



REPORT

Acoustic Assessment Report

Durham-York Energy Centre

Submitted to:

Covanta Durham York Renewable Energy L.P.

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Courtice, Ontario
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Submitted by:

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Distribution List

Electronic copy - Covanta Durham York Renewable Energy L.P.

Electronic copy - Golder Associates Ltd.

Version Control

This Acoustic Assessment Report (AAR) documents the operations at an Energy-from-Waste facility owned by the Regional Municipalities of Durham and York, the Durham York Energy Centre (DYEC) which is operated by Covanta Durham York Renewable Energy L.P. and has been prepared in accordance with Ontario Ministry of the Environment, Conservation and Parks (MECP) 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 MECP 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
1.0	March 2011	Original Acoustic Assessment Report in support of a Basic Comprehensive Certificate of Approval (Air and Noise) application.	Golder Associates Ltd.
2.0	December 2021	Updated Acoustic Assessment Report (AAR) in support of an Environmental Compliance Approval amendment application. AAR updated based on site measurements.	Golder Associates Ltd.

Executive Summary

The Regional Municipalities of Durham and York own an Energy-from-Waste facility (DYEC) located on the west side of Osborne Road located at the intersection of Osborne Road and Energy Drive, south of Highway 401 and north of a CN Rail Corridor in the Municipality of Clarington (the Facility). The Facility is a thermal treatment facility, capable of processing post-diversion residual waste and recovering materials and energy to export to the marketplace.

The Facility is operated by Covanta Durham York Renewable Energy L.P. (Covanta). The Regions are currently undertaking a streamlined Environmental Assessment (EA) to increase the maximum annual processing rate at the DYEC from 140,000 to 160,000 tonnes per year (TPY). The streamlined EA is being completed in accordance with the Environmental Screening Process as defined in Ontario Regulation 101/07. If approved, the Facility will process approximately 160,000 TPY of municipal solid waste (MSW) and capture its energy content in the form of superheated steam used to generate electricity. The Facility operates year-round, typically 24 hours per day, seven (7) days per week with reduced operations during the evening and nighttime periods (i.e., 19:00 to 07:00 hours). Operation of equipment that are limited to the daytime period (i.e., 07:00 to 19:00 hours) include the MSW trucking, transfer of Residual Waste, and periodic testing of standby diesel generator and diesel fire pumps.

Golder Associates Ltd. (Golder) was retained by Covanta to prepare an Acoustic Assessment Report (AAR) in support of the streamlined Environmental Assessment as well as an amendment application for the Facility's ECA. The purpose of this AAR is to evaluate the overall noise emissions of the Facility with respect to the Ontario Ministry of the Environment, Conservation and Parks (MECP) noise guidelines.

Significant noise sources associated with Facility operations include: HVAC units, roof ventilation units, closed-loop cooling water cooler, transformer, silo filling using truck mounted blower, silo vent dust collector, main exhaust stack, on-site truck traffic, front end loader traffic, air cooled condensers, various building openings (louvers, bay doors etc.), an emergency diesel generator and two emergency diesel fire pumps. Testing of the Facility's emergency diesel generator and emergency fire pumps is limited to daytime hours only (i.e., 07:00 to 19:00 hours).

All relevant sound levels for sources were obtained from onsite measurements which were used as inputs to a predictive acoustical model to quantify outdoor noise emissions associated with the Facility. The acoustical criteria was established in accordance with MECP publications NPC 233 (October, 1995) and NPC 300 (August, 2013).

Three (3) locations have been identified as being representative of the most sensitive Point(s) of Reception (POR(s)) in the vicinity of the Facility.

Golder predicted sound levels from the Facility at the identified PORs are below the applicable sound level limits during the predictable worst-case hour of the Facility during normal operation and during the periodic testing of the emergency diesel generator and emergency diesel fire pumps. Therefore, the Facility can operate in compliance with MECP noise guidelines as specified in NPC 300.

Site operations are not expected to be a significant source of vibration as defined by the MECP in NPC 207, and therefore a vibration assessment was not carried out.

Table of Contents

1.0 INTRODUCTION	1
2.0 FACILITY DESCRIPTION.....	2
3.0 NOISE SOURCE SUMMARY.....	4
3.1 Insignificant Noise Sources	4
3.2 Predictable Worst Cast Operation Scenarios	4
3.2.1 Facility Normal Operations (Stationary Sources).....	4
3.2.2 Scheduled Emergency Diesel Generator Testing.....	4
3.2.3 Scheduled Emergency Diesel Fire Pump Testing	4
4.0 POINT(S) OF RECEPTION.....	5
5.0 ASSESSMENT CRITERIA.....	6
5.1 Stationary Sources.....	6
5.2 Emergency Equipment	6
6.0 IMPACT ASSESSMENT.....	7
6.1 Analysis Methodology	7
6.2 Results.....	7
6.2.1 Noise Impact Assessment – Facility Normal Operations (Stationary Sources).....	7
6.2.2 Noise Impact Assessment – Back-up Diesel Generator Testing	7
6.2.3 Noise Impact Assessment –Emergency Fire Pump Testing	8
7.0 CONCLUSION.....	9

TABLES

Table A1: Facility Source Summary

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

Table SS2: Acoustic Assessment Summary – Overall Sound Levels – Normal Operations (Stationary Source)

Table EG1: Point of Reception Predicted Partial Sound Levels – Emergency Generators

Table EG2: Acoustic Assessment Summary – Overall Sound Levels – Emergency Generators

Table FP11: Point of Reception Predicted Partial Sound Levels – Emergency Fire Pump 1

Table FP12: Acoustic Assessment Summary – Overall Sound Levels – Emergency Fire Pump 1

Table FP21: Point of Reception Predicted Partial Sound Levels – Emergency Fire Pump 2

Table FP22: Acoustic Assessment Summary – Overall Sound Levels – Emergency Fire Pump 2

FIGURES

Figure 1: Site Location

Figure 2: Site Layout

APPENDICES

APPENDIX A

Zoning Designation Plan

APPENDIX B

Description of Technical Terms

APPENDIX C

Noise Data

APPENDIX D

Insignificant Noise Sources

APPENDIX E

Weather Data

APPENDIX F

Calibration Certificates

APPENDIX G

Sample Calculations

Ministry
of the
Environment

Ministère
de
l'Environnement



ACOUSTIC ASSESSMENT REPORT CHECKLIST

Company Name: Covanta Durham York Renewable Energy L.P.

Company Address: Durham York Energy Centre, 1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham, L1E 2R2

Location of Facility: Durham York Energy Centre, 1835 Energy Dr Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham, L1E 2R2

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.

