.0	0.0	0.0	0.0	34
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	73.7	0.0	-0.6	3.8	4.2	0.0	0.0	0.0	0.0	0.0	26

Receiver: R11
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	42

Receiver Name	Receiver ID	X	Y	Z
2-Storey	R11	637445.04 m	4750192.59 m	187.50 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637988.4	4750745.0	167.4	0	78	25.5	A	68.8	0.0	-3.2	4.8	3.2	0.0	0.0	0.0	0.0	0.0	30
D13_HwyTruck	Highway Trucks	637902.7	4750480.3	167.4	0	78	19.8	A	65.7	0.0	-2.3	8.5	2.4	0.0	0.0	0.0	0.0	0.0	24
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	65.8	0.0	-2.7	6.8	2.4	0.0	0.0	0.0	0.0	0.0	22
D13_HwyTruck	Highway Trucks	637879.7	4750579.6	167.4	0	78	16.3	A	66.3	0.0	-2.8	5.0	2.5	0.0	0.0	0.0	0.0	0.0	24
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	73.3	0.0	-3.0	9.5	4.8	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638702.7	4750495.8	175.5	0	78	17.9	A	73.2	0.0	-2.4	4.8	4.8	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638726.6	4750558.0	173.5	0	78	18.6	A	73.5	0.0	-2.5	5.0	4.9	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	73.8	0.0	-2.8	5.0	5.1	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638779.0	4750790.4	170.8	0	78	20.8	A	74.3	0.0	-2.8	4.9	5.3	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	73.0	0.0	-2.0	4.7	4.7	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	74.3	0.0	-3.0	5.0	5.3	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637733.7	4750454.8	168.5	0	83	20.6	A	62.8	0.0	-1.7	12.2	2.2	0.0	0.0	0.0	0.0	0.0	28
D13_OffRoad	Off-Road Trucks	637847.3	4750447.1	168.5	0	83	20.6	A	64.6	0.0	-1.8	10.7	2.5	0.0	0.0	0.0	0.0	0.0	27
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	60.9	0.0	-1.5	15.2	1.8	0.0	0.0	0.0	0.0	0.0	27
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	65.1	0.0	-0.2	19.8	3.0	0.0	0.0	0.0	0.0	0.0	37
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	65.5	0.0	-0.8	14.4	2.2	0.0	0.0	0.0	0.0	0.0	26
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	59.6	0.0	-0.2	7.6	1.3	0.0	0.0	0.0	0.0	0.0	39
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	75.7	0.0	-3.0	6.5	6.4	0.0	0.0	0.0	0.0	0.0	31
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	75.8	0.0	-2.5	5.7	4.8	0.0	0.0	0.0	0.0	0.0	23

Receiver: R12
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	42

Receiver Name	Receiver ID	X	Y	Z
Bungalo	R12	637469.49 m	4750313.27 m	184.50 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637938.1	4750672.2	167.4	0	78	22.5	A	66.4	0.0	-2.0	7.8	2.6	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	638038.7	4750817.7	167.4	0	78	22.5	A	68.6	0.0	-2.0	6.0	3.1	0.0	0.0	0.0	0.0	0.0	25
D13_HwyTruck	Highway Trucks	637905.8	4750476.6	167.4	0	78	20.2	A	64.4	0.0	-1.8	10.1	2.1	0.0	0.0	0.0	0.0	0.0	24
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	64.3	0.0	-1.9	10.0	2.1	0.0	0.0	0.0	0.0	0.0	20
D13_HwyTruck	Highway Trucks	637879.7	4750579.6	167.4	0	78	16.3	A	64.8	0.0	-1.9	9.4	2.2	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	57.3	0.0	-0.3	15.0	1.3	0.0	0.0	0.0	0.0	0.0	30
D13_OffRoad	Off-Road Trucks	637733.7	4750454.8	168.5	0	83	20.6	A	60.5	0.0	-1.0	12.7	1.8	0.0	0.0	0.0	0.0	0.0	30
D13_OffRoad	Off-Road Trucks	637847.3	4750447.1	168.5	0	83	20.6	A	63.1	0.0	-1.1	10.8	2.2	0.0	0.0	0.0	0.0	0.0	29
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	64.0	0.0	0.1	22.8	2.8	0.0	0.0	0.0	0.0	0.0	35
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	64.5	0.0	-0.5	18.3	2.0	0.0	0.0	0.0	0.0	0.0	23
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	55.0	0.0	0.6	11.2	0.9	0.0	0.0	0.0	0.0	0.0	39
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	75.3	0.0	-0.6	12.0	6.3	0.0	0.0	0.0	0.0	0.0	24
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	75.4	0.0	-0.9	8.7	4.7	0.0	0.0	0.0	0.0	0.0	19

