

Peel Goods Movement

Peel Enterprise Zone Business Case



February 23, 2018



Plaza Three, 101-2000 Argenta Rd.
Mississauga, Ontario
Canada L5N 1V9
Phone: (905) 272-3600
Fax: (905) 272-3602
e-mail: info@watson-econ.ca



In association with:



Table of Contents

EXECUTIVE SUMMARY	1
1. INTRODUCTION	15
1.1 Terms of Reference	15
1.2 Goods Movement Sector Defined	16
1.3 Importance of Goods Movement Sector.....	16
2. THE PEEL ENTERPRISE ZONE CONCEPT	18
2.1 Freight Villages Overview	18
2.2 Freight Village Examples/Case Studies	21
2.3 Exploring the Case for a Peel Enterprise Zone in Peel.....	29
3. EMPLOYMENT LAND NEEDS ASSOCIATED WITH THE GOODS MOVEMENT SECTOR IN PEEL.....	33
3.1 Macro-Economic Trends.....	33
3.2 Importance of Goods Movement Sector in Peel Region.....	38
3.3 Goods Movement Employment Forecast in Peel Region, 2006-2041	39
3.4 Impact of Goods Movement Sector on Peel Region Employment Land Needs	41
3.5 General Location and Market Attributes Related to the Goods Movement Sector	42
3.6 Employment Land Supply Opportunities in Peel Region	43
3.7 Conclusions	43
4. SITE SELECTION ANALYSIS	45
4.1 General Location Requirements	45
4.2 Stakeholder Workshop	55
4.3 Site Selection Criteria.....	57
4.4 Preferred Location Option.....	59

PEEL GOODS MOVEMENT – REGION OF PEEL

5. OVERVIEW OF CAPITAL INFRASTRUCTURE NEEDS AND SERVICING COSTS..... 64

5.1 Roads..... 64

5.2 Water & Wastewater 74

6. GOVERNANCE STRUCTURE81

7. FISCAL IMPACT ANALYSIS82

8. ECONOMIC IMPACT ANALYSIS 90

8.1 Methodology 90

8.2 Output, GDP, Labour Income and Jobs..... 91

8.3 Direct Effects, Indirect Effects, and Induced Effects 92

8.4 Short-Term Economic Impacts (Construction) 93

8.5 Long-Term Economic Impacts (Goods Movement Employment) 94

8.6 External Economic Impacts..... 96

8.7 Summary of Economic Impact Analysis 98

9. CONCLUSION..... 100

Appendix A – Land Use Schedules of Local Municipalities

Appendix B – Stakeholder Workshop Discussion Guide

Appendix C – Site Evaluation Scoring

Appendix D – Road Network Maps

Appendix E – Trip Generation Forecast

Appendix F – Supplementary Fiscal Impact Analysis

EXECUTIVE SUMMARY

Continuing the efforts of previous studies on freight villages, the Region of Peel is exploring the feasibility of a Peel Enterprise Zone (PEZ) in the Region as a strategy to address issues related to Goods Movement land use and employment density. This business case report looks exclusively at the feasibility of a PEZ in the Region of Peel.

The study undertakes a feasibility analysis through planning, economic and fiscal factors. For the purposes of this type of study, a specific site was selected for which to measure these factors. The conclusion of the study is to understand the feasibility of a PEZ for the selected site and for sites that share similar features.

The Goods Movement sector forms an integral part of the Region of Peel's economic development and employment growth potential. The Region of Peel comprises a high concentration of Goods Movement related industries which contribute significantly to the local, provincial and national economies.

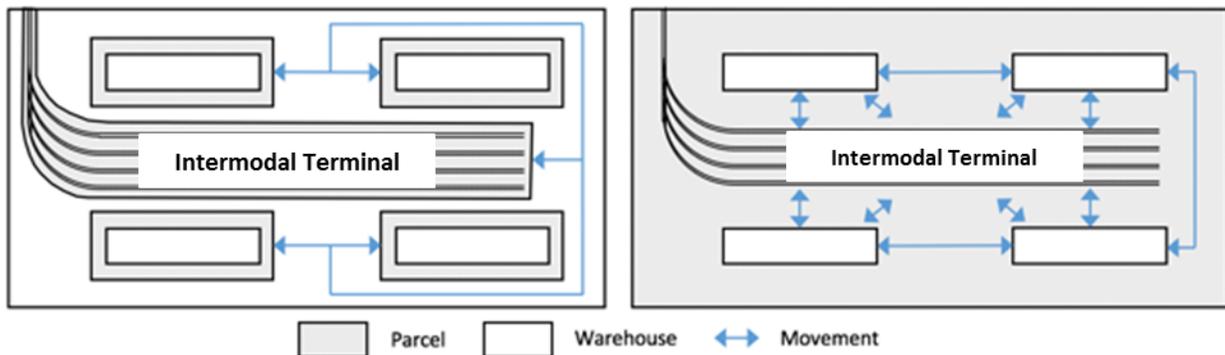
Peel Enterprise Zone (PEZ) Concept

Peel Region's agglomeration of freight and logistics activities can be classified as a freight hub. Freight hubs and freight villages are similar concepts. Both are clusters of freight and logistics activity that provide significant employment and economic activity in the local economy. The key difference between freight hubs and freight villages can be found at the spatial level in their scale and organization.

In terms of size, a freight hub is generally a hub of freight and logistics activities over a large area. Likewise, a freight village is smaller in scale, but still contains a significant cluster of freight and logistics activities. The key difference is in the way these activities are organized over space. This is shown conceptually in the figure below, which will serve as an example around which the discussions in the subsequent sections are based.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE ES-1: CONCEPTUAL MOVEMENTS IN A FREIGHT HUB (LEFT) AND FREIGHT VILLAGE (RIGHT)



The goals of a freight village are to agglomerate transportation and logistics activities to promote economic growth and development. Freight villages take the concept of co-location a step further to maximize internal synergies among firms on site. In addition to reducing movements between firms and key pieces of transportation infrastructure, a freight village incorporates more elements of the supply chain into the same site. This can include customs, insurance, banking, postal, and other services, free/foreign trade zone areas and basic services in support of transportation and logistics such as fuel and maintenance facilities, restaurants and other employment supportive uses.

To explore the case for a freight village in Peel, we based our analysis on high-level factors such as:

- Benefits as they relate to conditions in Peel;
- Possible conceptual constraints; and
- Demand and industry compatibility.

Following this, we identified various locations that, based on their characteristics, would be compatible with the freight village concept. We further took these locations and ranked them against a checklist of criteria developed using stakeholder input to identify a preferred location. This preferred location was then used in a conceptual and feasibility exercise in order to conduct further analysis related to capital and servicing costs, for example, for a PEZ in Peel Region.

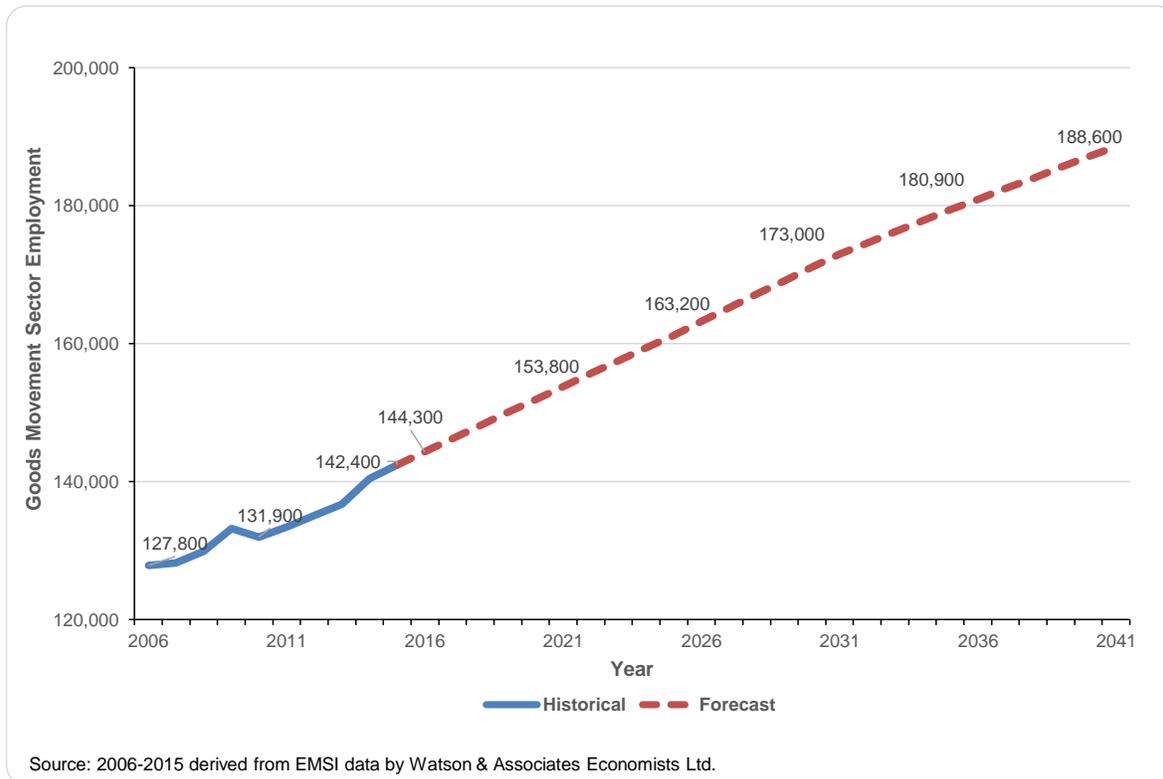
Employment Land Needs Associated with the Goods Movement Sector

