



**DRAFT Premier Gateway Phase 2B
Secondary Plan Land Use Compatibility
Study (Air Quality)**

Project # WW20101004

Prepared for:

Macaulay Shiomi Howson Ltd.

600 Annette Street, Toronto, Ontario, M6S 2C4

November 2021

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Executive Summary

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) was retained by Macaulay Shiomi Howson Ltd. to prepare a study of the potential for air quality effects associated with the Premier Gateway Phase 2B Employment Area Secondary Plan, hereafter referred to as the Land Use Compatibility Study (Air Quality).

The objective of the study was to assess the Phase 2B proposed development in the context of land use compatibility with the existing sensitive land uses. The scope of this report includes potential air contaminant emissions, nuisance odours, nuisance dust, and light effects; a study of potential noise effects and land use compatibility was prepared under separate cover.

The Ministry of the Environment, Conservation and Parks (MECP) D-6 Guideline “Compatibility Between Industrial Facilities and Sensitive Land Uses” (D-6 Guideline) and the Halton Region Land Use Compatibility Guidelines outline the approach to land use compatibility studies with the intention that the findings may be used for informed municipal planning to prevent, or minimize, issues that may arise from incompatible development. The guidelines specify both the minimum separation distances, and the potential influence areas, in which compatibility issues may arise depending on facility size and nature of operations. The D-6 Guideline assigns a ranking for facilities based upon the potential for effects, ranging from Class 1 (low potential) to Class 3 (highest potential).

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 potential influence area.

The potential for health or environmental effects 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. Odour and fugitive dust are also considered by the MECP, though it may not be explicit.

The *Prestige Industrial Area* 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 or dust effects to prepare land use compatibility studies specific to their operations to determine the actual influence area as the potential influence area cited in MECP’s D-6 Guidelines may be overly conservative. This is consistent with the Land Use Compatibility Guidelines published by Halton Region.

The most common land use compatibility issue associated with land development are nuisance effects resulting from the new sources of dust, odour, and light 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. It is recommended that the requirement to identify, avoid, or mitigate potential nuisance effects be discussed with proposed prestige industrial facilities as part of the site plan approval process or through other mechanisms available to the Region or municipality.

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1.0 Introduction

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) was retained by Macaulay Shiomi Howson Ltd. to prepare a study of the potential for air quality effects associated with the Premier Gateway Phase 2B Employment Area Secondary Plan, hereafter referred to as the Land Use Compatibility Study (Air Quality).

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The proposed Development Area and the Study Area are presented in Figure 1.1.

2.0 Land Use Compatibility Guidelines

There are provincial and municipal guidance materials published to assist in discussions of land-use compatibility. Of particular relevance to this study are the Ministry of the Environment, Conservation and Parks (MECP) Guideline D-6 and the Halton Region Land Use Compatibility Guidelines.

2.1 Ontario Ministry of the Environment, Conservation and Parks

Guideline D-6, "Compatibility Between Industrial Facilities and Sensitive Land Uses", hereafter referred to as Guideline D-6, was published in 1995 to assist in the land use planning process by preventing or minimizing 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 MECP provides guidance and recommendations as a tool for informed decision making by land use approval authorities.

The MECP recommends air quality 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 2B Employment Area on sensitive land uses.

Guideline D-6 defines two parameters that are in place to help assess the likelihood of adverse air quality effects from changes in land use:

- Potential influence area - 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.



Figure 1-1: Development Area and Study Area

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.”*

Guideline D-6 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, and 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.

Examples of Class II facilities may be 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.

Examples of Class III facilities may be breweries, chemical manufacturing plants, and automotive manufacturing.

MECP recommends that no sensitive land uses occur within the minimum distances and only be allowed within the potential influence area if studies indicate that air quality effects are not likely to be excessive or cause a nuisance. 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.

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

Table 2-1: Guideline D-6 Land Use Compatibility Separation Distances by Facility Class

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

Note: The guideline defines the distance as property line to property line.

2.2 Halton Region Land Use Compatibility Guideline

The stated goal of the Halton Region Land Use Compatibility Guideline is to identify how municipalities may address land use compatibility issues related to development to minimize the effects of noise, vibration, odour, or air pollution from industrial, transportation, and utility uses on existing land uses. These guidelines support the use of the Potential Influence Area and Recommended Minimum Separation Distances cited in MECP D-6 (Table 2.1).

The Halton Region guidelines are more general than the MECP's Guideline D-6, but do suggest a number of required studies for new Class III industrial facilities proposed near existing sensitive land uses. A provision exists for facilities to prepare a site-specific study by a qualified Professional Engineer to determine the actual influence area based upon specific processes and activities, to support land use compatibility. The actual influence area may be smaller than the potential influence area 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 Premier Gateway Phase 2B covers a parcel of land with an area of approximately 257 hectares (635 acres) and is located north of Steeles Avenue, between Eighth Line and Winston Churchill Boulevard. The Premier Gateway Phase 2B Employment Area is strategically located along the Hwy 401 and 407 ETR and to the east of the Phase 1B Employment Area. Figure 3.1 below outlines the preferred land use concept for Phase 2B, including the Prestige Industrial Area indicated in purple. The Prestige Industrial Area of the proposed Premier Gateway Phase 2B development will not include Class III facilities.

The majority of the lands are currently held under corridor protection to accommodate the GTA West Corridor, a provincial highway corridor extending from Highway 400 in the Regional Municipality of York to the vicinity of the Highway 401/407 ETR interchange in the Regional Municipality of Halton.

The Study Area includes the Sixteen Mile Creek and Credit Valley Conservation Watersheds, agricultural lands, the Toronto Premium outlets, Highways 401 and 407, various residences and light commercial and industrial operations.

