



**PREMIER GATEWAY PHASE 1B LAND USE
COMPATIBILITY STUDY**

AIR QUALITY, LIGHT AND NOISE

TECHNICAL SUPPORT DOCUMENT

Draft Report

Submitted to:

**Macaulay Shiomi Howson Limited
600 Annette Street
Toronto, ON M6S 2C4**

Submitted by:

**Amec Foster Wheeler Environment & Infrastructure
a Division of Amec Foster Wheeler Americas Limited
160 Traders Boulevard East, Suite 110
Mississauga, ON L4Z 3K7**

September 22, 2017

TP115085

EXECUTIVE SUMMARY

Amec Foster Wheeler Environment and Infrastructure, a Division of Amec Foster Wheeler Americas Ltd. was retained to prepare a Land Use Compatibility Study for Air Quality, Light and Noise effects for the Premier Gateway Phase 1B Employment Area Secondary Plan. The objective of the study is to assess the proposed development in the context of land use compatibility with the existing sensitive land uses within the study area and in the vicinity.

The Ministry of the Environment and Climate Change (MOECC) D-6 Guideline “Compatibility Between Industrial Facilities and Sensitive Land Uses” (D-6 Guideline) is a tool for informed municipal planning to prevent issues that may arise from incompatible development. The guideline specifies both minimum separation distances and areas of influence in which compatibility issues may arise depending on facility size and nature of operations. The Guideline rates facility operations as ranging from Class 1 (low potential impact) to Class 3 (highest potential impact).

The study findings are based upon existing knowledge of the proposed development and the sensitive land uses both within the bounds of the study area, and those proximate to the study area that may fall within the area of influence, in the absence of information on specific facilities. The potential for health or environmental effects (Air and Noise) associated with the facilities that will be located in the study area would be addressed by provincial permitting and review tools such as Environmental Compliance Approvals, EASR registration, or Environmental Assessments.

The most common land use compatibility issue associated with land development are nuisance effects resulting from the new sources of dust, odour, light and noise introduced to the study area. There are measures that can be taken by both the Town of Halton Hills and by the occupants of the new employment area to mitigate these nuisance effects depending on the type of facility. Class I facilities are unlikely to result in significant land use compatibility issues, however Class II and III facilities have the potential to result in incompatibilities, nuisance effects, and complaints.

The development would not include Class III facilities which have the highest potential for nuisance effects. It may be prudent to require Class II facilities with the potential for odour, dust or noise effects to prepare land use compatibility studies specific to their operations to determine the actual area of influence as the potential area of influence cited in MOECC’s D-6 Guidelines may be overly conservative. This is consistent with the Land Use Compatibility Guidelines published by Halton Region.

Effective communication with residents during planning and construction phases has proven beneficial for other redevelopment projects, with consideration given to establishing a public liaison committee to encourage resident participation. There may be opposition to any development that might amplify potential nuisances. The ability to become actively involved, contribute to managing air quality, light and noise effects, and be provided with a clear mechanism for resident complaints and feedback, may help avoid land use compatibility issues.



TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION.....	3
2.0 LAND USE COMPATIBILITY GUIDELINES.....	3
2.1 Ontario Ministry of the Environment and Climate Change.....	3
2.2 Halton Region Land Use Compatibility Guideline.....	5
3.0 GEOGRAPHIC CONTEXT	5
3.1 Sensitive Land Uses	6
3.2 Other Land Uses	7
3.2.1 TransCanada Energy Ltd. - Halton Hills Generating Station (HHGS)	7
3.2.2 ROXUL Inc.....	7
3.2.3 Pits and Quarries	8
3.2.4 Commercial.....	8
3.2.5 Infrastructure.....	8
4.0 POTENTIAL EFFECTS	9
4.1 Air Quality.....	9
4.1.1 Air Pollutants.....	9
4.1.2 Air Nuisance Effects.....	9
4.2 Light	10
4.3 Noise	11
5.0 EXISTING CONDITIONS.....	11
5.1 Air Quality.....	11
5.1.1 Local Meteorological Data	11
5.1.2 Background Ambient Air Quality	14
5.2 Light	17
5.3 Noise	18
6.0 EFFECTS DISCUSSION	19
6.1 Air Quality.....	19
6.1.1 Air Pollutants.....	19
6.1.2 Air Nuisance Effects.....	19
6.2 Light	21
6.3 Noise	21
7.0 SUMMARY OF FINDINGS	25
8.0 REFERENCES.....	28
9.0 CLOSURE.....	29



LIST OF TABLES

Table 2.1: D-6 Land Use Compatibility Separation Distances* by Facility Class	5
Table 3.1: 2015 HHGS Reported Air Releases	7
Table 3.2: 2015 Roxul Reported Air Releases.....	8
Table 5.1: Existing 2017 Traffic Data.....	18
Table 6.1: Vehicle Fleet Composition	22
Table 6.2: PM Peak Hour Traffic Volume Estimates	23
Table 6.3: AADT Volume Estimates	23
Table 6.4: Traffic Ratios and Estimated Noise Increases.....	25

LIST OF FIGURES

Figure 3.1: Preferred Land Use Concept.....	6
Figure 5.1: Wind Rose (Toronto Pearson)	13
Figure 5.2: Seasonal Wind Roses (Toronto Pearson)	14
Figure 5.3: Background PM _{2.5} Concentrations at MOECC Guelph.....	16
Figure 5.4: Background PM _{2.5} Concentrations at MOECC Brampton.....	16
Figure 5.5: Background NO ₂ Concentrations at MOECC Guelph.....	17
Figure 5.6: Background NO ₂ Concentrations at MOECC Brampton	17

LIST OF APPENDICES

Appendix A: Statement of Limitations	
--------------------------------------	--

1.0 INTRODUCTION

Amec Foster Wheeler Environment and Infrastructure, a Division of Amec Foster Wheeler Americas Ltd. was retained to prepare a Land Use Compatibility Study for Air Quality, Light and Noise Effects for the Premier Gateway Phase 1B Employment Area Secondary Plan.

The objective of the study is to assess the proposed development in the context of land use compatibility with the existing sensitive land uses within the study area and in the vicinity. The Preferred Land Use Concept figure is provided in Section 3.0 to illustrate the existing and proposed land uses.

2.0 LAND USE COMPATIBILITY GUIDELINES

There are provincial, regional and municipal guidance materials published to assist in discussions and decision making processes surrounding land-use compatibility. Of particular relevance to this study are the MOECC D-6 Guidelines and the Halton Region Land Use Compatibility Guidelines.

The MOECC D-6 Guideline “Compatibility Between Industrial Facilities and Sensitive Land Uses” (D-6 Guideline) is a tool for informed municipal planning to prevent issues that may arise from incompatible development. The guideline specifies both minimum separation distances and areas of influence in which compatibility issues may arise depending on facility size and nature of operations.

2.1 Ontario Ministry of the Environment and Climate Change

The Guideline D-6, “Compatibility Between Industrial Facilities and Sensitive Land Uses”, was published in 1995 to assist in the land use planning process to prevent or minimize future land use problems due to encroachment of sensitive land uses and industrial land uses on one another. Rather than taking a regulatory approach, the MOECC provides guidance and recommendations as a tool for informed decision making by land use approval authorities.

The MOECC recommends studies for noise, dust, and odour be provided by the proponent to the approving authority in support of proposed land use changes. The focus of this study will be identifying the potential for air quality effects from the Premier Gateway Phase 1B Employment Area on sensitive land uses.

The Guidelines define two parameters that are in place to help assess the likelihood of adverse air quality effects from changes in land use:

- Potential area of influence - areas within which adverse effects may be experienced; and
- Recommended minimum separation distance - no incompatible development should occur within this area except where infilling, urban redevelopment, and/or transition to mixed use is taking place.

The definition of Sensitive Land Use is also a key component of the D-6 Guidelines:

“Sensitive Land Use: A building, 'amenity area' or outdoor space where routine or normal activities occurring at reasonably expected times would experience 1 or more 'adverse effect(s)' from contaminant discharges generated by a nearby 'facility'. The 'sensitive land use' may be a part of the natural or built environment. Depending upon the particular 'facility' involved, a sensitive land use and associated activities may include one or a combination of:

- (i) residences or facilities where people sleep (e.g. single and multi-unit dwellings, nursing homes, hospitals, trailer parks, camping grounds, etc.). These uses are considered to be sensitive 24 hours/day.
- (ii) a permanent structure for non-facility related use, particularly of an institutional nature (e.g. schools, churches, community centres, day care centres).
- (iii) certain outdoor recreational uses deemed by a municipality or other level of government to be sensitive (e.g. trailer park, picnic area, etc.).
- (iv) certain agricultural operations (e.g. cattle raising, mink farming, cash crops and orchards).
- (v) bird/wildlife habitats or sanctuaries.”