It is anticipated that the Goods Movement sector will continue to be a significant driver of employment growth in the Region of Peel and the local Employment Areas, given the location strengths it offers. It is anticipated that the share of employment in the Goods Movement sector to total employment will modestly decline from 21% to 19%. The absolute number of jobs associated with this sector,

PEEL GOODS MOVEMENT – REGION OF PEEL

however, is anticipated to increase by approximately 44,300 jobs between 2016 and 2041. **Figure ES-2** graphically summarizes the historical and forecast population growth for Peel Region between 2006 and 2041.

FIGURE ES-2: HISTORICAL AND FORECAST GOODS MOVEMENT EMPLOYMENT GROWTH IN PEEL REGION, 2006 TO 2041



At both the Regional and local levels, location requirements of industry can vary considerably depending on the nature of the employment sector/use. Goods Movement land uses can be found dispersed throughout the GTHA; however, clear concentrations do exist in the Region of Peel. In general, Goods Movement industries tend to concentrate when a series of key factors come into alignment, including:

- Access via highway networks;
- Proximity and access to Employment Areas via arterial roads;
- Links to major trading destinations;
- Competitive land costs;
- Proximity to a major urban centre; and
- Proximity to multi-modal hubs (airports, rail and ports).

Historically, Peel Region has offered all of these attributes. Of particular importance in Peel Region is the presence of the following:

PEEL GOODS MOVEMENT – REGION OF PEEL

- TPIA;
- CN Intermodal Yard in Brampton;
- 400-series highway connections to surrounding Ontario and U.S. employment markets; and
- Market choice of greenfield employment lands.

It is anticipated that the Goods Movement sector will continue to be a significant driver of employment growth in Peel and, more specifically, the Region's Employment Areas given the location strength that support this sector. While there is demand for this sector in Peel, the current vacant designated employment land supply is diminishing and, as a result, the opportunity to accommodate this industry on designated employment lands is limited.

Site Selection Analysis

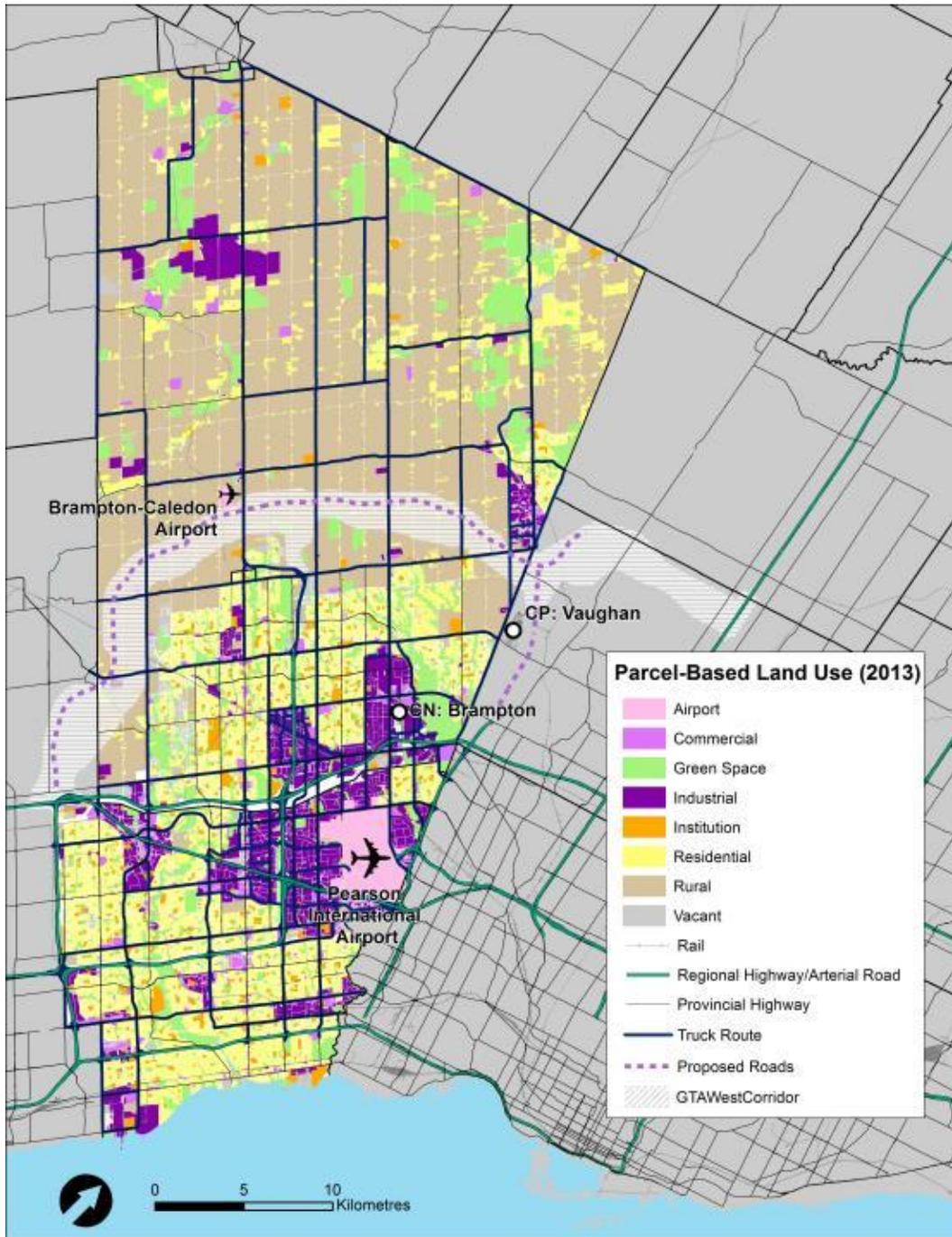
While a PEZ could offer value to Peel in terms of offering benefits such as reduced truck traffic on roads and responding to demand among transportation and logistics firms, an important consideration is location. To analyze this, an initial planning exercise was undertaken to highlight several guiding factors based on best practices. An ideal location for a freight village will exhibit the following characteristics:

1. A large contiguous area of greenfield land available for development, preferably on employment designated land;
2. Serviced land or planned-to-be-serviced lands, in terms of water and wastewater infrastructure;
3. Close to existing or planned capital improvements in transportation infrastructure;
4. Close to existing or planned major highways;
5. Close to existing or planned rail intermodal facilities; and
6. Separate from conflicting land uses.

