



**Brooks Road
Environmental**



Noise Assessment Report

Brooks Road Environmental Landfill Fill Rate Amendment – Environmental Screening Study

**Brooks Road Landfill Site
160 Brooks Road
Haldimand County, Ontario**

**March 2021
REF NO. 018235 (106)**

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1. Introduction

The Brooks Road Landfill Site (Site), is located at 160 Brooks Road, near Cayuga, Haldimand County, Ontario and is owned and operated by 2270386 Ontario Limited, herein referred to as Brooks Road Environmental (BRE, Owner, Proponent). The location of the Site is shown in **Figure 1.1**.

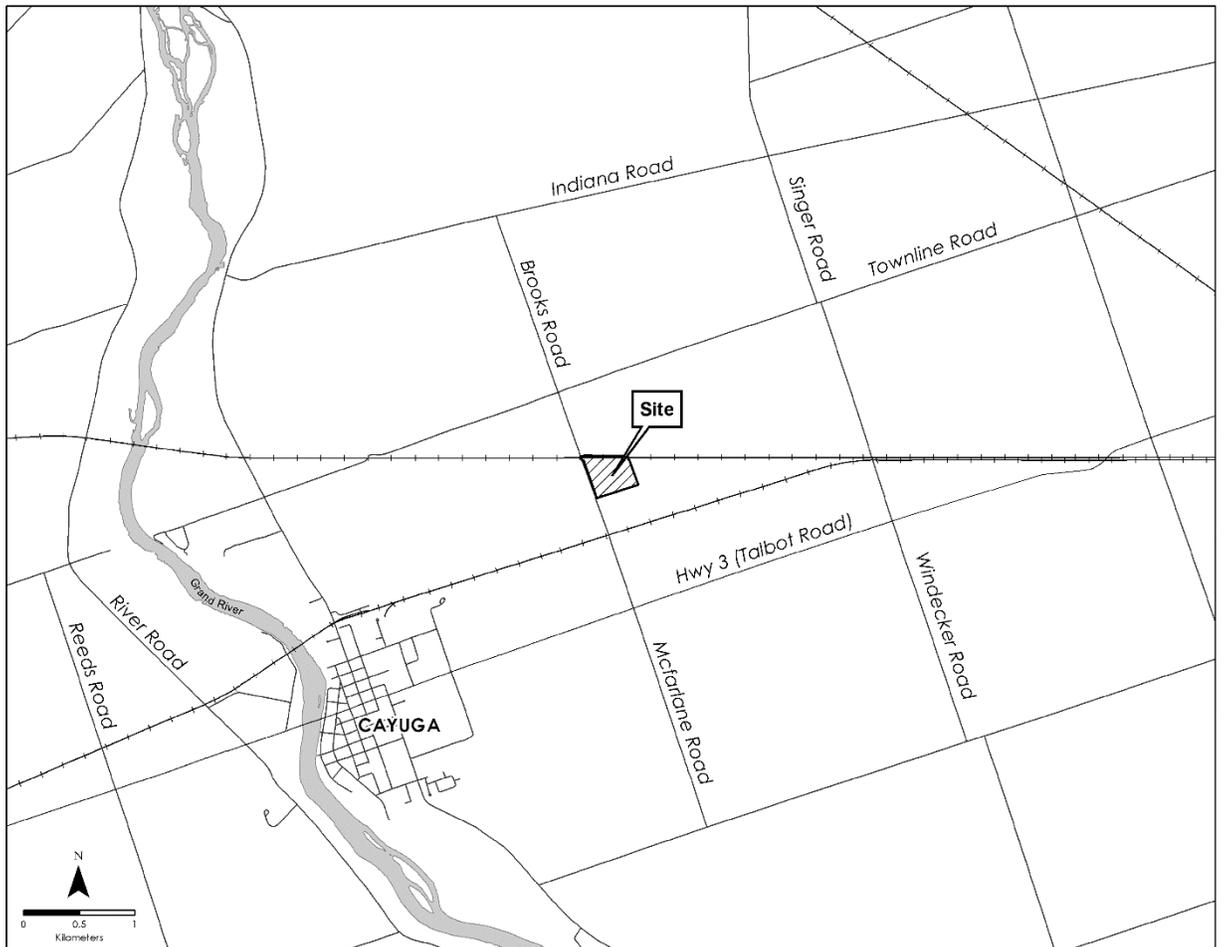


Figure 1.1 Location of the Proposed Undertaking

The Site, which operates under Environmental Compliance Approval (ECA) No. A110302, has an approved annual fill rate of 151,000 tonnes per year and a total capacity of 1,045,065 cubic metres (m³) (including waste and daily/final cover). The Site has accepted waste (in one form or another) since 1959 and received a Certificate of Approval (CofA) in 1980, with amendments approved by the Ministry of the Environment¹ in 1980, 2002, 2004, 2005, 2007, 2011, 2012, 2013, 2014, 2017 and 2018. Under the current ECA, the Site is licenced to receive post-diversion solid non-hazardous

¹ Now known as the Ministry of Environment, Conservation and Parks

Industrial, Commercial & Institutional (IC&I) waste from across Ontario. The 14.3 hectare (ha) Site contains an approved fill area of 6 ha.

In 2018, BRE completed an Individual Environmental Assessment (EA) to increase the total approved capacity at the site to allow for the continued receipt of post-diversion IC&I waste over a five to seven year planning period and an amendment to the Site's rate of fill to provide for a maximum of 151,000 tonnes per year (known as the Brooks Road Landfill Vertical Capacity Expansion EA). Previously, the Site was approved to accept up to 500 tonnes per day. The approved Brooks Road Landfill Vertical Capacity Expansion EA assessed the effects to the environment based on a maximum daily fill rate of 1,000 tonnes per day to demonstrate that the Site could manage this daily quantity, while maintaining the same annual limits (151,000 tonnes per year). Therefore, the 1,000 tonnes per day was used in the EA as a benchmark for the environmental effects analysis.

