October 2017

COLACEM CANADA INC.
L'ORIGNAL, ONTARIO

Noise Environmental Compliance Approval Cumulative Effects Study

Submitted to:
Colacem Canada Inc.
2540, Boulevard Daniel Johnson, Bureau 808
Laval, Quebec

REPORT

Report Number: 1529718

Distribution:

E-Copy - Colacem Canada Inc.
E-Copy - Golder Associates Ltd.

Golder Associates

Document Version Control

This Noise Environmental Compliance Approval Cumulative Effects Study (ECA CES) documents the combined operations of Colacem Canada Inc.'s proposed new Portland cement manufacturing facility and adjacent existing Quarry. This document has been prepared in general accordance with requests made by Review Engineers at the Ontario Ministry of the Environment and Climate Change (MOECC). This version control will allow facility personnel, compliance auditors, or the MOECC to track and monitor any changes over time.

Version	Date	Revision Description	Prepared By	Reviewed By (Facility Contact)
1.0	October 2017	N/A	Golder Associates Ltd.	Marc Bataille

Executive Summary

Colacem Canada Inc. (Colacem) retained Golder Associates Ltd. (Golder) to prepare an Acoustic Assessment Report (AAR) in support of an application for an Environmental Compliance Approval (ECA) considering Air and Noise emissions (under Section 9 of the Ontario *Environmental Protection Act*) for the proposed new Portland cement manufacturing facility located at Lot 217, Parcel M100, County Road 17, United Counties of Prescott-Russell, L'Orignal, Ontario (the Facility). Through the review of the ECA application, Review Engineers at the Ontario Ministry of the Environment and Climate Change (MOECC) requested that a cumulative assessment be completed, which considers the combined noise levels from the proposed Facility and the existing active quarry (the Quarry) located immediately to the west of the Facility that is also owned and operated by Colacem.

This Noise Environmental Compliance Approval Cumulative Effects Study (ECA CES) documents the combined operations of the Facility and the adjacent Quarry, starting in the year 2019 when the Facility is expected to be commissioned. The location of the Facility and Quarry is presented in Figure 1 – Site Location Plan.

The purpose of the assessment is to evaluate the overall sound emissions of the Facility and Quarry with respect to MOECC noise guidelines. This report is not intended to specifically provide a status of noise compliance for the proposed Facility. For the assessment of noise compliance of the proposed Facility, please refer to the AAR Version 1.1 (Golder 2017 AAR) prepared in support of the ECA application. Rather, this report has been prepared to provide stakeholders with an analysis of the potential cumulative noise impacts of from the proposed Facility and existing Quarry, starting in the year 2019 when the Facility is expected to be commissioned.

The Facility will have the capacity to produce 3,000 tonnes of clinker per day, with an estimated annual production of 1.16 Million tonnes of cement. The Facility can operate up to 24 hours per day, 7 days per week, 52 weeks per year. Additional information is provided in the Golder 2017 AAR. The Quarry includes Portable Crushing Equipment (the Portable Crushing Plant), Asphalt Plant and Lime Plant. These activities typically operate between 7:00 am and 5:00 pm but at times can operate up to 24 hours per day.

All relevant sound levels for sources were supported by onsite sound level measurements, manufacturers' data, information from Colacem or their designate and/or Golder's database of similar sources. Noise level predictions were generated using this data. Due to the nature of the stationary sources, the Facility is not expected to be a significant source of operations vibration.

Consistent with the Golder 2017 AAR, five (5) locations have been identified as being representative of the most sensitive Point(s) of Reception (POR(s)) in the vicinity of the Facility in accordance with NPC 300 guidelines. Elevated background sound levels due to existing road traffic were investigated and applicable limits were established in accordance with MOECC accepted practices. Based on the results of this assessment, sound levels from the Facility and Quarry operations, on the surrounding PORs, are expected to be at or below the applicable MOECC sound level limits, starting in the year 2019 when the proposed Facility is expected to be commissioned.

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APPENDICES

1.0 INTRODUCTION

Colacem Canada Inc. (Colacem) retained Golder Associates Ltd. (Golder) to prepare an Acoustic Assessment Report (AAR) in support of an application for an Environmental Compliance Approval (ECA) considering Air and Noise emissions (under Section 9 of the Ontario *Environmental Protection Act*) for the proposed new Portland cement manufacturing facility located at Lot 217, Parcel M100, County Road 17, United Counties of Prescott-Russell, L'Orignal, Ontario (the Facility). Through the review of the ECA application, Review Engineers at the Ontario Ministry of the Environment and Climate Change (MOECC) requested that a cumulative assessment be completed, which considers the combined noise levels from the proposed Facility and the existing active quarry (the Quarry) located immediately to the west of the Facility that is also owned and operated by Colacem. This Noise Environmental Compliance Approval Cumulative Effects Study (ECA CES) documents the combined operations of the Facility and the adjacent Quarry, starting in the year 2019 when the Facility is expected to be commissioned. The location of the Facility and Quarry is presented in Figure 1 – Site Location Plan.

The purpose of the assessment is to evaluate the overall sound emissions of the Facility and Quarry with respect to MOECC noise guidelines. This report is not intended to specifically provide a status of noise compliance for the proposed Facility. For the assessment of noise compliance of the proposed Facility, please refer to the AAR Version 1.1 (Golder 2017 AAR) prepared in support of the ECA application. Rather, this report has been prepared to provide stakeholders with an analysis of the potential cumulative noise impacts of from the proposed Facility and existing Quarry, starting in the year 2019 when the Facility is expected to be commissioned.

A site location plan showing the location of the Facility, the Quarry, and the most sensitive Point(s) of Reception (POR[s]) is provided in Figure 1. Noise sensitive PORs were selected that are representative of sensitive receptors surrounding the Facility and Quarry. Consistent with the Golder 2017 AAR, five (5) locations have been selected to be representative of the existing PORs and vacant lots, labelled as POR01 to POR05 in Figure 2. POR03 is approximately 30 metres from the closest stationary noise source assessed in the Golder 2017 AAR.

A site layout plan for the Quarry, showing the locations of the significant noise sources, is provided in Figure 2. The site layout plan of the Facility is shown in the Golder 2017 AAR. The surrounding lands are used for rural, commercial, aggregate-quarry and agricultural purposes. A zoning map for the property and surrounding areas is provided in Appendix A.

Sound level limits for the Facility and Quarry operations on neighbouring PORs were established in accordance with MOECC guidelines. Elevated background sound levels due to road traffic were investigated and applicable sound level limits were established in accordance with MOECC accepted practices. Using information obtained from Colacem sites, manufacturers' data, information from Colacem or their designate and Golder's database of similar sources, noise predictions of the Facility and Quarry operations onto neighbouring PORs were completed to determine the potential noise impacts. To help understand the analysis and recommendations made in this report, a brief discussion of noise terminology is provided in Appendix B.

2.0 FACILITY DESCRIPTION

The following describes the Facility and Quarry operations due to stationary noise sources.

2.1 The Proposed Cement Manufacturing Facility

For a description of the proposed Facility operations, see Section 2.0 of the Golder 2017 AAR.

2.2 The Quarry

2.2.1 Site Activities and Equipment

The Quarry primary activities expected in 2019 include Portable Crushing Equipment (the Portable Crushing Plant), an Asphalt Plant and a Lime Plant. The Portable Crushing Plant operates on the Quarry floor and is supported by various types of heavy truck traffic. The following is a summary of the schedule for each primary Quarry activity.

Quarry Activity	Hours of Operation
Portable Crushing Plant	0700 - 2300 (Typically - 10 hours per day)
Lime Plant	0700 - 2300 (Typically - 10 hours per day, January to August) 0000 - 2400 (Typically - 24 hours per day, September to December)
Asphalt Plant	0700 - 2300 (Typically - 12 hours per day)
Quarry Deliveries	0700 - 2300 (Typically - 10 hours per day)

The equipment associated with the Quarry in 2019 during the predictable worst case operating scenario are discussed below. Unless otherwise noted, Golder conservatively assessed the equipment operating the entire hour in any one hour period:

- Asphalt Plant:
  - Dust Collector
  - Burner
  - Dryer
  - Screen
  - Asphalt Delivery trucks – 5 loads per hour.
- Lime Plant:
  - Crusher
  - Feeding Hopper
  - Material transfer (operates no more than 20 minutes in any one hour period)
  - Silo

- Asphalt/Lime Plant Heavy Truck Traffic:
  - CAT 960H (or equivalent) Front End Wheel Loader:
    - Lime Plant feeding hopper loaded approximately every 20 minutes
    - Asphalt Plant feeding hopper loaded approximately every 20 minutes
- Delivery Loading at Existing Grade:
  - CAT 980G (or equivalent) Front End Wheel Loader. Operates no more than 15 minutes in any one hour period.
- Portable Crushing Plant:
  - Up to two Feeding Hoppers
  - Up to two Crushers
  - Up to three Screens.
- Quarry Floor Heavy Truck Traffic:
  - Two Kenworth (or equivalent) Tandem Dump Trucks
  - Terex TA27 (or equivalent) Off Highway Dump Truck
  - CAT 988G (or equivalent) Front Wheel End Wheel Loader
    - Transfers up to 30 loads from the working quarry face to the Portable Crushing Plant feeding hopper.
    - Loads quarry delivery trucks.
  - Quarry Delivery Trucks – 15 loads per hour.
  - CAT 980G (or equivalent) Loader for loading of Delivery Trucks. Operates no more than 30 minutes in any one hour period.
- Water Truck
- Grader.

2.2.2 Operational Plan – Extraction Site Phasing/Sequencing Plan

The operational plan for the Quarry extraction operations is divided into five (5) phases and all occur above the water table. The limit of extraction will maintain a minimum setback distance of 15 m to the property boundary. The Quarry extraction operations in 2019 are expected to be within Phase 1. The Quarry is permitted to extract to a quarry floor elevation of 2 m above sea level (A.S.L). According to the operational plan, extraction will begin in any phase once the previous phase has been depleted and will be limited to the setback distances from the boundary of each phase. The stripping of any subsequent phase may occur at the same time as a phase is being extracted. Extraction of Phase 1 may occur in any cardinal direction. Extraction of Phases 2 through 5 occur in a northerly direction, beginning along the southern boundary of the phase. The existing entrance to the quarry floor will remain as is, throughout all five extraction phases. Refer to Figure 3 for the Site Phasing/Sequencing Plan.