Figure ES-3 summarizes the Region of Peel by land use at the parcel level. Also included is a summary of existing high-order transportation infrastructure, airports, rail intermodal terminals as well as the potential location of the GTA West Corridor and Highway 427 extension. This provides context regarding where current residential and non-residential areas within Peel Region are located.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE ES-3: PEEL REGION PARCEL-BASED DEVELOPED LAND USE - 2013



Source: Region of Peel, WSP

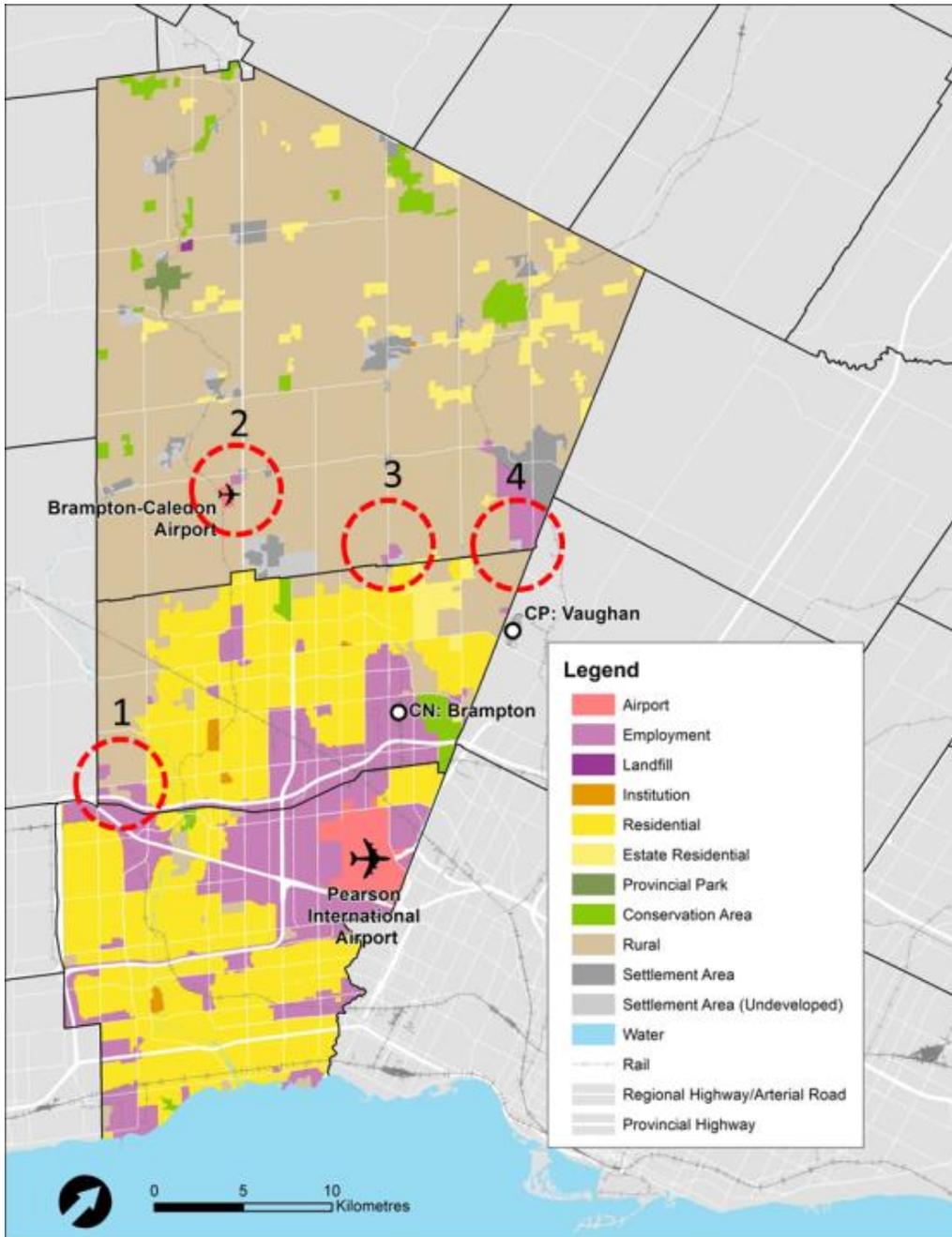
This map was used to identify undeveloped sites (i.e. greenfields). Areas with greatest potential are those near transportation infrastructure such as those located on/near regional roadways, provincial highways, provincial freeways,

PEEL GOODS MOVEMENT – REGION OF PEEL

Toronto Pearson International Airport, CN Brampton Intermodal Terminal and CP Vaughan Intermodal Terminal.

Four potential site options for further investigation in this business case are illustrated in **Figure ES-4**. These four sites were vetted and presented to the project's stakeholders in a workshop format to develop formal evaluation criteria.

FIGURE ES-4: POTENTIAL SITE OPTIONS



Source: Region of Peel, WSP

PEEL GOODS MOVEMENT – REGION OF PEEL

The stakeholder engagement was a process for informing, consulting and collaborating with select stakeholders. The stakeholders from the project included:

- Technical agency representatives;
- Industry representatives; and
- Provincial, municipal and regional land use and transportation planning staff.

A workshop was held to gather feedback on local and regional land use and transportation planning preferences, economic development opportunities and business and industry needs as they relate to a PEZ in the context of Peel Region. During the stakeholder workshop and subsequent follow up with local municipal staff, a preliminary review of the sites was completed. Feedback received from local municipalities discussed the vision of both Mississauga and Brampton and the compatibility with a PEZ. The preliminary review showed that sites in both Mississauga and Brampton would not be viable options for a PEZ. The rationale for this is premised on land availability constraints, cost of land and differing planning objectives and visions with the proposed PEZ.

Therefore, the developed criteria have only evaluated the two remaining sites located in Caledon, site #2 Victoria and site #3 Tullamore. The PEZ vision is appropriate for the economic development goals of the Town and was seen as advantageous by municipal stakeholders. The areas circled in **Figure ES-5** are only conceptual in nature; the site boundaries have not been identified at this phase in the study.

FIGURE ES-5: POTENTIAL SITES FOR EVALUATION



Source: WSP

Overview of the Site Selection Criteria

This site selection criteria were used to select a preferred location option from the two potential sites. The criteria are comprised of 16 criteria in four categories: transportation, infrastructure, land use and market.

Transportation criteria are related to connectivity and proximity: the site's proximity to key transportation nodes in the region (e.g. highways, airport, rail), and available infrastructure to provide sufficient access to the site for both Goods Movement and for future employees.

Infrastructure criteria are related to non-transportation infrastructure that is needed to support the development of the site (e.g. water and wastewater). These criteria prioritize sites with existing or planned infrastructure that can support the site as they require large capital investments to be expanded.

Land use criteria assess the site's compatibility with the appropriateness of the site in terms of size/configuration, surrounding land uses, and potential for expansion.

Market criteria measure the site's appeal to industry and potential tenants of the PEZ site.

Preferred Location Option

The results of the evaluation criteria identify Tullamore to be the preferred location to further investigate the feasibility of a PEZ in Peel Region. The characteristics of the site that make it preferable over the Victoria site include:

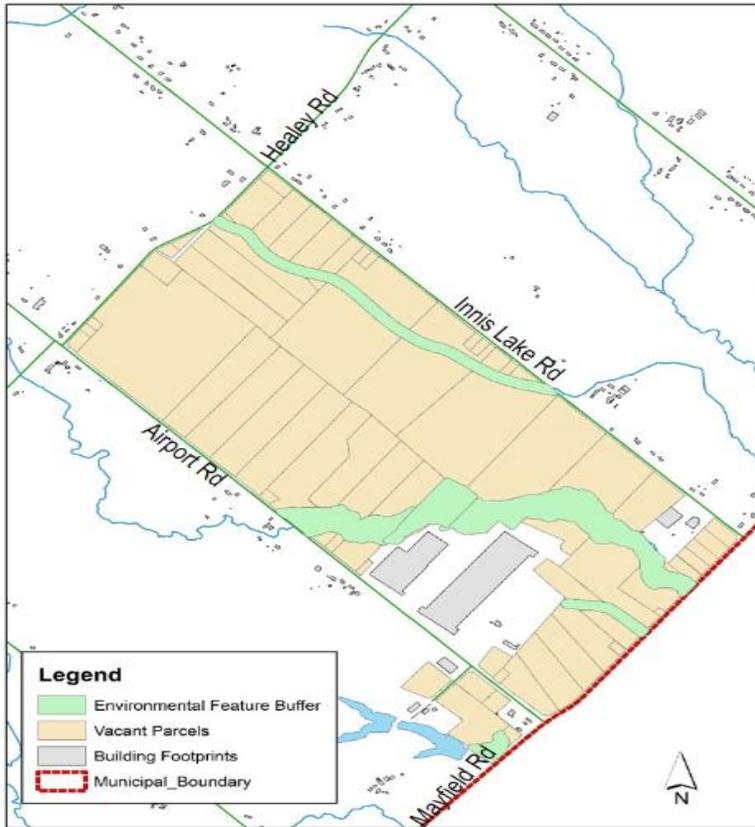
- Proximity to rail intermodal;
- Proximity to transit;
- Serviced by water; and
- Market demand.

Site Characteristics

The preferred site is located in the Tullamore Study Area in the Town of Caledon. The subject site is bound by Airport Road to the west, Innis Lake Road to the east, Healey Road to the north and Mayfield Road to the south, as shown in **Figure ES-6**. The total gross development land area, excluding environmental features, is 315 hectares.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE ES-6: TULLAMORE VACANT LAND SITE



Source: Watson & Associates Economists Ltd.

Employment forecasts were developed for the site. These are summarized in **Table ES-1** and represent employment forecasts for 2041 in various employment sectors.

