



# Appendix 8I

## Population and Community Use Analysis

December 2010



**METROLINX**

An agency of the Government of Ontario

APPENDIX 8I

Population and Community Use Analysis

December 2010

Prepared for:



20 Bay Street, Suite 901  
Toronto ON M5J 2N8

Prepared by:



In Association with:



**APPENDIX 8I**  
**POPULATION AND COMMUNITY USE ANALYSIS**  
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## Introduction

Residents alongside the railway will be affected by GO Transit operations. The evaluation of the relative impacts and benefits of different rail technologies on different corridors of GO operation will be understood in terms of a quantified description of the local communities affected. The electrification study has sought to understand the number of residents and the number of sensitive receptors (schools, daycares, hospitals, etcetera) affected by rail operations.

The approach adopted is transparent, defensible and is based on the techniques and methodology employed by other transit agencies globally when addressing questions of this nature. Appropriate review within the project team and by key stakeholders (and the ability to modify the results in response to feedback) was considered an integral part of ensuring peer acceptance of the output and the delivery of suitably robust analysis. Appropriate steps were therefore included in the adopted methodology.

## 1. DELIVERABLES

The analysis of the population and community uses comprises of:

- The number of residents living alongside the railway.
- The number and type of sensitive receptors located alongside the railway.

Sensitive Receptors are defined as:

- Schools
- Hospitals
- Daycare Centres
- Nursing Homes and Residences for the Elderly
- Community Centres
- Places of Worship
- Parks and Protected Areas

It is noted that the availability of current year data for some of the sensitive receptors may be limited, in particular daycares. The dataset used for this analysis includes all registered businesses.

Data tables have been created detailing the results of the population analysis by segment. These tables can be found in Appendix 8I-2.

Population data has been gathered for both current and future year (year 2021) scenarios and the methodology by which the catchment analysis has been performed is noted in this report. However, creating future year projections regarding changes to the location of sensitive receptors is not practicable.

## 2. METHODOLOGY AND DATA REQUIREMENTS

GIS tools and techniques are a mainstream and important component of the planners' toolbox. They are used extensively as an analytical tool during transportation studies and significant volumes of planning and cartographic data (in the form of "GIS Layers") were used to complete this study, in particular:

- Current population by Census Dissemination Area and Transport Analysis Zone
- Future Population by Transport Analysis Zone
- Comprehensive list of sensitive receptors

This data needs to be identifiable by location and appropriate geo-coded datasets have been sourced and used.

### 2.1. Study Areas

The following buffer zones have been selected as appropriate for analysis.

Air Quality Study Area – As defined in Appendix 8D

Noise and Vibration – As defined in Appendix 8E

### 2.2. Sensitive Receptors

Geo-coded data has been sourced from ArcGIS using their "Business Analyst" dataset. No appropriate method is available to forecast the number of sensitive receptors in the future year and therefore all analysis of sensitive receptors relates to the existing year number of sensitive receptors.

### 2.3. Current Population

Metrolinx have 2006 Census population data at the level of "Census Dissemination Areas" and this has been made available to the project team. Census Dissemination Areas will be the basic unit of analysis. However, these do not neatly fit within the study zones required. The following 3 stage process has therefore been used to resolve this issue:

- **Stage 1:** Define Proportion of DA land area that lies within the Study zone
- **Stage 2a:** If 100% of the DA land area is within the study zone, assign the full population to the study zone.
- **Stage 2b:** If less, than 100% of the DA land area is within the Study Zone, visually review the nature of the DB to determine if land use across the DB is uniform.
- **Stage 3a:** Apply stage 1 percentage value to population of the DB if land use within the DB is uniform.
- **Stage 3b:** If land use within the DB displays special characteristics (for example, significant parkland), apply a "common sense" review of the zone and manually adjust the value of population within the study zone.

## 2.4. Future Year Population

This data is not available for Census Dissemination Areas but is available for Transport Analysis Zones. Metrolinx hold this dataset and have released both base year and future year data to the project team. The future year forecast in this database has recently been updated and is for 2031. As it was agreed by the project team to base future year analysis of Electrification on future year 2021, we have assumed that growth between 2001 and 2031 will be linear and derived a 2021 forecast by Transport Analysis Zone as follows:

$$\text{POP}_{2021} = \text{TAZPOP}_{2001} + (70\% \times \text{TAZPOP}_{2031} - \text{TAZPOP}_{2001})$$

Transportation Analysis Zones are the basic unit of analysis. These TAZ boundaries will not neatly fit within the study zones required. The following 3 stage process will therefore be used to resolve this issue:

- **Stage 1:** Define Proportion of TAZ land area that lies within the Study Area
- **Stage 2:** Apply stage 1 percentage values to year 2031 population of each TAZ
- **Stage 3:** Calculate the 2021 future year population based on the POP2021 calculation described above.