Receiver: R13
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	45

Receiver Name	Receiver ID	X	Y	Z
2-Storey	R13	637431.99 m	4750418.81 m	188.50 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637938.1	4750672.2	167.4	0	78	22.5	A	66.1	0.0	-3.6	4.9	2.5	0.0	0.0	0.0	0.0	0.0	31
D13_HwyTruck	Highway Trucks	638038.7	4750817.7	167.4	0	78	22.5	A	68.2	0.0	-3.8	4.8	3.0	0.0	0.0	0.0	0.0	0.0	28
D13_HwyTruck	Highway Trucks	637926.1	4750452.3	167.4	0	78	18.4	A	64.9	0.0	-3.6	5.2	2.2	0.0	0.0	0.0	0.0	0.0	28
D13_HwyTruck	Highway Trucks	637887.9	4750498.1	167.4	0	78	17.0	A	64.3	0.0	-3.5	5.5	2.1	0.0	0.0	0.0	0.0	0.0	27
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	64.2	0.0	-3.5	5.6	2.1	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	637879.7	4750579.6	167.4	0	78	16.3	A	64.6	0.0	-3.5	5.4	2.1	0.0	0.0	0.0	0.0	0.0	26
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	72.6	0.0	-4.1	10.1	4.5	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638714.4	4750526.3	174.5	0	78	21.0	A	73.2	0.0	-3.8	4.8	4.8	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	73.5	0.0	-3.8	4.9	4.9	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	74.0	0.0	-3.9	4.8	5.1	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638693.6	4750404.1	178.8	0	78	17.3	A	73.0	0.0	-3.8	4.8	4.7	0.0	0.0	0.0	0.0	0.0	17
A02_HwyTruck	Highway Trucks	638764.1	4750942.4	170.9	0	78	17.6	A	74.1	0.0	-4.1	4.8	5.2	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637588.9	4750437.7	168.5	0	83	13.4	A	55.0	0.0	-1.1	21.7	1.1	0.0	0.0	0.0	0.0	0.0	20
D13_OffRoad	Off-Road Trucks	637638.2	4750449.4	168.5	0	83	19.0	A	57.4	0.0	-1.8	13.7	1.3	0.0	0.0	0.0	0.0	0.0	31
D13_OffRoad	Off-Road Trucks	637698.9	4750457.1	168.5	0	83	16.4	A	59.6	0.0	-2.1	10.4	1.6	0.0	0.0	0.0	0.0	0.0	30
D13_OffRoad	Off-Road Trucks	637812.5	4750449.5	168.5	0	83	22.6	A	62.6	0.0	-2.9	6.6	2.1	0.0	0.0	0.0	0.0	0.0	37
D13_OffRoad	Off-Road Trucks	637928.7	4750430.6	168.5	0	83	11.8	A	64.9	0.0	-3.3	5.1	2.6	0.0	0.0	0.0	0.0	0.0	25
D13_OffRoad	Off-Road Trucks	637945.4	4750415.2	168.5	0	83	14.8	A	65.2	0.0	-3.2	16.9	2.7	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	64.7	0.0	-3.3	5.2	2.5	0.0	0.0	0.0	0.0	0.0	27
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	64.6	0.0	-2.4	22.0	2.9	0.0	0.0	0.0	0.0	0.0	37
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	65.0	0.0	-3.1	16.3	2.1	0.0	0.0	0.0	0.0	0.0	27
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	54.3	0.0	-0.7	11.6	0.8	0.0	0.0	0.0	0.0	0.0	41
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	75.3	0.0	-4.0	6.2	6.3	0.0	0.0	0.0	0.0	0.0	33
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	75.4	0.0	-3.6	5.6	4.7	0.0	0.0	0.0	0.0	0.0	25