TABLE ES-1: EXISTING TULLAMORE LAND CHARACTERISTICS

Total Gross Development Land Area (Net of Environmental Features)	315	Hectares
Net to Gross Adjustment	80%	
Net Developable Area	252	Hectares
Land Vacancy	15%	
Net Developable Area Adjusted for Land Vacancy	214	Hectares
Existing Job Base	800	

Source: Watson & Associates Economists Ltd.

Capital Infrastructure Needs and Servicing Costs

WSP completed a high-level review of the current and future capital infrastructure needs around the Tullamore site in order to determine the feasibility of a PEZ. This review provides an overview of the road network conditions around the site, identifies current and potential constraints, and estimates the increase in traffic. This review also proposes transportation improvements to account for the growth in truck volumes expected from a PEZ.

Under current assumptions, the planned roadway improvements for Mayfield Road indicate adequate capacity to account for the increased traffic volume; no capital improvements have been suggested.

Based on the preliminary traffic assessment, the subject site located in the Tullamore Study Area is feasible for a potential PEZ, provided a few transportation infrastructure improvements are implemented to accommodate safe truck circulation and to account for increased traffic volumes. **Table ES-2** summarizes the improvements and measures required to successfully develop a PEZ on the site.

TABLE ES-2: RECOMMENDED MEASURES

TYPE OF IMPROVEMENT
1. Monitor traffic volumes on Airport Road and Mayfield Road in the vicinity of the subject site – since all of the truck volumes will be utilizing the roadways.
2. The timing of the improvements on Mayfield Road should be considered when planning the timing and phasing of the subject site.
3. Collect turning movement count data at the key boundary intersections (i.e. Airport Road and Mayfield Road) so that the intersection can be analyzed to better understand the need to increase turning lane storage or adjustments to signal timing plans in order to accommodate the trips associated with the subject site.
4. Site access design along Airport Road and Mayfield Road should consider the existing transit operations as well as the access design requirements onto an arterial roadway.
5. Review the potential to relax truck restrictions on Innis Lake Road and Healey Road as the lands in the study area intensifies and the need to provide alternate routes to Mayfield Road and Airport Road arises. In order to facilitate truck movements on Innis Lake Road and Healey Road, the following should be considered: <ul style="list-style-type: none"> <li data-bbox="332 1587 1218 1688">a. Increase curb radii of right turns at the intersection of Airport Road and Healey Road and the intersection of Healey Road and Innis Lake Road; and <li data-bbox="332 1688 1218 1745">b. Increase length of left turn storage lane along Mayfield Road at Innis Lake Road.

PEEL GOODS MOVEMENT – REGION OF PEEL

The site could be used as a PEZ without removing the truck restrictions imposed on Innis Lake Road and Healey Road. Removing the truck restrictions, however, will improve truck traffic around the site and should still be considered as a potential improvement by the Region.

Water/Wastewater

WSP estimated the water demands and wastewater flows corresponding to the PEZ development. This estimate was based on the forecast 2041 total population (employment) estimates for the PEZ site as well as proposed land uses on the site.

Preliminary analysis of the water and wastewater infrastructure reveals the need for capital improvements of the existing systems in order to accommodate a large development such as the PEZ. The preliminary estimate of these capital costs is \$8,446,750 (**Table ES-3**). All capital costs are assumed to be expended in 2020.

TABLE ES-3: TOTAL WATER & WASTEWATER CAPITAL COSTS

Description	Est. Cost
Water	\$4,858,750
Wastewater	\$3,588,000
Total	\$8,446,750

Governance

In terms of what the governance structure of freight village would look like in Peel, the most effective option would be to follow the European model of public-private partnership. This is the case for two reasons. First, the option to replicate the private freight village developments seen in the United States is generally not available in the Canadian context. Many freight village and other large logistics centre developments in the U.S. resulted from the private purchase of decommissioned military bases, offering their owners a large contiguous parcel of land suitable for a variety of industrial and other employment uses. In contrast, the fragmented ownership of existing parcels of land around key transportation and logistics infrastructure in much of Canada (including Peel Region) would necessitate a high level of private land assembly.

Instead, a project structure similar to that seen in Europe and the two Canadian cases (Regina Global Transportation Hub and CentrePort Canada) seems more promising. Here the public sector can assemble the large land area required to implement a freight village, or at least part of it. In contrast to private ownership, which would likely require the quick development of land to maximize the return on what would be a significant investment in land assembly, public ownership can be

PEEL GOODS MOVEMENT – REGION OF PEEL

used to master plan an area at a more calculated pace to achieve high levels of efficiency and synergies among tenants.

Beyond the role of public capital in securing project feasibility, a PPP structure also brings private-sector stakeholders to the table as partners in managing a freight village project, ensuring their voices are heard in management decisions and soliciting greater buy-in from firms for locating on site.

Fiscal Impact

The fiscal impact assessment methodology provides an operating and capital cost analysis related to the preferred PEZ site location. The operating cost analysis involves calculating the revenues and expenditures attributable to the existing development, which are estimated on a proportionate basis. That is, operating revenue and expenditure dollars are assigned by distributing the operating cost and revenues on a per capita and per employee basis. Tax revenue is calculated based on the total tax rate applicable to the subject area and proposed non-residential development types. The assessment assumptions are based on a survey of similar non-residential buildings within the local and regional market area within Peel Region.

In accordance with the estimated annual operating revenues and expenditures assigned to the PEZ, an annual net fiscal surplus of \$2.45 million has been identified at full buildout of the subject lands.

With respect to capital costs, a total of \$64 million has been identified with respect to water and wastewater infrastructure to service the subject lands. It is noted that the majority of the water and wastewater infrastructure costs identified for the subject lands are associated with local services internal to the development. The local water and sewer mains may be required as a local service and thus would be constructed and paid for by the developer(s).

It is further noted that capital cost impacts associated with other hard and soft Regional services have not been assessed as part of this analysis. Furthermore, local municipal capital costs (e.g. roads) have not been assessed as part of this analysis.

As development proceeds, the Region will receive DC revenue related to new non-residential development. Based on (current) 2017 DC rates, the proposed PEZ would generate a total of \$114.2 million in DC revenues.

DCs are the primary financing source for eligible growth-related capital works. DCs represent a one-time capital funding source, which will fund a portion of the Region's capital costs. The external water and wastewater works may have a

PEEL GOODS MOVEMENT – REGION OF PEEL

benefit to existing development component (i.e. non-growth-related component) as well as a post-period benefit component. As planning is still in the early stages, this has yet to be determined but should be reviewed as part of the next Region of Peel and Town of Caledon DC study process. The local water and sewer mains may be required as a local service and thus would be constructed and paid for by the developer(s).

Economic Impact

The development of and operations within a PEZ would create opportunities for increased economic activity in the form of jobs, GDP and economic output. This economic activity will be generated from both the construction of the necessary infrastructure needed for the facility and through the business operations occurring on the site.

The short-term economic impacts have been calculated based on the estimated water/wastewater capital expenditures required to develop the PEZ site. The development of water/wastewater construction capital costs are described in section 5.2. All capital costs are assumed to be expended in 2020. As a result, the short-term economic impacts represent a 2020 forecast.

It is estimated that the short-impacts due to the capital infrastructure investment will generate an estimated \$7.7 million in GDP and generate 75 full-time equivalent employees during the construction period in 2020.

The long-term economic impacts have been calculated based on the estimated employment creation. The employment forecast is based on the following sectors: employment supportive uses, manufacturing, multi-tenant office and Goods Movement. A summary of the long-term economic impacts is shown in the table below. The cumulative economic impacts for GDP are estimated to be \$1.1 billion, with a compounded annual growth rate of 19.2%.

TABLE ES-4: SUMMARY OF LONG-TERM PEZ ECONOMIC IMPACTS (IN \$2017 MILLIONS)

Impact	2021 Forecast	2041 Forecast
Output	\$64.7	\$2,154.5
GDP	\$32.5	\$1,083.6
Labour	\$19.1	\$635.9
Jobs	331	11,070

PEEL GOODS MOVEMENT – REGION OF PEEL

External impacts do not affect the site directly, but the society as a whole. These externalities are the cost that affects a party that did not choose to incur the cost. This analysis compared the difference in number of truck trips generated without the proposed freight village (No-Build) with the proposed freight village (Build) to determine the cost of externalities due to increased trucks. The industry type and facility size were used to determine employment and truck generation estimates from the implementation of the site. The externalities that were considered for this project include collisions, greenhouse gas emissions and air quality. These impacts were then commodified to understand the full economic cost.

Based on the VKT impact factors for collisions, greenhouse gas emissions and air quality, as well as the total VKT over the study horizon period, the total cost of the impacts was monetized for each year in the study horizon period (2021 to 2041). These costs were then discounted by the Metrolinx discount factor of 3.5%. The results or present value of the external economic impacts are summarized in **Table ES-5**.

