FREEFIELD LTD.
Ottawa Ontario Canada

ACOUSTIC ASSESSMENT REPORT

ELGINBURG QUARRY AND EXPANSION AREA

TOWNSHIP OF KINGSTON

Prepared for

Coco Properties Corporation

Prepared by

Freefield Ltd.

23rd March 2020

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ACOUSTIC ASSESSMENT OF THE ELGINBURG QUARRY AND EXPANSION AREA

TOWNSHIP OF KINGSTON

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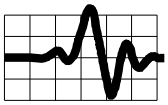

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Executive Summary

Coco Properties Corporation in the future will be applying to the Ministry of Environment, Conservation and Parks, MECP, for a Site-Wide Environmental Compliance Approval, ECA, for their existing licensed quarry and associated operations, referred as the Elginburg Quarry, located at 2357 Unity Road, Kingston, Ontario.

The associated operations include an Asphalt Plant and Ready-Mix Concrete Plant which currently operate under separate ECA's issued from the Ontario Ministry of Environment, Conservation and Parks, MECP. The Elginburg Asphalt Plant operates under an Amended Environmental Compliance Approval, ECA No. 5860-95CPZG issued 21 June 2013, and, the CBM Ready-Mix Concrete Plant currently operates under Certificate of Approval No. 0147-6S5RA3.

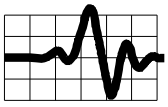
It is understood that the main purpose of the Site-Wide ECA for the existing quarry is to cover all on-site operations, including Extraction and Aggregate Processing Operations, the Asphalt Plants operations and the Ready-Mix Concrete Plants operations.

In addition to the Site-Wide ECA application, Coco Properties Corporation wish to expand the Elginburg Quarry and are applying to the City of Kingston for rezoning and the Ministry of Natural Resources and Forestry, MNRF, for a license under the Aggregate Resources Act, ARA, for the proposed Expansion Area located immediately west of the existing licensed quarry.

A part of the application process involves the preparation of an acoustic assessment report covering all existing and proposed on-site operations. Freefield Ltd. has been retained by Coco Properties Corporation to complete this acoustic assessment.

Although the ARA license application and Municipal approval process refer only to the Expansion Area, the following acoustical assessment considers noise sources from both the existing and expansion areas, as is appropriate under MECP guidelines. Assessment includes both current and future operations of the quarry and as such supports separate applications to the MECP for a Site-Wide Environmental Compliance Approval for the existing licensed quarry, as well as, an application for a Site-Wide Environmental Compliance Approval for the proposed expanded quarry, following the rezoning and granting of a license under the ARA for the Expansion Area.

The acoustic assessment has been carried out according to the applicable MECP Noise Assessment Guidelines, including NPC-300, published August 2013.[1] The assessment considers the impact on nearby noise sensitive land uses of noise generated by all on-site equipment operations, including extraction operations, aggregate processing operations, asphalt production, ready-mix concrete production, loading and vehicle movements. The noise and vibration impacts of blasting are being considered in a separate blasting study conducted by blasting specialists.



Noise impacts have been predicted and compared to the MECP sound level limits as set out in NPC-300.[1] Where applicable, noise mitigation measures such as limitations on operations, silencers and berms have been designed to ensure all operations are in compliance with the applicable sound level limits.

Assessment Methodology is provided in Section 1. A detailed description of the facility and its operations is provided in Section 2. Noise sources associated with operations at the facility are summarized in Section 3. Critical Receptors are described in Section 1 and Section 4, with Section 5 and 6 and 7 detailing recommended noise mitigation measure, applicable assessment criteria and an assessment of noise impacts.

ACOUSTIC ASSESSMENT OF THE ELGINBURG QUARRY AND EXPANSION AREA

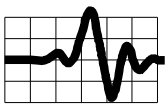
TOWNSHIP OF KINGSTON

1.0 Introduction

Coco Properties Corporation in the future will be applying to the Ministry of Environment, Conservation and Parks, MECP, for a Site-Wide Environmental Compliance Approval, ECA, for their existing licensed quarry and associated operations, referred as the Elginburg Quarry, located at 2357 Unity Road, Kingston, Ontario. The associated operations include an Asphalt Plant and Ready-Mix Concrete Plant which currently operate under separate ECA's issued from the MECP. The Elginburg Asphalt Plant operates under an Amended Environmental Compliance Approval, ECA No. 5860-95CPZG issued 21 June 2013, and, the CBM Ready-Mix Concrete Plant currently operates under Certificate of Approval No. 0147-6S5RA3. The main purpose of the Site-Wide ECA for the existing quarry is to cover all on-site operations, including the extraction and processing operations, the Asphalt Plants operations and the Ready-Mix Concrete Plants operations.

The North American Industry Classification System (NAICS) codes for the various on-site operations include 324121 (asphalt production), 212323 (limestone quarrying) and 327320 (Ready-mix concrete manufacturing).

In addition to the Site-Wide ECA application for the existing licensed area, Coco Properties Corporation wish to expand the Elginburg Quarry and are applying to the City of Kingston for rezoning and the Ministry of Natural Resources and Forestry, MNRF, for a license under the Aggregate Resources Act, ARA, for the proposed Expansion Area, located immediately west of the existing licensed quarry. Although the ARA license application and Municipal approval process refer only to the Expansion Area, the following acoustical assessment considers noise sources from both the existing licensed quarry and the expansion area, as is appropriate under MECP guidelines. Assessment includes both current and future operations of the quarry and as such supports applications to the MECP for a Site-Wide Environmental Compliance Approval for the existing licensed quarry, as well as, supporting the applications for rezoning, ARA licensing and an application for a Site-Wide Environmental Compliance Approval for the proposed expanded quarry, following the rezoning and granting of a license under the ARA, for the Expansion Area.



This report describes an assessment carried out by Freefield Ltd. of the potential impact of noise from operations at the Elginburg Quarry and Expansion Area on nearby receptors in accordance with MECP guidelines for stationary noise sources.[1,2] The ARA license application and Municipal approval process refer only to the Expansion Area, however, this acoustical assessment considers noise sources from both the existing and expanded sites as appropriate under MECP guidelines.

This report has been prepared in accordance with the MECP Document NPC-233, *Information to be Submitted for Approval of Stationary Sources of Sound*, October 1995[2]. Noise from the facility is assessed according to MECP Documents: NPC-300, *Stationery and Transportation Sources – Approval and Planning*, August 2013[1]. The report follows the recommended format contained in, *Sample Application Package, Basic Comprehensive Certificate of Approval (Air and Noise)*, July 2009[3].

The noise assessment methodology is summarised below.

- Identification of noise sensitive receptors in the vicinity of the site. Potential noise sensitive receptors include residences, motels, places of worship, schools, hospitals and vacant land zoned for potential noise sensitive use.

- Determination of the MECP sound level limits[2] which will apply at each of the noise sensitive receptors.

- Identification of the sources of noise that will arise from on-site operations. In the current study, the strengths of the various noise sources were obtained from noise measurements carried out on-site by Freefield Ltd. in October, 2019, from noise measurements of similar operations at other facilities in Ontario by Freefield Ltd, and, from noise measurements carried out on-site by Golder Associates in May, 2016 and December, 2017, and, HGC Engineering in February, 2016.

- Based on the strengths of the individual noise sources, noise levels due to on-site operations are predicted at nearby noise sensitive receptors using a prediction procedure[6] which is favoured by the MECP. The MECP methodology requires that compliance be assessed under predictable "worst case" conditions for normal operations.

- Assessment of compliance of the noise due to on-site operations with MECP sound level limits. Where appropriate, mitigation measures are recommended such that compliance with MECP sound level limits is achieved at all receptors.

Note that this assessment does not consider the noise and vibrations caused by blasting. The impacts of blasting at the Elginburg Quarry are being assessed by others.

Surrounding Lands, Acoustic Environment and Critical Receptors

The Elginburg Quarry and Expansion Area is located on the southern side of Unity Road as shown in Figure 1.

The legal description of the land occupied by the Elginburg Quarry is as follows:

PART OF LOTS 12, 13, 14, 15
CONCESSION 5
KINGSTON TOWNSHIP, ONTARIO

A location plan showing the site with respect to the surrounding area is provided in Figure 1. A site layout plan, showing the sites detailed arrangement and source locations, is provided in Figure 2. A land use zoning map is provided in Appendix 1.

The existing Elginburg Quarry is located on land zoned Extractive Industrial Zone (M5-1). The proposed Expansion Area is currently zoned General Agricultural Zone (A2).

To the north of the site, the land is zoned Restricted Agricultural Zone (A1) and General Agricultural Zone (A2). This land is predominantly open pastureland with an existing solar farm located on a parcel of land located directly north of the site at 2490 Unity Road. A small number of residences currently exist on the north and south sides of Unity Road on land zoned A2, with a vacant lot located in a north easterly direction, neighboring the existing Solar Farm. As per MECP requirements for Vacant Lots (> 1 HA), a Point of Reception, POR 2, has been included on this vacant lot in location consistent with the existing development fabric of the area, to represent a possible future residence. The closest existing and possible future residences in a northerly direction have been selected as critical receptors in the following assessment.

To the east of the site, the land is zoned Restricted Agricultural Zone (A1). A small number of residences currently exist in this direction fronting Unity Road and Sydenham Road. The closest residences in this direction have been included as critical receptors in the following assessment.

To the south of the site, the land is zoned General Agricultural Zone (A2). Further south in a south easterly direction the land is zoned Environmental Protection Area Zone (EPA) with pockets of land zoned Service Industrial Zone (M3), Open Space Zone (OS), Residential Type 1 Zone (R1) and Restricted Agricultural Zone (A1) located adjacent to Bur Brook Road. A number of existing residences lie in this direction fronting Burbrook Road and Mayview Road. The closest residences in this direction have been included as critical receptors in the following assessment.

To the west of the site, the land is zoned General Agricultural Zone (A2) with pockets of land zoned Residential Type 1 Zone (R1), Residential Type 2 Zone (R2) and Restricted Agricultural Zone (A1) located near the intersection of Cordukes Road and Burbrook Road.

A number of existing residences lie in this direction fronting Unity Road and Cordukes Road. The closest residences in this direction have been selected as critical receptors.

The quarry and surrounding lands are relatively hilly with moderate changes in elevation.

The existing licensed quarry site is partially excavated down to an elevation ranging from 118 mASL and 125 m ASL.

The proposed expansion area is unexcavated with topography ranging from approximately 139 m ASL at Unity Road site boundary, sloping down to the south east to approximately 133 m ASL in the mid region of the site and 124 m ASL at the sites south eastern boundary.

The surrounding land falls generally in a south easterly direction with steep sections occurring at the site's southern boundary adjacent to the environment protection area.

The critical noise sensitive receptors, which have been selected for detailed analysis, are shown in Figure A1.1. These were selected as being the receptors most likely to be impacted by noise from the Elginburg Quarry. Other noise sensitive receptors are at greater distances and will be less affected by noise from the quarry.

Table 1 lists the noise sensitive receptors selected for analysis.

2.0 Detailed Facility Description

The Elginburg Quarry operations produce a range of products including various sized aggregates, ready-mix concrete and asphalt products. These products are produced from operations that can be categorized as follows:

- Extraction and Aggregate Processing Operations,
- Ready-Mix Concrete Plant operations (RMC Plant).
- Hot Mix Asphalt Plant operations (HMA Plant),

The main entry to the Elginburg Quarry, as shown in Figure 2, is via Unity Road. An internal haul road runs from the site entry to the various on-site operations. The expansion area will be accessed via the existing site entry serving the existing licensed quarry.

A Hydro One easement dissects the site from the north west corner of the expansion area to the south east corner of the existing licensed quarry. A pipeline easement for Enbridge and TransCanada, running east to west, dissects both the existing license quarry and the expansion area into north and south areas.

The RMC Plant and HMA Plant are stationary plants located within the existing licensed quarries boundaries.

Extraction operations will progress from the current lift face to the extraction limits in both the existing licensed quarry and expansion area. Equipment will follow the sequence of extraction and typically be located on the quarry floor near the lift face.

A detailed description of each operation is provided below.

2.1 Extraction and Aggregate Processing Operations:

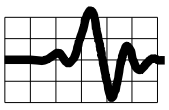
2.1.1 Existing Licensed Quarry:

The existing licensed quarry has an annual production limit of 500,000 tonnes. A Pipeline Easement, running east /west, divides the site into two extraction areas. Extraction and aggregate processing operations will take place in the two extraction areas, referred to as follows:

- Existing Quarry Phase North of Pipeline (Phase 1),
- Existing Quarry Phase South of Pipeline (Phase 2).

The existing quarry is partially excavated with the lift floor approximately 125 mASL in Phase 1 and between 118 mASL and 125 mASL in Phase 2.

The quarry will be extracted in 3 lifts, benched at 125 mASL and 118 mASL with the final depth of the quarry at an elevation approximate elevation of 103 mASL with actual finished depth in each area dependent on quality of limestone deposit.



Extraction will proceed from the current lift face to the extraction limits in a south to north direction in Phase 1 and in an east to west direction in Phase 2.

Extraction and aggregate processing operations in the existing licensed quarry occur on a 24-hour basis (24 hours) with limited operations permitted during the evening and nighttime period (19:00 to 07:00). Refer to Section 7.0.

2.1.2 Expansion Area:

Coco Properties Corporation are applying for an annual production limit of 1,000,000 tonnes. The Pipeline Easement, running east /west, divides the site into two extraction areas. The Phase North of Pipeline is further dissected into two extraction areas by the Hydro One easement. Extraction and aggregate processing operations will take place in these three areas, referred to as follows:

- Expansion Area Phase South of Pipeline (Phase 3),
- Expansion Area Phase North of Pipeline North of Hydro Easement (Phase 4),
- Expansion Area Phase North of Pipeline South of Hydro Easement (Phase 5).

The expansion area is unexcavated with topography ranging from approximately 139 m ASL at Unity Road site boundary, sloping down to the south east to approximately 133 m ASL in the mid region of the site and 124 m ASL at the sites south eastern boundary.

The expansion area will be extracted in 3 lifts, benched at 125 mASL and 115 mASL with the final depth of the quarry at an elevation approximate elevation of 103 mASL with actual finished depth in each area dependent on quality of limestone deposit.

Extraction will proceed from the current lift face of the existing licensed quarry to the extraction limits of the expansion area in a west and south direction in Phase 3 and in a west and north direction in both Phase 4 and 5.

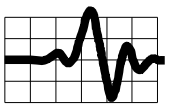
Extraction and aggregate processing operations in the expansion area occur only during the daytime period (07:00 to 19:00).

2.1.3 Description of process:

Aggregate is extracted through a process of drilling and blasting. Blasting produces large pieces of rock which are then taken by loader to one of the on-site aggregate processing operations.

The aggregate processing operations include a portable crushing and screening plant and a wash plant.

The portable crushing and screening plant has a production rate of 450 tonnes per hour and is typically located near the pile of blasted rock. After blasting, a loader will be used to feed rock into the portable crushing and screening plant. The aggregates produced are then placed in



stockpiles, using conveyors. Loaders will then load the stockpiled aggregates onto haul trucks which are used to haul the product internally on-site for further processing or shipped directly off-site. A generator is used to provide power to the portable crushing and screening plant and associated conveyors.

A portable wash plant is used to clean aggregate products before being delivered on-site for asphalt or ready-mix concrete production or shipped directly off-site. The wash plant is typically located near the portable crushing and screening plant. A loader is used to feed material into the wash plant and load the cleaned aggregate product onto haul trucks. Haul trucks are used to deliver products to and from the wash plant operation as needed. A generator is used to provide power to the wash plant and associated equipment.

For the purposes of assessing worst-case noise impacts for the extraction and aggregate processing operations, equipment is assumed to be located on the surface and or one lift down.

The major equipment associated with the extraction and aggregate processing operation is as follows:

- One Portable Standard Hydraulic Rock Drill or Low Noise Rock Drill
- One Portable Crushing and Screening Plant and associated equipment, including:
    - 1 x Primary Jaw Crusher,
    - 1 x Secondary Cone or VSI Crusher,
    - 1 x Primary Screener,
    - 1 x Secondary Screener,
    - 1 x Generator (1600kW or similar),
    - 2 x Loaders at Extraction (CAT 980K or similar),
    - 1 x Loader at Stockpiles (CAT 980M or similar),
    - Conveyors and stackers used to transfer material*,
- One Portable Washing and screening Plant, including:
    - 1 x Dry Screen
    - 1 x Classifier,
    - 1 x Wet Screen,
    - 1 x Generator,
    - 1 x Loader at Stockpiles (CAT 980M or similar),
    - Conveyors and stackers used to transfer material*,
    - Pumps*.
- Haulage Trucks
- Portable equipment for site preparation and rehabilitation, including excavators, hydraulic shovels, dozers and scrapers

*Assessed as an insignificant noise source in this analysis. Refer Section 3.0 Noise Source summary.

2.2 Ready-Mix Concrete Plant Operations:

The Ready-Mix Concrete Plant is owned and operated by St. Mary's Cement Inc. (Canada)

who lease a portion of the existing licensed quarry from Coco Properties Corporation. The plant has a maximum production rate of 168 tonnes per hour and is located within the existing licensed quarry site boundary in location shown in Figure 2.

Raw material, including sand and coarse aggregate, are delivered by large highway trucks and stored in stockpiles, a loader is used to feed the stockpiled material into a pit or hopper. Conveyors transfer the material to an elevated dispensing bin. The elevated dispensing bin loads metered quantities of the washed sand and aggregate into the concrete batch silo where materials are combined. The resultant mix of sand and aggregate is then delivered directly into a concrete truck located under the batch silo i.e. gravity fed.

Cement and slag powder, which is delivered to site and stored in an enclosed split silo, is added directly into the concrete truck with water at the appropriate ratio. Cement supplements (slag, additives), stored in a separate compartment within the split silo, may be added in appropriate quantities depending on the type of mix being prepared.

Concrete trucks enter the site from Unity and proceed to the load and mix location under the concrete batch silo. The signal horn operates for 2 seconds per load / truck. At certain times concrete trucks proceed to the wash out area prior to proceeding to the load and mix location. A signal horn sounds at the completion of loading.

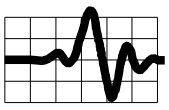
The concrete truck remains at the load and mix location, mixing the components, for 3 - 5 minutes. During this period, the trucks run at a fast idle with the concrete drum spinning to achieve the mixing.

After loading and mixing the concrete trucks proceed to the slump mix station where additional water is added, as needed. This typically takes 3 - 5 minutes with the concrete drum spinning to continue the mixing process. Concrete trucks then leave the site via the site entry at Unity Road.

Cement powder and powdered slag are delivered by a specialized powder tanker truck equipped with a blower/pump to unload the cement powder or powdered slag into the silos. The blower/pump is located under the chassis of the truck, immediately behind the cab. Powder trucks typically have a capacity of 40 tons. Unloading of the cement powder or slag typically takes approximately 1 to 2 hours.

The cement and slag storage silos are fitted with a baghouse (dust collector) to control dust emissions. The dust collector is typically operated at the start and end of the filling process for approximately 15 minutes. For the purpose of assessing compliance it has been assumed the dust extractor is in operation continuously.

Ancillary operations include mechanical and maintenance operations associated with the concrete trucks and administration operations occurring inside the plant building. In addition, an oil burner, that exhausts through an exhaust stack located on the roof of the plant building,



and an air compressor are located internally. These were assessed as insignificant during the site visit.

The major components and / or operations of the ready-mix concrete plant are as follows:

- Signal Horn,
- Concrete Truck Loading and Mixing,
- Concrete Truck Slump Test and Mixing,
- Cement powder tanker truck equipped with a blower/pump to unload the cement powder or slag,
- Dust Extractor (baghouse),
- Loader (to load sand and aggregate into the pit or hopper),
- Concrete Truck on-site movements,
- Aggregate Truck delivery to stockpiles,
- Highway Truck on-site movements delivering sand, aggregate or recycled concrete,
- Highway Truck on-site movements delivering powdered cement and slag;
- Concrete Truck Wash Out*,
- Oil Boiler Exhaust*,
- Conveyors used to transfer material*,
- Silo's and associated shakers located at the top of the silos*,
- Air compressor located inside insulated building*,
- Small vents and exhausts located at the office and control tower building*.

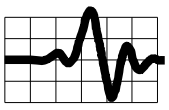
*Assessed as an insignificant noise source in this analysis. Refer Section 3.0 Noise Source summary.

The Ready-mix Concrete Plant operations occur on a 24-hour basis (24 hours) with limited operations permitted during the evening and nighttime period (19:00 to 07:00). Refer to Section 7.0.

2.3 Asphalt Plant Operations:

The asphalt plant has a maximum production rate of 220 tonnes per hour and is located within the existing licensed quarry site boundary in location shown in Figure 2.

A loader loads processed aggregate into the hopper. Conveyors transfer the material to the rotary dryer. In the dryer, the aggregate is heated by the oil burner to remove surface moisture and raise the aggregates temperature to approximately 120 to 160 ºC. The heated aggregate is conveyed into the batch plant where it is mixed with liquid asphalt cement, reclaimed dust from the baghouse and recycled asphalt. The asphalt is then dispensed into highway trucks beneath the asphalt batch plant for transport off-site.



The air, dust, and products of combustion are drawn out of the dryer by a cyclone fan, through enclosed ductwork, to the baghouse before being exhausted to the atmosphere. Dust collected by the baghouse is conveyed back to a dust storage silo for reuse in the mix.

A generator is used to power the plant in stand-by mode during non-production periods. All other processes are generally shut down. This assessment considers the noise impact of the asphalt plant in normal operation during a production period. Noise impacts from the plant while in stand-by are insignificant.

The major components and operations of the asphalt plant are as follows:

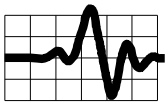
- Truck loading and batch tower,
- Dryer, cyclone fan and associated ventilation system (baghouse),
- RAP Screen,
- Aggregate hopper,
- Aggregate screen,
- Natural gas fired burner and associated blower,
- Drum mixer,
- Air exhaust,
- Tower screen and associated ventilation system,
- Loader (to load aggregate and recycled asphalt product into hoppers),
- Highway Trucks used for delivery and shipping of product,
- Mineral fines silo*,
- Bitumen tanks*,
- Fuel oil tanks and Hot Oil System*,
- Pumps*,
- Air compressors located inside insulated building*,
- Aggregate and product conveyors*,
- Control trailer and laboratory including exhausts*.

*Assessed as an insignificant noise source in this analysis. Refer Section 3.0 Noise Source summary.

The asphalt plant operations occur on a 24-hour basis (24 hours) with limited operations permitted during the evening and nighttime period (19:00 to 07:00). Refer to Section 7.0.

2.4 Haul Trucks

On-site truck movements (Concrete Trucks and Highway Trucks) are used for the transport of material on-site and shipping of product off site for each of the on-site operations. The on-site haul routes of truck movements have been included in this assessment.



2.5 Ancillary Operations:

An office and scale house are located near the site entry. Small exhausts and vents associated with the building were considered insignificant noise sources.

2.6 Portable equipment for site preparations and rehabilitation:

Portable construction equipment will be used occasionally for site preparation (e.g. land clearing and construction of berms) and rehabilitation. This equipment would typically include excavators, hydraulic shovels, dozers and scrapers. To minimize the impact of noise during site preparation and rehabilitation, the construction equipment used, excavators, bulldozers, etc., will comply with MECP Publication NPC-115[5], *Construction Equipment*, August 1978. This publication gives noise standards to be met by construction equipment in Ontario. Site preparation and rehabilitation activities will take place only during daytime hours (07:00 – 19:00).

2.7 Hours of Operation

Daytime Operations (07:00 – 19:00) - During the daytime period, all significant noise sources are assumed to be in operation, and include the following:

- One Hydraulic Rock Drill or One Low Noise Rock Drill;
- One Portable Crushing Plant, may consist of primary, secondary and tertiary crushing and screening units (up to three total) and an associated diesel generator;
- One Wash Plant and associated diesel generator
- One Ready-Mix Concrete Plant and associated equipment;
- One Asphalt Plant and associated equipment;
- Loaders and Excavators;
- On-Site Truck movements, to deliver product and haul the product off-site.

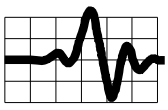
Evening and Night Operations (19:00 – 07:00) – During the evening and nighttime period, the Ready-Mix Concrete Plant, Asphalt Plant, Loaders and Haul Trucks only will be in operation. All other equipment is assumed to be in stand-by mode or shut down.

- One Ready-Mix Concrete Plant;
- One Asphalt Plant;
- Loaders;
- On-Site Truck movements, to deliver product and haul the product off-site.

Refer to Section 7.0 for additional restrictions on operations during the daytime, evening and nighttime period of operation.

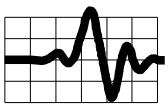
2.8 Possible Simultaneous Operation of the Existing Quarry and the Expansion Area

Coco Paving will hold the licences, and be the operator, for both Existing Quarry and the Expansion Area.



The extraction and aggregate processing equipment listed above currently operates in the existing quarry and will be moved to, and operate in, the Expansion Area once the license is in place and as production of aggregate is needed. While there may be some concurrent operations of both quarries, it is the one set extraction and aggregate processing equipment, as listed above, which will be in operation.

It is noted the Ready-Mix Concrete Plant and Asphalt Plant will be in operation concurrently with extraction and aggregate processing operations occurring in both the existing quarry and expansion area.



3.0 Noise Source Summary

The following noise sources have been used to model noise generated by operations at the Elginburg Quarry and Expansion Area. In brackets are the shortened names of the noise sources as used in the acoustic model. The characteristics of these sources, as used in acoustic modelling, are summarized in Table 2.1, Table 2.2 and Table 2.3.

Extraction and Aggregate Processing Operations:

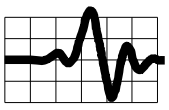
- Portable Crushing and Screening Plant (Source: Q_CP_Crushing_Plant)
  (Includes primary and secondary crushing and screening units and an associated diesel generator)
- Washing and Screening Plant (Source: Q_WP_Wash_Plant)
  (Includes one classifier, one wet screen, one dry screen and an associated diesel generator)
- Two (2) Loaders carrying out extraction operations (Source: Q_Loader_CAT980K)
  (CAT980K or similar)
- One (1) Loader carrying out site preparation, stockpiling and loading operations (Source: Q_Loader_CAT980M)
  (CAT980M or similar)
- On-site Highway Truck Movements (Source: Q_Highway_Truck_Passby)
  (Delivery and shipment of processed aggregate product from the extraction and aggregate processing operations)

Ready-Mix Concrete Plant Operations:

- Arriving/Departing Powder Tanker Trucks (Source: RMC_NS_01)
- Powder Truck Unloading Tanker Blower 1 (Source: RMC_NS_02)
- Powder Truck Unloading Tanker Engine 1 (Source: RMC_NS_03)
- Powder Truck Unloading Tanker Exhaust 1 (Source: RMC_NS_04)
- Powder Truck Unloading Tanker Blower 2 (Source: RMC_NS_05)
- Powder Truck Unloading Tanker Engine 2 (Source: RMC_NS_06)
- Powder Truck Unloading Tanker Exhaust 2 (Source: RMC_NS_07)
- Arriving/Departing Ready-Mix Trucks (Source: RMC_NS_08)
- Loading Ready-Mix Trucks Engine (Source: RMC_NS_09)
- Loading Ready-Mix Trucks Exhaust (Source: RMC_NS_10)
- Slumping Ready-Mix Trucks Engine 1 (Source: RMC_NS_11)
- Slumping Ready-Mix Trucks Exhaust 1 (Source: RMC_NS_12)
- Slumping Ready-Mix Trucks Engine 2 (Source: RMC_NS_13)
- Slumping Ready-Mix Trucks Exhaust 1 (Source: RMC_NS_14)
- Arriving/Departing Aggregate Trucks (Source: RMC_NS_15)
- Unloading Aggregate Trucks (Source: RMC_NS_16)
- Front End Loader (Source: RMC_NS_17)
- Aggregate Conveyor (Source: RMC_NS_18)
- Loading Point Dust Collector (Source: RMC_NS_19)
- Loading Point Signal Horn (Source: RMC_NS_20)

Asphalt Plant Operations:

- Truck Loading and Batch Tower (Source: AP_Truck_Loading_Batch_Tower)
- Dryer and Cyclone Fan (Source: AP_Dryer_Cyclone_Fan)
- Recycled Asphalt Product Screen (RAP Screen) (Source: AP_RAP_Screen)
- Aggregate Screen (Source: AP_Aggregate_Screen)



- Hopper (Source: AP_Hopper)
- Burner (Source: AP_Burner)
- Drum Mixer (Source: AP_Drum_Mixer)
- Air Exhaust (Source: AP_Air_Exhaust)
- Tower Screen Fan (Source: AP_Tower_Screen_Fan)
- Loader (Source: AP_Loader)
- Highway_Truck_Passby (Source: AP_Highway_Truck_Passby)
  (Powder cement and slag delivery)
- Aggregate_Truck_Passby (Source: AP_Aggregate_Truck_Passby)
  (Aggregate delivery)

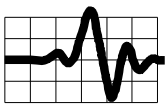
Refer to Section 2.0 for detailed description of equipment in operation at the facility.

The strengths of the noise sources, i.e. the sound powers shown in Table 2.1, 2.2 and 2.3, and used in this analysis, are taken from noise measurements carried out on-site in October, 2019, from a database of noise measurements made by Freefield Ltd. of similar operations at other facilities in Ontario, from noise measurement data provided by HGC Engineering in March 2020[12], and, from noise measurements carried out on-site by Golder Associates in May, 2016 and December, 2017, presented in Golder Associates, "Cruickshank Construction Limited Elginburg Quarry Acoustic Assessment Report", dated January 2018[11] (Golder AAR).

Noise from the crushing and screening plant (crusher) is estimated using a single point source that represents noise from the primary and secondary crushing and screening units and an associated diesel generator. The calculated sound power was based on the direction of worst-case noise impact measured at far field locations in each direction from the plant. While, the noise measurement data included noise from the associated loaders and haul trucks, noise from these associated operations has been modelled separately to account for potential operations in unshielded areas where recommendations have been made related to the crusher.

Noise from the Washing and Screening Plant (Wash Plant) is estimated using a single point source that represents the cumulative noise from one classifier, one wet screen, one dry screen and an associated diesel generator. The calculated sound power was based on noise measurement data provided in the Golder AAR[11].

Noise from the Ready-Mix Concrete Plant is estimated using point sources that represent each major component of the plant. The sound power for all sources, except for the associated on-site truck movements, was based on noise data provided by HGC Engineering[12]. The sound power for the associated on-site truck movements was based on noise measurements made by Freefield Ltd. of similar operations at other facilities in Ontario. In addition, the cumulative noise from the overall RMC Plant was measured at far field measurements locations in each direction from the plant by Freefield Ltd. in October 2019. The locations selected for noise measurements correspond to the direction of worst-case receptors in each direction from the plant. Table A6.1, Appendix 6, presents the raw measurement data at each far field measurements location. As shown in Figure A6.1 the prediction results correlate closely with the measured sound pressure level at measurement locations L1 (in the direction of POR 2, POR 3 and POR 4) and L4 (in direction of POR 6 and POR 7). In all other directions the



predicted results in the acoustic model exceed the measured sound pressure level.

Noise from the Asphalt Plant and associated operations is estimated using point sources that represent each major component of the plant. The sound power for each component was based on noise measurement data provided in the Golder AAR[11].

Noise from the loaders is estimated using the moving point source method and modelled as an area of operation for each of the applicable processes described above.

Noise from the on-site truck movements is estimated using the moving point source method and modelled as a continuous loop.

Noise measurements were carried out by Freefield Ltd. using a Brüel & Kjær Type 2270 sound level meter. Field calibrations, using a Brüel & Kjær 4231 field calibrator, and battery checks were carried out before and after each measurement series. In no case did the field calibration vary by more than 0.1 dB over a series of measurements. In addition, the sound level meters, and the field calibrator are laboratory calibrated on an annual basis. Copies of the relevant calibration certificates are included in Appendix 3.

Meteorological conditions during the measurement period were well suited to noise measurements, i.e. temperature between +1 and +5 °C, no precipitation, partly cloudy skies and the relative humidity below 95 %. Wind was slight, less than 20 km/hour and often near calm.

All measurements were made with microphones mounted on tripods, 1.5 m above the ground and at least 3 m away from any major obstacles.

During the site visit the following noise sources were assessed as insignificant noise sources.

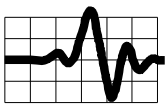
Insignificant Noise Sources:

Extraction and Aggregate Processing Operations:

- Conveyors and stackers used to transfer material from the crusher and / or wash plant,
- Pumps associated with the wash plant.

Ready-Mix Concrete Plant:

- Concrete Truck Wash Out,
- Oil Boiler Exhaust,
- Conveyors used to transfer material,
- Silo's and associated shakers located at the top of the silos,
- Air compressor located inside insulated building,
- Small vents and exhausts located at the office and control tower building.



Asphalt Plant:

- Mineral fines silo,
- Bitumen tanks,
- Fuel oil tanks and Hot Oil System,
- Pumps,
- Air compressors located inside insulated building,
- Aggregate and product conveyors,
- Control trailer and laboratory including exhausts.
- Small vents and exhausts located at the office and control tower building.

In addition, there are several small vents located at the scale house, which were also assessed as insignificant during the site visit.

4.0 Point of Reception Summary

A total of thirteen nearby noise sensitive receptors have been selected for detailed noise evaluation, as shown in Figure 1. These existing residences and vacant lots zoned for potential noise sensitive use, are those closest to the Existing Elginburg Quarry and Expansion Area in all directions and represent the worst-case noise impacts in comparison to other nearby or more distant noise sensitive receptors.

The thirteen points of reception selected for analysis, POR 1 to POR 13, are shown in Figure 1 and listed in Table 1.

As per MECP Guideline NPC-300, two points of reception (POR) have been selected at each receptor for which worst case sound levels have been calculated.

> POW – Plane of window (POW) points of reception are located on the dwelling or noise sensitive building, typically 2 m above ground for single storey dwellings and 4.5 m above ground for two storey dwellings.
>
> OPR – Outdoor Points of Reception, represent an outdoor amenity area on the property of the residence. For large properties, the OPR point of reception can be up to 30 m from the dwelling at a height of 1.5 m above ground.

At the identified noise sensitive zoned vacant lots, the location selected for noise impact evaluation is consistent with the existing pattern of development.

Noise prediction results are summarized in Table 6 by point of reception. Figures 4, 6, 8, 10, 12, 14, 16, 18 and 20, show predicted noise impacts as noise contours for Scenario 1 through 9.

Point of reception noise impacts by noise source for all scenarios are contained in Appendix 2, Table A2.6.01 to A2.6.10.

5.0 Assessment Criteria, Performance Limits

Sound level limits as specified in the MECP guideline NPC-300[1], depend on the acoustical classification of the area as Class 1, 2, 3 or 4.

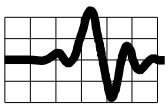
> **Class 1 area** 'an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as urban hum.'
>
> **Class 2 area** 'an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 areas: sound levels characteristic of Class 1 during daytime (07:00 to 19:00 or to 23:00 hours); and, low evening and night background sound level defined by natural environment and infrequent human activity starting as early as 19:00 hours (19:00 or 23:00 to 07:00 hours).'
>
> **Class 3 area** 'a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as: a small community; agricultural area; a rural resort area such as a cottage or resort area; or, a wilderness area. '
>
> **Class 4 area** 'an area or specific site that would otherwise be defined as Class 1 or 2 and which: is an area intended for development with new noise sensitive land use(s) that are not yet built; is in proximity to existing, lawfully established stationary source(s); and, has formal confirmation from the land use planning authority with the Class 4 area classification which is determined during the land use planning process. Additionally, areas with existing noise sensitive land use(s) cannot be classified as Class 4 areas.'

Due to the relatively high levels of road traffic along Unity Road, the area in which POR 1, POR 2, POR 3, POR 12 and POR 13 are located is subject to road traffic noise, particularly during the daytime period from 07:00 to 19:00 hours. As such these receptors are classified as Class 2 Area.

Due to the dominant rural nature of the area and minimal road traffic on Cordukes Road, Bur Brook Road and Mayview Road and the relatively large distance to Unity Road, the acoustical environment in which POR 4, POR 5, POR 6, POR 7, POR 8, POR 9, POR 10 and POR 11 are located is dominated by natural sounds with little road traffic noise. As such, the area in which these receptors are located is classified as Class 3 Area.

For a Class 2 and Class 3 Area the applicable outdoor sound level limit at a point of reception is the higher of the applicable exclusion limit value, given in Tables 2 and Table 3, or, the background sound level for that point of reception.

Background sound level means the sound level that is present in the environment, produced by noise sources other than the source under assessment. Road traffic noise is the most common source of background sound. [6-8]



A background noise assessment was carried out based on MECP methodology[6-8] at points of reception on Unity Road. Appendix 5 contains an analysis of background traffic noise at points of reception based on road traffic data obtained from the City of Kingston.

This assessment indicated elevated sound levels, above the Class 2 area exclusion limits, at POR 2 and POR 13, located on the north side of Unity Road, during the daytime period. As this meets the MECP definition for a Class 2 Area as noted above, we have applied the Class 2 area exclusion limits for POR 2 and POR 13 during the evening and nighttime period.

For POR 1, POR 3 and POR 12, located on the south side of Unity Road, the assessment indicated elevated sound levels above the Class 2 area exclusion limits during the daytime period with lower levels realized during the evening and nighttime period. As this meets the MECP definition for a Class 2 Area as noted above, and taking into consideration the shielding provided by the residence to Plane of Window locations on the south side of the residence, we have applied the Class 2 area exclusion limits for these receptors during the daytime, evening and nighttime period.

For all other receptors the levels given in the Tables 3 and 4 are taken as the sound level limits at all points of reception for the purpose of this assessment according to their location in a Class 3 Area.

The applicable sound level limits for each point of reception are set out in Table 5.

Sound levels are assessed in terms of the 1-hour equivalent sound level, L_{eq}, effectively the average sound level over each hour. All sound levels are A-weighted, A-weighting being a frequency weighting with represents sensitivity of human hearing to sounds of differing frequencies.

6.0 Impact Assessment

Noise levels have been predicted at the critical receptors using "predictable worst case" assumptions under normal operations and using the ISO sound propagation methodology[6] as implemented in the sound prediction software Cadna-A, Version 2020. The "predictable worst case" is interpreted as meaning the greatest noise impact anticipated under normal operating conditions. The ISO methodology provides a conservative (i.e. high) estimate of the noise level at a receptor taking into account adverse wind and meteorological conditions.

The estimation method includes the following:

- Distance attenuation is based on spherical spreading.
- Atmospheric attenuation.
- Ground attenuations, as appropriate.
- Barrier attenuation, as appropriate.

In order to consider cases of worst noise impacts, a number of operational scenarios have been modeled. In general, the worst impacts are those which occur when concurrent operations occur.

The following ten worst case scenarios are presented in this report and form the basis for the recommended mitigation measures and assessment of compliance to MECP criteria:

Scenario 1: *Worst Case, Existing Quarry, RMC Plant in operation concurrently with extraction in Phase 1, Asphalt Plant not in operation (Day only) – Figure 3 and Figure 4.*

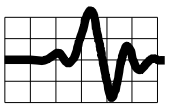
Scenario 2: *Worst Case, Existing Quarry, RMC Plant in operation concurrently with extraction in Phase 2, Asphalt Plant not in operation (Day only) – Figure 5 and Figure 6.*

Scenario 3: *Worst Case, Expansion Area, RMC Plant in operation concurrently with extraction in Phase 3, Asphalt Plant not in operation (Day only) – Figure 7 and Figure 8.*

Scenario 4: *Worst Case, Expansion Area, RMC Plant in operation concurrently with extraction in Phase 4, Asphalt Plant not in operation (Day only) – Figure 9 and Figure 10.*

Scenario 5: *Worst Case, Expansion Area, RMC Plant in operation concurrently with extraction in Phase 4, Asphalt Plant not in operation (Day only) – Figure 11 and Figure 12.*

Scenario 6: *Worst Case, Existing Quarry, RMC Plant and Asphalt Plant in operation concurrently with extraction in Phase 1 (Day only) – Figure 13 and Figure 14.*



Scenario 7: Worst Case, Expansion Area, RMC Plant and Asphalt Plant in operation concurrently with extraction in Phase 4 (Day only) – Figure 15 and Figure 16.

Scenario 8: Worst Case, Existing Quarry, RMC Plant in operation concurrently with loading and hauling operations in Phase 1 (Day, Evening or Night) – Figure 17 and Figure 18.

Scenario 9: Worst Case, Expansion Area, RMC Plant in operation concurrently with loading and hauling operations in Phase 4 (Day, Evening or Night) – Figure 19 and Figure 20.

Scenario 10: Worst Case, Asphalt Plant in operation, RMC Plant and Quarry Operations not in operation (Day, Evening or Night) – Figure 21 and Figure 22.