The guideline defines three classes of industrial facilities as follows:

- Class I - A small scale, self-contained plant or building with no outside storage that produces and stores a packaged product. There are daytime operations only and infrequent truck movement. Examples of Class I facilities may be electronics manufacturing and repair, furniture repair and refinishing, small food manufacturing and packaging, beverage bottling.
- Class II - A medium scale processing or manufacturing facility with outdoor storage, shift work, and frequent truck movements however movements are predominantly during daytime hours. Class II facilities may include: commercial printing, surface coatings (paint spray booths or electrostatic painting), and dairy product manufacturing.
- Class III - A large scale processing and manufacturing facility with outdoor storage, large production volumes, open processes, significant probability of fugitive dusts or odours, and continuous movement of products and employees during shift operations. Frequent outputs result in major annoyance and there is high probability of fugitive emissions. Breweries, chemical manufacturing plants, and automotive manufacturing, are examples of Class III facilities.

The potential areas of influence and the recommended minimum separation distances for each facility class are provided in Table 2.1.

Table 2.1: D-6 Land Use Compatibility Separation Distances* by Facility Class

Facility Class	Potential Area of Influence (m)	Recommended Minimum Separation Distance (m)
Class I	70	20
Class II	300	70
Class III	1,000	300

*The guideline defines the distance as property line to property line

The MOECC recommends that no sensitive land uses occur within the minimum distances and only be allowed within the influence zones if studies indicate that impacts are acceptable. The definition does not reference specific zoning classifications. Though residential zoning would be considered a sensitive use, certain specific uses in other zoning classifications could also be considered sensitive. The key aspect of the definition is that sensitive land uses occur where there can be activities that could be impacted or affected by emissions from the industry.

2.2 Halton Region Land Use Compatibility Guideline

The stated goal of the guideline is to identify how municipalities may address land use compatibility issues related to a development in order to minimize the effects of industrial, transportation and utility uses that emit noise, vibration, odour, or air pollution on sensitive uses. These guidelines support the use of the Potential Areas of Influence and Recommended Minimum Separation Distances cited in MOECC D-6 (Table 2.1).

The Guidelines are more general than the MOECC D-6, but do suggest a number of required studies for new Class III industrial facilities proposed near existing sensitive land uses. An allowance exists for facilities to prepare a site-specific study by a qualified Professional Engineer to determine the actual area of influence based upon specific processes and activities, to support land use compatibility. The actual area of influence may be smaller than the potential area of influence stipulated.

An Industrial Facility Classification Table is provided in Appendix 3 of the Halton Region guidelines that provides specific criteria to be used to categorize an industrial facility as Class I, Class II, or Class III.

3.0 GEOGRAPHIC CONTEXT

The Background Study defines two parcels of land for potential future employment uses:

Parcel 1 - This property is located on the west side of Eighth Line in the northeast quadrant of the Study Area. It comprises a dairy operation with a large bank barn, silos, grain bin, machine shed, residence and ancillary buildings. The developable area is estimated at +/- 40 hectares.

Parcel 2 - These lands are primarily occupied by the Hornby Glen Golf Course and also include adjacent lands to the west of the golf course with frontage on Sixth Line. The golf course is

located on the west side of Hornby Road just north of the Hornby Rural Residential Concentration. The developable area is estimated at +/- 46 hectare (MSH, 2015).

The Preferred Land Use Concept figure is provided as Figure 3.1 to illustrate the existing and proposed land uses.

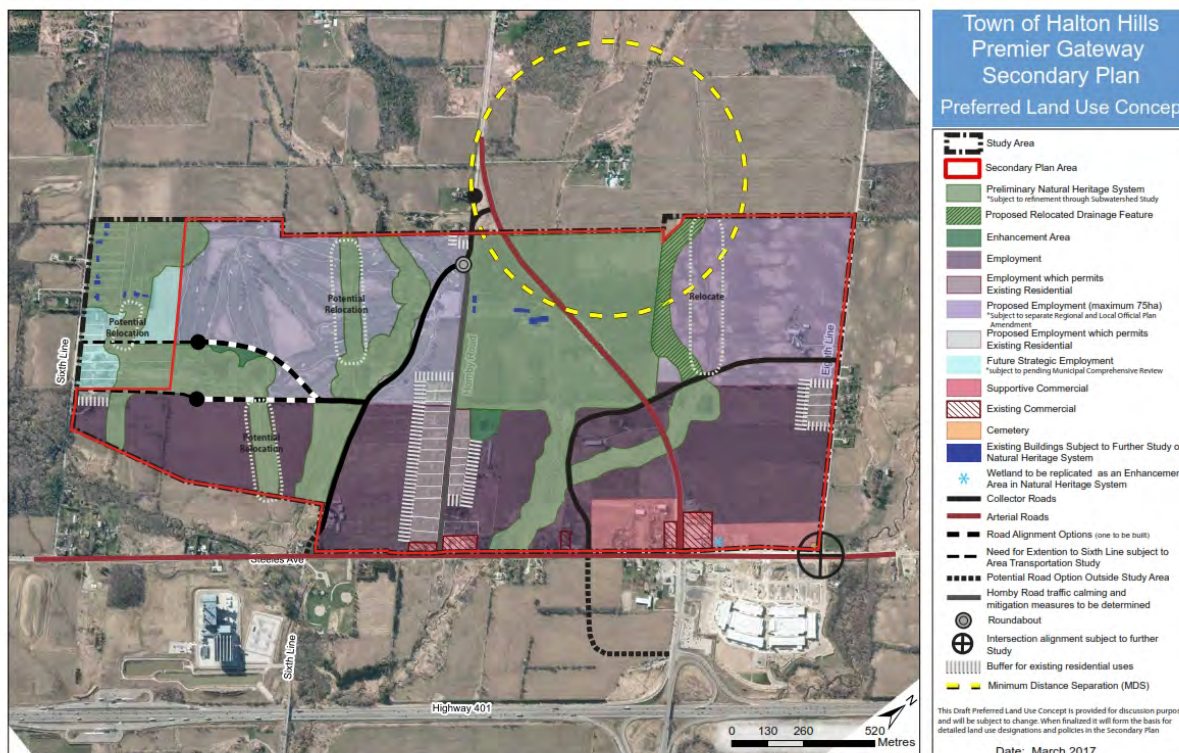


Figure 3.1: Preferred Land Use Concept

3.1 Sensitive Land Uses

There are a number of residential dwellings, community lands, commercial uses, and institutions within and in the vicinity of the study area. It is these sensitive land uses that may result in land use compatibility issues related to air quality, light and noise, depending upon the separation distance and the nature of the emissions.

Within the study area the following sensitive land uses are noted:

- Residential lots along Hornby Road, along the east side of Sixth Line, on the west side of 8th Line, and on the north side of Steeles west of Trafalgar;
- Hope Place Centre, a residential addiction treatment facility;
- Agriculture and dairy farming (former), characterized as an area in transition.

None of the above has been designated under the Heritage Act.

3.2 Other Land Uses

The following are large facilities and operations that would discharge air contaminants and potentially influence ambient air quality, as well as potentially generate noise and light nuisances, in the Study Area:

3.2.1 TransCanada Energy Ltd. - Halton Hills Generating Station (HHGS)

This facility is a 683 megawatt natural gas-fired power plant located within 300 metres of the south western corner of the Study Area at Steeles Ave and Sixth Line. It has been in service as of September 2010.

Although proximate to the Study Area, the HHGS has tall stacks on the emission points and would have been required to complete an air quality assessment and possibly a noise assessment, depending on the proximity to sensitive receptors, as part of the Class Environmental Assessment and to obtain the Environmental Compliance Approval to operate. The air quality assessment would have been required to demonstrate compliance with the standards of Ontario Regulation 419/05 including meeting POI standards at or beyond the property line. The noise or acoustic assessment would have been required to demonstrate compliance with the noise criteria outlined in the MOECC Environmental Noise Guideline NPC-300 “Stationary and Transportation Sources – Approval and Planning”. Therefore, the air and noise emissions from HHGS should not affect development in the study area unless elevated receptors are introduced such as multi-storey buildings. The total annual air releases from HHGS, as reported to the NPRI, are summarized in Table 3.1.

Table 3.1: 2015 HHGS Reported Air Releases

Contaminant	Total 2015 Air Release – HHGS (tonnes)
Particulate Matter PM _{2.5}	2.7
Volatile Organic Compounds (VOCs)	11
Carbon Monoxide	76
Nitrogen Oxides, as NO ₂	284

3.2.2 ROXUL Inc.

Roxul operates a mineral wool insulation manufacturing facility at 805 Steeles Avenue East in Milton, 3.5 km west of the study area. An example of a Class III facility, Roxul operates under an Environmental Compliance Approval.

