8.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

This section corresponds to Task 1 of the methodology described in Section 2.3 and provides a more detailed description of the components of the existing natural and human environments at and related to the Boundary Road Site. In general, the environment is first described in general at a regional scale and then it is described in greater detail for the two generic study areas that were used to assess the Boundary Road Site. As noted in Section 2.3, the EA study team modified the generic study areas as appropriate to meet the specific requirements of each environmental component.

Section 8.1 provides a regional overview of the Site to provide context for the assessment. Sections 8.2 and 8.3 provide an overview of the Site-vicinity and on-Site study areas, respectively. The existing conditions for each of the environmental components are then described in Sections 8.4 to 8.11.

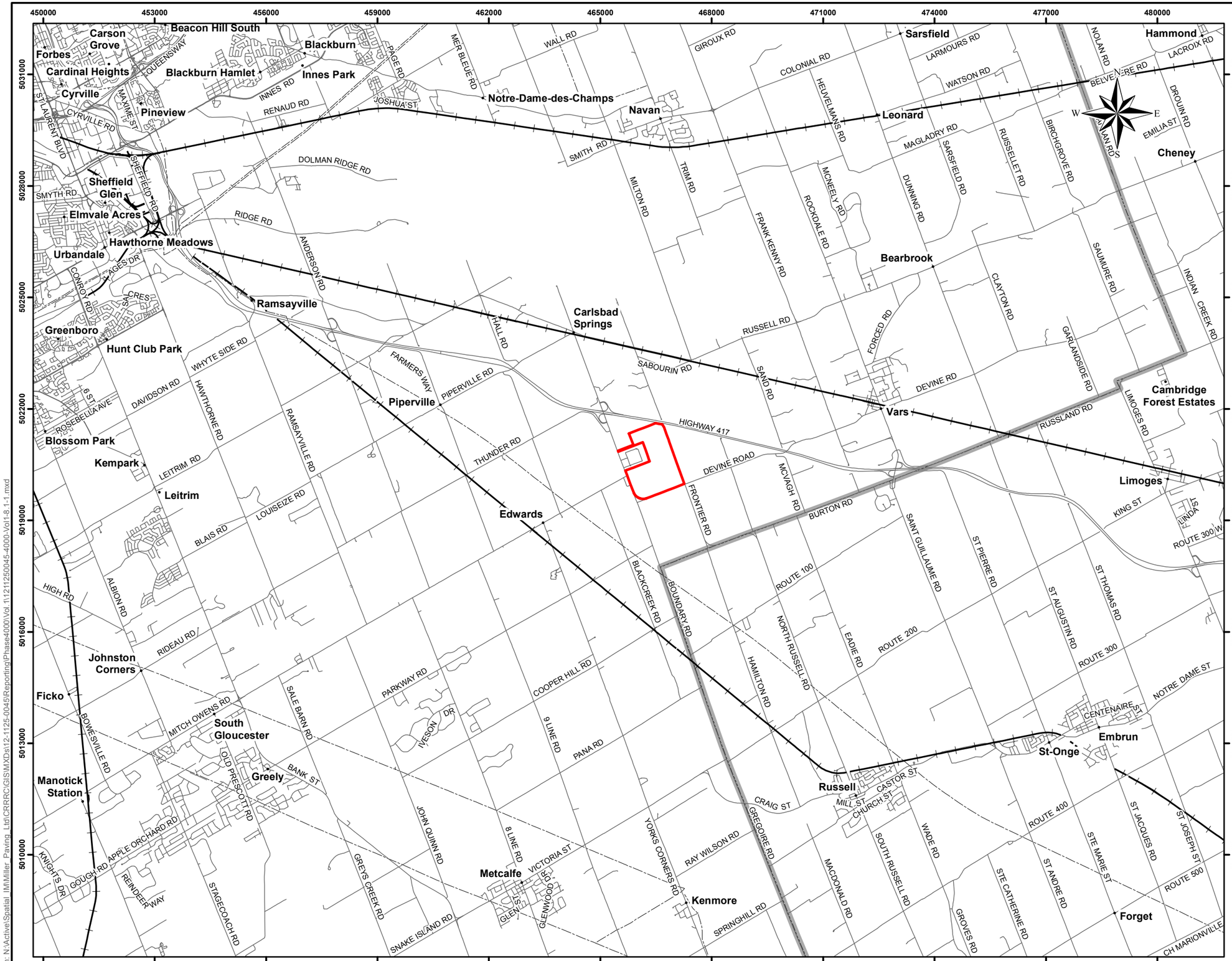
8.1 Regional Overview

The general location of the proposed CRRRC Site is shown on Figure 8.1-1. The Site is located within the City of Ottawa, in the rural portion of Cumberland ward. The City of Ottawa, with a population of 883,391 in 2011 according to Statistics Canada, represents 6.9% of the population of the Province. The estimated population of the ward of Cumberland is 44,400, including 16,300 households (City of Ottawa, 2013a). This represents 4.7% of the total population of the City of Ottawa and 4.2% of households.