The Portable Crushing Plant feeding hopper will be located at a maximum distance of 120 m (≈400 ft.) to the working face, with the wheel loader operating between them. The typical working face height is approximately 14 m (i.e., ≈45 ft.), but is permitted to reach heights of approximately 23 m (i.e., ≈75 ft.). The Portable Crushing Plant and Quarry Floor Heavy Truck Traffic, as described above, will be located on the Quarry floor at a minimum depth of approximately 14 m or deeper from the existing grade. The operations of the crushers and screens associated with the Portable Crushing Plant will operate as follows as extraction progresses through the different phases:

- Phase 1
  - Southwest Quadrant
    - All screens and crushers associated with the Portable Crushing Plant will operate behind a working face that has a minimum height of 14 m. The equipment must operate within 30 m of the working face, providing shielding to all PORs; or
    - All screens and crushers associated with the Portable Crushing Plant must be shielded to POR01 by operating within 30 m of the working face that has a minimum height of 14 m and the equipment must operate within 10 m of a 5 m high acoustical barrier in the direction of the remaining PORs (i.e. POR02 to POR05).
  - Northwest, Southeast and Northeast Quadrant
    - All PORs must be shielded from the screens and crushers associated with the Portable Crushing Plant by either operating within 30 m of the working face that has a minimum height of 14 m or operating within 10 m of a 5 m high acoustical barrier.
- Phases 2 & 3
  - All screens and crushers associated with the Portable Crushing Plant must operate within 10 m of a 5 m high acoustical barrier that breaks the line of sight of all PORs.
- Phases 4 & 5
  - No additional operating conditions for these phases are required.

3.0 NOISE SOURCE SUMMARY

All the identified primary noise sources associated with the Quarry are summarized in the attached Table A1, and illustrated in Figure 2. Noise sources associated with the Facility are presented in Section 3.0 of the Golder 2017 AAR. The respective noise data is provided in Appendix C. Not all of the identified primary noise sources operate continuously during a 24 hour period and/or an entire one hour period during the predictable worst case hour period. These respective operating schedules were considered in the noise assessment.

Worst Case Operation Scenarios

As the Facility will be operational 24 hours a day, with different equipment operating at different times of the day, the predictable worst case operating scenario was established and considered for the daytime, evening, and nighttime periods. The operating time for each of the identified primary sources is presented in the Sample Calculation, Appendix D.

4.0 POINTS OF RECEPTION

A total of five (5) PORs were identified, consistent with the Golder 2017 AAR, as being representative of the sensitive receptors in the vicinity of the Facility and Quarry as shown in Figure 1. Table 1 below summarizes each identified POR. Vacant lots exist directly adjacent to the Facility. However, the identified existing PORs are considered to be representative of the most sensitive PORs.

Table 1: Point of Reception Summary

POR ID	POR Description	Location
POR01_POW	One-Storey Residence_Plane of Window	Southwest of Facility, along the north façade
POR01_OUT	One-Storey Residence_Outdoor Location	Southwest of Facility, near the north façade
POR02_POW	Two-Storey Residence_Plane of Window	South of Facility, along the north façade
POR02_OUT	Two-Storey Residence_Outdoor Location	South of Facility, near the north façade
POR03_POW	Two-Storey Residence_Plane of Window	South of Facility, along the north façade
POR03_OUT	Two-Storey Residence_Outdoor Location	South of Facility, near the north façade
POR04_POW	One-Storey Residence_Plane of Window	East of Facility, along the north façade
POR04_OUT	One-Storey Residence_Outdoor Location	East of Facility, near the north façade
POR05_POW	Two-Storey Residence_Plane of Window	East of Facility, along the north façade
POR05_OUT	Two-Storey Residence_Outdoor Location	East of Facility, near the north façade

5.0 ASSESSMENT CRITERIA

The PORs located in the vicinity of the Facility and Quarry are in an area defined as Class 3 as per MOECC publication NPC 300. A Class 3 area can best be described as a rural area.

In assessing stationary noise sources, the MOECC has established exclusionary Plane of Window (POW) and Outdoor sound level limits for Class 3 areas. The POW sound level limit for the noise sensitive receptors in a Class 3 area is described as follows:

> *The sound level limit at a POW POR is set as the higher of either the applicable exclusionary limit of 45 dBA in the daytime period of 07:00-19:00, 40 dBA in the evening period of 19:00-23:00 and 40 dBA in the night-time period of 23:00-07:00, or the minimum background sound level that occurs or is likely to occur during the time period corresponding to the operation of the stationary source under impact assessment.*

The Outdoor sound level limit for the noise sensitive receptors in a Class 3 area is described as follows:

> *The sound level limit at an outdoor POR is set as the higher of either the applicable exclusionary limit of 45 dBA in the daytime period of 07:00-19:00 and 40 dBA in the evening period of 19:00-23:00, or the minimum background sound level that occurs or is likely to occur during the time period corresponding to the operation of the stationary source under impact assessment. In general, the outdoor POR will be protected during the night-time as a consequence of meeting the sound level limit at the adjacent POW.*

The One Hour Equivalent Sound Level (L_{eq}) MOECC exclusionary sound level limits for a POR in a Class 3 area are summarized in Table 2 below.

Table 2: Sound Level Limits for Class 3 Area

Time Period	Class 3 POW MOECC Exclusionary Sound Level Limit (dBA)	Class 3 Outdoor MOECC Exclusionary Sound Level Limit (dBA)
Daytime (07:00 – 19:00)	45	45
Evening (19:00 – 23:00)	40	40
Night-time (23:00 – 07:00)	40	N/A

The PORs are directly exposed to traffic along County Road 17. As described in the Golder 2017 AAR, due to the proximity to this roadway and traffic volumes, Golder investigated if elevated noise levels existed at the PORs. Road traffic noise predictions were carried out at the most sensitive location of each POR using STAMSON V5.03 (STAMSON). STAMSON is issued by the MOECC and consistent with the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT). Road traffic data was obtained from the *CIMA Colacem Canada Cement Plant L'Orignal Traffic Impact Study* dated October 7, 2015. Using the available traffic data, it was determined elevated levels exist for many of the identified PORs locations, during the various time periods of the day. The minimum expected noise levels are presented in the Table 3 below. Road traffic data and STAMSON road traffic predictions are provided in the Golder 2017 AAR.

Table 3: Applicable Sound Level Limits

POR ID	Daytime (07:00 – 19:00) [1]	Evening (19:00 – 23:00) [1]	Nighttime (23:00 – 07:00) [1]
POR01_POW	46	46	40 [2]
POR01_OUT	49	49	-
POR02_POW	60	60	53
POR02_OUT	63	63	-
POR03_POW	57	57	50
POR03_OUT	64	64	-
POR04_POW	46	46	40 [2]
POR04_OUT	49	49	-
POR05_POW	48	48	41
POR05_OUT	47	47	-

Notes:
1 STAMSON Road Traffic Prediction – Predicted minimum one hour LEQ unless otherwise noted
2 MOECC Class 3 Area Exclusionary Sound Level Limits

6.0 IMPACT ASSESSMENT

6.1 Method

All relevant sound levels for sources were supported by onsite sound level measurements, manufacturers' data, information from Colacem or their designate and/or Golder's database of similar sources. Noise data has been summarized in Appendix C. Noise impact predictions were generated using this data.

Source sound pressure level measurements were carried out at the Quarry on September 6 and 19th, 2017 using a Larson Davis 831 sound level meter/real-time analyzer. The instruments were calibrated before and after all sound level measurements and the calibration verified. All measuring equipment used in this study meets the MOECC requirements.

A predictive analysis was carried out using the commercially available software package Cadna/A. Geometrical spreading, attenuation from barriers, ground effect and air absorption were included in the analysis as determined from ISO 9613 (Part 2), which is the current standard accepted by the MOECC for use for outdoor sound propagation predictions. It should be noted that this standard makes provisions to include a correction to address for downwind or ground based temperature inversion conditions. Noise predictions have been made assuming a downwind or moderate temperature inversion conditions for all PORs, a design condition consistent with the accepted practice of the MOECC.

As described in ISO 9613 (Part 2), ground factor values that represent the ground effect on sound levels range between 0 and 1. Based on the specific site conditions, the ground factor values used in the modelling were a ground factor value of 0.3 for the surface on the property of the Quarry which is made up of a combination of asphalt, concrete, gravel and landscaped areas and a ground factor value of 1.0 for the surrounding area which is mainly made up of grassed or treed areas in between the Quarry and the most sensitive PORs surrounding the Quarry and Facility.

6.2 Results

The Facility and Quarry operations, as described in Section 3.0, were modelled to determine the predictable worst case cumulative noise levels of each phase at the identified PORs. Sound levels were predicted at each POR location for both POW and Outdoor PORs. Outdoor POR sound levels (at a height of 1.5 m) were predicted by calculating sound levels within the POR property boundaries and if applicable within 30 m of the POW, consistent with NPC 300 requirements.

Table A2 attached provides a summary of these predictable worst case noise levels of each phase for each of the identified receptor locations. Sample calculations are provided in Appendix D.

The overall predicted noise levels at the identified PORs, due to the cumulative operation of the Facility and Quarry are expected to be at or below the MOECC applicable sound level limits.

7.0 CONCLUSION

Colacem Canada Inc. (Colacem) retained Golder Associates Ltd. (Golder) to prepare an Acoustic Assessment Report (AAR) in support of an application for an Environmental Compliance Approval (ECA) considering Air and Noise emissions (under Section 9 of the Ontario Environmental Protection Act) for the proposed new Portland cement manufacturing facility located at Lot 217, Parcel M100, County Road 17, United Counties of Prescott-Russell, L'Orignal, Ontario (the Facility). Through the review of the ECA application, Review Engineers at the Ontario Ministry of the Environment and Climate Change (MOECC) requested that a cumulative assessment be completed, which considers the combined noise levels from the proposed Facility and the existing active quarry (the Quarry) located immediately to the west of the Facility that is also owned and operated by Colacem.

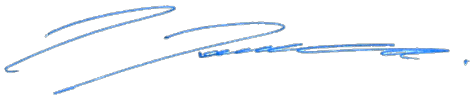
This Noise Environmental Compliance Approval Cumulative Effects Study (ECA CES) documents the combined operations of the Facility and the adjacent Quarry, starting in the year 2019 when the Facility is expected to be commissioned. The purpose of the assessment is to evaluate the overall sound emissions of the Facility and Quarry with respect to MOECC noise guidelines. This report is not intended to specifically provide a status of noise compliance for the proposed Facility. For the assessment of noise compliance of the proposed Facility, please refer to the AAR Version 1.1 (Golder 2017 AAR) prepared in support of the ECA application.

Using information obtained from Colacem sites, manufacturers' data, information from Colacem or their designate and/or Golder's database of similar sources, Golder predicted the noise levels on the identified Point(s) of Reception during the combined predictable worst case hour of operation of the proposed new Portland cement manufacturing facility and the adjacent existing active Quarry. The predictive analysis indicates the noise emissions, associated with the proposed new Portland cement manufacturing facility and the adjacent existing active Quarry, are expected to be below or at the applicable Ontario Ministry of the Environment and Climate Change sound level limits at all identified PORs.

Report Signature Page

GOLDER ASSOCIATES LTD.