To obtain an Environmental Compliance Approval (ECA) from the MOECC the facility would have been required to complete an air quality assessment and possibly a noise assessment, depending on the proximity to sensitive receptors, as part of the ECA Application process. The air quality assessment would have been required to demonstrate compliance with the standards

of Ontario Regulation 419/05 including meeting POI standards at or beyond the property line. The noise or acoustic assessment would have been required to demonstrate compliance with the noise criteria outlined in the MOECC Environmental Noise Guideline NPC-300 “Stationary and Transportation Sources – Approval and Planning”. Also the separation distance of 3.5 km would make air, light and noise effects upon the study area unlikely. In the vicinity of Roxul are a number of employment areas with mainly Class I and II facilities that would not result in air, light or noise effects at this distance. The total annual air releases from Roxul, as reported to the NPRI, are summarized in Table 3.2.

Table 3.2: 2015 Roxul Reported Air Releases

Contaminant	Total 2015 Air Release – Roxul (tonnes)
Ammonia	89
Particulate Matter PM _{2.5}	81
Volatile Organic Compounds (VOCs)	54
Sulphur Dioxide	1,123
Carbon Monoxide	90
Nitrogen Oxides, as NO ₂	107

3.2.3 Pits and Quarries

There are two quarries operated by Dufferin Aggregates located approximately 8 kilometres to the west between Hwy. 25 and Sixth Line, one active pit on the north side of Hwy. 401 between Appleby Line and Guelph Line, and one Class A License near the active pit that is currently vegetated and is traversed by a hydro transmission line. Given the distance, these are unlikely to have any air quality, noise or light impact on the study area.

3.2.4 Commercial

Directly to the south of the study area are the Toronto Premium Outlets along Steeles Avenue. This complex would be a minor source of criteria air contaminants from natural gas combustion for heating purposes. Due to the nature of the facility and the character of the existing and proposed land uses; light and noise emissions from this complex should not present any impacts on the existing commercial or the proposed commercial/employment lands to the north within the study area.

3.2.5 Infrastructure

The study area is approximately 500 metres north of Highway 401 and approximately 2 kilometres northwest of the Highway 407/401 interchange.

There are criteria air contaminants in vehicle tailpipe emissions, however the study area is setback by more than 300 metres from these major arterial roads. This is the distance from such

roads that air quality effects have been shown to decrease and are no longer a significant influence on ambient air quality (MOECC, 2006). In Halton Region, it was recommended that sensitive land uses not be located closer than 150 m to major highways for the protection of human health (Halton, 2009).

Thought vehicular traffic on major aerial roads and highways can be a substantial source of noise emissions these emissions are typically sufficiently attenuated at these distances.

The preferred land use concept does not propose any new sensitive land uses. Therefore, any existing impacts from these sources on existing land uses would remain but they are not expected to increase.

4.0 POTENTIAL EFFECTS

The establishment of the Premier Gateway Phase 1B lands and long-term implementation of the preferred land use concept as illustrated in Figure 3.1 will have two substantial outcomes. The first outcome will be the establishment of additional employment and commercial land uses in proximity to existing residential land uses. Once these new land uses are established the second outcome will be increase transportation traffic into and throughout the study area.

4.1 Air Quality

4.1.1 Air Pollutants

Facilities that discharge air pollutants to the atmosphere would be required to either obtain an ECA or register their activities to the EASR. It should be noted that as of January 2017 the list of facilities that is subject to the EASR requirements and registration will increase significantly with the proposed new legislation. Irrespective of which approach is required by the facility, it will still be necessary for the facility to demonstrate compliance with all air quality standards. Major projects involving waste, power, power transmission, transportation, or public works may also be subject to a Class Environmental Assessment.

In all cases, a facility must ensure that the discharge to the atmosphere does not contravene the EPA and does not result in an adverse effect off-property. This would require facilities to ensure that the off-site concentrations of contaminants emitted are below the POI standards and guidelines of Regulation 419/05. The MOECC is also increasing the requirements on facilities to address noise, nuisance odour and fugitive dust.

4.1.2 Air Nuisance Effects

The potential for nuisance effects must be considered when industrial facilities are sited proximate to residences or other sensitive land uses. The most common air quality nuisances are odour and fugitive dust.

4.1.2.1 Odour

Odour has a high potential to become a nuisance to people that live near industrial facilities, or those that frequent sports fields, community centres, or other sensitive land uses. What prompts odours to be a nuisance varies widely from person to person, as there are varying degrees of sensitivity and opinions about what is considered offensive. Five factors that contribute to odour nuisance have been defined to help deal with the complex and subjective nature of odours. These are referred to as the FIDOL factors, and consist of:

- Frequency – how often odour is detected
- Intensity – how strong is the odour
- Duration – are odours very brief or are episodes lengthy
- Offensiveness - the hedonics or descriptors (putrid, solvent, se
- Location – is someone present to smell the odour.

All five of the FIDOL effects contribute to the likelihood that odours may become a nuisance and affect the enjoyment of the use of property. If odour effects are frequent, lengthy, and offensive, nuisance effects and complaints are more likely than if there are infrequent odours, or if the odours are characterized as good smells such as cookies, bread or candy operations.

4.1.2.2 Fugitive Dusts

Fugitive dust generally refers to dust generated from open sources that is not captured and discharged to the atmosphere from a point source (a stack). Common sources of fugitive dust include unpaved roads, aggregate storage piles, and heavy construction operations, although there may be other site-specific sources such as crushing, screening, and material handling.

It is the larger size fractions of particulate matter, namely total suspended particulates (TSP) and particulates less than 10 micron in diameter (PM₁₀) that constitute the nuisance fugitive dusts through dust deposition and visibility impairment. The smaller respirable particle PM_{2.5} size fraction is of greater concern with respect to health and usually are emitted from combustion activities including vehicular tailpipe and diesel engine exhaust. It is emphasized that that these particle size fractions are not separate compounds, nor are they additive. The smaller particle sizes are a subset of the large particulate matter size fractions.

The Ambient Air Quality Criterion (AAQC) for total particulate matter of 120 µg/m³ is for the 24-hour averaging time, and is based upon potential effects on visibility. The MOECC have not set an AAQC for PM₁₀, but suggest a value for PM₁₀ of 50 µg/m³ for the 24-hour averaging time as an 'interim' AAQC and 30 µg/m³ for PM_{2.5} (MOE, 2012). The Canadian Ambient Air Quality Standard (CAAQS) for PM_{2.5} is 28 µg/m³, and will decrease to 27 µg/m³ in 2020.

4.2 Light

The development of the study area may affect the lighting characteristics in the vicinity. Light pollution is not specific to Class II or III facilities; even street lighting may be a nuisance to neighbours. There is evidence to suggest that there are negative effects on human health and

the environment resulting from light pollution, and potential effects associated with specific wavelengths such as the blue wavelengths. Since the study area is not located near a dark sky site, as designated by the Royal Astronomical Society of Canada or other organization, and is proximate to urban centres, light pollution is considered a potential nuisance effect only if the artificial light is excessive, obtrusive, or misdirected. The addition of lighting in the development would alter the current light patterns, particularly to the north, east, and west where significant street lighting is not expected and the residences are setback from developed areas and would not currently experience much light pollution at nighttime.

There are no guidance materials specific to light pollution published by the MOECC. The potential effects associated with three aspects of light pollution will be considered:

- Light intrusion or light trespass of unwanted light onto adjacent properties
- Timing of lighting
- Light intensity, spectrum, clutter and glare.

4.3 Noise

Facilities that discharge contaminants as defined in the EPA, including noise, into the atmosphere would be required to either obtain an ECA or register their activities to the EASR. In all cases, a facility must ensure that the discharge to the atmosphere does not contravene the EPA and does not result in an adverse effect off-property. This would require facilities to ensure that the off-site contaminants emitted are below the applicable MOECC criteria.

5.0 EXISTING CONDITIONS

5.1 Air Quality

5.1.1 Local Meteorological Data

Local weather patterns play an important role in air quality. Parameters such as wind speed, wind direction, and precipitation affect the degree and extent of dust impact in a given area. Weather stations are located in various parts of the province collecting data which, in most cases, are publicly available.

For the Study Area, the Environment and Climate Change Canada (ECCC) climate normals and hourly meteorological data from the Toronto Pearson Airport station was determined to be representative of local conditions, at a distance of approximately 20 km northeast of the Study Area.

5.1.1.1 Wind Speed, Wind Direction, and Climate Data

Local weather conditions may contribute to land use incompatibility. Wind direction dictates the frequency at which sensitive lands are downwind of industrial sources, while wind speed, temperature, and relative humidity affect how far odours or particulate matter is carried off-site and how well it is dispersed before reaching sensitive land uses. There are no significant natural terrain features that may influence local winds, and buildings are generally less than two stories.

