



October 2017

COLACEM CANADA INC.
L'ORIGINAL, ONTARIO

Acoustic Assessment Report Version 1.1

Submitted to:

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

REPORT



Report Number: 1529718

Distribution:

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





Document Version Control

This Acoustic Assessment Report (AAR) documents the operations at the proposed Colacem L'Original Portland cement manufacturing facility and has been prepared in accordance with Ontario Ministry of the Environment and Climate Change (MOECC) noise guidelines, NPC 233 *“Information to be Submitted for Approval of Stationary Sources of Sound”* (NPC 233) and NPC 300 *“Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning”* (NPC 300). The AAR is a living document and should be kept up-to-date at all times. Therefore, it is necessary to have appropriate version control. This version control will allow facility personnel, compliance auditors, or the MOECC to track and monitor AAR changes over time.

As facility operations change and noise sources are added or removed, this AAR will need to be updated as required. When the AAR is updated, the version number should be updated accordingly.

Version	Date	Revision Description	Prepared By	Reviewed By (Facility Contact)
1.0	January 2016	Acoustic Assessment Report for Environmental Compliance Approval Application (1529718)	Golder Associates Ltd.	Marc Bataille
1.1	October 2017	Revised Acoustic Assessment Report for Environmental Compliance Approval Application (1529718)	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).

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. It is anticipated that four types of Portland cement will be produced at the plant: general use cement (GU), general use limestone cement (GUL), high early strength cement (HE) and blended general use silica fume cement (GubSF). The Facility can operate up to 24 hours per day, 7 days per week, 52 weeks per year.

This AAR has been completed in accordance with the Ontario Ministry of the Environment and Climate Change (MOECC) publications NPC 233 and NPC 300. The purpose of the assessment is to evaluate the overall sound emissions of the Facility with respect to MOECC noise guidelines.

All relevant sound levels for sources were obtained from 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 sources, the Facility is not expected to be a significant source of vibration.

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 operations, on the surrounding PORs, are expected to be at or below the applicable MOECC sound level limits. Therefore, the Facility can operate in compliance with the MOECC noise guidelines as specified in NPC 300.



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Ministry
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l'Environnement



ACOUSTIC ASSESSMENT REPORT CHECK-LIST

Company Name: Colacem Canada Inc.

Company Address: 2540, Boulevard Daniel Johnson, Bureau 808
Laval, Quebec H7T 2S3

Location of Facility: Lot 217, Parcel M100, County Road 17
United Counties of Prescott-Russell

The attached Acoustic Assessment Report was prepared in accordance with the guidance in the ministry document "Information to be Submitted for Approval of Stationary Sources of Sound" (NPC 233) dated October 1995 and the minimum required information identified in the check-list on the reverse of this sheet has been submitted.

Company Contact:

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Date: 10 octobre 2017

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Date: October 20, 2017

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ACOUSTIC ASSESSMENT REPORT CHECKLIST

	Required Information	Submitted	Explanation/Reference
1.0	Introduction (Project Background and Overview)	☒ Yes	Section 1.0
2.0	Facility Description		
	2.1 Operating hours of facility and significant Noise Sources	☒ Yes	Section 2.0 & 3.0
	2.2 Site Plan identifying all significant Noise Sources	☒ Yes	Figure 2
3.0	Noise Source Summary		
	3.1 Noise Source Summary Table	☒ Yes	Table A1
	3.2 Source noise emissions specifications	☒ Yes	Table A1
	3.3 Source power/capacity ratings	☒ Yes	Table A1, Appendix C
	3.4 Noise control equipment description and acoustical specifications	☒ Yes	Table A1, Appendix C
4.0	Point of Reception Noise Impact Calculations		
	4.1 Point of Reception Noise Impact Table	☒ Yes	Table SS1
	4.2 Point(s) of Reception (POR) list and description	☒ Yes	Section 4.0, Table 1
	4.3 Land Use Zoning Plan	☒ Yes	Appendix A
	4.4 Scaled Area Location Plan	☒ Yes	Figure 1
	4.5 Procedure used to assess noise impacts at each POR	☒ Yes	Section 6.1
	4.6 List of parameters/assumptions used in calculations	☒ Yes	Section 6.1
5.0	Acoustics Assessment Summary		
	5.1 Acoustic Assessment Summary Table	☒ Yes	Table SS2
	5.2 Rationale for selecting applicable noise guideline limits	☒ Yes	Section 5.0
	5.3 Predictable Worst Case Impacts Operating Scenario	☒ Yes	Section 2.0 & 3.0
6.0	Conclusions		
	6.1 Statement of compliance with the selected noise performance limits	☒ Yes	Section 7.0
7.0	Appendices (Provide details such as)		
	7.1 Listing of Insignificant Noise Sources	☐ No	
	7.2 Manufacturer's Noise Specifications	☒ Yes	Appendix C
	7.3 Calculations	☒ Yes	Appendix F
	7.4 Instrumentation	☐ Yes	N/A
	7.5 Meteorology during Sound Level Measurements	☐ Yes	N/A
	7.6 Raw Data from Measurements	☐ Yes	N/A
	7.7 Drawings (Facility / Equipment)	☒ Yes	Figures

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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).

This AAR has been completed in accordance with the Ontario Ministry of the Environment and Climate Change (MOECC) publications NPC 233 and NPC 300. The purpose of the assessment is to evaluate the overall sound emissions of the Facility with respect to MOECC noise guidelines.

A site location plan showing the location of the Facility 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. For the purpose of this assessment, 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 this AAR.

A site layout plan, showing the locations of the significant noise sources, is provided in Figure 2. 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 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 sound power levels obtained from manufacturers' data, information from Colacem or their designate and Golder's database of similar sources, noise predictions of the Facility's 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 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. Four types of Portland cement are anticipated to be produced at the plant: general use cement (GU), general use limestone cement (GUL), high early strength cement (HE) and blended general use silica fume cement (GubSF). The production of cement is a three step process, as follows: raw material preparation, clinker production, and cement grinding and distribution.

The Facility will be located on a 56 hectare lot adjacent to an existing quarry. It will be comprised of several buildings/structures, including: raw material storage/silos, hoppers, conveyors, crushing and grinding systems, raw mill, preheater, rotary kiln, cooler and cooling tower, cement mill, concrete plant, administrative offices, and a control room. A majority of the raw materials and finished product will be trucked to and from the Facility with access along County Road 17. An acoustic barrier will be required to reduce the predicted off-site sound levels associated with the Facility. The acoustic barrier will have an overall length of 400 m and an overall height of 4.6 m. The acoustic barrier will be constructed with a minimum surface density of 20 kg/m² and a continuous surface without any gaps. The location of the acoustic barrier is presented in Figure 2.



3.0 NOISE SOURCE SUMMARY

The primary noise sources of concern that could operate onsite are summarized below, they include:

- Process equipment dust collectors (DC);
- Process equipment outdoors and within buildings;
- Mobile equipment on-site (i.e. loaders);
- HVAC equipment;
- Electrical Substation; and
- Shipping and receiving truck traffic.

All the identified primary noise sources are summarized in the attached Table A1, and illustrated in Figure 2. 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. In preparing the assessment, efforts were taken to ensure that the source numbering convention was consistent with the information submitted by Colacem, to the MOECC, as part of the documentation provided in the Emission Summary and Dispersion Modelling (ESDM) Report.

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 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 F.