### ***Output***

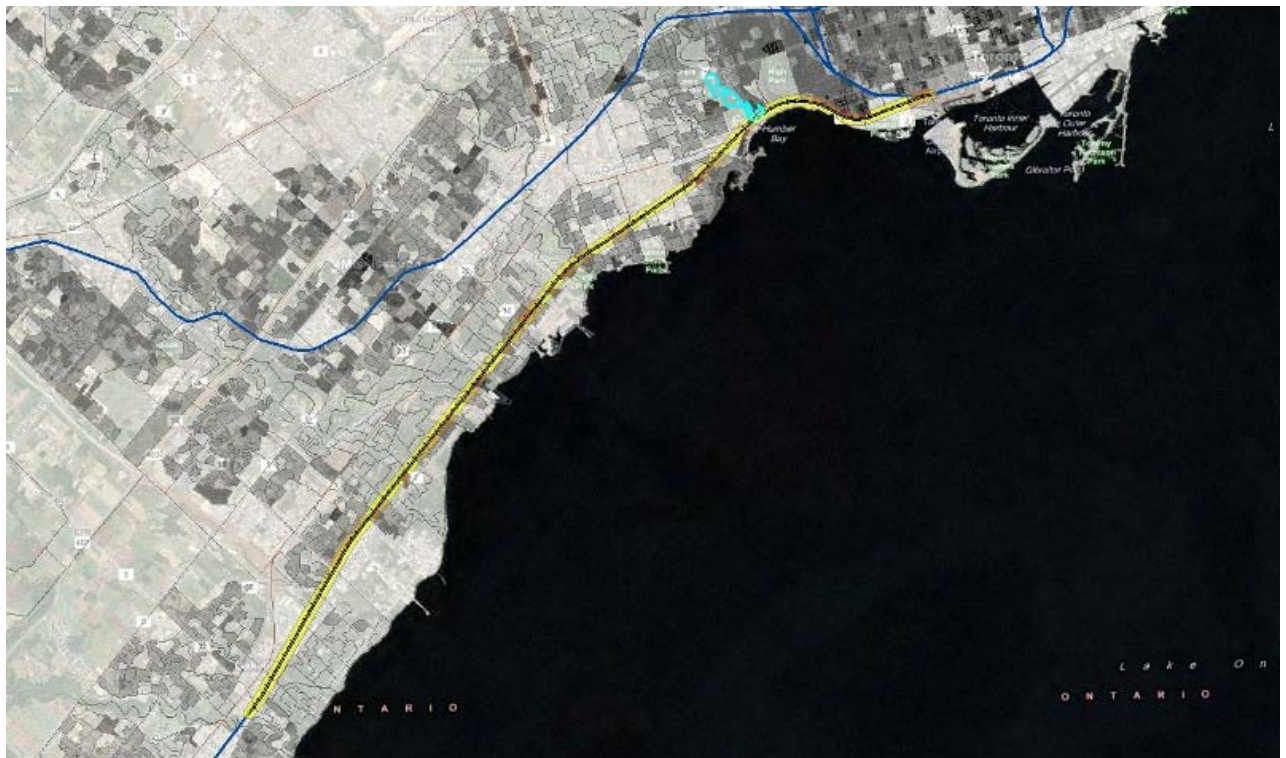
Example results are contained in Appendix 8I-1.