TABLE ES-5: PRESENT VALUE OF EXTERNAL IMPACTS (IN \$2017 DOLLARS)

Impact	Present Value (Discounted at 3.5%)
Collision Impact	\$872,776
Greenhouse Gas Impact	\$63,654,620
Air Quality Impact	\$5,665,156
Total Impact	\$70,192,552

1. INTRODUCTION

1.1 Terms of Reference

The Region of Peel retained Watson & Associates Economists Ltd. and WSP Group in 2016 to prepare a business case analysis with respect a proposed Peel Enterprise Zone (PEZ) within the Region of Peel. This study builds on the results of the Peel Region Goods Movement Density Discussion Paper,¹ which recommends that the Region of Peel explore opportunities to accommodate the needs and facilitate the development of the Goods Movement sector in Peel Region. More specifically, this study has been prepared in direct response to Action Item #21 of the Peel Region Goods Movement Strategic Plan, 2012 to 2016,² which identifies the need for the Region of Peel to develop an economic business case for a Freight Village.

Continuing the efforts of previous studies on freight villages, the Region of Peel is exploring the feasibility of a PEZ in the Region as a strategy to address issues related to Goods Movement land use and employment density. This business case report looks exclusively at the feasibility of a PEZ in the Region of Peel. The successfulness of a PEZ as a land use strategy is beyond the current scope and should be further explored by the Region.

A PEZ aligns with the concept of a freight village, but the term “PEZ” has been coined to maintain consistency with the nomenclature of past work on Goods Movement by emphasizing the intended employment growth of the facility, aligning with existing land use terminology, and supporting the positive growth and partnerships that can foster in this development. For the remainder of the report, “PEZ” will be used for reference to Peel-specific development, but “freight village” will be used for reference to best practice concepts.

The study undertakes a feasibility analysis through economic and fiscal factors. For the purposes of this type of study, a specific site was selected for which to measure these factors. The conclusion of the study is to understand the feasibility of a PEZ for the selected site and for sites that share similar features.

¹ Peel Goods Movement, Employment Density Discussion Paper. October 21, 2015. Watson & Associates Economists Ltd., in association with Meridian Planning and WSP Group.

² Peel Region Goods Movement Strategic Plan, 2012 to 2016. Region of Peel. April 2012

PEEL GOODS MOVEMENT – REGION OF PEEL

The study explores, in detail, the following topics:

1. An Overview of the Goods Movement Growth District Concept
2. Employment Land Needs Associated with the Goods Movement Sector in Peel Region
3. Site Selection Analysis and Preferred Location Options
4. An Overview of Capital Infrastructure Needs and Servicing Costs
5. Fiscal and Economic Impacts

The observations in each section intend to inform the overall recommendations and feasibility of a PEZ in the Region of Peel.

1.2 Goods Movement Sector Defined

Goods movement refers to the transportation system, infrastructure and policy that enable the movement of goods and services. The Goods Movement sector includes air, rail, water, pipeline and truck transportation industries, as well as warehousing, storage and logistics companies and support activities for transportation (including numerous public agencies, private firms, and individual shippers and receivers). Goods move through and within Peel Region for a variety of reasons, including local deliveries, processing and production (i.e. movement of materials and components to and from manufacturing facilities), imports and exports (i.e. shipping of commodities and goods).

1.3 Importance of Goods Movement Sector

The Goods Movement sector forms an integral part of the Region of Peel's economic development and employment growth potential. The Region of Peel comprises a high concentration of Goods Movement related industries which contribute significantly to the local, provincial and national economies. Freight transportation, warehousing and manufacturing account for approximately one-fifth of Peel's employment base and a significant share of industrial development activity over the past decade has been in the Goods Movement sector. The Region of Peel home to over 2,000 trucking companies, which represents 25% of all truck activity in Ontario and accounts for approximately \$1.8 billion worth of Goods Movement through Peel every day.³ Goods Movement is the largest industrial employment growth sector within the GTHA and the Region of Peel. To maintain its competitive edge, the Region of

³ Peel Goods Movement, Strategic Goods Movement Network Study Technical Report, April 25, 2013, Region of Peel.

PEEL GOODS MOVEMENT – REGION OF PEEL

Peel must ensure the efficient movement of goods through and within the Region to attract industry and investments.⁴

⁴ Peel Region Goods Movement Strategic Plan (2012-2016). Status Update. June, 2014.

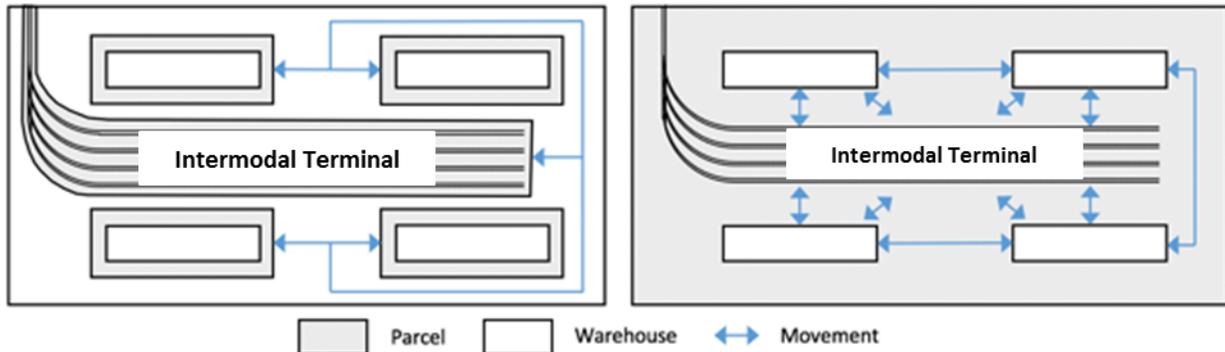
2. THE PEEL ENTERPRISE ZONE CONCEPT

2.1 Freight Villages Overview

Peel Region's agglomeration of freight and logistics activities can be classified as a freight hub. Freight hubs and freight villages are similar concepts. Both are clusters of freight and logistics activity that provide significant employment and economic activity in the local economy. They also serve important roles in what are increasingly global supply chains. The key difference between freight hubs and freight villages can be found at the spatial level in their scale and organization.

In terms of size, a freight hub is generally a hub of freight and logistics activities over a large area. Likewise, a freight village is smaller in scale, but still contains a significant cluster of freight and logistics activities. The key difference is in the way these activities are organized over space. This is shown conceptually in **Figure 2-1**, which will serve as an example around which the discussions in the subsequent sections are based.

FIGURE 2-1 CONCEPTUAL MOVEMENTS IN A FREIGHT HUB (LEFT) AND FREIGHT VILLAGE (RIGHT)



Freight Hubs

Freight hubs typically evolve through more market-oriented processes. Critical infrastructure is built, such as airports, highways, ports, and rail facilities, land is serviced through investments in local roads and utilities and land within these areas is zoned for similar industrial and commercial uses. This is in no way meant to imply a linear process; in the case of the Region of Peel for example, the evolution in these factors over time has resulted in the development of significant hubs of transportation and logistics activities around key pieces of transportation infrastructure such as the Lester B. Pearson International Airport,

PEEL GOODS MOVEMENT – REGION OF PEEL

the CN Brampton Intermodal Terminal, and the provincial highway infrastructure that surrounds and moves through the Region.

While successful, the evolution of economic activity within these hubs is not optimal from both a land use and transportation perspective. Movement associated with Goods Movement and logistics is movement intensive, particularly for trips occurring over the “last mile.”

From a land use perspective, more market-oriented development patterns (i.e. industry selecting locations based on land costs) mean that the locations of some firms may not lend itself to optimal and efficient transportation flows. For example, as mentioned previously, many transportation and logistics firms are movement intensive, particularly over the “last mile” of a trip, whether it be making final deliveries, picking up containers from an intermodal terminal for de-stuffing (unloading cargo), or empty hauls to return containers and trailers. With this in mind, more market-oriented development patterns can result in sub-optimal locations where some firms may be located next to an intermodal terminal but are engaged in a business that will never or rarely make use of it, while those that use it daily may be located further away.

From a transportation perspective, these patterns of separate land uses on small parcels around key pieces of transportation infrastructure funnel all movements to municipal road networks, which create the potential for choke points in the movement of goods, particularly as overall levels of congestion increase. Similarly, even if a frequent user of a terminal is located close to the terminal itself, a lack of integration that results from separate land parcels means they too must use the local road network alongside other firms. This is demonstrated in the blue lines in **Figure 2-1**, where several users of an intermodal terminal must travel longer distances on the same path to reach the terminal itself which creates longer travel times, higher transportation costs, and the potential for delay as well as greater negative externalities to neighbouring land uses and other road network users.