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Recreated by Golder Associates Ltd. from Ontario Ministry of Environment Publication PIBS 5356e

ACOUSTIC ASSESSMENT REPORT CHECKLIST

	Required Information		
		Submitted	Explanation/Reference
1.0	Introduction (Project Background and Overview)	<input checked="" type="checkbox"/> Yes	Section 1.0
2.0	Facility Description		
	2.1 Operating hours of facility and significant Noise Sources	<input checked="" type="checkbox"/> Yes	Sections 2.0 and 3.0
	2.2 Site Plan identifying all significant Noise Sources	<input checked="" type="checkbox"/> Yes	Figures 2
3.0	Noise Source Summary		
	3.1 Noise Source Summary Table	<input checked="" type="checkbox"/> Yes	Table A1
	3.2 Source noise emissions specifications	<input type="checkbox"/> Yes	N/A
	3.3 Source power/capacity ratings	<input checked="" type="checkbox"/> Yes	Table A1
	3.4 Noise control equipment description and acoustical specifications	<input checked="" type="checkbox"/> Yes	Section 3.0
4.0	Point of Reception Noise Impact Calculations		
	4.1 Point of Reception Noise Impact Table	<input checked="" type="checkbox"/> Yes	Table SS1, EG1, FP11 and FP21
	4.2 Point(s) of Reception (POR) list and description	<input checked="" type="checkbox"/> Yes	Section 4.0
	4.3 Land-use Zoning Plan	<input checked="" type="checkbox"/> Yes	Appendix A
	4.4 Scaled Area Location Plan	<input checked="" type="checkbox"/> Yes	Figure 1
	4.5 Procedure used to assess noise impacts at each POR	<input checked="" type="checkbox"/> Yes	Sections 6.0
	4.6 List of parameters/assumptions used in calculations	<input checked="" type="checkbox"/> Yes	Section 6.0
5.0	Acoustics Assessment Summary		
	5.1 Acoustic Assessment Summary Table	<input checked="" type="checkbox"/> Yes	Table SS2, EG2, FP12 and FP22
	5.2 Rationale for selecting applicable noise guideline limits	<input checked="" type="checkbox"/> Yes	Section 5.0
	5.3 Predictable Worst Case Impacts Operating Scenario	<input checked="" type="checkbox"/> Yes	Sections 2.0 and 3.0
6.0	Conclusions		
	Statement of compliance with the selected noise performance limits	<input checked="" type="checkbox"/> Yes	Section 7.0
7.0	Appendices (Provide details such as)	<input type="checkbox"/> Yes	
	Listing of Insignificant Noise Sources	<input checked="" type="checkbox"/> Yes	Appendix D
	Manufacturer's Noise Specifications	<input type="checkbox"/> Yes	N/A
	Calculations	<input checked="" type="checkbox"/> Yes	Appendix G
	Instrumentation	<input checked="" type="checkbox"/> Yes	Appendix F
	Meteorology during Sound Level Measurements	<input checked="" type="checkbox"/> Yes	Appendix E
	Raw Data from Measurements	<input type="checkbox"/> Yes	N/A
	Drawings (Facility / Equipment)	<input type="checkbox"/> Yes	N/A

Recreated by Golder Associates Ltd., from Ontario Ministry of Environment Publication PIBS 5356e

1.0 INTRODUCTION

The Regional Municipalities of Durham and York own an Energy-from-Waste facility (DYEC) located on the west side of Osborne Road located at the intersection of Osborne Road and Energy Drive, south of Highway 401 and north of a CN Rail Corridor in the Municipality of Clarington (the Facility). The Facility is a thermal treatment facility, capable of processing post-diversion residual waste and recovering materials and energy to export to the marketplace.

The Facility is operated by Covanta Durham York Renewable Energy L.P. (Covanta). The Regions are currently undertaking a streamlined Environmental Assessment (EA) to increase the maximum annual processing rate at the DYEC from 140,000 to 160,000 tonnes per year (TPY). The streamlined EA is being completed in accordance with the Environmental Screening Process as defined in Ontario Regulation 101/07. The Facility thermally treats approximately 140,000 TPY of municipal solid waste and captures its energy content in the form of superheated steam used to generate electricity and potentially provide district heating to the neighbouring Courtice Waste Pollution Control Plant and Clarington Energy Park. The Facility incorporates a steam-turbine generator with a nameplate rating of approximately 20MW. The Facility is to be in full operation year-round and typically operates 24 hours per day, seven (7) days per week with reduced operations during the evening and nighttime periods (i.e. 19:00 to 07:00 hours). Operation of equipment that are limited to the daytime period (i.e., 07:00 to 19:00 hours) include the MSW trucking, transfer of Residual Waste, and periodic testing of standby diesel generator and diesel fire pumps.

Golder Associates Ltd. (Golder) was retained by Covanta to prepare an Acoustic Assessment Report (AAR) in support of an ECA amendment application for the Facility. The purpose of this AAR is to evaluate the overall noise emissions of the Facility with respect to the Ontario Ministry of Environment, Conservation and Parks (MECP) noise guidelines.

A site location plan showing the location of the Facility and the Points of Reception (PORs) is provided in Figure 1. Three (3) locations have been identified as being representative of the most sensitive receptor locations in the vicinity of the Facility in accordance with NPC 300 guidelines and are labelled as POR001 through POR003 in Figure 1. A site layout plan, showing the locations of the significant noise sources, is provided in Figure 2. 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 MECP noise guidelines. All relevant sound levels for sources were obtained from onsite measurements completed on November 29, 2019. Noise level predictions of the Facility's operations onto the neighbouring PORs were completed using this data to determine the potential noise impacts. For a description of technical terminology used in this report refer to Appendix B.

Site operations are not expected to be a significant source of vibration as defined by the MECP in NPC 207, and therefore a vibration assessment was not carried out.

2.0 FACILITY DESCRIPTION

The Facility provides a method of waste disposal through thermal waste treatment and generates electrical power via a steam-turbine generator. The Facility has provisions to extract steam from the process to supply heat to a future hot water district heating loop that could service the neighbouring Courtice Water Pollution Control Plant and the surrounding Energy Park. Additionally, the Facility recovers ferrous and non-ferrous metals from the ash residue stream for recycling.

The Facility consists of two (2) identical combustion trains, each designed to process a nominal 218 tonnes/day of MSW referenced at 13MJ/kg. Each train has identical boilers/furnaces and air pollution control equipment including carbon injection, dry scrubbers and fabric filters. The treated exhaust gases are vented to a common 87.6 m stack and released into the atmosphere. Although listed as a significant noise source later in the report in Section 3.0, the main exhaust stack was not audible over ambient background noise levels at any time or location during the November 2019 site visit.

Solid waste delivered to the facility is received within an enclosed tipping building. Refuse mixing and handling is carried out in the refuse pit and refuse feeding into the boilers is handled by one of two overhead grapple cranes.

After being charged into the feed chute hopper, the refuse is metered onto the fuel bed in a manner which continually mixes the combusting refuse, resulting in thorough burnout of combustible matter.