Stefan Cicak, P.Eng.
Acoustics, Noise and Vibration Engineer



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Associate/Acoustics, Noise and Vibration Engineer

SC/SD/JT/ng

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TABLES

Table A1: Facility Source Summary

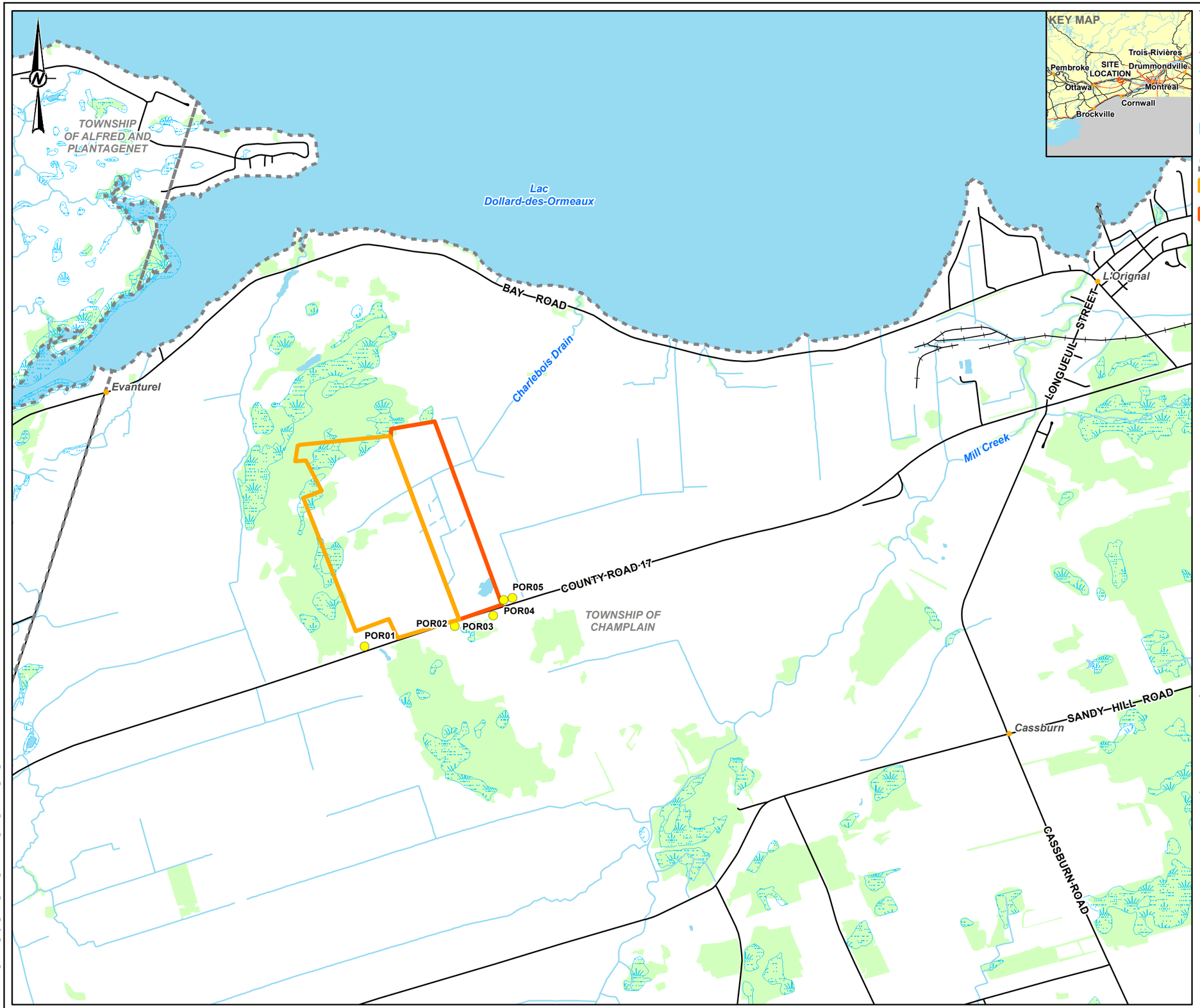
Source ID	Source Description	Overall Sound Power Level (dBA)
A_P01	Asphalt Plant Dust Collector Top of Stack	98
A_P02	Asphalt Plant Dust Collector Blower and Drive Motor	106
A_P03	Asphalt Plant Dryer	104
A_P04	Asphalt Plant Burner	102
A_P05	Asphalt Plant Burner Blower Fan	106
A_P06	Asphalt Plant Compressor	100
A_P07	Asphalt Plant Truck - Idling	99
Q_P01	Crusher - Plant 5	116
Q_P02	Crusher - Plant 7	115
Q_P03	Screen - Plant 8	114
Q_P04	Screen - Plant 9	115
Q_P05	Screen - Plant 12	108
Q_P06	Generator	114
Q_P07	CAT 988 Loading	107
Q_P08	CAT 980 Loading Delivery Trucks	108
S_P01	Stripping - Excavator	109
S_P02	Stripping - Terex	105
S_P03	Stripping - Dozer	110
L_P01	Lime Plant Ducting	113
L_P02	Lime Plant Building	103
L_P03	Lime Plant Hopper	115
L_P04	CAT 980 Loader	108
A_L01	Asphalt Plant Truck Passby	99
A_L02	CAT 960 Loader	108
Q_L01	Delivery Truck	99
Q_L02	Water Truck	107
Q_L03	Terex	105
Q_L04	Kenworth #1	103
Q_L05	Kenworth #2	103
Q_L06	Grader	110
Q_L07	CAT 988 Loader	108
L_L01	CAT 960 Loader	108
T01	Limestone Truck - 65 ton	112
T02	Petcoke Truck - 35 ton	103
T04	Shale Truck - 35 ton	103
T05	Iron Ore Truck - 35 ton	103
T06	Silica Sand Truck - 35 ton	103
T08	Silica Fume Truck - 35 ton	103
T09	Fly Ash Truck - 35 ton	103
T10	Cement Truck - 35 ton	103
T11	Water Truck	103

Note 1: If a source has tonal characteristics, the tonal penalty is not included in the Sound Power Level
Note 2: Sound Power Levels do not include time weighting

Table A2: Acoustic Assessment Summary

POR ID	Phase 1 Predictable Worst Case Sound Pressure Level (dBA)			Phase 2 Predictable Worst Case Sound Pressure Level (dBA)			Phase 3 Predictable Worst Case Sound Pressure Level (dBA)			Phase 4 Predictable Worst Case Sound Pressure Level (dBA)			Phase 5 Predictable Worst Case Sound Pressure Level (dBA)			Performance Limit (dBA)			Meets Performance Limit (Yes/No)
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	
POR01_POW	46	45	36	46	45	36	46	45	36	45	44	36	45	44	36	46	46	40	Yes
POR01_OUT	46	45	-	46	45	-	46	45	-	45	44	-	45	44	-	49	49	-	Yes
POR02_POW	55	54	51	55	53	51	55	54	51	55	53	51	55	53	51	60	60	53	Yes
POR02_OUT	53	52	-	53	52	-	53	52	-	53	52	-	53	52	-	63	63	-	Yes
POR03_POW	48	46	41	47	46	41	47	45	41	47	46	41	47	46	41	57	57	50	Yes
POR03_OUT	46	45	-	46	44	-	46	44	-	46	44	-	46	45	-	64	64	-	Yes
POR04_POW	46	45	39	46	44	39	46	45	39	46	45	39	46	45	39	46	46	40	Yes
POR04_OUT	46	45	-	46	44	-	46	45	-	46	45	-	46	45	-	49	49	-	Yes
POR05_POW	46	45	40	46	45	40	46	45	40	47	45	40	46	45	40	48	48	41	Yes
POR05_OUT	45	44	-	45	44	-	45	44	-	45	44	-	45	44	-	47	47	-	Yes

FIGURES



LEGEND

- POINT OF RECEPTION (POR)
- ROAD
- WATERCOURSE
- WATERCOURSE, INTERMITTENT
- WATERBODY
- WETLAND
- WOODED AREA
- MUNICIPAL BOUNDARY
- EXISTING ACTIVE QUARRY PROPERTY BOUNDARY
- PROPOSED CEMENT MANUFACTURING FACILITY PROPERTY BOUNDARY

0 1,000 2,000

1:30,000 METRES

REFERENCE(S)

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CLIENT
COLACEM CANADA

PROJECT
L'ORIGNAL CEMENT PLANT NOISE ENVIRONMENTAL COMPLIANCE APPROVAL CUMULATIVE EFFECTS STUDY

TITLE
SITE LOCATION PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-06
DESIGNED	JMC
PREPARED	JMC/MM
REVIEWED	SC
APPROVED	SC

PROJECT NO.	CONTROL	REV.	MAP
1529718	0013		1

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Legend

- POINT SOURCE
- LINE SOURCE
- ON-SITE BUILDINGS
- ON-SITE STRUCTURES
- EXISTING ACTIVE QUARRY PROPERTY BOUNDARY
- PROPOSED CEMENT MANUFACTURING FACILITY PROPERTY BOUNDARY

0 100 200

1:3,500 METRES

REFERENCE(S)

MNR LIO, OBTAINED 2015
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PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

CLIENT
COLACEM CANADA

PROJECT
L'ORIGNAL CEMENT PLANT NOISE ENVIRONMENTAL COMPLIANCE APPROVAL CUMULATIVE EFFECTS STUDY

TITLE
SITE LAYOUT PLAN - TYPICAL

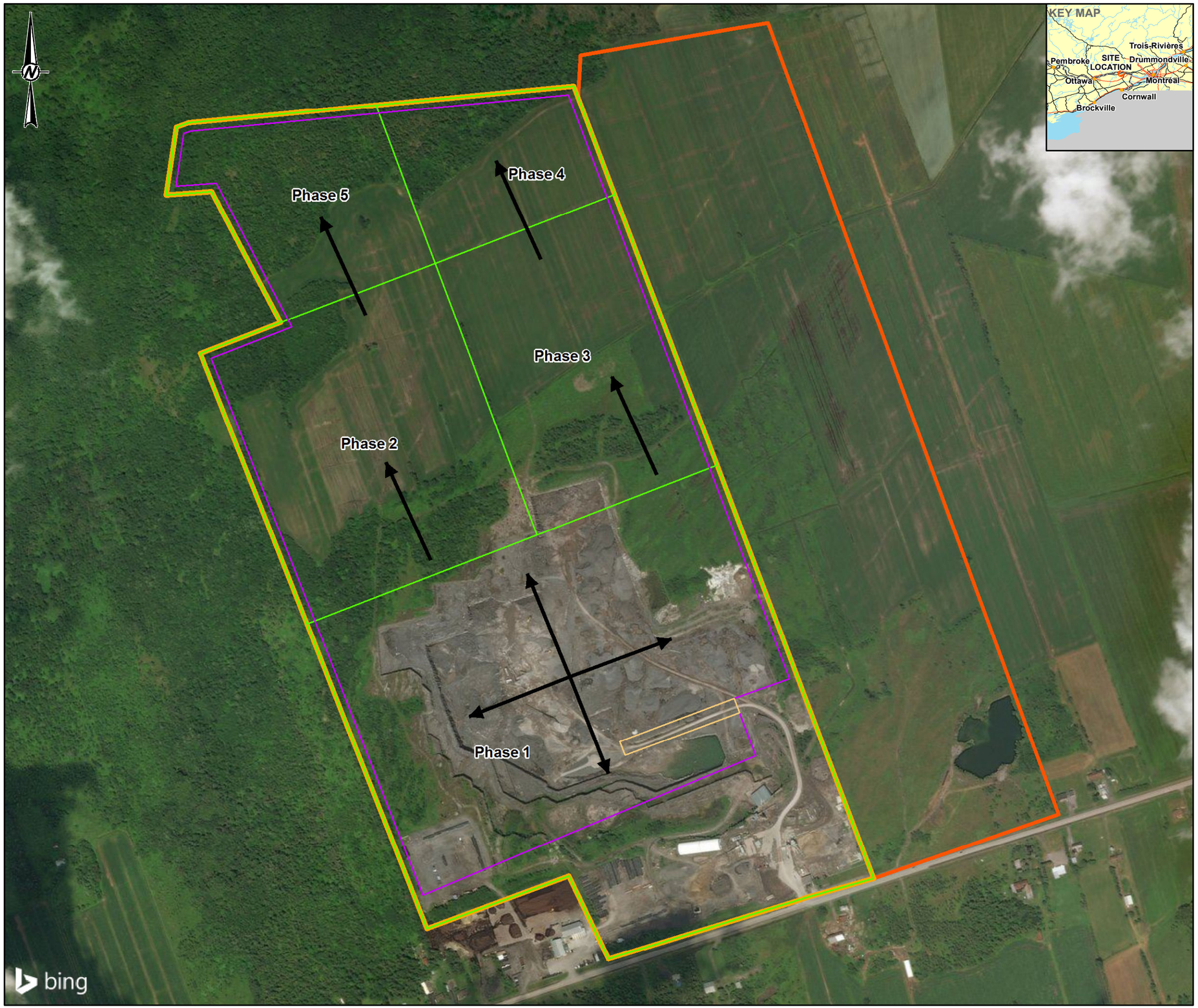
CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-17
DESIGNED	JMC
PREPARED	JMC/MM
REVIEWED	SC
APPROVED	SC