In Table 6, estimated noise levels at the nearest receptors for the worst case among all scenarios are compared with the applicable sound level limits. More detailed estimates, for all sources and scenarios are contained in Appendix 2, Tables A2.6.01 to A2.6.10.

It can be seen that the sound level limits are met at all noise sensitive points of reception, POR 1 to POR 13, for worst case operating conditions during the proposed daytime period, 7 am to 7 pm (07:00 to 19:00), and, evening and nighttime period 7 pm to 7 am (19:00 to 07:00) of operation. Details of acoustic modeling are provided in Appendix 2. Figures 4, 6, 8, 10, 12, 14, 16, 18, 20 and 22 show predicted noise contours for each mode of operation analyzed.

Statement of Compliance

It is concluded that with the recommended mitigation measures, as noted in Section 7.0 of this report, noise impacts from operations at the Elginburg Quarry and Expansion Area will be in compliance with MECP Environmental Noise Guidelines[1] for the proposed daytime period of operation 7 am to 7 pm (07:00 to 19:00), and, evening and nighttime period of operation 7 pm to 7 am (19:00 to 07:00).

7.0 Recommended Noise Mitigation Measures (Site Plan Recommendations)

Noise mitigation measures for the Existing Elginburg Quarry and Expansion Area are detailed below. It is recommended that these measures be included on the official Site Plan for the Elginburg Quarry Expansion Area.

The predicted noise impacts in Tables A2.6.01 to A2.6.10 are based on the implementation of the following mitigation measures.

7.1 Berms:

7.1.1 A 5 m high and 220 m long berm (Berm 1) is to be provided at the site entry shielding noise impacts from the internal haul route to POR 1.

7.1.2 Prior to commencing extraction operations in the Expansion Area Phase 4 or Phase 5, a 5 m high berm (Berm 2) is to be provided at the sites northern setback shielding Line of Sight (LOS) from the extraction and aggregate processing operations to POR 1. Berm 2 is to be extended to shield LOS from the extraction and aggregate processing operations to POR 12 and 13 when operating west of Line AA.

7.1.3 Prior to commencing of the asphalt plant operations during the evening and nighttime period Berm 2 is to be provided at the Expansion Area Phase 4 northern setback to shield line of sight (LOS) from the asphalt plant to POR 1 and POR 13 as shown on Figure 21. Note prior to establishment of Berm 2 in the Expansion Area, Berm 2 may be established on the existing licensed quarries western setback as shown on Figure 21, Berm 2: Alternative location, for the purpose of shielding noise impacts from the asphalt plant when operating during the evening and nighttime period.

7.1.4 Noise barriers or berms are to be solid, having no gaps, and are to have a surface density of no less than 20 kg/m^2. Examples of suitable barriers or berms are as follow:

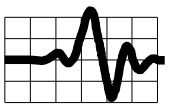
- 7.1.4.1 Lift face or existing terrain;
- 7.1.4.2 Earth, gravel or aggregate berms or stockpiles;
- 7.1.4.3 Concrete or brick walls;
- 7.1.4.4 Commercial noise barriers;
- 7.1.4.5 Shipping containers;
- 7.1.4.6 A portable barrier such as a truck trailer equipped with movable flaps to block the space between the ground and the bottom of the trailer.

7.1.5 Noise barriers shielding portable equipment may be progressively established to provide shielding from location of operation to the identified noise sensitive point of reception (POR).

7.2 Extraction and Aggregate Processing Operations:

7.2.1 The operation of a Standard Hydraulic Rock Drill (drill), may take place only during the daytime period (07:00 – 19:00), and shall comply with the following:

- 7.2.1.1 The drill is not to operate concurrently with the crusher, wash plant or asphalt plant.



7.2.1.2 When operating on the surface in Phase 1: A 4 m high portable barrier (Barrier RD1) located at a maximum of 5 m from the drill is to be provided shielding noise impacts to POR 2, 3 and 4.

7.2.1.3 When operating on the surface in Phase 2: The drill may operate anywhere in the extraction area above or below grade. No shielding with portable barriers is required.

7.2.1.4 When operating on the surface in Phase 3: The drill may operate anywhere in the extraction area above or below grade. No shielding with portable barriers is required.

7.2.1.5 When operating on the surface in Phase 4: Berm 2 is to be provided.

7.2.1.6 When operating on the surface in Phase 5:

i. Berm 2 is to be provided.

ii. A 4 m high portable barrier (Barrier RD2) located at a maximum of 10 m from the drill is to be provided shielding noise impacts to POR 12.

7.2.2 The operation of a Low Noise Rock Drill (Low noise drill), such as the Atlas Copco SmartRig ROC D9C or similar, may take place only during the daytime period (07:00 – 19:00), and shall comply with the following:

7.2.2.1 The drill may operate anywhere in the extraction area above or below grade. No shielding with portable barriers is required.

7.2.2.2 When operating on the surface in Phase 1: The low noise rock drill is not to operate concurrently with the crusher, wash plant or asphalt plant.

7.2.2.3 When operating on the surface in Phase 2: The low noise rock drill may operate concurrently with the crusher, wash plant or asphalt plant.

7.2.2.4 When operating on the surface in Phase 3: The low noise rock drill may operate concurrently with the crusher, wash plant or asphalt plant.

7.2.2.5 When operating on the surface in Phase 4 or Phase 5: The low noise rock drill is not to operate concurrently with the crusher, wash plant or asphalt plant.

7.2.3 The operation of the Portable Crushing and Screening Plant (crusher) and Wash Plant (wash plant), may take place only during the daytime period (07:00 – 19:00) and shall comply with the following:

7.2.3.1 The crusher and wash plant are to be located on the quarry floor at a maximum elevation of 125 mASL, and, shall comply with the following:

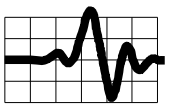
i. When operating one lift down, at a maximum elevation of 125 mASL, the crusher, wash plant or asphalt plant are not to be in concurrently.

ii. When operating two or more lifts down, at an elevation of 118 mASL or lower at the existing quarry or an elevation 115 mASL in the Expansion Area, the crusher, wash plant and asphalt plant may operate concurrently.

7.2.3.2 When operating in Phase 1:

i. The crusher and wash plant are to be located at a maximum distance of 40 m to the west of the lift face shielding receptor POR 4. The height of the lift face is to be a minimum of 10 m.

ii. 6 m high stockpile (Barrier Q1) located at a maximum of 30 m from the



plant is to be provided shielding POR 1.

7.2.3.3 When operating in Phase 2:

i. A 4 m high noise barrier (Barrier Q2 located at a maximum of 50 m from the plant is to be provided shielding POR 4.

7.2.3.4 When operating in Phase 3: The crusher and wash plant are to be located at a maximum distance of 50 m to the east of the lift face shielding receptors POR 9, 10 and 11. The height of the lift face is to be a minimum of 10 m.

7.2.3.5 When operating in Phase 4: The crusher and wash plant are to be located at a maximum distance of 40 m from the lift face shielding receptor POR 1.

7.2.3.6 When operating in Phase 5: The crusher and wash plant are to be located at a maximum distance of 30 m from the lift face shielding receptor POR 12.

7.2.4 The operation of loaders or excavators associated with the *Extraction and Aggregate Processing Operation* may take place on a 24-hour basis, anywhere in the extraction area, and shall comply with the following:

7.2.4.1 When operating during the daytime period (07:00 – 19:00): A maximum of three (3) loaders or excavators may in in operation carrying out extraction, stockpiling and loading operations.

7.2.4.2 When operating during the evening and nighttime period (19:00 – 07:00): A maximum of one (1) loader or excavator may in in operation carrying out stockpiling and loading operations.

7.2.4.3 Loaders or excavators associated with the *Extraction and Aggregate Processing Operations* are not to operate concurrently with the Asphalt Plant during the evening and nighttime period (19:00 – 07:00).

7.2.5 The loading and shipping of product associated with the *Extraction and Aggregate Processing Operation* using Highway Trucks may take place on a 24-hour basis (24 hour) and shall comply with the following:

7.2.5.1 When operating on-site, Highway Trucks shall not exceed 20 kph and shall not use compression braking (Jake Brakes).

7.2.5.2 When operating during the daytime period (07:00 – 19:00): A maximum of ten (10) trucks may enter and exit the site per hour.

7.2.5.3 When operating during the evening and nighttime period (19:00 – 07:00) **or** concurrently with the Asphalt Plant: A maximum of five (5) trucks may enter and exit the site per hour.

7.2.5.4 Highway Trucks associated with the *Extraction and Aggregate Processing Operations* are not to operate concurrently with the Asphalt Plant during the evening and nighttime period (19:00 – 07:00).

7.3 Ready-Mix Concrete (RMC) Plant Operations:

7.3.1 The operation of the Ready-Mix Concrete (RMC) Plant may take place on a 24-hour basis and shall comply with the following:

7.3.1.1 A maximum of one (1) loader *associated with the RMC Plant* operation may be in operation carrying out stockpiling and loading raw material into hoppers

to feed the plant.

7.3.1.2 The RMC Plant and associated operations are not to operate concurrently with the Asphalt Plant during the evening and nighttime period (19:00 – 07:00).

7.3.2 The delivery, loading and shipping of product associated with the *RMC Plant Operations* using trucks may take place on a 24-hour basis (24 hour) and shall comply with the following:

7.3.2.1 When operating on-site, trucks shall not exceed 20 kph and shall not use compression braking (Jake Brakes).

7.3.2.2 <u>When operating during the daytime period (07:00 to 19:00):</u>

i. A maximum of eight (8) concrete trucks can enter and exit the site per hour.
ii. A maximum of two (2) powder trucks, delivering cement and slag, can enter and exit the site per hour.
iii. A maximum of two (2) highway trucks, delivering aggregate to stockpiles, can enter and exit the site per hour.

7.3.2.3 <u>When operating concurrently with the Asphalt Plant:</u>

i. A maximum of four (4) concrete trucks can enter and exit the site per hour.
ii. A maximum of one (1) powder truck, delivering cement and slag, can enter and exit the site per hour.
iii. A maximum of one (1) highway truck, delivering aggregate to stockpiles, can enter and exit the site per hour.

7.3.2.4 <u>When operating during the evening and nighttime period (19:00 – 07:00):</u>

i. A maximum of eight (8) concrete trucks can enter and exit the site per hour.
ii. Cement and slag powder delivery by powder trucks is not to occur.
iii. Aggregate delivery by Highway Truck is not to occur.

7.4 Asphalt Plant Operations:

7.4.1 The operation of the Asphalt Plant and associated equipment may take place on a 24-hour basis and shall comply with the following:

7.4.1.1 A maximum of one (1) loader may in in operation carrying out stockpiling and loading raw material into hoppers to feed the plant.

7.4.1.2 A 4 m high barrier or stockpile (Barrier AP1) is to be maintained shielding line of sight from the RAP screen to POR 4.

7.4.1.3 A silencer providing minimum 20 dBA attenuation is to be installed on the Air Exhaust. The maximum outdoor sound power of the Air Exhaust after installation of the silencer is not to exceed 100 dBA. Replacement with a new quieter unit is acceptable providing the maximum outdoor sound power as noted above is not exceeded.

7.4.1.4 <u>When operating during the evening and nighttime period (19:00 – 07:00):</u>

i. Berm 2 is to be provided shielding line of sight from the asphalt plant to POR 1 and 13 as shown in Figure 21.
ii. Barrier AP1 is to be increased in height to 6 m.
iii. A 7.8 m high barrier or stockpile (Barrier AP2) is to be provided shielding line of sight from the asphalt plant to POR 4 as shown in Figure 24.
iv. The Asphalt Plant and associated operations are not to operate concurrently

with the RMC Plant during the evening and nighttime period (19:00 – 07:00).

v. The Asphalt Plant and associated operations are not to operate concurrently with the extraction and aggregate processing operations during the evening and nighttime period (19:00 – 07:00).

7.4.2 The delivery and shipping of product *associated with the Asphalt Plant* using trucks may take place on a 24-hour basis (24 hour) and shall comply with the following:

7.4.2.1 When operating on-site, trucks shall not exceed 20 kph and shall not use compression braking (Jake Brakes).

7.4.2.2 <u>When operating during the daytime period (07:00 to 19:00):</u>

7.4.2.3 A maximum of sixteen (16) highway trucks associated with asphalt production may enter and exit the site per hour.

7.4.2.4 <u>When operating concurrently with the RMC Plant:</u>

i. A maximum of nine (9) highway trucks associated with asphalt production may enter and exit the site per hour.

7.4.2.5 <u>When operating during the evening and nighttime period (19:00 – 07:00):</u>

i. A maximum of eight (8) highway trucks associated with shipping asphalt product may enter and exit the site per hour.

ii. Highway trucks used for delivery of aggregate to stockpiles and other raw material to the asphalt plant are not to be in operation.

7.5 Site Preparation and Remediation:

7.5.1 Portable construction equipment used for site preparation (e.g. land clearing and construction of berms) and rehabilitation shall comply with MECP Publication NPC-115[5], *Construction Equipment*, August 1978. (This publication gives noise standards to be met by construction equipment in Ontario.) Site preparation and rehabilitation activities shall take place only during daytime hours (07:00 – 19:00).

7.6 New Processes:

7.6.1 If a new process is introduced to the site, then this process shall be assessed by a qualified acoustical consultant prior to commissioning. Noise mitigation measures shall be reviewed, and altered if necessary, to ensure that MECP sound level limits are met at all points of reception.

8.0 Conclusions and Recommendations

An acoustic assessment of operations at the Elginburg Quarry and Expansion Area has been conducted according to MECP noise assessment procedures. Operations include extraction and aggregate processing operations, ready-mix concrete production, asphalt production, and the delivery and shipping of product.

It has been found that noise levels from the operations at nearby receptors are in compliance with MECP sound level limits as set out in publication NPC-300[1], provided that the noise mitigation measures described in Section 7.0 are followed.

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References

1. Ministry of Environment Publication NPC-300, *Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning*, August 2013.

2. Ministry of Environment, Publication NPC-233 *Information to be Submitted for Approval of Stationary Sources of Sound.* Issued: October 1995.

3. Ministry of Environment, Conservation and Parks, *Sample Application Package, Basic Comprehensive Certificate of Approval (Air and Noise)*, July 2009.

4. Ministry of Environment, Publication NPC-103, *Measurement Procedures*.

5. Ministry of Environment, Publication NPC-104, *Sound Level Adjustments.*

6. Ministry of Environment, Conservation and Parks Publication NPC-206, *Sound Levels due to Road Traffic*, October 1995.

7. Ministry of Environment, Conservation and Parks, *Ontario Road Noise Analysis Method for Environment and Transportation* (ORNAMENT), 1989.

8. Ministry of Environment, Conservation and Parks, STAMSON Software, Version 5.03, 1996. (Software implementation of reference 4).

9. International Standards Organization, *Acoustics - Attenuation of Sound during Propagation Outdoors, Part 2: General Method of Calculation*, ISO 9613-2: 1996(E).

10. RWDI AIR Inc. Publication, *"Typical Hourly Traffic Distribution for Noise Modelling"*, Vol. 36 No. 3 (2008).

11. Golder Associates, *"Cruickshank Construction Limited Elginburg Quarry Acoustic Assessment Report"*, dated 23rd January 2018.

12. HGC Engineering, *"Table 1: CBM Kingston Ready-Mix Concrete Batching Plant Sound Source Summary",* received 18th March 2020.

TABLES

Table 1: Point of Reception Summary Table

Point of Reception	Location*
POR 1	Residence 2467 Unity Road (1 Storey)
POR 2	Vacant Lot 2350 Unity Road (2 Storey)
POR 3	Residence 2309 Unity Road (2 Storey)
POR 4	Residence 2295 Unity Road (2 Storey)
POR 5	Residence 2043 Sydenham Road (2 Storey)
POR 6	Residence 1909 Mayview Road (1 Storey)
POR 7	Residence 2440 Burbrook Road (1 Storey)
POR 8	Residence 2630 Burbrook Road (2 Storey)
POR 9	Residence 1998 Cordukes Road (1 Storey)
POR 10	Residence 2034 Cordukes Road (2 Storey)
POR 11	Residence 2166 Cordukes Road (1 Storey)
POR 12	Residence 2559 Unity Road (1 Storey)
POR 13	Residence 2528 Unity Road (1.5 Storey)

* For assessment purposes, points of reception, (POR), have been taken as upper floor windows (2 m above grade for single storey and 4.5 m above grade to represent two storey residences) and Outdoor Points of Reception (30 m from Residence, 1.5 m above grade) in acoustic calculations. POR's located on vacant land and existing residences determined to be 1.5 stories have been assessed at 2 stories in height.

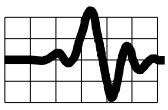
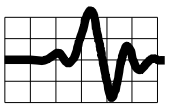


Table 2.1: Noise Source Summary Table – Extraction and Processing Operations

Name	Source ID	Sound Power (dBA)	Location		Sound Character-istics	Noise Control Measures
			Height above ground (m)*	Outside / Inside		
Portable Crushing and Screening Plant (Includes primary and secondary crushing and screening units and an associated diesel generator)	Q_CP_Crushing_Plant	119	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Washing and Screening Plant (Includes one classifier, one wet screen, one dry screen and an associated diesel generator)	Q_WP_Wash_Plant	118.8	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Loader/s (CAT980K or similar carrying out extraction operations)	Q_Loader_CAT980K	107.1	2.5	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
Loader (CAT980M or similar carrying out stockpiling and loading operations)	Q_Loader_CAT980M	103.1	2.5	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
Highway_Truck_Passby (Delivery and shipment of product)	Q_Highway_Truck_Passby	110.1	4	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0

Table 2.2: Noise Source Summary Table – Ready-Mix Concrete Plant

Name	Source ID	Sound Power[2] (dBA)	Location		Sound Character-istics	Noise Control Measures
			Height above ground (m)	Outside / Inside		
RMC_Arriving/Departing Tanker Trucks	RMC_NS_01	110.1	2.5	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
RMC_Unloading Tanker Blower 1	RMC_NS_02	114[1]	1	Outside	Steady, tonal, non-directional	As noted in section 7.0
RMC_Unloading Tanker Engine 1	RMC_NS_03	97	1.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Unloading Tanker Exhaust 1	RMC_NS_04	87	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Unloading Tanker Blower 2	RMC_NS_05	114[1]	1	Outside	Steady, tonal, non-directional	As noted in section 7.0
RMC_Unloading Tanker Engine 2	RMC_NS_06	97	1.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Unloading Tanker Exhaust 2	RMC_NS_07	87	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Arriving/Departing Ready-Mix Trucks	RMC_NS_08	104.3	2.5	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
RMC_Loading Ready-Mix Trucks Engine	RMC_NS_09	102	1.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Loading Ready-Mix Trucks Exhaust	RMC_NS_10	92	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Slumping Ready-Mix Trucks Engine 1	RMC_NS_11	102	1.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Slumping Ready-Mix Trucks Exhaust 1	RMC_NS_12	92	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0



Name	Source ID	Sound Power[2] (dBA)	Location		Sound Character-istics	Noise Control Measures
			Height above ground (m)	Outside / Inside		
RMC_Slumping Ready-Mix Trucks Engine 2	RMC_NS_13	102	1.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Slumping Ready-Mix Trucks Exhaust 2	RMC_NS_14	92	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Arriving/Departing Aggregate Trucks	RMC_NS_15	110.1	2.5	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
RMC_Unloading Aggregate Trucks	RMC_NS_16	104	1.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Front End Loader	RMC_NS_17	101	2.5	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
RMC_Aggregate Conveyor	RMC_NS_18	95	Varies (1 to 6.5)	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
RMC_Loading Point Dust Collector	RMC_NS_19	100	7	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
RMC_Loading Point Signal Horn	RMC_NS_201	1221	5	Outside	Steady, tonal, non-directional	As noted in section 7.0

Notes:

1. Sound power levels for tonal sources noted above include a 5 dB penalty as per MECP guideline NPC-104.
2. Sound power for sources not in operation continuously exclude time weighting.

Table 2.3: Noise Source Summary Table – Asphalt Plant

Name	Source ID	Sound Power (dBA)	Location		Sound Character-istics	Noise Control Measures
			Height above ground (m)*	Outside / Inside		
Truck Loading and Batch Tower	AP_Truck_Loading_Batch_Tower	104	4	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Dryer and Cyclone Fan	AP_Dryer_Cyclone_Fan	109	2.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Recycled Asphalt Product Screen (RAP Screen)	AP_RAP_Screen	111	3.2	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Aggregate Screen	AP_Aggregate_Screen	102	3.7	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Hopper	AP_Hopper	104	3	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Burner	AP_Burner	115	3.2	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Drum Mixer	AP_Drum_Mixer	105	4.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Air Exhaust	AP_Air_Exhaust	120	12.5	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Tower Screen Fan	AP_Tower_Screen_Fan	100	9.75	Outside	Steady, non-tonal, non-directional	As noted in section 7.0
Loader	AP_Loader	105	2.5	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
Highway_Truck_Passby (Powdered cement and slag delivery)	AP_Highway_Truck_Passby	110.1	4	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0
Aggregate_Truck_Passby (Aggregate delivery)	AP_Aggregate_Truck_Passby	110.1	4	Outside	Steady, Moving, non-tonal, non-directional	As noted in section 7.0

Table 3: MECP Exclusion Limit Values for One-Hour Equivalent Sound Level (Leq, dBA) at Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

Table 4: MECP Exclusion Limit Values for One-Hour Equivalent Sound Level (Leq, dBA) at Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

Table 5: Applicable One Hour Sound Level Limits for the Daytime (07:00 – 19:00) and Evening and Nighttime Period (19:00 – 07:00) period of operation.

Receptor & Point of Reception POW = Plane of Widow OPR = Outdoor Point of Reception	Sound Level Limit 1-hour LAEQ dBA (Daytime Period, 07:00 – 19:00)*	Sound Level Limit 1-hour LAEQ dBA (Evening Period, 19:00 – 23:00)**	Sound Level Limit 1-hour LAEQ dBA (Nighttime Period, 23:00 – 07:00)*
POR 1 - POW	50	50	45
POR 1 - OPR	50	45	-
POR 2 - POW	52.05**	50	45
POR 2 - OPR	52.05**	45	-
POR 3 - POW	50	50	45
POR 3 - OPR	50	45	-
POR 4 - POW	45	40	40
POR 4 - OPR	45	40	-
POR 5 - POW	45	40	40
POR 5 - OPR	45	40	-
POR 6 - POW	45	40	40
POR 6 - OPR	45	40	-
POR 7 - POW	45	40	40
POR 7 - OPR	45	40	-
POR 8 - POW	45	40	40
POR 8 - OPR	45	40	-
POR 9 - POW	45	40	40
POR 9 - OPR	45	40	-
POR 10 - POW	45	40	40
POR 10 - OPR	45	40	-
POR 11 - POW	45	40	40
POR 11 - OPR	45	40	-
POR 12 - POW	50	50	45
POR 12 - OPR	50	45	-
POR 13 - POW	58.42**	50	45
POR 13 - OPR	58.42**	45	-

*As per NPC-300 Outdoor points of reception (OPR) are not considered noise sensitive during the nighttime period (nighttime period).
**Sound level limit based on results of background traffic noise analysis, refer Appendix 5.

Table 6: Acoustic Assessment Summary Table, Worst Case, Daytime Period (07:00 – 19:00) and Evening and Nighttime Period (19:00 – 07:00) of operation

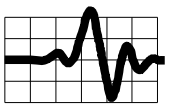
Point of Reception ID	POR Description	Location	Estimated Sound Level at POR Daytime Period (Worst Case) (dBA)	Performance Limit Daytime Period (dBA)	Estimated Sound Level at POR Evening and Nighttime Period (Worst Case) (dBA)	Performance Limit Evening and Nighttime Period (dBA)	Compliance with Performance Limit (Yes/No)	Verified by an acoustic Audit (Yes / No)
POR 1	Residence	POW	50	50	44	45	Yes	No
		OPR	50	50	44	45	Yes	No
POR 2	Vacant Lot	POW	50	52	43	45	Yes	No
		OPR	50	52	42	45	Yes	No
POR 3	Residence	POW	48	50	43	45	Yes	No
		OPR	48	50	40	45	Yes	No
POR 4	Residence	POW	44	45	40	40	Yes	No
		OPR	43	45	39	40	Yes	No
POR 5	Residence	POW	37	45	34	40	Yes	No
		OPR	37	45	33	40	Yes	No
POR 6	Residence	POW	45	45	39	40	Yes	No
		OPR	42	45	36	40	Yes	No
POR 7	Residence	POW	43	45	36	40	Yes	No
		OPR	42	45	36	40	Yes	No
POR 8	Residence	POW	44	45	34	40	Yes	No
		OPR	44	45	33	40	Yes	No
POR 9	Residence	POW	42	45	35	40	Yes	No
		OPR	40	45	33	40	Yes	No
POR 10	Residence	POW	43	45	36	40	Yes	No
		OPR	42	45	35	40	Yes	No
POR 11	Residence	POW	42	45	40	40	Yes	No
		OPR	42	45	39	40	Yes	No
POR 12	Residence	POW	50	50	45	45	Yes	No
		OPR	49	50	44	45	Yes	No
POR 13	Residence	POW	52	58.4	44	45	Yes	No
		OPR	51	58.4	43	45	Yes	No

Notes:

1. Performance limits are based on 1-hour equivalent sound levels, Leq.

2. The highest predicted sound level at plane of window or Outdoor Point of Reception are provided above as these are the most critical at each point of reception. Refer to Tables A2.6.01 to A2.6.10 in Appendix 2 for more detailed sound level estimates by source.

3. As per NPC-300 Outdoor points of reception (OPR) are not considered noise sensitive during the nighttime period.



Figures

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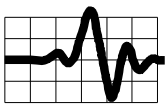


Figure 1: Area Plan Showing Receptor Locations

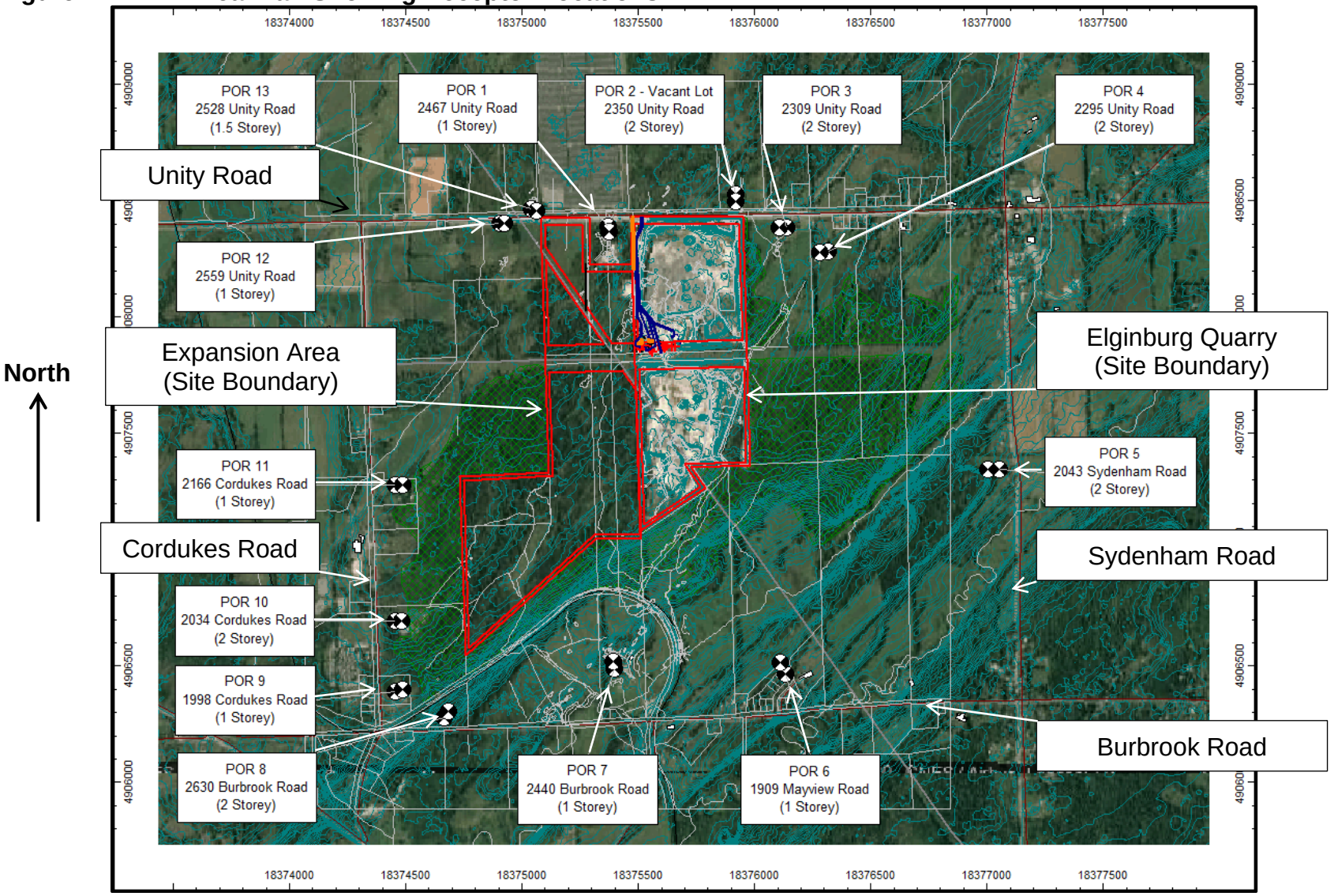


Figure 2: Site Detail & Surface Elevation Contours (elevation contours at 1-meter intervals)

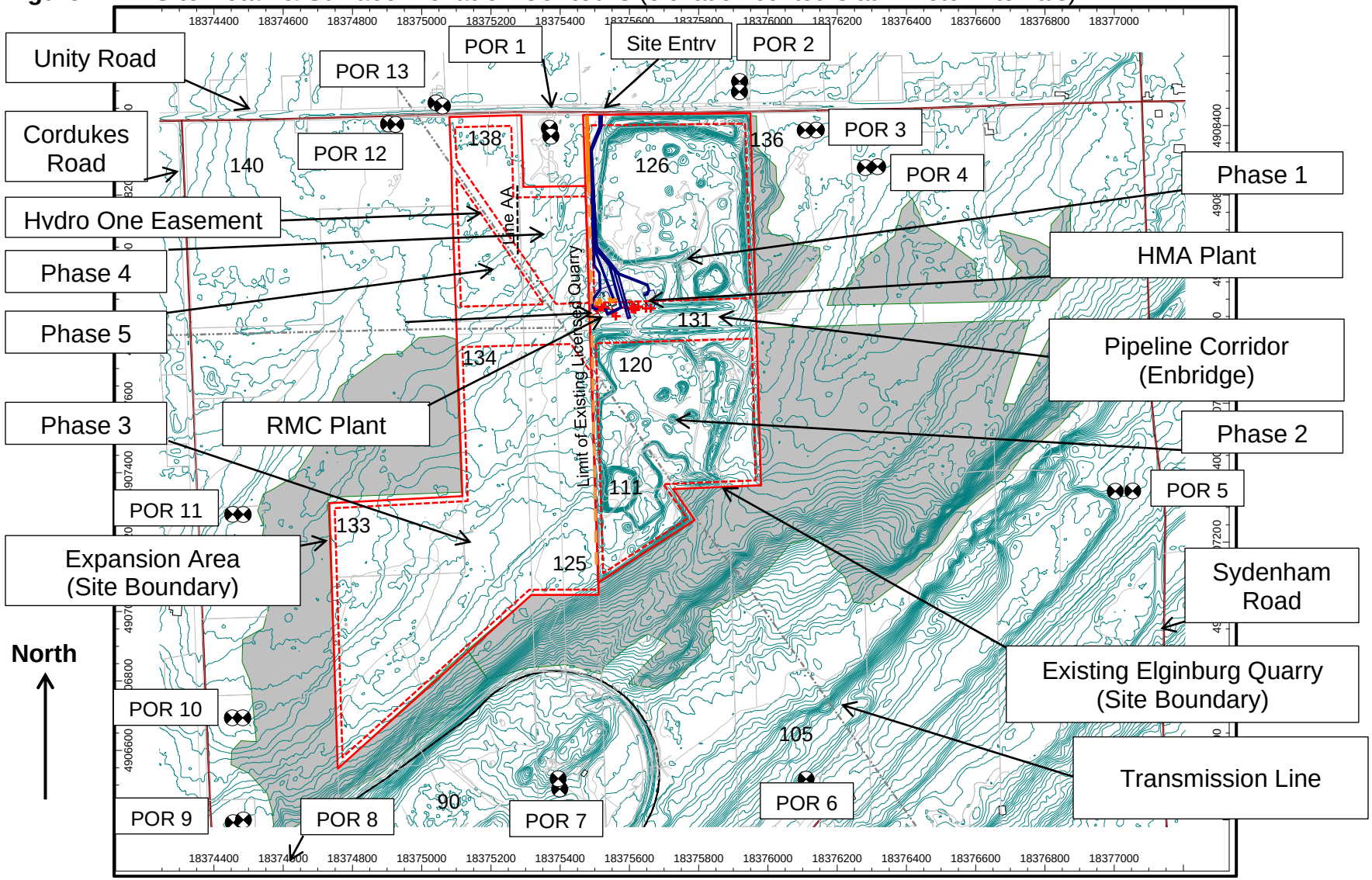


Figure 3: Scenario 1: Worst Case, Existing Quarry, RMC Plant in operation concurrently with extraction in Phase 1, Asphalt Plant not in operation (Day only)

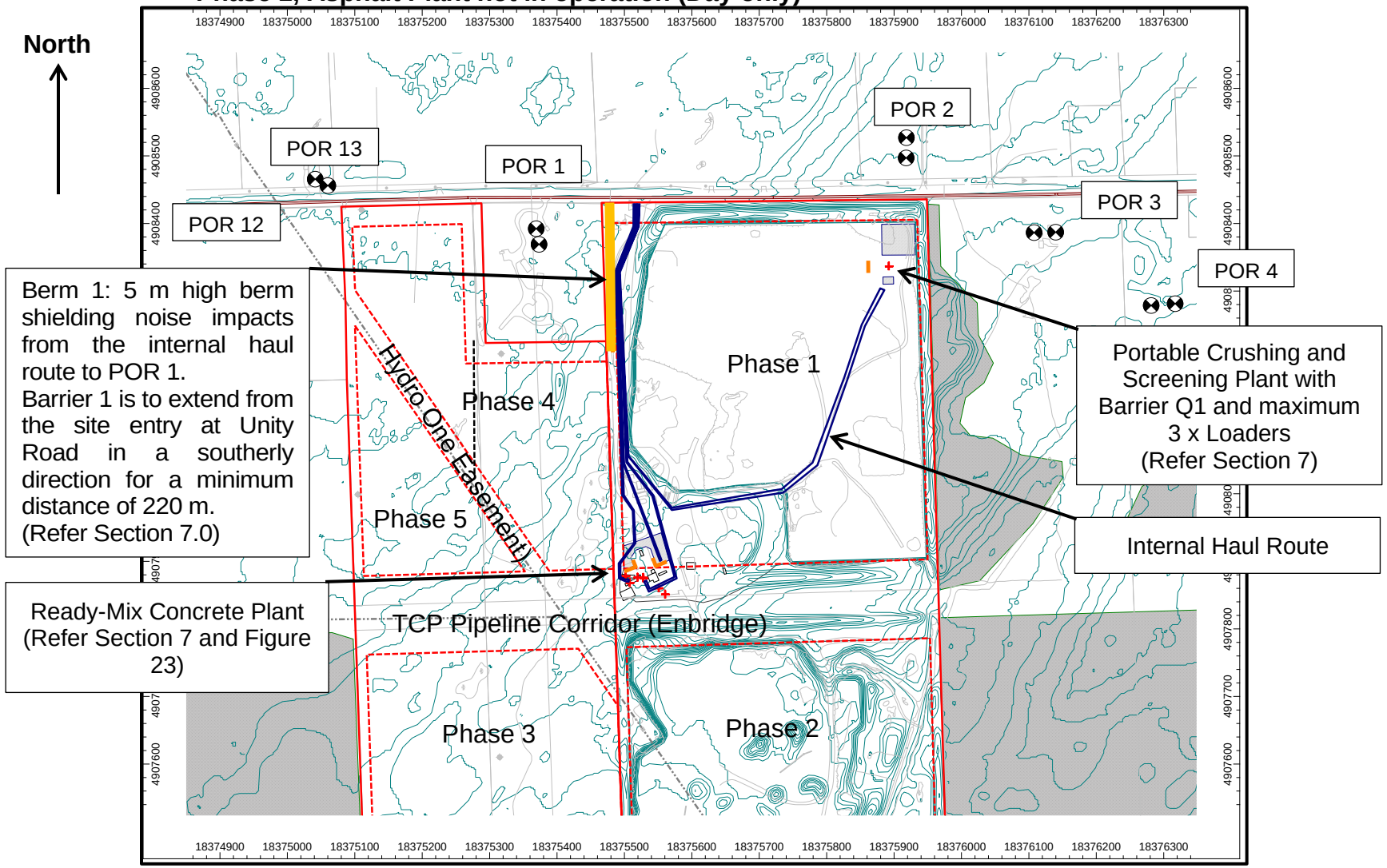


Figure 4: Scenario 1: Worst Case – Noise Contours, Day Only: (Noise levels at 4.5 m)

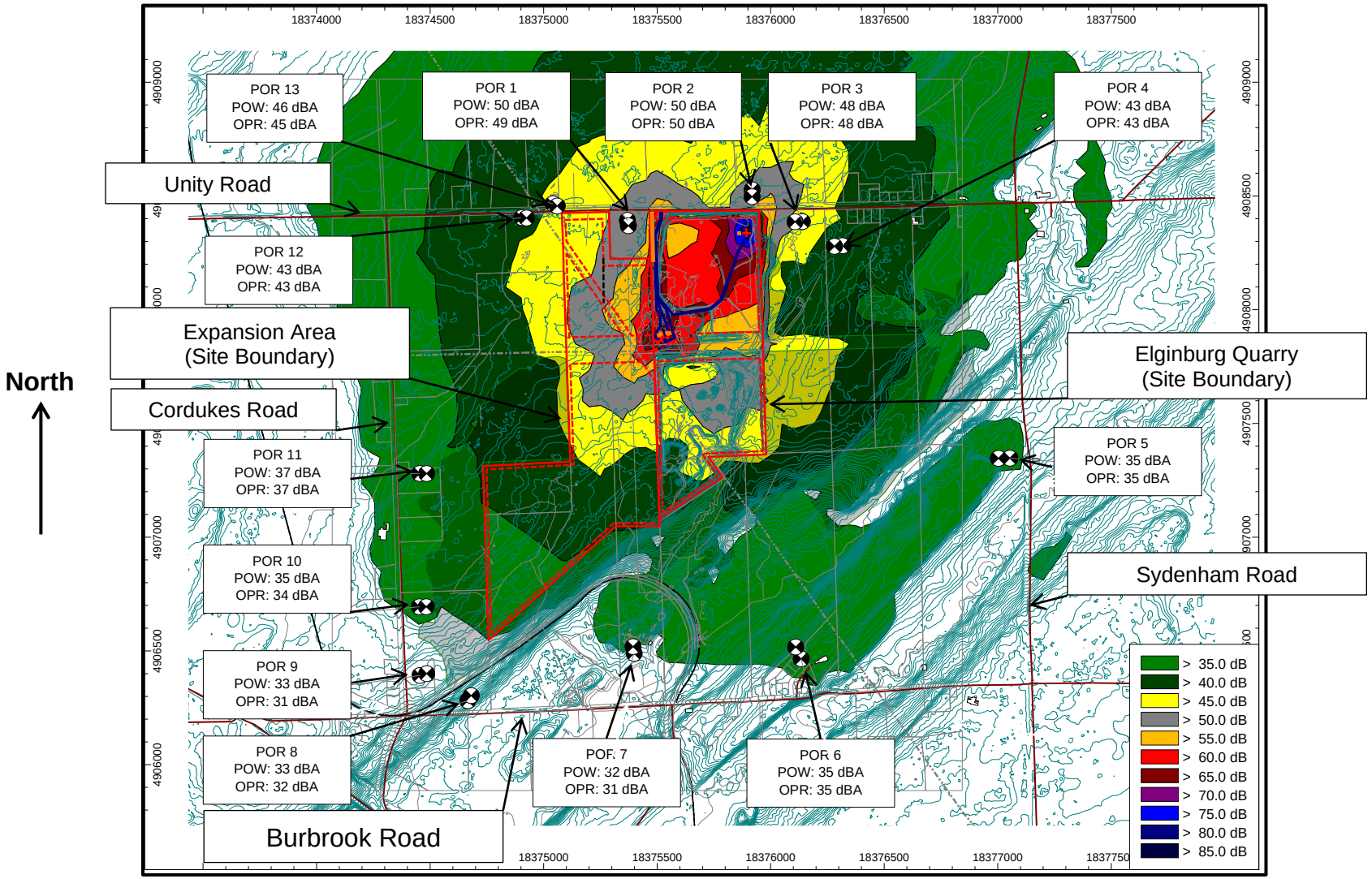


Figure 5: Scenario 2: Worst Case, Existing Quarry, RMC Plant in operation concurrently with extraction in Phase 2, Asphalt Plant not in operation (Day only)