Freight Villages

Similar to a freight hub, the goals of a freight village are to agglomerate transportation and logistics activities to promote economic growth and development. But rather than control patterns of development only through zoning, the key difference between a freight hub and a freight village is that the freight village takes a more intentional and master planning approach to policy and planning. The goal of this approach is to master-plan the locations of transport and logistics activities in a way that excess movements are

PEEL GOODS MOVEMENT – REGION OF PEEL

reduced, the impact of negative externalities to communities are minimized, and synergies among land uses are maximized.

This occurs by providing a “park” or “campus” style layout in which transport and logistics activities can occur and intensity of movements that arise in this sector can be accommodated. This reduces the potential chokepoints that can occur with freight hubs when movements are funneled onto municipal road networks and the many entry and egress points that arise from separate land uses. This is similar to the way mixed use and compact communities create walkable neighbourhoods, by reducing travel distances for local trips.

To fully realize the benefits of this layout, the users of a freight village are co-located to best ensure synergies between uses. If a rail intermodal terminal is within the freight village, firms that regularly make use of it are encouraged to co-locate within the same area. Combined with an open layout, this enables these firms to access their containers in a timely fashion. By avoiding travel on municipal roads, terminal tractors or shunt trucks can be used instead of full-size trucks to transfer containers to and from the terminal and warehouse. This can be seen conceptually in the right panel of **Figure 2-1** where co-location on a single parcel enables transportation and logistics activities to move unimpeded by the constraints of municipal roads and their capacities.

Terminal tractors or shunt trucks are tractors used to move semi-trailers within a cargo yard, warehouse facility or intermodal yard. These are smaller in size and use less energy compared to road trucks.

Freight villages take the concept of co-location a step further to maximize internal synergies among firms on site. In addition to reducing movements between firms and key pieces of transportation infrastructure, a freight village incorporates more elements of the supply chain into the same site. This can include customs, insurance, banking, postal, and other services, free/foreign trade zone areas and basic services in support of transportation and logistics such as fuel and maintenance facilities, restaurants and day-care facilities. Other value added through a freight village can include features such as shared investments in tracking technologies and services such as skills training and human resources. Some freight villages even engage in educational partnerships to support the labour force needs of the industries in the freight village.

The types of synergies outlined above are increasingly being realized at a smaller scale through co-located intermodal terminals. In the past it was common for rail carriers to locate and operate an intermodal terminal within a

PEEL GOODS MOVEMENT – REGION OF PEEL

singular site, as seen in the example of the CN Brampton Intermodal Terminal. Private rail operators are now increasingly leading or entering into partnership agreements to locate significant intermodal customers on the same site as an intermodal terminal, resulting in a larger site overall.

These types of partnership agreements can be seen in Canada at the CPR Vaughan and Calgary Intermodal Terminals and the CN Calgary Logistics Park. Canada also features two newer projects that have developed through partnerships between the public and private sectors. Both CentrePort in Winnipeg, MB and the Global Transportation Hub in Regina are developing around intermodal terminals that serve as an anchor for attracting transportation and logistics firms. In the United States, two examples of privately-developed co-located intermodal terminals include the CenterPoint developments in Chicago and Kansas City. Some of these case studies are further discussed in Section 2.2.

Together these elements maximize the concept of co-location by concentrating transportation and logistics-related movements and reducing transportation costs. As such, in contrast to a freight hub, the end result is a promotion of synergistic relationships among tenants within and around a freight village to achieve a level of efficiency that would not be possible without coordinated freight-oriented master-planning. Such agglomeration of transportation and logistics activity is also inward-looking in that the concentration of activities within a single site reduces the potential for congestion on municipal road networks and other negative externalities for different land uses within the neighbouring area.

2.2 Freight Village Examples/Case Studies

To better illustrate the freight village concept and how it differs from other types of logistics centres, **Table 2-1** on the next page provides an overview of several freight villages and a number of intermodal terminals. Here it can be seen that these logistics centres have much in common. They feature road and rail connections, with some offering air and barge service and all maintain control over land within the site. They differ in the size of the site, degree of master planning and public-sector involvement, and the provision of direct and ancillary services to support transportation and logistics activities.

To explore how such differences manifest themselves in practice, brief overviews of best practice case studies are provided in this section.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 2-1: TYPOLOGY OF LOGISTICS CENTRES

	CN Brampton Intermodal	CPR Vaughan Intermodal Terminal	CPR Calgary Intermodal Terminal	CN Calgary Logistics Park	CN Milton Intermodal Terminal	Regina Global Transportation Hub	CentrePort Canada	CenterPoint Chicago	Interporto Bologna	GVZ Bremen	NTC Denmark	Roissy-SOGARIS	Alliance Texas	Raritan Center
Type														
<i>Intermodal Terminal</i>	●													
<i>Co-Loc. Interm. Term.</i>		●	●	●	●	●	●	●						
<i>Freight Village</i>									●	●	●	●	●	●
Size														
<i>Acres</i>	200	770	100	680	1,000	1,700	20,000	6,500	1,055	895	494	133	17,000	3,000
<i>Firms</i>	-	-	-	-	-	-	39	-	100	114	15	100	170	300
<i>Employees</i>	250	-	-	-	-	1,000	-	8,000	1,500	-	-	2,500	28,000	8,000
Modes														
<i>Road</i>	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<i>Rail</i>	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<i>Sea</i>								●		●	●			●
<i>Air</i>						○	○			○		○	●	
Services														
<i>Direct</i>									●	●	●	●	●	●
<i>Ancillary</i>									●	●	●	●	●	●
Management														
<i>Private</i>	●	●	●	●	●			●				●	●	●
<i>PPP</i>						●	●		●	●	●			
Planning														
<i>Master-Planning</i>		●	●	●	●	●	●	●	●	●	●	●	●	●
<i>Land Ownership</i>	●	●	●	●	●	●	partial	●	●	●	●	●	●	●

Italics indicates future potential; ○ indicates facility is nearby

Intermodal Terminal: contains only the intermodal facility on a singular site. **Co-located intermodal Terminal:** contains intermodal customers or auxiliary facilities on the same site as an intermodal terminal. **Freight village:** Co-located facilities on a specifically planned site.

An Intermodal Terminal: CN Brampton Intermodal Terminal



The 195-acre CN Brampton Intermodal Terminal is Canada's largest intermodal facility and is an anchor to a significant freight hub in Peel Region. The surrounding freight cluster generates 4,000 trucks per weekday, the largest generator of which is the intermodal terminal itself. The terminal receives and ships containers from all of continental North America.

The freight cluster around the CN Brampton Intermodal Terminal exhibits elements of the freight village concept. Many of the businesses in the periphery of the terminal interact with the facility regularly, including numerous transportation companies that ship large volumes both within Ontario and outside the province. However, the level of functional integration between the intermodal terminal and surrounding businesses is low and the organization of freight and logistics activities in the area is inefficient, as trucks looking to access the terminal and its satellite yard are forced to queue on Intermodal Drive.

For example, although many distribution centres are located next to the terminal, they must use their own trucks and the Intermodal Drive entrance to collect their freight. Despite being located adjacent to the terminal, Canadian Tire in particular does not use it for its shipments. This negates many of the benefits of locating near an intermodal terminal and increases congestion. Essentially, not integrating major freight generators on site constrains its capacity to serve peak periods of truck traffic. Furthermore, incompatible land uses, such as the Goreway gas-fired power plant, are located next to the terminal.

While CN has done much to increase efficiency at the facility by adding a satellite terminal and other measures, issues with movements in the area result from the design of the freight hub. Bottlenecks are created by separated parcels that force movements onto the local road network. Furthermore, a lack of explicit co-location means the organization of firms in the area has proceeded without any type of master planning to create synergies.