PROJECT NO.	CONTROL	REV.	MAP
1529718	0013		2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm 0

S:\Clients\Colacem_Canada\4_Original_Cement_Plant\59_PRO\1529718_EIS\40_PROD\0013_Noise_Cumulative\mxd\fig-cds1529718-0013-RN-0002.mxd



LEGEND

- QUARRY RAMP
- GENERAL DIRECTION OF EXTRACTION
- GENERAL LIMIT OF EXTRACTION
- EXISTING ACTIVE QUARRY PROPERTY BOUNDARY
- PROPOSED CEMENT MANUFACTURING FACILITY PROPERTY BOUNDARY
- PHASE BOUNDARY

0 250 500

1:7,000 METRES

REFERENCE(S)

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PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

CLIENT
COLACEM CANADA

PROJECT
L'ORIGNAL CEMENT PLANT NOISE ENVIRONMENTAL COMPLIANCE APPROVAL CUMULATIVE EFFECTS STUDY

TITLE
QUARRY PHASING PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-17
DESIGNED	JMC
PREPARED	JMC/MM
REVIEWED	SC
APPROVED	SC

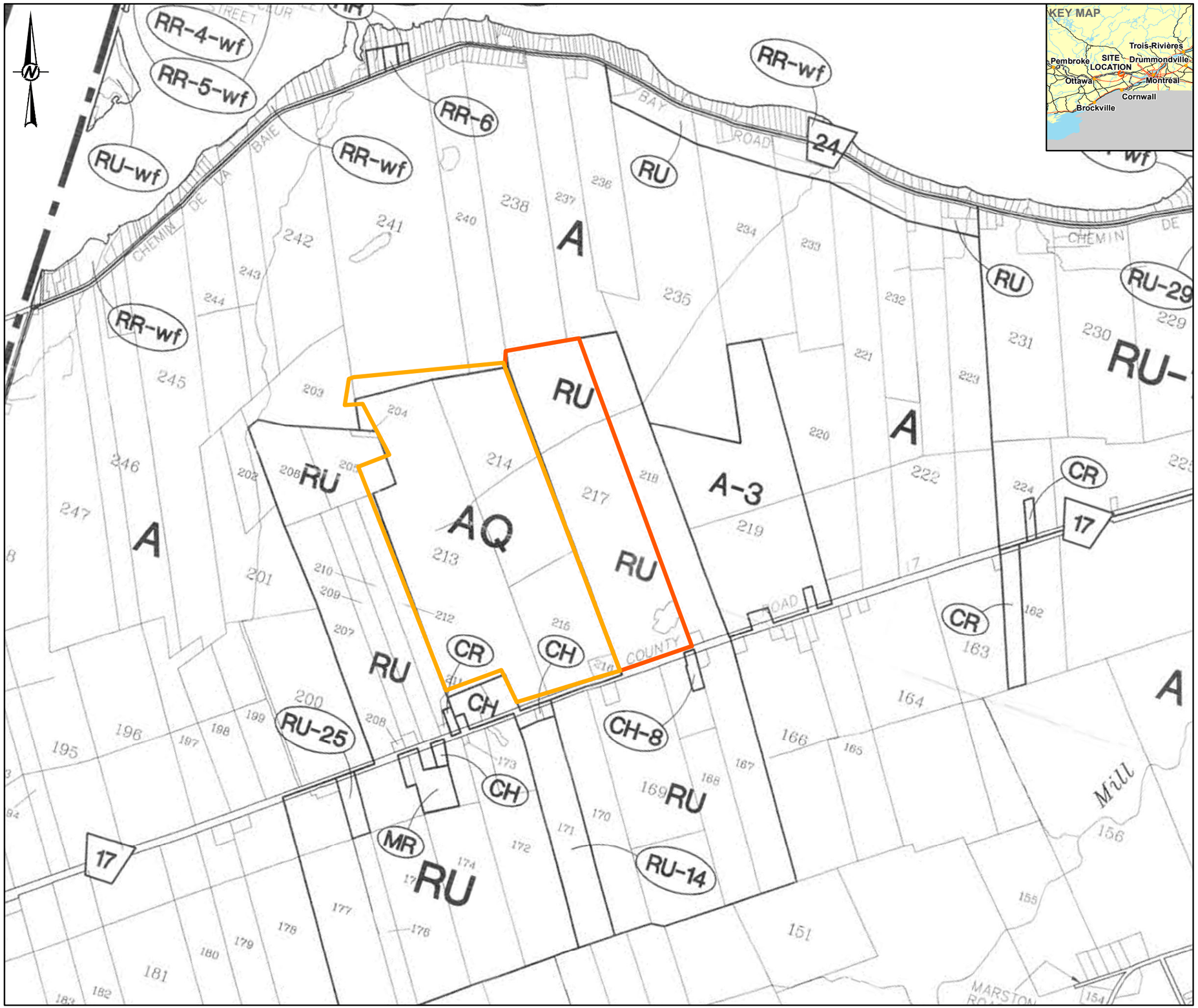
PROJECT NO.	CONTROL	REV.	MAP
1529718	0013		3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
0

S:\Clients\Colacem_Canada\L_Orignal_Cement_Plant\99_PRO\1529718_EIS\40_PROD\0013_Noise_Cumulative\GIS\cds1529718-0013-RN-0003.mxd

APPENDIX A

Zoning / Land Use Designation



LEGEND

- EXISTING ACTIVE QUARRY PROPERTY BOUNDARY
- PROPOSED CEMENT MANUFACTURING FACILITY PROPERTY BOUNDARY

A	Agriculture
AQ	Minetal Aggregate - Quarry
CH	Commercial Highway
CR	Commercial Rural
MR	Industrial Rural
RR	Residential Rural
RU	Rural

0 500 1,000

1:18,000 METRES

REFERENCE(S)

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ZONING - ZONING BY-LAW NO. 2000-75, TOWNSHIP OF CHAMPLAIN, WARD OF LONGUEUIL, SCHEDULE A
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

CLIENT
COLACEM CANADA

PROJECT
L'ORIGNAL CEMENT PLANT NOISE ENVIRONMENTAL COMPLIANCE APPROVAL CUMULATIVE EFFECTS STUDY

TITLE
LAND USE ZONING DESIGNATION PLAN

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-10-06
DESIGNED	JMC
PREPARED	JMC/MM
REVIEWED	SC
APPROVED	SC

PROJECT NO.	CONTROL	REV.	MAP
1529718	-	-	A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

S:\Clients\Colacem_Canada\4_Original_Cement_Plant\99_PRO\1529718_EIS\40_PROD\0013_Noise_Cumulative\efile:cds:1529718-0013-RN-0004.mxd

APPENDIX B

Description of Technical Terms

APPENDIX B
Description of Technical Terms

To help understand the analysis and recommendations made in this report, the following is a brief discussion of technical noise terms.

Sound pressure level is expressed on a logarithmic scale in units of decibels (dB). Since the scale is logarithmic, a sound that is twice the sound pressure level as another will be three decibels (3 dB) higher.

The noise data and analysis in this report have been given in terms of frequency distribution. The levels are grouped into octave bands. Typically, the centre frequencies for each octave band are 31.5, 63, 125, 250, 500, 1000, 2000, 4000 and 8000 Hertz (Hz.). The human ear responds to the pressure variations in the atmosphere that reach the ear drum. These pressure variations are composed of different frequencies that give each sound we hear its unique character.

It is common practice to sum sound levels over the entire audible spectrum (i.e., 20 Hz to 20 kHz) to give an overall sound level. However, to approximate the hearing response of humans, each octave band measured has a weighting applied to it. The resulting "A-weighted" sound level is often used as a criterion to indicate a maximum allowable sound level. In general, low frequencies are weighted higher, as human hearing is less sensitive to low frequency sound.