Any proposed change in the annual fill rate limits requires a modification to Condition 3(7) of the approved ECA, which specifies the maximum amount of waste that may be received at the landfill on an annual basis. The proposed Project would amend the approved ECA to allow for receipt of this maximum daily quantity (1,000 tonnes per day) throughout the year, increasing the annual fill rate from 151,000 tonnes per year to 250,000 tonnes per year. There is no change to the currently approved total landfill volume, size of landfill footprint, or final site contours. There is no change to the daily, interim, or final cover design, or the landfill base design. This change to the annual fill rate will allow for BRE to respond to the growing demands from waste generators/ customers who need a safe and reliable waste management facility for their residual material. This includes the ability to accommodate BRE's customers facing seasonal volume increases at certain times of the year (i.e. increased construction generated wastes) which the Site might not be able to accommodate with the current annual fill rate. If this project is approved and the maximum tonnage proposed as part of this Screening were received annually at the Site starting in 2021, the approved capacity of the site may be reached earlier.

This ECA amendment is subject to the Environmental Screening Process in accordance with Section 15 of the Waste Management Projects Regulation, (O. Reg. 101/07) of the EA Act. Ontario Regulation 101/07 – Waste Management Projects Act exempts this project from Part II of the Environmental Assessment Act and subjects it to the Environmental Screening Process. The Project falls under Section 15 of the Regulation – Change to Landfilling site, increase in rate of fill.

The Screening will be conducted in accordance with the planning and design process outlined in Ontario Ministry of Environment, Conservation and Parks (MECP) "*Guide to Environmental Assessment Requirements for Waste Management Projects*". The Screening process includes identifying and applying screening criteria to determine and describe potential environmental effects, public/external agency consultation, and the development of measures to mitigate identified environmental effects. The results of the Study will be documented in an Environmental Screening Report, which will be released for review to Stakeholders including Indigenous communities, the public, and government agencies. Upon completion of the Environmental Screening Process an application will be made to amend the existing ECA No. A110302.

GHD has prepared a Noise Assessment (Assessment) on behalf of BRE for the proposed undertaking. This report documents the following as it relates to the acoustical environment:

- Baseline/existing conditions (i.e., what exists in absence of the proposed project)
- Potential effects on the environment, mitigation measures and net effects
- Future monitoring requirements to be implemented

The Study Areas reviewed for the Noise Assessment was as follows (see **Figure 1.2**):

- **On-Site** – the 14.3 ha Site containing the existing 6 ha landfill footprint
- **Local Study Area**, including all lands and waters within a 1 kilometre (km) radius of the Site Study Area boundaries

The Study Area for the noise discipline was defined by the area extending 1 km from the existing Brooks Road Landfill property boundary (see **Figure 1-2**). The Ministry of the Environment, Conservation and Parks (MECP) Noise Screening Process Questionnaire requires that industries with significant potential environmental noise profiles, or equipment, evaluate the off-site environmental noise impact within 1 km from the site; the noise impact beyond 1 km is expected to be environmentally insignificant.

The rationale for the Study Area for the noise discipline is that the off-site environmental noise impact from the existing Brooks Road Landfill facility (Facility) or the amendment to the fill rate will be defined by the sound power generated by the equipment and activities on-site and the proximity and line-of-sight noise exposure to the off-site receiver locations subject of analysis. In the absence of other developments and intervening built structures, such as businesses or institutions, the rural residential dwellings within the Study Area represent the receiver locations subject of the assessment. The net change to the noise impact predicted at these residences based on the fill rate amendment will be directly compared to the Existing Conditions and to the applicable sound level limits and guidelines.