**APPENDIX 8I-1 – BATHURST STREET TO OAKVILLE CORRIDOR**

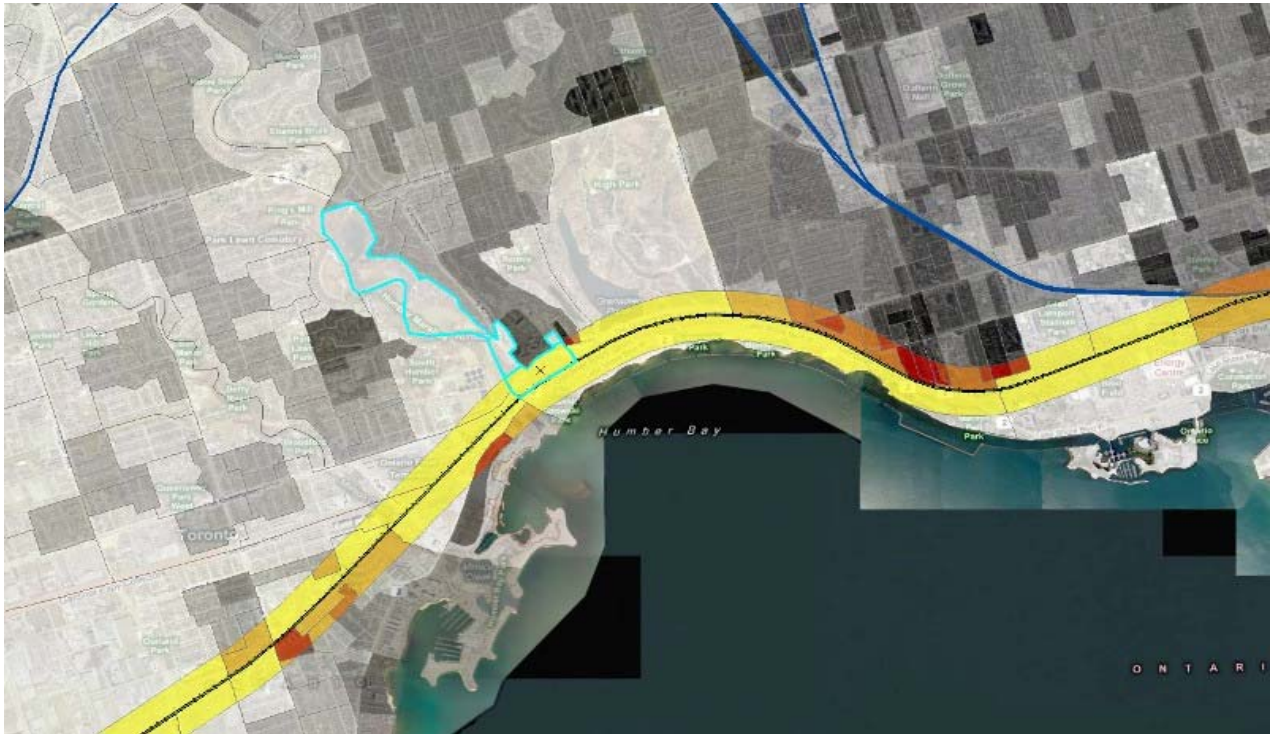


**Figure 1 Reference Case Rail Corridors**



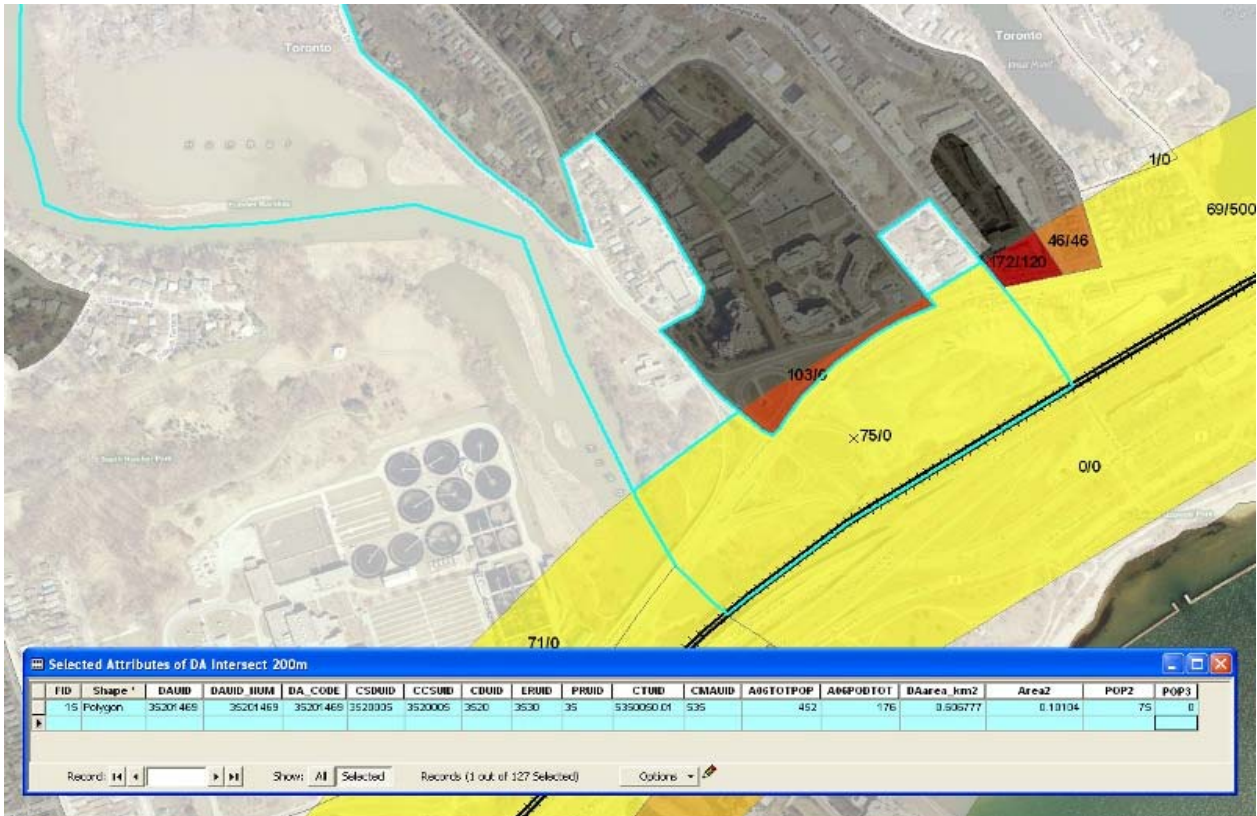
**Figure 2 Lakeshore West - Bathurst Street to Oakville**