Natural gas is supplied by one (1) auxiliary burner in each furnace during start-up conditions to raise the temperature in the furnace to above 1000°C. This process takes about six (6) hours prior to solid waste being fed into the system. The residue from the combustion process that remains on the grate, referred to as bottom ash, is removed from the grate and quenched with water in an ash discharger. Bottom ash is removed from the ash discharger by a hydraulic ram that moves the bottom ash up an inclined surface onto a vibrating conveyor that promotes dewatering of the bottom ash.

The vibrating conveyor transports the material to the ferrous and non-ferrous metals recovery systems for separation, with the remaining residue discharged to dedicated bunks within the residue storage building. Fly ash and reaction products from the scrubber and baghouse hoppers are transported to the fly ash conditioners by a dedicated enclosed screw conveyor system. The fly ash conditioners thoroughly mix and stabilize the ash and deposit the conditioned material in a dedicated bunker in the residue building. All residue is loaded into vehicles for transport to a licensed disposal site.

In addition to the two (2) mass burn thermal treatment units (i.e., the combustion trains), the Facility also operates one (1) steam turbine generator with a maximum gross output of approximately 20 MW. The turbine generator set is designed to accept 72,000 kg/hr of steam.

The turbine exhausts directly to the air-cooled condenser. The air-cooled condenser is designed to accept full turbine bypass flow and can be isolated from the turbine under this mode of operation.

All major equipment not requiring direct contact with the environment is enclosed in buildings providing a controlled working environment and process isolation from the environment.

The Facility operates year-round, typically 24 hours per day, seven (7) days per week with waste deliveries only occurring during the daytime periods (i.e., 07:00 to 19:00 hours) from Monday to Saturday.

On site vehicles

Refuse is delivered to the Facility in fully enclosed transfer trailers. There is one (1) access route to the site. Vehicles enter the site from Darlington Park Road. All deliveries go through the gate and scale-house.

Based on the annual processing capacity and trucking, there could potentially be up to 27 trucks per day arriving at the site to drop off waste, and nine (9) trucks per day taking residual materials from the site, and reagent delivery, resulting in a conservative approximation of 36 trucks per day, excluding delivery trucks. For the purposes of this assessment, it was conservatively assumed that there could be up to ten (10) trucks on site during the predictable worst-case hour of operation.

In addition to on-site truck movements, the assessments consider up to three (3) reagent silo loading truck blowers operating simultaneously for the full hour under assessment.

The Facility operates two (2) front-end loaders which predominantly operate inside the tipping floor and residue building. The loaders are occasionally required to move between buildings to transfer materials. As such, Golder has conservatively assumed ten (10) loader trips, outside, during the predictable worst-case hour of operation.

3.0 NOISE SOURCE SUMMARY

The primary noise sources of concern include roof ventilation units, silo filling, air cooled condensers, a closed-loop cooling water cooler, silo dust collectors, HVAC units, transformers, louvers and bay doors, an emergency diesel generator, emergency diesel fire pumps, front-end loaders, on-site vehicle movements and idling and the main exhaust stack.

The overall sound power levels of the sources at the Facility are provided in Table A1 in the Tables Section, and their locations are illustrated in Figure 2. The octave band sound power levels for the primary noise sources used in this assessment are provided in Appendix C.

3.1 Insignificant Noise Sources

Insignificant noise sources are presented in Appendix D.

3.2 Predictable Worst Cast Operation Scenarios

3.2.1 Facility Normal Operations (Stationary Sources)

The Facility's normal operations can operate 24 hour per day, 7 days per week. The MSW and residual waste is limited from Monday to Saturday 07:00-19:00. Reagents and deliveries can arrive 24 hour per day, 7 days per week. Operation of equipment that is limited to the daytime period (i.e., 07:00 to 19:00 hours) include the MSW trucking and transfer of Residual Waste. The operation of all significant noise sources is identified in the sample calculation in Appendix G.

3.2.2 Scheduled Emergency Diesel Generator Testing

The Facility's emergency diesel generator is tested weekly and is assumed to operate for the full hour under assessment. Testing is limited to the daytime period (i.e. 07:00 to 19:00 hours). The Facility emergency diesel generator is tested independently from the other emergency equipment (i.e., emergency diesel fire pumps).

3.2.3 Scheduled Emergency Diesel Fire Pump Testing

The Facility's emergency fire pumps are each independently tested weekly and are assumed to operate for the full hour under assessment. Testing is limited to the daytime period (i.e. 07:00 to 19:00 hours). The Facility emergency fire pumps are tested independently from the other emergency equipment (i.e., emergency diesel generator).

4.0 POINT(S) OF RECEPTION

Three (3) PORs were identified in the AAR, as being representative of the most sensitive PORs in the vicinity of the Facility. These PORs are shown on the site location plan in Figure 1 and described below:

- POR001 – a former two-storey single family dwelling located approximately 480 metres from the property line west of the Facility, the dwelling is currently demolished, however, Golder has assumed a new dwelling could potentially be developed on these lands and has therefore conservatively included in the assessment;
- POR002 – two-storey single family dwelling approximately 690 metres from the property line east of the Facility;
- POR003 – one-storey single family dwelling approximately 870 metres from the property line north of the Facility.

Vacant Lots

Golder has reviewed the vacant lots surrounding the Facility to determine whether any of the zoning designations permit a noise sensitive land use. As can be seen from the zoning designation plan provided in Appendix A, the site location and surrounding lands have an industrial designation. Golder has also included pages from a land use official plan provided by the Municipality of Clarington showing the site location and surrounding lands are zoned as a business park with an industrial designation.

Furthermore, the lands located to the east and northeast of the Facility are owned and currently being developed by the Ontario Power Generation Inc. (OPG) as a new headquarters. The land to the north is a proposed battery storage facility. Based on the zoning designations, proposed future and existing non-noise sensitive land uses surrounding the Facility, vacant lots surrounding the Facility are not expected to include a noise sensitive development and therefore have not been included in the assessment.

5.0 ASSESSMENT CRITERIA

5.1 Stationary Sources

The PORs located in the vicinity of the Facility are in an area defined as Class 2 per MECP publication NPC 300. A Class 2 area means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 areas. Sound level characteristics of Class 1 during daytime (07:00 to 19:00 or to 23:00); and low evening and night background sound level defined by natural environment and infrequent human activity starting as early as 19:00 hours (19:00 or 23:00 to 07:00 hours).

In assessing stationary noise sources, the MECP has established exclusionary sound level limits for Class 2 areas for both; Plane of Window (POW) and Outdoor areas.

The One Hour Equivalent Sound Level (L_{eq}) MECP exclusionary sound level limits for a POR in Class 2 area are summarized below in Table 1 and were used to assess compliance of the Facility.

Table 1: Stationary Sources Sound Level Limits for Class 2

Time Period	Class 2 POW MECP Exclusionary Sound Level Limit (dBA)	Class 2 Outdoor MECP Exclusionary Sound Level Limit (dBA)
Day time (07:00 to 19:00)	50	50
Evening (19:00 to 23:00)	50	45
Nighttime (23:00 to 07:00)	45	N/A ¹

Note:

1. In accordance with NPC-300, in general, the Outdoor POR will be protected during the nighttime as a result of meeting the sound levels at the adjacent POW.