A five year climate data set (1996-2000) for Toronto Pearson Airport was used as representative of local weather. This is the meteorological data currently required by the MOECC for air dispersion modelling completed in support of Environmental Compliance Approvals. There may be slight increases in the wind speeds in recent years, however this data set is still considered reasonable for use of providing baseline wind direction and wind speed, and is still within the date range for the most recent Environment and Climate Change Canada Climate Normals for Toronto (1981-2010). A review of the climate normals generated for the past 50 years suggest that there has been minor changes in average wind speeds measured at Toronto Pearson, however the maximum wind gusts are higher in the more recent data set, particularly during the summer months. Discussions of wind direction consider the cardinal directions based upon true north. The study area presented in Figure 3.1 is rotated by approximately 45 degrees to show Highway 401 running East-West.

A wind rose is a useful figure in discussing wind speed and wind direction. It depicts the relative frequency of wind direction on a 16-point compass (with north, east, south, and west directions going clockwise) whose value is listed adjacent to each of the compass points. Each ring on the wind rose represents a frequency of 2% of the total. The length of the shaded bars on each wind rose petal represents the frequency of wind recorded from a given direction within a certain speed range. A wind rose prepared using five years of weather data from Toronto Pearson Airport is provided in Figure 5.1. Figure 5.2 details the seasonal variation in wind direction and speed for the same data set.

The summer months are generally the most common months that nuisance complaints are received. During these months, the prevailing winds are from the westerly, northwesterly, and southeasterly directions.

Although precipitation, relative humidity, and temperatures may also influence the transport of air pollutants and the location of nuisance effects. However, without specific information on the location of the emissions source or the use of dispersion modelling, any predictions on how these weather parameters would affect local air quality are limited. In general, hot weather combined with low wind speeds and dry periods during the summer months tend to result in the most significant nuisance effects. This is worsened by the fact that people spend much more time outdoors during these times and are more likely to be inconvenienced by any potential impacts.

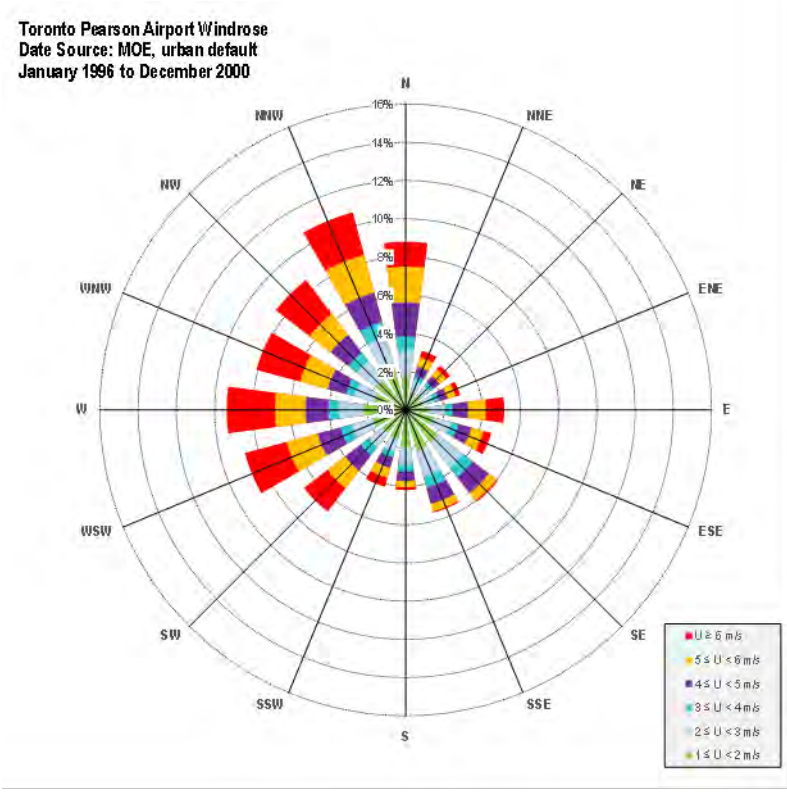
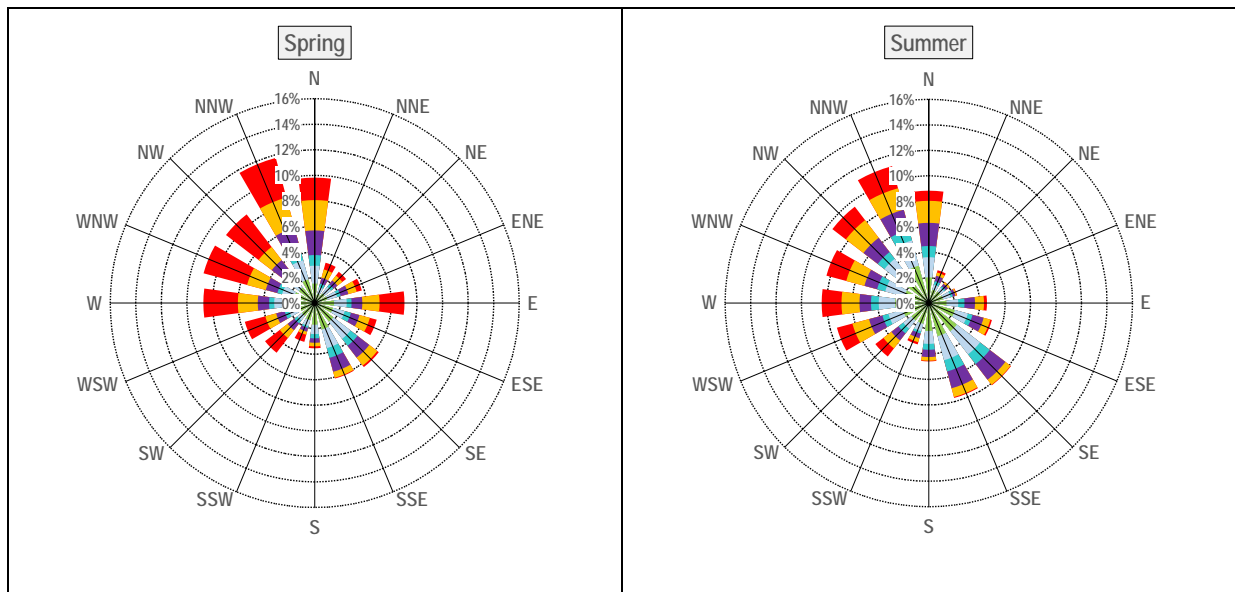


Figure 5.1: Wind Rose (Toronto Pearson)



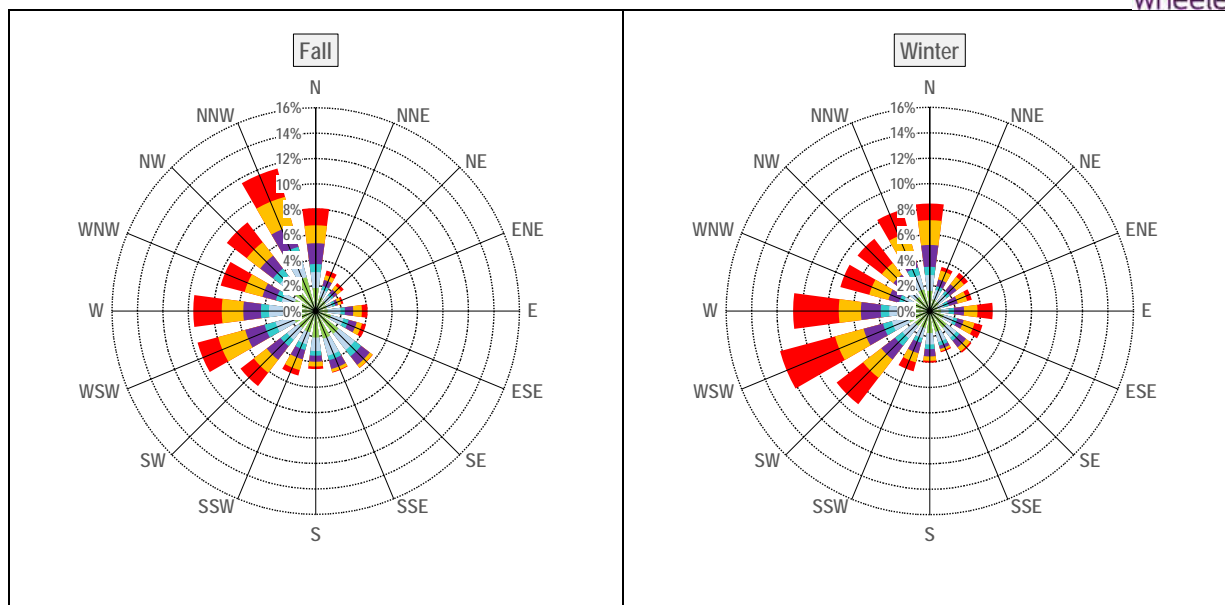


Figure 5.2: Seasonal Wind Roses (Toronto Pearson)

5.1.2 Background Ambient Air Quality

5.1.2.1 Air Zone and Transboundary Air Pollutants

As part of AQMS, Ontario has delineated the province into three Air Zones:

- Zone 1 - Areas with limited pollution from either point or non-point sources or transboundary influence; where the air quality management activities are focused on maintaining good air quality. Included in this Zone is the majority of Northern Ontario;
- Zone 2 - Areas under pressure from multiple sources including some or all of the following: non-point sources, smaller point sources, individual large industrial point sources, transboundary influences; where air quality management activities are focused on multiple broad-based initiatives targeting many sources. This Zone includes most of Southern Ontario, including the Study Area, Sudbury, and Sault. Ste. Marie; and
- Zone 3 - Areas with a concentration of large industrial sources; where air quality management activities are focused on the abatement of local industrial emissions as well as non-industrial sources. This Zone includes the Cities of Hamilton and the Sarnia area.