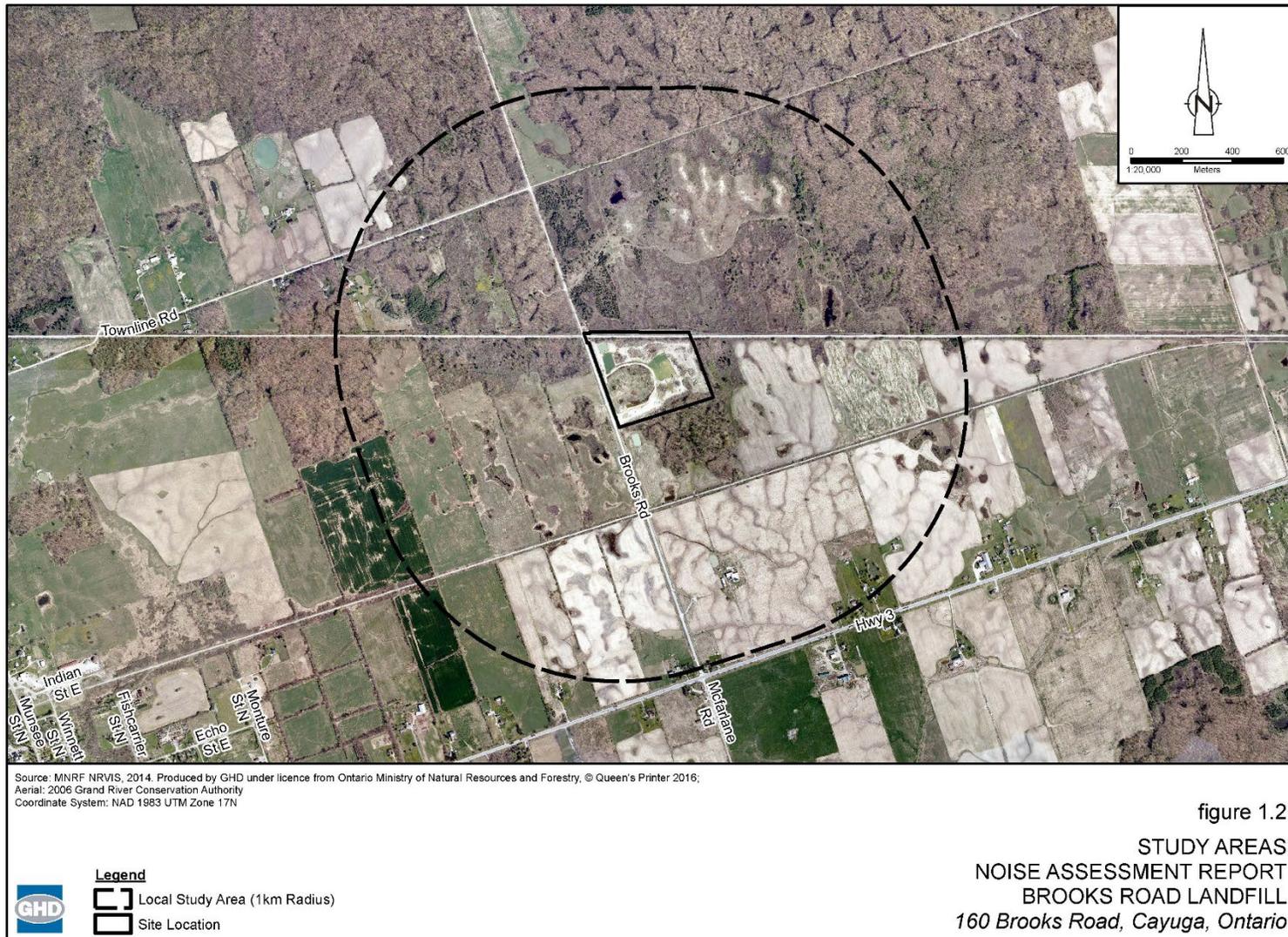


Figure 1.2 Noise Study Area

2. Screening Criteria Checklist

At the beginning of the Environmental Screening, the Screening Criteria Checklist (provided as Schedule I, pp 62 – 64, to the "Guide to Environmental Assessment Requirements for Waste Management Projects") is to be completed based on the information provided in the Project Description. The Screening Criteria reflect the broad definition of “environment” contained in the *Ontario Environmental Assessment Act*.

As noted in the Guide:

"The Screening Criteria are presented in the form of a checklist with the option of a "Yes" or "No" response. Mitigation measures **are not** to be considered in concluding whether there is "No" potential environmental effect. That is, the proponent is required to answer "Yes" even if the proponent believes that a potential environmental effect could likely be mitigated. The reason for requiring a "Yes" is to ensure that mitigation measures are open to discussion and review. Another reason for this approach is that further discussion and review of a potential effect may reveal that there is no actual effect, in which case no mitigation is required. Where a “yes” has been identified, the proponent is to provide additional information in the Environmental Screening Report, explaining the potential effect(s), methods to mitigate or address the effect(s), any net effects that are anticipated and if so, their significance. Even where the proponent indicates that no environmental effects are anticipated, it is recommended that additional information is provided in the Environmental Screening Report in order to support the “no effects” conclusion”. Each criterion is based on a question which is prefaced with the phrase, “Might the Project...”.

Table 2.1 was completed as the first step of the Environmental Screening Process and is a summary of the criteria for the Noise discipline:

Table 2.1 Screening Criteria Checklist

	Criterion	YES	NO	Additional Information
	Might the project...			
1. Air and Noise				
3.4	Cause negative effects from the emission of noise?	X		The proposed Environmental Compliance Approval amendment will result in a potential increase in noise emissions associated with additional truck movements to/from the Site.

Further descriptions on the criterion that answered "Yes" in the Screening table are discussed in **Section 4** of this report.

3. Existing Conditions

The following subsections describe the existing conditions that are found within the on-Site and Site Vicinity Study Areas of the proposed project.

3.1 Methodology

3.1.1 Available Secondary Source Information Collection and Review

Available secondary sources of information were collected and reviewed by the Noise Study Team to determine existing noise impacts within the study area(s). The following sources of secondary information were collected and reviewed:

- Review of Historic Complaints
- Review of current zoning plans, definitions and land use designations
- Field Observations and Investigations
- Review of local traffic data
- MECP technical guidelines and standards
- March 27, 2020 Amended Environmental Compliance Approval #A110302
- Design and Operations Report Vertical Expansion, Brooks Road Landfill Site, 2270386 Ontario Inc., Prepared by GHD, April 18, 2019
- Noise Assessment Report for the Brooks Road Landfill Site Vertical Capacity Expansion Environmental Assessment, Prepared by GHD, 2016

3.1.2 Historic Complaints

Brooks Road Landfill has not received any noise complaints for the previous operations on-site based on information provided by BRE Site operators as of September 2015.

3.1.3 Review of Zoning

The Comprehensive Zoning By-Law for Haldimand County identifies the Site as "MD – Disposal Industrial Zone," which is suitable for a municipal sanitary landfill site. The surrounding land uses are zoned Agricultural use.