Environmental noise levels vary over time, and are described using an overall sound level known as the L_{eq}, or energy averaged sound level. The L_{eq} is the equivalent continuous sound level, which in a stated time, and at a stated location, has the same energy as the time varying noise level. It is common practice to measure L_{eq} sound levels in order to obtain a representative average sound level. The L_{90} is defined as the sound level exceeded for 90% of the time and is used as an indicator of the "ambient" noise level.

n:\active\2015\3 proj\1529718 colacem_l'orignal_champlain\07 technical studies\noise\aar update_aug2017\reports\cumulative assessment\appendix b description of technical terms\appendix b description of technical terms.docx

APPENDIX C

Noise Data

Source Name	Plant 9	Plant 8	Plant 5	Plant 7	Plant 12	Generator	Asphalt Plant DC Top of Stack	Loader - CAT 988 Pass By	Asphalt Plant DC Blower
ID	S001	S002	S003	S004	S005	S006	S007	S008	S009
Frequency (Hz)									
31.5	111	113	115	111	103	110	123	101	124
63	111	113	112	116	109	108	109	104	119
125	114	115	116	118	107	114	103	109	118
250	108	112	113	112	105	110	99	105	109
500	110	112	114	113	105	112	92	105	101
1000	108	111	110	110	98	110	89	103	96
2000	102	105	108	105	100	106	93	100	92
4000	98	100	102	100	101	104	88	91	88
8000	92	95	98	94	92	95	84	86	83
dBA	112	114	116	115	108	114	98	108	106

Source Name	Asphalt Plant Loader - CAT 960	Delivery Truck Pass By	Water Truck	Asphalt Plant DC Dryer	Asphalt Plant DC Burner	Asphalt Plant DC Burner Blower Fan	Asphalt Plant Compressor	CAT 988H Loading	Lime Plant Hopper
ID	S010	S011	S012	S016	S017	S018	S019	S020	S021
Frequency (Hz)									
31.5	101	96	105	105	130	112	102	113	120
63	104	98	109	102	117	114	91	124	116
125	109	101	115	104	107	104	94	116	116
250	105	94	103	99	100	98	93	104	115
500	105	95	102	103	93	92	95	102	105
1000	103	95	101	100	91	88	94	101	105
2000	100	92	100	93	93	91	96	98	108
4000	91	86	95	85	96	103	89	93	109
8000	86	81	87	81	92	99	85	85	105
dBA	108	99	107	104	102	106	100	107	115

Source Name	Lime Plant Building	Lime Plant Ducting	Terex	Kenworth	Asphalt Plant Truck Passby	Site Grader	Excavator	CAT D6	CAT 980 Loader
ID	S022	S023	S024	S025	S026	S030	S031	S032	S033
Frequency (Hz)									
31.5	117	110	109	112	96	106	102	106	101
63	112	115	108	106	98	109	107	109	104
125	110	110	104	100	101	114	108	114	109
250	105	107	96	97	94	113	115	113	105
500	98	101	98	98	95	106	102	106	105
1000	92	95	102	98	95	103	100	103	103
2000	93	97	98	96	92	103	100	103	100
4000	94	110	96	94	86	96	95	96	91
8000	90	106	88	85	81	88	90	88	86
dBA	103	113	105	103	99	110	109	110	108

APPENDIX D

Sample Calculation

Report (1529718_Colacem_CES_P1a_19Oct2017.cna)

CALCULATION CONFIGURATION

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (m)	3000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (m)	1000.00
Min. Length of Section (m)	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
DTM	
Standard Height (m)	40.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (°C)	10
rel. Humidity (%)	70
Ground Absorption G	1.00
Wind Speed for Dir. (m/s)	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

NOISE SOURCES

Noise Source Library

Name	ID	Type	Oktave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Bauxite Reception Bin	E01	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Schist, Silica, Iron Ore Reception Bin	E02	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Gypsum Reception Bin	E03	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Limestone Crusher Dedusting	E04	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Bauxite Dosing Bin	E05	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	

Name	ID	Type	Oktave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Iron Ore Hopper	E06	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Silica Hopper	E07	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Limestone Reclaimer Belt	E08	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Limestone Reclaimer Belt	E09	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Gypsum Reclaimer Belt	E10	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Limestone and Gypsum Belt to Cement Hopper	E11	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Costituents Belt to Cement Hopper	E12	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Raw Mill Deeding Dedusting	E13	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Raw Meal Airslide Dedusting	E14	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Raw Meal Silo Dedusting	E15	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Raw Meal Silo Extraction Dedusting	E16	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Air Lift Bin Dedusting	E17	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Kiln End Process Filter - Exhaust Stack	E18_A	Lw		0.0	90.2	99.2	93.2	92.2	90.2	84.2	79.2	78.2	94.5	101.6	
Kiln End Process Filter - Fan Casing	E18_B	Lw		93.1	100.1	101.2	105.8	98.8	88.5	86.0	80.0	77.1	100.3	108.6	
Kiln End Process Filter - Baghouse/Cyclone Casing	E18_C	Lw		103.8	108.6	96.6	93.8	87.6	81.1	80.9	78.9	77.1	91.2	110.1	
Petcoke Reception Bin	E19	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Petcoke Silos Loading Bucket Elevator Dedusting	E20	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Coarse Petcoke Silo 1 Dedusting	E21	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Coarse Petcoke Silo 2 Dedusting	E22	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Petcoke Grinding Process Filter	E23	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Pulverized Petcoke Silo 1 Dedusting	E24	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Pulverized Petcoke Silo 2 Dedusting	E25	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Alternative Fuel Process Filter	E26	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Clinker Cooler Discharge Dedusting	E27	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Clinker Reception Bin	E28	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Clinker Silo Dedusting	E29	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Clinker Extraction Dedusting for Bulk Loading	E30	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Clinker Bulk Loading Dedusting	E31	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Clinker Extraction Ddusting for Cement Hopper	E32	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Clinker Hopper Dedusting	E33	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Limestone Hopper Dedusting	E34	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Gypsum Hopper Dedusting	E35	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement 4° Costituent Hopper Dedusting	E36	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Silica Fume Silo Dedusting	E37	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Fly Ash Silo Dedusting	E38	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Mill 1 Process Filter - Exhaust Stack	E39_A	Lw		0.0	90.2	99.2	93.2	92.2	90.2	84.2	79.2	78.2	94.5	101.6	
Cement Mill 1 Process Filter - Fan Casing	E39_B	Lw		93.1	100.1	101.2	105.8	98.8	88.5	86.0	80.0	77.1	100.3	108.6	
Cement Mill 1 Process Filter - Baghouse/Cyclone Casing	E39_C	Lw		103.8	108.6	96.6	93.8	87.6	81.1	80.9	78.9	77.1	91.2	110.1	
Cement Mill 2 Process Filter - Exhaust Stack	E40_A	Lw		0.0	90.2	99.2	93.2	92.2	90.2	84.2	79.2	78.2	94.5	101.6	
Cement Mill 2 Process Filter - Fan Casing	E40_B	Lw		93.1	100.1	101.2	105.8	98.8	88.5	86.0	80.0	77.1	100.3	108.6	
Cement Mill 2 Process Filter - Baghouse/Cyclone Casing	E40_C	Lw		103.8	108.6	96.6	93.8	87.6	81.1	80.9	78.9	77.1	91.2	110.1	
Cement Mill 1 Air Slide and Bucket Elevator Dedusting	E41	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Mill 2 Air Slide and Bucket Elevator Dedusting	E42	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 1A Top Filter	E43	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 2A Top Filter	E44	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 1B Top Filter	E45	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 2B Top Filter	E46	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 1A Bulk Loading A Dedusting	E47	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 1A Bulk Loading B Dedusting	E48	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 2A Bulk Loading A Dedusting	E49	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 2A Bulk Loading B Dedusting	E50	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 1B Bulk Loading A Dedusting	E51	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 1B Bulk Loading B Dedusting	E52	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 2B Bulk Loading A Dedusting	E53	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Cement Silo 2B Bulk Loading B Dedusting	E54	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Packing Plant Line A Dedusting	E55	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Packing Plant Line B Dedusting	E56	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Concrete Mixing Plant Silo A Dedusting	E57	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Concrete Mixing Plant Silo B Dedusting	E58	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Concrete Mixing Plant Silo C Dedusting	E59	Lw		93.6	90.0	96.5	101.3	88.2	85.3	81.2	73.8	62.2	94.5	103.5	
Substation	P01	Lw		78.8	84.8	86.8	81.8	81.8	75.8	70.8	65.8	58.8	82.2	90.8	
HVAC	P02	Lw		81.7	86.5	91.3	82.5	81.4	79.0	72.5	65.9	62.2	83.7	93.7	
HVAC	P03	Lw		81.7	86.5	91.3	82.5	81.4	79.0	72.5	65.9	62.2	83.7	93.7	
HVAC	P04	Lw		81.7	86.5	91.3	82.5	81.4	79.0	72.5	65.9	62.2	83.7	93.7	
HVAC	P05	Lw		81.7	86.5	91.3	82.5	81.4	79.0	72.5	65.9	62.2	83.7	93.7	
HVAC	P06	Lw		81.7	86.5	91.3	82.5	81.4	79.0	72.5	65.9	62.2	83.7	93.7	
Loader CAT 962 - Petcoke	P07	Lw		115.9	125.1	116.7	105.6	103.6	102.8	101.8	96.5	87.3	109.0	126.2	
Loader CAT 962 - Raw Material	P08	Lw		115.9	125.1	116.7	105.6	103.6	102.8	101.8	96.5	87.3	109.0	126.2	
Limestone Truck - 65 ton	T01	Lw		108.4	114.6	120.7	114.7	102.4	105.4	105.4	97.9	89.2	112.2	122.8	
Petcoke Truck - 35 ton	T02	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Bauxite Truck - 35 ton	T03	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Shale Truck - 35 ton	T04	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Iron Ore Truck - 35 ton	T05	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Silica Sand Truck - 35 ton	T06	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Gypsum Truck - 35 ton	T07	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Silica Fume Truck - 35 ton	T08	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	

Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Fly Ash Truck - 35 ton	T09	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Bulk Loading Cement Truck - 35 ton	T10	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Water Truck	T11	Lw		106.9	106.5	102.4	94.5	96.4	100.0	96.0	94.1	86.1	103.4	111.3	
Building Exterior Façade	VA100	Li		-6.4	80.3	75.9	66.0	71.9	61.3	55.6	42.8	24.5	70.4	82.2	
Cement Mill Walls Exterior Facade	VA101	Li		-11.4	75.3	70.9	61.0	66.9	56.3	50.6	37.8	19.5	65.4	77.2	
Plant 9	S001	Lw		110.5	111.1	114.2	107.7	109.6	107.9	102.1	98.1	92.3	111.8	118.7	
Plant 8	S002	Lw		112.7	112.6	114.8	112.4	111.7	110.5	104.7	100.0	94.5	114.3	120.6	
Plant 5	S003	Lw		114.8	112.0	115.9	113.1	114.4	110.0	107.5	101.7	98.0	115.7	121.8	
Plant 7	S004	Lw		110.9	116.2	117.7	111.9	112.9	110.4	105.4	100.1	93.8	114.8	122.1	
Plant 12	S005	Lw		102.7	108.7	107.3	105.1	105.0	98.2	100.2	101.2	92.0	107.7	113.8	
Generator	S006	Lw		110.0	108.4	113.8	110.0	111.6	110.0	106.3	103.6	94.8	114.4	119.1	
Asphalt Plant DC Top of Stack	S007	Lw		122.6	109.4	102.6	98.5	91.7	88.8	92.7	87.8	84.2	98.3	122.9	
Loader - CAT 988 Pass By	S008	Lw		100.6	103.7	109.3	105.4	105.3	103.4	99.6	91.1	86.3	107.7	113.4	
Asphalt Plant DC Blower	S009	Lw		124.1	119.4	118.0	109.0	100.5	96.1	91.7	87.9	83.4	106.1	126.2	
Asphalt Plant Loader - CAT 960	S010	Lw		100.6	103.7	109.3	105.4	105.3	103.4	99.6	91.1	86.3	107.7	113.4	
Delivery Truck Pass By	S011	Lw		96.2	97.5	101.1	94.4	94.6	95.0	91.8	86.4	80.8	99.0	105.3	
Water Truck	S012	Lw		104.5	108.5	114.5	103.0	102.2	101.1	99.6	94.5	87.0	106.7	116.5	
Asphalt Plant DC Dryer	S016	Lw		105.2	102.3	103.9	98.8	102.7	100.0	92.8	85.4	81.4	103.7	110.5	
Asphalt Plant DC Burner	S017	Lw		129.7	116.5	106.6	99.9	92.8	90.6	93.0	96.0	91.9	101.9	129.9	
Asphalt Plant DC Burner Blower Fan	S018	Lw		111.9	114.0	104.1	98.1	91.5	88.3	90.8	103.2	99.1	105.8	116.7	
Asphalt Plant Compressor	S019	Lw		102.0	90.8	93.6	92.5	94.6	94.3	96.1	88.9	84.5	100.4	105.0	
CAT 988H Loading	S020	Lw		113.4	123.7	115.9	104.2	101.8	101.4	97.7	93.0	85.0	107.0	124.8	
Lime Plant Hopper	S021	Lw		120.1	116.2	116.0	114.6	104.9	104.7	107.6	109.0	104.7	114.7	123.7	
Lime Plant Building	S022	Lw		116.8	111.6	109.8	105.4	98.4	91.9	93.4	93.9	89.5	102.8	118.8	
Lime Plant Ducting	S023	Lw		109.6	114.8	109.9	106.5	100.9	95.1	96.9	110.2	106.0	112.7	118.5	
Terex	S024	Lw		108.8	108.4	104.3	96.4	98.3	101.9	97.9	96.0	88.0	105.3	113.2	
Kenworth	S025	Lw		112.0	106.2	100.0	96.7	97.9	97.8	96.3	93.9	85.2	102.8	113.7	
Asphalt Plant Truck Passby	S026	Lw		96.2	97.5	101.1	94.4	94.6	95.0	91.8	86.4	80.8	99.0	105.3	
Site Grader	S030	Lw		105.5	109.0	113.5	112.5	106.1	103.4	102.7	96.1	88.4	110.1	117.8	
Excavator	S031	Lw		102.3	106.8	107.9	115.3	102.3	100.3	99.5	94.8	90.0	109.2	117.0	
CAT D6	S032	Lw		105.5	109.0	113.5	112.5	106.1	103.4	102.7	96.1	88.4	110.1	117.8	
CAT 980 Loader	S033	Lw		100.6	103.7	109.3	105.4	105.3	103.4	99.6	91.1	86.3	107.7	113.4	