4.0 POINTS OF RECEPTION

A total of five (5) PORs were identified as being representative of the sensitive receptors in the vicinity of the Facility 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 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. 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'Original Traffic Impact Study* dated October 7, 2015 and is provided in Appendix E. 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. STAMSON road traffic predictions are provided in Appendix E. The minimum expected noise levels are presented in the Table 3 below.



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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 obtained from 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.

The predicted levels take into consideration that the sound from a stationary point noise source spreads spherically and attenuates at a rate of 6 dB per doubling of distance. Further, attenuation from barriers, ground effect and air absorption may be included in the analysis as determined from ISO 9613 (part 2), which is the current standard used 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 0.2 for the surface on the property of the Facility 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 Facility and the most sensitive PORs surrounding the Facility.

6.2 Results

The Facility's operations, as described in Section 3.0, were modelled to determine the predictable worst case sound levels 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. The higher of the POW or Outdoor sound levels, relative to the applicable sound level limit, were reported for the respective POR.

Table SS1 attached summarizes the predicted sound levels from each individual source (i.e. partial levels) at the identified PORs due to the Facility operations. Table SS2 attached provides a summary of the overall sound levels at the identified PORs due to the Facility operations. Sample calculations are provided in Appendix F.

The overall predicted noise levels at the identified PORs, due to the Facility's operations are at or below the MOECC applicable sound level limits.



7.0 CONCLUSION

Golder Associates Ltd. was retained by Colacem Canada Inc. to prepare an Acoustic Assessment Report in support of an application for an Environmental Compliance Approval for the proposed facility located at Lot 217, Parcel M100, County Road 17, United Counties of Prescott-Russell, L'Orignal, Ontario. Using manufacturers' data and database of similar noise sources, Golder predicted the noise levels on the identified PORs during the Facility's predictable worst case hour of operation. The predictive analysis indicates the noise emissions, associated with the Facility operations, are expected to be at or below the applicable MOECC sound level limits at all identified PORs. Therefore, the Facility can operate in compliance with the prescribed sound limits.



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Report Signature Page

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TABLES

Table A1: Facility Source Summary

Source ID	Source Description	Overall Sound Power Level (dBA)	Source Location	Sound Characteristics	Noise Control Measures
E01	Bauxite Reception Bin	94	O	S	U
E02	Schist, Silica, Iron Ore Reception Bin	94	O	S	U
E03	Gypsum Reception Bin	94	O	S	U
E04	Limestone Crusher Dedusting	94	O	S	U
E05	Bauxite Dosing Bin	94	O	S	U
E06	Iron Ore Hopper	94	O	S	U
E07	Silica Hopper	94	O	S	U
E08	Limestone Reclaimer Belt	94	O	S	U
E09	Limestone Reclaimer Belt	94	O	S	U
E10	Gypsum Reclaimer Belt	94	O	S	U
E11	Limestone and Gypsum Belt to Cement Hopper	94	O	S	U
E12	Constituents Belt to Cement Hopper	94	O	S	U
E13	Raw Mill Deeding Dedusting	94	O	S	U
E14	Raw Meal Airslide Dedusting	94	O	S	U
E15	Raw Meal Silo Dedusting	94	O	S	U
E16	Raw Meal Silo Extraction Dedusting	94	O	S	U
E17	Air Lift Bin Dedusting	94	O	S	U
E18_A	Kiln End Process Filter - Exhaust Stack	94	O	S	U
E18_B	Kiln End Process Filter - Fan Casing	100	O	S	U
E18_C	Kiln End Process Filter - Baghouse/Cyclone Casing	91	O	S	U
E19	Petcoke Reception Bin	94	O	S	U
E20	Petcoke Silos Loading Bucket Elevator Dedusting	94	O	S	U
E21	Coarse Petcoke Silo 1 Dedusting	94	O	S	U
E22	Coarse Petcoke Silo 2 Dedusting	94	O	S	U
E23	Petcoke Grinding Process Filter	94	O	S	U
E24	Pulverized Petcoke Silo 1 Dedusting	94	O	S	U
E25	Pulverized Petcoke Silo 2 Dedusting	94	O	S	U
E26	Alternative Fuel Process Filter	94	O	S	U
E27	Clinker Cooler Discharge Dedusting	94	O	S	U
E28	Clinker Reception Bin	94	O	S	U
E29	Clinker Silo Dedusting	94	O	S	U
E30	Clinker Extraction Dedusting for Bulk Loading	94	O	S	U
E31	Clinker Bulk Loading Dedusting	94	O	S	U
E32	Clinker Extraction Ddusting for Cement Hopper	94	O	S	U
E33	Cement Clinker Hopper Dedusting	94	O	S	U
E34	Cement Limestone Hopper Dedusting	94	O	S	U
E35	Cement Gypsum Hopper Dedusting	94	O	S	U
E36	Cement 4" Constituent Hopper Dedusting	94	O	S	U
E37	Silica Fume Silo Dedusting	94	O	S	U
E38	Fly Ash Silo Dedusting	94	O	S	U
E39_A	Cement Mill 1 Process Filter - Exhaust Stack	94	O	S	U
E39_B	Cement Mill 1 Process Filter - Fan Casing	100	O	S	U
E39_C	Cement Mill 1 Process Filter - Baghouse/Cyclone Casing	91	O	S	U
E40_A	Cement Mill 2 Process Filter - Exhaust Stack	94	O	S	U
E40_B	Cement Mill 2 Process Filter - Fan Casing	100	O	S	U
E40_C	Cement Mill 2 Process Filter - Baghouse/Cyclone Casing	91	O	S	U
E41	Cement Mill 1 Air Slide and Bucket Elevator Dedusting	94	O	S	U
E42	Cement Mill 2 Air Slide and Bucket Elevator Dedusting	94	O	S	U
E43	Cement Silo 1A Top Filter	94	O	S	U
E44	Cement Silo 2A Top Filter	94	O	S	U
E45	Cement Silo 1B Top Filter	94	O	S	U
E46	Cement Silo 2B Top Filter	94	O	S	U
E47	Cement Silo 1A Bulk Loading A Dedusting	94	O	S	U
E48	Cement Silo 1A Bulk Loading B Dedusting	94	O	S	U
E49	Cement Silo 2A Bulk Loading A Dedusting	94	O	S	U
E50	Cement Silo 2A Bulk Loading B Dedusting	94	O	S	U
E51	Cement Silo 1B Bulk Loading A Dedusting	94	O	S	U
E52	Cement Silo 1B Bulk Loading B Dedusting	94	O	S	U
E53	Cement Silo 2B Bulk Loading A Dedusting	94	O	S	U
E54	Cement Silo 2B Bulk Loading B Dedusting	94	O	S	U
E55	Packing Plant Line A Dedusting	94	O	S	U
E56	Packing Plant Line B Dedusting	94	O	S	U
P01	Substation	82	O	T	U
P02	HVAC	84	O	S	U
P03	HVAC	84	O	S	U
P04	HVAC	84	O	S	U
P05	HVAC	84	O	S	U

Table A1: Facility Source Summary

Source ID	Source Description	Overall Sound Power Level (dBA)	Source Location	Sound Characteristics	Noise Control Measures
P06	HVAC	84	O	S	U
P07	Loader CAT 962 - Petcoke	109	O	S	U
P08	Loader CAT 962 - Raw Material	109	O	S	U
T01	Limestone Truck - 65 ton	112	O	S	U
T02	Petcoke Truck - 35 ton	103	O	S	U
T04	Shale Truck - 35 ton	103	O	S	U
T05	Iron Ore Truck - 35 ton	103	O	S	U
T06	Silica Sand Truck - 35 ton	103	O	S	U
T08	Silica Fume Truck - 35 ton	103	O	S	U
T09	Fly Ash Truck - 35 ton	103	O	S	U
T10	Cement Truck - 35 ton	103	O	S	U
T11	Water Truck	103	O	S	U
A01	Cement Mill	70	O	S	U
A02	Raw Mill	70	O	S	U
A03	Pet coke grinding	70	O	S	U
VA01	Cement Mill	65	O	S	U
VA02	Raw Mill	70	O	S	U
VA03	Pet coke grinding	70	O	S	U

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

Note 3: The Electrical Substation will be designed with an overall sound pressure level of 50 dBA at 15 m.