The Study Area is located in Zone 2, however is near enough to the City of Hamilton that under southwesterly winds the air quality may be influenced by sources there; these effects would be similar at the Brampton and Guelph MOECC air monitoring stations and likely reflected in the background monitoring data presented in Section 5.1.2.2.

Transboundary influences are also expected, notably from the Ohio Valley to the southwest. About half of the nitrogen oxides and VOCs that form smog in southern Ontario originate in the United States Midwest and are carried by prevailing winds through the Ohio Valley (www.ec.gc.ca) to the north-east, and fine particulate matter (PM_{2.5}) is also affected by transboundary sources (Giovanni et al, 2009). Note that both primary and secondary particulate matter may have transboundary contributions; primary particulate matter is released directly from tailpipes and industrial processes, and secondary particulate matter is formed in the atmosphere due to the presence of precursor gases such as SO₂, NO_x, and VOCs.

5.1.2.2 Ambient Air Quality Monitoring Data

Local air quality may be influenced by anthropogenic sources located proximate to the Study Area, which may not be monitored at the MOECC Air Quality stations in Brampton or Guelph, such as the local industries identified in Section 3.2 and the interchange of two major highways, Hwy. 401 and Hwy 407.

The 2006 Clarkson Airshed Study included air monitoring stations located proximate to the QEW/403 junction, which is similar to the Study Area location in relation to the Hwy 401 and 407 interchange. The study concluded that vehicular traffic along major roadways contributed measurably to elevated PM_{2.5}, NO₂, and NO, and decrease by up to 75 to 80% at a distance of 300 metres from the roadways. For this reason, the background concentrations measured at Guelph and Brampton should be considered reasonable estimates of the Study Area ambient air quality as there is significantly more than 300 metres separation between these roadways and the Study Area. There may be some underestimation, however both the Brampton and Guelph air monitoring sites also have arterial roadways nearby.

The Guelph and Brampton ambient air quality monitoring data collected by the MOECC for PM_{2.5} and NO₂ was reviewed, and it was found that for the period 2011 to 2015, with a very limited number of exceptions, the 24-hour average concentrations were well below the respective criterion. For PM_{2.5}, the 24-hour averages were compared to the Canadian Ambient Air Quality Standard (CAAQS) of 28 µg/m³, and the NO₂ was compared to the Ontario Ambient Air Quality Criterion (AAQC) of 100 ppb. This is indicative of air quality that is not under more stress when compared to stations in other parts of southern Ontario that record notably higher PM_{2.5} and NO₂ concentrations. The data is presented in Figures 5.3 to 5.6 as box and whisker plots by month. This is a useful depiction of the monitoring data as the boxes show the 25th, the diamond indicates the average value, and the whiskers how the maximum and minimum measured concentrations.