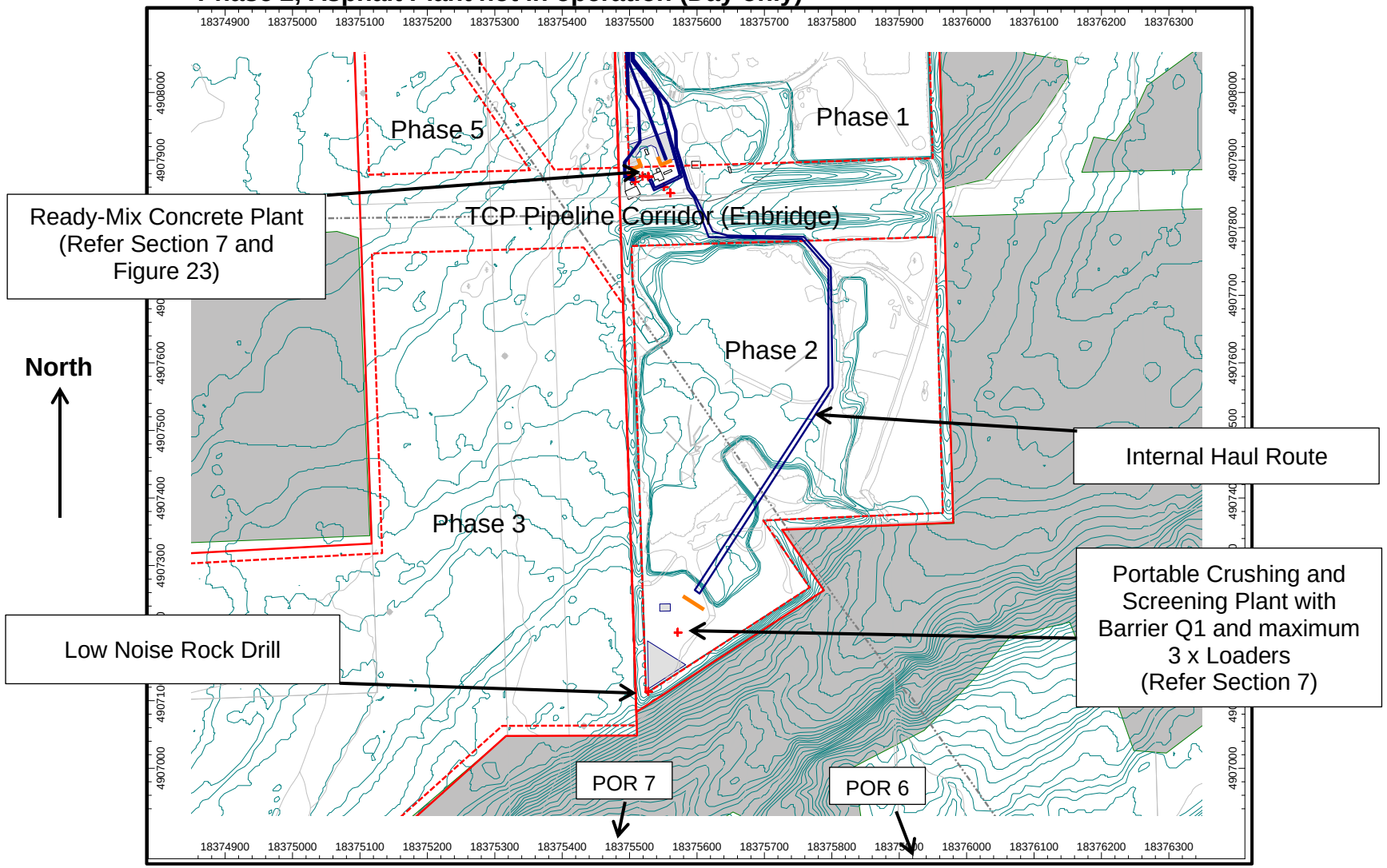


Figure 6: Scenario 2: Worst Case – Noise Contours, Day Only: (Noise levels at 4.5 m)

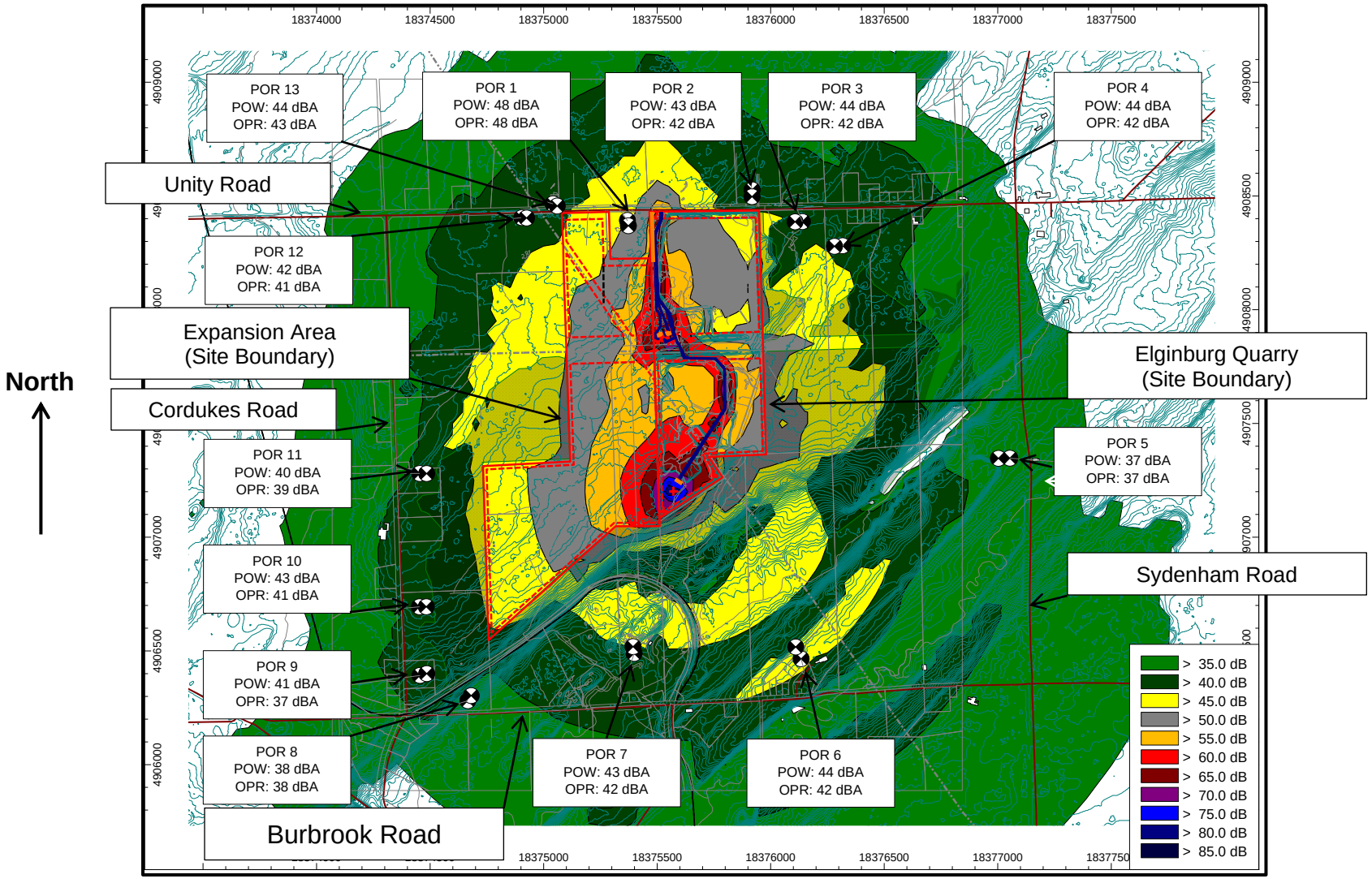


Figure 7: Scenario 3: Worst Case, Expansion Area, RMC Plant in operation concurrently with extraction in Phase 3, Asphalt Plant not in operation (Day only)

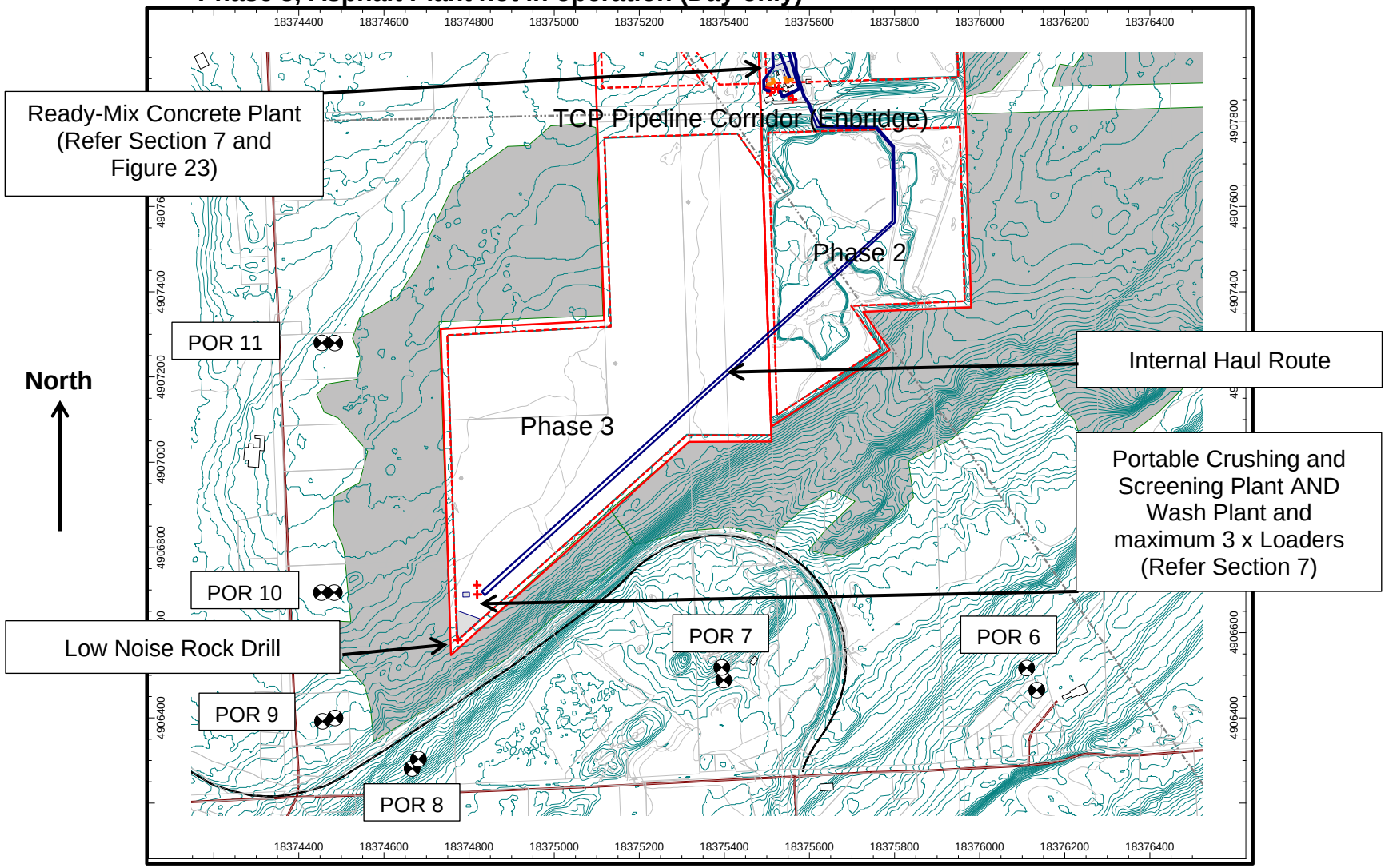


Figure 8: Scenario 3: Worst Case – Noise Contours, Day Only: (Noise levels at 4.5 m)

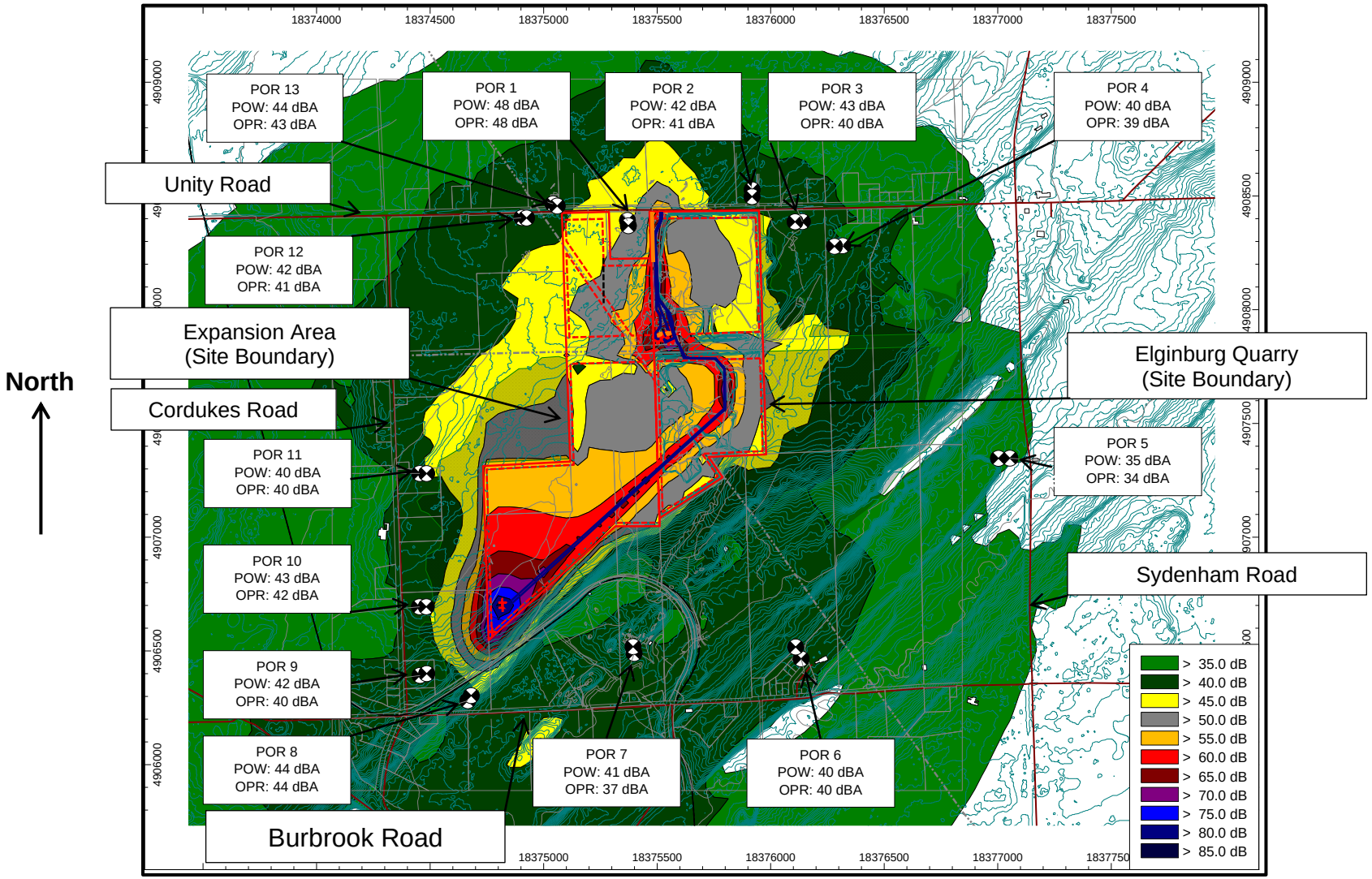


Figure 9: Scenario 4: Worst Case, Expansion Area, RMC Plant in operation concurrently with extraction in Phase 4, Asphalt Plant not in operation (Day only)

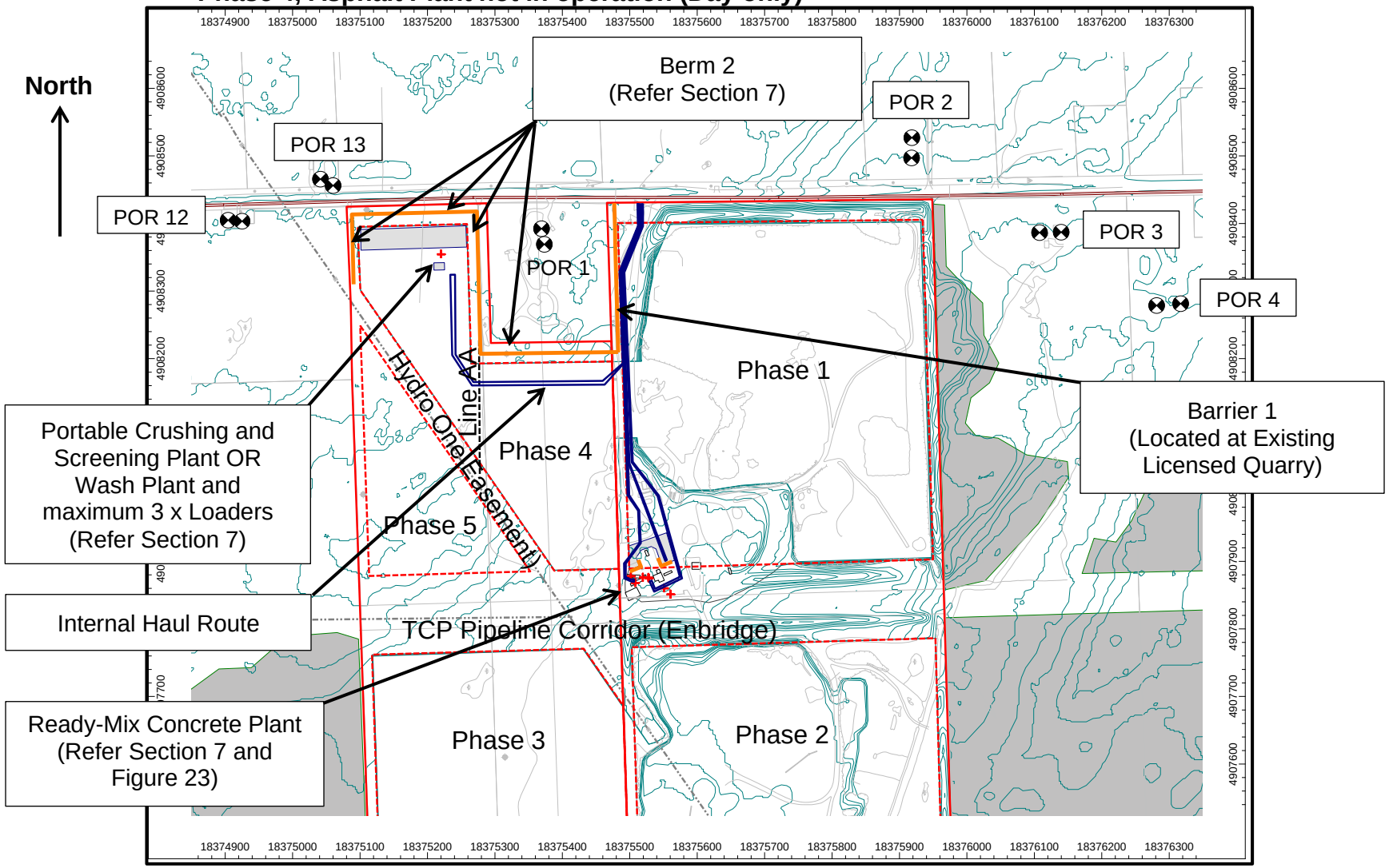


Figure 10: Scenario 4: Worst Case – Noise Contours, Day Only: (Noise levels at 4.5 m)

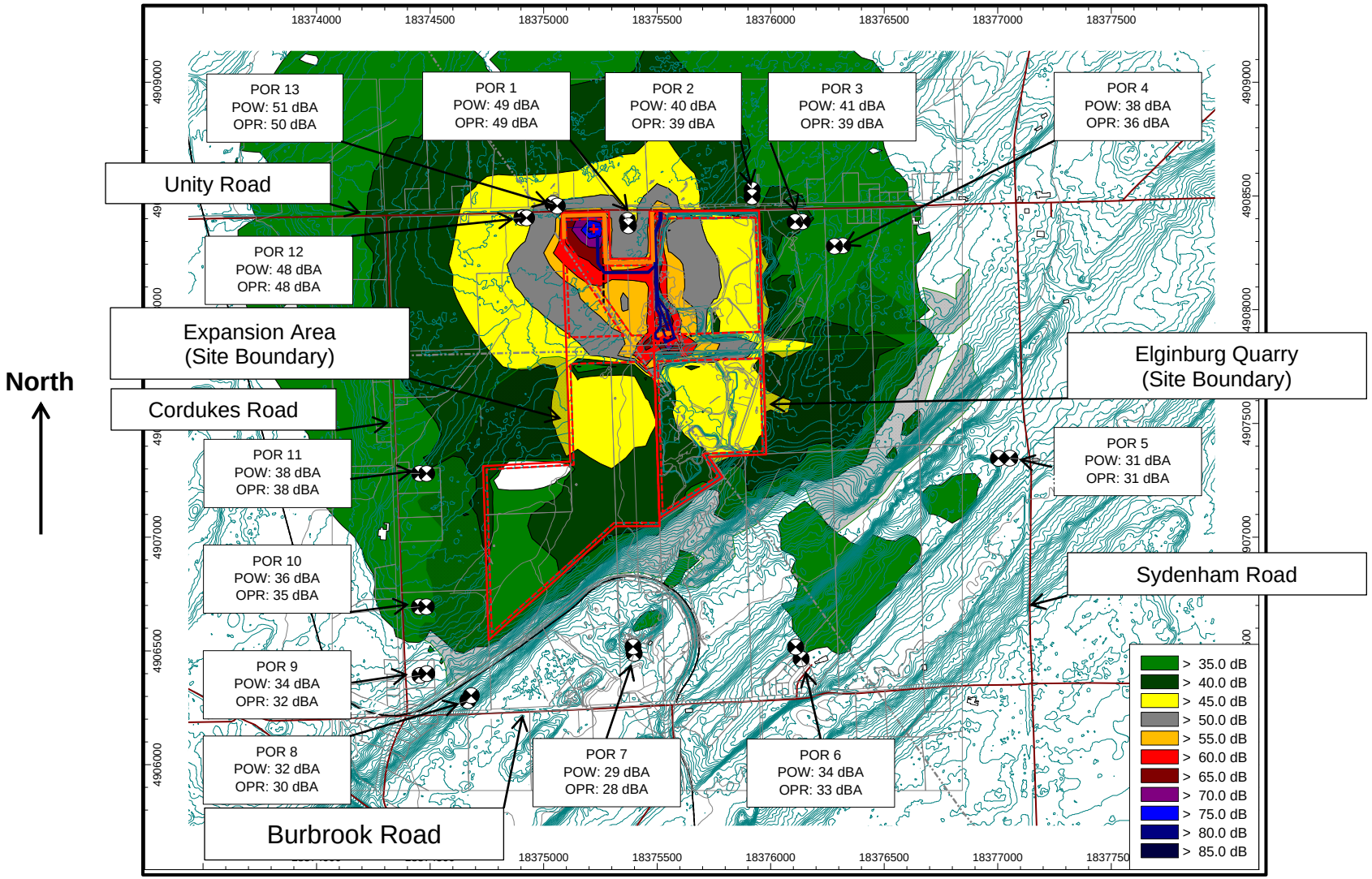


Figure 11: Scenario 5: Worst Case, Expansion Area, RMC Plant in operation concurrently with extraction in Phase 5, Asphalt Plant not in operation (Day only)

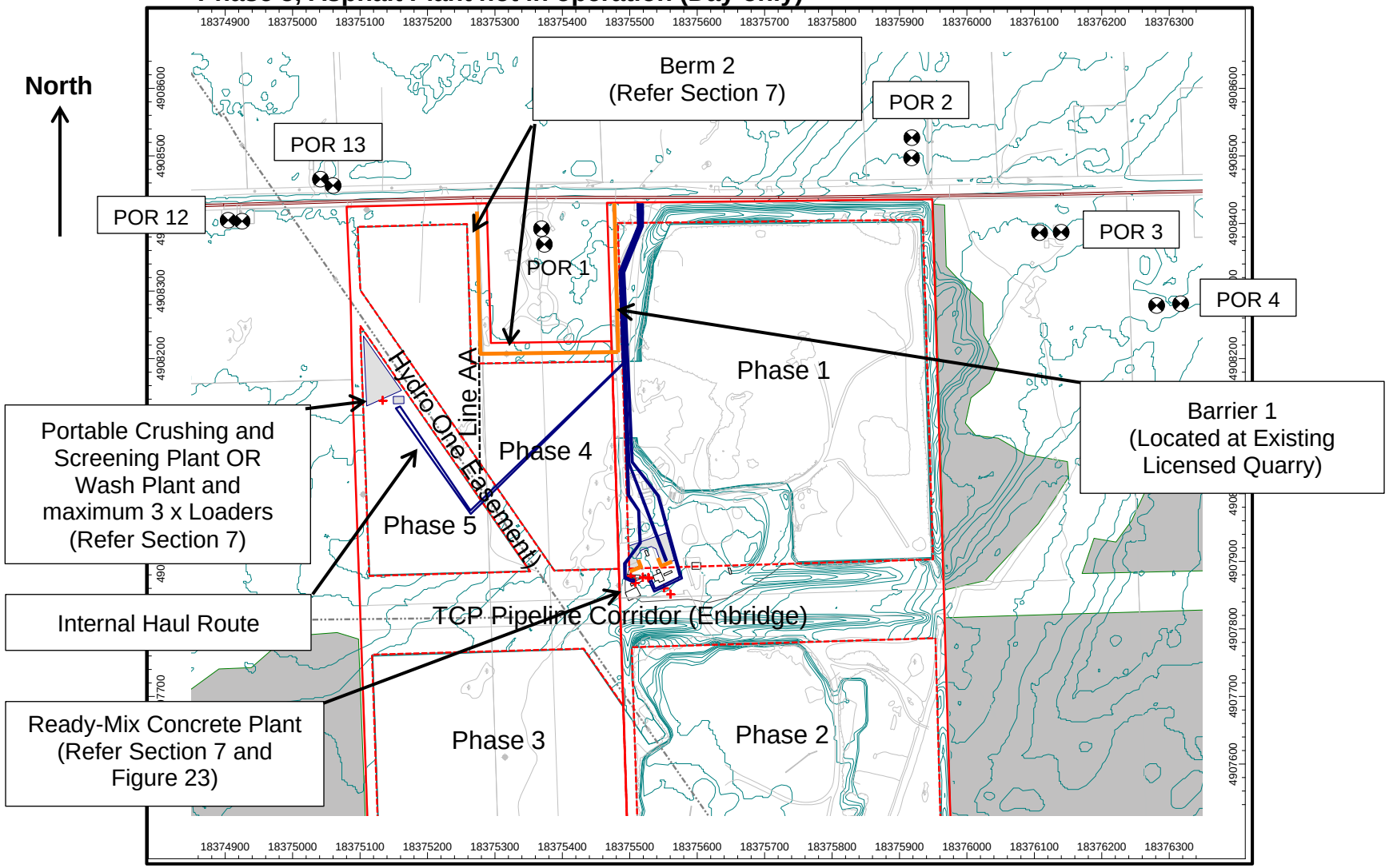


Figure 12: Scenario 5: Worst Case – Noise Contours, Day Only: (Noise levels at 4.5 m)

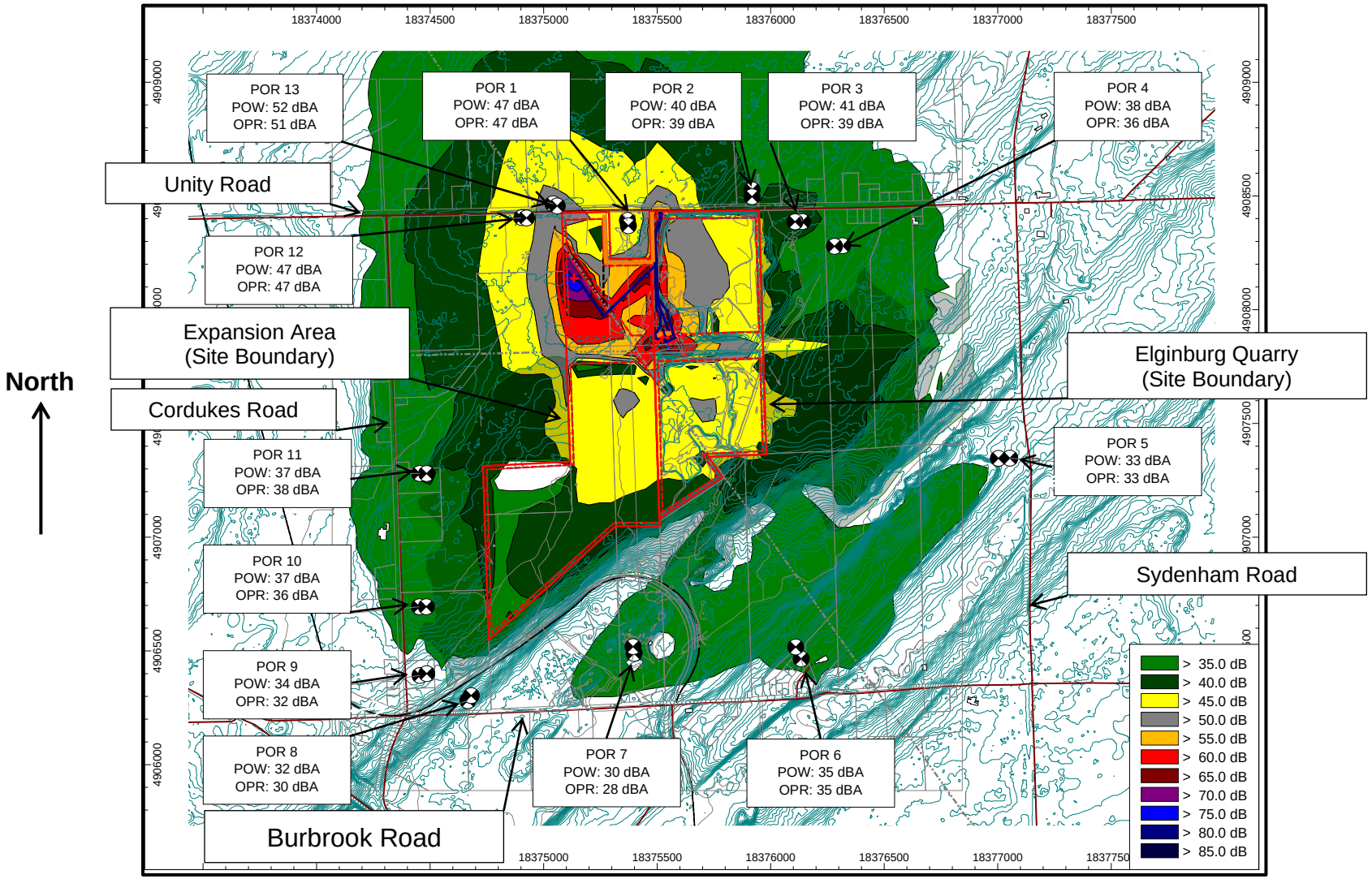


Figure 13: Scenario 6: Worst Case, Existing Quarry, RMC Plant and Asphalt Plant in operation concurrently with extraction in Phase 1 (Day only)

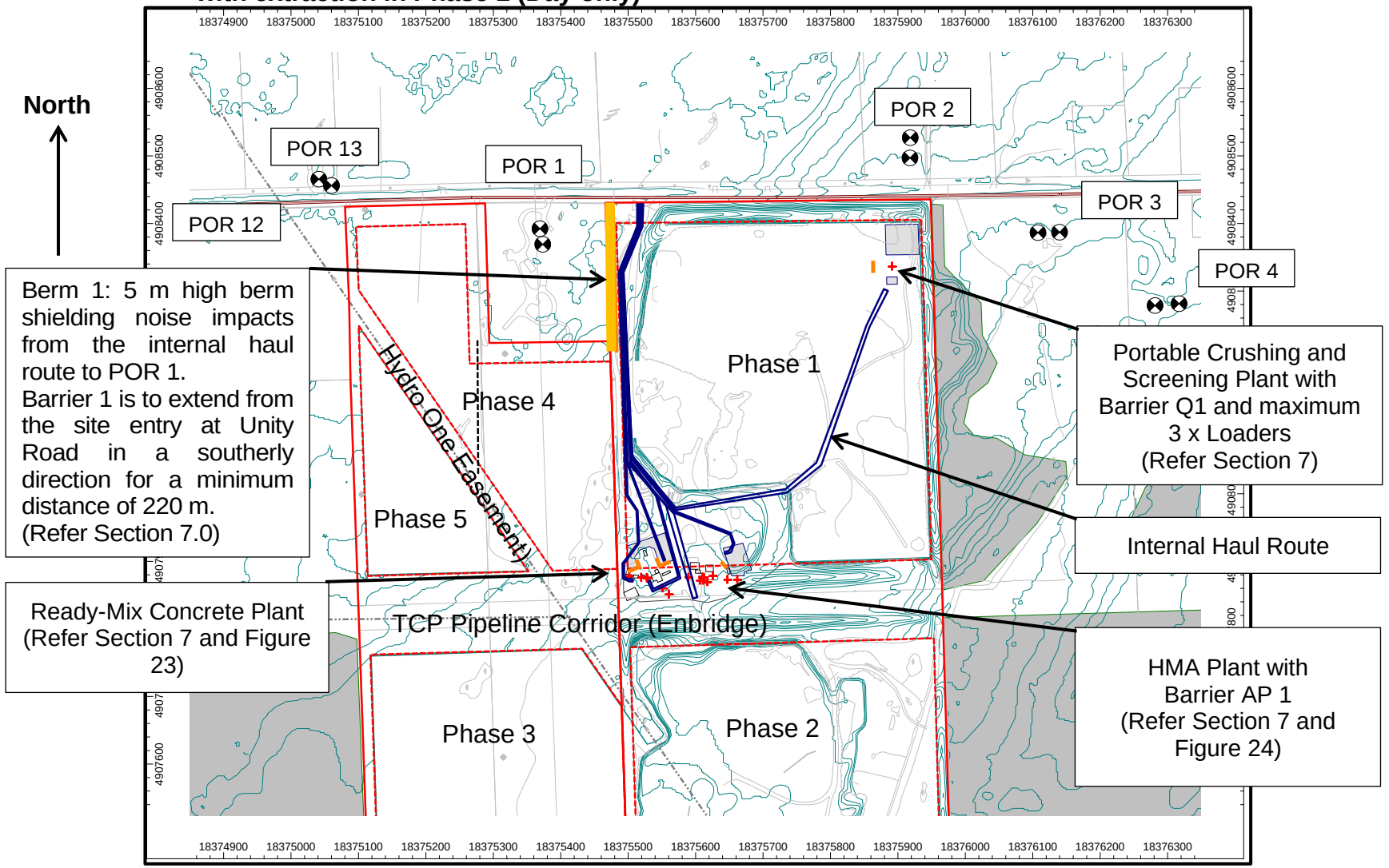


Figure 14: Scenario 6: Worst Case – Noise Contours, Day Only: (Noise levels at 4.5 m)

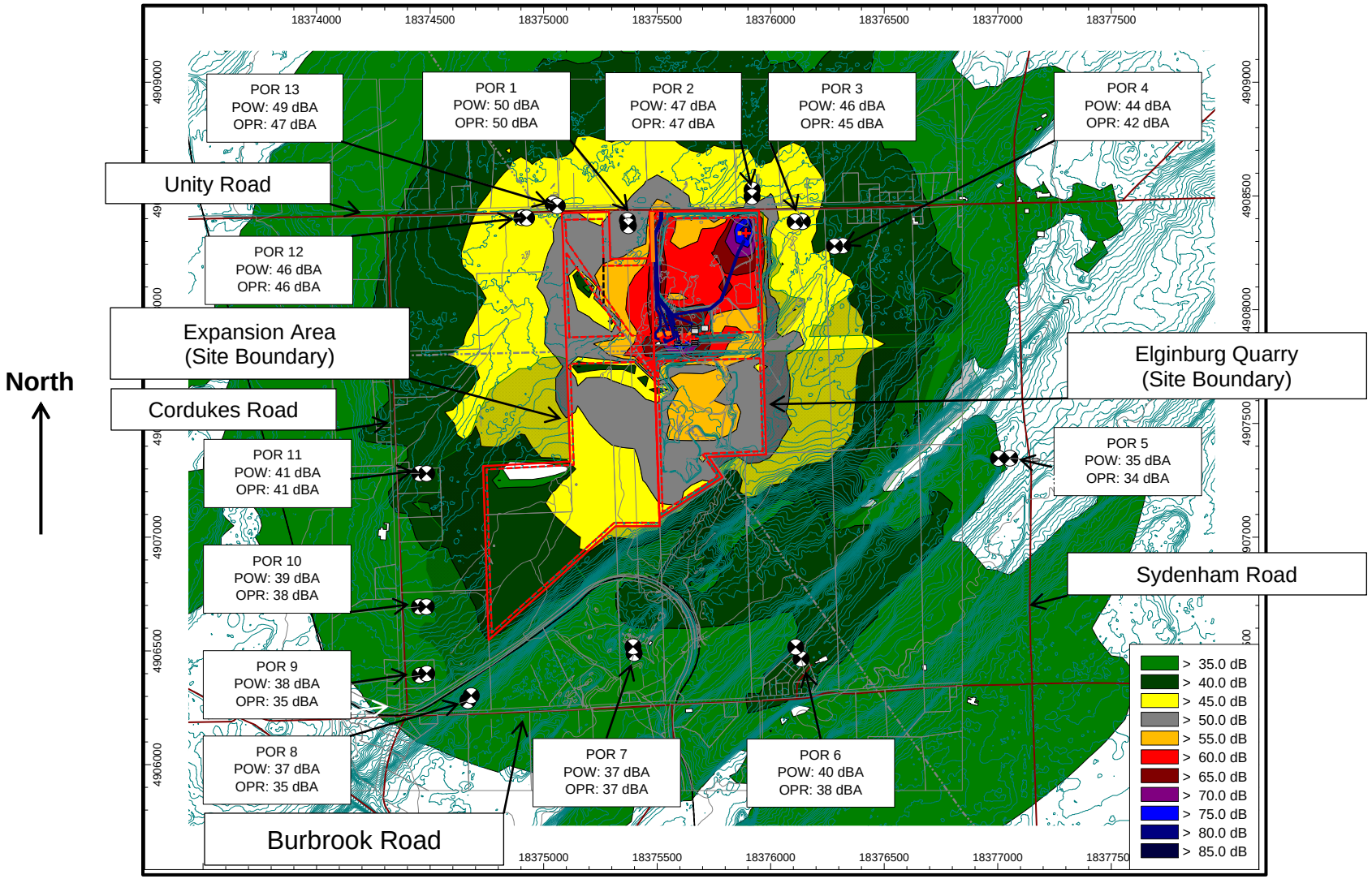


Figure 15: Scenario 7: Worst Case, Expansion Area, RMC Plant and Asphalt Plant in operation concurrently with extraction in Phase 4 (Day only)