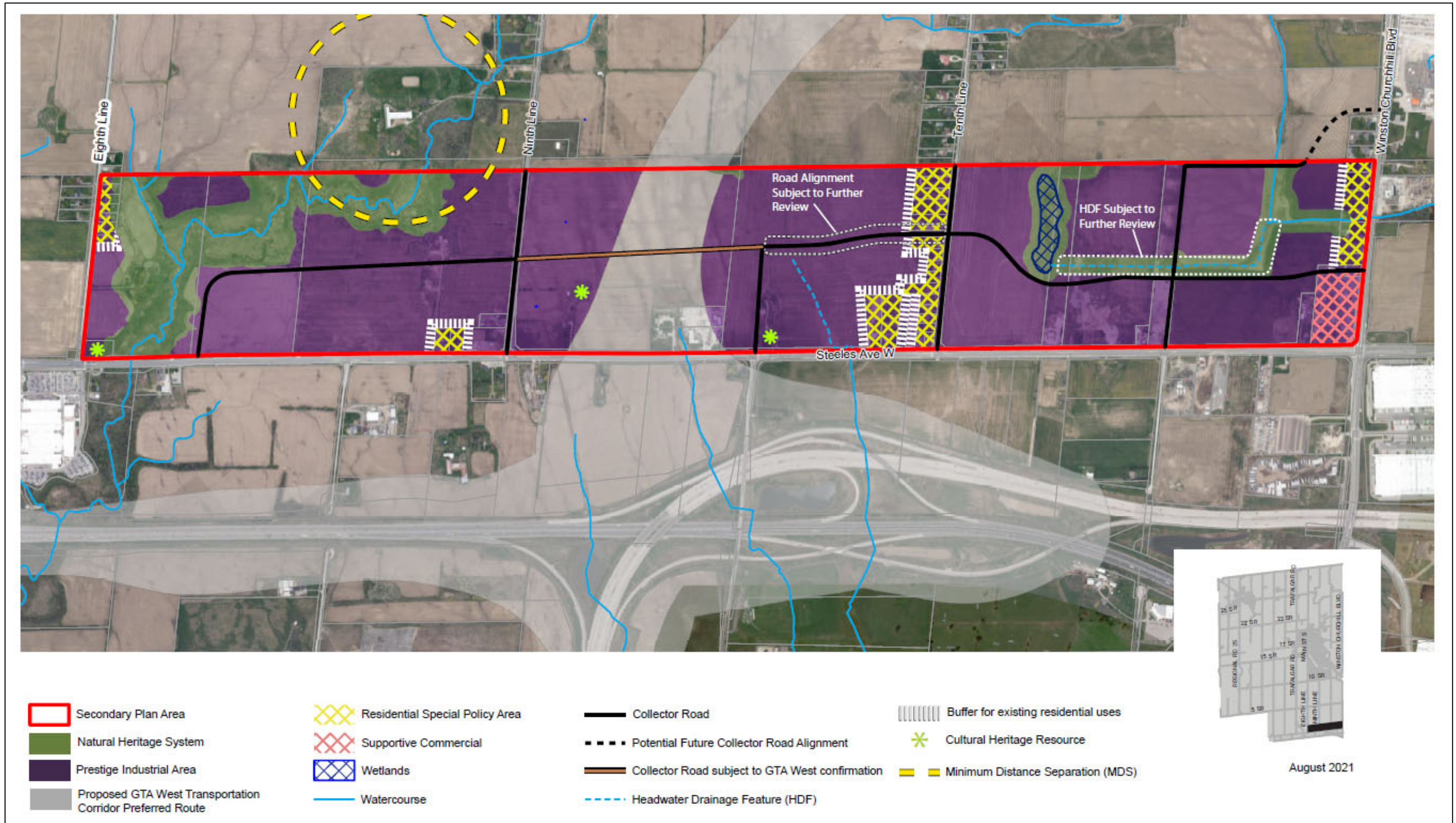


Figure 3-1: Premier Gateway Employment Area Phase 2B Preferred Land Use Concept

3.1 Identification of Surrounding Sensitive Receptors

Sensitive Land Uses

There are a number of residential dwellings, community lands, commercial uses, and institutions 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 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 Steeles Avenue, and on Eighth Line, Ninth Line, Tenth Line, and Winston Churchill Boulevard;
- Hope Place Centre, a residential addiction treatment facility; and
- Agriculture and dairy farming (former), characterized as an area in transition.

There are also two sites within the Study Area that as listed on the Town's Heritage Registry but are not designated under the Ontario Heritage Act. A full list of sensitive land uses within a maximum influence area of 1,000 metres (m) from the property line of the study area is included in Appendix A.

3.2 Other Land Uses

The following are large facilities and operations that would discharge air contaminants and potentially influence ambient air quality in the Study Area:

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

This facility is a 683-megawatt natural gas- fired power plant located within 1,000 m of the southwestern corner of the Study Area at Steeles Ave and Sixth Line. It has been in service as of September 2010. The contaminants emitted include particulate matter, nitrogen oxides (NO_x), carbon monoxide, sulphur dioxide (SO₂), and some volatile organic compounds (VOCs) created during the combustion of natural gas.

Although proximate to the Study Area, the HHGS has tall stacks on the emission points and completed air quality assessments as part of the Class Environmental Assessment and to obtain the Environmental Compliance Approval to operate. These works would require HHGS to demonstrate compliance with the standards of Ontario Regulation 419/05 including meeting point of impingement (POI) standards at or beyond the property line. The air emissions from HHGS should not affect development in the Study Area unless elevated receptors are introduced such as multi-storey buildings.

The 2019 total annual air releases from HHGS, as reported to the National Pollutant Release Inventory (NPRI), are summarized in Table 3.1.

Table 3-1: Halton Hills Generating Station (HHGS) NPRI Reported Air Releases

Contaminant	2019 Total Air Release(tonnes)
Particulate Matter PM _{2.5}	2
Particulate Matter PM ₁₀	2
Total Particulate Matter	2
Volatile Organic Compounds	6
Carbon Monoxide	49
Nitrogen Oxides, as NO ₂	138
Sulphur Dioxide	0.3

ROXUL Inc.