PEEL GOODS MOVEMENT – REGION OF PEEL

A Co-Located Intermodal Terminal: CenterPoint Intermodal Center

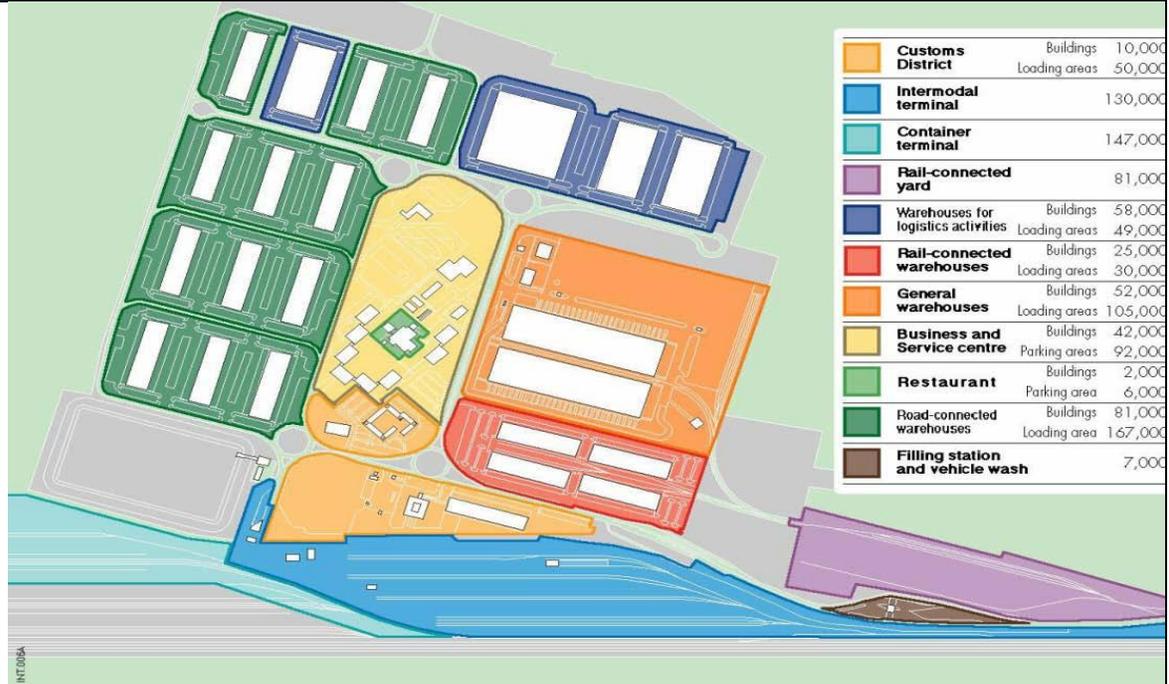


Built in 2000 to handle intermodal shipments moving through the Chicago area, CenterPoint Intermodal Center is located approximately 40 miles from Chicago. CenterPoint has multimodal access (rail and road), and a dedicated freight transfer facility on site. Tenants include transportation-related companies, as well as big box retail (their warehousing and distribution functions), among others. However, unlike a Freight Village, the site does not feature any additional services.

CenterPoint was developed and is actively managed by a private company – CenterPoint Property – rather than a public entity. With this said, the public sector was actively involved in the development of the facility. The bulk of the \$1 Billion investment for the facility was provided by CenterPoint Property, with the State of Illinois providing \$75 million for road, water, and sewer facilities. \$125 million was also funded through tax-increment financing by the City of Elwood, Illinois.

CenterPoint had a clear impact on job creation. CenterPoint was built on a former military site where 8,000 people used to work. However, the facility was decommissioned in 1976, turning the once active community into an economically depressed area. By turning this site into a modern logistics centre, roughly 8,000 – 12,000 new jobs were created, and \$27 million in annual property tax revenues were generated.

A European Freight Village: Interporto Bologna



Since opening in 1971, Interporto Bologna in Italy has come to represent one of the earliest and best examples of a freight village in operation around the world. The project is a public-private partnership designed to achieve many public goals such as promoting intermodal rail transport to reduce heavy truck traffic in the city, improving urban goods distribution and promoting environmentally sustainable economic development. More than 100 companies currently conduct business in the freight village.

The 1,055-acre site is master-planned and features a number of large warehouses with raised docking bays and office facilities, public warehouses for storage, intermodal terminals and supporting services such as customs, post office and bank, vehicle service facilities, container maintenance and a restaurant. Members also benefit from value-added services such as shared tracking technologies. Significant landscaping around the site was also done to make it more appealing to neighbouring residents.

Approximately half of all goods handled at the site were road-based, with the remainder travelling by rail. Interporto Bologna SpA estimates that the high share of rail freight at the facility has reduced the number of trucks circulating on Bologna's roads by 55,000. The freight village has also been good for business, as combining major transport and logistics service companies into a single area has contributed to improving the quality of services provided and has allowed local companies to better compete at the national and international levels.

PEEL GOODS MOVEMENT – REGION OF PEEL

A US Freight Village: The Raritan Center

The Raritan Logistics Center

Raritan Center Industrial Park
 • 2,350 acres
 • 14-million sq. ft. warehousing and distribution space
 • 330 companies, 32 Fortune 500 companies including: FedEx, FedEx Ground, UPS, TNT Logistics, Eagle Global Logistics, GE, BASF, Nova Chemicals, INEOS, SABIC, St. Gobain, North Pacific, ConocoPhillips, Basell

Heller Industrial Park
 • 700 acres
 • 7 million sq. ft. warehousing and distribution space

Raritan Center Business Park
 2,350 acres

Raritan Center Proposed In-Built Marine Facility

The map shows the Raritan Center's location in Edison, New Jersey, adjacent to the Raritan River and the Raritan Central Railway. Key features include the Raritan Arsenal, Heller Industrial Park, and various industrial parks like BASF, UPS, and FedEx Ground. Major roads such as I-95, I-287, and Route 440 are also shown.

Built on a decommissioned army arsenal, the Raritan Center in New Jersey presents a good example of a privately financed logistics centre that has gradually evolved to become a freight village after pursuing short-line rail and barge service to the site. The facility's private management has enabled it to stay on top of emerging trends to capitalize on their land holdings.

The site is large at more than 3,000 acres, boasting 21 million square feet of warehousing and distribution space and more than 330 companies and 8,000 jobs. It benefits from a location at the nexus of several major highways and major local roads, the Raritan River and the Raritan Central Railway. The Port of Newark and Liberty International Airport are approximately 20 minutes away. Refurbishment of rail services included a new rail yard, a 95,000-square-foot rail-to-truck intermodal dock, and a 90,000-square-foot food-grade rail-to-truck warehouse. The Raritan Central Railway short line connects to CSAO, NS, and CSX rail systems.

Supporting services at the Raritan Center include restaurants, hair salons/spas, banks, shops and retailers, cafes, a day care, health and insurance services and a US Postal Service branch. Such services help to make the Raritan Center a "one-stop-shop" for freight and logistics and serve not only as a buffer between nearby neighbourhoods, but also an attraction for local residents.

A Future Freight Village in Canada: Regina Global Transportation Hub



Regina's Global Transportation Hub (GTH) is the closest example in Canada to achieving the Freight Village concept. The site consists of 1,700 acres of land purchased by the Crown from local landowners and now managed by GTH. The project was viewed as an important opportunity to capitalize on Canadian Pacific Railway's need for a new intermodal yard, which is now much larger than their old facility and built into GTH. Beyond CP, to date the site has attracted a number of large anchor clients in transportation and logistics.

All land within GTH is serviced and the site is in close proximity to major highways, the City of Regina, and its international airport. Firms within the site lease land from GTH at competitive rates, which funds the planning and operation of the project. As a new project, GTH has a great deal of flexibility for development as much of the site remains greenfield.

GTH is managed by a board of public and private individuals, but is predominately a public initiative. GTH presently provides value added services to firms within the site including access to government programs and expertise, human resources and business and supply chain support. GTH management argues this design allows them to reduce risk, land and infrastructure costs for clients.

GTH is also exploring the creation of new on-site shared services such as fuel and maintenance facilities and other amenities, as well as shared investments in security and technology such as vehicle and consignment tracking. Such services stand to turn GTH into a true freight village.

2.3 Exploring the Case for a Peel Enterprise Zone in Peel

To explore the case for a freight village in Peel, we will base our analysis on high-level factors such as:

- Benefits as they relate to conditions in Peel
- Possible conceptual constraints
- Demand and industry compatibility

Following this, in Section 4 we identified various locations that based on their characteristics would be compatible with the freight village concept. We further took these locations and ranked them against a checklist of criteria developed using stakeholder input to identify a preferred location. This preferred location was then used in a conceptual and feasibility exercise in order to conduct further analysis related to capital and servicing costs, for example, for a PEZ in Peel Region.

PEZ Benefits

Higgins and Ferguson (2011) noted a number of benefits that arise from freight village implementations around the world, both in theory and practice. In the broadest sense, freight villages can achieve both private and public goals.

For industry, freight villages have been shown to enable the achievement of higher levels of efficiency, productivity and profitability from the synergies that result from co-location and master-planning. Such benefits are important for giving firms a competitive advantage as global supply chains become increasingly complex.