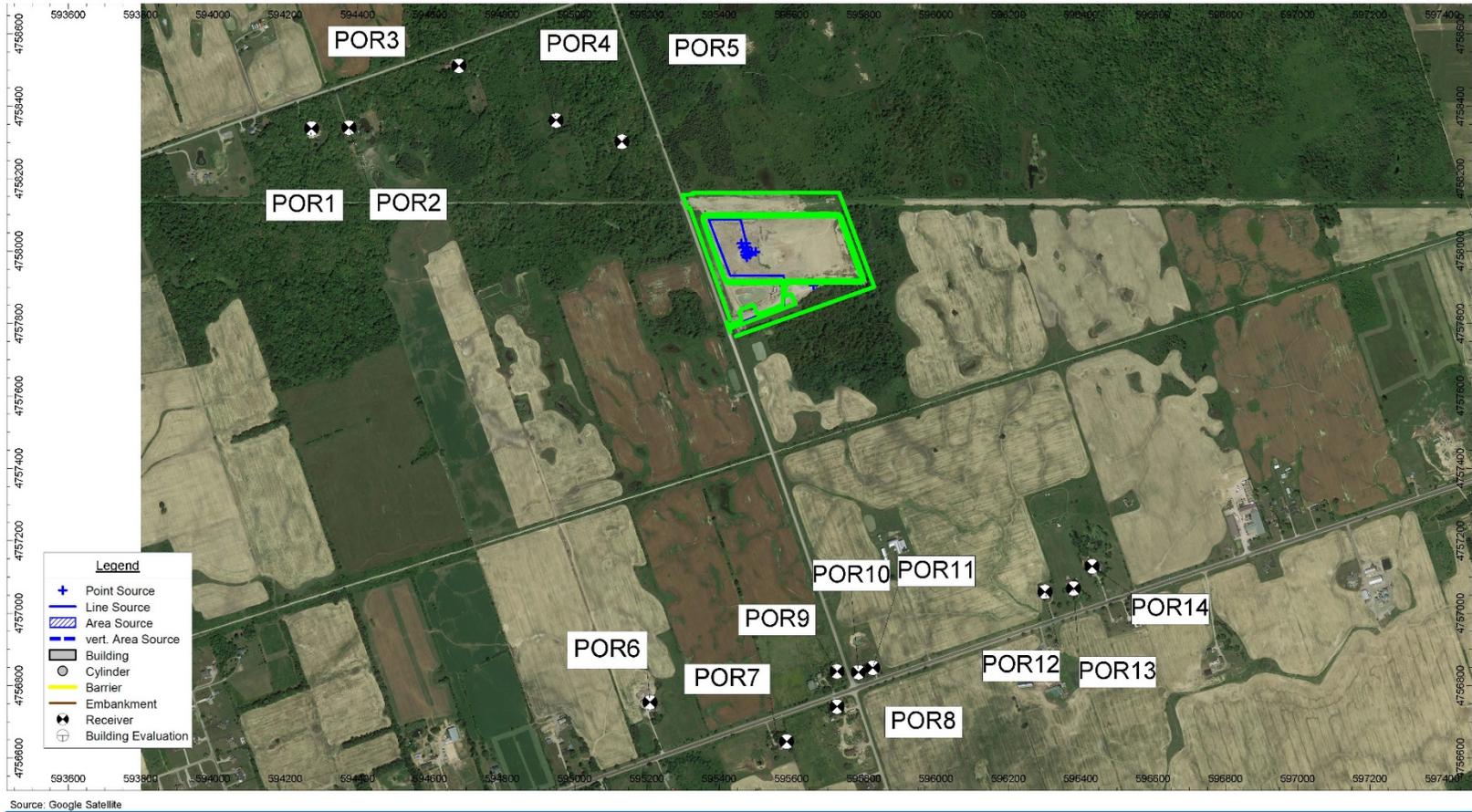
A zoning map is provided as **Figure A.1** and definitions are included in **Appendix A**.

3.1.4 Site Review

Previous data collected during the Vertical Capacity Expansion EA was reviewed. The Study Area is rural in character and surrounded by agricultural fields. There are no existing industries within the Study Area other than the Facility that may contribute to the background noise levels.

During the Vertical Capacity Expansion EA, a site visit was conducted and determined that off-site residential dwelling locations were reviewed and the height of structures for noise impact exposure analysis was determined.

The nearest residential dwelling is approximately 232 metres (m) northwest of the existing property boundary. There are approximately 14 existing one-storey (1.5 m above grade) and two-storey (4.5 m above grade) residential dwellings within the Study Area as identified on **Figure 3.1**.



NOISE ASSESSMENT REPORT
 BROOKS ROAD LANDFILL
 160 BROOKS ROAD, CAYUGA, ONTARIO
 POINT OF RECEPTION LOCATION PLAN

018235
 12.02.2021

FIGURE 3.2

CadnaA File: \\ghdnet\ghd\CA\Waterloo\Projects\662\018235\Tech\Noise\2021 Base Existing conditions.cna

Figure 3.1 Sensitive Receiver Locations

3.2 Description of Existing Conditions

3.2.1 Local Traffic Data

There are three roads located within the Study Area including:

1. Townline Road – is a two-lane dirt rural road with minimal local traffic only
2. Brooks Road – is a two-lane road with minimal local traffic and primarily used by Brooks Road Landfill
3. Highway 3 – is a two-lane road with significant 24-hour road traffic

Traffic data was obtained from the local traffic authority and the Ministry of Transportation. Townline Road and Brooks Road experience low traffic volumes based on site observations and also confirmed by the traffic authority. Highway 3 traffic volumes are elevated and subject of analysis.

MECP's Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) software is the approved road traffic model that is currently used in the province of Ontario to evaluate noise generated from road traffic. However, the model does not graphically generate contours and cannot be used to evaluate large areas and multiple road corridors simultaneously. ORNAMENT modeling predictions are also limited to noise predictions less than 500 m from the source and a minimum traffic volume of 40 vehicles per hour is required to evaluate an individual roadway.

Due to these model limitations, CADNA A was selected for the purposes of this Study as the preferred modeling software for analysis of road traffic generated background noise existing conditions. In addition, the CADNA A modeling software is better suited to handle multiple noise sources and can generate contour plots with imported base maps.