Receiver: R14
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	42

Receiver Name	Receiver ID	X	Y	Z
Bungalo	R14	637452.56 m	4750599.26 m	184.50 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637938.1	4750672.2	167.4	0	78	22.5	A	64.8	0.0	-1.9	9.2	2.2	0.0	0.0	0.0	0.0	0.0	27
D13_HwyTruck	Highway Trucks	638038.7	4750817.7	167.4	0	78	22.5	A	66.9	0.0	-2.0	7.2	2.7	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	637918.8	4750461.0	167.4	0	78	21.7	A	64.7	0.0	-1.9	9.1	2.2	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	63.5	0.0	-1.9	10.3	1.9	0.0	0.0	0.0	0.0	0.0	21
D13_HwyTruck	Highway Trucks	637879.7	4750579.6	167.4	0	78	16.3	A	63.6	0.0	-1.9	10.2	1.9	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	73.6	0.0	-1.8	7.7	5.0	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	73.3	0.0	-1.7	8.4	4.8	0.0	0.0	0.0	0.0	0.0	15
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	73.0	0.0	-1.4	7.9	4.7	0.0	0.0	0.0	0.0	0.0	15
D13_OffRoad	Off-Road Trucks	637733.7	4750454.8	168.5	0	83	20.6	A	61.0	0.0	-1.0	11.9	1.8	0.0	0.0	0.0	0.0	0.0	30
D13_OffRoad	Off-Road Trucks	637847.3	4750447.1	168.5	0	83	20.6	A	63.5	0.0	-1.4	9.7	2.3	0.0	0.0	0.0	0.0	0.0	29
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	58.3	0.0	-0.3	14.3	1.5	0.0	0.0	0.0	0.0	0.0	29
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	65.3	0.0	-1.5	8.2	2.7	0.0	0.0	0.0	0.0	0.0	25
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	64.8	0.0	-1.5	8.7	2.6	0.0	0.0	0.0	0.0	0.0	21
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	65.0	0.0	-1.9	20.8	3.0	0.0	0.0	0.0	0.0	0.0	38
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	65.3	0.0	-1.6	16.7	2.2	0.0	0.0	0.0	0.0	0.0	24
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	57.5	0.0	0.8	9.4	1.1	0.0	0.0	0.0	0.0	0.0	38
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	75.0	0.0	-1.0	11.8	6.1	0.0	0.0	0.0	0.0	0.0	25
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	75.1	0.0	-1.2	8.6	4.6	0.0	0.0	0.0	0.0	0.0	20