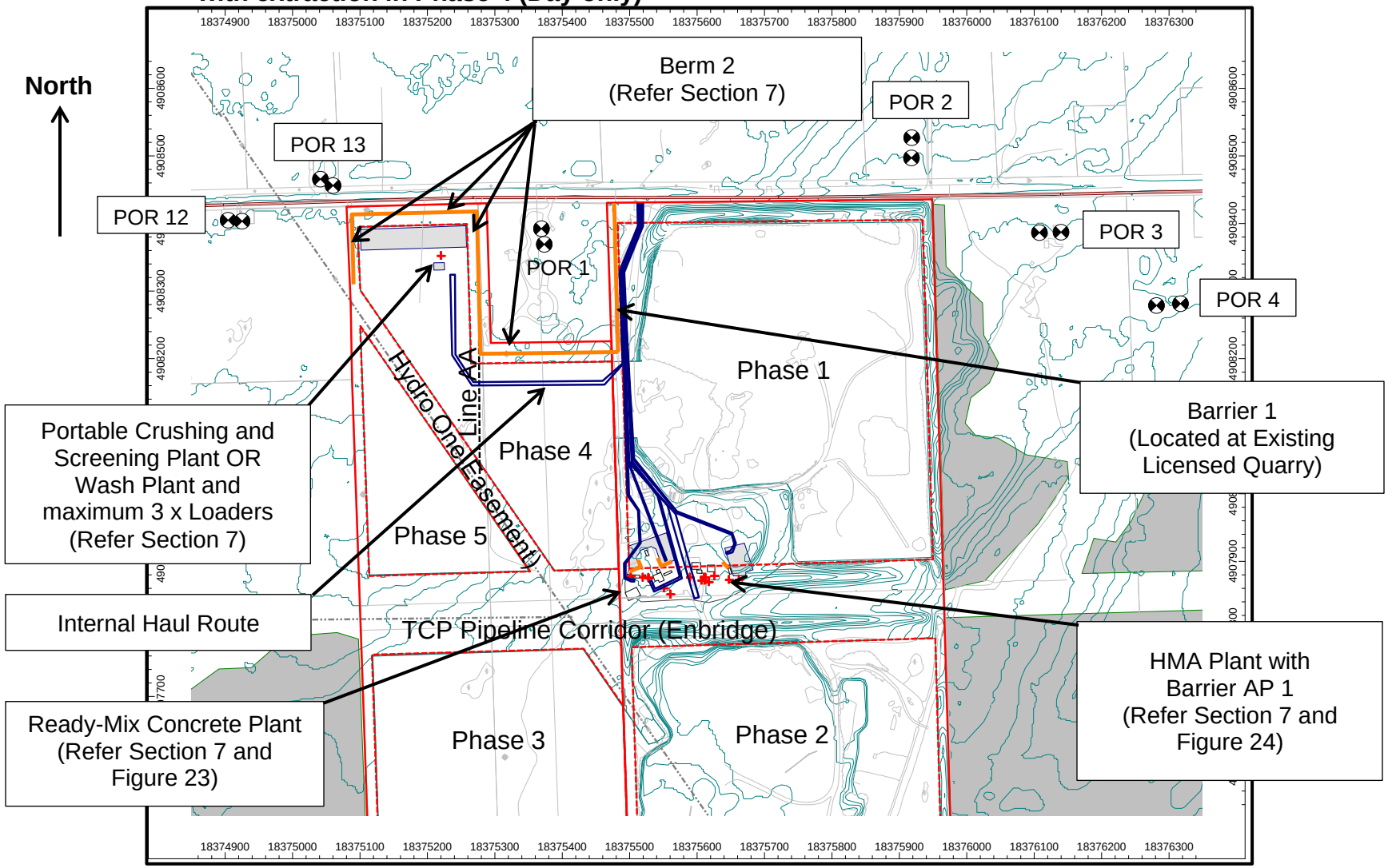


Figure 16: Scenario 7: Worst Case – Noise Contours, Day: (Noise levels at 4.5 m)

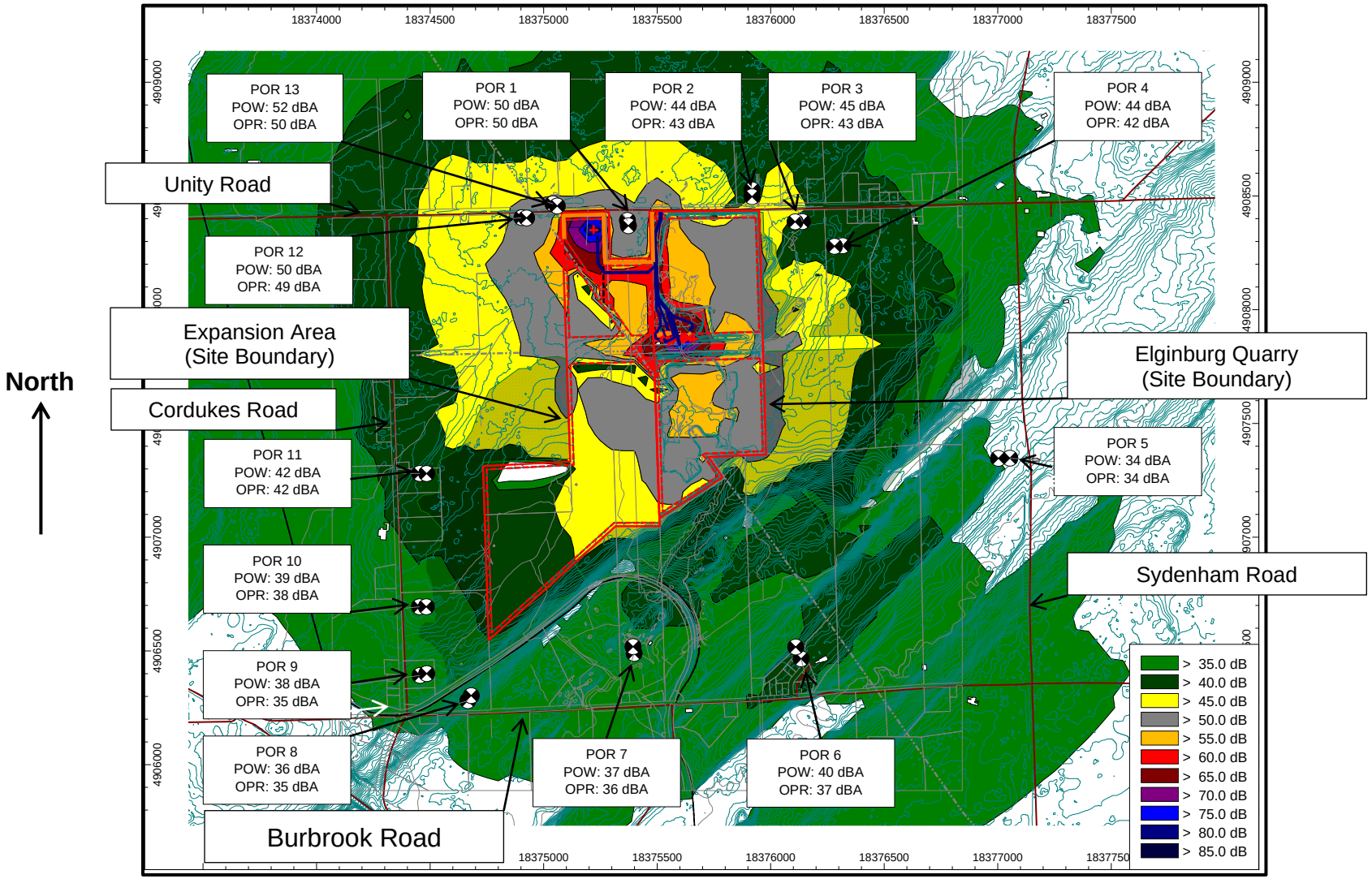


Figure 17: Scenario 8: Worst Case, Existing Quarry, RMC Plant in operation concurrently with loading and hauling operations in Phase 1 (Day, Evening or Night)

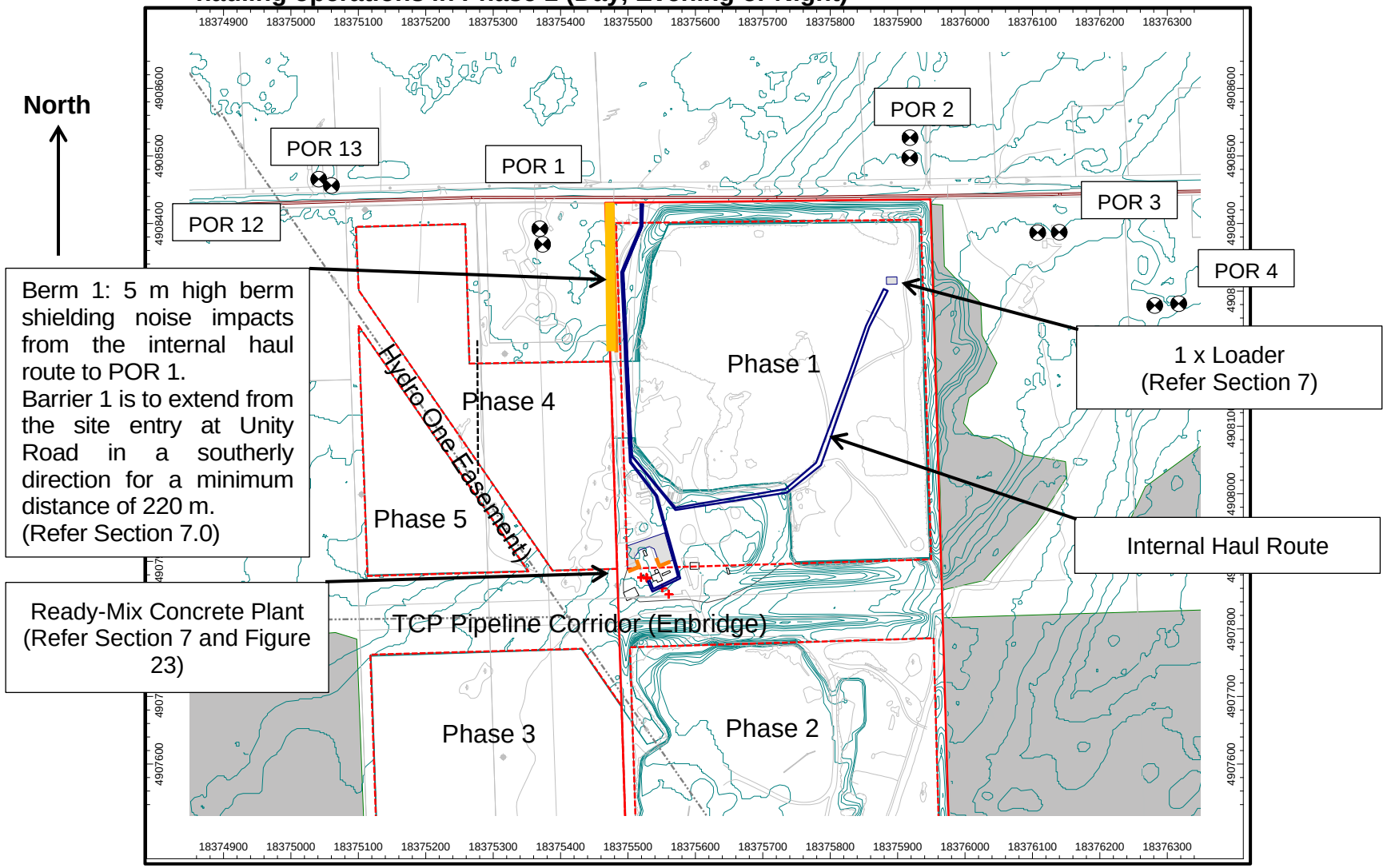


Figure 18: Scenario 8: Worst Case – Noise Contours, Night: (Noise levels at 4.5 m)

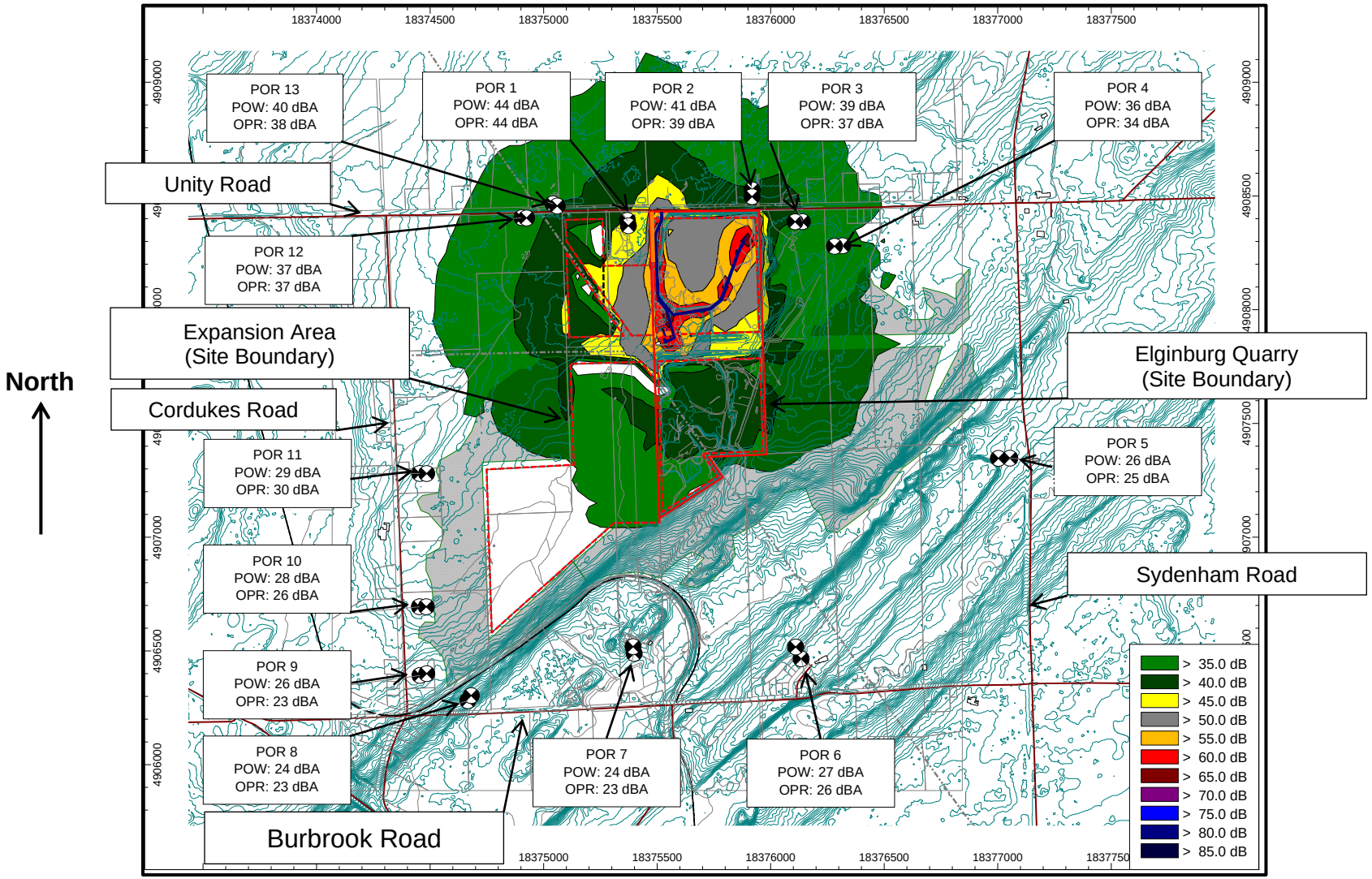


Figure 19: Scenario 9: Worst Case, Expansion Area, RMC Plant in operation concurrently with loading and hauling operations in Phase 4 (Day, Evening or Night)

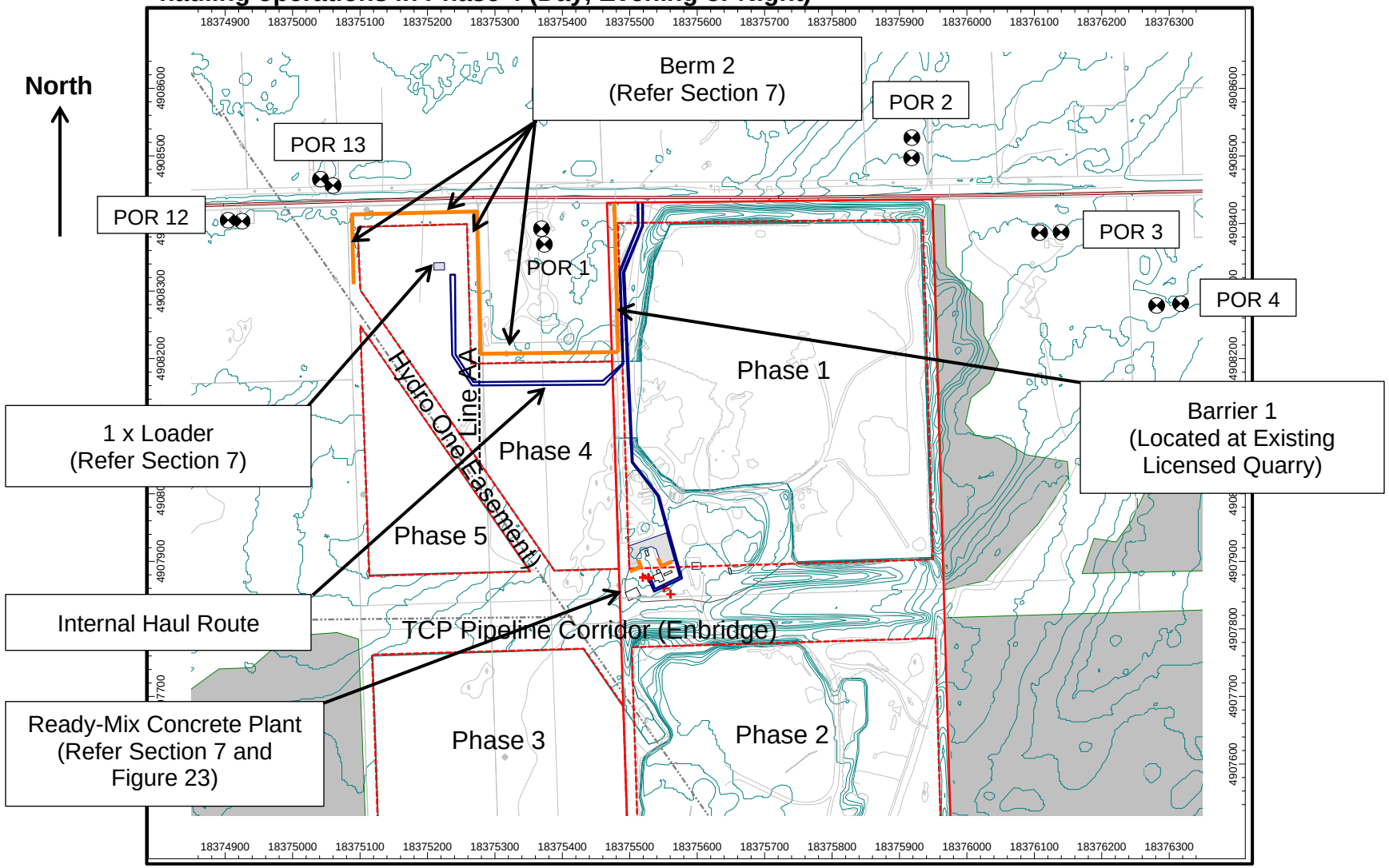


Figure 20: Scenario 9: Worst Case – Noise Contours, Night: (Noise levels at 4.5 m)

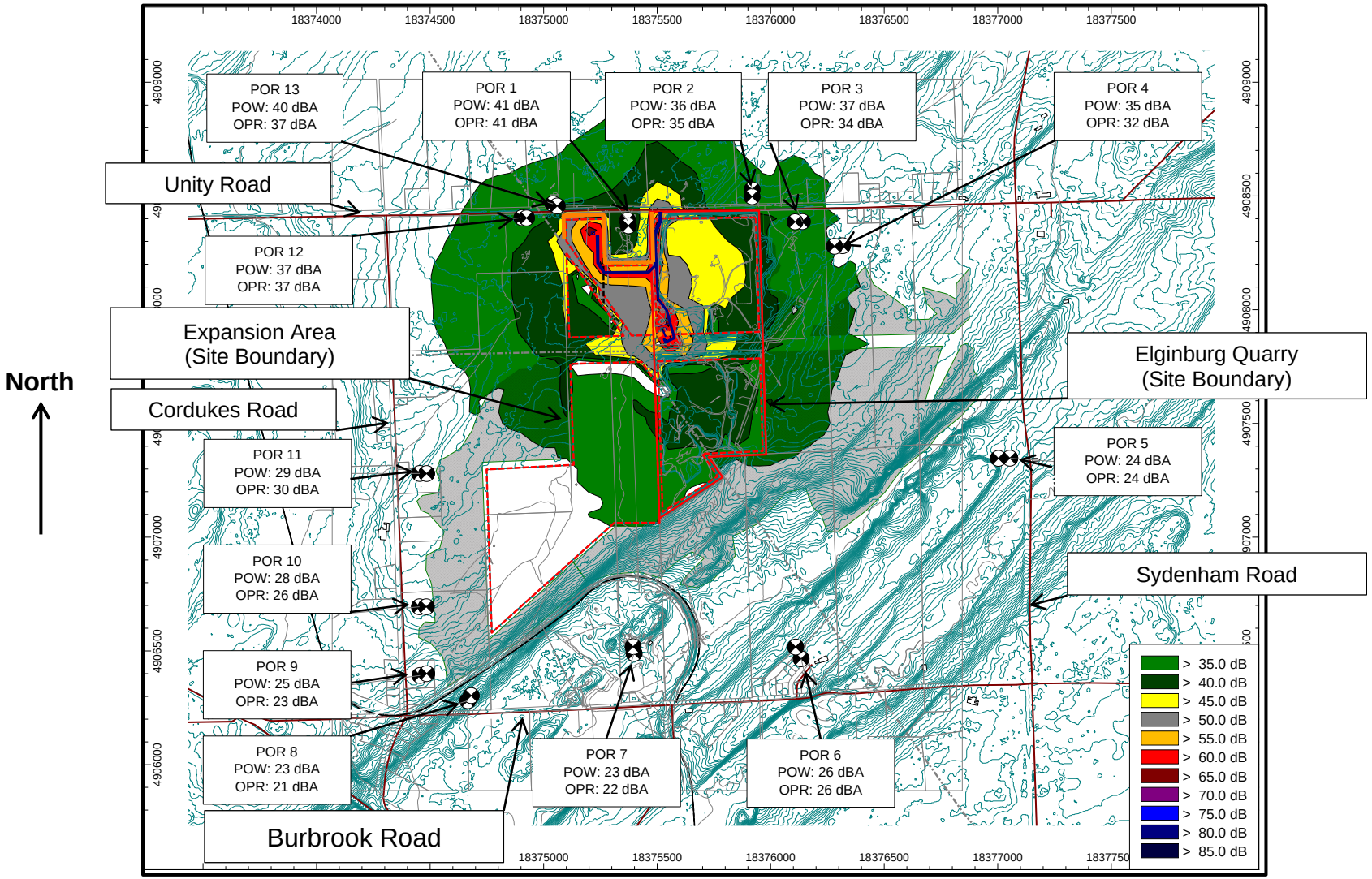


Figure 21: Scenario 10: Worst Case, Asphalt Plant in operation, RMC Plant and Quarry Operations not in operation (Day, Evening or Night)

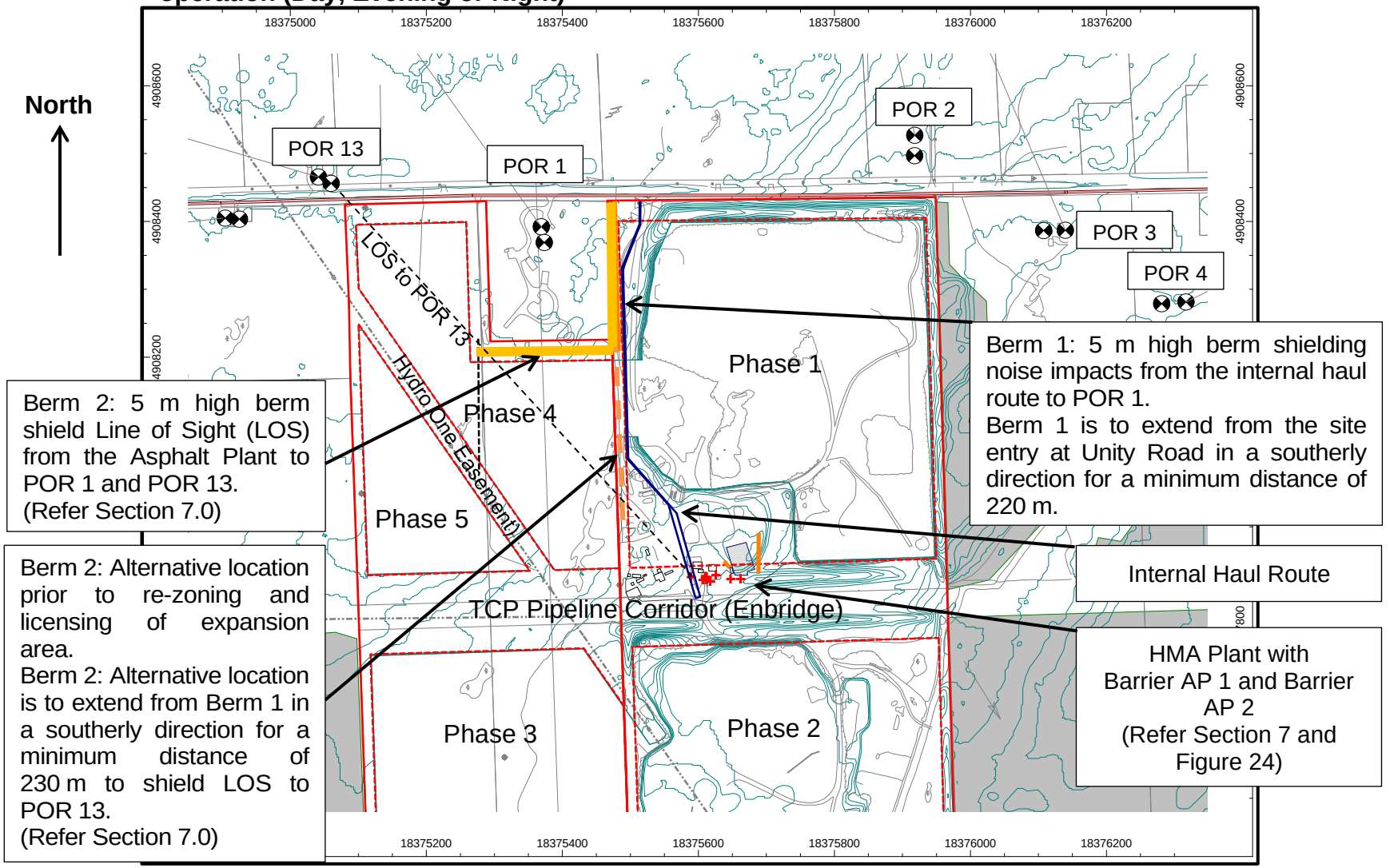


Figure 22: Scenario 10: Worst Case – Noise Contours, Night: (Noise levels at 4.5 m)

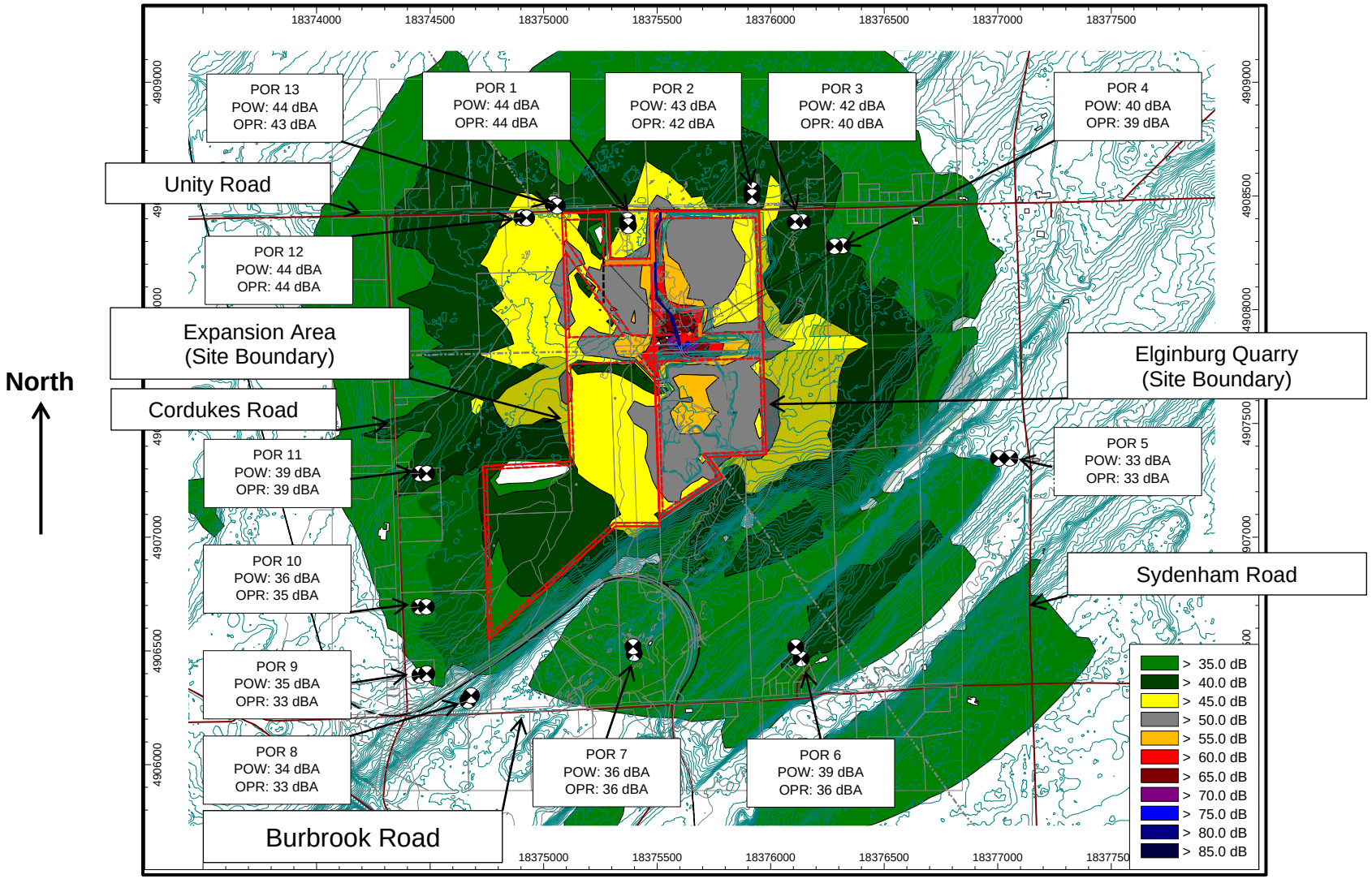


Figure 23: Detail Plan at Ready-Mix Concrete Plant showing source locations

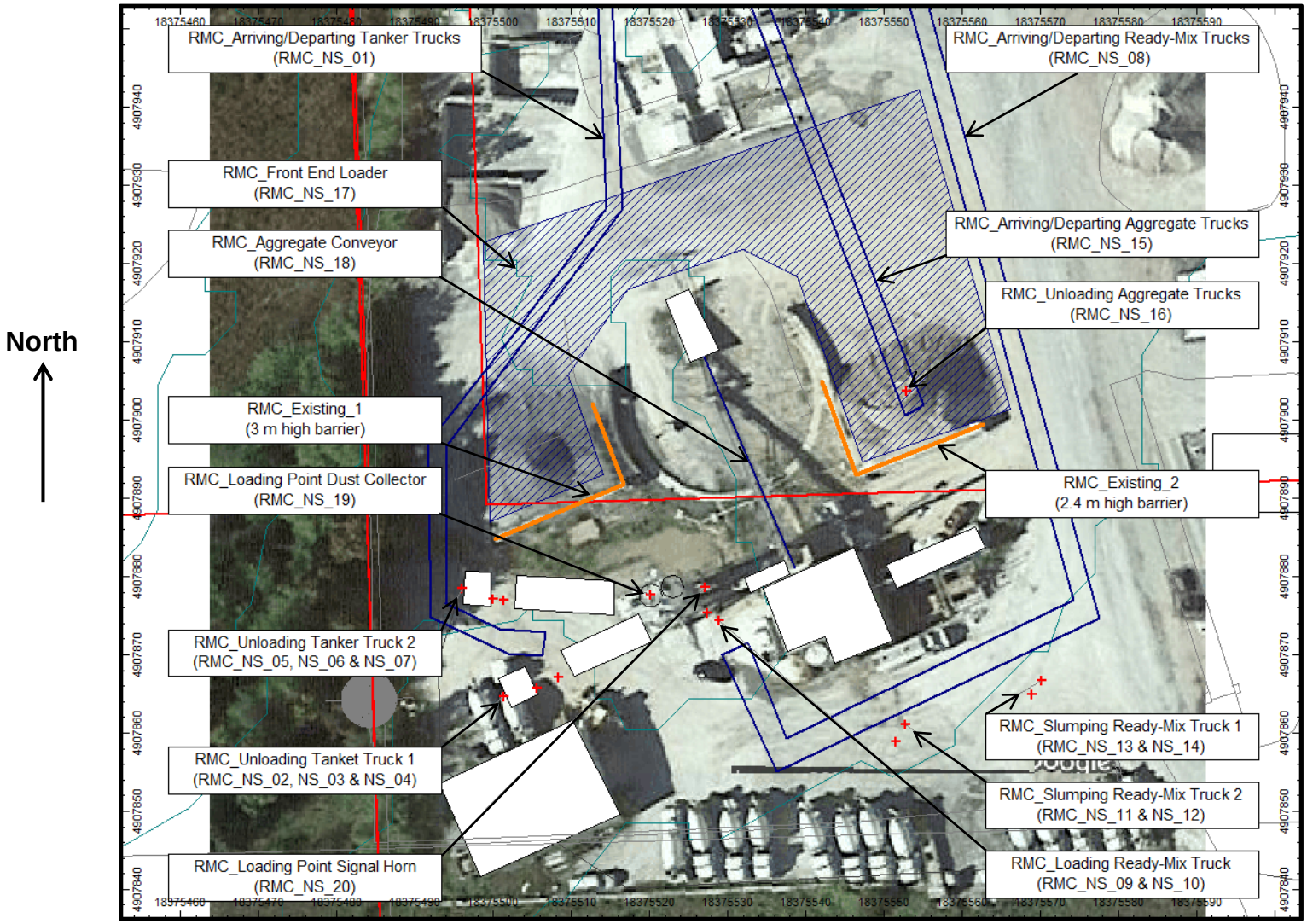
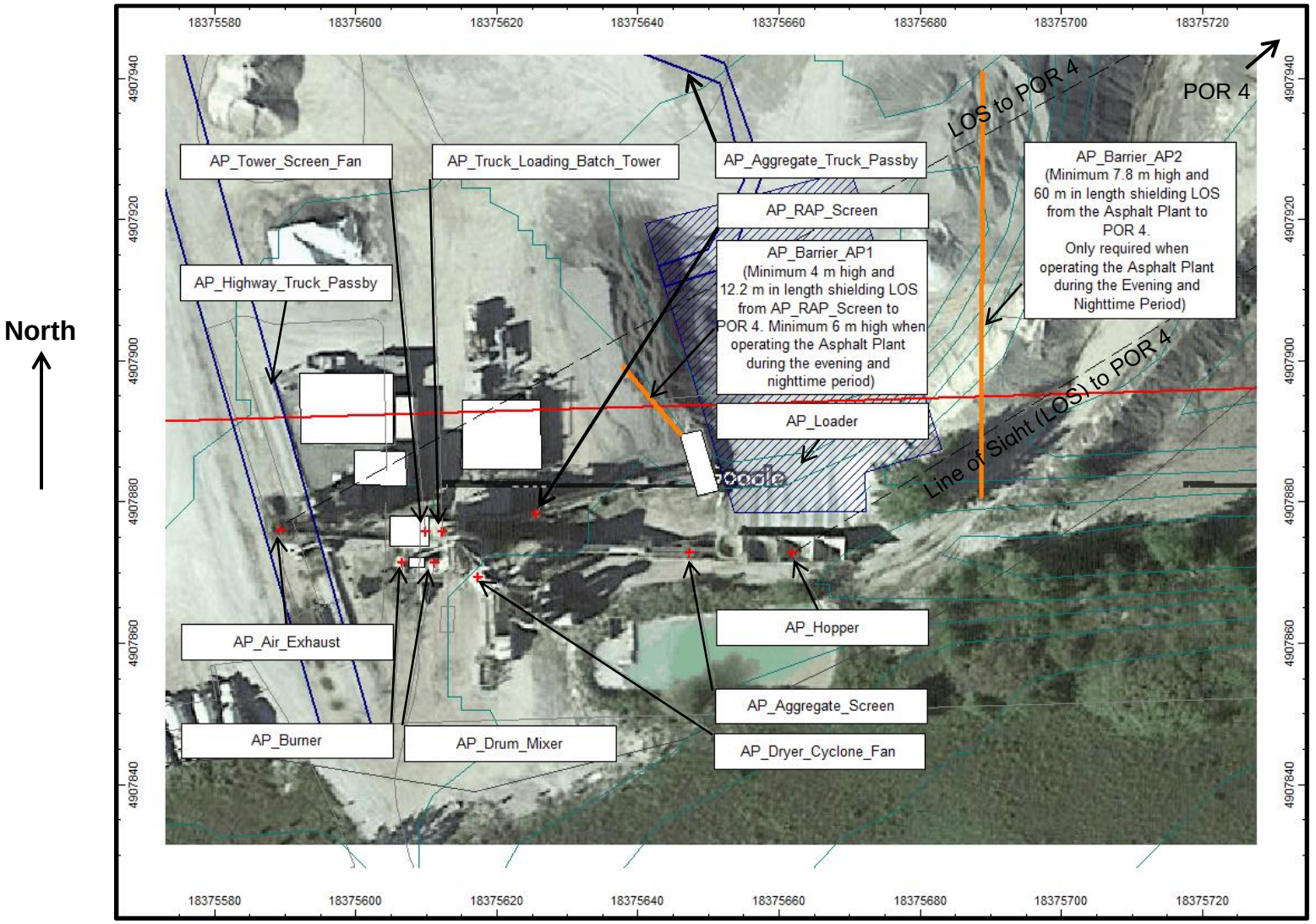


Figure 24: Detail Plan at Asphalt Plant showing source locations



Appendix 1

Zoning Plan and Land Use Designations

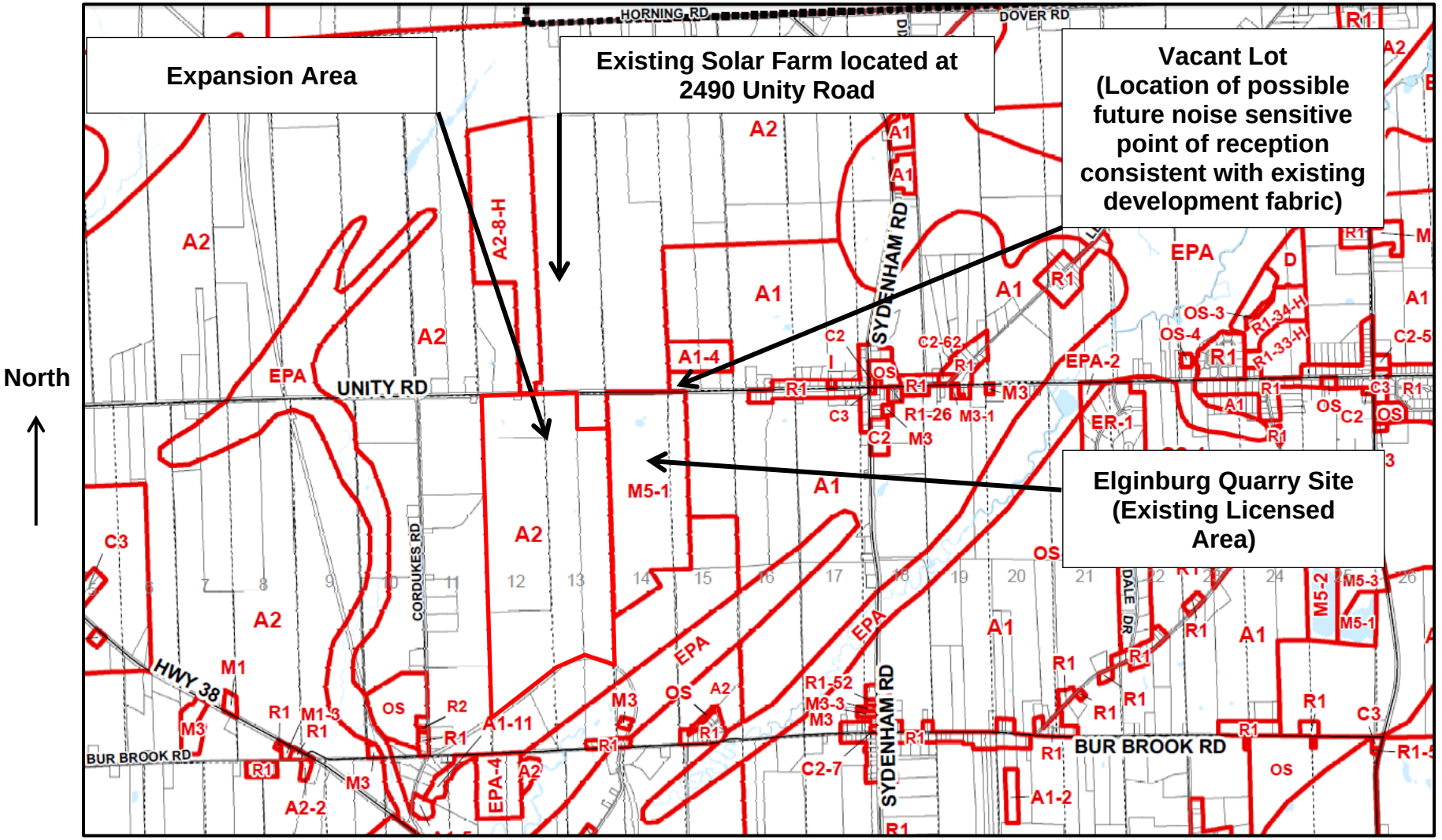
Contents:

- **Zoning Plan, source: Schedule 'A' Zone Maps, Township of Kingston, Zoning By-Law No.76-26 - Map 1**

Legend for Land Use Designations:

ZONES	SYMBOLS
Environmental Protection Area Zone	EPA
Open Space Zone	OS
Restricted Agricultural Zone	A1
General Agricultural Zone	A2
Residential Type 1 Zone	R1
Residential Type 2 Zone	R2
Residential Type 3 Zone	R3
Residential Type 4 Zone	R4
Service Industrial Zone	M3
Extractive Industrial Zone	M5

Zoning Plan, source: Schedule 'A' Zone Maps, Township of Kingston, Zoning By-Law No.76-26 - Map 1



Appendix 2

Acoustic Modelling Details

Modeling Notes:

1. Acoustic model developed uses Cadna-A software, Version 2020.
2. Sound propagation is modeled according to ISO 9613-2: 1996(E).
3. The whole of the extraction area is modeled as relatively reflective with an absorption coefficient of 0.3, a conservative assumption. The surrounding area is modelled with an absorption coefficient of 1.0 indicative of a rural area with pastureland and woodland.
4. MECP favoured conservative modelling assumptions are used, that is, 'no subtraction of negative ground attenuation' and 'no negative path differences'.