5.2 Emergency Equipment

Sound level limits do not apply to emergency equipment operating in emergency situations. In assessing noise sources associated with emergency equipment, Section B7.3 of the NPC 300 guideline outlines the emergency equipment sound level limits as follows:

The sound level limits for noise produced by emergency equipment operating in non-emergency situations, such as testing or maintenance of such equipment, are 5 dB greater than the sound level limits otherwise applicable to stationary sources.

The noise produced by emergency equipment operating in non-emergency situations should be assessed independently of all other stationary sources of noise. Specifically, the emissions are not required to be included with the overall noise assessment of a stationary source facility.

Therefore, the stationary source sound level limits presented in Table 1 above were increased by 5 dB during the daytime period when assessing periodic testing (i.e., non-emergency situations) of the emergency diesel generator and emergency diesel fire pumps.

6.0 IMPACT ASSESSMENT

6.1 Analysis Methodology

The predictive analysis was carried out using the commercially available software package Cadna/A V 2019 MR 1 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 MECP accepted standard used for outdoor sound propagation predictions. It should be noted 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 MECP accepted practice.

As described in ISO 9613 (part 2), ground factor values that represent the ground effect on sound levels range between 0 for acoustically reflective or hard surfaces and 1 for acoustically absorbing or soft surfaces. For this assessment, a factor of 0 was applied to all roads and a factor of 1 was applied to all other ground surfaces.

All relevant sound levels for sources were obtained from Golder's onsite sound measurements carried out on November 29, 2019 using an NTI sound level meter/real-time analyzer. The instrument was calibrated before and after the sound level measurements and the calibration verified. Sound levels have been documented in octave band level format and are summarized in Appendix C. Noise impact predictions were generated using this data. The instrument provided the spectral (i.e. frequency) content of the noise source(s) under review and is a valuable tool for identifying, quantifying and ranking noise source emissions from equipment at a given POR. Measuring equipment used in this study meets the MECP requirements, and calibration certificates are provided in Appendix F. Weather data for the November 29, 2019 site visit is presented in Appendix E.

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 using a 2 m by 2 m grid resolution within the POR property boundaries and within 30 m of the POW POR as per NPC 300. Sample calculations are provided in Appendix G.

6.2.1 Noise Impact Assessment – Facility Normal Operations (Stationary Sources)

Table SS1 in the Tables Section summarizes the predicted partial noise levels at the identified PORs due to the Facility operations. Table SS2 in the Tables Section provides a summary of the predictable worst-case overall sound levels for the identified PORs. The predicted overall sound levels from the Facility's normal operations at the identified PORs are below the applicable sound level limits.

6.2.2 Noise Impact Assessment – Back-up Diesel Generator Testing

Table EG1 summarizes the predicted partial noise levels for the periodic testing of the emergency diesel generator at the identified PORs. Table EG2 provides a summary of the overall noise levels for the emergency diesel generator at the identified PORs.

The predicted noise levels for all PORs, based on the daytime emergency diesel generator testing, comply with the applicable sound level limits. The equipment can be tested in compliance with MECP noise guidelines.

6.2.3 Noise Impact Assessment –Emergency Fire Pump Testing

Table FP11 and FP21 summarizes the predicted partial noise levels for the periodic testing of the emergency diesel fire pumps at the identified PORs. Table FP12 and FP22 provides a summary of the overall noise levels for the emergency diesel fire pumps at the identified PORs.

The predicted noise levels for all PORs, based on the daytime emergency diesel fire pump testing, comply with the applicable sound level limits. The equipment can be tested in compliance with MECP noise guidelines.

7.0 CONCLUSION

Golder Associates Ltd. was retained by Covanta to provide an Acoustic Assessment Report in support of an Environmental Compliance Approval amendment application for the Durham York Energy Centre facility located in Clarington, Ontario.

Using onsite noise measurements Golder predicted the noise levels on the identified Point(s) of Reception during the Facility's predictable worst-case hours of operation for both normal operations and testing of the Facility's emergency equipment.

Based on the results of this assessment, the noise emissions associated with Facility operations are below the applicable sound level limits at the identified PORs. Therefore, the Facility is expected to operate in compliance with MECP noise guidelines as specified in NPC 300.

Signature Page

Golder Associates Ltd.



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JS/TG/ADC/ng/lI

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TABLES

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

POR ID	POR Description	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Verified by Acoustic Audit	Daytime Performance Limit (dBA)	Night-time Performance Limit (dBA)	Compliance with Performance Limit (Yes/No)
POR001	Commercial Farmer - two storey	47	44	No	50	45	Yes
OLA001	OLA001	45	43	No	50	45	Yes
POR002	Residential - two storey	49	45	No	50	45	Yes
OLA002	OLA002	47	43	No	50	45	Yes
POR003	Residential - one storey	40	39	No	50	45	Yes
OLA003	OLA003	40	39	No	50	45	Yes

Table EG1: Point of Reception Predicted Partial Sound Levels - Emergency Generators

Source ID	POR001			OLA001			POR002			OLA002			POR003			OLA003		
	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)
S032	661	39	—	641	38	—	897	16	—	877	17	—	954	32	—	930	34	—
S056	664 / 665	30	—	644 / 644	30	—	894 / 895	14	—	873 / 874	13	—	953 / 956	15	—	929 / 932	28	—

Note 1: ### / ### refers to minimum and maximum distance of the source to the respective POR

Table EG2: Acoustic Assessment Summary - Overall Sound Levels - Emergency Generators

POR ID	POR Description	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Verified by Acoustic Audit	Daytime Performance Limit (dBA)	Night-time Performance Limit (dBA)	Compliance with Performance Limit (Yes/No)
POR001	Commercial Farmer - two storey	39	-	No	55	50	Yes
OLA001	OLA001	39	-	No	55	50	Yes
POR002	Residential - two storey	18	-	No	55	50	Yes
OLA002	OLA002	18	-	No	55	50	Yes
POR003	Residential - one storey	32	-	No	55	50	Yes
OLA003	OLA003	35	-	No	55	50	Yes

Table FP11: Point of Reception Predicted Partial Sound Levels - Emergency Fire Pump 1

Source ID	POR001			OLA001			POR002			OLA002			POR003			OLA003		
	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)
S033	721	35	—	705	36	—	786	40	—	767	39	—	1085	26	—	1061	26	—
S057	717 / 717	4	—	701 / 701	3	—	789 / 790	18	—	770 / 771	14	—	1082 / 1085	0	—	1058 / 1061	0	—
S058	725 / 725	0	—	709 / 709	0	—	782 / 782	4	—	763 / 763	3	—	1086 / 1086	0	—	1063 / 1063	0	—
S059	725 / 725	5	—	709 / 709	5	—	782 / 783	6	—	763 / 764	6	—	1083 / 1086	0	—	1060 / 1063	0	—