## Current Year Population Data



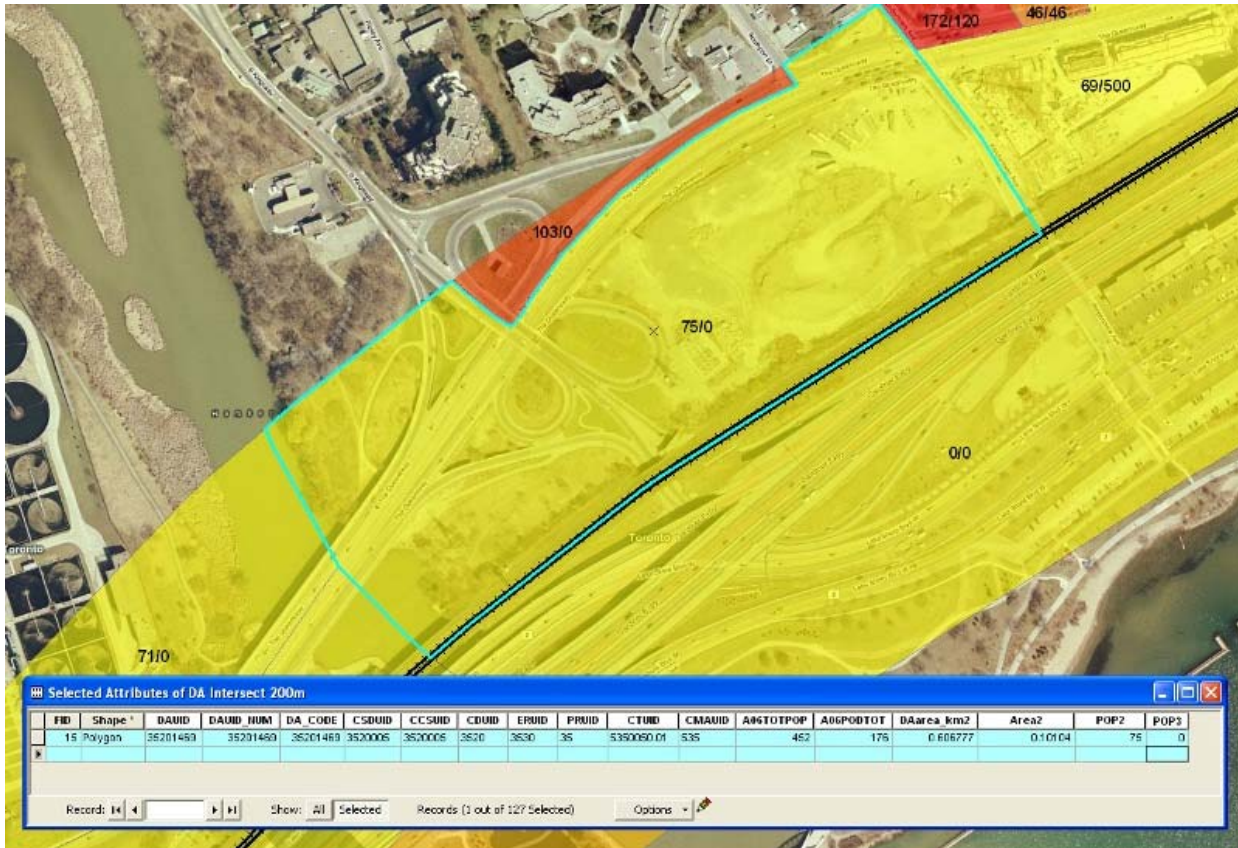
**Figure 3 Bathurst Street to Oakville Corridor (Eastern End)**

The colour of each zone alongside the railway represents population density as described in Figure 6.



**Figure 4 Detailed Method Stage 3A**

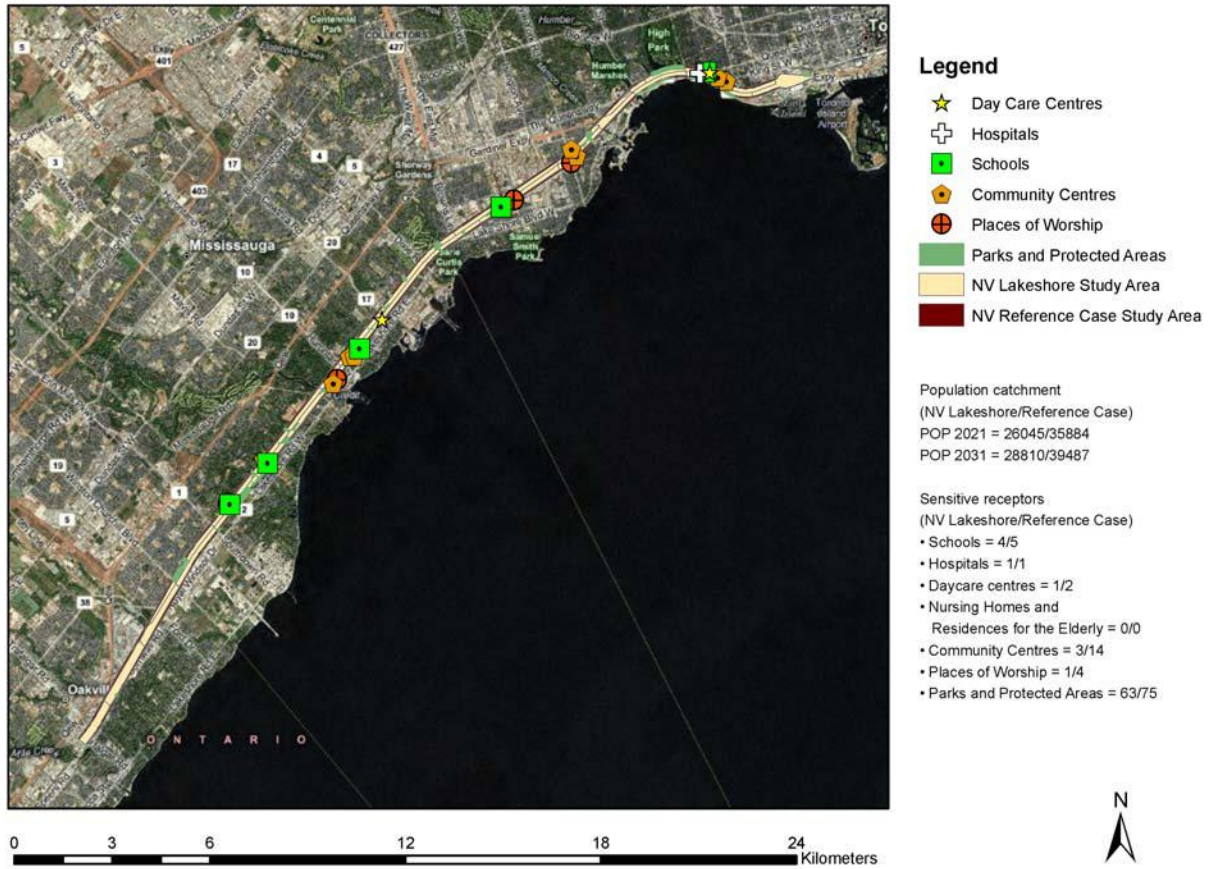
Figure 4 shows an example of the stage 3A methodology as applied to Census Dissemination Area with the ID code 35201469, shown by the blue boundary line. This CDA has a population of 452 and covers an area of 0.606 square km. The area within the study zone is 0.101 square km and the population within the study zone is calculated to be 75.