The Site is located within a humid continental climate region, characterized by cold winters, warm summers and high humidity levels. On average, the coldest month of the year is January and the warmest is July. The nearest meteorological station to the Site with hourly data is at the Ottawa MacDonald Cartier International Airport, located approximately 20 kilometres west of the Site. The long-term average daily temperature at this station is 6°C, with average temperatures ranging from -10.8°C to 20.9°C throughout the year. On average, the region experiences 944 millimetres of total annual precipitation. The total average annual rainfall is 732 millimetres, with most rainfall occurring from April through November. The total average annual snowfall is 236 centimetres, with most snowfall occurring from December through March (Environment, Canada 2014).

The region within which the CRRRC Site is situated is characterized by relatively thick and extensive deposits of sensitive marine clay, silt and silty clay that were deposited within the Champlain Sea basin. These deposits overlie relatively thin, commonly reworked glacial till and glaciofluvial deposits, that in turn overlie bedrock consisting of shales, dolostones and limestones.

The Site is also located within the Mixedwood Plains Ecozone, an area underlain by Paleozoic limestones and dolostone bedrock. Within the larger Ecozones are nested Ecoregions, areas defined by characteristic climate patterns. The Site is located within the Lake Simcoe Rideau Ecoregion, which contains extensive agricultural lands, as well as deciduous and mixed forests (MNR, 2007). The Site location is within the South Nation River watershed, where land use is primarily agricultural including dairy and cash crop production (Chapman and Putnam, 1984).



NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

REFERENCE

DIGITAL NRVIS MNR DATA PRODUCED BY GOLDER ASSOCIATES LTD., USED UNDER LICENSE © QUEEN'S PRINTER OF ONTARIO.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: UTM ZONE 18

PROJECT

ENVIRONMENTAL ASSESSMENT OF THE CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE

SITE CONTEXT

Golder Associates
Ottawa, Ontario

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV. 0
DESIGN	PLE	DEC. 2013	FIGURE 8.1-1
GIS	BR	DEC. 2013	
CHECK	PLE	AUG. 2014	
REVIEW	PAS	AUG. 2014	

Path: N:\Active\Spatial_IM\Miller_Paving_Ltd\CRRRC\GIS\MXDs\12-1125-0045\Reporting\Phase4000\Vol.1\1211250045-4000-Vol1-8.1-1.mxd

8.2 Site Vicinity Overview

The Site is located on the east side of Boundary Road just southeast of the Highway 417/Boundary Road interchange, on Lots 22 through 25, Concession XI, in the former Township of Cumberland, as shown on Figure 8.2-1.

The land use surrounding the Site is primarily a mixture of commercial/industrial and agricultural. The agricultural land use is found immediately east of the Site, as well as to the southeast, south and southwest; however, areas of undeveloped (heavily vegetated) land generally exists between the Site and the agricultural lands in these directions.

The industrial land use is found to the west and northwest of the Site. Residential development in the vicinity of the Site is limited to some homes mixed in with the commercial/industrial uses along Boundary Road. The Site is located in an area of the City of Ottawa in which development has been somewhat constrained due to poor quality groundwater.

There are four natural watercourses within 5 kilometres of the Site. Bear Brook Creek is 3.4 kilometres to the northwest of the property boundaries and Shaw's Creek is 1.6 kilometres to the east. Bear Brook Creek is a major tributary of the South Nation River; the Site is located within the Bear Brook Creek subwatershed. The North Castor River is 4.7 kilometres to the southwest of the property, while Black Creek is approximately 2.5 kilometres to the southeast; these two watercourses are in the Castor River subwatershed and, as such, do not receive drainage from the Site.

In the general area of the Site, the topography is generally highest to the west and southwest, and lowest in the north, northeast and southeast. Overall the topography is generally flat lying. Major surface water features within the vicinity of the Site (i.e., the Castor River and Bear Brook Creek) generally drain in an easterly direction following the general topographic slope. Drainage in the vicinity of the Site is mainly by means of a network of agricultural ditches and three municipal drains. There are roadside ditches along Boundary, Devine and Frontier Roads that eventually all drain eastward.