ROXUL Inc. (ROXUL) operates a mineral wool insulation manufacturing facility at 805 Steeles Avenue East in Milton, 5 km west of the Study Area. An example of a Class III facility, ROXUL operates under an Environmental Compliance Approval that demonstrates compliance with the standards of Ontario Regulation 419/05 including meeting POI standards at or beyond the property line. The air emissions from ROXUL Inc. should not affect development in the Study Area.

The 2019 total annual air releases from ROXUL, as reported to the National Pollutant Release Inventory (NPRI), are summarized in Table 3.2.

Table 3-2: ROXUL NPRI Reported Air Releases

Contaminant	2019 Total Air Releases (tonnes)
Ammonia	126
Particulate Matter PM _{2.5}	49
Particulate Matter PM ₁₀	49
Total Particulate Matter	49
Volatile Organic Compounds	41
Sulphur Dioxide	648
Carbon Monoxide	74
Nitrogen Oxides, as NO ₂	95

Other Permitted Facilities

A review of the MECP's Access Environment portal showed one other facility in the Study Area with an air permit; Re-Flex 2000 Incorporated, at 729 Eight Line, operates a garment design facility with heat transfer. Emissions from this operation are expected to be minor.

In the vicinity of ROXUL are a number of industrial and commercial facilities that are mainly Class I and II, and would not result in air quality effects at this distance.

Pits and Quarries

There are two quarries operated by Dufferin Aggregates located approximately 10 kilometres (km) 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 an impact on the Study Area.

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, and potential light effects from signage and lighting.

Infrastructure

Transportation sources (roads, rail) are sources of Criteria Air Contaminants from vehicle tailpipe emissions, as well as light effects.

Highway 401 and Highway 407 currently pass through the Study Area. The proposed GTA West Corridor would connect to these highways at ramps constructed between Winston Churchill Boulevard and Trafalgar Road, and within the study area.

There is a rail corridor approximately 800 metres south of the study area, at which setback distance air quality effects are not expected.

4.0 Potential Air Quality Effects

4.1 Air Pollutants

With few exceptions, facilities that discharge 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 increased significantly with the introduction of Ontario Regulation (O.Reg.) 1/17.

In all cases, a facility must ensure that the discharge to the atmosphere does not contravene the Environmental Protection Act (EPA) and does not result in an adverse effect off-property. This would require facilities to demonstrate compliance with all air quality standards of Regulation 419/05. Irrespective of which approach is required by the facility, it will still be necessary for the facility to comply.

4.2 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. In addition, attention should be given to potential light pollution effects on sensitive land uses. Municipal by-laws under the *Municipal Act* can assist municipalities in address nuisance effects during the land use compatibility planning process. Section 129 provides municipalities with the authority to develop by-laws in response to noise, vibration, odour, dust, and outdoor illumination.

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, etc.); and
- **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 infrequency odours, or if the odours are characterized as 'good' smells such as cookies, bread, or candy operations.

The MECP has drafted the Guideline to Address Odour Mixtures in Ontario which can be utilized in the compatibility study to determine the likelihood of causing an adverse effect, and the best approach to manage that risk. Outcomes from the study can range from no further assessment required, to the requirement of a minimization/mitigation plan. This Guideline can also be utilized by municipalities in addressing nuisance effects through by-law regulations.

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 (PM_{10}) 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 MECP has set criteria for airborne dust, the Ambient Air Quality Criteria (AAQC). For fugitive dusts, it is the coarse particles that are most relevant. For suspended particulate matter the AAQC is $120 \mu\text{g}/\text{m}^3$ based upon potential effects on visibility over a 24-hour period. PM_{10} , which includes smaller particles that may be inhaled, currently have an interim-AAQC of $50 \mu\text{g}/\text{m}^3$ for the 24-hour averaging time. For the respirable particulate fraction $PM_{2.5}$, there 24-hour AAQCs and Canadian Ambient Air Quality Standards

are $27 \mu\text{g}/\text{m}^3$ to be protective of human health. PM_{2.5} is associated with fossil fuel combustion from stationary heating and power and transportation sources.

The assessment of fugitive dust effects is not required for all facilities to obtain an ECA or register to the EASR, however fugitive dusts must be prevented or minimized. Maintaining a setback distance equal to, or greater than, the Minimum Separation Distances (MSD) described in Guideline D-6 can help prevent nuisance dust effects.

Where there are outdoor stockpiles, unpaved areas, or material handling activities that may be a source of dusts, a Fugitive Dust Control Plan or Best Management Practices Plan (BMPP) is an effective management tool, with a framework provided in the MECP *Technical Bulletin: Management Approaches For Industrial Fugitive Dust Sources*.

Lighting

The development in the Study Area may affect ambient light conditions. Light pollution is not limited to Class II or III facilities. Class I facilities, parking area lighting, as well as new or modified street lighting, may be a nuisance to neighbours.

The potential effects associated with the following three aspects of light pollution are considered in the assessment of light effects:

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

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 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 there currently is minimal street lighting and the residences are set back from developed areas, not currently experience much light pollution at nighttime beside sky glow from the nearby urban centres.

There are no guidance materials specific to light pollution assessment published by the MECP. Lighting plans and design are generally considered through site plan controls and approval processes.

4.1 Transportation Effects

Vehicular traffic and rail corridors are sources of Criteria Air Contaminants. The introduction of new Prestige Industrial land uses will increase car and truck volumes on roads within the Study Area. There is also the potential for fugitive dusts associated with road silt.

A traffic assessment was completed by Paradigm Transport Solutions to forecast truck traffic demands, with the findings summarized in Table 4.1. The assessment is based on the assumption that the proposed development would be limited to Prestige Industrial facilities, assumed to be Class I and Class II facilities according to the Guideline D-6 criteria.