**Figure 5 Detailed Method Stage 3B**

Figure 5 shows reveals that under closer inspection it is apparent that land use is not uniformly distributed within zone 35201469 and that in fact no residential units are located in this part of the CDA. The population count is therefore revised to reflect this in accordance with Stage 3b of the methodology for deriving the current year population within the study zone. Cumulatively across the corridor, this process results in a population count adjustment of approaching 20% and is therefore considered a worthwhile additional step to ensure the best possible accuracy of the output.

## LW1 NV - Bathurst Street to Oakville



**Figure 6 Bathurst Street to Oakville Corridor Sample Map**

Total population calculated to be within 200 metres of the rail corridor (Bathurst Street to Oakville) was calculated to be 35,698 using the Stage 3A methodology. This count was revised to 30,684 under Stage 3B methodology. The revised count is significantly more accurate. The above figure shows a final sample of a map produced for Noise and Vibration study area for the Bathurst Street to Oakville segment.

### Future Year Population Data

This section shows the full system catchment analysis results for the study areas of Air Quality and Noise and Vibration. Both the population and number of sensitive receptors were analysed per segment, as shown on figure 7 below.



**Figure 7 GO Rail Corridor Map with Segments**

## APPENDIX 8I-2 – DATA TABLES

AQ RefCase	Sensitive Receptors							
Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0
UE1	11,933	8	0	14	0	12	2	7
UE2	32,085	6	0	10	0	14	7	20
UW1	20,148	8	0	6	0	4	2	4
UW2	15,064	7	0	4	1	12	7	11
UW3	11,544	7	0	5	0	3	11	12
LE1	10,790	0	0	1	0	0	0	14
LE2	1,290	0	0	0	0	0	0	2
LE3	2,783	2	0	0	0	1	1	16
LW1	22,373	4	1	1	0	1	1	64
LW2	2,665	0	0	0	0	1	0	16
LW3	531	1	1	0	0	0	3	4
LW4	919	0	0	0	0	0	0	5
MI1	13,680	0	0	2	0	0	0	22
MI2	1,225	0	0	0	0	0	0	3
GT1	14,215	6	2	3	0	3	12	24
GT2	3,848	0	0	1	0	0	3	2
GT3	1,201	0	0	1	0	0	1	4
BA1	14,091	3	0	1	0	5	2	43
BA2	480	0	0	0	0	0	0	1
RH1	5,089	0	0	0	0	0	0	38
RH2	441	0	0	0	0	0	0	1
ST1	8,319	0	0	1	0	0	2	19
ST2	1,414	0	0	0	0	0	0	3

**Figure 8 Corridor Results for Air Quality for the Reference Case**

AQ Option1	Sensitive Receptors							
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship
UN1	0	0	0	0	0	0	0	0
UE1	10,582	6	0	12	0	10	1	7
UE2	32,085	6	0	10	0	14	7	20
UW1	13,233	7	0	4	0	0	0	4
UW2	12,323	4	0	0	0	3	0	5
UW3	3,637	0	0	0	0	0	1	3
LE1	10,790	0	0	1	0	0	0	14
LE2	1,290	0	0	0	0	0	0	2
LE3	2,783	2	0	0	0	1	1	16
LW1	22,373	4	1	1	0	1	1	64
LW2	2,665	0	0	0	0	1	0	16
LW3	531	1	1	0	0	0	3	4
LW4	919	0	0	0	0	0	0	5
M11	13,680	0	0	2	0	0	0	22
M12	1,225	0	0	0	0	0	0	3
GT1	0	0	0	0	0	0	0	0
GT2	0	0	0	0	0	0	0	0
GT3	0	0	0	0	0	0	0	0
BA1	14,091	3	0	1	0	5	2	43
BA2	480	0	0	0	0	0	0	1
RH1	5,089	0	0	0	0	0	0	38
RH2	441	0	0	0	0	0	0	1
ST1	8,319	0	0	1	0	0	2	19
ST2	1,414	0	0	0	0	0	0	3