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Bauxite Reception Bin		!00!E01	94.5	94.5	94.5	Lw	E01		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	15.00	r	518710.30	5049945.16	67.00
Schist, Silica, Iron Ore Reception Bin		!00!E02	94.5	94.5	94.5	Lw	E02		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	15.00	r	518704.59	5049918.12	67.00
Gypsum Reception Bin		!00!E03	94.5	94.5	94.5	Lw	E03		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	15.00	r	518701.57	5049892.83	67.00
Limestone Crusher Dedusting		!00!E04	94.5	94.5	94.5	Lw	E04		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.00	g	518712.81	5049929.29	73.10
Bauxite Dosing Bin		!00!E05	94.5	94.5	94.5	Lw	E05		0.0	0.0	0.0							0.0		(none)	1.00	g	518823.81	5050007.12	63.05
Iron Ore Hopper		!00!E06	94.5	94.5	94.5	Lw	E06		0.0	0.0	0.0							0.0		(none)	1.00	g	518833.64	5049980.34	84.46
Silica Hopper		!00!E07	94.5	94.5	94.5	Lw	E07		0.0	0.0	0.0							0.0		(none)	1.00	g	518836.99	5049971.22	84.46
Limestone Reclaimer Belt		!00!E08	94.5	94.5	94.5	Lw	E08		0.0	0.0	0.0							0.0		(none)	1.00	g	518835.35	5049975.70	84.46
Limestone Reclaimer Belt		!00!E09	94.5	94.5	94.5	Lw	E09		0.0	0.0	0.0							0.0		(none)	1.00	g	518838.63	5049966.75	84.46
Gypsum Reclaimer Belt		!00!E10	94.5	94.5	94.5	Lw	E10		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.00	g	518840.51	5049961.66	72.54
Limestone and Gypsum Belt to Cement Hopper		!00!E11	94.5	94.5	94.5	Lw	E11		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	5.00	r	518751.64	5049937.51	57.00
Costituents Belt to Cement Hopper		!00!E12	94.5	94.5	94.5	Lw	E12		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	5.00	r	518755.07	5049931.83	57.00
Raw Mill Deeding Dedusting		!00!E13	94.5	94.5	94.5	Lw	E13		0.0	0.0	0.0							0.0		(none)	1.00	g	518886.88	5049823.70	84.00
Raw Meal Airslide Dedusting		!00!E14	94.5	94.5	94.5	Lw	E14		0.0	0.0	0.0							0.0		(none)	15.00	r	518925.65	5049778.23	67.00
Raw Meal Silo Dedusting		!00!E15	94.5	94.5	94.5	Lw	E15		0.0	0.0	0.0							0.0		(none)	1.00	g	518939.61	5049780.45	118.00
Raw Meal Silo Extraction Dedusting		!00!E16	94.5	94.5	94.5	Lw	E16		0.0	0.0	0.0							0.0		(none)	15.00	r	518936.21	5049767.26	67.00
Air Lift Bin Dedusting		!00!E17	94.5	94.5	94.5	Lw	E17		0.0	0.0	0.0							0.0		(none)	15.00	r	518922.17	5049762.14	67.00
Kiln End Process Filter - Exhaust Stack		!00!E18_A	94.5	94.5	94.5	Lw	E18_A		0.0	0.0	0.0							0.0		(none)	125.00	r	518903.12	5049755.50	177.00
Kiln End Process Filter - Fan Casing		!00!E18_B	100.3	100.3	100.3	Lw	E18_B		0.0	0.0	0.0							0.0		(none)	5.00	r	518903.12	5049755.50	57.00
Kiln End Process Filter - Baghouse/Cyclone Casing		!00!E18_C	91.2	91.2	91.2	Lw	E18_C		0.0	0.0	0.0							0.0		(none)	5.00	r	518903.12	5049755.50	57.00
Petcoke Reception Bin		!00!E19	94.5	94.5	94.5	Lw	E19		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	10.00	r	518845.60	5049629.82	62.00
Petcoke Silos Loading Bucket Elevator Dedusting		!00!E20	94.5	94.5	94.5	Lw	E20		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	10.00	r	518922.11	5049655.84	62.00
Coarse Petcoke Silo 1 Dedusting		!00!E21	94.5	94.5	94.5	Lw	E21		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	35.00	r	518932.97	5049662.78	87.00
Coarse Petcoke Silo 2 Dedusting		!00!E22	94.5	94.5	94.5	Lw	E22		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	35.00	r	518927.68	5049661.06	87.00
Petcoke Grinding Process Filter		!00!E23	94.5	94.5	94.5	Lw	E23		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	35.00	r	518921.02	5049691.07	87.00
Pulverized Petcoke Silo 1 Dedusting		!00!E24	94.5	94.5	94.5	Lw	E24		0.0	0.0	0.0							0.0		(none)	35.00	r	518939.43	5049654.14	87.00
Pulverized Petcoke Silo 2 Dedusting		!00!E25	94.5	94.5	94.5	Lw	E25		0.0	0.0	0.0							0.0		(none)	35.00	r	518930.96	5049653.70	87.00
Alternative Fuel Process Filter		!00!E26	94.5	94.5	94.5	Lw	E26		0.0	0.0	0.0							0.0		(none)	20.00	r	518950.36	5049662.29	72.00
Clinker Cooler Discharge Dedusting		!00!E27	94.5	94.5	94.5	Lw	E27		0.0	0.0	0.0							0.0		(none)	10.00	r	518947.52	5049665.36	62.00
Clinker Reception Bin		!00!E28	94.5	94.5	94.5	Lw	E28		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	10.00	r	518982.10	5049671.74	62.00
Clinker Silo Dedusting		!00!E29	94.5	94.5	94.5	Lw	E29		0.0	0.0	0.0							0.0		(none)	1.00	g	518983.60	5049573.68	127.88
Clinker Extraction Dedusting for Bulk Loading		!00!E30	94.5	94.5	94.5	Lw	E30		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	10.00	r	518995.94	5049544.82	63.41
Clinker Bulk Loading Dedusting		!00!E31	94.5	94.5	94.5	Lw	E31		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	27.00	r	518999.03	5049514.04	81.00
Clinker Extraction Ddusting for Cement Hopper		!00!E32	94.5	94.5	94.5	Lw	E32		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	10.00	r	518959.03	5049558.95	62.00
Cement Clinker Hopper Dedusting		!00!E33	94.5	94.5	94.5	Lw	E33		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518913.13	5049541.92	88.50
Cement Limestone Hopper Dedusting		!00!E34	94.5	94.5	94.5	Lw	E34		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518905.19	5049539.01	88.50