Table 4-1: Estimated Trucking Traffic Demands for the Premier Gateway Phase 2B Development

Period	New Trips	Trips In	Trips Out
Weekday AM	141	89	53
Weekday PM	199	121	76
Saturday	31	21	9

Reference: PTSL 2021

5.0 Local Meteorological Data and Background Air Quality

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 INTL A station (Climate ID:6158731) was determined to be representative of local conditions, at a distance of approximately 20 km northeast of the Study Area.

5.1 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 (2016 to 2020) for Toronto Pearson Airport was used as representative of local weather. A review of the climate normals generated for the past 50 years suggest that there have 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.

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 the frequency of time wind is blowing from any particular direction (i.e., the longest wind rose petals represent the direction the wind is blowing from most often 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.

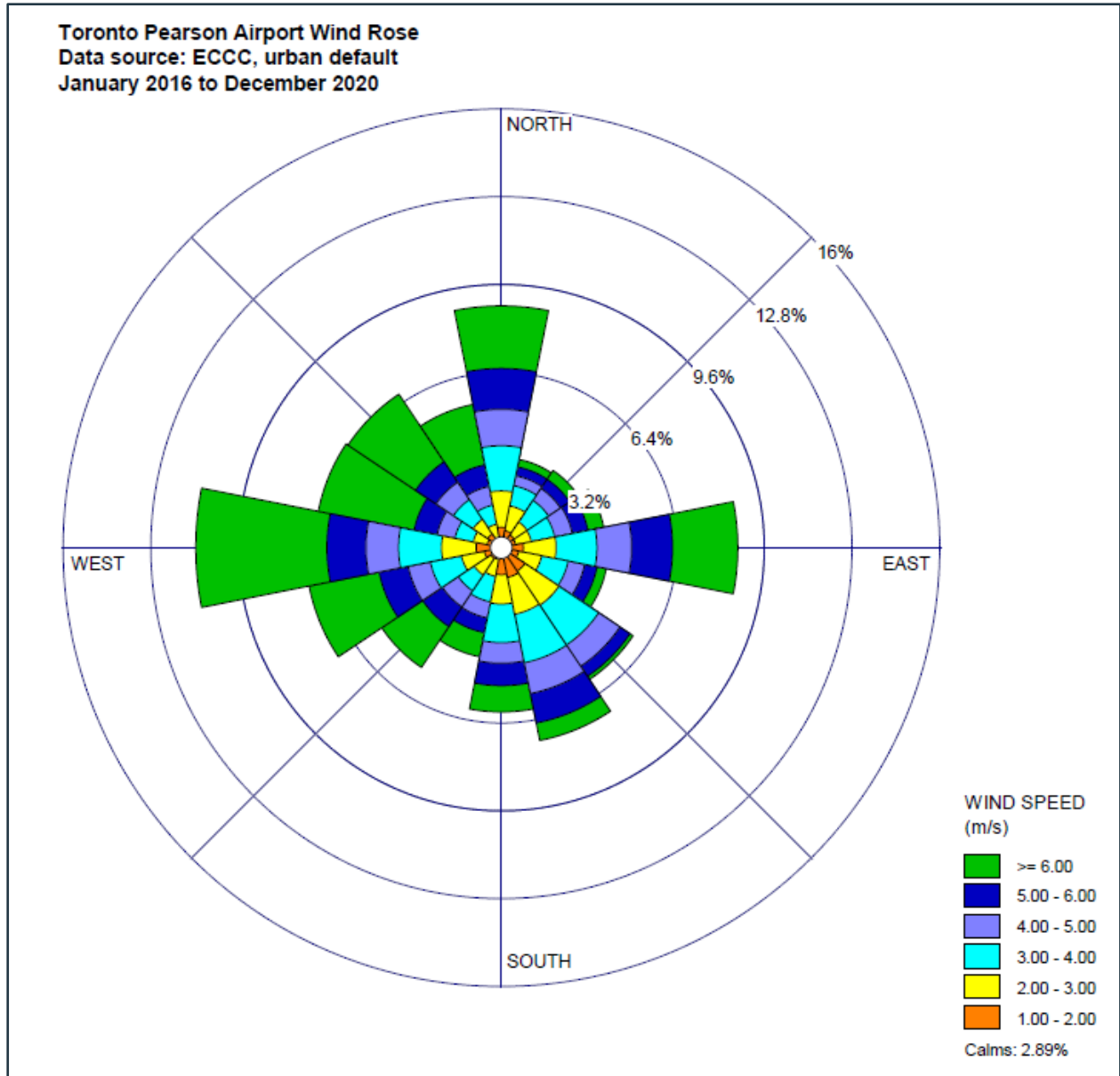


Figure 5-1: Wind Direction and Speed (Toronto Pearson Wind Rose)

The summer months are generally the most common months that nuisance complaints are received. During these months, the prevailing winds are from the north, west, and south-southeasterly quadrants.

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 the summer months and are more likely to be inconvenienced by any potential impacts.