Annual Average Daily Traffic (AADT) values are the only reported data for less travelled roads, which presents a problem when estimating daytime and nighttime background noise levels as the values do not provide a distribution for the two time periods. GHD used recommendations for traffic breakdown for provincial highways and regional roads as outlined in the ORNAMENT guidance document to address this issue. The most current road traffic volumes were obtained from Haldimand County and the Ministry of Transportation (MTO). The following AADT values were available for road segments within the Study Area:

- Highway 3 (MTO, 2010) – 3,450 vehicles / day
- Brooks Road (Haldimand County, 2011) – 114 vehicles / day

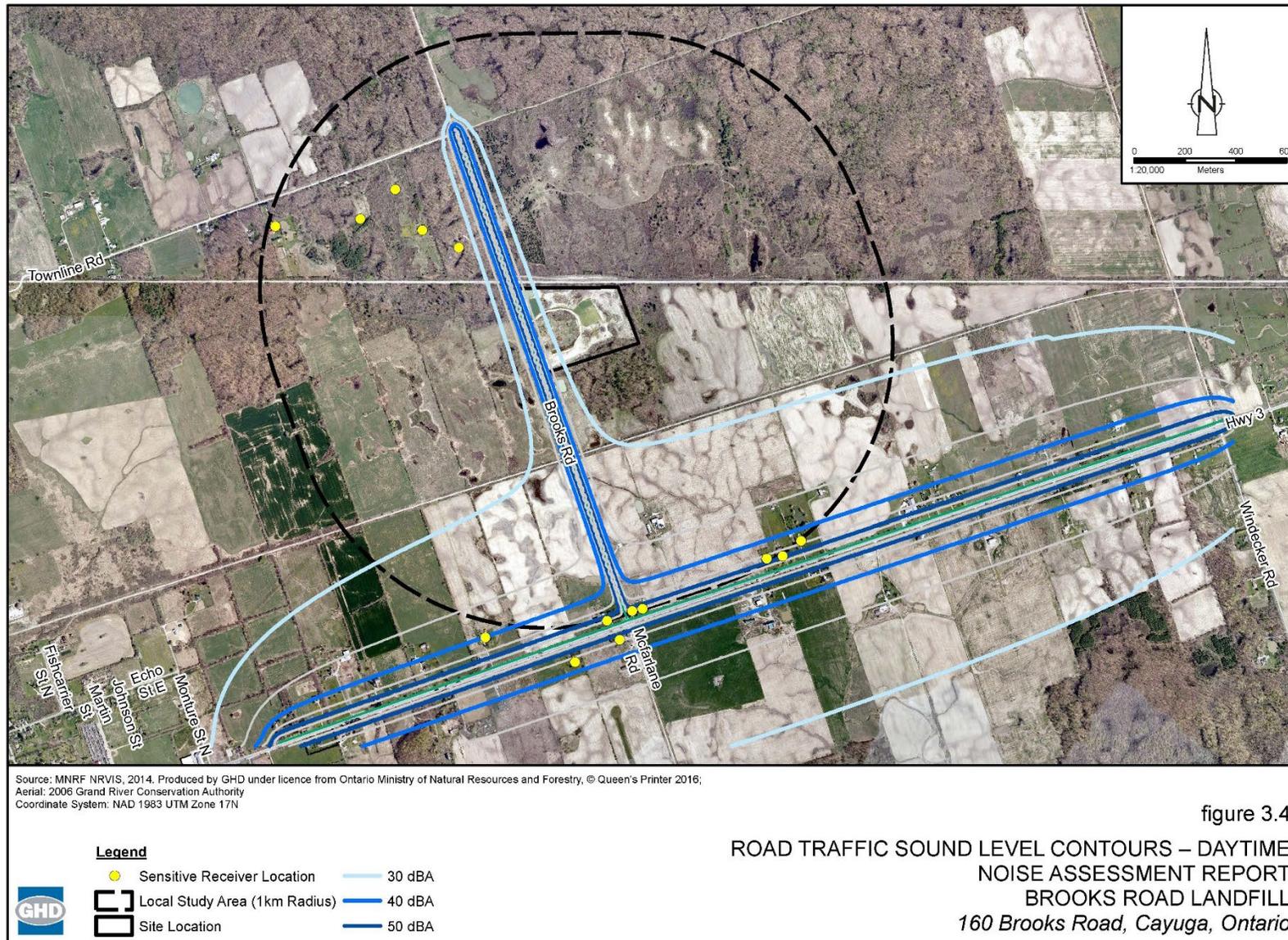
The existing noise conditions within the Study Area were quantified using the industry standard CADNA A software and the road traffic data provided by the regulatory authorities. The US Department of Transportation Federal Highway Administration Traffic Noise Model (TNM) calculation standard was used in CADNA A to quantify the noise levels.

Vehicular road traffic generates noise that consists of mechanical noise from the engine and brakes, friction noise created from wheel contacting the road surface, and aerodynamic wind noise. Traffic volume, speed, road composition, gradient and surface type will affect the overall traffic

noise that can be generated. Proximity and line-of-sight to the road corridor are most consequential for quantifying the off-site noise exposure conditions.

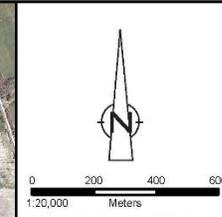
The model calculates the predicted equivalent sound level (Leq) respective of the defined daytime (7 a.m. to 11 p.m.) and nighttime (11 p.m. to 7 a.m.) periods.

Figure 3.2A and **Figure 3.2B** present the road traffic sound level contours within the Study Area for the daytime and nighttime periods, respectively.



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Figure 3.2A Road Traffic Sound Level Contours (Daytime)



Source: MNR/NRVIS, 2014. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016;
 Aerial: 2006 Grand River Conservation Authority
 Coordinate System: NAD 1983 UTM Zone 17N

Legend

- Sensitive Receiver Location
- Local Study Area (1km Radius)
- Site Location
- 30 dBA
- 40 dBA
- 50 dBA

figure 3.5
 ROAD TRAFFIC SOUND LEVEL CONTOURS – NIGHTTIME
 NOISE ASSESSMENT REPORT
 BROOKS ROAD LANDFILL
 160 Brooks Road, Cayuga, Ontario

018235-20(053)GIS-OT003 Jul 08/2016

Figure 3.2B Road Traffic Sound Level Contours (Nighttime)

3.2.2 Off-Site Haul Routes

Highway 54 to Highway 3 is primarily used to reach Brooks Road and the off-site haul route will not change regardless of the capacity modification. Any potential traffic increase to support the proposed increased landfill capacity will be evaluated using the noise model based on the future road traffic data.

3.2.3 MECP Technical Guidelines and Standards

The acoustic character of the Study Area will be defined in accordance with the MECP guidelines NPC-300 "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning," October 2013.