Receiver: R15
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	42

Receiver Name	Receiver ID	X	Y	Z
Bungalo	R15	637437.00 m	4750865.83 m	184.50 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637938.1	4750672.2	167.4	0	78	22.5	A	65.6	0.0	-1.6	6.4	2.4	0.0	0.0	0.0	0.0	0.0	28
D13_HwyTruck	Highway Trucks	638038.7	4750817.7	167.4	0	78	22.5	A	66.6	0.0	-1.3	5.2	2.6	0.0	0.0	0.0	0.0	0.0	28
D13_HwyTruck	Highway Trucks	638201.8	4750891.9	167.4	0	78	23.5	A	68.7	0.0	-1.4	4.4	3.2	0.0	0.0	0.0	0.0	0.0	27
D13_HwyTruck	Highway Trucks	637918.8	4750461.0	167.4	0	78	21.7	A	67.0	0.0	-1.8	5.9	2.7	0.0	0.0	0.0	0.0	0.0	26
D13_HwyTruck	Highway Trucks	637879.7	4750579.6	167.4	0	78	16.3	A	65.4	0.0	-1.8	7.3	2.3	0.0	0.0	0.0	0.0	0.0	21
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	65.7	0.0	-1.8	7.0	2.4	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	71.7	0.0	-1.5	9.2	4.2	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	73.6	0.0	-1.5	4.4	5.0	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	73.5	0.0	-1.5	4.4	4.9	0.0	0.0	0.0	0.0	0.0	19
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	73.4	0.0	-1.5	4.4	4.9	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	73.6	0.0	-1.6	4.5	5.0	0.0	0.0	0.0	0.0	0.0	16
A02_HwyTruck	Highway Trucks	638701.3	4750950.4	170.6	0	78	18.4	A	73.1	0.0	-1.5	4.5	4.7	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637790.5	4750450.9	168.5	0	83	23.6	A	65.7	0.0	-1.2	6.2	2.8	0.0	0.0	0.0	0.0	0.0	33
D13_OffRoad	Off-Road Trucks	637627.6	4750446.9	168.5	0	83	20.1	A	64.3	0.0	-0.6	7.4	2.5	0.0	0.0	0.0	0.0	0.0	29
D13_OffRoad	Off-Road Trucks	637939.8	4750420.4	168.5	0	83	16.6	A	67.5	0.0	-1.4	5.3	3.2	0.0	0.0	0.0	0.0	0.0	25
D13_OffRoad	Off-Road Trucks	637913.6	4750439.5	168.5	0	83	13.1	A	67.1	0.0	-1.4	5.5	3.1	0.0	0.0	0.0	0.0	0.0	22
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	67.5	0.0	-1.9	19.7	3.7	0.0	0.0	0.0	0.0	0.0	36
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	67.6	0.0	-1.4	5.0	2.6	0.0	0.0	0.0	0.0	0.0	33
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	64.3	0.0	1.2	4.2	2.0	0.0	0.0	0.0	0.0	0.0	35
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	74.9	0.0	-0.7	6.0	6.0	0.0	0.0	0.0	0.0	0.0	30
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	75.0	0.0	-1.0	5.0	4.6	0.0	0.0	0.0	0.0	0.0	23

Receiver: R17
 Project: Law Quarry Extension
 Project Number: 17132.02

Time Period	Total (dBA)
Day	40

Receiver Name	Receiver ID	X	Y	Z
Raised Bungalo	R17	637524.61 m	4749965.00 m	185.31 m

Source ID	Source Name	X	Y	Z	Refl.	Lw	L/A	Freq	Adiv	K0	Agr	Abar	Aatm	Afol	Ahous	Cmet	Dc	RL	Lr
D13_HwyTruck	Highway Trucks	637988.4	4750745.0	167.4	0	78	25.5	A	70.2	0.0	-2.2	4.7	3.6	0.0	0.0	0.0	0.0	0.0	27
D13_HwyTruck	Highway Trucks	637871.8	4750538.6	167.4	0	78	16.3	A	67.5	0.0	-1.7	5.3	2.8	0.0	0.0	0.0	0.0	0.0	21
D13_HwyTruck	Highway Trucks	637879.7	4750579.6	167.4	0	78	16.3	A	68.0	0.0	-1.8	4.8	3.0	0.0	0.0	0.0	0.0	0.0	21
A02_HwyTruck	Highway Trucks	638512.6	4750932.5	170.4	0	78	23.8	A	73.8	0.0	-1.9	4.7	5.1	0.0	0.0	0.0	0.0	0.0	20
A02_HwyTruck	Highway Trucks	638715.6	4750529.5	174.4	0	78	21.2	A	73.4	0.0	-1.6	4.6	4.9	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638749.1	4750663.0	171.4	0	78	21.6	A	74.0	0.0	-1.9	4.6	5.1	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638784.5	4750805.6	170.9	0	78	21.8	A	74.6	0.0	-2.2	4.6	5.4	0.0	0.0	0.0	0.0	0.0	18
A02_HwyTruck	Highway Trucks	638694.6	4750389.6	178.4	0	78	19.2	A	72.9	0.0	-1.5	4.6	4.7	0.0	0.0	0.0	0.0	0.0	17
D13_OffRoad	Off-Road Trucks	637790.5	4750450.9	168.5	0	83	23.6	A	65.9	0.0	-0.9	10.7	2.8	0.0	0.0	0.0	0.0	0.0	28
D13_OffRoad	Off-Road Trucks	637585.1	4750436.7	168.5	0	83	11.4	A	64.5	0.0	-0.6	11.9	2.5	0.0	0.0	0.0	0.0	0.0	16
D13_OffRoad	Off-Road Trucks	637634.3	4750448.5	168.5	0	83	19.4	A	64.9	0.0	-0.8	11.3	2.6	0.0	0.0	0.0	0.0	0.0	24
D13_Plant	Processing Plant	637910.5	4750397.0	168.5	0	125	0.0	A	66.3	0.0	0.1	21.7	3.4	0.0	0.0	0.0	0.0	0.0	33
D13_SFEL	Shipping Loaders	637932.4	4750408.6	167.4	0	110	0.0	A	66.6	0.0	-0.1	14.3	2.4	0.0	0.0	0.0	0.0	0.0	24
D13_FEL	Single Extraction Loader	637578.1	4750428.1	178.5	0	107	0.0	A	64.4	0.0	0.5	4.0	2.0	0.0	0.0	0.0	0.0	0.0	36
A02_WashPlant	Wash Plant	638995.8	4750932.9	172.0	0	117	0.0	A	75.9	0.0	-2.2	4.6	6.5	0.0	0.0	0.0	0.0	0.0	32
A02_2FEL	Wash Plant Loaders	639011.0	4750946.1	171.4	0	110	0.0	A	76.0	0.0	-1.6	4.3	4.9	0.0	0.0	0.0	0.0	0.0	23