Note 4: The buildings will be designed with a maximum sound pressure level of 70 dBA at any location along the outside surface to the building façade (i.e., walls and roof), with the exception of Note 5

Note 5: The Cement Mill will be designed with a maximum sound pressure level of 65 dBA at any location along the outside surface to the building façade (i.e., walls and roof)

Table SS1: Point of Reception Predicted Sound Levels - Normal Operations (Stationary Source)

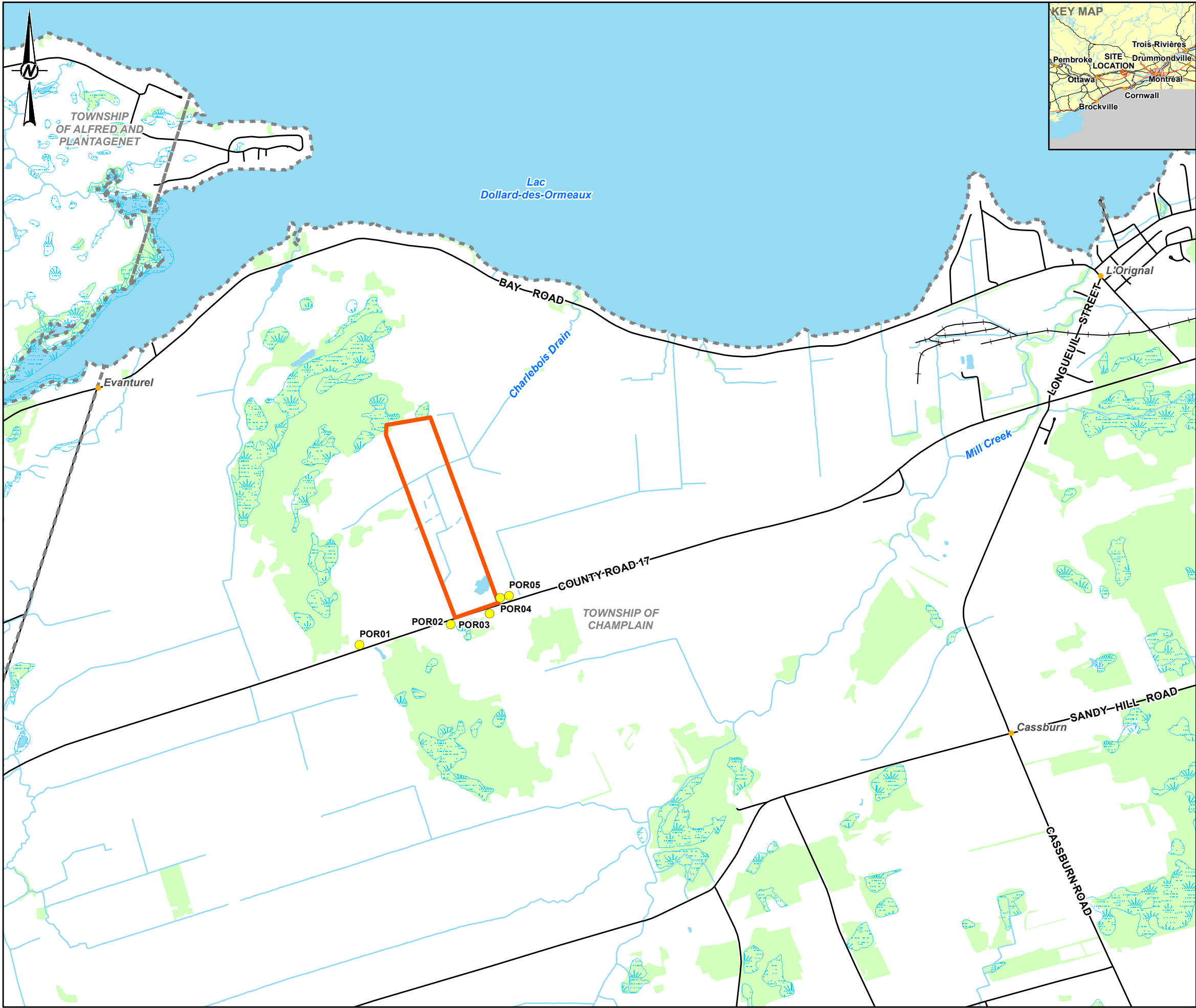
Source ID	POR01_POW				POR01_OUT			POR02_POW				POR02_OUT			POR03_POW				POR03_OUT				POR04_POW				POR04_OUT			POR05_POW			POR05_OUT			
	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	
E01	1172	11	0	0	1170	11	0	935	15	0	0	922	15	0	979	20	0	0	948	17	0	0	930	19	0	0	927	19	0	964	20	0	0	962	19	0
E02	1145	11	0	0	1143	11	0	910	24	0	0	898	20	0	959	18	0	0	928	11	0	0	913	8	0	0	911	8	0	949	10	0	0	947	9	0
E03	1121	16	0	0	1119	16	0	887	25	0	0	874	21	0	940	22	0	0	909	20	0	0	897	8	0	0	895	15	0	934	19	0	0	932	19	0
E04	1158	15	0	0	1157	15	0	919	18	0	0	906	18	0	964	18	0	0	933	17	0	0	916	17	0	0	914	17	0	951	20	0	0	949	17	0
E05	1277	15	15	15	1276	15	15	976	18	18	18	959	8	8	978	0	0	0	949	0	0	0	911	0	0	0	909	0	0	937	1	1	1	935	0	0
E06	1258	15	15	15	1257	15	15	948	18	18	18	931	17	17	950	18	18	18	921	17	17	18	883	18	18	18	881	18	18	910	18	18	18	907	17	17
E07	1252	15	15	15	1251	15	15	939	20	20	20	922	17	17	940	18	18	18	911	18	18	18	874	18	18	18	871	18	18	900	20	20	20	898	18	18
E08	1255	15	15	15	1254	15	15	943	18	18	18	926	17	17	945	18	18	18	916	18	18	18	878	18	18	18	876	18	18	905	19	19	19	903	17	17
E09	1249	15	15	15	1247	15	15	934	22	22	22	917	17	17	935	18	18	18	906	18	18	18	869	19	19	19	867	19	19	896	21	21	21	894	18	18
E10	1245	15	0	0	1244	15	0	929	22	0	0	912	18	0	930	19	0	0	901	20	0	0	864	20	0	0	861	20	0	891	20	0	0	888	20	0
E11	1183	15	15	0	1181	15	15	919	19	19	0	904	18	18	950	11	11	0	920	3	3	0	897	18	18	0	895	18	18	930	18	18	0	928	18	18
E12	1179	15	0	0	1177	15	0	912	19	0	0	898	18	0	944	11	0	0	913	3	0	0	891	18	0	0	888	18	0	924	18	0	0	922	18	0
E13	1153	16	16	16	1152	16	16	788	19	19	19	769	8	8	786	12	12	12	756	5	5	5	724	19	19	19	722	19	19	755	11	11	11	753	7	7
E14	1140	17	17	17	1138	17	17	741	6	6	6	721	10	10	728	2	2	2	699	1	1	1	665	17	17	17	662	17	17	695	4	4	4	693	2	2
E15	1150	15	15	15	1149	15	15	743	22	22	22	723	18	18	724	20	20	20	695	20	20	20	658	20	20	20	656	20	20	688	21	21	21	685	20	20
E16	1138	17	17	17	1136	17	17	730	5	5	5	710	3	3	713	22	22	22	684	20	20	20	650	22	22	22	647	22	22	680	22	22	22	678	22	22
E17	1125	17	17	17	1124	17	17	725	5	5	5	705	6	6	715	20	20	20	685	19	19	19	654	21	21	21	652	21	21	685	21	21	21	683	20	20
E18 A	1108	17	17	17	1107	17	17	719	24	24	24	700	22	22	718	24	24	24	688	22	22	22	660	23	23	23	658	23	23	694	24	24	24	692	22	22
E18 B	1108	22	22	22	1107	22	22	719	17	17	17	700	9	9	718	19	19	19	688	9	9	9	660	16	16	16	658	16	16	694	26	26	26	692	26	26
E18 C	1108	12	12	12	1107	12	12	719	11	11	11	700	3	3	718	10	10	10	688	2	2	2	660	9	9	9	658	9	9	694	17	17	17	692	17	17
E19	974	19	0	0	972	19	0	599	26	0	0	583	22	0	642	10	0	0	611	8	0	0	612	22	0	0	610	22	0	657	22	0	0	655	21	0
E20	1043	18	0	0	1042	18	0	618	9	0	0	599	12	0	621	14	0	0	591	2	0	0	573	4	0	0	571	4	0	612	18	0	0	610	14	0
E21	1056	16	0	0	1054	16	0	625	18	0	0	606	18	0	622	12	0	0	592	9	0	0	571	22	0	0	569	22	0	608	22	0	0	606	21	0
E22	1051	17	0	0	1050	17	0	624	16	0	0	604	22	0	623	12	0	0	593	9	0	0	573	22	0	0	571	22	0	611	22	0	0	609	21	0
E23	1069	16	16	0	1068	16	16	654	11	11	0	635	10	10	652	10	10	0	622	6	6	6	600	21	21	0	598	21	21	636	22	22	0	634	21	21
E24	1054	17	17	17	1052	17	17	617	22	22	22	597	16	16	611	12	12	12	581	8	8	8	560	23	23	23	558	23	23	598	26	26	26	596	22	22
E25	1048	17	17	17	1046	17	17	616	17	17	17	597	22	22	615	12	12	12	585	9	9	9	565	19	19	19	563	23	23	604	24	24	24	602	22	22
E26	1067	3	3	3	1066	3	3	625	9	9	9	605	6	6	613	6	6	6	583	4	4	4	559	12	12	12	557	12	12	595	12	12	12	593	11	11
E27	106																																			