As stated in the guideline:

A "Class 1 Area" means an area with an acoustical environment typical of a major population centre, where the background noise is dominated by the urban hum.

"Class 2 Area" means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 Areas, and in which a low ambient sound level, normally occurring only between 23:00 and 07:00 hours in Class 1 Areas, will typically be realized as early as 19:00 hours.

Other characteristics which may indicate the presence of a Class 2 Area include:

- Absence of urban hum between 19:00 and 23:00 hours
- Evening background sound level defined by natural environment and infrequent human activity
- No clearly audible sound from stationary sources other than from those under impact assessment

"Class 3 Area" means a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as the following:

- A small community with less than 1,000 population
- Agricultural area
- A rural recreational area such as a cottage or a resort area
- A wilderness area

The urban sound level limits are 5 dBA greater in comparison to the rural limits to account for the elevated background sound level or the urban hum due to road traffic or adjacent industrial/commercial activities.

Landfill activities and on-site operations are compared directly against a daytime one-hour Leq sound level limit of 55 dBA for landfill operations that are limited to 7 a.m. to 7 p.m. under the "Noise Guidelines for Landfill Sites" (N-1).

3.2.4 2015 ECA

The 2015 ECA amendment application that was prepared for the shredder unit confirmed that the Study Area immediately surrounding the Site is Acoustic Class 3 and that the nearest residential dwelling is approximately 232 m from the property boundary. It should be noted that this shredder system is no longer in use at the Landfill.

3.3 Noise Existing Conditions

3.3.1 Site Activities

Brooks Road Landfill is proposing to modify the annual fill rate from 151,000 tonnes per year to 250,000 tonnes per year. With this increase in mind, the equipment currently utilized on site is expected to continue. Therefore, the significant environmental noise sources at the Landfill include:

- 1 x Leachate Treatment Plant (pumps and aerator equipment located inside heavy gauge sheet steel structure) (91.5 dBA)
- 2 x Caterpillar 826G Compactors (106.5 dBA)
- 2 trips/hr. existing conditions/16 trips/hr. future conditions - John Deere 225 Rock Trucks on Primary Haul Route (109.9 dBA)
- 2 x Caterpillar 330/Hyundai 210 Excavators (102.0 dBA)
- 4 x Caterpillar D5/D6/D7 Bulldozers (106.3 dBA)
- 2 x John Deere 270 Skid Steers (109.1 dBA)
- 1 x HAMM 64 inch sheepsfoot packer (106.5 dBA)

These noise sources generate continuous steady state mechanical noise and will be the subject of analysis for the evaluation. These noise sources are input into an industry standard acoustic model that includes all significant on-site structures (buildings, equipment, storage tanks and silos).

Computer Aided Noise Abatement Acoustical Modeling Software (CADNA A), version 2020, is based on the ISO 9613-2 standard "Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation." The CADNA model is the industry standard for environmental noise modeling in Ontario.

The worst-case cumulative site-wide sound levels estimated at the receptor(s) included attenuation effects due to geometric divergence, atmospheric attenuation, barriers/berms, ground absorption and directivity, as applicable significant noise sources at off-site buildings were input into the model as intervening structures.

Cadna A modelling assumptions applied include the following:

- Noise Sources | All sources were modelled using the 1/1 octave band data from manufacturer's sound level data or reference materials.
- Noise Source Elevation | The heights of the noise sources were modelled at the tallest point to represent the worst-case line of sight and emission of noise.

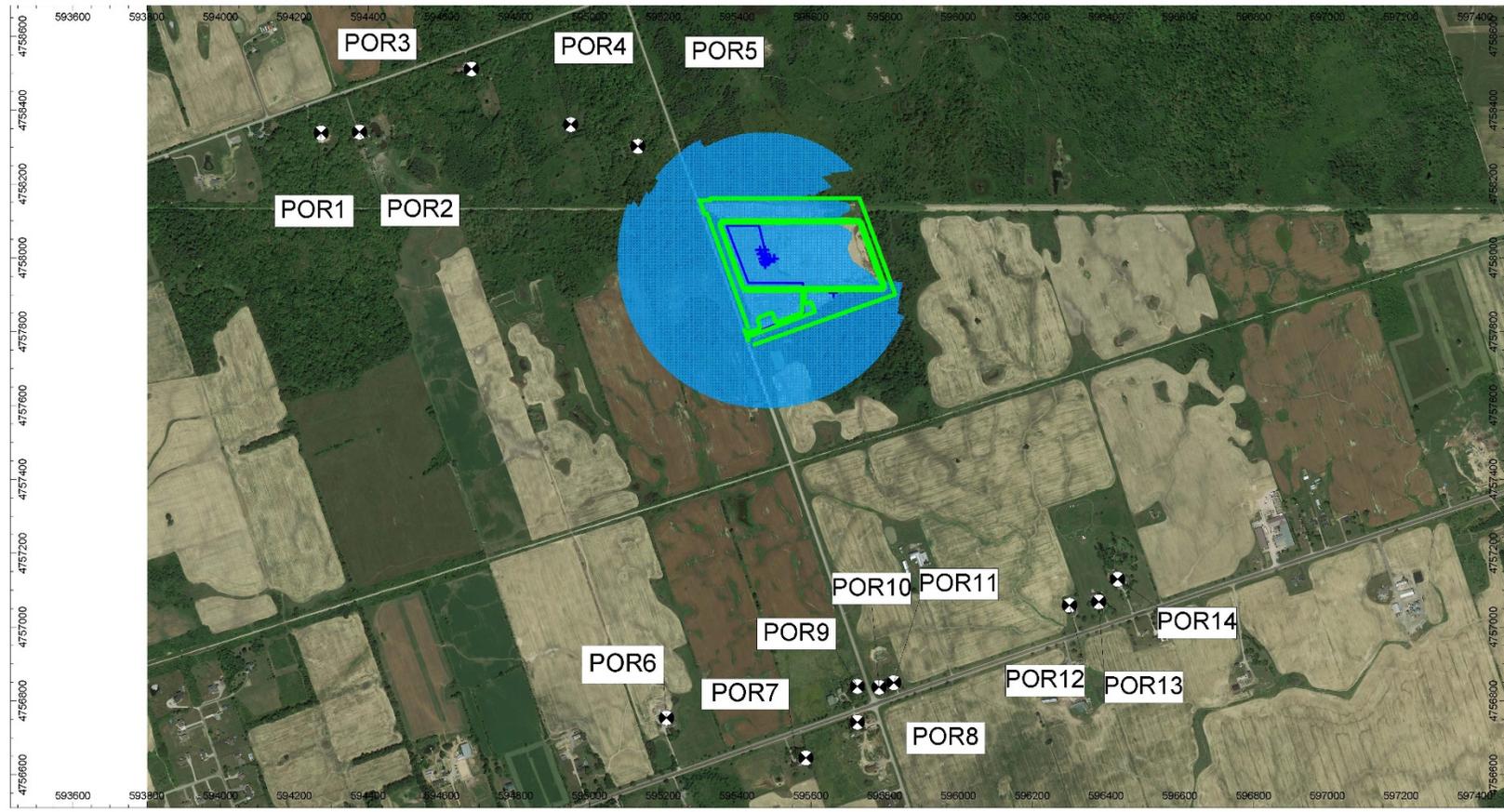
- Ground Absorption | The model included water (G=0), soft/porous ground (G=1), and gravel/hard ground (G=0.25).
- Receptor elevation | POR receptor heights were modelled appropriately to represent the worst-case elevation based on one or two-storey residences at the worst-case compass directions from the Site as no houses are present.
- Time-weighted Adjustment | Time-weighted adjustments for sources that do not operate continuously were utilized.
- Tonality | A +5 dBA adjustment was applied for tonal sources if applicable.
- Foliage | Foliage attenuation was not considered in our analysis as a conservative assumption.