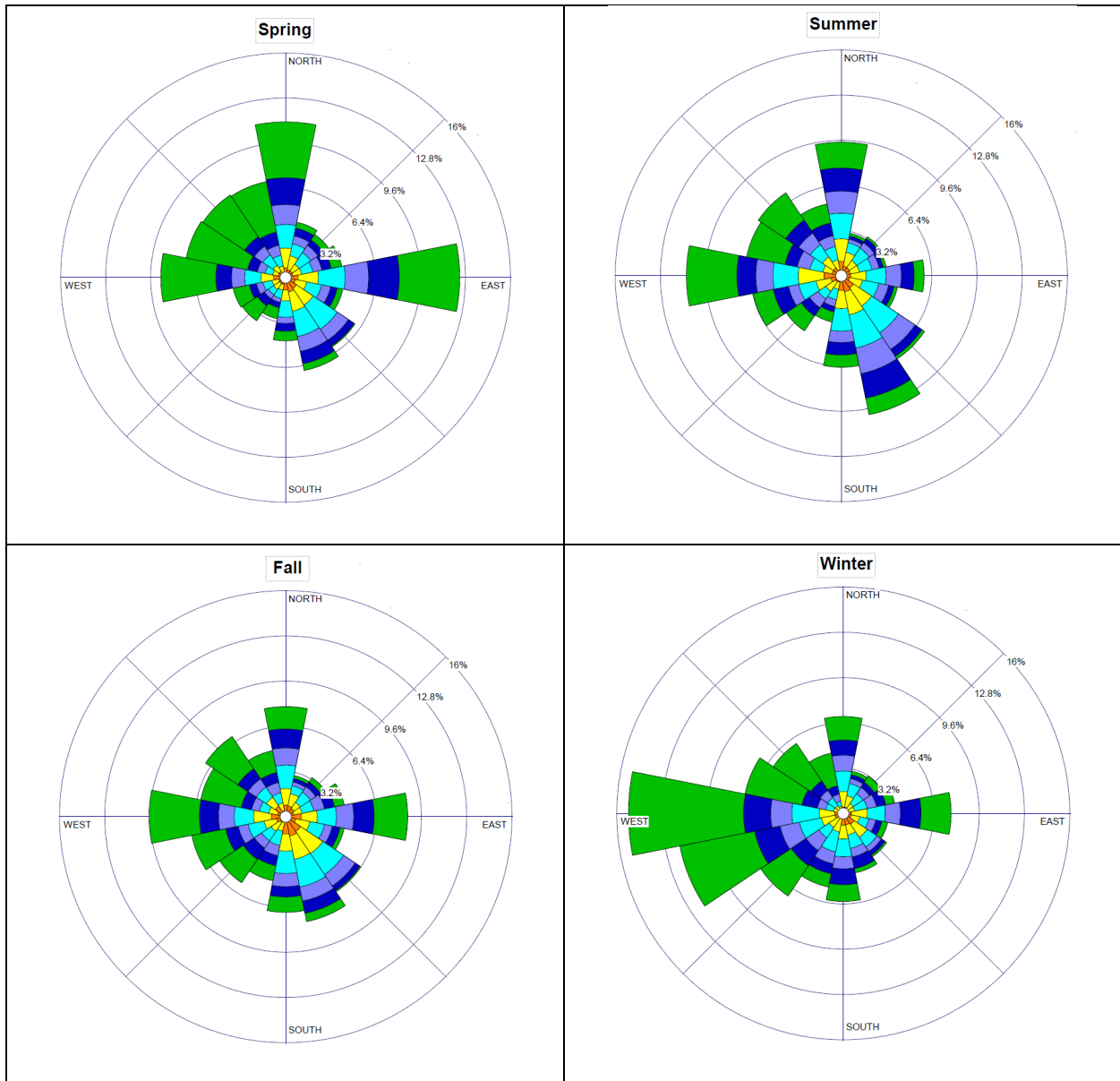


Figure 5-2: Seasonal Wind Directions and Speeds (Toronto Pearson Wind Roses)

5.2 Background Ambient Air Quality

5.2.1 Air Zone and Transboundary Air Pollutants

The Canadian Council of Ministers of the Environment established the Air Quality Management System with a mechanism for air zone management by delineating smaller geographical areas within each province or territory. 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.
- 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 MECP air monitoring stations and likely reflected in the background monitoring data presented in Section 4.2.3.

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. 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.

5.2.2 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 MECP 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 m from the roadways. While the southeastern portion of the Study Area is within 300 m of the Hwy 401 and 407, the background concentrations measured at Guelph and Brampton should be considered reasonable estimates of the Study Area ambient air quality as the area is otherwise surrounded by rural land uses; further, 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 MECP for PM_{2.5} and NO₂ was reviewed, and it was found that for 2016 to 2020, 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 27 µg/m³, and the NO₂ was compared to the 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 5.5 as box and whisker plots by month. This is a useful depiction of the monitoring data as the boxes show the 25th and 75th percentiles, the 'x' indicates the average value, and the whiskers show the maximum and minimum measured concentrations. Outliers are indicated by the plots outside of the box and whisker figures.