460000
464000
468000
472000
5024000
5020000
5016000

N
W
E
S

BEAR BROOK CREEK
SHAW'S CREEK
BLACK CREEK
NORTH CASTOR RIVER

CARLSBAD SPRINGS
PIPERVILLE
EDWARDS
NORTH RUSSELL
VARS
BEARBROOK
BRISSON

HIGHWAY 417

FARMERS WAY
HALL RD
LEITRIM RD
WAY ST
BOUNDARY RD
CARLSBAD LANE
MILTON RD
PERRAULT RD
GOLF COURSE RD
MCNEELY RD
DUNNING RD
RUSSELL RD
SABOURIN RD
ROCKDALE RD
FORCED RD
FRANK KENNY RD
SAND RD
HORIZON DR
TRUDEAU AVE
VARS ST
DIVISION ST
ROLLIN PL
PIPERVILLE RD
THUNDER RD
DEVINE RD
HIGHWAY LANE
RUSSLAND RD
ST-PIERRE RD
CORDUROY RD
ENTREPISE ST
CLEMENT ST
MCVAGH RD
FRONTIER RD
BURTON RD
SAINT GUILLAUME RD
ANDERSON RD
MITCH OWENS RD
YORKS CORNERS RD
BLACKCREEK RD
HAMILTON RD
ROUTE 100
EADIE RD
9 LINE RD
PARKWAY RD
RODNEY FARM DR
NASHDALE DR
8 LINE RD
ADAM BAKER WAY
IVESON DR
COOPER HILL RD
PANA RD
NORTH RUSSELL RD
ROUTE 200

LEGEND

- POPULATED PLACE NAME
- ROADWAY
- RAILWAY
- UTILITY LINE
- SURFACE WATER FEATURE
- WATER AREA
- PROPERTY BOUNDARY

1,000 500 0 1,000
SCALE 1:50,000 METRES

NOTE

THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

REFERENCE

LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, ©QUEENS PRINTER 2012.
PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 18

PROJECT
ENVIRONMENTAL ASSESSMENT OF THE CAPITAL REGION RESOURCE RECOVERY CENTRE

TITLE
SITE PLAN

Golder Associates

PROJECT No. 12-1125-0045			SCALE AS SHOWN	REV. 0.0
DESIGN	JPAO	DEC. 2013		
GIS	BR	DEC. 2013		
CHECK	PLE	AUG. 2014		
REVIEW	PAS	AUG. 2014		

FIGURE 8.2-1

N:\Active\Spatial_IM\Miller_Paving_Ltd\CRRRC\GIS\MXDs\12-1125-0045\Reporting\Phase4000\Vol. 1\12112500045-4000-Vol1-8.2-1.mxd

8.3 Site Overview

The Site totals approximately 192 hectares in area, as shown on Figure 8.2-1. It is bounded by Boundary Road to the west, Devine Road to the south and Frontier Road to the east. To the north, the Site is bounded primarily by undeveloped or industrial land, and by Highway 417 at the northeast corner.

The Site is currently vacant, with the exception of three residences and a model aircraft club along Frontier Road and one residence along Boundary Road. The residences are all owned by Taggart Miller and will be removed on construction of the CRRRC. A portion of the northern section of the Site is currently used to grow hay, but the majority of the Site is heavily vegetated and treed. Cropland reflects approximately 16% of the Site area. The Site has a generally high groundwater level and minimal relief, with a gradual slope of less than 1% draining west to east and ground surface elevations ranging from approximately 78 to 76 metres above sea level (masl).

Overall the Site is characterized by a mix of thickets, immature deciduous forests, swamps, agricultural fields and disturbed areas. Watercourses in the form of ditches and drains are present on the Site. In general, these are extensions of municipal drains in the vicinity of the property, or of municipal drains and their branches that originate from the property. All drainage discharge from the Site eventually combines in Shaw's Creek that in turn eventually discharges to Bear Brook Creek.

8.4 Atmosphere

This section presents the existing conditions related to atmosphere within the Site and Site-vicinity. This component is divided into noise and air quality/odour sub-components; the study areas for these sub-components are provided in Section 2.3. These summaries were compiled from the detailed studies of the noise environment (provided as TSD #2) and the air quality/odour environment (provided as TSD #3).

8.4.1 Noise

A field study was carried out to characterize existing noise levels, due to the lack of existing noise data in the Site-vicinity. Continuous noise monitoring was carried out at three locations within the Site-vicinity to collect the average and minimum existing noise levels for daytime (0700 to 1900), evening (1900 to 2300) and nighttime (2300 to 0700) periods at nearby sensitive PORs. The monitoring lasted from August 23, 2013 through to August 29, 2013. Noise data was logged continuously on an hourly basis for the duration of the monitoring period.

The locations where baseline noise monitoring was carried out are shown in Figure 8.4.1-1 and summarized in Table 8.4.1-1.