Appendix D
Qualifications of the Authors

Derek Flake **M.Sc., P.Eng.**

Profile

Derek is an employee of Aercoustics Engineering Limited, an engineering consulting company specializing in acoustics, noise and vibration. Prior to that, he worked for several years at another acoustics, noise and vibration firm and he completed a Master of Science in the field of ultrasound transducer design. Derek is a Professional Engineer with the Professional Engineers Ontario.

Derek has been recognized by the Local Planning Appeal Tribunal (LPAT) and previously by the Ontario Municipal Board (OMB) as an expert in environmental noise and has provided expert opinion testimony to the Board and in civil litigation.

Employment History

2012 – Present Acoustical Engineer, Aercoustics Engineering Limited

2009 – 2012 Engineering Intern, Jade Acoustics Incorporated

Additional Activities / Committees

2019 – Present Officer on the Board of Directors and Chair of the Membership Committee at the Air & Waste Management Association (A&WMA) Ontario Section (OS)

2018 – Present Member of Environment Committee at the Ontario Sand, Stone and Gravel Association (OSSGA)

2014 – Present Member of Training and Development Committee at the Ontario Sand, Stone and Gravel Association (OSSGA)

Education

Master of Science (M.Sc.) Medical Biophysics (Ultrasound Physics)
University of Toronto

Bachelor of Applied Science (B.A.Sc.) Engineering Physics (Mechanical)
Queen's University

Professional Registration / Affiliations

Licensed Professional Engineer with the Professional Engineers of Ontario (PEO)

Courses and Speaking Events

Instructor, Municipal Law Enforcement Officers' Association (MLEOA) Environmental Noise training courses. This is an annual four-day training program which provides the officers with an understanding of sound measurement and its relationship with environmental noise impact. The officer is trained in the utilization of technical equipment required in the application of sound measurement theories. This course also covers the unique elements of qualitative noise regulations and is authorized by the Ministry of the Environment and Climate Change.

Speaker, "Overview of Noise & Vibration Issues in Land-Use Planning", A&WMA OS Environment Issues in Land-Use Planning, Guelph, October 30, 2019.

Attended A&WMA Course "Consultant Liability and Expert Witness Testimony", Guelph, 2019.

Speaker, "Environmental Noise: Modelling Techniques to Quiet your Acoustic Troubles", ACE 2019, Quebec City, 2019.

Attended PSMJ Resources Project Management Bootcamp, Toronto, 2016.

Attended OSSGA Health and Safety Seminar courses "*Aggregates 101*" and "*Aggregates 201*", Toronto, 2015. Mr. Flake both attended and aided in the development for parts of the course.

Speaker, "*The New NPC-300 Noise Guideline: What does it mean for your noise by-law?*" MLEOA Annual General Meeting, Kingston, 2014.