Note 1: ### / ### refers to minimum and maximum distance of the source to the respective POR

Table FP12: Acoustic Assessment Summary - Overall Sound Levels - Emergency Fire Pump 1

POR ID	POR Description	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Verified by Acoustic Audit	Daytime Performance Limit (dBA)	Night-time Performance Limit (dBA)	Compliance with Performance Limit (Yes/No)
POR001	Commercial Farmer - two storey	35	-	No	55	50	Yes
OLA001	OLA001	36	-	No	55	50	Yes
POR002	Residential - two storey	40	-	No	55	50	Yes
OLA002	OLA002	39	-	No	55	50	Yes
POR003	Residential - one storey	26	-	No	55	50	Yes
OLA003	OLA003	26	-	No	55	50	Yes

Table FP21: Point of Reception Predicted Partial Sound Levels - Emergency Fire Pump 2

Source ID	POR001			OLA001			POR002			OLA002			POR003			OLA003		
	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Distance (m)	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)
S034	721	35	—	705	36	—	784	40	—	766	39	—	1089	26	—	1066	26	—
S060	717 / 717	4	—	701 / 701	3	—	788 / 788	19	—	770 / 770	18	—	1088 / 1088	0	—	1064 / 1064	0	—
S061	725 / 725	5	—	709 / 709	5	—	781 / 781	13	—	762 / 762	11	—	1089 / 1089	0	—	1066 / 1066	0	—
S062	725 / 725	5	—	709 / 709	5	—	780 / 781	19	—	762 / 762	17	—	1089 / 1092	0	—	1066 / 1069	0	—

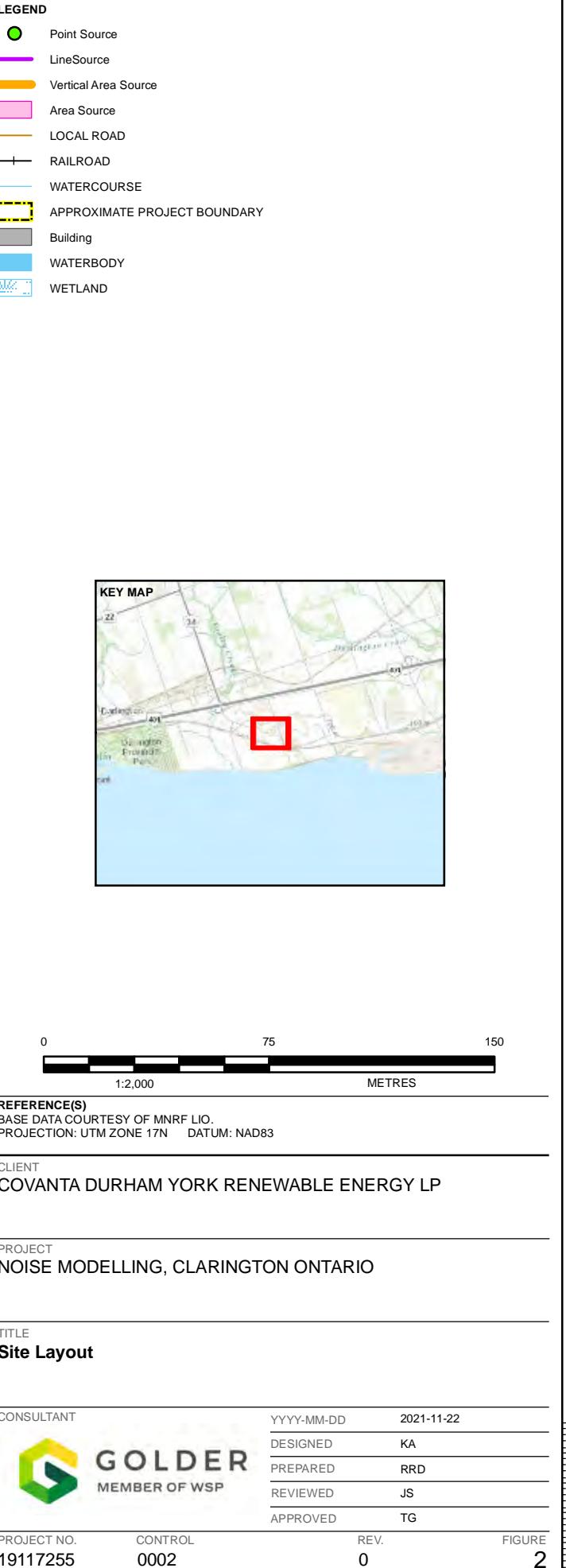
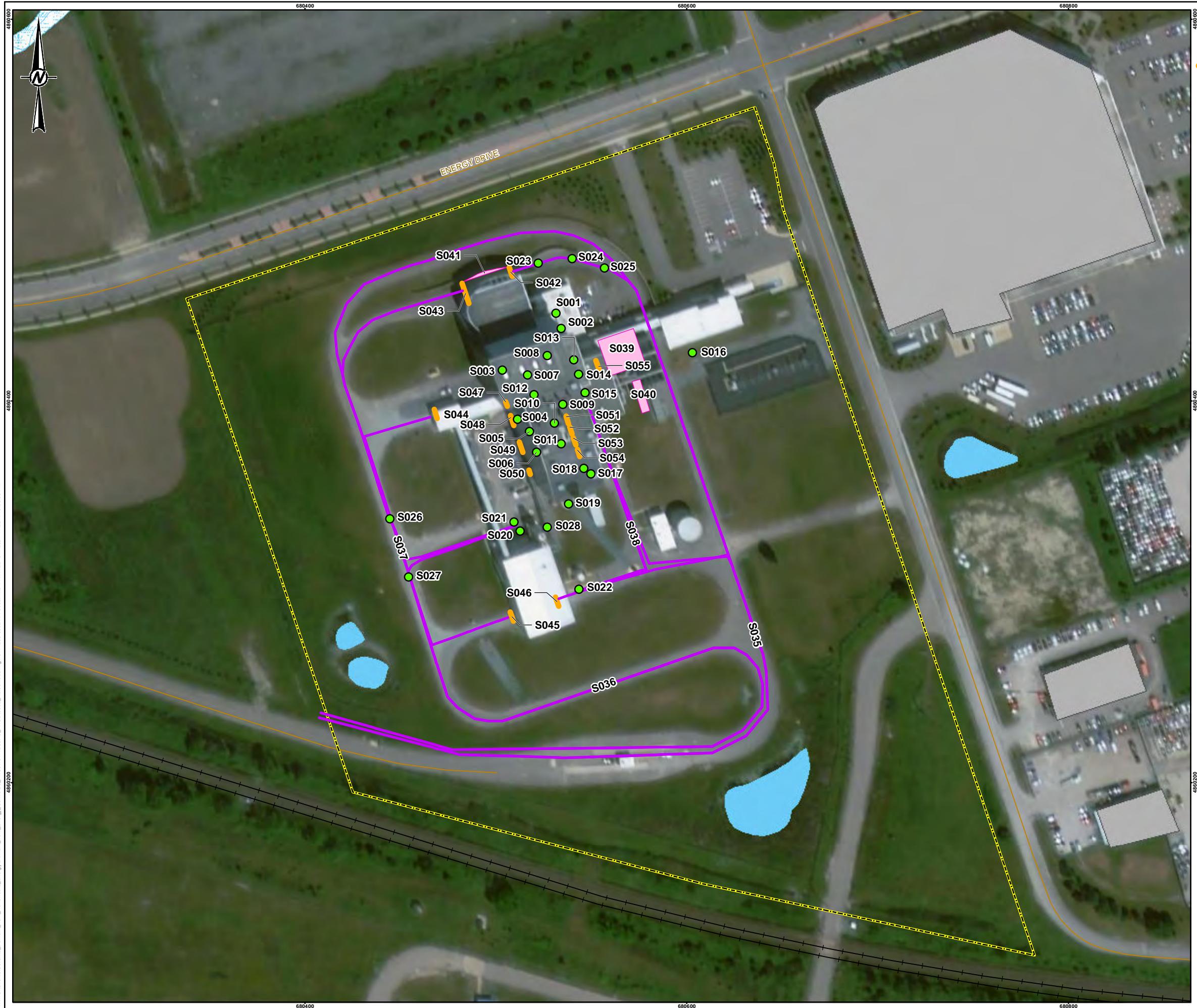
Note 1: ### / ### refers to minimum and maximum distance of the source to the respective POR