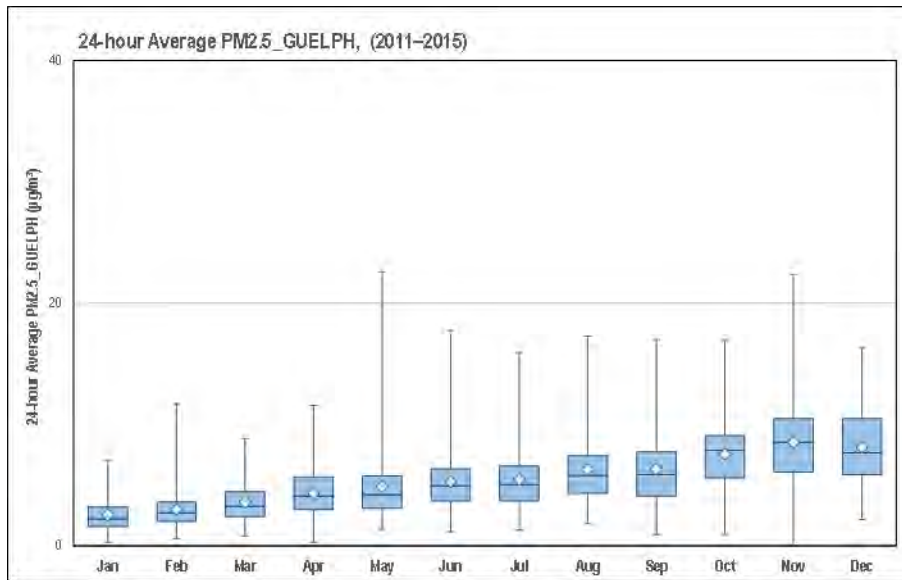


Figure 5.3: Background PM_{2.5} Concentrations at MOECC Guelph

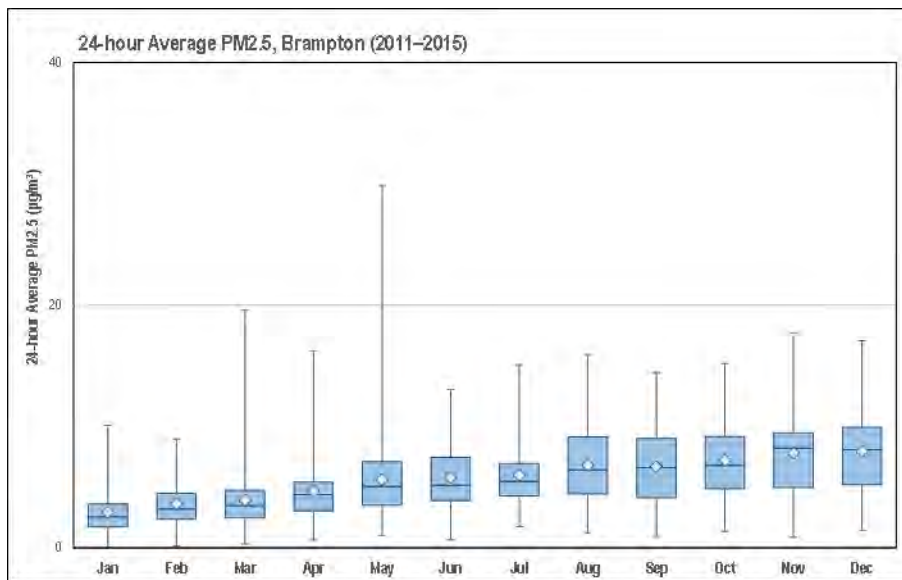


Figure 5.4: Background PM_{2.5} Concentrations at MOECC Brampton

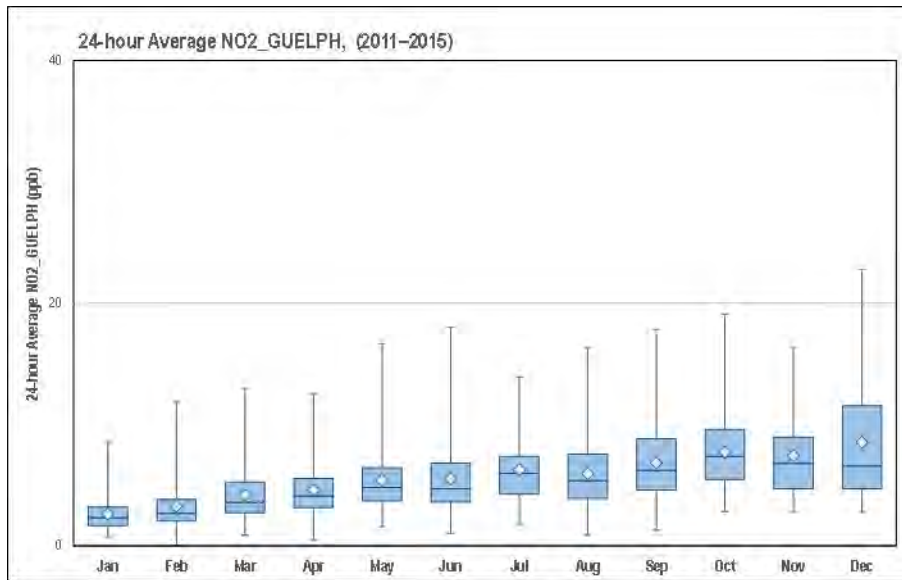


Figure 5.5: Background NO₂ Concentrations at MOECC Guelph

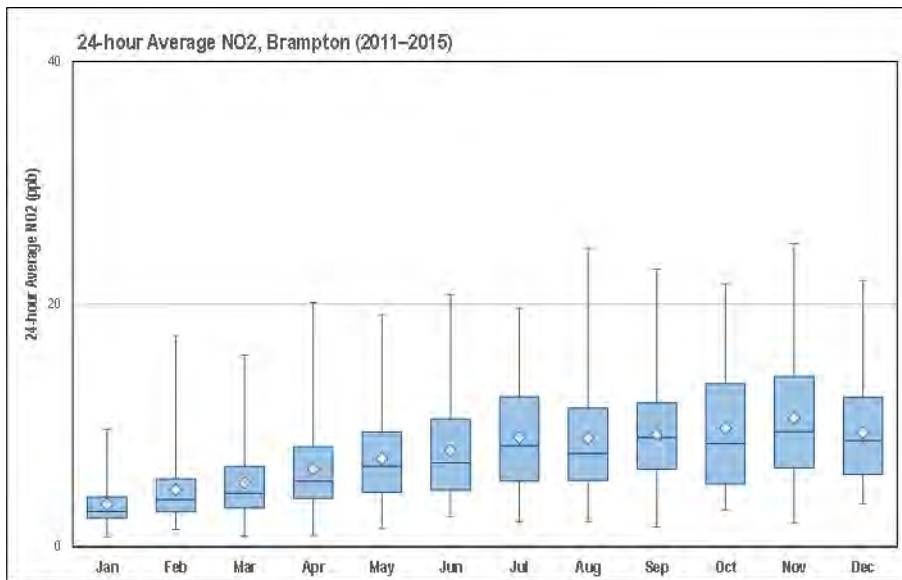


Figure 5.6: Background NO₂ Concentrations at MOECC Brampton

5.2 Light

Although the study area is not near an identified dark sky site, the current residents of the rural dwellings would not currently be subject to significant light pollution in the evening, other than sky glow from neighbouring Mississauga and Milton. Some of the rural roads north of Steeles would currently have little or no street lights.

5.3 Noise

Noise levels within a study area this large would be expected to have significant variations with spatial location and temporal context. The noise environment is likely to be characterized by natural environmental sound, infrequent anthropogenic sources, and predictable anthropogenic sources. The predictable anthropogenic noise can be expected from existing facilities (stationary sources) and transportation sources within and in the vicinity of the study area.

The existing facilities within the study area were discussed in Section 3.2. Also the obligations of facilities to meet appropriate noise emission standards were further discussed in Section 4.3.

The existing transportation sources within the study area are roadways. The existing traffic network and traffic volumes are discussed in the Transportation Study for the project (Paradigm, 2017). Paradigm also provided estimates for Average Annual Daily Traffic (AADT) and truck proportion estimates via email on August 24, 2017. Table 5.1 represents the additional information provided by Paradigm for the existing traffic scenario.

These existing traffic volumes would produce spatially and temporally varying noise levels throughout the study area. These noise levels could be predicted using computerized noise models along with reasonable traffic-time distribution assumptions. However, the information would be far more detailed than necessary for the purposes of assessing the potential impacts of the undertaking. Instead the relative change in traffic volumes due to implementation of the project can be used directly to estimate the maximum traffic noise change to be expected. This will be discussed further in Section 6.3.

Table 5.1: Existing 2017 Traffic Data

Road	Segment	PM Peak Hour Traffic ¹	Estimated AADT ²	Truck Proportion Estimates		
				Total ³	Heavy Trucks ⁴	Other Trucks ⁵
Steeles Avenue	Fifth Line to Sixth Line (South)	1800	18000	25%	80%	20%
Steeles Avenue	Sixth Line (South) to Trafalgar	1406	14100	25%	80%	20%
Steeles Avenue	Trafalgar to Ninth Line	2389	23900	12%	75%	25%
Trafalgar Road	Steeles to 5 Sideroad	1115	11200	13%	70%	30%
5 Sideroad	Fifth Line to Trafalgar	693	7000	6%	65%	35%
5 Sideroad	Trafalgar to Ninth Line	614	6200	4%	50%	50%

1. The PM Peak Hour traffic volume expressed in terms of total vehicles;
2. AADT – Average Annual Daily Traffic which represents the average 24 hour traffic volume;
3. Truck volume (all trucks) as a percentage of AADT;
4. Heavy truck volume (more than 2 axles) as a percentage of Total truck volume; and,
5. Other truck volume (2 axles only, buses included) as percentage of Total truck volume.

6.0 EFFECTS DISCUSSION

6.1 Air Quality

6.1.1 Air Pollutants

Based upon the background air quality, as measured in Brampton and Guelph, the new facilities in the employment area would not be introducing air emissions sources into an overly stressed area. With very few exceptions, the ambient air quality is within the MOECC AAQCs. The proposed employment areas also lie within close proximity to the HHGS, which went through an Environmental Assessment process that would have included public consultation; the project was approved and the HHGS is currently operational.

Although facilities would have to comply with air quality regulations, such as O.Reg 419 and EPA Sections 9 and 14, there are a number of examples of sensitive land uses within the radius of influence and recommended exclusion zones for Class I and II facilities. These sensitive land uses might be impacted by nuisance effects such as odour and dust. The employment area associated with the proposed development would not include Class III facilities which have the highest potential for nuisance effects and compatibility issues.

Class II facilities have a recommended minimum separation distance of 70 metres; this is also the recommended radius of influence buffer for a Class I facility. This separation distance is generally available for most lands within each Parcel, with the only exceptions being the sensitive land uses that abut the Parcels. There are also many sensitive land uses that are within the potential area of influence of a Class II facility (300 metres).

Without sufficient separation distances, there is a risk of air quality effects on these sensitive land uses that may require mitigative measures. Class II facilities may require additional site-specific study depending upon the actual separation distance between the facility within the Parcel and the sensitive land use.

6.1.2 Air Nuisance Effects

6.1.2.1 Odour

Odorous emissions may occur from certain Class I facilities, with examples of food preparation, and printing activities. In these cases, however, the activity or process would be contained inside a plant or building with daytime operations only. This would limit the potential for off-site effects to the immediate vicinity of the building (70 metres). Stacks (point sources) on these types of facilities may result in off-site odours at a distance from the facility, therefore caution should be used in assigning a facility as Class I and consideration should be given to the nature of the facility.

6.1.2.2 Fugitive Dusts

Effects of fugitive dusts tend to decrease with distance from facility boundary. For typical wind speeds, particles larger than about 100 μm are likely to settle out within 6 to 9 meters from the edge of the road or other point of emission, while those 30 to 100 μm in diameter are likely to undergo impeded settling, and are likely to settle within one hundred metres (US EPA, 1995).

Class I facilities don't tend to have notable outdoor activities, and dust generation would be infrequent and of low magnitude with limited extent. Class II facilities may have notable sources of dust on their sites and nuisance dust effects may be expected if the site does not implement effective fugitive dust management.

6.1.2.3 Parcel 1 of Preferred Land Use Concept

Parcel 1 is defined in Section 3.0 as the proposed employment area adjacent to Eight Line in the northeast quadrant of the Study Area. There is one sensitive land use that abuts the southern extent of Parcel 1 (the southwest corner), with no separation distance between the land uses, since the D-6 Guidelines consider the distance to be property line to property line. As an indication of the potential frequency of nuisance effects, this institutional land use would be downwind of Parcel 1 under winds from the north, northwest, and north-northeast, which occur approximately 20% of the time.

The 13 residences to the east along Eighth Line are shown to have a buffer zone in the Preferred Land Use Concept (Figure 3.1) to provide separation between the nearest residences and Parcel 1. These residences would be downwind of Parcel 1 approximately 26% of the time. There is not much seasonal variability in these wind directions.

These sensitive land uses would previously have been subject to odours from agricultural and dairy farming. These odours are, however, significantly different in hedonics from those of many industrial operations and therefore previous exposure to other odours would not necessarily suggest higher tolerance of the current residents.

6.1.2.4 Parcel 2 of Preferred Land Use Concept

Parcel 2 is defined in Section 3.0 as the proposed employment area on the lands of the Hornby Glen Golf Course. With respect to Parcel 2, there are residents along Sixth Line that would be downwind less than 10% of the time, and less frequently in the summer months. These are also separated from the parcel by at least 100 metres and would be beyond the minimum separation distance for Class I and II facilities, but well within potential zone of influence for Class II facilities.

The residences to the east on Hornby are shown to have a buffer zone in the Preferred Land Use Concept (Figure 3.1) to provide separation distance from the eastern extent of Parcel 2. These residences would be downwind with winds from the west, northwest, and west-southwest, an estimated 27% of the time.