Contents:

Table A2.1 Point of Reception Location Table

Name	ID	Height	Coordinates, ground		
		Above Ground	X	Y	Z
		(m)	(m)	(m)	(m)
POR_1	POR_1_POW	2	18375369.2	4908392.18	140.82
POR_1	POR_1_OPR	1.5	18375373.3	4908368.95	140.16
POR_2	POR_2_POW	4.5	18375918.4	4908526.87	138.1
POR_2	POR_2_OPR	1.5	18375917.9	4908496.87	134.5
POR_3	POR_3_POW	4.5	18376139.8	4908387.03	135.5
POR_3	POR_3_OPR	1.5	18376107.8	4908386.37	132.33
POR_4	POR_4_POW	4.5	18376317	4908281.23	133.99
POR_4	POR_4_OPR	1.5	18376281.5	4908278.6	131.03
POR_5	POR_5_POW	4.5	18377053.5	4907347.16	114.34
POR_5	POR_5_OPR	1.5	18377003.2	4907346.4	112.49
POR_6	POR_6_POW	2	18376134.3	4906464.96	114.51
POR_6	POR_6_OPR	1.5	18376110.4	4906516.95	111.19
POR_7	POR_7_POW	2	18375398.8	4906488.54	92.12
POR_7	POR_7_OPR	1.5	18375394.3	4906518.29	94.51
POR_8	POR_8_POW	4.5	18374666.3	4906280.76	103.78
POR_8	POR_8_OPR	1.5	18374681.2	4906303.2	102.41
POR_9	POR_9_POW	4.5	18374455.8	4906391.89	125.35
POR_9	POR_9_OPR	1.5	18374485.2	4906399.71	121.85
POR_10	POR_10_POW	4.5	18374453.3	4906693.81	135.06
POR_10	POR_10_OPR	1.5	18374483.3	4906693.81	132.4
POR_11	POR_11_POW	2	18374454.4	4907279.9	134.41
POR_11	POR_11_OPR	1.5	18374484.8	4907279.41	134.62
POR_12	POR_12_POW	2	18374904.4	4908404.7	140
POR_12	POR_12_OPR	1.5	18374925.1	4908403.21	139.5
POR_13	POR_13_POW	4.5	18375041.4	4908465.45	143.5
POR_13	POR_13_OPR	1.5	18375060	4908455.99	140.5

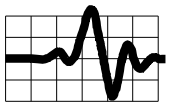


Table A2.2 Point Sources

Name	Result. PWL			Lw / Li	Noise Source	Operating Time			Direct.	Source
	Day	Evening	Night	Type	Library File	Day	Evening	Night		Height
	(dBA)	(dBA)	(dBA)			(min/Hr)	(min/Hr)	(min/Hr)		(m)
Q_CP_Crushing_Plant_S1	119	119	119	Lw	Q_Crushing_Plant				(none)	4
Q_CP_Crushing_Plant_S2	119	119	119	Lw	Q_Crushing_Plant				(none)	4
Q_CP_Crushing_Plant_S3	119	119	119	Lw	Q_Crushing_Plant				(none)	4
Q_CP_Crushing_Plant_S4	119	119	119	Lw	Q_Crushing_Plant				(none)	4
Q_CP_Crushing_Plant_S5	119	119	119	Lw	Q_Crushing_Plant				(none)	4
Q1_CP_Crushing_Plant_S6	119	119	119	Lw	Q_Crushing_Plant				(none)	4
Q4_CP_Crushing_Plant_S7	119	119	119	Lw	Q_Crushing_Plant				(none)	4
Q_WP_Wash_Plant_S3	118.8	118.8	118.8	Lw	WP_Wash_Plant				(none)	4
RMC_NS_02_Z	114[1]	114[1]	114[1]	Lw	RMC_NS_02				(none)	1
RMC_NS_03_Z	97	97	97	Lw	RMC_NS_03				(none)	1.5
RMC_NS_04_Z	87	87	87	Lw	RMC_NS_04				(none)	4
RMC_NS_05	114[1]	114[1]	114[1]	Lw	RMC_NS_05				(none)	1
RMC_NS_06	97	97	97	Lw	RMC_NS_06				(none)	1.5
RMC_NS_07	87	87	87	Lw	RMC_NS_07				(none)	4
RMC_NS_09_Z	102	102	102	Lw	RMC_NS_09	40	40	40	(none)	1.5
RMC_NS_09_S6	102	102	102	Lw	RMC_NS_09	20	20	20	(none)	1.5
RMC_NS_10_Z	92	92	92	Lw	RMC_NS_10	40	40	40	(none)	4
RMC_NS_10_S6	92	92	92	Lw	RMC_NS_10	20	20	20	(none)	4
RMC_NS_11_Z	102	102	102	Lw	RMC_NS_11	20	20	20	(none)	1.5
RMC_NS_11_S6	102	102	102	Lw	RMC_NS_11	10	10	10	(none)	1.5
RMC_NS_12_Z	92	92	92	Lw	RMC_NS_12	20	20	20	(none)	4
RMC_NS_12_S6	92	92	92	Lw	RMC_NS_12	10	10	10	(none)	4
RMC_NS_13_Z	102	102	102	Lw	RMC_NS_13	20	20	20	(none)	1.5
RMC_NS_13_S6	102	102	102	Lw	RMC_NS_13	10	10	10	(none)	1.5
RMC_NS_14_Z	92	92	92	Lw	RMC_NS_14	20	20	20	(none)	4
RMC_NS_14_S6	92	92	92	Lw	RMC_NS_14	20	10	10	(none)	4
RMC_NS_16	104	104	104	Lw	RMC_NS_16	0.02	0.02	0.02	(none)	1.5
RMC_NS_19	100	100	100	Lw	RMC_NS_19				(none)	7
RMC_NS_20	122[1]	122[1]	122[1]	Lw	RMC_NS_20	0.01	0.01	0.01	(none)	5
AP_Truck_Loading_Batch_Tower	104	104	104	Lw	AP_Truck_Loading_Batch_Tower				(none)	4
AP_Dryer_Cyclone_Fan	109	109	109	Lw	AP_Dryer_Cyclone_Fan				(none)	2.5

AP_RAP_Screen	111	111	111	Lw	AP_RAP_Screen				(none)	3.2
AP_Aggregate_Screen	102	102	102	Lw	AP_Aggregate_Screen				(none)	3.7
AP_Hopper	104	104	104	Lw	AP_Hopper				(none)	3
AP_Burner	115	115	115	Lw	AP_Burner				(none)	3.2
AP_Drum_Mixer	105	105	105	Lw	AP_Drum_Mixer				(none)	4.5
AP_Air_Exhaust	100	100	100	Lw	AP_Air_Exhaust				(none)	12.5
AP_Tower_Screen_Fan	100	100	100	Lw	AP_Tower_Screen_Fan				(none)	0.75
LNRD_Rock_Drill_S1	108.3	108.3	108.3	Lw	Q_Rockdrill_SmartRIG				(none)	0.5
LNRD_Rock_Drill_S2	108.3	108.3	108.3	Lw	Q_Rockdrill_SmartRIG				(none)	0.5
LNRD_Rock_Drill_S3	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5
LNRD_Rock_Drill_S4	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5
LNRD_Rock_Drill_S5	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5
RD_Rock_Drill_S1	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5
RD_Rock_Drill_S2	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5
RD_Rock_Drill_S3	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5
RD_Rock_Drill_S4	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5
RD_Rock_Drill_S5	118.6	118.6	118.6	Lw	Q_Rockdrill_TH_70				(none)	0.5

1. Sound power levels for tonal sources noted above include a 5 dB penalty as per MECP guideline NPC-104.

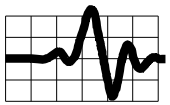


Table A2.3 Area Sources

Name	Result. PWL			Lw / Li	Noise Source	Operating Time			Direct.	Moving Point Source		
	Day	Evening	Night	Type	Library File	Day	Number			Number		
	(dBA)	(dBA)	(dBA)			(min/Hr)	Day	Evening	Night	Day	Evening	Night
Q_Loaders_S1	110.1	7.1	7.1	PWL-Pt	Q_Loader_CAT980K				(none)	2	0	0
Q_Loader_S1	103.1	103.1	103.1	PWL-Pt	Q_Loader_CAT980M				(none)	1	1	1
Q_Loaders_S2	110.1	7.1	7.1	PWL-Pt	Q_Loader_CAT980K				(none)	2	0	0
Q_Loader_S2	103.1	103.1	103.1	PWL-Pt	Q_Loader_CAT980M				(none)	1	1	1
Q_Loaders_S3	110.1	7.1	7.1	PWL-Pt	Q_Loader_CAT980K				(none)	2	0	0
Q_Loader_S3	103.1	103.1	103.1	PWL-Pt	Q_Loader_CAT980M				(none)	1	1	1
Q_Loaders_S4	110.1	107.1	107.1	PWL-Pt	Q_Loader_CAT980K				(none)	2	1	1
Q_Loader_S4	103.1	103.1	103.1	PWL-Pt	Q_Loader_CAT980M				(none)	1	1	1
Q_Loaders_S5	107.1	107.1	107.1	PWL-Pt	Q_Loader_CAT980K				(none)	1	1	1
Q_Loader_S5	103.1	103.1	103.1	PWL-Pt	Q_Loader_CAT980M				(none)	1	1	1
Q1_Loaders_S6	107.1	7.1	7.1	PWL-Pt	Q_Loader_CAT980K				(none)	1	0	0
Q1_Loader_S6	103.1	103.1	103.1	PWL-Pt	Q_Loader_CAT980M				(none)	1	1	1
Q4_Loader_S7	103.1	103.1	103.1	PWL-Pt	Q_Loader_CAT980M				(none)	1	1	1
Q4_Loaders_S7	107.1	107.1	107.1	PWL-Pt	Q_Loader_CAT980K				(none)	1	1	1
RMC_NS_17	101	101	101	PWL-Pt	RMC_NS_17	40	40	40	(none)	1	1	1
AP_Loader	105	105	105	PWL-Pt	AP_Loader				(none)	1	1	1

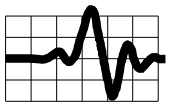


Table A2.4 Line Sources

Name	Point Source PWL			Lw / Li	Modelling Type/ Noise Source Lib. File	Direct.	Moving Pt. Source			Speed
	Day	Type	Night				Day	Evening	Night	
	(dBA)	(dBA)	(dBA)							(km/h)
Q_Highway_Truck_Passby_S1	110.1	107.1	107.1	PWL-Pt	HWYTruck_Slow58	(none)	10	5	5	20
Q_Highway_Truck_Passby_S2	111.6	108.6	108.6	PWL-Pt	HWYTruck_Slow58	(none)	10	5	5	20
Q_Highway_Truck_Passby_S3	113.8	110.8	110.8	PWL-Pt	HWYTruck_Slow58	(none)	10	5	5	20
Q_Highway_Truck_Passby_S4	108.2	105.2	105.2	PWL-Pt	HWYTruck_Slow58	(none)	10	5	5	20
Q_Highway_Truck_Passby_S5	108.9	105.9	105.9	PWL-Pt	HWYTruck_Slow58	(none)	10	5	5	20
Q1_Highway_Truck_Passby_S6	107.1	107.1	107.1	PWL-Pt	HWYTruck_Slow58	(none)	5	5	5	20
Q2_Highway_Truck_Passby_S6	108.6	108.6	108.6	PWL-Pt	HWYTruck_Slow58	(none)	5	5	5	20
Q3_Highway_Truck_Passby_S6	110.9	110.9	110.9	PWL-Pt	HWYTruck_Slow58	(none)	5	5	5	20
Q4_Highway_Truck_Passby_S7	105.2	105.2	105.2	PWL-Pt	HWYTruck_Slow58	(none)	5	5	5	20
Q5_Highway_Truck_Passby_S6	105.9	105.9	105.9	PWL-Pt	HWYTruck_Slow58	(none)	5	5	5	20
RMC_NS_01_Z	103.8	0.8	0.8	PWL-Pt	HWYTruck_Slow58	(none)	2	0	0	20
RMC_NS_01_S6	100.8	0.8	0.8	PWL-Pt	HWYTruck_Slow58	(none)	1	0	0	20
RMC_NS_08_Z	104.4	104.4	104.4	PWL-Pt	RMC_NS_08	(none)	8	8	8	20
RMC_NS_08_S6	101.4	101.4	101.4	PWL-Pt	RMC_NS_08	(none)	4	4	4	20
RMC_NS_15_Z	103.5	0.5	0.5	PWL-Pt	HWYTruck_Slow58	(none)	2	0	0	20
RMC_NS_15_S6	100.5	0.5	0.5	PWL-Pt	HWYTruck_Slow58	(none)	1	0	0	20
RMC_NS_18	95	95	95	Lw	RMC_NS_18	(none)	40*	40*	40*	n/a
AP_Highway_Truck_Passby	107.1	107.1	107.1	PWL-Pt	HWYTruck_Slow58	(none)	8	8	8	20

*Operating time (min/hour) provided above as applicable.

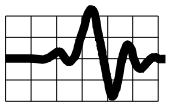


Table A2.5 Noise Source Library

ID	Type	Spectra (dB)											Source*
		31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Q_Rockdrill_TH_70	Lw	111.2	110.6	112.4	108.9	108.7	109.3	113.6	112.2	109.9	118.6	120.6	Furukawa Model HCR12-ES Rock Drill Measured 2007
Q_Rockdrill_SmartRIG	Lw	103.4	109.4	112.6	106.8	102.2	101.7	102.5	98.6	91.3	108.3	116	Measured 30/08/11
Q_Crushing_Plant	Lw	127.2	120.1	115.7	116.8	116.2	113.6	111.9	108.2	95.9	119	129	Meas. Elginburg Quarry - P3 - 69.4 at 110 m
Q_Loader_CAT980M	Lw	108	105.5	102	99.1	101.5	98.6	94.7	89.2	74.8	103.1	111.7	Meas. Elginburg Quarry - 68.4 at 20.3 m
Q_Loader_CAT980K	Lw	112	109.5	106	103.1	105.5	102.6	98.7	93.2	78.8	107.1	115.7	Meas. Elginburg Quarry - 76.9 at 12.7 m
WP_Wash_Plant	Lw	127	119.9	115.5	116.6	116	113.4	111.7	108	95.7	118.8	128.8	Based on Golder AAR dated February 2018
RMC_NS_01	Lw	115.9	112.7	110.2	101.6	101.4	105	104.2	97.6	103.5	110.1	119	Brockville McDowell Study, 2003 (HWYTruck_Slow58)
RMC_NS_02	Lw		109	117	109	109	110	106	104	96	114[1]	119.6	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
RMC_NS_03	Lw		101	92	90	94	93	89	85	82	97	103.2	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
RMC_NS_04	Lw		91	82	80	84	83	79	75	72	87	93.2	HGC measurement database
RMC_NS_05	Lw		109	117	109	109	110	106	104	96	114[1]	119.6	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
RMC_NS_06	Lw		101	92	90	94	93	89	85	82	97	103.2	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
RMC_NS_07	Lw		91	82	80	84	83	79	75	72	87	93.2	HGC measurement database
RMC_NS_08	Lw	100.3	110.7	104.6	104	103.2	97.2	95.7	92.6	86.2	104.3	113.3	Meas. by Freefield at CH Concrete 27/09/2019 - 74.5 dBA at 12 m
RMC_NS_09	Lw		92.8	97.8	95.8	96.8	98.8	94.8	89.8	84.8	102	104.5	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
RMC_NS_10	Lw		82.8	87.8	85.8	86.8	88.8	84.8	79.8	74.8	92	94.5	HGC measurement database
RMC_NS_11	Lw		92.8	97.8	95.8	96.8	98.8	94.8	89.8	84.8	102	104.5	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
RMC_NS_12	Lw		82.8	87.8	85.8	86.8	88.8	84.8	79.8	74.8	92	94.5	HGC measurement database
RMC_NS_13	Lw		92.8	97.8	95.8	96.8	98.8	94.8	89.8	84.8	102	104.5	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
RMC_NS_14	Lw		82.8	87.8	85.8	86.8	88.8	84.8	79.8	74.8	92	94.5	HGC measurement database
RMC_NS_15	Lw	115.9	112.7	110.2	101.6	101.4	105	104.2	97.6	103.5	110.1	119	Brockville McDowell Study, 2003 (HWYTruck_Slow58)
RMC_NS_16	Lw		109.5	94.5	94.5	94.5	93.5	97.5	98.5	97.5	104	110.7	HGC measurement database
RMC_NS_17	Lw		97.4	95.4	101.4	99.4	95.4	92.4	87.4	81.4	101	105.7	Meas by HGC at CBM Kingston Plant 4 February 2016

RMC_NS_18	Lw		94.5	93.5	98.5	93.5	88.5	82.5	78.5	76.5	95	101.9	Meas by HGC at CBM Kingston Plant 4 February 2016
RMC_NS_19	Lw		99.1	101.1	99.1	97.1	96.1	91.1	83.1	75.1	100	106	HGC Acoustic Calculations
RMC_NS_20	Lw		95.9	100.9	109.9	115.9	118.9	115.9	107.9	102.9	122[1]	122.4	Measured by HGC Eng. at CBM Kingston Feb 4, 2016
AP_Truck_Loading_Batch_Tower	Lw	109.8	106.6	104.1	95.5	95.3	98.9	98.1	91.5	97.4	104	112.9	Based on Golder AAR dated February 2018
AP_Drum_Mixer	Lw	108.4	111.4	105.4	107.4	102.4	96.4	94.4	95.4	94.4	105	115.2	Based on Golder AAR dated February 2018
AP_Dryer_Cyclone_Fan	Lw	112	118	115	110	107	101	98	98	96	109	121.1	Based on Golder AAR dated February 2018
AP_Aggregate_Screen	Lw	106.5	113.5	109.5	102.5	100.5	93.5	91.5	89.5	82.5	102	115.9	Based on Golder AAR dated February 2018
AP_RAP_Screen	Lw	110.8	114.8	112.8	109.8	109.8	104.8	102.8	95.8	87.8	111	119.3	Based on Golder AAR dated February 2018
AP_Tower_Screen_Fan	Lw	101.5	107.5	104.5	101.5	97.5	93.5	89.5	88.5	84.5	100	110.9	Based on Golder AAR dated February 2018
AP_Burner	Lw	130.4	126.4	119.4	116.4	113.4	107.4	105.4	100.4	94.4	115	132.3	Based on Golder AAR dated February 2018
AP_Air_Exhaust	Lw	119.1	118.1	115.1	102.1	103.1	109.1	111.1	114.1	117.1	120	124.5	Based on Golder AAR dated February 2018
AP_Hopper	Lw	108.9	106.4	102.9	100	102.4	99.5	95.6	90.1	75.7	104	112.6	Based on Golder AAR dated February 2018
AP_Loader	Lw	109.9	107.4	103.9	101	103.4	100.5	96.6	91.1	76.7	105	113.6	Based on Golder AAR dated February 2018
HWYTruck_Slow58	Lw	115.9	112.7	110.2	101.6	101.4	105	104.2	97.6	103.5	110.1	119	Brockville McDowell Study, 2003

1. Sound power levels for tonal sources noted above include a 5 dB penalty as per MECP guideline NPC-104.

Table A2.6.01 Point of Reception Impacts by Source for Scenario 1

	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
Q_CP_Crushing_Plant_S1	43.4	42.5	49.4	49	46.8	46.5	41.2	40.9	33	32.2	32	32.1	30.3	29.1	29.7	28.7	29.5	28.5	30.9	29.9	32.8	32.6	39.1	38.9	42.5	41.8
Q_Highway_Truck_Passby_S1	42.8	43	39.1	37.2	37.6	35.6	33.6	32.5	23.4	23.1	22.4	22.6	20	18.2	19.1	18.3	19.4	18.7	23	22.1	24	26	32.6	32.7	36.4	35.6
RMC_NS_05	40.1	40.3	27.1	26.1	31	30.1	25.9	23.7	14.3	14.4	25.2	25.2	18.2	17.6	26.5	25	26.1	24.6	30.2	29.1	30	29.9	29.2	28.6	32.1	31.8
RMC_NS_08_Z	39.6	39.4	33.3	32	34.6	30.9	30	28.2	20.4	19.6	19.5	19.6	18.3	16.8	17.3	16.1	17.7	16.6	21.6	19.5	22.1	22.9	29.9	29.5	33.5	31.6
RMC_NS_15_Z	38.1	38.4	31.1	29.9	32.2	29.4	26.9	25.8	15.9	15.6	15.5	15.6	13.7	11.6	12.1	11.3	12.5	11.9	17.4	16.5	17.7	20.3	27.4	27.5	31	30.7
RMC_NS_01_Z	38	38	31.1	30	32.5	29.4	27	25.9	16.2	15.9	15.8	15.9	13.6	11.6	12.4	11.8	13.4	12.1	18.1	17.1	21.2	21	27.3	27.4	31.1	29.1
Q_Loaders_S1	37.5	38	36	37.1	35.3	35.8	31.2	31.2	20.4	19.9	23.4	23.5	21.7	20.4	21.2	20.2	21.1	19.9	22.4	21.5	24.2	24.1	31.7	31.6	33.7	33
RMC_NS_02_Z	36.4	36.5	24.7	24	22.8	22.4	25.5	24.3	28.5	28	26.7	26.5	14.4	14.3	14.7	14.4	21.8	16.7	24.5	23.3	23.1	23.3	35.9	34.6	37.2	36.3
Q_Loader_S1	31.9	31.8	35.8	33	28.4	28.6	23.5	23.4	16.8	16.2	16.8	17	14.7	13.4	14.5	13.6	14.3	13.4	15.8	14.8	17.6	17.5	24.8	24.8	27.3	26.4
RMC_NS_19	31.5	31	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.1	16.5	14	13.5	18.2	13.4	19.9	17.4	21.7	20.9	26.6	25.8	28.6	26.7
RMC_NS_17	31.3	29.9	25.9	24.9	25	24.1	23.4	22.6	15.5	14.7	15.3	15.4	10.3	9	12.4	10.8	14.9	12.1	16.9	14.8	19.5	18.6	25.9	24.9	28.3	26
RMC_NS_09_Z	27.8	28	25.4	16.2	12.5	9.9	16.6	14.7	9.5	9.2	15.2	15.2	10.5	8.5	5.6	4.6	12.1	7.1	13.4	12.6	17.8	21.3	22.9	22.6	24.4	23.9
RMC_NS_13_Z	25.2	25.3	22.7	22.5	21.4	18.2	20.5	20.3	12.1	11.9	12	11.7	7.3	6.7	8.9	7.4	9.3	8.3	11.2	10.3	14.6	18.1	19.1	18.5	20.2	19.8
RMC_NS_18	24.5	23.6	20	18.9	22.6	18.3	21.5	17	10.4	9.6	11.5	10.9	7.8	6.6	7.1	5.6	8.7	7.2	10.4	9	13.4	12.5	19.3	18.1	22	19
RMC_NS_06	23.4	23.4	16.7	13.8	6.9	6.1	8.8	6.7	-3.6	-3.5	-1.3	-1.1	2.5	1.8	9.7	8.1	9.6	8	14.1	13	13.9	16.7	22.2	21.9	23.4	22.7
RMC_NS_10_Z	22.1	21.9	15.7	15.2	14.9	13.4	14.4	12.4	5	4.5	9.3	8.9	1.9	0	-0.6	-2.3	2.5	1.6	4.3	4	11.6	11	16.7	16.2	18.2	17.1
RMC_NS_11_Z	21.4	21.2	22.5	22.2	21.8	21.5	20.3	20	12	11.8	11.9	11.5	6.9	5.8	8.7	6.9	9.3	8.2	11.2	10.3	14.7	18.2	18.7	17.5	13.5	13.1
RMC_NS_12_Z	19	18.7	12.7	12.2	11.9	11.4	13.4	10.1	1.8	1.4	6.5	6.1	2.9	1.4	-0.5	-0.8	3.8	-1	5.7	4.1	8.4	7.9	13.5	13	12.9	11.7
RMC_NS_07	18.1	17.7	12.5	11.8	11.7	10.9	10.1	9.5	2.3	1.7	2.2	2.3	-4.6	-5.3	0.1	-0.1	4.5	-0.2	6.3	4.3	8.6	7.9	13.6	12.9	15.2	13.7
RMC_NS_04_Z	18	17.6	12.5	6.5	11.6	10.4	10.5	9.5	2.1	1.6	-1.2	-1.2	-7.1	-7.4	-6.4	-7.2	-0.2	-3	1.7	1.6	4.9	5.1	9.5	9.7	15.1	13.6
RMC_NS_03_Z	17.9	17.9	7.3	6.6	6	5	8.6	3.1	-3.4	-3.3	3	3.1	-1.3	-1.4	-0.8	-1.1	7.8	1.3	14.7	13.5	14.3	17.1	22.4	22	23.7	22.9
RMC_NS_20	16	15.9	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	-1.4	-3.9	-6.4	-8.1	-4.3	-4.4	-2.3	-2.5	5.4	4.9	10.6	10.2	12	11.1
RMC_NS_14_Z	14.6	14.7	12.9	12.4	12.5	11.7	15.4	10.3	2	1.6	6.5	6.1	3	1.8	-0.4	-0.8	3.8	-1.1	5.6	4	8.4	7.8	9.3	9.2	15.3	10.2
Total	49.5	49.4	50.4	49.9	48.3	47.7	43.2	42.6	35.3	34.7	35.1	35.1	32.2	30.9	32.6	31.5	32.9	31.5	35.4	34.3	36.5	36.8	43.1	42.7	46.0	45.1

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OPA) at 1.5 m are given above as these where the most critical points at each receptor.

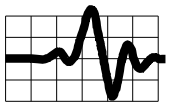


Table A2.6.02 Point of Reception Impacts by Source for Scenario 2

	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
Q_Highway_Truck_Passby_S2	42.8	43	36.4	35.4	37.4	35.2	34.9	33.9	26.1	25.9	28.2	27.9	25	23.4	22.8	22	23.1	22.5	25.7	25	26.9	27.7	33.1	33.1	36.1	35.3
RMC_NS_05	40.1	40.3	27.1	26.1	31	30.1	25.9	23.7	14.3	14.4	25.2	25.2	18.2	17.6	26.5	25	26.1	24.6	30.2	29.1	30	29.9	29.2	28.6	32.1	31.8
RMC_NS_08_Z	39.6	39.4	33.3	32	34.6	30.9	30	28.2	20.4	19.6	20.8	19.6	18.3	16.8	17.3	16.1	17.7	16.6	21.6	19.5	22.1	22.9	29.9	29.5	33.5	31.6
RMC_NS_15_Z	38.1	38.4	31.1	29.9	32.2	29.4	26.9	25.8	15.9	15.6	15.5	15.6	13.7	11.6	12.1	11.3	12.5	11.9	17.4	16.5	17.7	20.3	27.4	27.5	31	30.7
RMC_NS_01_Z	38	38	31.1	30	32.5	29.4	27	25.9	16.2	15.9	15.8	15.9	13.6	11.6	12.4	11.8	13.4	12.1	18.1	17.1	21.2	21	27.3	27.4	31.1	29.1
Q_CP_Crushing_Plant_S2	37.6	37.5	38	36.7	37.8	36.8	42.5	40.1	35.4	34.7	43.7	40.5	41.7	41.5	36.8	36.1	40.3	35.3	41.7	39.4	37.8	36.9	35.7	35.5	36.5	35.7
RMC_NS_02_Z	36.4	36.5	24.7	24	22.8	22.4	25.5	24.3	28.5	28	26.7	26.5	14.4	14.3	14.7	14.4	21.8	16.7	24.5	23.3	23.1	23.3	35.9	34.6	37.2	36.3
RMC_NS_19	31.5	31	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.1	16.5	14	13.5	18.2	13.4	19.9	17.4	21.7	20.9	26.6	25.8	28.6	26.7
RMC_NS_17	31.3	29.9	25.9	24.9	25	24.1	23.4	22.6	15.5	14.7	16.1	15.4	10.3	9	12.4	10.8	14.9	12.1	16.9	14.8	19.5	18.6	25.9	24.9	28.3	26
Q_Loaders_S2	28.8	28.7	29.3	27.7	29.2	28	29.1	28.1	26.6	25.7	31.9	32.3	32	31	28.6	28.2	27.7	27.3	29.1	27.8	29.6	28.7	27	26.8	27.8	27.1
RMC_NS_09_Z	27.8	28	25.4	16.2	12.5	9.9	16.6	14.7	9.5	9.2	15.2	15.2	10.5	8.5	5.6	4.6	12.1	7.1	13.4	12.6	17.8	21.3	22.9	22.6	24.4	23.9
RMC_NS_13_Z	25.2	25.3	22.7	22.5	21.4	18.2	20.5	20.3	12.1	11.9	12	11.7	7.3	6.7	8.9	7.4	9.3	8.3	11.2	10.3	14.6	18.1	19.1	18.5	20.2	19.8
LNRD_Rock_Drill_S2	24.7	24.3	24.3	24.1	24.6	24	28.5	24	20.2	19.6	28.9	29.5	30.9	31.3	25.8	25.2	25.1	22.2	26.5	25.1	24.2	23.6	21.8	21.4	23.8	22.1
RMC_NS_18	24.5	23.6	20	18.9	22.6	18.3	21.5	17	10.4	9.6	11.5	10.9	7.8	6.6	7.1	5.6	8.7	7.2	10.4	9	13.4	12.5	19.3	18.1	22	19
RMC_NS_06	23.4	23.4	16.7	13.8	6.9	6.1	8.8	6.7	-3.6	-3.5	-1.3	-1.1	2.5	1.8	9.7	8.1	9.6	8	14.1	13	13.9	16.7	22.2	21.9	23.4	22.7
Q_Loader_S2	22.6	22.6	23	21.7	22.8	21.7	27.4	25	20.1	18.6	24.7	25.1	24.1	23.3	21.2	20.8	20.4	20	21.8	21.4	22.6	21.8	20.8	20.7	21.5	20.8
RMC_NS_10_Z	22.1	21.9	15.7	15.2	14.9	13.4	14.4	12.4	5	4.5	9.3	8.9	1.9	0	-0.6	-2.3	2.5	1.6	4.3	4	11.6	11	16.7	16.2	18.2	17.1
RMC_NS_11_Z	21.4	21.2	22.5	22.2	21.8	21.5	20.3	20	12	11.8	11.9	11.5	6.9	5.8	8.7	6.9	9.3	8.2	11.2	10.3	14.7	18.2	18.7	17.5	13.5	13.1
RMC_NS_12_Z	19	18.7	12.7	12.2	11.9	11.4	13.4	10.1	1.8	1.4	6.5	6.1	2.9	1.4	-0.5	-0.8	3.8	-1	5.7	4.1	8.4	7.9	13.5	13	12.9	11.7
RMC_NS_07	18.1	17.7	12.5	11.8	11.7	10.9	10.1	9.5	2.3	1.7	2.2	2.3	-4.6	-5.3	0.1	-0.1	4.5	-0.2	6.3	4.3	8.6	7.9	13.6	12.9	15.2	13.7
RMC_NS_04_Z	18	17.6	12.5	6.5	11.6	10.4	10.5	9.5	2.1	1.6	-1.2	-1.2	-7.1	-7.4	-6.4	-7.2	-0.2	-3	1.7	1.6	4.9	5.1	9.5	9.7	15.1	13.6
RMC_NS_03_Z	17.9	17.9	7.3	6.6	6	5	8.6	3.1	-3.4	-3.3	3	3.1	-1.3	-1.4	-0.8	-1.1	7.8	1.3	14.7	13.5	14.3	17.1	22.4	22	23.7	22.9
RMC_NS_20	16	15.9	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	-1.4	-3.9	-6.4	-8.1	-4.3	-4.4	-2.3	-2.5	5.4	4.9	10.6	10.2	12	11.1
RMC_NS_14_Z	14.6	14.7	12.9	12.4	12.5	11.7	15.4	10.3	2.0	1.6	6.5	6.1	2.9	1.6	-0.4	-0.8	3.8	-1.1	5.6	4.0	8.4	7.8	9.3	9.2	15.3	10.2
Total	48.3	48.3	42.8	41.6	43.5	41.5	44.3	42.2	37.4	36.8	44.5	42.0	42.7	42.4	38.3	37.7	41.1	36.9	42.6	40.6	39.9	39.5	41.8	41.3	43.7	42.8

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

Table A2.6.03 Point of Reception Impacts by Source for Scenario 3

	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
Q_Highway_Truck_Passby_S3	42.9	43	36.4	35.4	37.4	35.2	34.1	33	26.9	25.7	29.3	28.9	25.8	24.8	29	28	31.8	29.9	35.1	30.7	31.5	30.7	33.5	33.4	36.2	35.5
RMC_NS_05	40.1	40.3	27.1	26.1	31	30.1	25.9	23.7	14.3	14.4	25.2	25.2	18.4	17.8	27.1	25.6	29.8	25.2	31.3	30.2	30.2	30	29.2	28.6	32.1	31.8
RMC_NS_08_Z	39.6	39.4	33.3	32	34.6	30.9	30	28.2	20.4	19.6	20.8	19.6	18.7	17	18.2	16.7	18.9	17.1	22.2	20	22.3	23.1	29.9	29.5	33.5	31.6
RMC_NS_15_Z	38.1	38.4	31.1	29.9	32.2	29.4	26.9	25.8	15.9	15.6	15.5	15.6	14.2	12	13.1	12.1	13.2	12.4	18	17.1	17.7	20.4	27.4	27.5	31	30.7
RMC_NS_01_Z	38	38	31.1	30	32.5	29.4	27	25.9	16.2	15.9	15.8	15.9	14.1	12	13.5	12.7	15.5	12.7	18.7	17.8	21.4	21.1	27.3	27.4	31.1	29.1
RMC_NS_02_Z	36.4	36.5	24.7	24	22.8	22.4	25.5	24.3	28.5	28	26.7	26.5	14.5	14.3	14.9	14.5	22	16.7	24.9	23.9	23.1	23.3	35.9	34.6	37.2	36.3
Q_CP_Crushing_Plant_S3	32.9	32.8	32.4	30.9	32.1	30.7	31.7	30.4	29.3	27.2	35.7	35.8	35.6	30.3	38.8	36.8	37	35.2	37.7	37.2	35.1	34.6	33.3	33	33.6	32.5
Q_WP_Wash_Plant_S3	32.8	32.7	32.3	30.8	32	30.6	31.6	30.3	29.4	27.6	35.6	35.7	35.8	30.1	39	37.6	36.5	34.4	36.9	36.6	32.8	31.8	33.3	33	33.5	32.5
RMC_NS_19	31.5	31	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.6	17	15.4	14.5	19.8	14.3	21.3	18.8	22.2	21.4	26.6	25.8	28.6	26.7
RMC_NS_17	31.3	29.9	25.9	24.9	25	24.1	23.4	22.6	15.5	14.7	16.1	15.4	10.5	9.2	13.4	11.6	16.1	12.9	17.9	15.6	19.8	18.9	25.9	24.9	28.3	26
RMC_NS_09_Z	27.8	28	25.4	16.2	12.5	9.9	16.6	14.7	9.5	9.2	15.2	15.2	11	9	6.3	5.2	13	7.9	14.1	13.6	18.1	21.7	22.9	22.6	24.4	23.9
LNRD_Rock_Drill_S3	25.9	25.5	24	23.7	23.8	23.4	23.5	23.1	19.7	19.1	29.9	30	36.1	34.3	39.4	40.2	35.8	33.5	33.9	34.5	32.3	31.9	26.5	25.8	26	25.2
RMC_NS_13_Z	25.2	25.3	22.7	22.5	21.4	18.2	20.5	20.3	12.1	11.9	12	11.7	8.3	7.5	9.8	8.6	10.2	9.6	12	11.6	15	18.7	19.1	18.5	20.2	19.8
RMC_NS_18	24.5	23.6	20	18.9	22.6	18.3	21.5	17	10.4	9.6	11.5	10.9	8	6.9	7.9	6.4	9.5	8	11.2	9.7	13.7	12.9	19.3	18.1	22	19
Q_Loaders_S3	24.1	24	23.7	22.1	23.4	21.9	23	21.7	17.1	14.9	24.2	24.2	23.3	19.9	26.9	26.8	24.6	21.2	25.4	26	21.3	21.4	24.6	24.3	25	23.8
RMC_NS_06	23.4	23.4	16.7	13.8	6.9	6.1	8.8	6.7	-3.6	-3.5	-1.3	-1.1	2.7	1.9	10.2	8.7	13.4	8.5	15.1	14	14.1	17.1	22.2	21.9	23.4	22.7
RMC_NS_10_Z	22.1	21.9	15.7	15.2	14.9	13.4	14.4	12.4	5	4.5	9.3	8.9	2.5	0.5	0.7	-1.5	3.8	2.4	5.4	4.6	12	11.5	16.7	16.2	18.2	17.1
RMC_NS_11_Z	21.4	21.2	22.5	22.2	21.8	21.5	20.3	20	12	11.8	11.9	11.5	7.6	6.3	9.6	8.1	10.2	9.4	12	11.3	15.1	18.7	18.7	17.5	13.5	13.1
RMC_NS_12_Z	19	18.7	12.7	12.2	11.9	11.4	13.4	10.1	1.8	1.4	6.5	6.1	3.7	3.1	0.8	0	5.2	-0.2	6.9	5.3	9	8.4	13.5	13	12.9	11.7
RMC_NS_07	18.1	17.7	12.5	11.8	11.7	10.9	10.1	9.5	2.3	1.7	2.2	2.3	-4.3	-5.2	1.4	0.5	5.7	0.3	7.3	5.3	9	8.3	13.6	12.9	15.2	13.7
RMC_NS_04_Z	18	17.6	12.5	6.5	11.6	10.4	10.5	9.5	2.1	1.6	-1.2	-1.2	-6.9	-7.3	-5.3	-6.9	1	-2.6	2.7	1.9	5.1	5.1	9.5	9.7	15.1	13.6
RMC_NS_03_Z	17.9	17.9	7.3	6.6	6	5	8.6	3.1	-3.4	-3.3	3	3.1	-1.1	-1.4	-0.5	-0.9	8.3	1.5	15.8	14.6	14.5	17.5	22.4	22	23.7	22.9
Q_Loader_S3	17.5	17.4	17	15.5	16.7	15.3	16.3	15	13.9	11.8	20.6	20.7	19.6	13.9	18.2	18.2	17.5	14.1	15.5	16.1	12.1	12.5	18	17.8	18.4	17.3
RMC_NS_20	16.0	15.9	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	0.2	-0.8	-4.8	-7.3	-2.9	-3.6	-1.2	-1.8	5.8	5.3	10.6	10.2	12.0	11.1
RMC_NS_14_Z	14.6	14.7	12.9	12.4	12.5	11.7	15.4	10.3	2.0	1.6	6.5	6.1	3.6	3.1	0.9	0.0	5.2	-0.3	6.9	5.3	8.9	8.3	9.3	9.2	15.3	10.2
Total	48.1	48.2	41.9	40.7	42.7	40.5	40.1	38.6	35.4	34.1	40.4	40.3	41.0	37.4	44.2	43.6	42.2	40.0	42.8	42.0	40.2	39.8	42.0	41.5	43.8	42.7