Table SS2: Acoustic Assessment Summary - Normal Operations (Stationary Source)

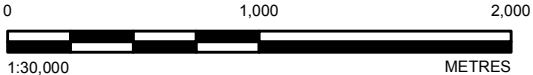
POR ID	POR Description	Overall Daytime Sound Pressure Level (dBA)	Overall Evening Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Verified by Acoustic Audit	Daytime Performance Limit (dBA)	Evening Performance Limit (dBA)	Night-time Performance Limit (dBA)	Compliance with Performance Limit (Yes/No)
POR01_POW	One-Storey Residence_Plane of Window	39	38	34	No	46	46	40	Yes
POR01_OUT	One-Storey Residence_Outdoor Location	39	38	-	No	49	49	-	Yes
POR02_POW	Two-Storey Residence_Plane of Window	48	45	45	No	60	60	53	Yes
POR02_OUT	Two-Storey Residence_Outdoor Location	46	43	-	No	63	63	-	Yes
POR03_POW	Two-Storey Residence_Plane of Window	43	41	39	No	57	57	50	Yes
POR03_OUT	Two-Storey Residence_Outdoor Location	42	40	-	No	64	64	-	Yes
POR04_POW	One-Storey Residence_Plane of Window	43	41	38	No	46	46	40	Yes
POR04_OUT	One-Storey Residence_Outdoor Location	43	42	-	No	49	49	-	Yes
POR05_POW	Two-Storey Residence_Plane of Window	44	43	39	No	48	48	40	Yes
POR05_OUT	Two-Storey Residence_Outdoor Location	42	41	-	No	47	47	-	Yes



FIGURES



- LEGEND**
- POINT OF RECEPTION (POR)
 - ROAD
 - WATERCOURSE
 - - - WATERCOURSE, INTERMITTENT
 - WATERBODY
 - ▨ WETLAND
 - WOODED AREA
 - - - MUNICIPAL BOUNDARY
 - ▭ PROPERTY BOUNDARY