Table FP22: Acoustic Assessment Summary - Overall Sound Levels - Emergency Fire Pump 2

POR ID	POR Description	Overall Daytime Sound Pressure Level (dBA)	Overall Night-time Sound Pressure Level (dBA)	Verified by Acoustic Audit	Daytime Performance Limit (dBA)	Night-time Performance Limit (dBA)	Compliance with Performance Limit (Yes/No)
POR001	Commercial Farmer - two storey	35	-	No	55	50	Yes
OLA001	OLA001	36	-	No	55	50	Yes
POR002	Residential - two storey	40	-	No	55	50	Yes
OLA002	OLA002	39	-	No	55	50	Yes
POR003	Residential - one storey	26	-	No	55	50	Yes
OLA003	OLA003	26	-	No	55	50	Yes

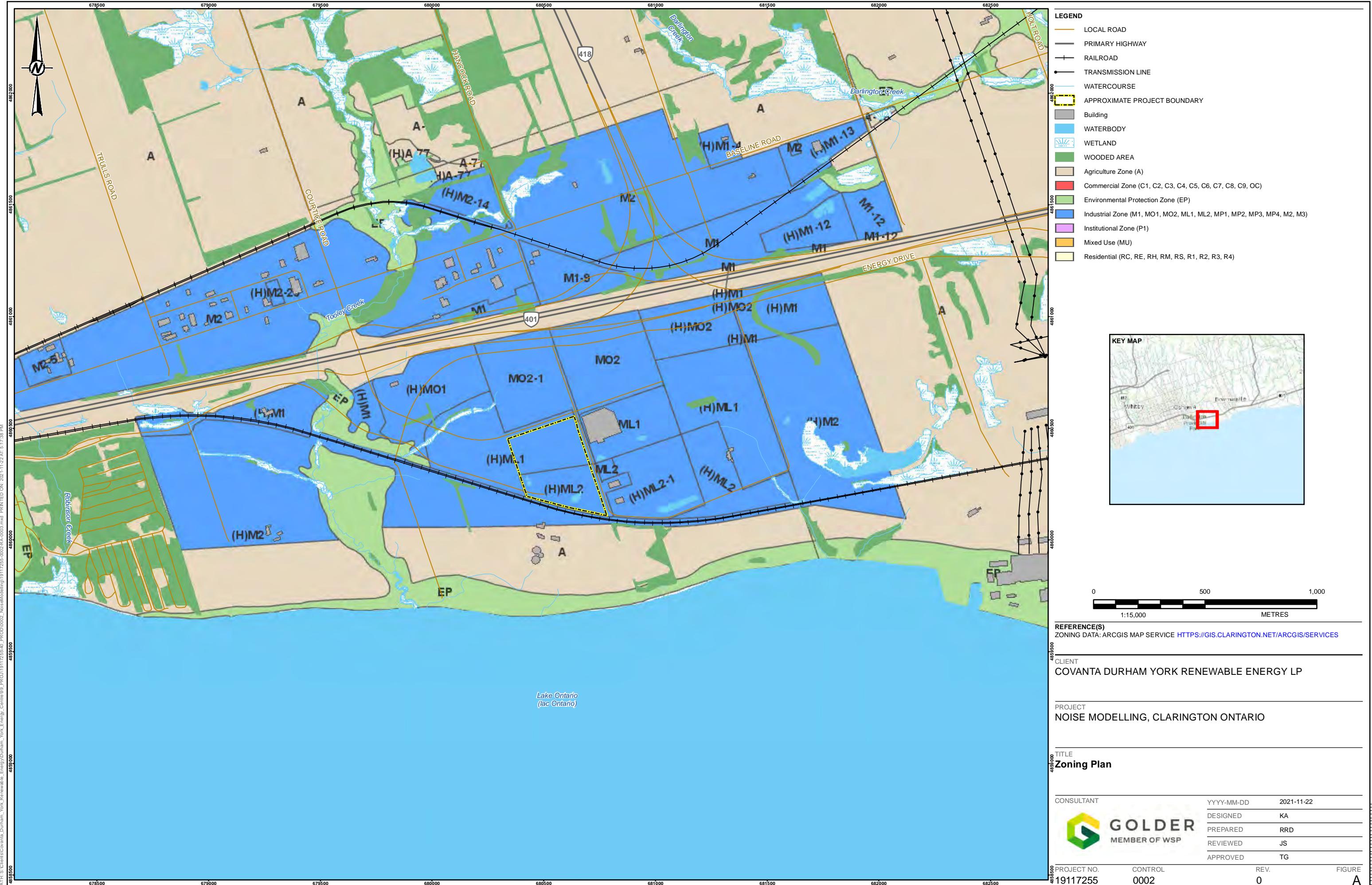
FIGURES

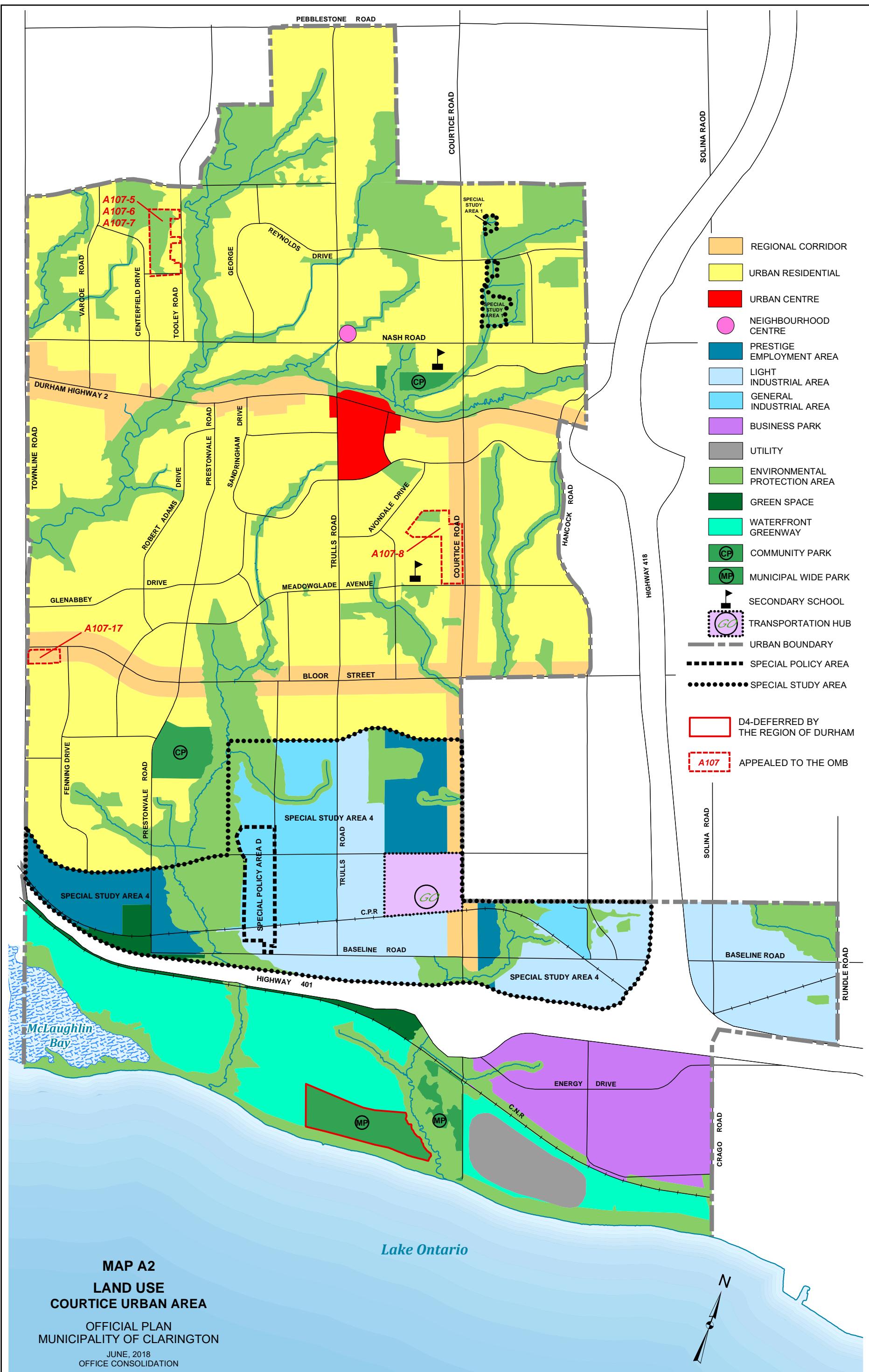


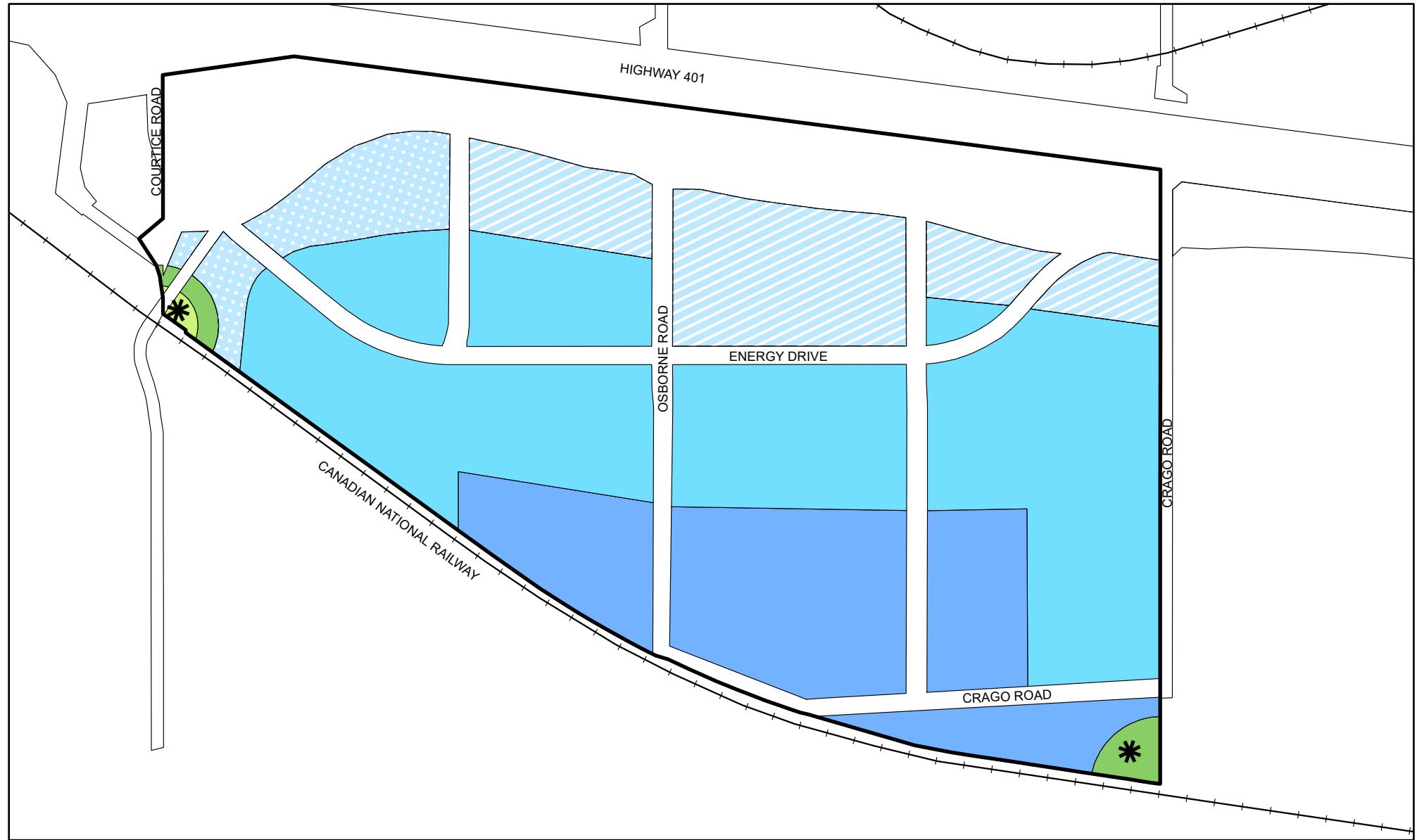


APPENDIX A

Zoning Designation Plan







LEGEND

	Clarington Business Park Area Boundary		Light Industrial 2
	Prestige Employment Corridor		Open Space
	Prestige Employment Node		Environmental Protection Area
	Light Industrial 1		Proposed Storm Water Pond

MAP A
LAND USE
AND PRIMARY ROADS
CLARINGTON ENERGY
BUSINESS PARK
SECONDARY PLAN
JUNE, 2018
OFFICE CONSOLIDATION

APPENDIX B

Description of Technical Terms

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.