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

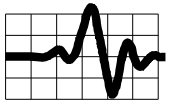


Table A2.6.04 Point of Reception Impacts by Source for Scenario 4

	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
Q_CP_Crushing_Plant_S4	46.6	46.4	30	29.8	29.2	28.7	28.5	28	23.4	23	29.7	29.1	25.9	24.2	28.6	26.8	30.2	29.4	32	31.3	35.5	35.5	46.7	46.7	50.3	49.2
RMC_NS_05	40.1	40.3	27.1	26	31	30.1	25.9	23.7	14.3	14.4	25.2	25.2	18.4	17.7	27.1	25.6	29.8	25.2	31.3	30.2	30.2	30	29.3	28.6	28.3	22.8
Q_Loaders_S4	38.3	38	28.3	23.7	24.5	23.7	24.4	23.7	18.6	17.9	21.2	21.1	16.2	14.6	18.3	16.8	21.1	20.2	23.4	22.6	27.2	26.9	36	36.3	34.6	34.9
RMC_NS_08_Z	38.1	38.2	33.3	32	34.6	30.9	30	28.2	20.4	19.6	20.8	19.6	18.7	17	18.2	16.7	18.9	17.1	22.2	20	22.3	23.1	29.7	29	30.3	29.2
Q_Highway_Truck_Passby_S4	37.3	37.3	30.4	27.3	30.8	30.3	28.5	26.4	17	16.6	16.9	16.9	14.6	12.9	14.6	12.8	16	15	18.2	17.8	21.6	21.6	31.8	32	34.1	32
RMC_NS_15_Z	35.9	36	31.1	29.9	32.2	29.4	26.9	25.8	15.9	15.6	15.5	15.6	14.2	12	13.1	12.1	13.2	12.4	18	17.1	17.7	20.4	27.3	27.2	27.4	26.6
RMC_NS_01_Z	35.8	36	31.1	30	32.5	29.4	27	25.9	16.2	15.9	15.8	15.9	14.1	12	13.5	12.7	15.5	12.7	18.7	17.8	21.4	21.1	27.6	27.5	27.5	26.9
RMC_NS_02_Z	31	31	24.7	24	22.8	22.4	25.5	24.3	28.5	28	26.7	26.5	14.5	14.3	14.9	14.5	22	16.7	24.9	23.9	23.1	23.3	36	34.7	35.6	29
Q_Loader_S4	30.4	30.3	14	13.3	12.9	12.7	12.1	12	7.2	7	14.4	13.6	9.7	8.1	12	10.3	14.6	13.7	16.6	15.8	20.4	20	30.4	30.6	35	33.3
RMC_NS_09_Z	27.8	28	25.4	16.2	12.5	9.9	16.6	14.7	9.5	9.2	15.2	15.2	11	9	6.3	5.2	13	7.9	14.1	13.6	18.1	21.7	22.9	22.6	22.7	18.6
RMC_NS_19	27.7	28	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.6	17	15.4	14.5	19.8	14.3	21.3	18.8	22.2	21.4	26.6	25.8	28.6	24
RMC_NS_17	27.7	27.9	25.9	24.9	25	24.1	23.4	22.6	15.5	14.7	16.1	15.4	10.5	9.2	13.4	11.6	16.1	12.9	17.9	15.6	19.8	18.9	25.9	24.9	24	23.2
RMC_NS_13_Z	24.6	24.4	22.7	22.5	21.4	18.2	20.5	20.3	12.1	11.9	12	11.7	8.3	7.5	9.8	8.6	10.2	9.6	12	11.6	15	18.7	19.1	18.5	20	12.4
RMC_NS_06	23.4	23.4	16.7	13.8	6.9	6.1	8.8	6.7	-3.5	-3.4	-1.2	-1	2.6	1.9	10.1	8.4	13.4	8.5	15.1	14	14.1	17.1	22.2	21.9	20.4	19.3
RMC_NS_18	21.3	21.4	20	18.9	22.6	18.3	21.5	17	10.4	9.6	11.5	10.9	8	6.9	7.9	6.4	9.5	8	11.2	9.7	13.7	12.9	19.3	18.1	20.6	16.9
RMC_NS_10_Z	17.7	17.8	15.7	15.2	14.9	13.4	14.4	12.4	5	4.5	9.3	8.9	2.5	0.5	0.7	-1.5	3.8	2.4	5.4	4.6	12	11.5	16.7	16.2	18.2	13.4
RMC_NS_11_Z	15.4	15.3	22.5	22.2	21.8	21.5	20.3	20	12	11.8	11.9	11.5	7.6	6.3	9.6	8.1	10.2	9.4	12	11.3	15.1	18.7	18.7	17.5	13.4	8.5
RMC_NS_14_Z	14.6	14.7	12.9	12.4	12.5	11.7	15.4	10.3	2	1.6	6.5	6.1	3.6	3.1	0.9	0	5.2	-0.3	6.9	5.3	8.9	8.3	9.3	9.2	15.3	10.2
RMC_NS_12_Z	14.5	14.6	12.7	12.2	11.9	11.4	13.4	10.1	1.8	1.4	6.5	6.1	3.7	3.1	0.8	0	5.2	-0.2	6.9	5.3	9	8.4	13.5	13	12.9	4.9
RMC_NS_07	14.1	14.5	12.5	11.8	11.7	10.7	10.1	9.5	2.3	1.7	2.2	2.3	-4.4	-5.2	1.4	0.5	5.7	0.3	7.3	5.3	9	8.3	13.6	12.9	15.2	10.6
RMC_NS_04_Z	13.9	14.3	12.5	6.6	11.6	10.4	10.5	9.5	2.1	1.6	-1.2	-1.2	-6.9	-7.3	-5.3	-6.9	1	-2.6	2.7	1.9	5.1	5.1	9.5	9.7	15.1	10.5
RMC_NS_20	11.5	11.6	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	0.2	-0.8	-4.8	-7.3	-2.9	-3.6	-1.2	-1.8	5.8	5.3	10.6	10.2	12	7.2
RMC_NS_03_Z	8.4	8.8	7.3	6.6	6	5	8.6	3.1	-3.4	-3.3	3	3.1	-1.1	-1.4	-0.5	-0.9	8.3	1.5	15.8	14.6	14.5	17.5	22.4	22	20.3	19.4
Total	49.4	49.3	40.0	38.6	40.8	38.6	37.7	36.0	31.5	31.0	33.7	33.4	29.1	27.6	32.1	30.4	34.4	32.0	36.2	35.3	38.1	38.2	47.9	47.9	50.9	49.7

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

Table A2.6.05 Point of Reception Impacts by Source for Scenario 5

	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
RMC_NS_05	40.5	40.7	27.1	26	31	30.1	25.9	23.7	14.3	14.4	25.2	25.2	18.4	17.7	27.1	25.6	29.8	25.2	31.3	30.2	30.2	30	30.2	29.7	33.8	33.2
Q_Highway_Truck_Passby_S5	38.8	38.8	33	31.2	32.1	31.6	29.1	27.3	18.4	18	19.7	19.8	17.7	15.8	18.4	16.9	19.2	18.6	21.6	21	25.3	25.2	36.2	36.2	36.9	36.1
Q_CP_Crushing_Plant_S5	38.5	38.4	30.7	29.2	32.9	28.7	31	29.7	29.8	28.8	31.8	31.9	27.1	25.3	28	26.3	30.6	28.9	33.9	33.2	34.5	34.5	45.4	45.8	51.5	50.3
RMC_NS_08_Z	38.1	38.3	33.3	32	34.6	30.9	30	28.2	20.4	19.6	20.8	19.6	18.7	17	18.4	16.8	19.1	17.2	22.7	20.3	22.5	23.6	30.8	30.2	31.3	30.3
RMC_NS_15_Z	36.1	36.1	31.1	29.9	32.2	29.4	26.9	25.8	15.9	15.6	15.5	15.6	14.3	12.1	13.4	12.5	13.6	12.8	18.6	17.6	18.3	21.2	28.8	28.7	28.5	28.1
RMC_NS_01_Z	36	36.2	31.1	30	32.5	29.4	27	25.9	16.2	15.9	15.8	15.9	14.2	12	13.9	13.1	15.9	13.1	19.4	18.3	22.2	21.8	29.3	29.2	29.7	29.2
RMC_NS_02_Z	31.3	31.4	24.7	24	22.8	22.4	25.5	24.3	28.5	28	26.7	26.5	14.5	14.3	14.9	14.5	22	16.7	24.9	23.9	23.1	23.3	36.8	35.5	39	37.9
RMC_NS_09_Z	28.4	28.6	25.4	16.2	12.5	9.9	16.6	14.7	9.5	9.2	15.2	15.2	11	9	6.3	5.2	13	7.9	14.1	13.6	18.1	21.7	23.7	23.6	26.3	25.5
RMC_NS_19	28.3	28.4	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.6	17	15.4	14.5	19.8	14.3	21.3	18.8	22.2	21.4	28.1	27.3	31.1	28.9
RMC_NS_17	28.1	28.3	25.9	24.9	25	24.1	23.4	22.6	15.5	14.7	16.1	15.4	10.5	9.2	13.4	11.6	16.1	12.9	17.9	15.6	20	19.1	27.3	26.4	29	26
RMC_NS_13_Z	24.9	24.7	22.7	22.5	21.4	18.2	20.5	20.3	12.1	11.9	12	11.7	8.3	7.5	9.8	8.6	10.2	9.6	12	11.6	15	18.7	19.9	19.3	21.8	17.7
RMC_NS_06	24.1	23.8	16.7	13.8	6.9	6.1	8.8	6.7	-3.5	-3.4	-1.2	-1	2.6	1.9	10.1	8.4	13.4	8.5	15.1	14	14.1	17.1	24.5	23.9	26.7	25.4
Q_Loaders_S5	23.7	23.8	15.3	14.4	15.8	13.2	14.2	13.5	13.9	11.9	20.3	20.4	15.4	13.5	14.2	12.7	16	14.4	20.9	20.3	19.2	19.5	31.1	31.7	38.1	35.9
RMC_NS_18	21.7	21.7	20	18.9	22.6	18.3	21.5	17	10.4	9.6	11.5	10.9	8	6.9	7.9	6.4	9.5	8	11.2	9.7	13.7	12.9	20.7	19.6	24.3	20.9
RMC_NS_10_Z	18.3	18.4	15.7	15.2	14.9	13.4	14.4	12.4	5	4.5	9.3	8.9	2.5	0.5	0.7	-1.5	3.8	2.4	5.4	4.6	12	11.5	18.2	17.7	20.6	19.2
Q_Loader_S5	18.2	18.4	9.4	8.9	9.7	7.8	7.9	7.3	6.4	6.2	16.6	16.7	11.3	9.6	14.8	12.8	17	15.5	19.2	18.4	22	22	32.1	32.4	31.2	29.5
RMC_NS_11_Z	15.7	15.6	22.5	22.2	21.8	21.5	20.3	20	12	11.8	11.9	11.5	7.6	6.3	9.6	8.1	10.2	9.4	12	11.3	15.1	18.7	19.5	18.2	15.1	13.8
RMC_NS_07	15	15.2	12.5	11.8	11.7	10.7	10.1	9.5	2.3	1.7	2.2	2.3	-4.4	-5.2	1.4	0.5	5.7	0.3	7.3	5.3	9	8.3	15.3	14.5	17.9	16.1
RMC_NS_12_Z	14.9	15.1	12.7	12.2	11.9	11.4	13.4	10.1	1.8	1.4	6.5	6.1	3.7	3.1	0.8	0	5.2	-0.2	6.9	5.3	9	8.4	14.8	14.3	14.9	13.3
RMC_NS_14_Z	14.9	15.1	12.9	12.4	12.5	11.7	15.4	10.3	2	1.6	6.5	6.1	3.6	3.1	0.9	0	5.2	-0.3	6.9	5.3	8.9	8.3	10.2	10.1	17.1	11.8
RMC_NS_04_Z	14.7	14.9	12.5	6.6	11.6	10.4	10.5	9.5	2.1	1.6	-1.2	-1.2	-6.9	-7.3	-5.3	-6.9	1	-2.6	2.7	1.9	5.1	5.1	10.6	10.5	17.7	15.9
RMC_NS_20	12.1	12.3	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	0.2	-0.8	-4.8	-7.3	-2.9	-3.6	-1.2	-1.8	5.8	5.3	12.1	11.7	14.4	13.3
RMC_NS_03_Z	8.6	8.9	7.3	6.6	6	5	8.6	3.1	-3.4	-3.3	3	3.1	-1.1	-1.4	-0.5	-0.9	8.3	1.5	15.8	14.6	14.5	17.5	23.8	23.4	26.5	25.2
Total	46.5	46.6	40.2	38.8	41.2	38.6	38.0	36.2	33.3	32.5	34.7	34.7	29.8	28.2	31.8	30.3	34.5	31.7	37.1	36.2	37.5	37.7	47.3	47.4	52.3	51.1

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

Table A2.6.06 Point of Reception Impacts by Source for Scenario 6

Scenario 6	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
AP_Highway_Truck_Passby	41.6	41.9	34.3	33.2	35.3	32.7	30.3	29.2	19.5	19.2	20.8	19.5	18	16.2	17.3	16.3	17.5	16.7	21.9	20.9	22.1	24.8	33.7	33.6	35.8	35.2
RMC_NS_05	40.5	40.7	27.1	26	31	30.1	25.9	23.6	14.2	14.3	25.3	25.3	18.5	17.8	27.1	25.6	29.8	25.2	31.3	30.2	30.2	30	29.9	29.3	33.7	33
Q1_CP_Crushing_Plant_S6	39.9	39.6	43.9	43.6	40.5	41.2	35	35.2	25.4	25.2	32	32.1	28.8	27.3	30.6	29.1	30.5	29.1	31.6	30.3	32.9	32.8	36	35.8	37.4	35.9
Q1_Highway_Truck_Passby_S6	39.9	40.1	35.2	33.6	34.3	32	29.8	29.1	19.9	19.5	19.4	19.6	16.8	15	16.7	15.8	17.3	16.1	20.8	19.9	21.2	23.3	32.5	32.4	34.4	33.9
AP_RAP_Screen	38.7	38.9	38	37	37.4	35.5	36	35	27.8	27.2	30.8	27.5	28.2	28.2	26.2	24.6	26.2	24.8	27.6	26.3	29.3	31.8	34.1	34	36.5	35.1
AP_Dryer_Cyclone_Fan	38	37.4	35.4	33.3	35.1	33.8	33.9	33.2	26.4	25.6	28.8	25.8	26.5	26.5	24.7	23.2	24.7	23.4	26.1	24.8	27.7	27.6	26.4	26.2	28.7	27.5
AP_Burner	36.8	36.9	29.4	29.2	32	29.4	32.7	31.8	26.2	26.3	36	32.7	33.3	33.3	31.5	30.2	31.4	30.2	32.8	31.6	37.9	37.2	42.9	42.1	45.8	43.1
AP_Loader	36.8	36.2	32.3	31	31.9	31.1	34.6	30	21.1	20.7	24.4	23.7	20.1	20.1	18.6	16.9	22.4	18.4	21.4	20.2	22.7	22.7	31.6	30.9	34.2	32
RMC_NS_08_S6	36.7	36.6	30.3	28.9	31.6	27.9	26.9	25.2	17.4	16.6	17.8	16.6	15.7	14	15.4	13.8	16.1	14.2	19.7	17.3	19.5	20.6	29	28.3	31.8	29.8
AP_Hopper	36	35.3	31.1	30.2	30.6	29.9	34	28.7	20.4	20.2	23.9	23.1	20.8	20.8	18.7	17.5	23.1	17.4	24.7	22.2	21.8	21.8	28.2	27.5	30.1	28.2
RMC_NS_01_S6	35.3	35.2	28.1	27	29.5	26.4	24	22.9	13.2	12.9	12.8	12.9	11.2	9	10.9	10.1	13	10.1	16.4	15.4	19.2	18.8	27.8	27.6	29.8	29.2
RMC_NS_15_S6	35.3	35.6	28.1	26.9	29.2	26.4	23.9	22.7	12.9	12.6	12.5	12.6	11.3	9.1	10.4	9.4	10.6	9.8	15.6	14.6	15.3	18.1	27.3	27.2	29.4	28.9
AP_Aggregate Screen	33.8	33.2	29	26.6	28.9	28.3	32.1	27.3	20	19.5	23	22.4	20.4	20.4	18.5	17.4	22.4	17.3	23.8	21.4	21.1	21.1	29.5	28.6	32.3	29.6
AP_Aggregate_Truck_Passby	32.6	32.8	25.5	24.5	26.7	24	22	20.5	10.7	10.3	11.4	11.2	9.2	7.4	8.3	7.3	8.7	7.6	12.8	11.8	13.4	15.4	24.7	24.6	26.7	26.2
Q1_Loaders_S6	32.6	33.8	29.4	30.8	26.9	27.9	22.4	22.9	9.8	9.6	20.4	20.5	17.4	15.9	19	17.6	18.9	17	20	18.8	21	20.9	28.7	28.7	29.7	29.2
RMC_NS_19	32.3	31.9	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.6	17	15.4	14.5	19.8	14.3	21.3	18.8	22.2	21.4	28.1	27.3	31.1	28.9
RMC_NS_17	32.1	30.4	25.9	24.9	25	24.1	23.4	22.6	15.5	14.6	16.1	15.4	10.6	9.3	13.4	11.6	16.1	12.8	17.9	15.6	20.1	19.1	27.3	26.4	30.4	27.8
AP_Tower_Screen_Fan	31	30.4	26.3	25.7	30.3	25.2	29	26.7	21.3	16.8	20.4	19.7	18.2	18.1	15.9	15.1	20.3	14.9	21.5	18.7	21.8	21	26.8	26	30	27.1
Q1_Loader_S6	30.6	31.3	29.1	28.1	23.2	23.8	18	18.2	8.5	8.2	16.8	17	12.9	11.4	15.3	13.8	15.2	13.8	16.4	15.1	17.7	17.6	25	25	27.2	26.3
AP_Truck_Loading_Batch_Tower	29	28.7	28.7	28.5	28	27.8	26.9	26.4	17.5	17.2	21.9	17.8	18.9	18.7	11.3	9.8	15.7	14.3	6.8	6.7	7.4	7.5	14.1	14.2	16.8	16.1
AP_Air_Exhaust	25.5	25.7	18.5	18.6	22.5	22.3	20.9	20.8	11.8	11.3	12.3	12.4	9.3	9.3	6	5.7	10.4	5.4	12	11.3	14.5	14.3	20.4	20.3	22.3	21.7
RMC_NS_09_S6	25.4	25.6	22.4	13.2	9.4	6.9	13.6	11.7	6.5	6.1	12.2	12.1	8	6	3.3	2.1	9.9	4.9	11.1	10.6	15.1	18.7	20.7	20.6	23.3	22.5
RMC_NS_18	25.1	24.2	20	18.9	22.6	18.3	21.5	17	10.4	9.5	11.5	10.9	8	6.9	7.9	6.4	9.5	8	11.2	9.7	13.7	12.8	20.7	19.6	24.3	20.9
RMC_NS_06	24.1	23.8	16.7	13.8	6.8	6.4	8.7	6.7	-3.7	-3.6	-1.4	-1.2	2.9	2.1	10.2	8.7	13.4	8.5	15.1	14.0	14.1	17.1	24.5	23.9	26.7	25.4
AP_Drum_Mixer	23.2	23.1	31.2	30.3	30.6	29.8	29.3	28.7	21.7	20.9	24.4	23.6	22.5	22.3	20.3	19.2	24.5	18.9	25.8	22.5	26.0	25.0	20.2	19.9	21.8	19.9
RMC_NS_13_S6	22.5	22.6	19.7	19.4	18.1	14.7	16.2	15.7	9.1	8.9	9.0	8.7	5.3	4.5	6.8	5.6	7.2	6.6	9.0	8.6	12.0	15.7	16.9	16.3	18.9	18.0

Scenario 6	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
RMC_NS_11_S6	20	19.7	19.5	19.2	18.8	18.5	17.3	16.7	9	8.8	8.9	8.5	4.6	3.3	6.6	5.1	7.2	6.4	9	8.3	12.1	15.7	16.5	10.8	12.4	11.2
RMC_NS_10_S6	19.8	19.6	12.7	12.2	11.9	10.4	11.4	9.4	2	1.5	6.3	5.9	-0.5	-2.5	-2.3	-4.5	0.7	-0.6	2.4	1.6	9	8.5	15.2	14.7	17.6	16.2
RMC_NS_07	19.4	19.1	12.5	11.8	11.7	10.7	10.1	9.5	2.3	1.7	2.2	2.4	-4.2	-5.1	-5.2	-7.1	1.1	0.2	2.7	1.9	5	5.1	10.8	10.7	17.9	16.1
RMC_NS_20	16.7	16.6	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	0.2	-0.8	-4.8	-7.3	-2.9	-3.6	-1.2	-1.8	5.8	5.3	12.1	11.7	14.4	13.3
RMC_NS_12_S6	16.5	16.3	9.7	9.2	8.9	8.4	8.1	7.1	-1.2	-1.6	3.5	3.1	0.7	0.1	-2.2	-3.1	2.2	-3.2	3.9	2.3	6	5.4	7.3	7.1	11.5	10
RMC_NS_14_S6	14.9	15.1	12.9	12.4	12.2	11.7	11.8	10.3	2	1.6	6.5	6.1	3.6	3.1	0.9	0	5.2	-0.3	6.9	5.3	8.9	8.3	10.2	10.1	17.1	11.4
Total	49.9	49.9	47.3	46.6	46.2	45.1	44.1	42.5	34.7	34.1	39.9	38.0	37.1	36.8	36.6	35.2	37.5	35.2	38.9	37.5	41.1	41.0	46.1	45.5	48.6	46.7

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

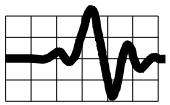


Table A2.6.07 Point of Reception Impacts by Source for Scenario 7

Scenario 7	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
Q4_CP_Crushing_Plant_S7	46.4	46.1	29.7	29.4	28.9	28.3	28.1	27.6	23.1	22.6	30.6	29.7	26.2	24.3	29.6	27.5	31.3	30.2	33	32.1	36.4	36.2	47.2	47.3	51.2	49.4
RMC_NS_05	40.5	40.7	27.1	26	31	30.1	25.9	23.7	14.3	14.4	25.2	25.2	18.4	17.7	27.1	25.6	29.8	25.2	31.3	30.2	30.2	30	30.2	29.7	28.6	22.9
AP_Highway_Truck_Passby	39.1	39.2	34.3	33.2	35.3	32.7	30.3	29.2	19.5	19.2	20.8	19.5	18	16.2	17.3	16.3	17.5	16.7	21.9	20.9	22.1	24.8	32.2	32	31.8	30.6
AP_RAP_Screen	38.4	38.1	38	37	37.4	35.5	36	35	27.8	27.2	30.8	27.5	28.2	28.2	26.2	24.6	26.2	24.8	27.6	26.3	29.3	31.8	34.1	34	36.5	31.7
Q4_Loaders_S7	35.8	35.2	25.9	20.5	22.3	20.9	22.3	21.1	16.4	15.4	19.3	19.1	13.6	11.8	16.6	14.7	19.3	18	21.6	20.7	25	24.9	33.5	33.8	31.8	32
RMC_NS_08_S6	35.1	35.3	30.3	28.9	31.6	27.9	26.9	25.2	17.4	16.6	17.8	16.6	15.7	14	15.4	13.8	16.1	14.2	19.7	17.3	19.5	20.6	27.7	27	28.2	26.6
Q4_Highway_Truck_Passby_S7	34.3	34.3	27.4	24.3	28	27.3	25.9	24	14.7	14.3	14.8	14.8	12.1	10.1	12.5	10.7	14.2	13.1	16.4	15.9	19.7	19.6	30	30	32.7	29.9
AP_Loader	34.3	33.1	32.3	31	31.9	31.1	34.6	30	21.1	20.7	24.4	23.7	20.1	20.1	18.6	16.9	22.4	18.4	21.4	20.2	22.7	22.7	31.6	30.9	29.6	28.2
AP_Dryer_Cyclone_Fan	33.8	33.6	35.4	33.3	35.1	33.8	33.9	33.2	26.4	25.6	28.8	25.8	26.5	26.5	24.7	23.2	24.7	23.4	26.1	24.8	27.7	27.6	26.4	26.2	25.8	19.4
RMC_NS_01_S6	33	33.2	28.1	27	29.5	26.4	24	22.9	13.2	12.9	12.8	12.9	11.2	9	10.9	10.1	13	10.1	16.4	15.4	19.2	18.8	26.2	26	25.8	24.8
RMC_NS_15_S6	33	33.1	28.1	26.9	29.2	26.4	23.9	22.7	12.9	12.6	12.5	12.6	11.3	9.1	10.4	9.4	10.6	9.8	15.6	14.6	15.3	18.1	25.6	25.4	25.4	24.3
AP_Hopper	32.2	31.9	31.1	30.2	30.6	29.9	34	28.7	20.4	20.2	23.9	23.1	20.8	20.8	18.7	17.5	23.1	17.4	24.7	22.2	21.8	21.8	28.2	27.5	25.6	20.4
AP_Tower_Screen_Fan	31	27.6	26.3	25.7	30.3	25.2	29	26.7	21.3	16.8	20.4	19.7	18.2	18.1	15.9	15.1	20.3	14.9	21.5	18.7	21.8	21	26.8	26	30	24.2
AP_Aggregate Screen	30.6	30.5	29	26.6	28.9	28.3	32.1	27.3	20	19.5	23	22.4	20.4	20.4	18.5	17.4	22.4	17.3	23.8	21.4	21.1	21.1	29.5	28.6	27.6	26.5
AP_Aggregate_Truck_Passby	30.4	30.5	25.5	24.5	26.7	24	22	20.5	10.7	10.3	11.4	11.2	9.2	7.4	8.3	7.3	8.7	7.6	12.8	11.8	13.4	15.4	23.2	23	22.7	21.7
Q4_Loader_S7	30.3	30	13.7	12.8	12.9	12.3	12.1	11.5	7	6.5	15.3	14.2	10.1	8.3	13.5	11.2	15.9	14.5	17.8	17	21.2	21.1	31.2	31.2	36	33.8
AP_Burner	28.5	28.6	29.4	29.2	32	29.4	32.7	31.8	26.2	26.3	36	32.7	33.3	33.3	31.5	30.2	31.4	30.2	32.8	31.6	37.9	37.2	42.9	42.1	41.1	39.9
RMC_NS_19	28.3	28.4	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.6	17	15.4	14.5	19.8	14.3	21.3	18.8	22.2	21.4	28.1	27.3	31.1	25.2
RMC_NS_17	28.1	28.3	25.9	24.9	25	24.1	23.4	22.6	15.5	14.6	16.1	15.4	10.6	9.3	13.4	11.6	16.1	12.9	17.9	15.6	20.1	19.1	27.3	26.4	25.7	24.3
AP_Air_Exhaust	25.5	25.7	18.5	18.6	22.5	22.3	20.9	20.8	11.8	11.3	12.3	12.4	9.3	9.3	6	5.7	10.4	5.4	12	11.3	14.5	14.3	20.4	20.3	22.3	17.2
RMC_NS_09_S6	25.4	25.6	22.4	13.2	9.4	6.9	13.6	11.7	6.5	6.1	12.2	12.1	8	6	3.3	2.1	9.9	4.9	11.1	10.6	15.1	18.7	20.7	20.6	21.5	16.7
RMC_NS_06	24.1	23.8	16.7	13.8	6.9	6.1	8.8	6.7	-3.5	-3.4	-1.2	-1	2.6	1.9	10.1	8.4	13.4	8.5	15.1	14	14.1	17.1	24.5	23.9	22	21.6
AP_Truck_Loading_Batch_Tower	23.4	23.1	28.7	28.5	28	27.8	26.9	26.4	17.5	17.2	21.9	17.8	18.9	18.7	11.3	9.8	15.7	14.3	6.8	6.7	7.4	7.5	14.1	14.2	14.3	8.5
RMC_NS_13_S6	21.9	21.7	19.7	19.4	18.1	14.7	16.2	15.7	9.1	8.9	9.0	8.7	5.3	4.5	6.8	5.6	7.2	6.6	9.0	8.6	12.0	15.7	16.9	16.3	18.7	10.2
RMC_NS_18	21.7	21.7	20.0	18.9	22.6	18.3	21.5	17.0	10.4	9.5	11.5	10.9	8.0	6.9	7.9	6.4	9.5	8.0	11.2	9.7	13.7	12.9	20.7	19.6	22.7	18.0
AP_Drum_Mixer	17.9	17.6	31.2	30.3	30.6	29.8	29.3	28.7	21.7	20.9	24.4	23.6	22.5	22.3	20.3	19.2	24.5	18.9	25.8	22.5	26.0	25.0	20.2	19.9	19.5	13.0

Scenario 7	Daytime Period (07:00 to 19:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
RMC_NS_10_S6	15.3	15.4	12.7	12.2	11.9	10.4	11.4	9.4	2	1.5	6.3	5.9	-0.5	-2.5	-2.3	-4.5	0.7	-0.6	2.4	1.6	9	8.5	15.2	14.7	17.6	11.9
RMC_NS_07	15	15.2	12.5	11.8	11.7	10.7	10.1	9.5	2.3	1.7	2.2	2.3	-4.4	-5.2	1.4	0.5	5.7	0.3	7.3	5.3	9	8.3	15.3	14.5	17.9	12
RMC_NS_14_S6	14.9	15.1	12.9	12.4	12.2	11.7	11.8	10.3	2	1.6	6.5	6.1	3.6	3.1	0.9	0	5.2	-0.3	6.9	5.3	8.9	8.3	10.2	10.1	17.1	11.4
RMC_NS_11_S6	13	12.8	19.5	19.2	18.8	18.5	17.3	16.7	9	8.8	8.9	8.5	4.6	3.3	6.6	5.1	7.2	6.4	9	8.3	12.1	15.7	16.5	10.8	12.2	6.4
RMC_NS_20	12.1	12.3	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	0.2	-0.8	-4.8	-7.3	-2.9	-3.6	-1.2	-1.8	5.8	5.3	12.1	11.7	14.4	8.8
RMC_NS_12_S6	11.9	12.1	9.7	9.2	8.9	8.4	8.1	7.1	-1.2	-1.6	3.5	3.1	0.7	0.1	-2.2	-3.1	2.2	-3.2	3.9	2.3	6	5.4	7.3	7.1	11.5	2.9
Total	49.9	49.8	44.2	43.0	44.5	42.7	43.6	41.5	34.4	33.8	39.7	37.5	36.7	36.4	36.3	34.7	37.7	35.5	39.2	37.9	41.9	41.8	49.5	49.3	52.2	50.3

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

Table A2.6.08 Point of Reception Impacts by Source for Scenario 8

	Evening and Nighttime Period (19:00 to 07:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
Q1_Highway_Truck_Passby_S6	39.9	40.1	36.1	34.2	34.6	32.6	30.6	29.5	20.4	20.1	19.4	19.6	17.2	15.6	17.1	16.2	17.3	16.5	21	20.1	21.4	23.5	32.5	32.4	34.4	33.9
RMC_NS_08_Z	39.8	39.6	33.3	32	34.6	30.9	30	28.2	20.4	19.6	20.8	19.6	18.7	17	18.4	16.8	19.2	17.2	22.8	20.4	22.6	23.6	32	31.3	34.8	32.8
RMC_NS_19	32.3	31.9	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.6	17	15.4	14.5	19.8	14.3	21.3	18.8	22.2	21.4	28.1	27.3	31.1	28.9
Q1_Loader_S6	31.9	31.8	35.8	33	28.5	28.6	23.5	23.4	16.8	16.2	16.8	17	14.6	13.4	15.4	14	15.2	13.8	16.4	15.1	17.7	17.6	25	25	27.3	26.4
RMC_NS_17	31.9	30.4	25.9	24.9	25	24.1	23.4	22.6	15.5	14.7	16.1	15.4	10.6	9.3	13.5	11.7	16.4	12.9	18.4	15.9	20.6	19.6	27.3	26.4	30.4	27.8
RMC_NS_09_Z	28.4	28.6	25.4	16.2	12.5	9.9	16.6	14.7	9.5	9.2	15.2	15.2	11	9	6.3	5.2	13	7.9	14.1	13.6	18.1	21.7	23.8	23.6	26.3	25.5
RMC_NS_13_Z	25.5	25.6	22.7	22.5	21.4	18.2	20.5	20.3	12.1	11.9	12	11.7	8.3	7.5	9.8	8.6	10.2	9.6	12	11.6	15	18.7	19.9	19.3	21.9	21
RMC_NS_18	25.1	24.2	20	18.9	22.6	18.3	21.5	17	10.4	9.6	11.5	10.9	8	6.9	7.9	6.3	10.3	7.9	12.8	10.3	14.4	13.3	20.7	19.6	24.3	20.9
RMC_NS_10_Z	22.8	22.6	15.7	15.2	14.9	13.4	14.4	12.4	5	4.5	9.3	8.9	2.5	0.5	0.7	-1.5	3.8	2.4	5.4	4.6	12	11.5	18.2	17.7	20.6	19.2
RMC_NS_11_Z	21.8	21.7	22.5	22.2	21.8	21.5	20.3	20	12	11.8	11.9	11.5	7.6	6.3	9.6	8.1	10.2	9.4	12	11.3	15.1	18.7	19.6	18.4	15.4	14.2
RMC_NS_12_Z	19.5	19.3	12.7	12.2	11.9	11.4	13.4	10.1	1.8	1.4	6.5	6.1	3.7	3.1	0.8	0	5.2	-0.2	6.9	5.3	9	8.4	14.8	14.3	14.9	13.3
RMC_NS_20	16.7	16.6	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	0.2	-0.8	-4.8	-7.3	-2.9	-3.6	-1.2	-1.8	5.8	5.3	12.1	11.7	14.4	13.3
RMC_NS_14_Z	14.9	15.1	12.9	12.4	12.5	11.7	15.4	10.3	2	1.6	6.5	6.1	3.6	3.1	0.9	0	5.2	-0.3	6.9	5.3	8.9	8.3	10.2	10.1	17.1	11.4
Total	44.1	44.0	40.7	38.7	39.2	36.7	35.8	34.0	26.0	25.5	26.9	26.5	24.2	22.9	23.9	22.6	25.7	23.1	28.2	26.4	29.3	30.4	37.4	36.9	39.9	38.4

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

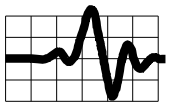


Table A2.6.09 Point of Reception Impacts by Source for Scenario 9

	Evening and Nighttime Period (19:00 to 07:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
RMC_NS_08_Z	38.1	38.3	33.3	32	34.6	30.9	30	28.2	20.4	19.6	20.8	19.6	18.7	17	18.4	16.8	19.2	17.2	22.8	20.4	22.6	23.6	30.7	30	31.2	29.6
Q4_Highway_Truck_Passby_S7	34.2	34.1	27.2	24.1	27.5	26.7	25.8	23.7	14.7	14.3	14.8	14.7	11.5	9.7	12	10.1	14	12.6	16.3	15.8	19.6	19.5	29.9	29.9	32.7	29.9
Q4_Loader_S7	30.3	30	13.7	12.8	12.9	12.3	12.1	11.5	7	6.5	15.3	14.2	10.1	8.3	13.5	11.2	15.9	14.5	17.8	17	21.2	21.1	31.2	31.2	36	33.8
RMC_NS_09_Z	28.4	28.6	25.4	16.2	12.5	9.9	16.6	14.7	9.5	9.2	15.2	15.2	11	9	6.3	5.2	13	7.9	14.1	13.6	18.1	21.7	23.8	23.6	24.6	19.7
RMC_NS_19	28.3	28.4	26	25.3	29.9	24.5	28.4	23.2	15.9	15.4	19.9	19.2	17.6	17	15.4	14.5	19.8	14.3	21.3	18.8	22.2	21.4	28.1	27.3	31.1	25.2
RMC_NS_17	28.1	28.3	25.9	24.9	25	24.1	23.4	22.6	15.5	14.7	16.1	15.4	10.6	9.3	13.5	11.7	16.4	12.9	18.4	15.9	20.6	19.6	27.3	26.4	25.7	24.3
RMC_NS_13_Z	24.9	24.7	22.7	22.5	21.4	18.2	20.5	20.3	12.1	11.9	12	11.7	8.3	7.5	9.8	8.6	10.2	9.6	12	11.6	15	18.7	19.9	19.3	21.7	13.2
RMC_NS_18	21.7	21.7	20	18.9	22.6	18.3	21.5	17	10.4	9.6	11.5	10.9	8	6.9	7.9	6.3	10.3	7.9	12.8	10.3	14.4	13.3	20.7	19.6	22.7	18
RMC_NS_10_Z	18.3	18.4	15.7	15.2	14.9	13.4	14.4	12.4	5	4.5	9.3	8.9	2.5	0.5	0.7	-1.5	3.8	2.4	5.4	4.6	12	11.5	18.2	17.7	20.6	14.9
RMC_NS_11_Z	15.7	15.6	22.5	22.2	21.8	21.5	20.3	20	12	11.8	11.9	11.5	7.6	6.3	9.6	8.1	10.2	9.4	12	11.3	15.1	18.7	19.6	18.4	15	9.3
RMC_NS_12_Z	14.9	15.1	12.7	12.2	11.9	11.4	13.4	10.1	1.8	1.4	6.5	6.1	3.7	3.1	0.8	0	5.2	-0.2	6.9	5.3	9	8.4	14.8	14.3	14.9	5.9
RMC_NS_14_Z	14.9	15.1	12.9	12.4	12.5	11.7	15.4	10.3	2	1.6	6.5	6.1	3.6	3.1	0.9	0	5.2	-0.3	6.9	5.3	8.9	8.3	10.2	10.1	17.1	11.4
RMC_NS_20	12.1	12.3	9.5	9.1	13.4	8.2	11.8	6.7	-1.7	-2.1	3.1	2.9	0.2	-0.8	-4.8	-7.3	-2.9	-3.6	-1.2	-1.8	5.8	5.3	12.1	11.7	14.4	8.8
Total	41.1	41.2	36.4	34.8	37.3	34.2	34.5	32.1	24.4	23.8	26.2	25.5	23.1	21.9	22.9	21.4	25.4	22.6	27.7	25.9	29.4	30.1	37.3	36.9	39.9	37.1

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

Table A2.6.10 Point of Reception Impacts by Source for Scenario 10

	Evening and Nighttime Period (19:00 to 07:00) (dBA)																									
Source ID	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
AP_Highway_Truck_Passby	39.1	39.2	34.3	33.2	35.3	32.6	30.2	29.2	19.5	19.2	20.8	19.5	18	16.1	17.3	16.3	17.5	16.7	21.9	20.9	22.1	24.9	32.7	32.6	32.4	32.1
AP_RAP_Screen	38.4	38.1	38	37	36.3	31.7	32.5	31.3	27.8	27.2	30.8	27.5	28.2	28.2	26.2	24.6	26.2	24.8	27.6	26.3	29.3	31.8	34.1	34	36.5	34.9
AP_Loader	34.3	33.1	32.1	30.9	32.8	28.4	28.6	27.2	21	19.4	24.4	23.7	19.9	20	18.1	16.5	22.4	18.1	21.3	20.2	22.4	22.4	31.6	30.8	29.6	28.4
AP_Dryer_Cyclone_Fan	33.8	33.6	35.4	33.3	33.2	31.7	32.7	31.9	26.4	25.6	28.8	25.8	26.5	26.5	24.7	23.2	24.7	23.4	26.1	24.8	27.7	27.6	26.4	26.2	26.3	21.9
AP_Hopper	32.2	31.9	31.1	28.3	29.2	23.9	28.1	27	20.4	20.2	23.9	23.1	20.8	20.8	18.7	17.5	23.1	17.4	24.7	22.2	21.8	21.8	28.2	27.5	25.9	24.1
AP_Tower_Screen_Fan	31	27.6	26.3	25.7	30.3	25.2	24.5	24.1	21.3	16.8	20.4	19.7	18.2	18.1	15.9	15.1	20.3	14.9	21.5	18.7	21.8	21	26.8	26	30	24.2
AP_Aggregate_Screen	30.6	30.5	29	26.6	28.7	26.3	27.8	27	20	19.5	23	22.4	20.4	20.4	18.5	17.4	22.4	17.3	23.8	21.4	21.1	21.1	29.5	28.6	27.6	26.6
AP_Burner	28.5	28.6	29.4	29.2	31.7	28.9	31.4	31.4	26.2	26.3	36	32.7	33.3	33.3	31.5	30.2	31.4	30.2	32.8	31.6	37.9	37.2	42.9	42.1	42.4	40.6
AP_Air_Exhaust	25.5	25.7	18.5	18.6	22.5	22.3	20.9	20.8	11.8	11.3	12.3	12.4	9.3	9.3	6	5.7	10.4	5.4	12	11.3	14.5	14.3	20.4	20.3	22.3	21.7
AP_Truck_Loading_Batch_Tower	23.4	23.1	28.7	28.5	28	27.8	25.3	24.5	17.5	17.2	21.9	17.8	18.9	18.7	11.3	9.8	15.7	14.3	6.8	6.7	7.4	7.5	14.1	14.2	14.4	10.1
AP_Drum_Mixer	17.9	17.6	31.2	30.3	30.6	29.7	29.1	28.2	21.7	20.9	24.4	23.6	22.5	22.3	20.3	19.2	24.5	18.9	25.8	22.5	26	25	20.2	19.9	19.6	15.5
Total	44.1	43.8	42.9	41.7	42.5	39.5	39.8	39.0	33.5	32.8	38.7	35.9	36.0	35.9	34.1	32.7	35.0	32.9	36.3	34.8	39.5	39.3	44.5	43.8	44.3	42.6

* Values at first floor window height (W) at 4.5 m or 2 m and Outdoor Living Area (OLA) at 1.5 m are given above as these where the most critical points at each receptor.