**Figure 9 Corridor Results for Air Quality for Option 1**



AQ Option2	Sensitive Receptors								
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0	0
UE1	4,726	6	0	4	0	4	0	0	0
UE2	9,095	1	0	1	0	0	1	15	
UW1	14,663	8	0	4	0	1	1	4	
UW2	15,064	7	0	4	1	12	7	11	
UW3	11,544	7	0	5	0	3	11	12	
LE1	0	0	0	0	0	0	0	0	0
LE2	0	0	0	0	0	0	0	0	0
LE3	0	0	0	0	0	0	0	0	0
LW1	0	0	0	0	0	0	0	0	0
LW2	0	0	0	0	0	0	0	0	0
LW3	0	0	0	0	0	0	0	0	0
LW4	919	0	0	0	0	0	0	5	
M11	13,680	0	0	2	0	0	0	22	
M12	1,225	0	0	0	0	0	0	3	
GT1	14,215	6	2	3	0	3	12	24	
GT2	3,848	0	0	1	0	0	3	2	
GT3	1,201	0	0	1	0	0	1	4	
BA1	14,091	3	0	1	0	5	2	43	
BA2	480	0	0	0	0	0	0	1	
RH1	5,089	0	0	0	0	0	0	38	
RH2	441	0	0	0	0	0	0	1	
ST1	8,319	0	0	1	0	0	2	19	
ST2	1,414	0	0	0	0	0	0	3	

**Figure 10 Corridor Results for Air Quality for Option 2**

AQ Option3	Sensitive Receptors							
	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0
UE1	3,997	1	0	4	0	3	0	0
UE2	9,095	1	0	1	0	0	1	15
UW1	7,061	1	0	4	0	0	0	2
UW2	12,323	4	0	0	0	3	0	5
UW3	3,637	0	0	0	0	0	1	3
LE1	0	0	0	0	0	0	0	0
LE2	0	0	0	0	0	0	0	0
LE3	0	0	0	0	0	0	0	0
LW1	0	0	0	0	0	0	0	0
LW2	0	0	0	0	0	0	0	0
LW3	0	0	0	0	0	0	0	0
LW4	919	0	0	0	0	0	0	5
M11	13,680	0	0	2	0	0	0	22
M12	1,225	0	0	0	0	0	0	3
GT1	0	0	0	0	0	0	0	0
GT2	0	0	0	0	0	0	0	0
GT3	0	0	0	0	0	0	0	0
BA1	14,091	3	0	1	0	5	2	43
BA2	480	0	0	0	0	0	0	1
RH1	5,089	0	0	0	0	0	0	38
RH2	441	0	0	0	0	0	0	1
ST1	8,319	0	0	1	0	0	2	19
ST2	1,414	0	0	0	0	0	0	3

**Figure 11 Corridor Results for Air Quality for Option 3**

AQ Option11	Sensitive Receptors							
	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0
UE1	3,970	1	0	4	0	3	0	0
UE2	9,095	1	0	1	0	0	1	15
UW1	2,605	0	0	0	0	0	0	1
UW2	11,082	0	0	0	0	0	0	1
UW3	282	0	0	0	0	0	0	0
LE1	0	0	0	0	0	0	0	0
LE2	0	0	0	0	0	0	0	0
LE3	0	0	0	0	0	0	0	0
LW1	0	0	0	0	0	0	0	0
LW2	0	0	0	0	0	0	0	0
LW3	0	0	0	0	0	0	0	0
LW4	919	0	0	0	0	0	0	5
M11	0	0	0	0	0	0	0	0
M12	0	0	0	0	0	0	0	0
GT1	0	0	0	0	0	0	0	0
GT2	0	0	0	0	0	0	0	0
GT3	0	0	0	0	0	0	0	0
BA1	14,091	3	0	1	0	5	2	43
BA2	480	0	0	0	0	0	0	1
RH1	5,089	0	0	0	0	0	0	38
RH2	441	0	0	0	0	0	0	1
ST1	8,319	0	0	1	0	0	2	19
ST2	1,414	0	0	0	0	0	0	3

**Figure 12 Corridor Results for Air Quality for Option 11**

AQ Option15	Sensitive Receptors								
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0	0
UE1	3,970	1	0	4	0	3	0	0	0
UE2	9,095	1	0	1	0	0	1	15	0
UW1	566	0	0	0	0	0	0	0	0
UW2	10,152	0	0	0	0	0	0	0	0
UW3	282	0	0	0	0	0	0	0	0
LE1	0	0	0	0	0	0	0	0	0
LE2	0	0	0	0	0	0	0	0	0
LE3	0	0	0	0	0	0	0	0	0
LW1	0	0	0	0	0	0	0	0	0
LW2	0	0	0	0	0	0	0	0	0
LW3	0	0	0	0	0	0	0	0	0
LW4	919	0	0	0	0	0	0	0	5
M11	0	0	0	0	0	0	0	0	0
M12	0	0	0	0	0	0	0	0	0
GT1	0	0	0	0	0	0	0	0	0
GT2	0	0	0	0	0	0	0	0	0
GT3	0	0	0	0	0	0	0	0	0
BA1	0	0	0	0	0	0	0	0	0
BA2	0	0	0	0	0	0	0	0	0
RH1	5,089	0	0	0	0	0	0	0	38
RH2	441	0	0	0	0	0	0	0	1
ST1	8,319	0	0	1	0	0	2	19	0
ST2	1,414	0	0	0	0	0	0	3	0

**Figure 13 Corridor Results for Air Quality for Option 15**

AQ Option18	Sensitive Receptors							
Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0
UE1	0	0	0	0	0	0	0	0
UE2	0	0	0	0	0	0	0	0
UW1	0	0	0	0	0	0	0	0
UW2	0	0	0	0	0	0	0	0
UW3	0	0	0	0	0	0	0	0
LE1	0	0	0	0	0	0	0	0
LE2	0	0	0	0	0	0	0	0
LE3	0	0	0	0	0	0	0	0
LW1	0	0	0	0	0	0	0	0
LW2	0	0	0	0	0	0	0	0
LW3	0	0	0	0	0	0	0	0
LW4	0	0	0	0	0	0	0	0
M11	0	0	0	0	0	0	0	0
M12	0	0	0	0	0	0	0	0
GT1	0	0	0	0	0	0	0	0
GT2	0	0	0	0	0	0	0	0
GT3	0	0	0	0	0	0	0	0
BA1	0	0	0	0	0	0	0	0
BA2	0	0	0	0	0	0	0	0
RH1	0	0	0	0	0	0	0	0
RH2	0	0	0	0	0	0	0	0
ST1	0	0	0	0	0	0	0	0
ST2	0	0	0	0	0	0	0	0