Professional Activities

Land Use Planning

In the field of environmental acoustics, Mr. Flake has completed numerous projects involving noise impact from planned stationary sources as well as noise impact studies for proposed new noise sensitive uses. These projects included conducting studies for proposed operations and developments and addressing noise concerns for existing operations. Peer reviews of noise studies prepared by other acoustic consultants were also conducted by Mr. Flake. In the land use planning process, Mr. Flake has completed studies which provide assessments of the noise impact on proposed residential, commercial, institutional and industrial developments from the local environment which includes noise from road, rail, and aircraft traffic and stationary noise sources such as industrial and commercial uses. Also, vibration measurements and studies were conducted to assess vibration from rail traffic such as trains, streetcars and subways. The studies include recommendations for noise control of the sources, dwelling building components, wall, window, and door constructions to satisfy the Ministry of Environment, Conservation and Parks noise guidelines.

In addition, Mr. Flake has conducted architectural drawing reviews and provided design advice for residential and commercial developments. These have ensured the construction plans will meet the municipal and Ontario Building Code requirements.

Environmental Compliance Approvals & EASR

Mr. Flake was involved in noise and vibration impact studies for industrial, institutional and commercial uses. He has prepared Acoustic Assessment Reports for use in applications for Environmental Compliance Approvals (ECA) and the Environmental Activity & Sector Registry (EASR). These studies provided conceptual as well as detailed designs of noise mitigation to reduce in-plant noise or noise emission into the environment. In-plant projects generally involved noise surveys, detailed noise and vibration measurements of equipment, data analysis and computer modelling of noise controls to evaluate effectiveness. In some cases, detailed designs and specifications have been provided. Mr. Flake has a good record of submitting applications that are accepted as fully complete according to MECP records.

Aggregates

Mr. Flake has done work in the aggregates industry which involved the preparation and support of noise impact studies to determine technical feasibility of aggregate licence applications to the Ministry of Natural Resources & Forestry. This work included preparing the noise impact studies, supporting the findings at public meetings, and performing acoustic audits to confirm compliance with the noise requirements.

Mining

Mr. Flake has acted as a third-party peer reviewer for the City of Timmins, overseeing all aspects of environmental compliance (including acoustics, noise & vibration) for the Hollinger Pit Open Mine in Timmins.

Acoustic Audits were also conducted at Goldcorp's Red Lake Balmerton & Cochenour sites.

Renewable Energy

Mr. Flake has performed IEC 61400 testing of Wind Turbines and Transformer Station noise audits.

Noise Source Investigations and Room Acoustics

Mr. Flake has completed several projects involving design of spaces where sound privacy and room acoustics were critical. These projects have included noise complaint investigation, room acoustics, mechanical noise, noise measurements to quantify sound isolation, and environmental noise impact. Examples of spaces include cinemas, offices, hospitals and residential condominiums.

Kohl Clark

B.Eng.

Profile

Kohl Clark is an Engineer in Training (EIT) in the Province of Ontario and holds a Bachelor's degree in Mechanical Engineering from McMaster University. He has 4 years of experience in the field of Acoustics and has been involved in different aspects of environmental noise and vibration.

Education + career milestones

B.Eng., Mechanical Engineering, McMaster University, June 2016
joined Aercoustics full time in 2016 as a noise and vibration consultant.
Member of Professional Engineers of Ontario.

Selected projects

Noise modelling and assessment

Oshawa Asphalt Plant	Oshawa, ON
Coleraine Drive Asphalt Plant	Bolton, ON
Derry Heights Commercial Development	Milton, ON
Rogers 333 Bloor Generator Upgrade	Toronto, ON
Law Quarry Extension	Wainfleet, ON
Greely Quarry	Ottawa, ON
Bury Road Quarry	Bruce, ON
Yellow Lake Solar Project	Yellow Lake, AB
Burdett Solar Project	Foremost, AB
Loblaws Supermarkets	Various locations within Canada

Industrial noise measurements and compliance verification

Lafarge Bath Cement Plant	Bath, ON
Headwaters Wind Farm	Randolph County, IN
Smiths Falls 2 Solar Farm	Perth, ON
Snowy Ridge Wind Farm	Kawartha Lakes, ON
Port Ryerse Wind Farm	Port Dover, ON
K2 Wind Project Wind Project	Kincardine, ON
Belle River Wind Power Project	Belle River, ON

End of Report