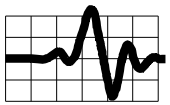


Table A2.7 Distance from Point of Reception to Source

	Source Coordinates		Distance from Point of Reception to Source (m)																									
Source ID	X (m)	Y (m)	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
Q_CP_Crushing_Plant_S1	183758 92.27	490833 6.44	526	520	192	162	253	221	428	393	1525	1488	1887	1833	1913	1885	2393	2367	2418	2394	2184	2164	1784	1760	990	969	861	841
Q_CP_Crushing_Plant_S2	183755 71.44	490720 0.68	1209	1185	1371	1342	1315	1301	1313	1291	1489	1439	926	871	733	705	1291	1264	1378	1350	1228	1200	1120	1090	1376	1365	1371	1355
Q_CP_Crushing_Plant_S3	183748 19.27	490668 9.25	1790	1769	2141	2115	2151	2131	2186	2160	2329	2281	1334	1303	613	600	436	410	470	442	366	336	694	678	1718	1717	1790	1783
Q_CP_Crushing_Plant_S4	183752 20.07	490835 4.28	154	154	719	712	920	888	1099	1064	2092	2048	2099	2042	1874	1844	2146	2121	2106	2088	1829	1817	1319	1302	320	299	210	190
Q_CP_Crushing_Plant_S5	183751 33.57	490813 7.63	347	333	876	863	1037	1005	1192	1157	2076	2030	1949	1892	1670	1640	1915	1889	1873	1855	1596	1583	1094	1076	352	338	341	327
Q1_CP_Crushing_Plant_S6	183758 91.19	490833 6.24	525	519	193	163	254	222	429	395	1526	1489	1887	1832	1912	1885	2393	2366	2417	2393	2183	2163	1783	1759	989	968	860	840
Q4_CP_Crushing_Plant_S7	183752 19.76	490835 0.61	155	155	721	713	921	889	1099	1064	2090	2047	2096	2039	1871	1841	2143	2117	2102	2085	1825	1813	1316	1299	320	299	212	191
Q_WP_Wash_Plant_S3	183748 18.19	490671 1.41	1769	1748	2123	2097	2134	2114	2170	2144	2324	2275	1339	1307	622	608	457	431	483	456	365	335	675	659	1695	1695	1768	1761
RMC_NS_02_Z	183755 08.3	490786 7.13	543	520	777	751	818	793	909	876	1630	1583	1536	1478	1383	1354	1796	1769	1812	1789	1578	1558	1206	1180	808	792	759	740
RMC_NS_03_Z	183755 01.39	490786 4.7	544	520	783	757	825	800	916	883	1636	1589	1536	1479	1380	1351	1791	1764	1806	1783	1571	1552	1199	1173	805	789	757	738
RMC_NS_04_Z	183755 05.65	490786 5.79	544	520	779	754	821	796	912	879	1632	1585	1535	1478	1381	1352	1794	1767	1810	1786	1575	1555	1203	1177	807	791	758	740
RMC_NS_05	183755 01.34	490787 6.99	532	508	772	747	817	792	910	877	1640	1593	1547	1490	1392	1363	1801	1775	1816	1793	1581	1561	1205	1179	797	780	747	728
RMC_NS_06	183754 96.04	490787 8.48	529	506	774	749	820	795	914	881	1646	1598	1551	1494	1393	1364	1800	1774	1814	1791	1578	1559	1201	1175	792	775	742	724
RMC_NS_07	183755 00	490787 7.09	531	508	773	748	818	793	912	879	1641	1594	1548	1491	1392	1363	1801	1774	1816	1792	1580	1560	1204	1178	796	779	746	727
RMC_NS_09_Z	183755 28.85	490787 4.41	542	518	760	734	798	773	887	854	1613	1566	1534	1477	1392	1363	1812	1785	1830	1807	1597	1577	1228	1202	819	803	766	747
RMC_NS_09_S6	183755 28.85	490787 4.41	542	518	760	734	798	773	887	854	1613	1566	1534	1477	1392	1363	1812	1785	1830	1807	1597	1577	1228	1202	819	803	766	747
RMC_NS_10_Z	183755 27.36	490787 5.41	540	517	760	734	798	773	888	855	1615	1568	1535	1478	1393	1364	1812	1785	1830	1807	1597	1577	1227	1201	817	801	764	745

	Source Coordinates		Distance from Point of Reception to Source (m)																									
Source ID	X (m)	Y (m)	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
RMC_NS_10_S6	1837527.36	4907875.41	540	517	760	734	798	773	888	855	1615	1568	1535	1478	1393	1364	1812	1785	1830	1807	1597	1577	1227	1201	817	801	764	745
RMC_NS_11_Z	1837551.25	4907861.03	561	538	760	734	789	765	874	841	1588	1540	1513	1456	1381	1352	1811	1784	1833	1809	1602	1582	1241	1215	845	828	791	772
RMC_NS_11_S6	1837552.8	4907861.15	562	539	759	733	788	764	872	840	1586	1539	1512	1455	1381	1352	1812	1785	1834	1810	1604	1583	1243	1216	846	829	792	772
RMC_NS_12_Z	1837550.92	4907858.66	564	540	763	736	791	767	875	843	1587	1540	1511	1454	1379	1349	1809	1782	1831	1807	1601	1580	1240	1213	846	830	792	773
RMC_NS_12_S6	1837551.54	4907858.85	564	540	762	736	791	767	874	842	1587	1539	1511	1454	1379	1350	1809	1783	1831	1807	1601	1581	1241	1214	847	830	793	773
RMC_NS_13_Z	1837570.09	4907866.68	563	539	746	720	772	748	854	822	1572	1525	1511	1454	1389	1360	1825	1799	1848	1825	1620	1599	1261	1234	856	839	799	779
RMC_NS_13_S6	1837570.09	4907866.68	563	539	746	720	772	748	854	822	1572	1525	1511	1454	1389	1360	1825	1799	1848	1825	1620	1599	1261	1234	856	839	799	779
RMC_NS_14_Z	1837568.9	4907864.9	564	541	749	722	774	750	856	824	1572	1525	1510	1453	1387	1358	1823	1796	1846	1822	1617	1597	1259	1232	856	839	799	780
RMC_NS_14_S6	1837568.95	4907864.9	564	541	749	722	774	750	856	824	1572	1525	1510	1453	1387	1358	1823	1796	1846	1822	1617	1597	1259	1232	856	839	799	780
RMC_NS_16	1837552.84	4907903.66	522	499	722	697	760	736	852	819	1600	1554	1552	1495	1423	1394	1849	1822	1868	1844	1635	1615	1263	1237	819	802	760	740
RMC_NS_19	1837520.18	4907877.63	536	513	762	736	802	777	893	860	1622	1575	1540	1483	1394	1365	1811	1784	1828	1804	1594	1574	1222	1196	811	794	758	739
RMC_NS_20	1837527.07	4907878.7	537	514	757	731	796	771	887	854	1616	1569	1539	1481	1396	1367	1815	1788	1833	1809	1599	1579	1228	1202	815	798	762	743
AP_Truck_Loading_Batch_Tower	1837561 2.3	4907875.86	571	548	719	692	735	711	813	781	1535	1488	1504	1447	1404	1375	1855	1828	1881	1857	1655	1635	1302	1276	884	866	821	801
AP_Dryer_Cyclone_Fan	1837561 7.27	4907869.29	579	556	723	696	736	713	812	780	1528	1481	1496	1439	1398	1369	1851	1825	1879	1855	1654	1633	1304	1277	892	874	829	809
AP_RAP_Screen	1837562 5.53	4907878.26	574	552	712	684	723	701	800	768	1523	1477	1502	1445	1408	1379	1863	1836	1891	1867	1666	1645	1315	1288	893	875	828	808
AP_Aggregate_Screen	1837564 7.38	4907872.77	589	567	708	680	712	690	784	753	1501	1454	1490	1433	1406	1378	1870	1843	1901	1876	1678	1657	1332	1305	914	896	848	828
AP_Hopper	1837566 1.86	4907872.8	596	574	703	675	702	680	772	741	1488	1441	1485	1428	1409	1381	1878	1851	1910	1885	1688	1667	1345	1318	926	908	858	838
AP_Burner	1837560 6.63	4907871.43	572	550	726	699	742	719	820	788	1539	1492	1502	1445	1398	1370	1848	1821	1874	1850	1648	1627	1295	1269	882	864	820	800

	Source Coordinates		Distance from Point of Reception to Source (m)																									
Source ID	X (m)	Y (m)	POR_1_POW	POR_1_OPR	POR_2_POW	POR_2_OPR	POR_3_POW	POR_3_OPR	POR_4_POW	POR_4_OPR	POR_5_POW	POR_5_OPR	POR_6_POW	POR_6_OPR	POR_7_POW	POR_7_OPR	POR_8_POW	POR_8_OPR	POR_9_POW	POR_9_OPR	POR_10_POW	POR_10_OPR	POR_11_POW	POR_11_OPR	POR_12_POW	POR_12_OPR	POR_13_POW	POR_13_OPR
AP_Drum_Mixer	1837561 1.14	4907871.42	574	551	724	697	738	715	816	784	1535	1488	1501	1444	1399	1370	1850	1823	1877	1853	1651	1631	1299	1272	885	868	823	803
AP_Air_Exhaust	1837589 .37	4907875.91	561	538	729	703	751	728	833	801	1557	1510	1513	1455	1400	1372	1843	1816	1867	1843	1640	1619	1282	1255	865	848	805	785
AP_Tower_Screen_Fan	1837609 .98	4907875.87	570	547	720	693	736	713	815	783	1537	1490	1505	1448	1403	1375	1853	1826	1880	1856	1654	1633	1300	1274	882	864	819	799
LNRD_Rock_Drill_S1	1837593 1.04	4908403.56	562	559	124	94	209	178	405	372	1541	1506	1949	1895	1988	1960	2471	2444	2495	2471	2260	2240	1856	1832	1027	1006	892	873
LNRD_Rock_Drill_S2	1837552 7.8	4907113.24	1289	1265	1467	1438	1413	1399	1410	1388	1543	1494	888	834	638	610	1198	1172	1292	1263	1153	1126	1086	1056	1434	1424	1437	1422
LNRD_Rock_Drill_S3	1837477 3.13	4906582.33	1905	1885	2257	2231	2264	2244	2296	2270	2405	2357	1366	1339	633	624	320	294	370	341	339	311	767	754	1827	1827	1902	1895
LNRD_Rock_Drill_S4	1837525 5.62	4908398.81	114	121	675	670	884	852	1068	1033	2083	2040	2124	2067	1916	1886	2198	2173	2160	2142	1884	1872	1376	1359	351	331	224	204
LNRD_Rock_Drill_S5	1837510 2.35	4908240.03	307	300	865	855	1048	1016	1215	1180	2146	2100	2053	1996	1776	1746	2007	1982	1958	1941	1677	1666	1158	1142	257	241	234	220
RD_Rock_Drill_S1	1837593 0.69	4908403.5	562	558	124	94	210	178	405	372	1542	1506	1949	1895	1987	1960	2471	2444	2494	2471	2260	2240	1855	1831	1026	1006	891	872
RD_Rock_Drill_S2	1837552 7.38	4907113.03	1289	1265	1467	1438	1414	1399	1410	1388	1544	1494	888	834	638	609	1198	1171	1292	1263	1153	1125	1086	1056	1434	1424	1437	1422
RD_Rock_Drill_S3	1837477 2.34	4906581.72	1906	1886	2258	2232	2265	2245	2297	2271	2406	2358	1367	1340	633	625	319	293	369	340	338	310	767	755	1828	1828	1903	1896
RD_Rock_Drill_S4	1837525 5.62	4908398.81	114	121	675	670	884	852	1068	1033	2083	2040	2124	2067	1916	1886	2198	2173	2160	2142	1884	1872	1376	1359	351	331	224	204
RD_Rock_Drill_S5	1837510 2.35	4908240.03	307	300	865	855	1048	1016	1215	1180	2146	2100	2053	1996	1776	1746	2007	1982	1958	1941	1677	1666	1158	1142	257	241	234	220

Table A2.8 Noise Measurement Data

ID	Type	Spectra (dB)											Notes
		31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Meas_Q_Crushing_Plant	Li	77.6	70.5	66.1	67.2	66.6	64	62.3	58.6	46.3	69.4	79.4	Meas. Elginburg Quarry - P3 - 69.4 at 110 m
Meas_Q_Loader_CAT980K	Li	71.4	68.9	65.4	62.5	64.9	62	58.1	52.6	38.2	66.5	75.1	Meas. Elginburg Quarry - 76.9 at 12.7 m
Meas_Q_Loader_CAT980M	Li	71.4	68.9	65.4	62.5	64.9	62	58.1	52.6	38.2	66.5	75.1	Meas. Elginburg Quarry - 68.4 at 20.3 m
Meas_WP_Generator_15m	Li	80	81	81	74	71	75	72	67	62	78.6	86.5	Based on Golder AAR dated February 2018
Meas_WP_Generator_Wet_Screen_Classifier	Li	76	76	77	72	71	70	68	66	65	75.5	82.6	Based on Golder AAR dated February 2018
Meas_WP_Generator_15m_Wet_Screen_8m	Li	82	82	82	77	78	77	76	75	74	83.1	88.7	Based on Golder AAR dated February 2018
Meas_WP_Generator_40m_Dry_Screen_26m	Li	78	78	79	75	75	71	69	65	58	76.9	84.7	Based on Golder AAR dated February 2018
Meas_WP_Generator_130m_Wet_Screen_140m	Li	69	63	60	56	57	56	53	47	39	60.2	71	Based on Golder AAR dated February 2018
Meas_RMC_NS_08	Li	70.5	80.9	74.8	74.2	73.4	67.4	65.9	62.8	56.4	74.5	83.5	Meas. CH Concrete 27/09/2019 - 74.5 dBA at 12 m
Meas_AP_Drum_Mixer	Li	66	69	63	65	60	54	52	53	52	62.6	72.8	Based on Golder AAR dated February 2018
Meas_AP_Dryer_Cyclone_Fan	Li	70	76	73	68	65	59	56	56	54	67	79.1	Based on Golder AAR dated February 2018
Meas_AP_Aggregate_Screen	Li	72	79	75	68	66	59	57	55	48	67.5	81.4	Based on Golder AAR dated February 2018
Meas_AP_RAP_Screen	Li	73	77	75	72	72	67	65	58	50	73.2	81.5	Based on Golder AAR dated February 2018
Meas_AP_Tower_Screen_Fan	Li	71	77	74	71	67	63	59	58	54	69.5	80.4	Based on Golder AAR dated February 2018
Meas_AP_Burner	Li	93	89	82	79	76	70	68	63	57	77.6	94.9	Based on Golder AAR dated February 2018
Meas_AP_Air_Exhaust	Li	74	73	70	57	58	64	66	69	72	74.9	79.4	Based on Golder AAR dated February 2018
Meas_AP_Cyclone_Fan_Only	Li	75	75	76	65	65	60	58	52	50	67.1	80.5	Based on Golder AAR dated February 2018
Meas_HWYTruck_Slow58 (Meas_RMC_NS_01 and RMC_NS_15)	Li	67.5	64.3	61.8	53.2	53	56.6	55.8	49.2	55.1	61.7	70.6	adj. 90m source Brockville McDowell Study, 2003

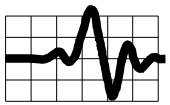


Table A2.9 Sample Calculation – Scenario 1

Receiver
Name: POR_1
ID: POR_1_POW
X: 18375369.19 m
Y: 4908392.18 m
Z: 140.82 m

Point Source, ISO 9613, Name: "Q_CP_Crushing_Plant", ID: "Q_CP_Crushing_Plant_S1"																			
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
1	18375892.27	4908336.44	128.89	0	DEN	32	87.8	0.0	0.0	0.0	0.0	65.4	0.0	-5.0	0.0	0.0	5.1	0.0	0.0	22.3
1	18375892.27	4908336.44	128.89	0	DEN	63	93.9	0.0	0.0	0.0	0.0	65.4	0.1	-5.0	0.0	0.0	5.3	0.0	0.0	28.1
1	18375892.27	4908336.44	128.89	0	DEN	125	99.6	0.0	0.0	0.0	0.0	65.4	0.2	1.6	0.0	0.0	4.2	0.0	0.0	28.1
1	18375892.27	4908336.44	128.89	0	DEN	250	108.2	0.0	0.0	0.0	0.0	65.4	0.5	4.1	0.0	0.0	2.5	0.0	0.0	35.6
1	18375892.27	4908336.44	128.89	0	DEN	500	113.0	0.0	0.0	0.0	0.0	65.4	1.0	-0.1	0.0	0.0	8.0	0.0	0.0	38.7
1	18375892.27	4908336.44	128.89	0	DEN	1000	113.6	0.0	0.0	0.0	0.0	65.4	1.9	-2.2	0.0	0.0	9.8	0.0	0.0	38.7
1	18375892.27	4908336.44	128.89	0	DEN	2000	113.1	0.0	0.0	0.0	0.0	65.4	5.1	-2.4	0.0	0.0	12.1	0.0	0.0	32.9
1	18375892.27	4908336.44	128.89	0	DEN	4000	109.2	0.0	0.0	0.0	0.0	65.4	17.2	-2.4	0.0	0.0	14.7	0.0	0.0	14.2
1	18375892.27	4908336.44	128.89	0	DEN	8000	94.8	0.0	0.0	0.0	0.0	65.4	61.5	-2.4	0.0	0.0	17.5	0.0	0.0	-47.2

Point Source, ISO 9613, Name: "RMC_Unloading Tanker Blower 2", ID: "RMC_NS_05"																			
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
2	18375501.34	4907876.99	136.95	0	DEN	63	82.8	0.0	0.0	0.0	0.0	65.5	0.1	-5.5	0.0	0.0	4.8	0.0	0.0	17.9
2	18375501.34	4907876.99	136.95	0	DEN	125	100.9	0.0	0.0	0.0	0.0	65.5	0.2	5.2	0.0	0.0	0.0	0.0	0.0	30.0
2	18375501.34	4907876.99	136.95	0	DEN	250	100.4	0.0	0.0	0.0	0.0	65.5	0.6	11.3	0.0	0.0	0.0	0.0	0.0	23.0
2	18375501.34	4907876.99	136.95	0	DEN	500	105.8	0.0	0.0	0.0	0.0	65.5	1.0	8.3	0.0	0.0	0.0	0.0	0.0	31.0
2	18375501.34	4907876.99	136.95	0	DEN	1000	110.0	0.0	0.0	0.0	0.0	65.5	1.9	1.2	0.0	0.0	3.6	0.0	0.0	37.8
2	18375501.34	4907876.99	136.95	0	DEN	2000	107.2	0.0	0.0	0.0	0.0	65.5	5.1	-0.4	0.0	0.0	4.8	0.0	0.0	32.2
2	18375501.34	4907876.99	136.95	0	DEN	4000	105.0	0.0	0.0	0.0	0.0	65.5	17.4	-0.4	0.0	0.0	4.8	0.0	0.0	17.7
2	18375501.34	4907876.99	136.95	0	DEN	8000	94.9	0.0	0.0	0.0	0.0	65.5	62.2	-0.4	0.0	0.0	4.8	0.0	0.0	-37.1

Point Source, ISO 9613, Name: "RMC_Unloading Tanker Blower 1", ID: "RMC_NS_02_Z"																			
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
3	18375508.30	4907867.13	137.00	0	DEN	63	82.8	0.0	0.0	0.0	0.0	65.7	0.1	-5.5	0.0	0.0	4.8	0.0	0.0	17.8
3	18375508.30	4907867.13	137.00	0	DEN	125	100.9	0.0	0.0	0.0	0.0	65.7	0.2	2.9	0.0	0.0	2.3	0.0	0.0	29.7
3	18375508.30	4907867.13	137.00	0	DEN	250	100.4	0.0	0.0	0.0	0.0	65.7	0.6	6.8	0.0	0.0	0.5	0.0	0.0	26.8
3	18375508.30	4907867.13	137.00	0	DEN	500	105.8	0.0	0.0	0.0	0.0	65.7	1.0	3.3	0.0	0.0	5.6	0.0	0.0	30.2
3	18375508.30	4907867.13	137.00	0	DEN	1000	110.0	0.0	0.0	0.0	0.0	65.7	2.0	-0.5	0.0	0.0	10.8	0.0	0.0	32.0
3	18375508.30	4907867.13	137.00	0	DEN	2000	107.2	0.0	0.0	0.0	0.0	65.7	5.2	-1.2	0.0	0.0	13.4	0.0	0.0	24.0
3	18375508.30	4907867.13	137.00	0	DEN	4000	105.0	0.0	0.0	0.0	0.0	65.7	17.8	-1.2	0.0	0.0	16.2	0.0	0.0	6.4
3	18375508.30	4907867.13	137.00	0	DEN	8000	94.9	0.0	0.0	0.0	0.0	65.7	63.5	-1.2	0.0	0.0	19.1	0.0	0.0	-52.3

Line Source, ISO 9613, Name: "Q_Highway_Truck_Passby", ID: "Q_Highway_Truck_Passby_S1"																			
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
5	18375494.25	4908291.55	140.11	0	D	32	43.5	18.6	0.0	0.0	0.0	55.1	0.0	-3.5	0.0	0.0	5.2	0.0	0.0	5.3
5	18375494.25	4908291.55	140.11	0	D	63	53.5	18.6	0.0	0.0	0.0	55.1	0.0	-3.5	0.0	0.0	5.5	0.0	0.0	14.9
5	18375494.25	4908291.55	140.11	0	D	125	61.1	18.6	0.0	0.0	0.0	55.1	0.1	2.5	0.0	0.0	3.7	0.0	0.0	18.3
5	18375494.25	4908291.55	140.11	0	D	250	60.0	18.6	0.0	0.0	0.0	55.1	0.2	9.8	0.0	0.0	0.0	0.0	0.0	13.6
5	18375494.25	4908291.55	140.11	0	D	500	65.2	18.6	0.0	0.0	0.0	55.1	0.3	2.6	0.0	0.0	6.2	0.0	0.0	19.5
5	18375494.25	4908291.55	140.11	0	D	1000	72.0	18.6	0.0	0.0	0.0	55.1	0.6	-0.0	0.0	0.0	10.9	0.0	0.0	24.0
5	18375494.25	4908291.55	140.11	0	D	2000	72.4	18.6	0.0	0.0	0.0	55.1	1.6	-0.2	0.0	0.0	13.3	0.0	0.0	21.2
5	18375494.25	4908291.55	140.11	0	D	4000	65.6	18.6	0.0	0.0	0.0	55.1	5.3	-0.2	0.0	0.0	16.0	0.0	0.0	8.0
5	18375494.25	4908291.55	140.11	0	D	8000	69.4	18.6	0.0	0.0	0.0	55.1	18.8	-0.2	0.0	0.0	18.9	0.0	0.0	-4.6
5	18375494.25	4908291.55	140.11	0	N	32	40.5	18.6	0.0	0.0	0.0	55.1	0.0	-3.5	0.0	0.0	5.2	0.0	0.0	2.3
5	18375494.25	4908291.55	140.11	0	N	63	50.5	18.6	0.0	0.0	0.0	55.1	0.0	-3.5	0.0	0.0	5.5	0.0	0.0	11.9
5	18375494.25	4908291.55	140.11	0	N	125	58.1	18.6	0.0	0.0	0.0	55.1	0.1	2.5	0.0	0.0	3.7	0.0	0.0	15.3
5	18375494.25	4908291.55	140.11	0	N	250	57.0	18.6	0.0	0.0	0.0	55.1	0.2	9.8	0.0	0.0	0.0	0.0	0.0	10.5
5	18375494.25	4908291.55	140.11	0	N	500	62.2	18.6	0.0	0.0	0.0	55.1	0.3	2.6	0.0	0.0	6.2	0.0	0.0	16.5
5	18375494.25	4908291.55	140.11	0	N	1000	69.0	18.6	0.0	0.0	0.0	55.1	0.6	-0.0	0.0	0.0	10.9	0.0	0.0	21.0
5	18375494.25	4908291.55	140.11	0	N	2000	69.4	18.6	0.0	0.0	0.0	55.1	1.6	-0.2	0.0	0.0	13.3	0.0	0.0	18.2

Appendix 3

Instrument Calibration Certificates

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PYLON
Calibration *Technologies*

Pylon Electronics Inc.
147 Colonnade Road
Ottawa, ON K2E 7L9

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CERTIFICATE OF CALIBRATION

Description	**SOUND ANALYZER**	**Work Order**	**H71313**
Model Number	**2270**	**Serial Number**	**3008643**
Instrument Id	**N/A**	**Cal Procedure**	**BE1713-32**
Manufacturer	**BRUEL & KJAER**	**Cal Date**	**14 Feb 2019**
Customer Name	**FREEFIELD LTD.**	**Recall Cycle**	**52 Weeks**
Purchase Order	**PO REQUIRED**	**Next Cal Date**	**14 Feb 2020**

Calibration Environment: Temperature **23.0 °C** Relative Humidity **38.2 %RH**

Received Condition: **Within Tolerance**

Completed Condition: **Within Tolerance**

Remarks: **Calibrated with Preamp ZC 0032 S/N 23073 AND MIC. 4189 2985656**

Standards Used to Establish Traceability

Instrument Type	Model	Asset #	Cal Due Date
SOUND LEVEL CALIBRATOR	4231	10629	2 Jan 2020
PISTONPHONE	4220	11239	2 Mar 2019

Pylon certifies that, at the time of calibration, the above listed instrument meets or exceeds all of the specifications defined on the Test Data Sheet (TDS), unless otherwise indicated. The Certificate received and completed conditions and the TDS specifications are based on the procedure(s) and/or specification(s) referenced on the TDS unless otherwise indicated. Any statement of compliance is made without taking measurement uncertainty into account and is based on the instrument's performance against the test limits documented on the test data sheet.

The above listed instrument has been calibrated using standards that are traceable to the International System of Units (SI) through a National Metrological Institute (such as NRC or NIST). Pylon's quality system meets the requirements of ISO/IEC 17025:2005. Unless otherwise specified, Pylon maintains a minimum of a 4:1 ratio between the equipment under test and the measurement system.

Test data As Found and Final (as left) results are the same unless reported otherwise. Certificate remarks identify if adjustments were performed.

Metrologist : *146* Quality Assurance: *265* Date of Issue: **20 Feb 2019** F083 Rev 15

pylcert1

HALIFAX MONTREAL OTTAWA TORONTO

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PYLON

Calibration Test Data

Description:	SOUND ANALYZER	Work order:	H71313
Model:	2270	Serial:	3008643
Customer ID.:	N/A	Procedure:	BE1713-32
Manufacturer:	BRUEL & KJAER	Proc. Rev.:	23-Feb-2016
Customer:	FREEFIELD LTD.	Cal Date:	14-Feb-2019

Rev 25Jan2007
AF=0
F=0

\\ott02\CompanyData\TDS\Elec TDS\2270 BRUEL & KJAER.xls Temp 006 Appr 062 27-Mar-2017

TEST REF.	TEST DESCRIPTION	RESULTS MIN	AS FOUND	FINAL	MAX
P. 52	**SOUND LEVEL CALIBRATION**				
	CONNECT TI TO SOUND CALIBRATOR MODEL 4231,				
	SWITCH ON THE CALIBRATOR, PRESS "START" ON TI,				
	NOTE THAT TI INDICATING "DETECTING LEVEL"	Pass / Fail	Pass		
	WHILE TI SEARCHING FOR SIGNAL & SIGNAL IS				
	STABILISING, THE "TRAFFIC LIGHT" INDICATES				
	SHORT GREEN FLASH EVERY SECOND	Pass / Fail	Pass		
	WHEN SIGNAL IS STABLE, THE GREEN LIGHT IS				
	STABLE	Pass / Fail	Pass		
	WHEN CALIBRATION IS COMPLETED SUCCESSFULLY				
	THE TRAFFIC LIGHT INDICATES A SHORT YELLOW				
	FLASH EVERY 5 SECONDS	Pass / Fail	Pass		
	Nominal SPL with 4189 Microphone attached	dB	dB		dB
	93.8 dB	92.8	93.9		94.8
	CALIBRATION COMPLETED	Pass / Fail	Pass		

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PYLON
Calibration Technologies

Pylon Electronics Inc.
147 Colonnade Road
Ottawa, ON K2E 7L9

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CERTIFICATE OF CALIBRATION

Description	**SOUND LEVEL CALIBRATOR**	**Work Order**	**H71314**
Model Number	**4231**	**Serial Number**	**2730374**
Instrument Id	**N/A**	**Cal Procedure**	**33K3-4-2871-1**
Manufacturer	**BRUEL & KJAER**	**Cal Date**	**14 Feb 2019**
Customer Name	**FREEFIELD LTD.**	**Recall Cycle**	**52 Weeks**
Purchase Order	**PO REQUIRED**	**Next Cal Date**	**14 Feb 2020**

Calibration Environment: Temperature **23.3 °C** Relative Humidity **36.7 %RH**

Received Condition: **Within Tolerance**

Completed Condition: **Within Tolerance**

Standards Used to Establish Traceability

Instrument Type	Model	Asset #	Cal Due Date
4145 BRUEL&KJAER 1" MICROPHONE	4145	12811	26 Jun 2019
PISTONPHONE	4220	11239	2 Mar 2019
FFT SIGNAL ANALYZER SYSTEM	3550	11850	5 Oct 2019
MICROPHONE PREAMP	2639T	13051	26 Feb 2019

Pylon certifies that, at the time of calibration, the above listed instrument meets or exceeds all of the specifications defined on the Test Data Sheet (TDS), unless otherwise indicated. The Certificate received and completed conditions and the TDS specifications are based on the procedure(s) and/or specification(s) referenced on the TDS unless otherwise indicated. Any statement of compliance is made without taking measurement uncertainty into account and is based on the instrument's performance against the test limits documented on the test data sheet.

The above listed instrument has been calibrated using standards that are traceable to the International System of Units (SI) through a National Metrological Institute (such as NRC or NIST). Pylon's quality system meets the requirements of ISO/IEC 17025:2005. Unless otherwise specified, Pylon maintains a minimum of a 4:1 ratio between the equipment under test and the measurement system.

Test data As Found and Final (as left) results are the same unless reported otherwise. Certificate remarks identify if adjustments were performed.

Metrologist : *146* Quality Assurance: *265* Date of Issue: **20 Feb 2019** F083 Rev 15

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Calibration Test Data

Page 1 of 1

Description:	SOUND LEVEL CALIBRATOR	Work order:	H71314
Model:	4231	Serial:	2730374
Customer ID.:	N/A	Procedure:	33K3-4-2871-1
Manufacturer:	BRUEL & KJAER	Proc. Rev.:	30-Oct-2006
Customer:	FREEFIELD LTD.	Cal Date:	14-Feb-2019

Rev:03Jul2009
AF=0
F=0

\\ott02\CompanyData\TDS\Elec TDS\4231 BRUEL & KJÆR.xls Temp 006 Appr 062 23 Oct 2018

TEST REF.	TEST DESCRIPTION	RESULTS MIN	AS FOUND	FINAL	MAX
4.1	**Sound Level Calibration:**				
	Nominal dB_{SPL}	dB_{SPL}	dB_{SPL}		dB_{SPL}
	94.0	93.80	94.04		94.20
	(+20 dB Button) 114.0	113.80	114.02		114.20
4.2	**Frequency Calibration:**				
	Nominal (Hz)	Hz	Hz		Hz
	1 k	999.0	1000.0		1001.0
4.3	**Distortion Calibration :**				
	Measured Value	-	0.32 %		1.00 %
	ADDITIONAL TEST:				
	AUTO SHUT OFF	Pass / Fail	Pass		

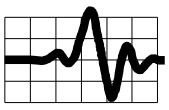
Appendix 4

Noise Abatement Schedule

Contents:

Table A4.1 Noise Abatement Schedule

ID	Type*	Description	Minimum Height (m)	Date of Installation / Construction
Barrier 1 (Berm 1)	Berm	To shield noise impacts from Internal Haul Route to POR 1. Berm to be located as shown in Figure A4.1.	5 m	Berm to be established minimum 220 m in length at setback adjacent to internal haul route at site entry
Barrier 2 (Berm 2)	Berm	To shield noise impacts from Portable Crushing and Screening Plant, Wash Plant or Rock Drill to POR 1. Barrier 2 extended to shield POR 12 and POR 13 when operating west of Line AA. Berm to be located as shown in Figure A4.2.	5 m	Berm progressively established as extraction and aggregate processing operations progress.
Barrier 3 (Barrier Q1)	Local Barrier, Berm, Lift Face or Stockpile at Portable Crushing Plant or Wash Plant	To shield noise impacts from the Portable Crushing and Screening Plant OR Wash Plant when operating in Phase 1 to POR 1. Located as shown in Figure A4.3.	6 m	Barrier established as operation progresses relative to location of current operation of plant.
Barrier 4 (Barrier Q2)	Local Barrier, Berm, Lift Face or Stockpile at Portable Crushing Plant or Wash Plant	To shield noise impacts from the Portable Crushing and Screening Plant OR Wash Plant when operating in Phase 2 to POR 4. Located as shown in Figure A4.4.	4 m	Barrier established as operation progresses relative to location of current operation of plant.
Barrier 5 (Barrier RD1)	Portable barrier such as a truck trailer	To shield noise impacts from the Rock Drill to POR 2, 3 and 4 when operating on the surface in in Phase 1. Located as shown in Figure A4.5.	4 m	Barrier established as operation progresses relative to location of current operation of drill.
Barrier 6 (Barrier RD2)	Portable barrier such as a truck trailer	To shield noise impacts from the Rock Drill to POR 12 when operating on the surface in in Phase 5. Located as shown in Figure A4.5.	4 m	Barrier established as operation progresses relative to location of current operation of drill.



ID	Type*	Description	Minimum Height (m)	Date of Installation / Construction
Barrier 7 (RMC_Existing_1)	Local Barrier at RMC Plant	To shield noise impacts from RMC Plant to POR 1 located as shown in Figure A4.6.	3 m	Existing concrete block wall to remain
Barrier 8 (RMC_Existing_2)	Local Barrier at RMC Plant	To shield noise impacts from RMC Plant to POR 1 located as shown in Figure A4.6.	2.4 m	Existing concrete block wall to remain
Barrier 9 (Barrier AP1)	Local Barrier, Berm or Stockpile at Asphalt Plant	To shield noise impacts from Asphalt Plant RAP Screen to POR 4. Berm to be located as shown in Figure A4.7.	4 m	Existing stockpile to be maintained.
Barrier 10 (Barrier AP2)	Local Barrier, Berm or Stockpile at Asphalt Plant	To shield noise impacts from Asphalt Plant to POR 4. Berm to be located as shown in Figure A4.7.	7.8 m	Prior to commencement of Asphalt Production during the evening and nighttime period (07:00 – 19:00)
Silencer Installed on AP_Air_Exhaust	Silencer	A silencer providing minimum 20 dBA attenuation is to be installed on the Asphalt Plant Air Exhaust. The maximum outdoor sound power of the Air Exhaust after installation of the silencer is not to exceed 100 dBA. Replacement with a new quieter unit is acceptable providing the maximum outdoor sound power as noted above is not exceeded.	N/A	Prior to commencement of Asphalt Production

* Alternative types of noise barriers are permissible following review by qualified acoustical consultant.