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

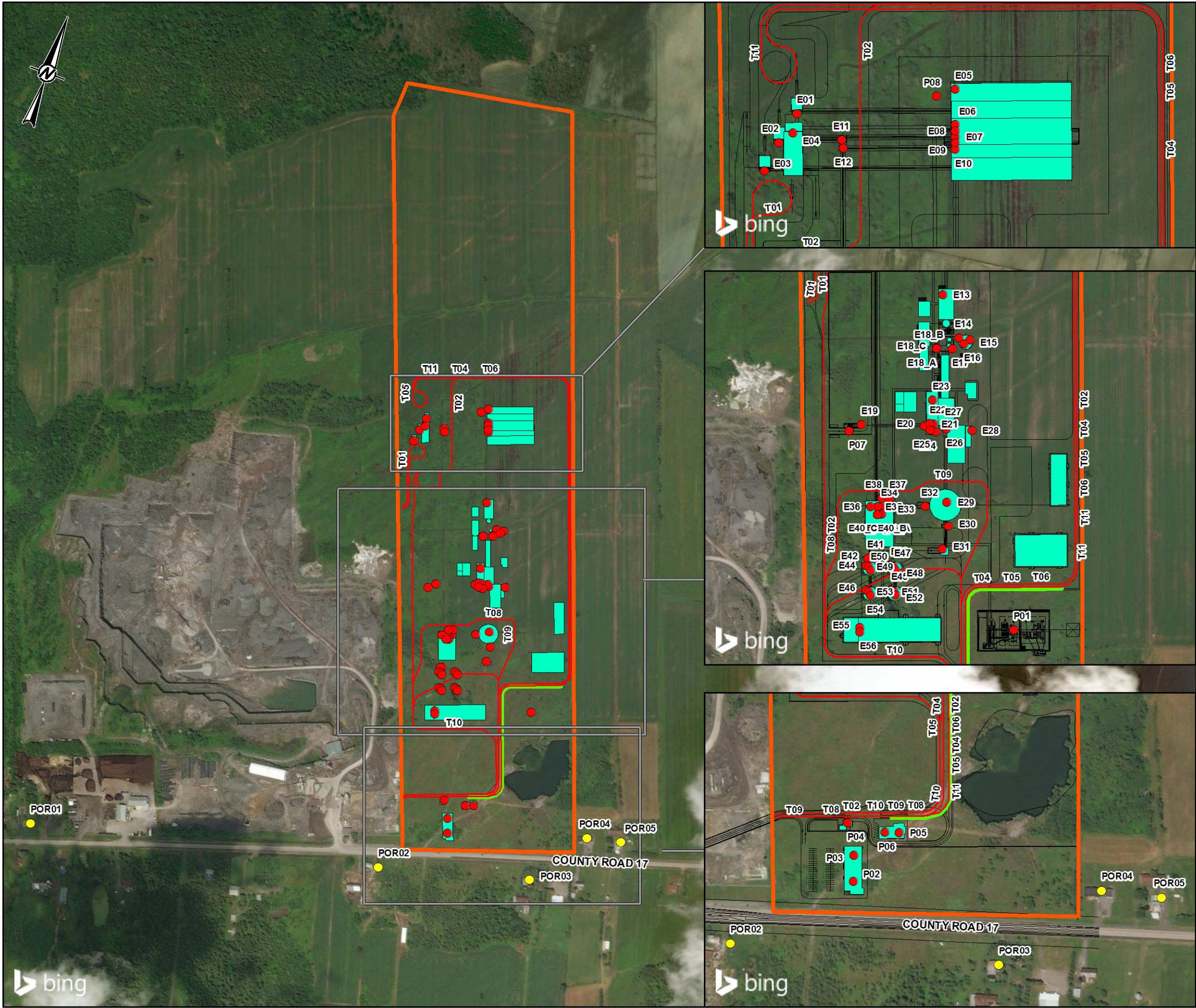
CLIENT
COLACEM CANADA

PROJECT
L'ORIGINAL CEMENT PLANT ACOUSTIC ASSESSMENT REPORT

TITLE
SITE LOCATION PLAN

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

PROJECT NO. 1529718	CONTROL -	REV. -	MAP 1
------------------------	--------------	-----------	----------

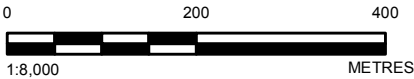


Legend

- POINTS OF RECEPTION (POR)
- SITE LAYOUT
- ACOUSTIC BARRIER
- ▭ PROPERTY BOUNDARY
- ▭ ON-SITE BUILDINGS

NOISE SOURCE

- POINT SOURCE
- LINE SOURCE



REFERENCE(S)
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PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

CLIENT
COLACEM CANADA

PROJECT
L'ORIGINAL CEMENT PLANT ACOUSTIC ASSESSMENT REPORT

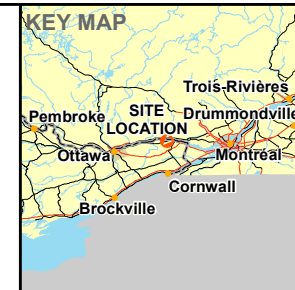
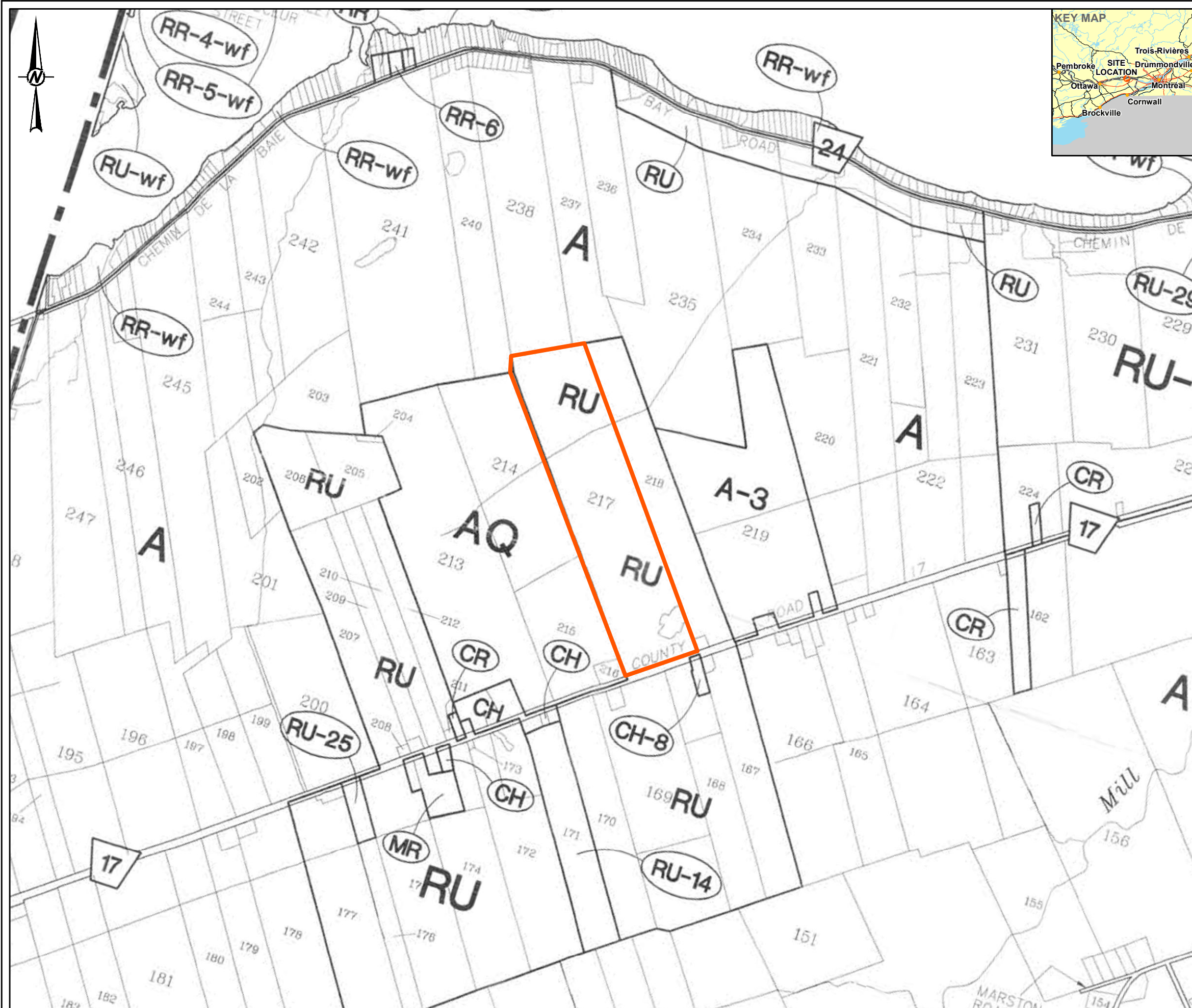
TITLE
SITE LAYOUT PLAN

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



APPENDIX A

Zoning / Land Use Designation





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.