Table 3.1 Acoustic Modelling Parameters

Item	Model Parameters	Model Setting
1	Temperature	10°C
2	Relative humidity	70%
3	Wind speed	Downwind condition; wind speed of 3 m/s
4	Max. Search Radius (m)	2500 m
5	Noise propagation model	CadnaA (DataKustik 2020)
6	Standard	ISO 9613
7	Terrain parameters	Flat topography was assumed
8	Reflection parameters	1 orders of reflection

In order to predict the future worst-case noise impacts from the Project activities, representative octave band noise data was used, measured from construction/processing equipment similar to what is noted to be required for the Project. This data was obtained from the United Kingdom's Department of Environment Food and Rural Affairs (DEFRA) Update of Noise Database for Prediction of Noise on Construction and Open Sites, 2005 and 2006 (common source used globally). The United States Department of Transportation, Federal Highway Administration (FHWA) document FHWA Roadway Construction Noise Model User's Guide, 2006 was used as a supplemental document to obtain sound level data for equipment not listed by DEFRA.

The existing Landfill noise contours are presented on **Figure 3.3**. The noise impacts predicted at the fourteen residential dwellings are below the 55 dBA noise limit defined in Guideline N-1. The future off-site environmental noise impact from the Brooks Road Landfill Facility will be modelled using this industry standard acoustical model methodology to evaluate the capacity modifications in terms of the net effects.



Source: Google Satellite



Legend
 ≥ 55 dBA



NOISE ASSESSMENT REPORT
 BROOKS ROAD LANDFILL
 160 BROOKS ROAD, CAYUGA, ONTARIO
 NOISE CONTOUR PLOT (Existing Conditions 4.5 m A.G.)

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FIGURE 3.3

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Figure 3.3 Noise Contours (Existing Landfill Conditions)

3.3.2 Summary of Existing Conditions

The Facility is located in a mixed Acoustical Class 2 and Class 3 area, depending on the proximity of the sensitive receiver to the Highway 3 corridor. Acoustical Class 2 areas are defined by NPC-300 as an acoustic environment with elevated daytime noise levels. Acoustical Class 3 areas are defined by NPC-300 as rural areas with an acoustical environment that is dominated by natural sounds having little or no road traffic.

The nine (9) residential dwellings located along Highway 3 are considered to be Class 2 receivers and the five (5) residential dwellings situated away from the corridor are considered to be Class 3 receivers. However, N-1 is the applicable regulatory Guideline for compliance assessment purposes for this Facility and the proposed increase in annual fill rate.

4. Potential Effects, Mitigation Measures & Net Effects

A Project Description, which includes a Site Plan, was prepared so that potential environmental effects and mitigation measures could be identified. The following subsections provide a general summary of the proposed undertaking:

4.1 Purpose and Opportunity

The purpose of the project is to increase the annual waste fill rate currently approved at the site. The proposed project would allow for receipt of a maximum daily quantity (1,000 tonnes per day) throughout the year, which would increase the permitted annual fill rate from 151,000 tonnes per year to 250,000 tonnes per year. This annual maximum assumes the site will operate 5 days a week, (closed on holidays) accepting 1,000 tonnes per day. The proposed change to the annual fill rate requires no additional landfill infrastructure and there is no change to the currently approved landfill volume, footprint, or final contours.

The proposed undertaking provides an opportunity for BRE to capture additional wastes generated by their customers during busier months of operation and to fill the site rapidly. If this proposed undertaking is approved and the maximum tonnage proposed as part of this Screening were received annually at the Site starting in 2021, the ultimate approved capacity of the site may be reached earlier than contemplated as part of the 2018 EA.

4.2 Description of Project Components and Activities

The proposed project outlined in this report does not involve a change to the final site capacity, contours or footprint. No construction is required to implement the proposal. There will be no change to the existing infrastructure and no new facilities are proposed on Site. Site will continue to operate within currently approved operating hours and current construction activities and daily operations will continue as usual.