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

APPENDIX C

Noise Data

December 2021

19117255

Appendix C: Noise Data

Name	ID	Oktave Spectrum (dB)											Source
		31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
GSU transformer	L004	100	97	93	95	102	93	82	77	72	100	106	Golder Database
Main stack exhaust	L007		126	125	103	98	93	87	82	78	110	129	Golder Measurement
On-site trucks	L008	103	106	108	99	99	102	98	92	85	105	112	Golder Database
Loader	L009	104	114	107	101	102	100	98	91	89	105	116	Golder Database
Standby diesel generator exhaust	L020		124	130	126	118	114	108	98	90	122	132	Golder Measurement
Standby diesel generator intake/discharge	L021		106	110	110	107	106	103	97	89	110	115	Golder Measurement
Diesel fire pump exhaust	L022	0	128	134	130	122	118	112	102	94	126	136	Golder Measurement
Truck Idling	L024	90	91	91	88	89	91	88	81	71	94	98	Golder Measurement
Updated ACC	L025	84	78	79	76	78	75	75	67	59	81	88	Golder Measurement
Updated Grizzly bay door	L026	71	83	76	71	71	73	70	65	58	77	85	Golder Measurement
Updated Tipping Floor Room	L027	82	85	82	78	78	80	77	72	63	84	90	Golder Measurement
Updated Boiler Room	L028	84	83	79	78	83	74	71	64	54	82	89	Golder Measurement
Updated APC building	L029	78	77	74	71	76	69	65	67	51	76	83	Golder Measurement
Updated Residue buiding	L030	78	77	78	75	73	75	73	75	76	82	86	Golder Measurement
Conveyor	L031	99	98	93	89	95	85	84	84	78	94	103	Golder Measurement
Updated HVAC	L032	101	98	97	97	90	87	81	76	71	93	105	Golder Measurement
Updated Turbine Building	L033	79	80	83	84	85	85	84	86	85	92	94	Golder Measurement
Updated Roof Ventillation Unit	L034	100	109	111	104	95	92	88	85	77	101	114	Golder Measurement
Updated Dust Colletor	L035	97	103	102	98	98	97	89	86	81	100	108	Golder Measurement
Updated Dies Fire pump Intake/Discharge	L036	77	81	93	88	90	93	95	92	92	100	101	Golder Measurement
Cooling Top	L037	95	91	87	87	100	83	81	79	74	97	102	Golder Measurement
Update Silo Filling	L038	92	100	103	101	107	104	102	96	86	109	111	Golder Measurement

APPENDIX D

Insignificant Noise Sources

INSIGNIFICANT NOISE SOURCES

Source Description	Rational
Various small building ventilation openings	The sound power levels associated with these sources are significantly lower than other sources onsite and is not expected to affect the findings of the assessment if included in the modelling.
Various passive stacks	

APPENDIX E

Weather Data

Weather Data for November 29, 2019 from Environment Canada
(<http://weather.gc.ca/>)

Station Name OSHAWA
 Province ONTARIO
 Latitude 43.92
 Longitude -78.88
 Elevation 139.9
 Climate Identifier 6155875
 WMO Identifier 71697
 TC Identifier YOO

Time	Temp (°C)	Dew Point Temp (°C)	Rel Hum (%)	Wind Dir (10s deg)	Wind Spd (km/h)	Stn Press (kPa)	Weather
0:00	-3.1	-5.9	81	33	11	101.32	NA
1:00	-3.2	-5.7	83	33	11	101.3	NA
2:00	-3.2	-5.7	83	33	9	101.35	NA
3:00	-3.4	-5.9	83	36	13	101.36	NA
4:00	-3.6	-5.8	85	35	11	101.3	NA
5:00	-3.5	-5.4	87	33	11	101.33	NA
6:00	-3.7	-5.6	87	2	5	101.34	NA
7:00	-3.8	-5.4	89	31	9	101.29	NA
8:00	-3.7	-5.2	90	34	13	101.28	NA
9:00	-3.8	-5.3	90	33	11	101.31	NA
10:00	-3.5	-5.4	87	35	8	101.34	NA
11:00	-3.3	-5.3	86	34	9	101.3	NA
12:00	-3	-5.3	84	35	8	101.2	NA
13:00	-2.7	-5.2	83	32	5	101.09	NA
14:00	-2.3	-5	82	32	11	101.06	NA
15:00	-2.3	-4.8	83	33	9	101.03	NA
16:00	-2.1	-4.8	82	34	11	100.98	NA
17:00	-2.2	-5	81	2	9	100.96	NA
18:00	-2.3	-5.3	80	1	8	100.95	NA
19:00	-2.3	-4.9	83	31	9	100.95	NA
20:00	-2.2	-4.7	83	33	4	100.9	NA
21:00	-2.2	-4.7	83	2	5	100.81	NA
22:00	-2.3	-5	82		0	100.79	NA
23:00	-3.3	-5.2	87	1	4	100.73	NA

APPENDIX F

Calibration Certificates

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

AUDIO ANALYZER

Manufactured by: NTI
Model No: XL2
Serial No: A2A-06532-E0
Calibration Recall No: 28565

Submitted By:

Customer:

Company: Golder Associates Ltd.
Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. XL2 NTI

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.

The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2008 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

Felix Christopher (QA Mgr.)

Calibration Date: 26-Feb-18

Certificate No: 28565 - 1

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

ISO/IEC 17025:2005

West Caldwell
Calibration
Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE

Manufactured by: NTI
Model No: MC230
Serial No: 6023
Calibration Recall No: 28565

Submitted By:

Customer:

Company: Golder Associates Ltd.
Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. MC230 NTI

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.

The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2008 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

Felix Christopher (QA Mgr.)

Calibration Date: 26-Feb-18

Certificate No: 28565 - 2

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

ISO/IEC 17025:2005

West Caldwell
Calibration
Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

APPENDIX G

Sample Calculations

Report (19117255 Covanta Noise Model 28Jun2021.cna)

CALCULATION CONFIGURATION

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	60.00
Reference Time Night (min)	60.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
DTM	
Standard Height (m)	75.00
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 (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	1.00
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	



golder.com