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APPENDIX C

Noise Data

Source Name	Small Dust Collector	Large Dust Collector Exhaust	Large Dust Collector Fan Casing	Large Dust Collector Baghouse Casing	HVAC	Substation	Loader CAT 962	Truck - 65 ton	Truck Pass-By	Building Exterior Façade	Building Exterior Façade
TYPE	PWL	PWL	PWL	PWL	PWL	PWL	PWL	PWL	PWL	SPL	SPL
Library ID	E00	E01_A	E01_B	E01_C	P00	P01	P08	T01	T02	VA100	VA101
Frequency (Hz)											
31.5	94		93	104	82	79	116	108	107	0	0
63	90	90	100	109	86	85	125	115	107	80	75
125	96	99	101	97	91	87	117	121	102	76	71
250	101	93	106	94	82	82	106	115	95	66	61
500	88	92	99	88	81	82	104	102	96	72	67
1000	85	90	89	81	79	76	103	105	100	61	56
2000	81	84	86	81	72	71	102	105	96	56	51
4000	74	79	80	79	66	66	96	98	94	43	38
8000	62	78	77	77	62	59	87	89	86	25	20
dBA	95	95	100	91	84	82	109	112	103	70	65



APPENDIX D

Noise Source Summary Nomenclature



NOISE SOURCE SUMMARY TABLE NOMENCLATURE

Source Location

O – located/installed outside the building, including on the roof

I – located/installed inside the building

Sound Characteristics

S – Steady

Q – Quasi Steady Impulsive

I – Impulsive

B – Buzzing

T – Tonal

C – Cyclic

Noise Control Measures

S – silencer, acoustic louver, muffler

A – acoustic lining, plenum

B – barrier, berm, screening

L – lagging

E – acoustic enclosure

O – other

U – uncontrolled

n:\active\2015\3 proj\1529718 colacem_l\original_champ\lain\07 technical studies\noise\aar update_aug2017\reports\aar\appendix d noise source summary nomenclature\noise source summary nomenclature.docx

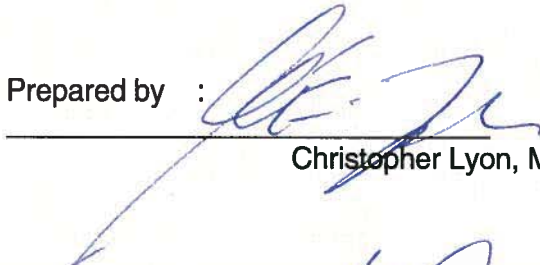


APPENDIX E

Road Traffic Data and STAMSON Predictions

**Colacem Canada Cement Plant
L'Original
Traffic Impact Study**

Prepared by :


Christopher Lyon, M.Eng., P.Eng.

Verified by :


Gerald Doucette, P.Eng.

**PROJECT N° A000559
7 October 2015**

Colacem Canada Cement Plant, L'Original, ON
Traffic Impact Study
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7. *A minimum development setback of 15 metres from the property line shall be required.*
[The 2015 Amendment to the Official plan proposes the following:
(b) Deleting in policy 7 the words “15 metres from the property line” and replacing them with the words “half the minimum right of way identified on Schedule D from the centre line of the road”;
c) Adding in policy 7 the words “and implemented in local zoning by-law” after the word “required”];

5. TRAFFIC ANALYSIS

5.1 SURVEY OF EXISTING TRAFFIC

Existing (2015) traffic levels on County Road 17 in close proximity to the development were acquired through peak period traffic counts conducted by CIMA on Tuesday 14 July 2015 (Morning Peak Period) and Thursday 16 July 2015 (Afternoon Peak Period).

The results of these counts and traditional Roadway Classification capacities for these public roads are provided in Table 1.

Table 1: Traffic Counts, Survey Results and Classification Related Capacities

Roadway	Official Plan Classification	AM Peak Hour Traffic (2015) 7:30 am to 8:30 am (vehicles per hour)	PM Peak Hour Traffic (2015) 4:00 pm to 5:00pm (vehicles per hour)	Estimated Capacity by Roadway Classification (vehicles per hour)
CR 17 East Bound	Primary Arterial	306	311	~ 1400
CR 17 West Bound	Primary Arterial	219	341	~ 1400
CR 17 Total	Primary Arterial	525	652	~ 2800

5.2 ANTICIPATED GROWTH IN BACKGROUND TRAFFIC 2018 – 2023 (UNRELATED TO THE PROPOSED DEVELOPMENT)

Background growth rates are used when projecting future traffic on major urban arterials to capture the impact of general urban growth and/or anticipated changes in trip making.



The UCPR supplied vehicle traffic counts from Friday 20 May 2011. The daily volume recorded for 2011 at a location 0.8 km west of County Road 17 intersection is 7,597 vehicles per day (vpd). The 2015 Average Annual Daily Traffic (AADT) estimated from CIMA traffic counts completed on the Tues 14 July 2015 and Thursday, 16 July 2015 is 8,287 vpd (based on a surveyed value of 652 vehicles per hour (vph) for p.m. peak hour).

Filename: cemlpowd.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 40.00 m
 Receiver height : 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
 Barrier height : 3.00 m
 Barrier receiver distance : 1.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.46 !	1.50 !	1.50 !	1.50

ROAD (38.95 + 43.59 + 38.95) = 45.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	-80	0.66	65.79	0.00	-7.07	-19.76	0.00	0.00	0.00	38.95
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-80	80	0.48	65.79	0.00	-6.31	-1.33	0.00	0.00	-14.56	43.59
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
80	90	0.66	65.79	0.00	-7.07	-19.76	0.00	0.00	0.00	38.95
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Segment Leq : 45.86 dBA

Total Leq All Segments: 45.86 dBA

TOTAL Leq FROM ALL SOURCES: 45.86

Filename: cemlout.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 40.00 m
 Receiver height : 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -70.00 deg Angle2 : 70.00 deg
 Barrier height : 3.00 m
 Barrier receiver distance : 3.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.46 !	1.50 !	1.50 !	1.50

ROAD (43.93 + 45.56 + 43.93) = 49.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	-70	0.66	65.79	0.00	-7.07	-14.79	0.00	0.00	0.00	43.93
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-70	70	0.48	65.79	0.00	-6.31	-1.68	0.00	0.00	-12.24	45.56
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
70	90	0.66	65.79	0.00	-7.07	-14.79	0.00	0.00	0.00	43.93
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Segment Leq : 49.31 dBA

Total Leq All Segments: 49.31 dBA

TOTAL Leq FROM ALL SOURCES: 49.31

Filename: cemlpown.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 70 veh/TimePeriod
 Medium truck volume : 4 veh/TimePeriod
 Heavy truck volume : 2 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 40.00 m
 Receiver height : 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
 Barrier height : 3.00 m
 Barrier receiver distance : 1.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.27 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.27	1.50	1.49	1.49

ROAD (34.81 + 39.38 + 34.81) = 41.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-80	0.66	61.64	0.00	-7.07	-19.76	0.00	0.00	0.00	34.81
-80	80	0.49	61.64	0.00	-6.33	-1.34	0.00	0.00	-14.59	39.38
80	90	0.66	61.64	0.00	-7.07	-19.76	0.00	0.00	0.00	34.81

Segment Leq : 41.68 dBA

Total Leq All Segments: 41.68 dBA

TOTAL Leq FROM ALL SOURCES: 41.68

Filename: cem2powd.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 29.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

ROAD (0.00 + 59.98 + 0.00) = 59.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	65.79	0.00	-4.50	-1.30	0.00	0.00	0.00	59.98

Segment Leq : 59.98 dBA

Total Leq All Segments: 59.98 dBA

TOTAL Leq FROM ALL SOURCES: 59.98

Filename: cem2out.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 17.00 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

ROAD (0.00 + 63.43 + 0.00) = 63.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.79	0.00	-0.90	-1.46	0.00	0.00	0.00	63.43

Segment Leq : 63.43 dBA

Total Leq All Segments: 63.43 dBA

TOTAL Leq FROM ALL SOURCES: 63.43

Filename: cem2pown.te Time Period: 1 hours
Description:

Road data, segment # 1: CR 17

Car traffic volume : 70 veh/TimePeriod
Medium truck volume : 4 veh/TimePeriod
Heavy truck volume : 2 veh/TimePeriod
Posted speed limit : 90 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