6.1.2.5 Road Dust and Tailpipe Emissions

The introduction of new employment areas within the study zone will also increase the traffic along the local roadways. This traffic has the potential to affect air quality in the local area due to the tailpipe emissions from the trucks and fugitive road dust from the trucks themselves, or resulting from trackout onto public roadways.

Although not as significant a land use compatibility issues from an air quality perspective, there are measures that can be taken on the part of the municipality such as enforcement of anti-idling, regular street cleaning, requiring paved yards, and effective road design that avoids sensitive land uses where possible.

6.1.2.6 Construction Phase

Although limited in duration, air quality effects of construction may be problematic for neighbouring sensitive land uses. Excavations, grading, leveling and earth moving activities on newly disturbed ground surfaces may result in fugitive dusts that may be visible and may settle onto adjacent properties. Municipal oversight of the construction activities is recommended to limit potential effects, but the construction phase is not considered to be a factor in long-term land use compatibility.

6.2 Light

Measures should be taken to mitigate light pollution, however other than potential glare and trespass into particular residences, the new light introduced with the employment zones would not be a land use compatibility issue in the same manner as odours or dust. Light effects are not discussed in the Halton Region Land Use Compatibility Guidelines or in the MOECC D-6 Guidelines.

New developments such as this can benefit from recent developments in planning and engineering of lighting. A municipal strategic lighting master plan would be an effective, and good engineering in street lighting design should be incorporated to avoid excessive lighting and use directional lighting to avoid light trespass to nearby residential properties.

There should be some mechanism of oversight (possibly through site plan approval or building permits) to ensure that facilities occupying the employment lands are mindful of light trespass onto neighbouring land uses, as well as potential glare from lighting in a region that is generally darker, and that reduced night lighting is in effect when facilities are not operating.

6.3 Noise

Future employment and commercial land uses are likely to generate noise emissions either via their operation or by generating additional vehicular traffic. In most cases commercial properties generate moderate noise emissions and these are relatively easy to mitigate during the design stages. Employment uses may generate varying levels of noise depending on the nature of their operations. However, as discussed in Section 4.3 it is the responsibility of the

facility to obtain the necessary permits or authorizations (ECA, EASR, etc.) to operate legally. In all cases, regardless of permits, a facility must ensure that the discharge of a contaminant, including noise, into the atmosphere does not contravene the EPA and does not result in an adverse effect off-property. Therefore, new employment uses must consider their impacts on existing sensitive land-uses when designing their facility and/or operations. Appropriate design can be used to mitigate the effects of such land uses on each other even in cases where adherence to preventative setbacks are either impossible or undesirable.

The Transportation Study for the project (Paradigm, 2017) presented the existing, future background (2026/2031) and future total (2026/2031) traffic scenarios in terms of predicted AM and PM Peak Hour traffic volumes. Paradigm also provided estimates for Average Annual Daily Traffic (AADT) and truck proportion estimates via email on August 24, 2017. Tables 6.1, 6.2 and 6.3 represent the traffic data provided for the background (2026/2031) and future total (2026/2031) traffic scenarios. Comparison of Table 5.1 and Table 6.1 reveals that the existing vehicle fleet composition for existing roads is predicted to remain unchanged. The three new road segments servicing Parcels 1 and 2 are expected to carry a relatively large truck proportion. Table 6.2 shows the PM Peak Hour traffic volumes which were used to generate estimated AADT volumes which are provided in Table 6.3. To convert PM Peak Hour values to AADT it was assumed that the PM Peak Hour represents 10% of the AADT, which is a common assumption used when more detailed data is not available.

Table 6.1: Vehicle Fleet Composition

Road	Segment	Truck Proportion Estimates		
		Total	Heavy Trucks	Other Trucks
Steeles Avenue	Fifth Line to Sixth Line (South)	25%	80%	20%
Steeles Avenue	Sixth Line (South) to Trafalgar	25%	80%	20%
Steeles Avenue	Trafalgar to Ninth Line	12%	75%	25%
Trafalgar Road	Steeles to 5 Sideroad	13%	70%	30%
5 Sideroad	Fifth Line to Trafalgar	6%	65%	35%
5 Sideroad	Trafalgar to Ninth Line	4%	50%	50%
"Street A"	Steeles to Hornby	20%	80%	20%
"Street B"	Steeles to Trafalgar	20%	80%	20%
"Street B"	Trafalgar to Ninth Line	20%	80%	20%

Table 6.2: PM Peak Hour Traffic Volume Estimates

Road	Segment	PM Peak Hour Traffic Volume Estimates			
		2026		2031	
		Background	Total	Background	Total
Steeles Avenue	Fifth Line to Sixth Line (South)	2625	30000	3085	3770
Steeles Avenue	Sixth Line (South) to Trafalgar	2065	25100	2420	3275
Steeles Avenue	Trafalgar to Ninth Line	3490	38000	4095	4535
Trafalgar Road	Steeles to 5 Sideroad	1820	30400	2100	3790
5 Sideroad	Fifth Line to Trafalgar	920	10400	1095	1230
5 Sideroad	Trafalgar to Ninth Line	820	11100	975	1385
"Street A"	Steeles to Hornby	-	6300	-	880
"Street B"	Steeles to Trafalgar	-	3700	-	715
"Street B"	Trafalgar to Ninth Line	-	6500	-	1090

Table 6.3: AADT Volume Estimates

Road	Segment	AADT Volume Estimates			
		2026		2031	
		Background	Total	Background	Total
Steeles Avenue	Fifth Line to Sixth Line (South)	26300	30000	30900	37700
Steeles Avenue	Sixth Line (South) to Trafalgar	20700	25100	24200	32800
Steeles Avenue	Trafalgar to Ninth Line	34900	38000	41000	45400
Trafalgar Road	Steeles to 5 Sideroad	18200	30400	21000	37900
5 Sideroad	Fifth Line to Trafalgar	9200	10400	11000	12300
5 Sideroad	Trafalgar to Ninth Line	8200	11100	9800	13900
"Street A"	Steeles to Hornby	-	6300	-	8800
"Street B"	Steeles to Trafalgar	-	3700	-	7200
"Street B"	Trafalgar to Ninth Line	-	6500	-	10900

The Transportation Study uses the terms Background and Total traffic. Background represents the predicted traffic volume due to growth factors such as population growth within the existing transportation network. Total represents the predicted traffic from Background plus the effects of transportation network and land use changes. Noise impact is typically determined by comparing the noise levels generated by the Total and Background traffic volumes for a given future year.

Since the vehicle fleet composition, the daily traffic distribution and the existing alignments are not expected to change, then the only variable changing is the traffic volume. Therefore, the expected change in noise levels throughout the study area, in the vicinity of existing roads, can be estimated based solely on comparison of the Total and Background traffic volumes. Table 6.4 shows the ratio of Total to Background traffic for the years 2026 and 2013 along with the corresponding estimated noise increases. The results show that the maximum increase of 2.6 dB is expected in year 2031 along Trafalgar Road between Steeles and 5 Sideroad. The Halton Region "Noise Abatement Guidelines" Section 3.0 (Halton Region, 2014) indicates that when noise impacts are between 0 and 5 dB no action is required. This is also consistent with the MTO/MOECC Protocol (MTO/MOECC, 1986) which is typically cited as the criteria for non-highway and Municipal Class Environmental Assessments despite being originally written in a highway context.

Noise levels generated by the proposed collector roads Street A, B and C will be less significant than noise generated by traffic along the major arterial roads with which they connect. These new roads will pass through green field areas where there are no existing established residential areas. They will only come into proximity to existing established sensitive land uses where they intersect with Sixth Line, Steeles Avenue, Trafalgar Road and Eighth Line. Therefore, these larger more travelled roads are likely to dominate sound levels at these areas. However, it would be prudent to conduct analyses during detailed design in the vicinity of these four points of intersection to evaluate the need for mitigation measures based on the specific and detailed design proposals.

Significant increases in transportation noise levels due to the establishment of the Premier Gateway Phase 1B Secondary Plan Area are not expected. However, additional consideration may be warranted during the design phases based on the finalized alignments at the intersection points collector roads and the surrounding arterial roads. Although it is expected that the major arterial roads will dominate noise levels at these locations final alignment decisions may affect outcomes and unshielded side yard exposures are a possibility.