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Cement Gypsum Hopper Dedusting		!00!E35	94.5	94.5	94.5	Lw	E35		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518901.49	5049537.53	88.50
Cement 4° Costituent Hopper Dedusting		!00!E36	94.5	94.5	94.5	Lw	E36		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518893.13	5049534.51	88.50
Silica Fume Silo Dedusting		!00!E37	94.5	94.5	94.5	Lw	E37		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518911.75	5049552.45	88.50
Fly Ash Silo Dedusting		!00!E38	94.5	94.5	94.5	Lw	E38		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518902.76	5049549.33	88.50
Cement Mill 1 Process Filter - Exhaust Stack		!00!E39_A	94.5	94.5	94.5	Lw	E39_A		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	40.00	r	518909.43	5049530.12	92.00
Cement Mill 1 Process Filter - Fan Casing		!00!E39_B	100.3	100.3	100.3	Lw	E39_B		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	5.00	r	518923.40	5049535.47	57.00
Cement Mill 1 Process Filter - Baghouse/Cyclone Casing		!00!E39_C	91.2	91.2	91.2	Lw	E39_C		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	5.00	r	518923.40	5049535.47	57.00
Cement Mill 2 Process Filter - Exhaust Stack		!00!E40_A	94.5	94.5	94.5	Lw	E40_A		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	40.00	r	518904.61	5049528.27	92.00
Cement Mill 2 Process Filter - Fan Casing		!00!E40_B	100.3	100.3	100.3	Lw	E40_B		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	5.00	r	518889.75	5049522.63	57.00
Cement Mill 2 Process Filter - Baghouse/Cyclone Casing		!00!E40_C	91.2	91.2	91.2	Lw	E40_C		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	5.00	r	518889.75	5049522.63	57.00
Cement Mill 1 Air Slide and Bucket Elevator Dedusting		!00!E41	94.5	94.5	94.5	Lw	E41		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518916.67	5049471.59	67.00
Cement Mill 2 Air Slide and Bucket Elevator Dedusting		!00!E42	94.5	94.5	94.5	Lw	E42		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518913.17	5049470.36	67.00
Cement Silo 1A Top Filter		!00!E43	94.5	94.5	94.5	Lw	E43		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518943.77	5049471.58	116.10
Cement Silo 2A Top Filter		!00!E44	94.5	94.5	94.5	Lw	E44		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518913.43	5049460.55	115.00
Cement Silo 1B Top Filter		!00!E45	94.5	94.5	94.5	Lw	E45		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518954.87	5049441.32	116.32
Cement Silo 2B Top Filter		!00!E46	94.5	94.5	94.5	Lw	E46		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	518924.58	5049430.15	115.23
Cement Silo 1A Bulk Loading A Dedusting		!00!E47	94.5	94.5	94.5	Lw	E47		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518953.14	5049461.14	67.86
Cement Silo 1A Bulk Loading B Dedusting		!00!E48	94.5	94.5	94.5	Lw	E48		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518953.15	5049461.15	67.86
Cement Silo 2A Bulk Loading A Dedusting		!00!E49	94.5	94.5	94.5	Lw	E49		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518921.94	5049449.75	67.00
Cement Silo 2A Bulk Loading B Dedusting		!00!E50	94.5	94.5	94.5	Lw	E50		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518921.95	5049449.75	67.00
Cement Silo 1B Bulk Loading A Dedusting		!00!E51	94.5	94.5	94.5	Lw	E51		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518964.13	5049430.77	68.10
Cement Silo 1B Bulk Loading B Dedusting		!00!E52	94.5	94.5	94.5	Lw	E52		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518964.13	5049430.77	68.10
Cement Silo 2B Bulk Loading A Dedusting		!00!E53	94.5	94.5	94.5	Lw	E53		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518933.04	5049419.43	67.17
Cement Silo 2B Bulk Loading B Dedusting		!00!E54	94.5	94.5	94.5	Lw	E54		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	15.00	r	518933.04	5049419.43	67.17
Packing Plant Line A Dedusting		!00!E55	94.5	94.5	94.5	Lw	E55		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	20.00	r	518933.45	5049382.42	72.89
Packing Plant Line B Dedusting		!00!E56	94.5	94.5	94.5	Lw	E56		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	20.00	r	518935.49	5049377.03	73.13
Substation		!00!P01	87.2	87.2	87.2	Lw	P01		5.0	5.0	5.0							0.0		(none)	3.00	r	519109.12	5049443.32	56.22
HVAC		!00!P02	83.7	83.7	83.7	Lw	P02		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	519044.79	5049153.94	62.38
HVAC		!00!P03	83.7	83.7	83.7	Lw	P03		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	519034.63	5049182.60	62.38
HVAC		!00!P04	83.7	83.7	83.7	Lw	P04		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	519014.94	5049215.73	57.13
HVAC		!00!P05	83.7	83.7	83.7	Lw	P05		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	519075.34	5049225.56	65.37
HVAC		!00!P06	83.7	83.7	83.7	Lw	P06		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	g	519059.29	5049219.89	65.37
Loader CAT 962 - Petcoke		!00!P07	109.0	109.0	109.0	Lw	P07		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.40	r	518833.27	5049616.98	54.40
Loader CAT 962 - Raw Material		!00!P08	109.0	109.0	109.0	Lw	P08		0.0	0.0	0.0							0.0		(none)	2.40	r	518811.47	5049996.80	53.79
Asphalt Plant Dust Collector Top of Stack		!0100!A_P01	98.3	98.3	98.3	Lw	S007		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	8.10	r	518737.99	5049130.53	61.53
Asphalt Plant Dust Collector Blower and Drive Motor		!0100!A_P02	106.1	106.1	106.1	Lw	S009		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	r	518737.34	5049130.59	54.42
Asphalt Plant Dryer		!0100!A_P03	103.7	103.7	103.7	Lw	S016		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	3.50	r	518728.23	5049141.81	56.77
Asphalt Plant Burner		!0100!A_P04	101.9	101.9	101.9	Lw	S017		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.50	r	518734.33	5049143.90	55.83
Asphalt Plant Burner Blower Fan		!0100!A_P05	105.8	105.8	105.8	Lw	S018		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.00	r	518733.97	5049144.57	54.33
Asphalt Plant Compressor		!0100!A_P06	105.4	105.4	105.4	Lw	S019		5.0	5.0	5.0				60.00	60.00	0.00	0.0		(none)	1.00	r	518736.34	5049135.42	54.38
Asphalt Plant Truck - Idling		!0100!A_P07	99.0	99.0	99.0	Lw	S026		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.10	r	518731.84	5049150.63	55.40
Crusher - Plant 5		!010100!Q_P01	115.7	115.7	115.7	Lw	S003		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	3.00	r	518301.32	5049473.93	24.32
Crusher - Plant 7		!010100!Q_P02	114.8	114.8	114.8	Lw	S004		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	3.00	r	518327.88	5049488.53	24.17
Screen - Plant 8		!010100!Q_P03	114.3	114.3	114.3	Lw	S002		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	4.00	r	518292.49	5049480.49	25.40
Screen - Plant 9		!010100!Q_P04	114.8	114.8	114.8	Lw	S004		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	3.00	r	518302.15	5049445.36	24.24
Screen - Plant 12		!010100!Q_P05	107.7	107.7	107.7	Lw	S005		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	4.00	r	518304.53	5049480.46	25.31
Generator		!010100!Q_P06	114.4	114.4	114.4	Lw	S006		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	3.00	r	518298.46	5049482.29	24.36
CAT 988 Loading		!010100!Q_P07	107.0	107.0	107.0	Lw	S020		0.0	0.0	0.0				30.00	30.00	0.00	0.0		(none)	2.40	r	518328.65	5049489.39	23.57
Cat 980 Loading Delivery Trucks		!010100!Q_P08	107.7	107.7	107.7	Lw	S033		0.0	0.0	0.0				30.00	30.00	0.00	0.0		(none)	2.40	r	518370.69	5049309.49	21.03
Stripping - Excavator		!010100!S_P01	109.2	109.2	109.2	Lw	S031		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.40	r	518227.25	5049681.74	58.21
Stripping - Terex		!010100!S_P02	105.3	105.3	105.3	Lw	S024		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.50	r	518237.22	5049684.46	58.01
Stripping - Dozer		!010100!S_P03	110.1	110.1	110.1	Lw	S032		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.40	r	518244.47	5049686.27	57.77
Lime Plant Ducting		!0102!L_P01	112.7	112.7	112.7	Lw	S023		0.0	0.0	0.0				20.00	20.00	20.00	0.0		(none)	14.00	r	518759.35	5049197.31	66.63
Lime Plant Building		!0102!L_P02	102.8	102.8	102.8	Lw	S022		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	7.00	r	518760.79	5049198.55	59.56
Lime Plant Hopper		!0102!L_P03	114.7	114.7	114.7	Lw	S021		0.0	0.0	0.0				5.00	5.00	5.00	0.0		(none)	4.00	r	518753.96	5049194.23	56.73
CAT 980 Loader		!0102!L_P04	107.7	107.7	107.7	Lw	S033		0.0	0.0	0.0				15.00	15.00	0.00	0.0		(none)	2.40	r	518847.31	5049259.91	57.07

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src				
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)	
Limestone Truck - 65 ton		!00!T01	105.5	-4.5	-4.5	80.5	-29.5	-29.5	PWL-Pt	T01		0.0	0.0	0.0							0.0		(none)	10.0	0.0	0.0	15.0	2.10
Petcoke Truck - 35 ton		!00!T02	106.9	106.9	106.9	72.4	72.4	72.4	PWL-Pt	T02		0.0	0.0	0.0							0.0		(none)	12.0	12.0	12.0	15.0	2.10
Shale Truck - 35 ton		!00!T04	99.6	-3.4	-3.4	64.6	-38.4	-38.4	PWL-Pt	T04		0.0	0.0	0.0							0.0		(none)	2.0	0.0	0.0	15.0	2.10
Iron Ore Truck - 35 ton		!00!T05	96.6	-3.4	-3.4	61.6	-38.4	-38.4	PWL-Pt	T05		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Silica Sand Truck - 35 ton		!00!T06	99.6	-3.4	-3.4	64.6	-38.4	-38.4	PWL-Pt	T06		0.0	0.0	0.0							0.0		(none)	2.0	0.0	0.0	15.0	2.10
Silica Fume Truck - 35 ton		!00!T08	93.2	-6.8	-6.8	61.6	-38.4	-38.4	PWL-Pt	T08		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Fly Ash Truck - 35 ton		!00!T09	93.2	-6.8	-6.8	61.6	-38.4	-38.4	PWL-Pt	T09		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Cement Truck - 35 ton		!00!T10	102.2	-7.8	102.2	71.6	-38.4	71.6	PWL-Pt	T10		0.0	0.0	0.0							0.0		(none)	10.0	0.0	10.0	15.0	2.10
Water Truck		!00!T11	96.6	96.6	96.6	61.6	61.6	61.6	PWL-Pt	T11		0.0	0.0	0.0							0.0		(none)	1.0	1.0	1.0	15.0	2.10
Asphalt Plant Truck Passby		!0100!A_L01	90.8	90.8	-16.1	64.2	64.2	-42.8	PWL-Pt	S026		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	5.0	5.0	0.0	15.0	2.10
CAT 960 Loader		!0100!A_L02	92.4	92.4	-15.4	73.7	73.7	-34.1	PWL-Pt	S010		0.0	0.0	0.0							0.0		(none)	6.0	6.0	0.0	15.0	2.40