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 : 29.00 m
Receiver height : 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CR 17

Source height = 1.27 m

ROAD (0.00 + 55.81 + 0.00) = 55.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.58	61.64	0.00	-4.51	-1.31	0.00	0.00	0.00	55.81

Segment Leq : 55.81 dBA

Total Leq All Segments: 55.81 dBA

TOTAL Leq FROM ALL SOURCES: 55.81

Filename: cem3powd.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

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 : 43.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: CR 17

Source height = 1.46 m

ROAD (0.00 + 57.30 + 0.00) = 57.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	65.79	0.00	-7.19	-1.30	0.00	0.00	0.00	57.30

Segment Leq : 57.30 dBA

Total Leq All Segments: 57.30 dBA

TOTAL Leq FROM ALL SOURCES: 57.30

Filename: cem3out.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 15.00 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

ROAD (0.00 + 64.33 + 0.00) = 64.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.79	0.00	0.00	-1.46	0.00	0.00	0.00	64.33

Segment Leq : 64.33 dBA

Total Leq All Segments: 64.33 dBA

TOTAL Leq FROM ALL SOURCES: 64.33

Filename: cem3pown.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 70 veh/TimePeriod
 Medium truck volume : 4 veh/TimePeriod
 Heavy truck volume : 2 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 43.00 m
 Receiver height : 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.27 m

ROAD (0.00 + 53.12 + 0.00) = 53.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.58	61.64	0.00	-7.21	-1.31	0.00	0.00	0.00	53.12

Segment Leq : 53.12 dBA

Total Leq All Segments: 53.12 dBA

TOTAL Leq FROM ALL SOURCES: 53.12

Filename: cem4powd.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
 Barrier height : 2.50 m
 Barrier receiver distance : 1.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.46 !	1.50 !	1.50 !	1.50

ROAD (37.34 + 44.56 + 37.34) = 45.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	-80	0.66	65.79	0.00	-8.68	-19.76	0.00	0.00	0.00	37.34
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-80	80	0.51	65.79	0.00	-7.90	-1.37	0.00	0.00	-11.96	44.56
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
80	90	0.66	65.79	0.00	-8.68	-19.76	0.00	0.00	0.00	37.34
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Segment Leq : 45.95 dBA

Total Leq All Segments: 45.95 dBA

Filename: cem4out.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -70.00 deg Angle2 : 70.00 deg
 Barrier height : 2.50 m
 Barrier receiver distance : 3.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.46	1.50	1.50	1.50

ROAD (42.32 + 46.68 + 42.32) = 49.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-70	0.66	65.79	0.00	-8.68	-14.79	0.00	0.00	0.00	42.32
-70	70	0.51	65.79	0.00	-7.90	-1.72	0.00	0.00	-9.49	46.68
70	90	0.66	65.79	0.00	-8.68	-14.79	0.00	0.00	0.00	42.32

Segment Leq : 49.07 dBA

Total Leq All Segments: 49.07 dBA

TOTAL Leq FROM ALL SOURCES: 49.07

Filename: cem4pown.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 70 veh/TimePeriod
 Medium truck volume : 4 veh/TimePeriod
 Heavy truck volume : 2 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
 Barrier height : 2.50 m
 Barrier receiver distance : 1.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.27 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.27	1.50	1.50	1.50

ROAD (33.20 + 40.34 + 33.20) = 41.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-80	0.66	61.64	0.00	-8.68	-19.76	0.00	0.00	0.00	33.20
-80	80	0.52	61.64	0.00	-7.93	-1.38	0.00	0.00	-11.99	40.34
80	90	0.66	61.64	0.00	-8.68	-19.76	0.00	0.00	0.00	33.20

Segment Leq : 41.76 dBA

Total Leq All Segments: 41.76 dBA

TOTAL Leq FROM ALL SOURCES: 41.76

Filename: cem5powd.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 46.00 m
 Receiver height : 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
 Barrier height : 5.50 m
 Barrier receiver distance : 1.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.46 !	4.50 !	4.43 !	4.43

ROAD (39.29 + 46.29 + 39.29) = 47.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	-80	0.57	65.79	0.00	-7.65	-18.85	0.00	0.00	0.00	39.29
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-80	80	0.24	65.79	0.00	-6.04	-0.94	0.00	0.00	-12.52	46.29
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
80	90	0.57	65.79	0.00	-7.65	-18.85	0.00	0.00	0.00	39.29
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Segment Leq : 47.75 dBA

Total Leq All Segments: 47.75 dBA

TOTAL Leq FROM ALL SOURCES: 47.75

Filename: cem5out.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 135 veh/TimePeriod
 Medium truck volume : 10 veh/TimePeriod
 Heavy truck volume : 7 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 46.00 m
 Receiver height : 1.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -70.00 deg Angle2 : 70.00 deg
 Barrier height : 5.50 m
 Barrier receiver distance : 3.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.46 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----+-----+-----+-----			
1.46 !	1.50 !	1.50 !	1.50

ROAD (42.92 + 38.59 + 42.92) = 46.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	-70	0.66	65.79	0.00	-8.08	-14.79	0.00	0.00	0.00	42.92
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-70	70	0.33	65.79	0.00	-6.48	-1.51	0.00	0.00	-19.21	38.59
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
70	90	0.66	65.79	0.00	-8.08	-14.79	0.00	0.00	0.00	42.92
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Segment Leq : 46.67 dBA

Total Leq All Segments: 46.67 dBA

TOTAL Leq FROM ALL SOURCES: 46.67

Filename: cem5pown.te Time Period: 1 hours
 Description:

Road data, segment # 1: CR 17

 Car traffic volume : 70 veh/TimePeriod
 Medium truck volume : 4 veh/TimePeriod
 Heavy truck volume : 2 veh/TimePeriod
 Posted speed limit : 90 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: CR 17

 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 : 46.00 m
 Receiver height : 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -80.00 deg Angle2 : 80.00 deg
 Barrier height : 5.50 m
 Barrier receiver distance : 1.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Reference angle : 0.00

Results segment # 1: CR 17

 Source height = 1.27 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.27	4.50	4.43	4.43

ROAD (35.06 + 42.07 + 35.06) = 43.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-80	0.58	61.64	0.00	-7.67	-18.91	0.00	0.00	0.00	35.06
-80	80	0.25	61.64	0.00	-6.07	-0.95	0.00	0.00	-12.55	42.07
80	90	0.58	61.64	0.00	-7.67	-18.91	0.00	0.00	0.00	35.06

Segment Leq : 43.53 dBA

Total Leq All Segments: 43.53 dBA

TOTAL Leq FROM ALL SOURCES: 43.53



APPENDIX F

Sample Calculation

Report (1529718 Colacem cement 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 Rcvr - 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 Airlside 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" Constituent 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 Wall	VA101	Li		-11.4	75.3	70.9	61.0	66.9	56.3	50.6	37.8	19.5	65.4	77.2	

Point Source(s)