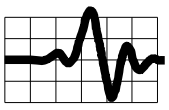


Figure A4.1 Noise Barrier Details – Existing Quarry - Phase 1

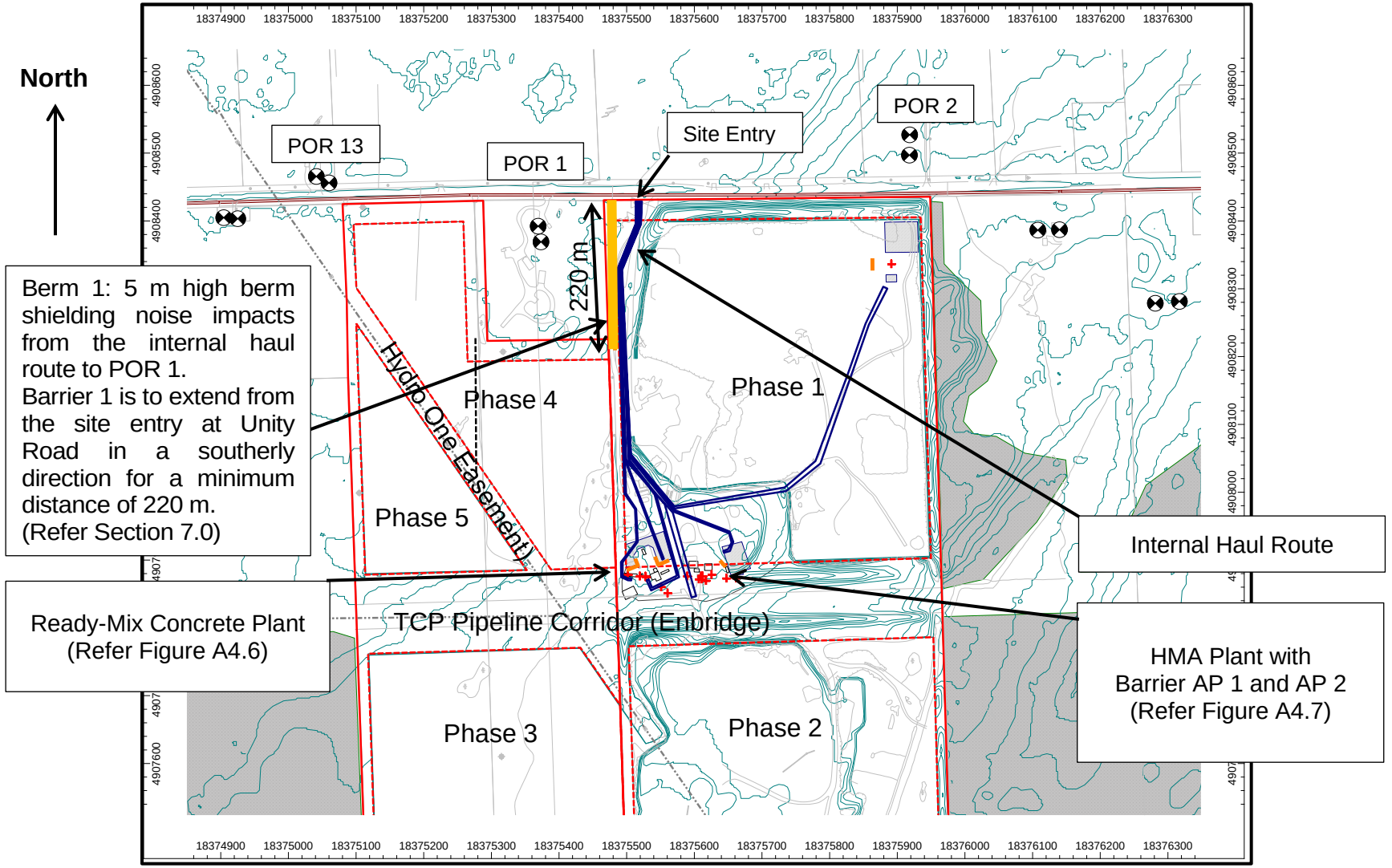


Figure A4.2 Noise Barrier Details – Expansion Area - Phase 4 and Phase 5

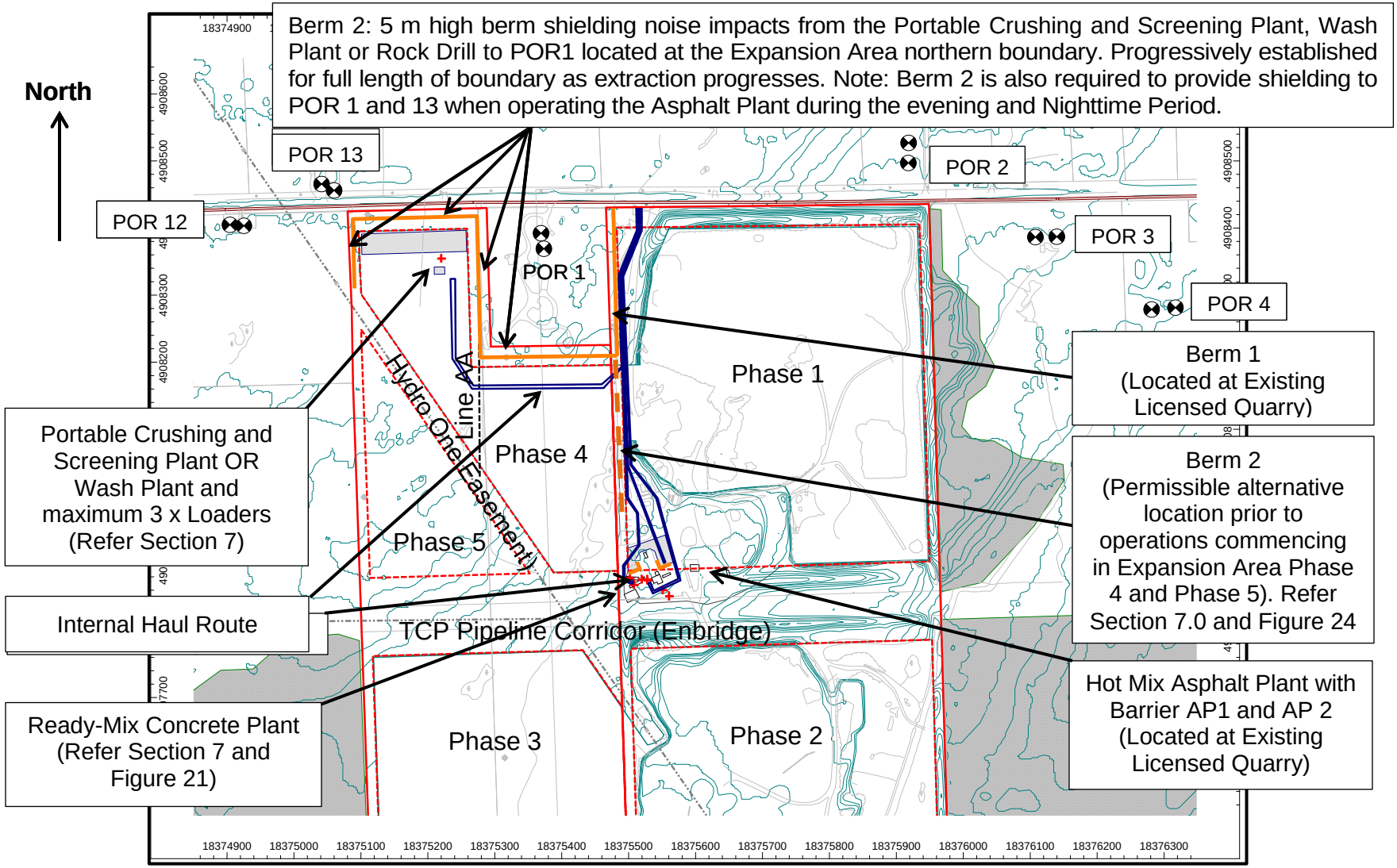


Figure A4.3 Noise Barrier Detail – Barrier Q1

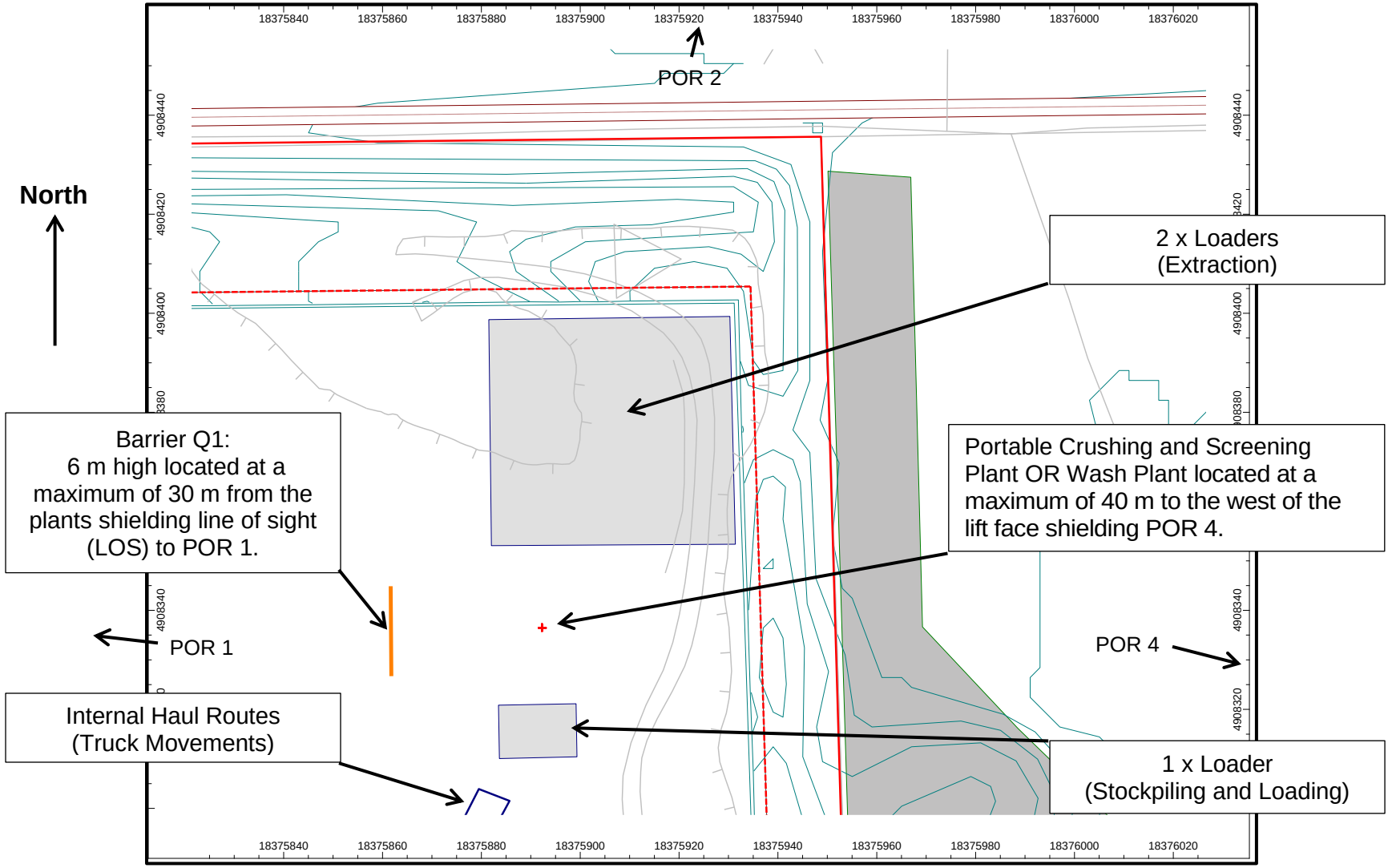


Figure A4.4 Noise Barrier Detail – Barrier Q2

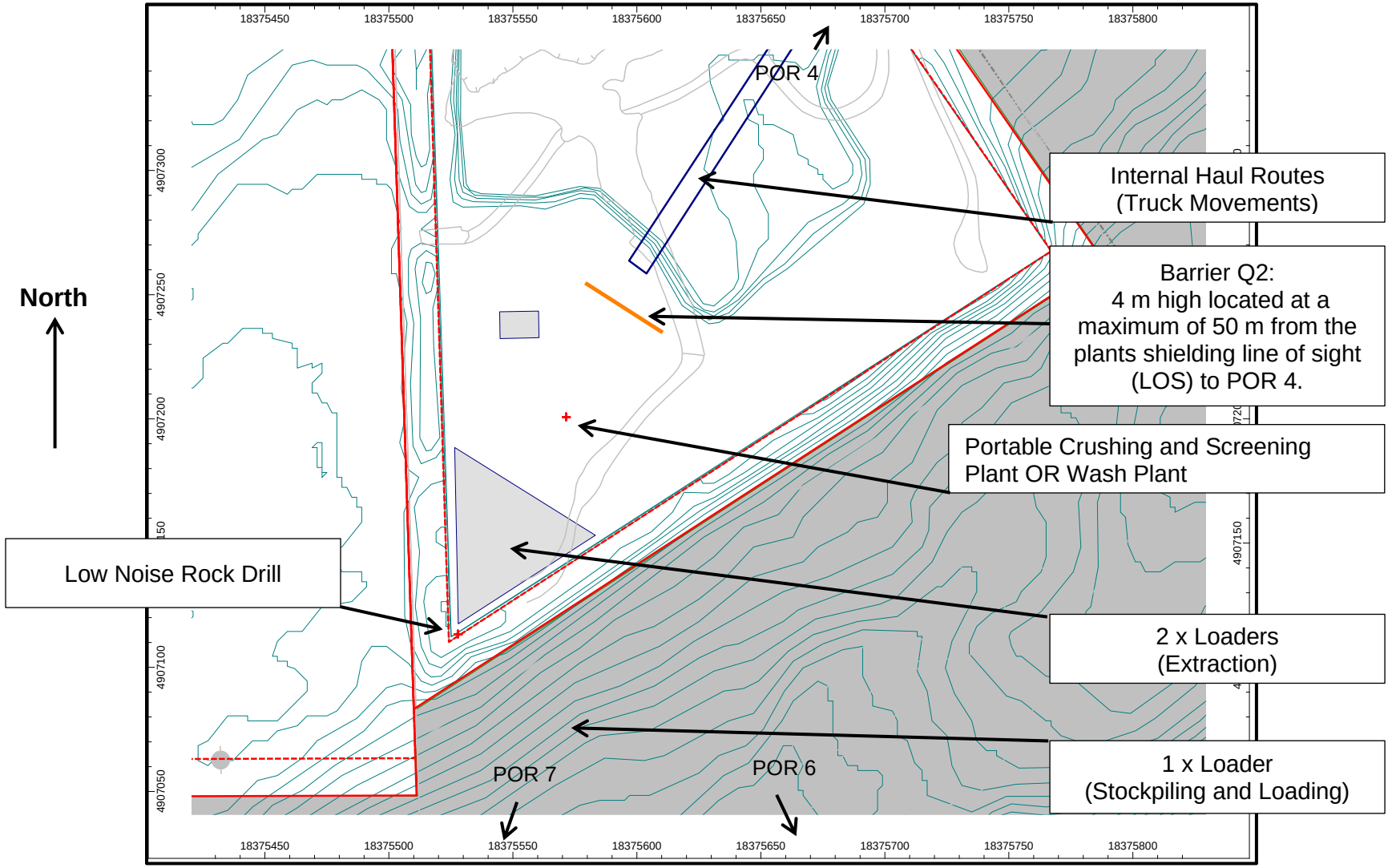


Figure A4.5 Noise Barrier Detail – Barrier RD* (Typical) – Shown at location of RD2

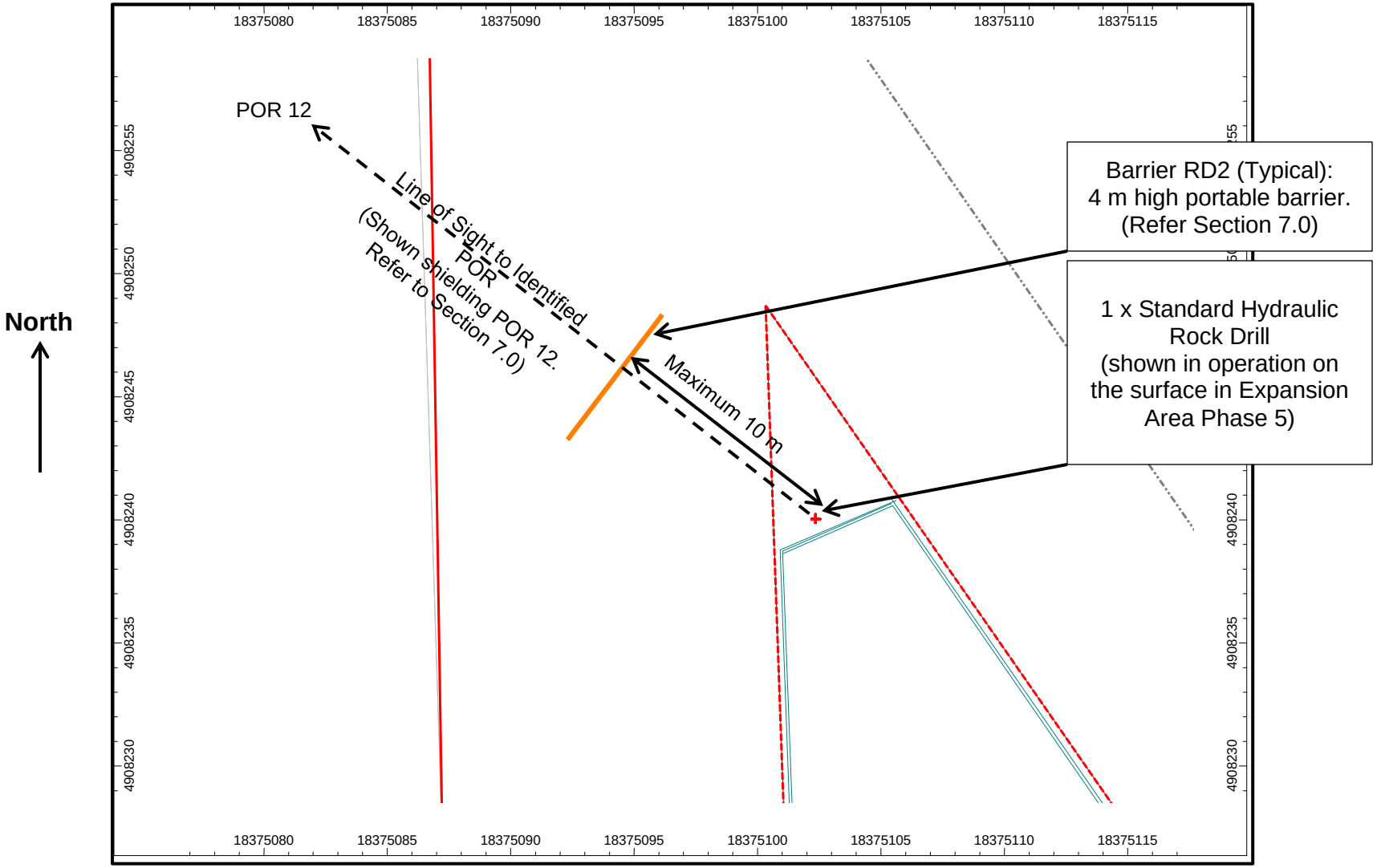


Figure A4.6 Noise Barrier Detail – RMC_Existing_1 and RMC_Existing_2

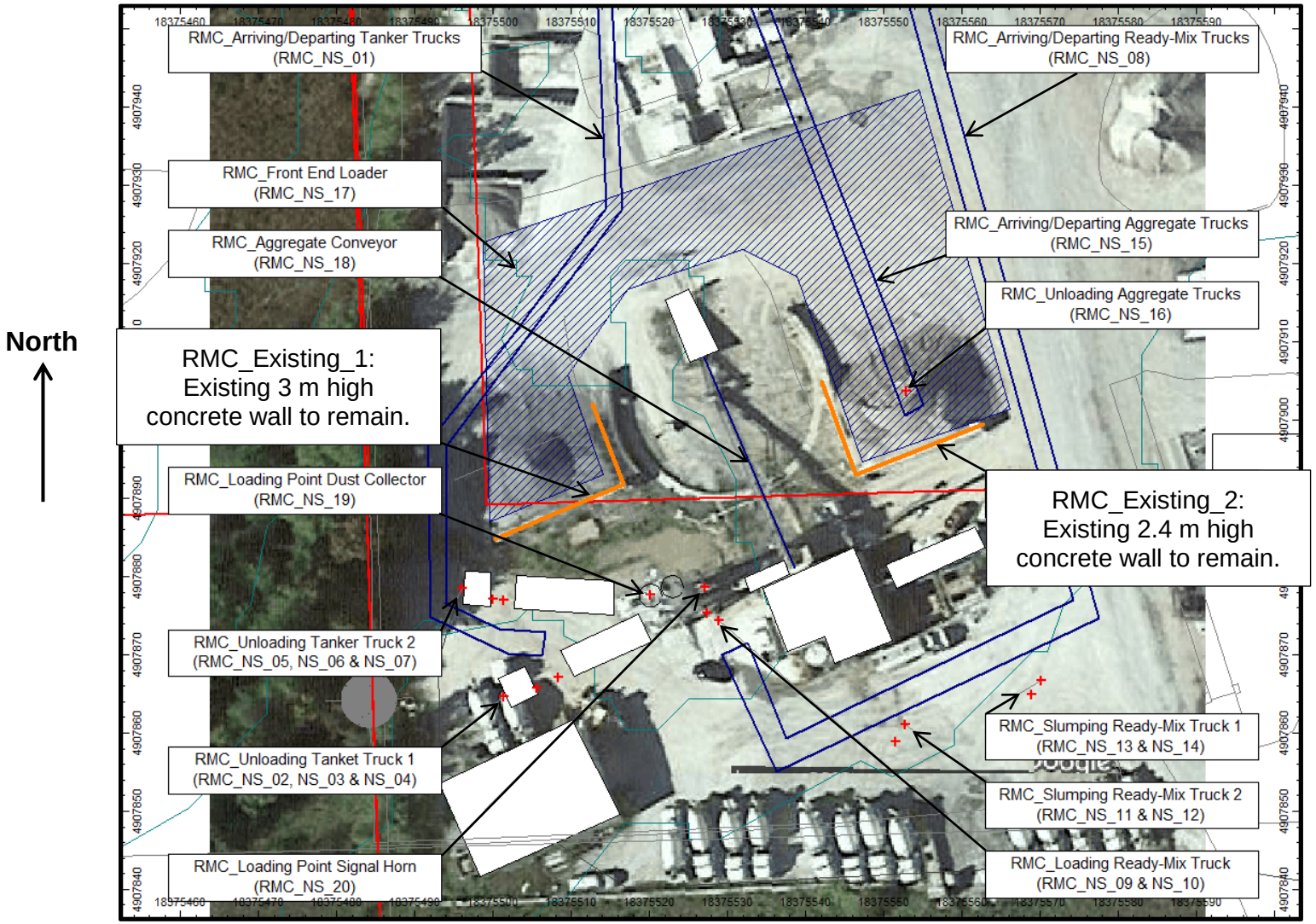
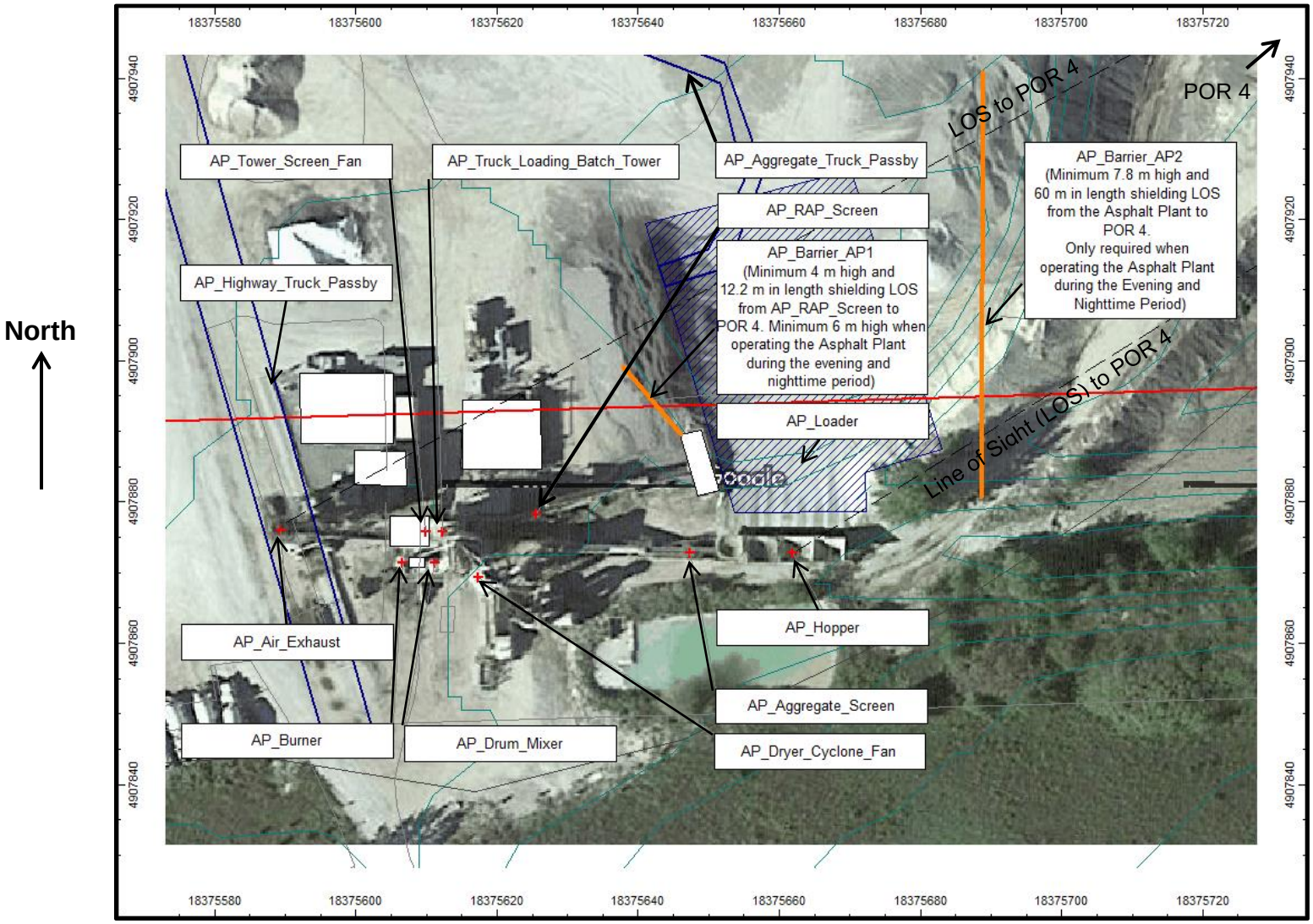


Figure A4.7 Noise Barrier Detail – Barrier AP1 and AP2 at Asphalt Plant



Appendix 5

Background Traffic Noise Analysis

This appendix presents the results of an analysis of background noise from road traffic on Unity Road at receptors in the vicinity of Elginburg Quarry.

Noise generated by road traffic is predicted using STAMSON, a traffic noise model developed by the MECP. STAMSON considers such factors as distance from the road, height, nature of the intervening buildings and terrain, ground absorption, and noise barriers, if present.

The results of the background noise level calculations are presented in Table A5.1 below. Samples of the outputs of the STAMSON software are also provided

Traffic data used in this analysis was based on a traffic count data provided by the City of Kingston which contains annual average daily traffic (AADT) volume information for Unity Road based on count data collected 10th June, 2015, for Unity Road at the intersection of Cordukes Road and Sydenham Road. An excerpt of this data is presented below containing the relevant traffic data used in this analysis.

In order to consider the lowest background noise occurring in each hour during the daytime period (07:00 to 19:00), to justify the Class 2 Area classification or higher sound level limits as applicable, hourly traffic volumes were calculated based methodology contained RWDI AIR Inc. Publication, "Typical Hourly Traffic Distribution for Noise Modelling", Vol. 36 No. 3 (2008) which outline applicable distribution factors to apply to Ontario AADT traffic volumes in order to calculate hourly traffic volumes for use in noise modelling. The estimated split was based on City of Ottawa Environmental Noise Control Guidelines which includes a split used for Medium Trucks to Heavy Trucks of 7% and 5% respectively. For a conservative estimation of background sound levels, all heavy trucks were excluded from calculations to account for the possibility that these correspond to site related truck traffic.

The results of this analysis are presented in Table A5.1 below at the selected points of reception.

Contents:

Table A5.1: Background Sound Level at Receptors Impacted by Noise from Road Traffic on Trans-Canada Highway 17

Point of Reception Reception	Lowest Sound Level Limit 1-hour L_{AEQ} dBA (Daytime Period, 07:00 – 19:00)
POR 1	51.64[2]
POR 2	52.05[1]
POR 3	52.05[2]
POR 4	44.65[3]
POR 12	58.24[2]
POR 13	58.42[1]

Notes:

1. Resultant background noise levels from traffic at POR 2 and POR 13 used as the applicable sound level limit for daytime period for the purposes of assessing compliance. Class 2 exclusion limits have been applied at POR 2 and POR 13 for the evening and nighttime period of operation.

2. Resultant background noise levels from traffic at POR 1, POR 3 and POR 12 justify the Class 2 area classification, of being "an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 areas: sound levels characteristic of Class 1 during daytime (07:00 to 19:00); and, low evening and night background sound level defined by natural environment and infrequent human activity starting as early as 19:00 hours (19:00 or 23:00 to 07:00 hours)." Hence, while the results of the background sound level assessment indicate elevated levels to the exclusion limits for a class 2 area during the daytime period. The results for the nighttime period indicate that a Class 2 classification is appropriate. To due potential shielding by the residence to locations facing the quarry, the Class 2 Area sound level limits have been applied.

3. Resultant background noise levels from traffic at POR 4 indicate a Class 3 Area classification is appropriate due to the relatively large distance to Unity Road.

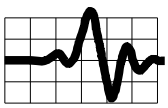


Table A5.2: Traffic Volumes

Unity Road - AADT Traffic Volumes from City of Kingston, 10 June 2015
Posted Speed Limit: 80 km/h

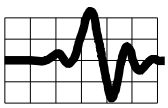
Hour Beginning	Distribution Factor*****	Total Vehicles Count no.	Estimated split****		
			Cars no.	Medium Trucks no.	Heavy Trucks no.
0:00	0.87	25			
1:00	0.49	14			
2:00	0.36	10			
3:00	**0.3**	9			
4:00	0.36	10			
5:00	0.95	27			
6:00	2.75	78			
7:00	**5.05**	144*	**127**	**10**	**7**
8:00	6.55	186			
9:00	5.62	160			
10:00	5.5	156			
11:00	6.04	172			
12:00	6.48	184			
13:00	6.26	178			
14:00	6.6	188			
15:00	7.41	211			
16:00	7.82	222			
17:00	7.65	217			
18:00	6.27	178			
19:00	5.12	146			
20:00	4.09	116			
21:00	3.41	97			
22:00	**2.41**	68			
23:00	1.67	47			
Total	100	2842			

Notes:

1. Minimum Hourly Traffic Volume during the daytime period occurs 07:00 to 08:00.

2. Estimated Split based on City of Ottawa Environmental Noise Control Guidelines as no suitable data available. Split used for Medium Trucks to Heavy Trucks is 7% and 5% respectively. Traffic volumes presented above rounded up, where applicable, for use in traffic noise modelling software (STAMSON). Heavy Truck traffic was excluded from calculations to account for the potential of site related truck traffic included in count.

3. Distribution factor based on RWDI AIR Inc. Publication, "Typical Hourly Traffic Distribution for Noise Modelling", Vol. 36 No. 3 (2008)



Traffic Data: City of Kingston - Unity Road at Cordukes Road, 10th June, 2015.

Unity Rd @ Cordukes Rd

Annual Average Daily Traffic Diagram

Total Factor = Monthly Factor(1.00) x Daily Factor(1.00) x 24 Hour Factor(1.88) = 1.880000

Municipality: City of Kingston
Site #: 0000000001
Intersection: Unity Road & Cordukes Road
TFR File #: 1
Count date: 10-Jun-2015

Weather conditions:

Person(s) who counted: Miovision

**** Non-Signalized Intersection ****

Major Road: Unity Road runs W/E

East Leg Total: 2843
East Entering: 1303
East Peds: 0
Peds Cross: ⧖

Cyclists	Trucks	Cars	Totals
6	124	891	1021

Unity Road

Cyclists	Trucks	Cars	Totals
0	105	857	963
4	9	53	66
4	115	910	

	Cars	Trucks	Cyclists	Totals
	816	117	0	932
	318	53	0	370
	1134	169	0	

Unity Road

Cars	Trucks	Cyclists	Totals
1365	175	0	1540

N
W E
S

Cordukes Road

Peds Cross: ⧖
West Peds: 6
West Entering: 1028
West Leg Total: 2049

Cars	370
Trucks	62
Cyclists	4
Totals	436

Cars	75	508	583
Trucks	8	70	77
Cyclists	6	0	6
Totals	88	577	

Peds Cross: ⋈
South Peds: 2
South Entering: 666
South Leg Total: 1102

Comments

Traffic Data: City of Kingston - Unity Road at Sydenham Road, 10th June, 2015.

Sydenham Rd @ Unity Rd

Annual Average Daily Traffic Diagram

Total Factor = Monthly Factor(1.00) x Daily Factor(1.00) x 24 Hour Factor(1.88) = 1.880000

Municipality: City of Kingston
Site #: 0000000001
Intersection: Sydenham Road & Unity Road
TFR File #: 1
Count date: 10-Jun-2015

Weather conditions:

Person(s) who counted: Miovision

**** Signalized Intersection ****

Major Road: Sydenham Road runs N/S

North Leg Total: 8695
North Entering: 4373
North Peds: 15
Peds Cross: ⋈

Cyclists	0	6	0	6
Trucks	13	109	23	145
Cars	177	3598	447	4222
Totals	190	3713	470	

Cyclists	4
Trucks	141
Cars	4177
Totals	4322

East Leg Total: 4867
East Entering: 2414
East Peds: 36
Peds Cross: ⧖

Cyclists	Trucks	Cars	Totals
0	214	1218	1433

Sydenham Road

Cars	Trucks	Cyclists	Totals
485	15	0	500
720	107	0	827
1055	32	0	1087
2260	154	0	

Unity Road

N
W E
S

Cyclists	Trucks	Cars	Totals
0	15	363	378
2	85	799	885
2	102	312	415
4	201	1474	

Unity Road

Cars	Trucks	Cyclists	Totals
2303	147	4	2453

Sydenham Road

Peds Cross: ⧖
West Peds: 9
West Entering: 1679
West Leg Total: 3111

Cars	4965
Trucks	243
Cyclists	8
Totals	5215

Cars	321	3329	1057	4708
Trucks	94	111	39	244
Cyclists	0	4	2	6
Totals	415	3444	1098	

Peds Cross: ⋈
South Peds: 8
South Entering: 4958
South Leg Total: 10173

Comments

Samples of Traffic Noise Predictions using STAMSON

```
STAMSON 5.0         SUMMARY REPORT         Date: 25-01-2020 09:22:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR1to3D.te           Time Period: 1 hours
```

Description: POR 1 - Daytime (Lowest Volume Hour) - No Trucks

```
Road data, segment # 1: Unity Road
----------------------------------
Car traffic volume  :   127 veh/TimePeriod
Medium truck volume :    10 veh/TimePeriod
Heavy truck volume  :     0 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Unity Road
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.00 m
Receiver height           :   2.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary
--------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Unity Road       !     0.50 !    51.64 !    51.64
--------------------+---------+---------+---------
                      Total                 51.64 dBA
```

TOTAL Leq FROM ALL SOURCES: 51.64

```
STAMSON 5.0        SUMMARY REPORT        Date: 25-01-2020 09:24:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR2to3D.te          Time Period: 1 hours
```

Description: POR 2 & 3-Daytime (Lowest Volume Hour)-No Trucks

```
Road data, segment # 1: Unity Road
----------------------------------
Car traffic volume  :   127 veh/TimePeriod
Medium truck volume :    10 veh/TimePeriod
Heavy truck volume  :     0 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Unity Road
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  50.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary
--------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Unity Road       !     0.50 !    52.05 !    52.05
--------------------+---------+---------+---------
                      Total                  52.05 dBA
```

TOTAL Leq FROM ALL SOURCES: 52.05

```
STAMSON 5.0        SUMMARY REPORT        Date: 25-01-2020 09:26:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR4D.te             Time Period: 1 hours
```

Description: POR 4 - Daytime (Lowest Volume Hour) - No Trucks

```
Road data, segment # 1: Unity Road
----------------------------------
Car traffic volume  :   127 veh/TimePeriod
Medium truck volume :    10 veh/TimePeriod
Heavy truck volume  :     0 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Unity Road
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary
--------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Unity Road       !     0.50 !    44.65 !    44.65
--------------------+---------+---------+---------
                      Total                  44.65 dBA
```

TOTAL Leq FROM ALL SOURCES: 44.65

```
STAMSON 5.0        SUMMARY REPORT        Date: 25-01-2020 09:27:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR12_13.te          Time Period: 1 hours
```

Description: POR 12 - Daytime (Lowest Volume Hour) - No Trucks

```
Road data, segment # 1: Unity Road
----------------------------------
Car traffic volume  :   127 veh/TimePeriod
Medium truck volume :    10 veh/TimePeriod
Heavy truck volume  :     0 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Unity Road
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  20.00 m
Receiver height           :   2.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary
--------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Unity Road       !     0.50 !    58.24 !    58.24
--------------------+---------+---------+---------
                      Total                  58.24 dBA
```

TOTAL Leq FROM ALL SOURCES: 58.24

```
STAMSON 5.0        SUMMARY REPORT        Date: 25-01-2020 09:28:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR13D.te            Time Period: 1 hours
```

Description: POR 13 - Daytime (Lowest Volume Hour) - No Trucks

```
Road data, segment # 1: Unity Road
----------------------------------
Car traffic volume  :   127 veh/TimePeriod
Medium truck volume :    10 veh/TimePeriod
Heavy truck volume  :     0 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Unity Road
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  20.00 m
Receiver height           :   4.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary
--------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Unity Road       !     0.50 !    58.42 !    58.42
--------------------+---------+---------+---------
                      Total                 58.42 dBA
```

TOTAL Leq FROM ALL SOURCES: 58.42

Appendix 6

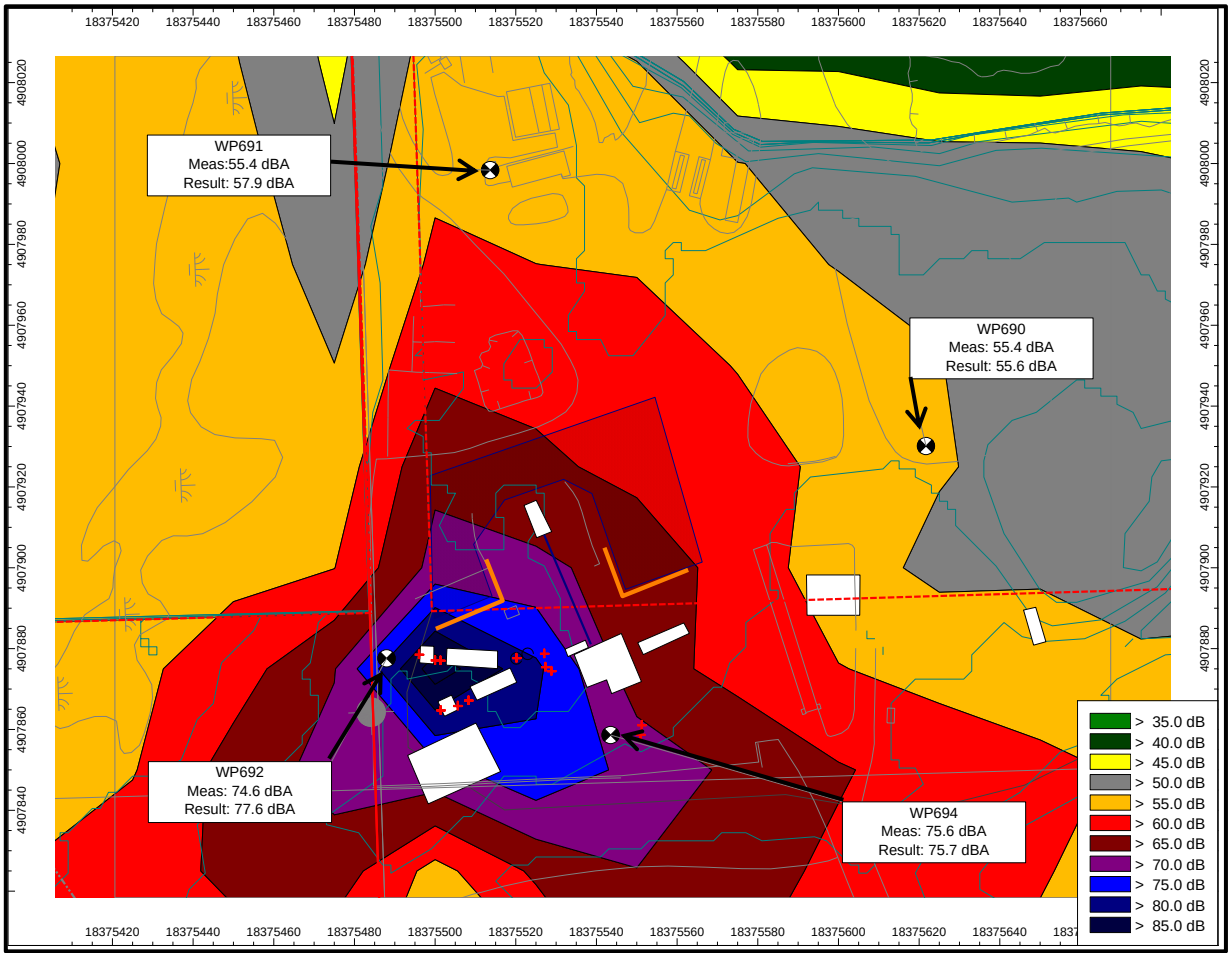
Measurements of Noise from the Overall RMC Plant

Contents:

Table A6.1 Measured Sound Pressure Level of Noise from the Overall RMC Plant at Far Field Measurements Locations

Location	Type	Spectra (dB)											Direction	Description
		31.5	63	125	250	500	1000	2000	4000	8000	A	lin		
WP690	Li	67.7	66.8	56.9	56.1	52.6	50.4	47.1	40.6	31.9	55.4	83.1	To POR 2, 3 and 4 (Northeast)	Measurement 18th October 2019
WP691	Li	66.2	66.9	60.1	62.0	49.6	48.0	45.5	41.3	31.8	55.4	81.1	To POR 1 (North)	Measurement 18th October 2019
WP692	Li	67.4	79.2	74.0	75.0	69.7	71.2	65.6	60.7	52.3	74.6	82.4	To POR 11 and 12 (West)	Measurement 18th October 2019
WWP694	Li	70.4	78.2	75.1	76.7	71.2	70.3	68.9	62.8	54.4	75.6	83.9	To POR 6 and 7 (South)	Measurement 18th October 2019

Figure A6.1 Prediction Results with comparison to Measured Sound Pressure Level at Far Field Measurements Locations



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- Environmental noise and vibration assessments, Environmental Compliance Approval (ECA). Noise assessment for land use planning
- Architectural and building acoustics, acoustics of office spaces, meeting rooms, auditoriums and studios, noise and vibration control of building mechanical services.
- Industrial noise and vibration assessment and control.
- Transportation noise and vibration.

PROFESSIONAL EXPERIENCE:

Hugh Williamson is a professional engineer with many years of experience in the measurement, analysis and control of noise and vibration. Freefield Ltd. was incorporated in 2017 and provides consulting services in architectural, building, industrial, transportation and environmental acoustics and vibration. Clients include architects, engineering firms, industrial firms and government departments. Prior to joining Freefield Ltd. Hugh Williamson founded and directed Hugh Williamson Associates Inc. which specialized in consulting services in architectural, building, industrial, transportation and environmental acoustics and vibration. His career included extensive periods in industry as well as university level research and teaching. He is a former Director of the Acoustics and Vibration Unit at the Australian Defence Force Academy. He has published over 50 engineering and scientific papers and has been an invited speaker on noise and vibration at national and international conferences. He has more than 25 years of experience as a consultant.

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- Architectural and building acoustics, acoustics of office spaces, meeting rooms, auditoriums and studios, noise and vibration control of building mechanical services.
- Industrial noise and vibration assessment and control.
- Transportation noise and vibration.
- Design services including sketch design, design development (development / permit applications), contract documents, tendering and contract administration.

PROFESSIONAL EXPERIENCE:

Michael Wells is a professional Architect registered in NSW, Australia, with many years of experience in the measurement, analysis and control of noise and vibration. Michael Wells is a founding Director of Freefield Ltd. which was incorporated in 2017, and provides consulting services in architectural, building, industrial, transportation and environmental acoustics and vibration. Clients include architects, engineering firms, industrial firms and government departments. Prior to establishing Freefield Ltd., his career included working for Hugh Williamson Associates Inc. specializing in acoustics, noise and vibration consulting services, and, the founding of Michael Wells Architect in Sydney, Australia, specializing in the design of institutional, commercial and residential projects. He is the former Director of Architectural Workshops Australia and Vision Blue Pty Ltd. He has more than 15 years of experience as a consultant.

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