Table 6.4: Traffic Ratios and Estimated Noise Increases

Road	Segment	Year 2026		Year 2031	
		Traffic Ratio	Estimated Noise Increase (dB)	Traffic Ratio	Estimated Noise Increase (dB)
Steeles Avenue	Fifth Line to Sixth Line (South)	1.14	0.6	1.22	0.9
Steeles Avenue	Sixth Line (South) to Trafalgar	1.21	0.8	1.36	1.3
Steeles Avenue	Trafalgar to Ninth Line	1.09	0.4	1.11	0.4
Trafalgar Road	Steeles to 5 Sideroad	1.67	2.2	1.80	2.6
5 Sideroad	Fifth Line to Trafalgar	1.13	0.5	1.12	0.5
5 Sideroad	Trafalgar to Ninth Line	1.35	1.3	1.42	1.5

7.0 SUMMARY OF FINDINGS

The following is a summary of our findings based upon existing knowledge of the proposed development and the sensitive land uses both within the bounds of the study area and those proximate to the study area that may fall within areas of influence.

These findings are based upon the type of facility that would be expected in an employment area of this nature, in the absence of information on specific facilities. It is recommended that Class II sites with potential for odour or dust effects from their facilities be required to prepare land use compatibility studies specific to their operations to determine the actual area of influence.

- The potential for health or environmental effects (Air and Noise) associated with the facilities that will be located in the study area would be addressed by provincial permitting and review tools such as Environmental Compliance Approvals, EASR registration, or Environmental Assessments. In some cases, these mechanisms also address odour and fugitive dust.
- The most common land use compatibility issue associated with land development are nuisance effects resulting from the new sources of dust, odour, light and noise introduced to the study area.
- Cumulative air quality effects as a result of introducing new industries are not expected to be significant due to the setback from the highways, the limited number of industrial facilities in the region, and the current air quality monitoring data that shows very limited exceedances of the ambient air quality criteria in the region.
- Class I facilities are unlikely to result in significant land use compatibility issues.

- Class II facilities have the potential to result in incompatibilities, nuisance effects, and complaints. For the purposes of this study, distribution centres have been considered Class II due to the likelihood of large volumes of heavy truck traffic and 24 hour operations.
- Construction activities are also a source of emissions, most commonly fugitive dusts, odours, light, noise and tailpipe emissions from diesel equipment and vehicles. Construction activities should be managed to control effects from these emissions, with consideration of scheduling, monitoring and mitigation.
- Road traffic generated by the proposed employment uses is expected to generate increased noise levels as compared to the Future Background. The maximum increases are expected along Trafalgar Road between Steeles and 5 Sideroad. However, the maximum increases are predicted to be below 5 dB and therefore no action or mitigation is expected to be required.
- There are measures that can be taken by both the Town of Halton Hills and by the occupants of the new employment area to mitigate nuisance effects, such as:
 - Strategic siting of entrances and exits of distribution centres, and a reasonable setback from sensitive land uses of 300 metres or more will help to limit nuisance effects associated with the truck traffic.
 - Requiring paved surfaces at all facilities to avoid road dust from unpaved areas.
 - Design measures to avoid queuing or traffic congestion may be incorporated into site planning and layout.
 - Requiring facilities and the municipality to adhere to a lighting plan that takes into account timing (reduced night lighting), directionality, intensity, location.
 - Fugitive dust mitigation measures by the municipality to include street cleaning and road maintenance.
 - Develop and/or enforce a strategic lighting master plan that addresses both private lighting of facilities and municipal lighting of roadways and supporting facilities such as transit stops.
 - On the part of the industrial, commercial, or warehousing / distribution facilities, there are a number of effective best management practices and facilities that are expected to have fugitive dusts should be required to prepare a BMP Plan outlining procedures and practices to prevent nuisance effects and deposition.
 - Odour is the most complex of the potential nuisance effects as it may be caused by discharges from stationary point sources, area sources, building, outdoor sources, or fugitive sources; the likelihood of odorous effects is very specific to the type of facility. Facility specific odour assessment, odour management plans and control measures should be required to avoid odour release and off-site effects.
 - Noise and/or vibration studies should be requested for new employment uses at the early stages of municipal approvals. Often an early feasibility level study can help guide discussions regarding how best, and most efficiently, mitigate noise emissions. Simple changes to the facility site plan such as building orientation

can have a profound effect on noise impacts at nearby sensitive land uses. These initial studies can help ensure that the final proposed facility can meet the applicable MOECC noise criteria without unnecessary, costly or operationally restrictive mitigation measures.

Effective communication with residents during planning and construction phases has proven beneficial for other redevelopment projects, with consideration given to establishing a public liaison committee to encourage resident participation. There may be opposition to any development that might amplify potential nuisances. The ability to become actively involved, contribute to managing possible sources of adverse effects, and to be provided with a clear mechanism for resident complaints and feedback, may help avoid land use compatibility issues.

8.0 REFERENCES

- Environment and Climate Change Canada. 2016. National Pollutant Release Inventory.
- DiGiovanni, F. et.al. 2009. Environmental Monitoring – Transboundary Air Pollution.
- Globe at Night. 2016. What is Light Pollution?
- Halton Region. June 18, 2014. Noise Abatement Guidelines. Regional Official Plan Guidelines.
- Halton Region. 2014. Land Use Compatibility Guidelines.
- Halton Region. 2009. Protecting Health: Air Quality and Land Use Compatibility.
- Macaulay Shiomi Howson Ltd. MSH 2015. Town of Halton Hills Premier Gateway Phase 1B Background Study.
- Ontario Ministry of the Environment. 2006. Clarkson Airshed Study Part II – The Ambient Air Monitoring Program.
- Ontario Ministry of the Environment and Climate Change. 2016. Access Environment provides access to Environmental Compliance Approvals and Environmental Activity and Sector Registry (EASR)
- Ontario Ministry of Natural Resources. 2016. Pits and Quarries Online.
- Ontario Ministry of Transportation and Ontario Ministry of Environment and Climate Change (MTO/MOEC). 1984. A Protocol for Dealing with Noise Concerns during the Preparation, Review and Evaluation of Provincial Highways Environmental Assessments.
- The Royal Commission on Environmental Pollution (UK). 2009. Artificial Light in the Environment.
- UK Department for Communities and Local Government. 2012. National Planning Policy Framework for England and supporting guidance documents.
- US EPA. 1995. AP 42 Compilation of Air Pollutant Emission Factors, Fifth Edition, Volume I Chapter 13.2 Fugitive Dust Sources.
- Paradigm Transportation Solutions Limited. July 2017. Premier Gateway Phase 1B Employment Area Secondary Plan Transportation Study.



9.0 CLOSURE

The work was performed using generally accepted assessment practices. No other warranty, expressed or implied is made. The limitations of this report are expressed in Appendix A.

Yours truly,

**Amec Foster Wheeler Environment & Infrastructure
a Division of Amec Foster Wheeler Americas Limited**

Prepared By (Air Quality & Light):

Prepared By (Noise):

DRAFT

DRAFT

Linda Lattner, M.Eng., P.Eng.
Senior Air Quality Engineer

Buddy Ledger, M.A.Sc., P.Eng., INCE
Senior Acoustic Engineer

Direct Tel (905) 415-2632 ext.224
E-mail linda.lattner@amecfw.com

Direct Tel (905) 568-2929 ext.4364
E-mail buddy.ledger@amecfw.com

Reviewed By (Air Quality & Light):

Reviewed By (Noise):

DRAFT

DRAFT

Steve Lamming, Ph.D., EP
Principal, Air Quality

Frank Babic, P.Eng., INCE
Senior Associate, Acoustics

Direct Tel (905) 568-2929 ext.4159
E-mail steve.lamming@amecfw.com

Direct Tel (905) 568-2929 ext.4182
E-mail frank.babic@amecfw.com

APPENDIX A
STATEMENT OF LIMITATIONS

Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
 - (a) The Standard Terms and Conditions which form a part of our Professional Services Contract;
 - (b) The Scope of Services;
 - (c) Time and Budgetary limitations as described in our Contract; and
 - (d) The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the site and attendant structures. Our conclusions cannot and are not extended to include those portions of the site or structures which were not reasonably available, in Amec Foster Wheeler's opinion, for direct observation.
4. The environmental conditions at the site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the site with any applicable local, provincial or federal by-laws, orders-in-council, legislative enactments and regulations was not performed.
5. The site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on site and may be revealed by different of other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Amec Foster Wheeler must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of Amec Foster Wheeler's services during the implementation of any remedial measures will allow Amec Foster Wheeler to observe compliance with the conclusions and recommendations contained in the report. Amec Foster Wheeler's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information of conclusions in the report, is the sole responsibility of such third party. Amec Foster Wheeler accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Amec Foster Wheeler.
11. Provided that the report is still reliable, and less than 12 months old, Amec Foster Wheeler will issue a third-party reliance letter to parties client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Amec Foster Wheeler's report, by such reliance agree to be bound by our proposal and Amec Foster Wheeler's standard reliance letter. Amec Foster Wheeler's standard reliance letter indicates that in no event shall Amec Foster Wheeler be liable for any damages, howsoever arising, relating to third-party reliance on Amec Foster Wheeler's report. No reliance by any party is permitted without such agreement.