Table 8.4.1-1: Summary of Noise Monitoring Locations

Monitoring Location	Address	Monitor UTM Coordinates
Meas Loc #1	6150 Thunder Road	464943, 5021708
Meas Loc #2	5368 Boundary Road	465339, 5021249
Meas Loc #3	5716 Boundary Road	465969, 5019628

The existing acoustic environment in the Site-vicinity is dominated primarily by road traffic noise along Boundary Road. During nighttime hours, noise from traffic along Highway 417 can also be heard. All noise monitoring data are included in TSD #2. Table 8.4.1-2 summarizes the measured noise levels at each of the three monitoring locations.

Table 8.4.1-2: Summary of Noise Monitoring Data (dBA)

Location	Average Hourly Daytime (0700 to 1900 hours) Normal Operations		Average Hourly Evening (1900 to 2300 hours) Normal Operations		Average Hourly Nighttime (0600 to 0700 hours) Normal Operations		Average Hourly Nighttime (2300 to 0600 hours) Essential Operations		Minimum Hourly Daytime (0700 to 1900 hours) Normal Operations		Minimum Hourly Evening (1900 to 2300 hours) Normal Operations		Minimum Hourly Nighttime (0600 to 0700 hours) Normal Operations		Minimum Hourly Nighttime (2300 to 0600 hours) Essential Operations	
	L_{eq}	L_{90}*	L_{eq}	L_{90}*	L_{eq}	L_{90}*	L_{eq}	L_{90}*	L_{eq}	L_{90}*	L_{eq}	L_{90}*	L_{eq}	L_{90}*	L_{eq}	L_{90}*
Meas Loc #1	60	53	60	53	60	55	54	47	58	49	56	49	58	52	47	40
Meas Loc #2	67	52	66	51	67	54	57	45	65	45	61	45	63	50	50	34
Meas Loc #3	61	49	60	48	62	50	51	40	58	41	54	39	56	41	47	28

Note: * Sound pressure level exceeded for 90% of the measurement period.

In addition, a total of 10 PORs with existing residences were identified within the Site-vicinity study area and near the haul route as being the closest off-Site receptors (see Figure 8.4.1-1). A total of 3 vacant lots (VL) zoned to allow possible future noise sensitive land use were also identified (see Figure 8.4.1-2).

Table 8.4.1-3 provides a summary of the PORs and VLs used in this assessment. The table also indicates which baseline noise monitoring location was used to establish the existing noise levels at each POR and VL.

Table 8.4.1-3: Summary of Sensitive PORs

Receptor	UTM Coordinates	Representative Noise Monitoring Location
POR1	465558, 5020774	Meas Loc #2
POR2	465319, 5020015	Meas Loc #3
POR3	465888, 5019611	Meas Loc #3
POR4	465421, 5020818	Meas Loc #2
POR5	465428, 5021084	Meas Loc #2
POR6	465323, 5021149	Meas Loc #2
POR7	465319, 5021197	Meas Loc #2
POR8	465306, 5021229	Meas Loc #2
POR9	465318, 5021389	Meas Loc #2
POR10	464934, 5021613	Meas Loc #1
VL01	465916, 5020949[1]	Meas Loc #2
VL02	466206, 5020603[1]	Meas Loc #3
VL03	466808, 5021378[1, 2]	N/A[3]
	467094, 5020583[1, 4]	N/A[5]

Notes:
[1] UTM coordinates are for the assumed location of the future developments.
[2] Assumed location representative of worst-case noise impact for ancillary noise sources.
[3] Noise monitoring was not carried out at this location. The minimum background sound level due to road traffic was calculated using STAMSON v5.04.
[4] Assumed location representative of worst-case noise impact for landfill noise sources.
[5] MOECC exclusionary sound level limits for Class 1 areas have been used.

For the vacant lot located to the east of the Facility (VL03 – see Figure 8.4.1-2), the minimum background sound level due to road traffic was calculated using hourly traffic data for Highway 417. The sound energy exposure was determined using STAMSON v5.04 – ORNAMENT, the computerized road traffic noise prediction model provided by the MOECC. Predictions were made at two locations representing the assumed worst-case location for the ancillary and landfill operations, respectively. The minimum hourly noise level predictions for VL03 are summarized in Table 8.4.1-4.

Table 8.4.1-4: Summary of Minimum Background Sound Level (dBA) Due to Road Traffic (applicable to VL03)

Location	Daytime (0700 to 1900 hours)	Evening (1900 to 2300 hours)	Night-time Normal Operations (0600 to 0700 hours)	Night-time Essential Operations (2300 to 0600 hours)
VL03 (Ancillary Assessment)	57 [1]	55 [1]	54 [1]	45 [2]
VL03 (Landfill Assessment)	55 [2]	N/A [3]	45 [2]	N/A [3]

Notes:
[1] Minimum background sound level due to road traffic calculated using STAMSON v5.04
[2] MOECC minimum sound level limits for landfilling operations.
[3] Proposed operating hours of the landfill are 0600 to 1900 hours.