Name	M.	ID	Result. PWL			Type	Lw / Li Value	Correction				Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height	Coordinates			
			Day	Evening	Night			norm.	Day	Evening	Night	R	Area (m²)		Day	Special	Night								
			(dBA)	(dBA)	(dBA)				(dB(A))	(dB(A))	(dB(A))				(dB(A))	(min)	(min)					(min)	(dB)	(Hz)	
Bauxite Reception Bin		100IE01	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		100IE02	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		100IE03	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		100IE04	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		100IE05	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		100IE06	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		100IE07	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		100IE08	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		100IE09	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		100IE10	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		100IE11	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		100IE12	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		100IE13	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		100IE14	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		100IE15	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		100IE16	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		100IE17	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		100IE18_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		100IE18_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		100IE18_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		100IE19	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		100IE20	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		100IE21	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		100IE22	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		100IE23	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		100IE24	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		100IE25	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		100IE26	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		100IE27	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		100IE28	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		100IE29	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		100IE30	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		100IE31	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		100IE32	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		100IE33	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		100IE34	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
Cement Gypsum Hopper Dedusting		100IE35	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" Constituent Hopper Dedusting		100IE36	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		100IE37	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		100IE38	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		100IE39_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		100IE39_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		100IE39_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		100IE40_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		100IE40_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		100IE40_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		100IE41	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	518916.87	5049471.59	67.00
Cement Mill 2 Air Slide and Bucket Elevator Dedusting		100IE42	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		100IE43	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		100IE44	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		100IE45	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		100IE46	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		100IE47	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		100IE48	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		100IE49	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		100IE50	94.5	94.5	94.5	Lw	E50		0.0	0.0	0.0				60.00	60.00									

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)		(m²)	(min)	(min)	(min)	(dB)	(Hz)		(m)	(m)	(m)	(m)
HVAC		100IP02	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		100IP03	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		100IP04	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		100IP05	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		100IP06	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		100IP07	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		100IP08	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

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)
Cement Truck - 35 ton		100IT10	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
Fly Ash Truck - 35 ton		100IT09	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
Iron Ore Truck - 35 ton		100IT05	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
Limestone Truck - 65 ton		100IT01	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		100IT02	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		100IT04	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
Silica Fume Truck - 35 ton		100IT08	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
Silica Sand Truck - 35 ton		100IT06	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
Water Truck		100IT11	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

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)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night
Cement Mill		100IA01	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		100IA02	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		100IA03	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		100IVA01	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		100IVA02	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		100IVA03	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)	(m)	(m)
Road Barrier		100001BR_01	0.37	0.37				4.60	r

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height	
						Begin	End
						(m)	(m)
Hopper Buaxite		100I01		0	0.37	20.10	r
Hopper Schist		100I02		0	0.37	20.10	r
Hopper Gypsum		100I03		0	0.37	20.10	r
Limestone Crusher		100I04		0	0.37	20.10	r
Raw Material		100I05_06_07_08_09		0	0.37	10.30	r
Raw Material		100I05_06_07_08_09		0	0.37	20.10	r
Raw Material		100I05_06_07_08_09		0	0.37	32.10	r
Raw Mill		100I12		0	0.37	31.00	r
Raw Mill		100I12		0	0.37	70.10	r
Homogenization Silo		100I13		0	0.37	65.00	r
Waste Gas Treatment System for Kiln and Mill		100I14		0	0.37	5.00	r
Cooler		100I17		0	0.37	20.80	r
Clinker Silo		100I18		0	0.37	74.50	r

Name	M.	ID	RB	Residents	Absorption	Height
						Begin
						(m)
Clinker Bulk Building		100119		0	0.37	24.70 r
Hopper Klinker and Additives of Cement Mill		100120		0	0.37	35.50 r
Silica Fume Silo		100121		0	0.37	35.50 r
Fly Ash Silo		100121		0	0.37	35.50 r
Cement Silo		100123		0	0.37	62.00 r
Cement Silo		100123		0	0.37	62.00 r
Cement Silo		100123		0	0.37	62.00 r
Cement Silo		100123		0	0.37	62.00 r
Cement Packing Pallets		100124 25		0	0.37	15.60 r
Cement Mill		100122		0	0.37	38.20 r
Air Compression Station		100126		0	0.37	5.00 r
Air Compression Station		100126		0	0.37	5.00 r
Pet coke grinding		100129		0	0.37	33.90 r
Central Control Room		100130		0	0.37	15.00 r
Porter's Desk		100131		0	0.37	10.00 r
Industrial Water Closed Circuit		100132		0	0.37	5.00 r
Mechanical & Electrical		100133		0	0.37	10.00 r
Storage Warehouse		100134		0	0.37	10.00 r
Empty Bags Storage		100135		0	0.37	15.60 r
Guardroom		100140		0	0.37	2.00 r
Canteen Change Rooms		100141 42		0	0.37	7.00 r
Kiln Inlet Ang Raw Mill Elec Room		100143		0	0.37	5.00 r
Kiln Outlet, Cooler and Pet Coke Mill Elec Room		100144		0	0.37	5.00 r
Limestone Crusher Elec Room		100147		0	0.37	5.00 r
Hopper Reception Clinker		100149		0	0.37	15.00 r
Alternative Fuel		100150		0	0.37	22.60 r
Electrical Room		1011QB-02		0	0.37	3.56 r
Scale House		1011QB-03		0	0.37	3.84 r
Lime Storage Shed		1011QB-04		0	0.37	3.80 r
IKO Dome		1011QB-06		0	0.37	10.00 r
Asphalt Control Room		1011QB-07		0	0.37	5.50 r
Concrete Plant		1011QB-09a		0	0.37	12.80 r
Concrete Plant		1011QB-09b		0	0.37	3.00 r
Garage		1011QB-10		0	0.37	4.80 r
Lime Plant		1011QB-05		0	0.37	
Silo IKO		1011QB-11		0	0.37	22.60 r
Soil Building		1011QB-14		0	0.37	6.00 r
Soil Building		1011QB-15		0	0.37	6.00 r

Ground Absorption Area(s)

Name	M.	ID	G
Pond		GABS01	0.0
Cement Plant Site		1001GABS01	0.3
Phase 1a Quarry Floor		101051GABS01	0.3
Scotts		1011GABS01	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	39.2	38.4	33.5	45.9	45.9	40.4				1.50 r	518227.46	5048877.49	55.50
One-Storey Residence Outdoor Location		POR01 OUT	39.2	38.4	33.5	49.3	49.3	0.0				1.50 r	518226.87	5048879.63	55.50
Two-Storey Residence Plane of Window		POR02 POW	47.7	45.3	44.8	60.0	60.0	52.8				4.50 r	518934.97	5049037.48	58.35
Two-Storey Residence Outdoor Location		POR02 OUT	45.5	43.3	42.3	63.4	63.4	0.0				1.50 r	518960.20	5049057.76	55.48
Two-Storey Residence Plane of Window		POR03 POW	43.4	41.3	39.3	57.3	57.3	50.1				4.50 r	519236.93	5049120.37	58.26
Two-Storey Residence Outdoor Location		POR03 OUT	42.5	40.4	38.6	64.3	64.3	0.0				1.50 r	519210.87	5049140.45	55.42
One-Storey Residence Plane of Window		POR04 POW	42.9	41.4	37.7	46.0	46.0	40.4				1.50 r	519319.32	5049242.65	55.50
One-Storey Residence Outdoor Location		POR04 OUT	43.0	41.5	37.8	49.1	49.1	0.0				1.50 r	519318.78	5049245.18	55.46
Two-Storey Residence Plane of Window		POR05 POW	44.2	42.6	38.8	47.8	47.8	40.5				4.50 r	519387.65	5049258.94	57.50
Two-Storey Residence Outdoor Location		POR05 OUT	42.5	41.2	37.0	46.7	46.7	0.0				1.50 r	519387.21	5049261.30	54.50

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