From a traffic perspective there will be no changes to existing haul routes or Site entrance. Increasing the maximum annual fill rate will result in increased truck traffic on the haul route from

Highway 3 along Brooks Road only on a total annual basis. It should be noted that as part of the Vertical Capacity Expansion EA completed in 2018, the assessment of impacts to traffic was based on 1,000 tonnes per day to demonstrate that the Site could manage this daily quantity and the potential effects resulting from this volume of traffic could be mitigated to acceptable levels.

GHD built on the analysis completed in the 2018 Vertical Capacity Expansion EA which reviewed the total daily maximum quantity of waste that the site can accommodate from an operational perspective (1,000 tonnes per day) to evaluate the potential effects and mitigation measures required to maintain this daily volume over the course of a year to reach the annual fill rate of 250,000 tonnes per year.

If this project is approved and the maximum tonnage proposed as part of this Screening were received annually at the Site starting in 2021, the approved capacity of the site may be reached earlier than contemplated as part of the 2018 EA.

4.3 Methodology and Investigations

The assessment of effects associated with the proposed undertaking was carried out through a series of steps that is based, in part, on the description of existing conditions as well as the Project Description and Site Plan. The assessment of effects was also undertaken within the context of the previously completed Screening Criteria Checklist, as summarized in **Section 2** of this report.

4.4 Noise Net Effects

This Section provides an assessment of the potential negative environmental effects (i.e., those for which a "Yes" answer was given in the Screening Criteria Checklist) for those Noise criteria which might be affected by the project as identified in **Section 2**. The effects assessment describes how existing environmental conditions in the Study Area(s) would change as a result of the construction and operation of the proposed undertaking.

As described in **Section 2**, a "Yes" was applied to the following Noise criteria:

- Cause negative effects from the emission of noise?

With respect to the above criteria/criterion, a description of the potential negative environmental effects, necessary mitigation measures and the resultant net effects on the environment are discussed. Studies conducted during the screening showed that the anticipated effects will be much less than expected or will not occur at all. In all cases, impact management (mitigation) measures have been identified that, when applied, will eliminate the potential environmental effects or reduce them to acceptable levels.

4.4.1 Potential Effects on Noise Environment

The proposed Environmental Compliance Approval (ECA) amendment will result in a potential increase in noise emissions associated with additional truck movements to/from the site and increased on-site landfill equipment requirements. Fourteen off-site residential dwellings will be potentially impacted from the existing Landfill activities. The predicted noise impact range is 42 to

55 dBA (rounded). POR5 is the most impacted at 53 dBA. All residential dwellings are below the 55 dBA noise limit.

From a potential noise impact exposure perspective, the future conditions for additional capacity are near identical and the only difference is the potential for additional truck traffic on the haul route up to 16 trucks per hour during daytime operations only.

Noise contours for the Existing Conditions are presented on **Figure 3.3**.

4.4.2 Mitigation Measures

Based on the description of the proposed annual fill rate increase provided in **Section 1** and the characterization of Noise Existing Conditions within the Study Areas described in **Section 3**, there are no mitigation measures recommended to be incorporated into the future conditions designs in order to avoid or minimize impacts from Noise. Mitigation measures are not required because the predicted off-site noise impact meets the applicable 55 dBA regulatory noise limit.

As all residential dwellings are below the 55 dBA noise limit, no specific mitigation measures are required. The implementation of Best Management Practices (BMPs), as recommended in the Vertical Capacity Expansion EA such as barriers and/or berms at Landfill perimeter and administrative controls that limit on-site landfilling activities will serve to minimize noise impacts from the Site.

4.5 Net Effects

Similar to the Vertical Capacity Expansion EA, the 14 residences that were anticipated to experience a change in the predicted off-site noise impact due to the previously approved landfill expansion, may continue to based on an increase in the annual fill rate. However, even with the increased annual fill rate, no change from the noise analysis completed as part of the Vertical Capacity Expansion EA will occur. With mitigation measures, all residential dwellings are below the 55 dBA noise limit.

5. Monitoring Requirements and Additional Approvals

To ensure that the mitigation measures identified in **Section 4** are implemented as envisioned, a strategy and schedule was developed for monitoring environmental effects. With these mitigation measures and monitoring requirements in mind, commitments have also been proposed for ensuring that they are carried out as part of the construction, operation, and maintenance of the proposed undertaking.

5.1 Monitoring Requirements

No monitoring requirements are needed for on-going noise compliance.

5.2 Additional Approvals

No additional approvals are required outside of the proposed ECA amendment for the daily capacity increase.

6. Conclusion

The BRE Facility is located in a mixed Acoustical Class 2 and Class 3 area based on the MECP NPC 300 guideline and depending on the proximity of the off-site residential dwellings to Highway 3. Nine residential dwellings located along Highway 3 are considered to be Class 2 receivers and the five residential dwellings situated away from the corridor are considered to be Class 3 receivers. N-1 is the applicable regulatory Guideline for compliance assessment purposes for the Facility and the proposed increase to the annual fill rate and requires that the BRE Facility achieve a noise limit of 55 dBA at all off-site residential dwellings of concern. The Landfill is limited to daytime only operations from 7 a.m. to 7 p.m. The Existing Conditions at the BRE Facility are below the 55 dBA noise limit.

The increase to the annual fill rate considers one future conditions evaluation which will remain well below the Guideline N-1 noise limit of 55 dBA at all existing sensitive points of reception.

7. References

Department of Environment Food and Rural Affairs (DEFRA). 2005/2006. Update of Noise Database for Prediction of Noise on Construction and Open Sites"

Appendix A – Supporting Information for an Acoustic Assessment Report or Vibration Assessment Report Required by a Basic Comprehensive C of A" as specified in the MECP guidance entitled "Basic Comprehensive Certificates of Approval (Air) – User Guide, April 2004"

NPC-103, "Procedures, August 1978"

NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound, October 1995"

NPC-300, "Stationary and Transportation Sources – Approval and Planning", August 2013

N-1, "Noise Guidelines for Landfill Sites, October 1998"