**Figure 14 Corridor Results for Air Quality for Option 18**

NV RefCase	Sensitive Receptors							
	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0
UE1	9,470	6	0	11	0	10	1	3
UE2	44,418	11	0	14	0	14	21	21
UW1	12,809	5	0	3	0	0	0	5
UW2	15,064	3	0	2	0	5	2	9
UW3	8,412	3	0	3	0	2	5	8
LE1	19,464	0	0	4	0	1	1	19
LE2	6,846	2	0	0	1	0	1	5
LE3	2,510	2	0	0	0	1	1	15
LW1	35,884	5	1	2	0	14	4	75
LW2	7,411	2	0	3	1	10	2	20
LW3	3,362	2	1	0	0	3	7	6
LW4	3,444	0	0	0	0	1	1	11
M11	19,573	1	0	4	0	0	1	22
M12	1,543	0	0	0	0	0	1	3
GT1	21,931	9	4	8	0	10	27	30
GT2	6,595	0	0	1	0	0	0	3
GT3	1,795	0	0	1	0	0	3	8
BA1	23,408	6	1	2	0	7	15	39
BA2	830	0	0	0	0	0	0	1
RH1	20,236	2	1	0	0	2	1	37
RH2	1,350	0	0	0	0	0	0	3
ST1	13,127	1	0	1	0	0	2	24
ST2	1,512	0	0	0	0	0	0	3

**Figure 15 Corridor Results for Noise & Vibration for the Reference Case**

NV Option1	Sensitive Receptors							
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship
UN1	0	0	0	0	0	0	0	0
UE1	9,256	6	0	11	0	10	1	3
UE2	38,634	10	0	13	0	13	16	16
UW1	11,332	3	0	3	0	0	0	5
UW2	12,323	3	0	2	0	3	1	5
UW3	7,949	0	0	2	0	2	3	7
LE1	19,464	0	0	4	0	1	1	19
LE2	6,846	2	0	0	1	0	1	5
LE3	2,510	2	0	0	0	1	1	15
LW1	35,884	5	1	2	0	14	4	75
LW2	7,411	2	0	3	1	10	2	20
LW3	3,362	2	1	0	0	3	7	6
LW4	3,444	0	0	0	0	1	1	11
M11	19,573	1	0	4	0	0	1	22
M12	1,543	0	0	0	0	0	1	3
GT1	15,134	4	2	3	0	1	18	27
GT2	4,734	0	0	1	0	0	3	3
GT3	1,303	0	0	1	0	0	3	7
BA1	23,408	6	1	2	0	7	15	39
BA2	830	0	0	0	0	0	0	1
RH1	20,236	2	1	0	0	2	1	37
RH2	1,350	0	0	0	0	0	0	3
ST1	13,127	1	0	1	0	0	2	24
ST2	1,512	0	0	0	0	0	0	3

**Figure 16 Corridor Results for Noise & Vibration for Option 1**

NV Option2	Sensitive Receptors							
	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0
UE1	7,210	4	0	8	0	5	0	3
UE2	38,634	10	0	13	0	13	16	16
UW1	11,943	4	0	3	0	0	0	5
UW2	15,064	3	0	2	0	5	2	9
UW3	8,412	3	0	3	0	2	5	8
LE1	13,767	0	0	2	0	0	1	14
LE2	4,313	2	0	0	0	0	0	4
LE3	1,905	1	0	0	0	1	1	14
LW1	26,045	4	1	1	0	3	1	63
LW2	5,372	1	0	2	0	5	1	17
LW3	2,353	2	1	0	0	3	6	6
LW4	3,444	0	0	0	0	1	1	11
M11	19,573	1	0	4	0	0	1	22
M12	1,543	0	0	0	0	0	1	3
GT1	21,931	9	4	8	0	10	27	30
GT2	6,595	0	0	1	0	0	0	3
GT3	1,795	0	0	1	0	0	3	8
BA1	23,408	6	1	2	0	7	15	39
BA2	830	0	0	0	0	0	0	1
RH1	20,236	2	1	0	0	2	1	37
RH2	1,350	0	0	0	0	0	0	3
ST1	13,127	1	0	1	0	0	2	24
ST2	1,512	0	0	0	0	0	0	3