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src				
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)	
Delivery Truck		!010100!Q_L01	102.5	102.5	-9.3	69.0	69.0	-42.8	PWL-Pt	S011		0.0	0.0	0.0							0.0		(none)	15.0	15.0	0.0	15.0	2.10
Water Truck		!010100!Q_L02	101.4	101.4	-1.6	67.9	67.9	-35.1	PWL-Pt	S012		0.0	0.0	0.0							0.0		(none)	2.0	2.0	0.0	15.0	2.10
Terex		!010100!Q_L03	105.4	105.4	-2.4	71.3	71.3	-36.5	PWL-Pt	S024		0.0	0.0	0.0							0.0		(none)	6.0	6.0	0.0	15.0	2.50
Kenworth #1		!010100!Q_L04	102.9	102.9	-4.9	68.8	68.8	-39.0	PWL-Pt	S025		0.0	0.0	0.0							0.0		(none)	6.0	6.0	0.0	15.0	2.10
Kenworth #2		!010100!Q_L05	102.9	102.9	-4.9	68.8	68.8	-39.0	PWL-Pt	S025		0.0	0.0	0.0							0.0		(none)	6.0	6.0	0.0	15.0	2.10
Grader		!010100!Q_L06	101.8	101.8	1.8	68.3	68.3	-31.7	PWL-Pt	S030		0.0	0.0	0.0							0.0		(none)	1.0	1.0	0.0	15.0	2.10
CAT 988 Loader		!010100!Q_L07	101.5	101.5	-16.3	83.7	83.7	-34.1	PWL-Pt	S008		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	60.0	60.0	0.0	15.0	2.40
CAT 960 Loader		!0102!L_L01	92.6	92.6	-15.2	73.7	73.7	-34.1	PWL-Pt	S010		0.0	0.0	0.0							0.0		(none)	6.0	6.0	0.0	15.0	2.40
Limestone Truck - 65 ton		!0104!T01	109.5	-0.5	-0.5	80.5	-29.5	-29.5	PWL-Pt	T01		0.0	0.0	0.0							0.0		(none)	10.0	0.0	0.0	15.0	2.10
Limestone Truck - 65 ton		!0104!T01	109.4	-0.6	-0.6	80.5	-29.5	-29.5	PWL-Pt	T01		0.0	0.0	0.0							0.0		(none)	10.0	0.0	0.0	15.0	2.10
Petcoke Truck - 35 ton		!0104!T02	95.3	95.3	95.3	72.4	72.4	72.4	PWL-Pt	T02		0.0	0.0	0.0							0.0		(none)	12.0	12.0	12.0	15.0	2.10
Petcoke Truck - 35 ton		!0104!T02	95.5	95.5	95.5	72.4	72.4	72.4	PWL-Pt	T02		0.0	0.0	0.0							0.0		(none)	12.0	12.0	12.0	15.0	2.10
Shale Truck - 35 ton		!0104!T04	87.5	-15.5	-15.5	64.6	-38.4	-38.4	PWL-Pt	T04		0.0	0.0	0.0							0.0		(none)	2.0	0.0	0.0	15.0	2.10
Shale Truck - 35 ton		!0104!T04	87.7	-15.3	-15.3	64.6	-38.4	-38.4	PWL-Pt	T04		0.0	0.0	0.0							0.0		(none)	2.0	0.0	0.0	15.0	2.10
Iron Ore Truck - 35 ton		!0104!T05	84.5	-15.5	-15.5	61.6	-38.4	-38.4	PWL-Pt	T05		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Iron Ore Truck - 35 ton		!0104!T05	84.7	-15.3	-15.3	61.6	-38.4	-38.4	PWL-Pt	T05		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Silica Sand Truck - 35 ton		!0104!T06	87.5	-15.5	-15.5	64.6	-38.4	-38.4	PWL-Pt	T06		0.0	0.0	0.0							0.0		(none)	2.0	0.0	0.0	15.0	2.10
Silica Sand Truck - 35 ton		!0104!T06	87.7	-15.3	-15.3	64.6	-38.4	-38.4	PWL-Pt	T06		0.0	0.0	0.0							0.0		(none)	2.0	0.0	0.0	15.0	2.10
Silica Fume Truck - 35 ton		!0104!T08	84.5	-15.5	-15.5	61.6	-38.4	-38.4	PWL-Pt	T08		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Silica Fume Truck - 35 ton		!0104!T08	84.7	-15.3	-15.3	61.6	-38.4	-38.4	PWL-Pt	T08		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Fly Ash Truck - 35 ton		!0104!T09	84.5	-15.5	-15.5	61.6	-38.4	-38.4	PWL-Pt	T09		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Fly Ash Truck - 35 ton		!0104!T09	84.7	-15.3	-15.3	61.6	-38.4	-38.4	PWL-Pt	T09		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0	2.10
Cement Truck - 35 ton		!0104!T10	94.5	-15.5	94.5	71.6	-38.4	71.6	PWL-Pt	T10		0.0	0.0	0.0							0.0		(none)	10.0	0.0	10.0	15.0	2.10
Cement Truck - 35 ton		!0104!T10	94.7	-15.3	94.7	71.6	-38.4	71.6	PWL-Pt	T10		0.0	0.0	0.0							0.0		(none)	10.0	0.0	10.0	15.0	2.10
Water Truck		!0104!T11	84.5	84.5	84.5	61.6	61.6	61.6	PWL-Pt	T11		0.0	0.0	0.0							0.0		(none)	1.0	1.0	1.0	15.0	2.10
Water Truck		!0104!T11	84.7	84.7	84.7	61.6	61.6	61.6	PWL-Pt	T11		0.0	0.0	0.0							0.0		(none)	1.0	1.0	1.0	15.0	2.10

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src		
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number		
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night
Cement Mill		!00!A01	103.0	103.0	103.0	70.4	70.4	70.4	Lw"	VA100		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)			
Raw Mill		!00!A02	99.3	99.3	99.3	70.4	70.4	70.4	Lw"	VA100		0.0	0.0	0.0							0.0		(none)			
Pet coke grinding		!00!A03	99.6	99.6	99.6	70.4	70.4	70.4	Lw"	VA100		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)			

Vertical Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night			
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)	
Cement Mill		!00!VA01	103.6	103.6	103.6	65.4	65.4	65.4	Lw"	VA101		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)
Raw Mill		!00!VA02	106.1	106.1	106.1	70.4	70.4	70.4	Lw"	VA100		0.0	0.0	0.0							0.0		(none)
Pet coke grinding		!00!VA03	107.2	107.2	107.2	70.4	70.4	70.4	Lw"	VA100		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)

Barrier(s)

Name	M.	ID	Absorption		Z-Ext.	Cantilever		Height			
			left	right		horz.	vert.	Begin		End	
					(m)	(m)	(m)	(m)		(m)	
Asphalt Plant Hopper		!0100!A_B1	0.37	0.37							
Road Barrier		!0000!BR_01	0.37	0.37				4.60	r		
P1a Barrier		!010100!QBR_01	0.37	0.37				5.00	r		
P1a Barrier		!010100!QBR_02	0.37	0.37				5.00	r		
P1a Barrier		!010100!QBR_03	0.37	0.37				5.00	r		

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height	
						Begin	
						(m)	
Hopper Buaxite		!00!01		0	0.37	20.10	r
Hopper Schist		!00!02		0	0.37	20.10	r
Hopper Gypsum		!00!03		0	0.37	20.10	r
Limestone Crusher		!00!04		0	0.37	20.10	r
Raw Material		!00!05_06_07_08_09		0	0.37	10.30	r
Raw Material		!00!05_06_07_08_09		0	0.37	20.10	r
Raw Material		!00!05_06_07_08_09		0	0.37	32.10	r

Name	M.	ID	RB	Residents	Absorption	Height	
						Begin	
						(m)	
Raw Mill		!00!12		0	0.37	31.00	r
Raw Mill		!00!12		0	0.37	70.10	r
Homogenization Silo		!00!13		0	0.37	65.00	r
Waste Gas Treatment System for Kiln and Mill		!00!14		0	0.37	5.00	r
Cooler		!00!17		0	0.37	20.80	r
Clinker Silo		!00!18		0	0.37	74.50	r
Clinker Bulk Building		!00!19		0	0.37	24.70	r
Hopper Klinker and Additives of Cement Mill		!00!20		0	0.37	35.50	r
Silica Fume Silo		!00!21		0	0.37	35.50	r
Fly Ash Silo		!00!21		0	0.37	35.50	r
Cement Silo		!00!23		0	0.37	62.00	r
Cement Silo		!00!23		0	0.37	62.00	r
Cement Silo		!00!23		0	0.37	62.00	r
Cement Silo		!00!23		0	0.37	62.00	r
Cement Packing_Pallets		!00!24_25		0	0.37	15.60	r
Cement Mill		!00!22		0	0.37	38.20	r
Air Compression Station		!00!26		0	0.37	5.00	r
Air Compression Station		!00!26		0	0.37	5.00	r
Pet coke grinding		!00!29		0	0.37	33.90	r
Central Control Room		!00!30		0	0.37	15.00	r
Porter's Desk		!00!31		0	0.37	10.00	r
Industrial Water Closed Circuit		!00!32		0	0.37	5.00	r
Mechanical & Electrical		!00!33		0	0.37	10.00	r
Storage Warehouse		!00!34		0	0.37	10.00	r
Empty Bags Storage		!00!35		0	0.37	15.60	r
Guardroom		!00!40		0	0.37	2.00	r
Canteen_Change Rooms		!00!41_42		0	0.37	7.00	r
Kiln Inlet Ang Raw Mill Elec Room		!00!43		0	0.37	5.00	r
Kiln Outlet, Cooler and Pet Coke Mill Elec Room		!00!44		0	0.37	5.00	r
Limestone Crusher Elec Room		!00!47		0	0.37	5.00	r
Hopper Reception Clinker		!00!49		0	0.37	15.00	r
Alternative Fuel		!00!50		0	0.37	22.60	r
Electrical Room		!01!QB-02		0	0.37	3.56	r
Scale House		!01!QB-03		0	0.37	3.84	r
Lime Storage Shed		!01!QB-04		0	0.37	3.80	r
IKO Dome		!01!QB-06		0	0.37	10.00	r
Asphalt Control Room		!01!QB-07		0	0.37	5.50	r
Concrete Plant		!01!QB-09a		0	0.37	12.80	r
Concrete Plant		!01!QB-09b		0	0.37	3.00	r
Garage		!01!QB-10		0	0.37	4.80	r
Lime Plant		!01!QB-05		0	0.37		
Silo IKO		!01!QB-11		0	0.37	22.60	r
Asphalt Plant Hopper		!0100!QB-12		0	0.37		
Asphalt Plant Hopper		!0100!QB-13		0	0.37		
Soil Building		!01!QB-14		0	0.37	6.00	r
Soil Building		!01!QB-15		0	0.37	6.00	r

Ground Absorption Area(s)

Name	M.	ID	G
Pond		GABS01	0.0
Cement Plant Site		!00!GABS01	0.3
Phase 1a Quarry Floor		!0105!GABS01	0.3
Scotts		!01!GABS01	0.5

Receptor Noise Impact Level(s)

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Evening	Night	Day	Evening	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
One-Storey Residence_Plane of Window		POR01_POW	45.7	44.9	36.2	45.9	45.9	40.4				1.50	r	518227.46	5048877.49	55.50
One-Storey Residence_Outdoor Location		POR01_OUT	45.6	44.9	36.1	49.3	49.3	0.0				1.50	r	518226.87	5048879.63	55.50
Two-Storey Residence_Plane of Window		POR02_POW	54.9	53.5	50.7	60.0	60.0	52.8				4.50	r	518934.97	5049037.48	58.35
Two-Storey Residence_Outdoor Location		POR02_OUT	53.0	51.7	47.7	63.4	63.4	0.0				1.50	r	518960.20	5049057.76	55.48
Two-Storey Residence_Plane of Window		POR03_POW	47.4	46.1	41.0	57.3	57.3	50.1				4.50	r	519236.93	5049120.37	58.26
Two-Storey Residence_Outdoor Location		POR03_OUT	46.2	44.9	39.5	64.3	64.3	0.0				1.50	r	519210.87	5049140.45	55.42
One-Storey Residence_Plane of Window		POR04_POW	46.0	44.8	39.1	46.0	46.0	40.4				1.50	r	519319.32	5049242.65	55.50
One-Storey Residence_Outdoor Location		POR04_OUT	45.9	44.8	39.4	49.1	49.1	0.0				1.50	r	519318.78	5049245.18	55.46
Two-Storey Residence_Plane of Window		POR05_POW	46.4	45.1	40.2	47.8	47.8	40.5				4.50	r	519387.65	5049258.94	57.50
Two-Storey Residence_Outdoor Location		POR05_OUT	45.1	44.0	38.5	46.7	46.7	0.0				1.50	r	519387.21	5049261.30	54.50

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