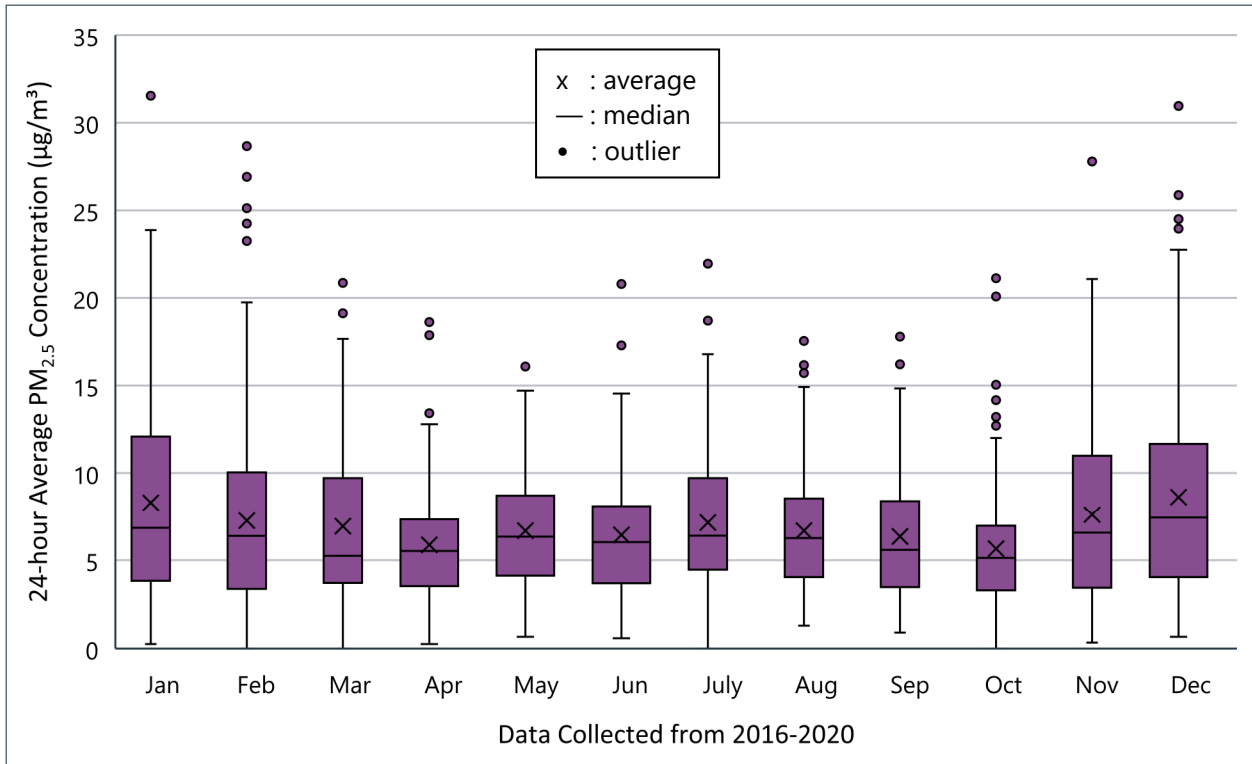


Figure 5-3: Background PM_{2.5} Concentrations at MECP Guelph

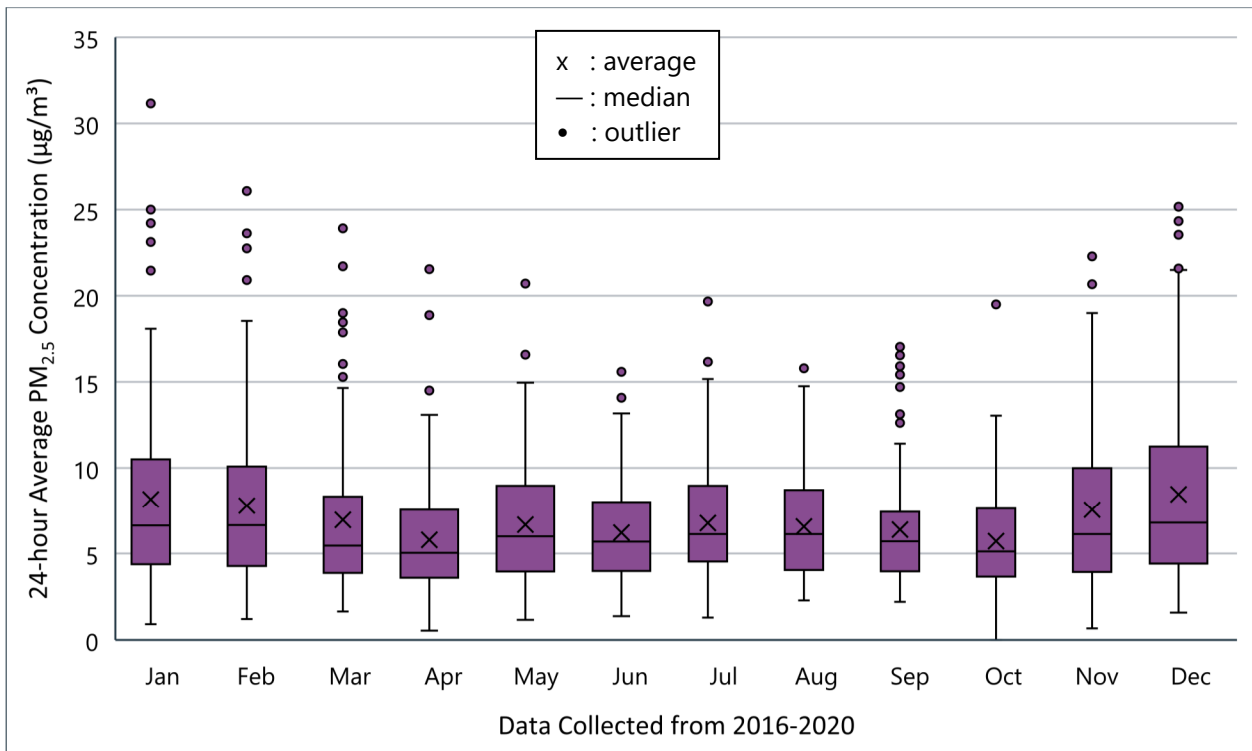


Figure 5-4: Background PM_{2.5} Concentrations at MECP Brampton



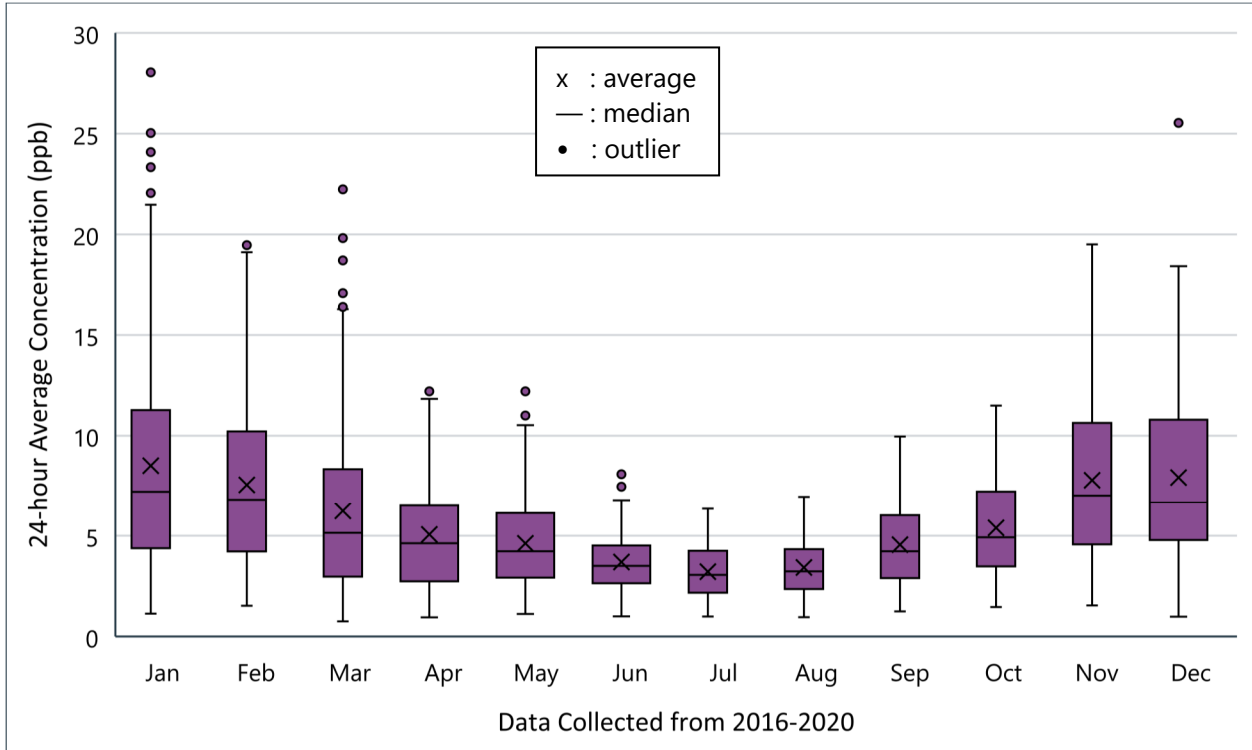


Figure 5-5: Background NO₂ Concentrations at MECP Guelph

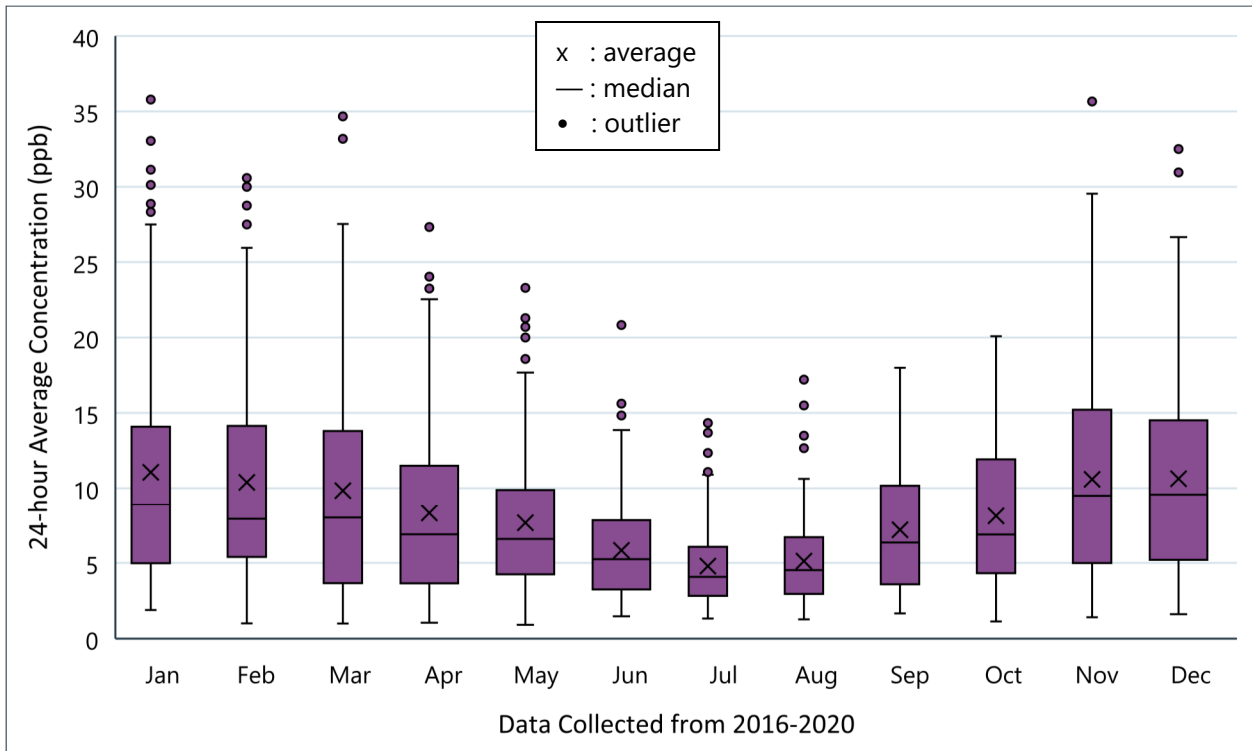


Figure 5-6: Background NO₂ Concentrations at MECP Brampton



6.0 Discussion

Based upon the background air quality, as measured at Brampton and Guelph MECP stations, the new facilities in the employment area would not be introducing new sources of air emissions into an overly stressed area. With very few exceptions, the ambient air quality is well within the AAQCs. The proposed employment areas also lie in 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.

There are, however, a number of sensitive land uses within the potential influence areas and recommended exclusion zones for Class I and II facilities. These sensitive land uses might be impacted by nuisance effects such as odour, dust, and light.

Air releases of contaminants other than nuisance dust and odour are managed through MECP regulations and approvals. Facilities would have to comply with air quality regulations, such as O.Reg. 419 and EPA Sections 9 and 14, and obtain approval to construction and operate where there are sources that discharge to the air.

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.

The minimum separation distance for Class I and Class II facilities is generally achieved within each parcel, with the only exceptions being the sensitive land uses that abut the parcels. There are sensitive land uses that are within the potential influence area for a Class II facility.