**Figure 17 Corridor Results for Noise & Vibration for Option 2**



NV Option3	Sensitive Receptors								
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0	0
UE1	7,210	4	0	8	0	5	0	3	
UE2	38,634	10	0	13	0	13	16	16	
UW1	10,358	3	0	3	0	0	0	5	
UW2	12,323	3	0	2	0	3	1	5	
UW3	7,949	0	0	2	0	2	3	7	
LE1	13,767	0	0	2	0	0	1	14	
LE2	4,313	2	0	0	0	0	0	4	
LE3	1,905	1	0	0	0	1	1	14	
LW1	26,045	4	1	1	0	3	1	63	
LW2	5,372	1	0	2	0	5	1	17	
LW3	2,353	2	1	0	0	3	6	6	
LW4	3,444	0	0	0	0	1	1	11	
M11	19,573	1	0	4	0	0	1	22	
M12	1,543	0	0	0	0	0	1	3	
GT1	15,134	4	2	3	0	1	18	27	
GT2	4,734	0	0	1	0	0	3	3	
GT3	1,303	0	0	1	0	0	3	7	
BA1	23,408	6	1	2	0	7	15	39	
BA2	830	0	0	0	0	0	0	1	
RH1	20,236	2	1	0	0	2	1	37	
RH2	1,350	0	0	0	0	0	0	3	
ST1	13,127	1	0	1	0	0	2	24	
ST2	1,512	0	0	0	0	0	0	3	

**Figure 18 Corridor Results for Noise & Vibration for Option 3**

NV Option11	Sensitive Receptors								
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship	Parks and Protected Areas
UN1	0	0	0	0	0	0	0	0	0
UE1	7,210	4	0	8	0	5	0	3	
UE2	38,634	10	0	13	0	13	16	16	
UW1	9,740	3	0	3	0	0	0	4	
UW2	11,082	1	0	0	0	3	0	5	
UW3	6,817	0	0	2	0	2	2	5	
LE1	13,767	0	0	2	0	0	1	14	
LE2	4,313	2	0	0	0	0	0	4	
LE3	1,905	1	0	0	0	1	1	14	
LW1	26,045	4	1	1	0	3	1	63	
LW2	5,372	1	0	2	0	5	1	17	
LW3	2,353	2	1	0	0	3	6	6	
LW4	3,444	0	0	0	0	1	1	11	
M11	14,005	1	0	4	0	0	0	19	
M12	1,080	0	0	0	0	0	0	3	
GT1	15,134	4	2	3	0	1	18	27	
GT2	4,734	0	0	1	0	0	3	3	
GT3	1,303	0	0	1	0	0	3	7	
BA1	23,408	6	1	2	0	7	15	39	
BA2	830	0	0	0	0	0	0	1	
RH1	20,236	2	1	0	0	2	1	37	
RH2	1,350	0	0	0	0	0	0	3	
ST1	13,127	1	0	1	0	0	2	24	
ST2	1,512	0	0	0	0	0	0	3	

**Figure 19 Corridor Results for Noise & Vibration for Option 11**

NV Option15	Sensitive Receptors							
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship
UN1	0	0	0	0	0	0	0	0
UE1	7,210	4	0	8	0	5	0	3
UE2	38,634	10	0	13	0	13	16	16
UW1	9,162	2	0	3	0	0	0	2
UW2	10,152	1	0	0	0	3	0	4
UW3	6,817	0	0	2	0	2	2	5
LE1	13,767	0	0	2	0	0	1	14
LE2	4,313	2	0	0	0	0	0	4
LE3	1,905	1	0	0	0	1	1	14
LW1	26,045	4	1	1	0	3	1	63
LW2	5,372	1	0	2	0	5	1	17
LW3	2,353	2	1	0	0	3	6	6
LW4	3,444	0	0	0	0	1	1	11
M11	14,005	1	0	4	0	0	0	19
M12	1,080	0	0	0	0	0	0	3
GT1	15,134	4	2	3	0	1	18	27
GT2	4,734	0	0	1	0	0	3	3
GT3	1,303	0	0	1	0	0	3	7
BA1	16,781	4	0	1	0	5	9	35
BA2	605	0	0	0	0	0	0	1
RH1	20,236	2	1	0	0	2	1	37
RH2	1,350	0	0	0	0	0	0	3
ST1	13,127	1	0	1	0	0	2	24
ST2	1,512	0	0	0	0	0	0	3

**Figure 20 Corridor Results for Noise & Vibration for Option 15**

NV Option18	Sensitive Receptors							
	Segments	Population (2021)	Schools	Hospitals	Daycare Centres	Nursing Homes	Community Centres	Places of Worship
UN1	0	0	0	0	0	0	0	0
UE1	5,760	1	0	4	0	5	0	0
UE2	27,771	6	0	10	0	10	5	5
UW1	9,162	2	0	3	0	0	0	2
UW2	10,152	1	0	0	0	3	0	4
UW3	6,817	0	0	2	0	2	2	5
LE1	13,767	0	0	2	0	0	1	14
LE2	4,313	2	0	0	0	0	0	4
LE3	1,905	1	0	0	0	1	1	14
LW1	26,045	4	1	1	0	3	1	63
LW2	5,372	1	0	2	0	5	1	17
LW3	2,353	2	1	0	0	3	6	6
LW4	2,558	0	0	0	0	0	1	8
M11	14,005	1	0	4	0	0	0	19
M12	1,080	0	0	0	0	0	0	3
GT1	15,134	4	2	3	0	1	18	27
GT2	4,734	0	0	1	0	0	3	3
GT3	1,303	0	0	1	0	0	3	7
BA1	16,781	4	0	1	0	5	9	35
BA2	605	0	0	0	0	0	0	1
RH1	14,273	1	0	0	0	1	1	36
RH2	1,020	0	0	0	0	0	0	3
ST1	9,324	1	0	1	0	0	2	19
ST2	1,180	0	0	0	0	0	0	3

**Figure 21 Corridor Results for Noise & Vibration for Option 18**