Where the separation between industrial and sensitive land uses is insufficient, there is a risk of air quality effects on these sensitive land uses. Mitigative measures may be required to prevent compatibility issues, to be defined at the site plan application and review process. All industrial facilities should be required to provide site-specific information on potential air emissions in the form of a feasibility or land use compatibility study; where the potential for air quality effects at sensitive land uses is identified in the study, an air quality assessment should be prepared that describes the nature of operations, the potential sources of air emissions, measures included in facility design to mitigation air quality effects, and that commits to the development and implementation of an air quality management plan for dust and/or odour.

6.1 Nuisance Effects

The Prestige Industrial Area will be tenanted by Class I and Class II facilities; it is assumed that Class III facilities will not be permitted.

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

However, the effects of fugitive dusts tend to decrease quickly with distance from facility boundary. Dust effects beyond the potential influence area are not expected, and it is assumed the effects would not be excessive beyond the minimum separation distance.

Odorous emissions may occur from certain Class I and Class II facilities, with examples of food preparation, and printing activities. Caution should be used in assigning a facility as Class I and consideration should be given to the nature of the operations. Stacks (point sources) on these types of facilities that are designed to improve dispersion of air emissions may result in off-site odours at a distance from the facility.

There are various residences within the parcel and the Study Area, with some abutting the parcel and thus having no separation distance between the land uses (since the D-6 Guidelines consider the distance to be property line to property line). These sensitive land uses would previously have been subject to odours from agricultural and dairy farming, and the highways. 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.

As an indication of the potential frequency of nuisance effects at these receptors, during the summer, sensitive land uses southeast of Steeles would be downwind of the development under winds from the northwest which occur approximately 12% of the time. Sensitive land uses to the northwest of the development would be downwind of the development under wind from the south-southeast which occur approximately 15% of the time. Through the winter, the prevailing south-southeasterly winds shift to the west such that winds prevail from the western quadrant.

The proximity of the existing residences to the proposed Prestige Industrial Area warrants that a land use compatibility study be prepared with the nature of the proposed facility or activity having the potential for air quality effects, including nuisance odour and dust effects.

6.1.1 Lighting

Although the Study Area is not near an identified dark sky site, the current residents of the rural dwellings would not generally be subject to significant light pollution in the evening, other than sky glow from neighbouring Mississauga and Milton and lighting from the Premier Outlets signage and property. Some of the rural roads north of Steeles would currently have little or no streetlighting. These areas could therefore be sensitive to new light pollution sources.

Measures should be taken to mitigate light pollution, however other than potential glare and trespass into 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 MECP 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 effective, good engineering in street lighting design should be incorporated to avoid excessive lighting, and directional lighting should be used 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.

6.1.2 Road Dust and Tailpipe Emissions

The introduction of new employment areas within the Study Area will increase the traffic along the local roadways. Traffic has the potential to affect air quality due to the tailpipe emissions from the trucks and fugitive road dust on the industrial properties or from public roadways as a result of trackout.

Though the increase in truck traffic volumes may be low compared with current volumes along the major highways in the study area, 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.

6.1.3 Construction Phase

Construction activities are limited in duration; however, the associated air quality effects may be problematic for neighbouring residents and at other sensitive receptors. 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.

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 the potential influence area.

These findings are based upon the type of facility that would be expected in a Prestige Industrial Area, in the absence of information on specific facilities. It is recommended that all facilities are screened for potential odour or dust effects, and a Land Use Compatibility Study or Air Quality Assessment specific to their operations be required in support of their intended operations.

The key findings of the Secondary Plan Land Use Compatibility Study are as follow:

- The potential for health or environmental effects 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 issues with air quality associated with land development are nuisance effects resulting from the new sources of dust, odour, and light introduced to the Study Area.
- Class I facilities are unlikely to result in significant land use compatibility issues, with the exception of odour releases from some facilities that may be classified as Class I.
- 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. A Land Use

Compatibility Study or Air Quality Assessment should be prepared unless it can be demonstrated using a screening that no potential air quality effects are likely.

- The traffic volumes for both passenger vehicles and trucks will increase with the introduction of new employment and shipping/receiving associated with Premier Gateway Phase 2B. The incremental increase is, however, low in comparison to the current traffic volumes on the major highways that are within the Study Area.
- Construction activities are also a source of air emissions, most commonly fugitive dusts, odours, lighting, and tailpipe emissions from diesel equipment and vehicles. Construction activities should be managed to control air quality effects, with consideration of scheduling, monitoring, and mitigation.
- 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. It is recommended that the identification and mitigation of potential nuisance effects of proposed prestige industrial facilities be discussed as part of the site plan approval process or using other mechanisms available to the Region or municipality.

It is recommended that the measures include, at minimum, the following:

- Effective engagement with potentially affected residents during planning and construction phases.
- Facility-specific odour assessments, odour management plans and control measures to avoid odour release and off-site effects.
- On the part of the industrial, commercial, or warehousing / distribution facilities, there are a number of effective best management practices to minimize dust. Facilities that can be expected to generate fugitive dusts should be required to prepare a Dust Management Plan outlining procedures and practices to prevent nuisance effects and deposition.
- Paved surfaces at all facilities to avoid road dust from unpaved areas.
- Prohibiting of outdoor stockpiles or requiring enclosures to be built to mitigate dust emissions.
- Implementation of fugitive dust mitigation measures by the municipality including frequent street cleaning and road maintenance.
- Strategic siting of entrances and exits of distribution centres and a reasonable setback from sensitive land uses of 300 m or more will help to limit nuisance effects associated with the truck traffic.
- 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, and location.
- 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.

8.0 References

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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 B.

Yours truly,

**Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited**

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The page features two large, light grey curved shapes that sweep across the background. One starts from the top left and curves towards the center. The other starts from the bottom left and curves towards the bottom right, framing the central text.

Appendix A

Surrounding Land Uses and Receptors

Appendix B
Statement of Limitations

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