Freight villages as a concept, align well with policy and planning goals in Peel at the regional and local municipal levels. Freight villages can overall reduce the negative externalities involved in transportation and logistics activities. This includes reductions in noise, pollution, traffic congestion, road maintenance (by localizing movements within a specific site), and also the increased use of other transportation options through the promotion of intermodal movements. These are facilitated by the campus-style layout of a freight village, concentrating these movements within a single area. In the case of Interporto Bologna there is evidence that it can result in significant reductions in truck traffic on local roads. Freight villages also produce employment and economic development by attracting a large number of jobs to specific sites in freight and logistics activities and freight-oriented services.

Conceptual Constraints

It is important to note that freight villages, also have several shortcomings. Primary among them is that the success of a freight village depends on the ability to attract firms to locate within the site. Because transportation and logistics activities generally take place in an open market, this means the freight village is subject to market demand and must present a clear value proposition to firms.

The achievement of high levels of synergies also requires not only attracting firms, but the right type of firms that will make best use of infrastructure and complement existing freight village tenants. For publicly managed freight villages in particular, this can create a potential source of conflict as there may be pressures to build out the site as quickly as possible regardless of tenant demand. Recognizing this, a balance must be struck between generally attracting firms and attracting the right firms to co-locate in order to maximize potential synergies. One solution is during the master planning process, to set aside prime land around key infrastructure according to a vision for the best uses and users of the site.

A further issue relates to achieving employment densities for new greenfield development. Transportation and logistics activities in general are land intensive and with often low on-site labour requirements, which can result in low employment densities. Increasing automation in this sector stands to reduce densities even further over the long term. However, project management, the provision of complementary services on site and a more campus-style development pattern has the potential to lead to higher levels of employment in general and employment intensity in particular within a freight village site.

Demand and Industry Compatibility

If a freight village is to be successful, it must respond to demand for particular site and locational characteristics among transportation and logistics firms. While such information on firm demand is typically difficult to obtain in a systematic manner, recent research by Jakubicek and Woudsma (2011) and Woudsma (2012) offers valuable insight on industry locational decisions in the Ontario context.

Contrasting this information with the features of a potential freight village reveals a strong base of demand. Data from a 2011 survey of 42 members of the Supply Chain and Logistics Canada association, in which 83% of respondents were from Ontario, revealed factors of high, neutral and low

PEEL GOODS MOVEMENT – REGION OF PEEL

importance and a respondent's present satisfaction with them (**Table 2-2**). It can be seen that respondents identified proximity to major transportation infrastructure, access to major customers and suppliers, operating hours and site parking as factors of major importance. These were also factors they were presently satisfied with in their current locations.

However, respondents also noted factors of high importance that they were not presently satisfied with and may influence them to relocate. These include high land costs and tax rates, the availability of skilled workers and land for expansion, a burdensome regulatory environment and the number of dock doors in their present facility.

These high importance factors could be addressed through a freight village concept. If such a facility is in the right location by being proximate to high-order transportation infrastructure, important suppliers, and a major market of customers and skilled workers, offers land at reasonable rates with room for expansion and ample room to conduct freight operations, it provides a solution that many transportation and logistics firms are looking for in a location. Furthermore, by ensuring that factors that are listed as high importance but low satisfaction are addressed, a freight village may offer a competitive advantage compared to other locations in the region.

It is also worth noting the factors rated as low importance in terms of a firm's locational decisions include proximity to rail intermodal facilities and airport access. According to survey respondents, having rail intermodal facilities on site, at a location close to the airport is not essential.

It is still important to keep in mind that while such factors may be of low importance based on surveys, they may be crucial for some firms. This would need to be explored in the context of the Region of Peel's Goods Movement industry. Finally, accessibility to sea ports and long combination vehicles are both factors of low present satisfaction and low importance, as they do not provide a competitive advantage to a freight village compared to the more important factors highlighted above.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 2-2 THE RELATIONSHIP BETWEEN IMPORTANCE AND SATISFACTION IN FIRM LOCATION

	Low Satisfaction Factor	High Satisfaction Factor
High Importance	Push Factors <ul style="list-style-type: none"> • Land costs/tax rates • Availability of Skilled Workers • Business regulatory environment • Land available for expansion • Number of dock doors 	Retain Factors <ul style="list-style-type: none"> • Access to major suppliers • Ability to operate 24/7 • Proximity to highways • Trailer parking • Access to major customers
Neutral Importance	<ul style="list-style-type: none"> • Public transit availability 	<ul style="list-style-type: none"> • Truck staging area
Low Importance	Neutral Effect <ul style="list-style-type: none"> • Long combination vehicle accessibility • Sea port access 	Slightly Retain <ul style="list-style-type: none"> • Proximity to similar businesses • Highway visibility • Airport access • Rail intermodal access • Availability of unskilled workers

Source: Jakubicek & Woudsma. 2011

3. EMPLOYMENT LAND NEEDS ASSOCIATED WITH THE GOODS MOVEMENT SECTOR IN PEEL

The following Chapter provides an analysis of the key macro-economic trends that are shaping the economy in the Region of Peel, including the importance of the Goods Movement sector in Peel and the future outlook of this sector. An examination of the anticipated land needs of the Goods Movement sector and its impact on employment lands in Peel Region is provided. In accordance with available data, most of the employment trends referenced in this sector cover the 2006 to 2014 period.

3.1 Macro-Economic Trends

The Ontario economy is facing significant structural changes. Over the past decade, the economic base, as measured by GDP output, has shifted from goods-producing sectors (i.e. manufacturing, utilities and primary) to services-producing ones. Much of this shift has occurred in the past ten years, driven by GDP declines in the manufacturing sector which were most significant immediately following the 2008/2009 global economic downturn.

Manufacturing, a significant component of the provincial economy, has seen its relative share of GDP decline from 21% in 2003 to 13% in 2013 largely as a result of increased global competition.⁶ The challenges of the manufacturing sector are also reflected in the Ontario labour force, which declined by 31% over the 2004 to 2014 period.⁷ It is important to note, however, that provincial labour force rates in the manufacturing sector have been relatively stable since 2010. In contrast, service-based sectors such as financial and business services have seen significant increases over the past decade. Growth in service-based sectors has been driven by strong growth in domestic demand, particularly in consumer spending.

Structural changes in the economy are changing the character of economic activities on employment lands and impacting the built form and character of Employment Areas in Ontario. Over the past decade, the composition of industrial employment in Ontario has evolved, with less emphasis on domestic manufacturing driven by increased outsourcing of production to emerging global markets. While manufacturing remains vitally important to the provincial economy with respect to jobs and economic output, this sector is not

⁶ Derived from Statistics Canada CANSIM Table 379-0028 – Gross domestic product (GDP) at basic prices, by Watson & Associates Economists Ltd.

⁷ Derived from Statistics Canada Labour Force Survey data by Watson & Associates Economists Ltd.

PEEL GOODS MOVEMENT – REGION OF PEEL

anticipated to support strong domestic labour force growth in the future. Looking forward, there will continue to be a manufacturing focus in Ontario and Peel Region. Industrial processes, however, have become more capital intensive and automated as local industries are required to streamline production through increased product innovation, specialization and integration of technology. This means that as the domestic manufacturing sector continues to gradually recover, economic output will increase, yet modest employment growth is anticipated in the sector.

While the manufacturing sector has steadily contracted over the past decade, there have been growth opportunities in other forms of industrial development. Post-recession (i.e. post-2009) industrial development has been largely oriented to large-scale industrial buildings housing wholesale trade, distribution and logistics. This has been driven by increasing demand in the Goods Movement sector to store and manage the distribution/transportation of goods produced locally as well as goods imported from abroad. These facilities tend to be land-extensive and typically located in greenfield areas which are accessible via road and rail, and offer future expansion potential. This trend, combined with increased automation in the manufacturing sector, has resulted in a decrease in average employment density levels on employment lands across many GTHA municipalities.

The GTHA has a dynamic and competitive economic base which is highly diverse. The regional economy is comprised of a mix of mature and emerging industry clusters and contains a significant industrial and office market base. Similar to the provincial economy as a whole, the nature of the GTHA economy is changing. Over the past two decades, the composition of GTHA employment has gradually shifted from a goods-producing economy to a services-producing economy, led by employment growth in sectors such as accommodation and food, health care and social assistance, professional, scientific and technical services and retail trade.

Despite the 2008/09 global economic slowdown, GTHA employment levels have steadily increased in almost all major areas of the service sector since 2006. Since then, employment growth in the service sector has averaged 2.3% annually. Many of these sectors, including professional, scientific and technical services, financial services, information and cultural industries, education services, health care, social services and real estate, represent a large portion of the “knowledge-based” and “creative-class” economy.⁸ A number of the uses within these sectors are permitted on employment lands across the GTHA

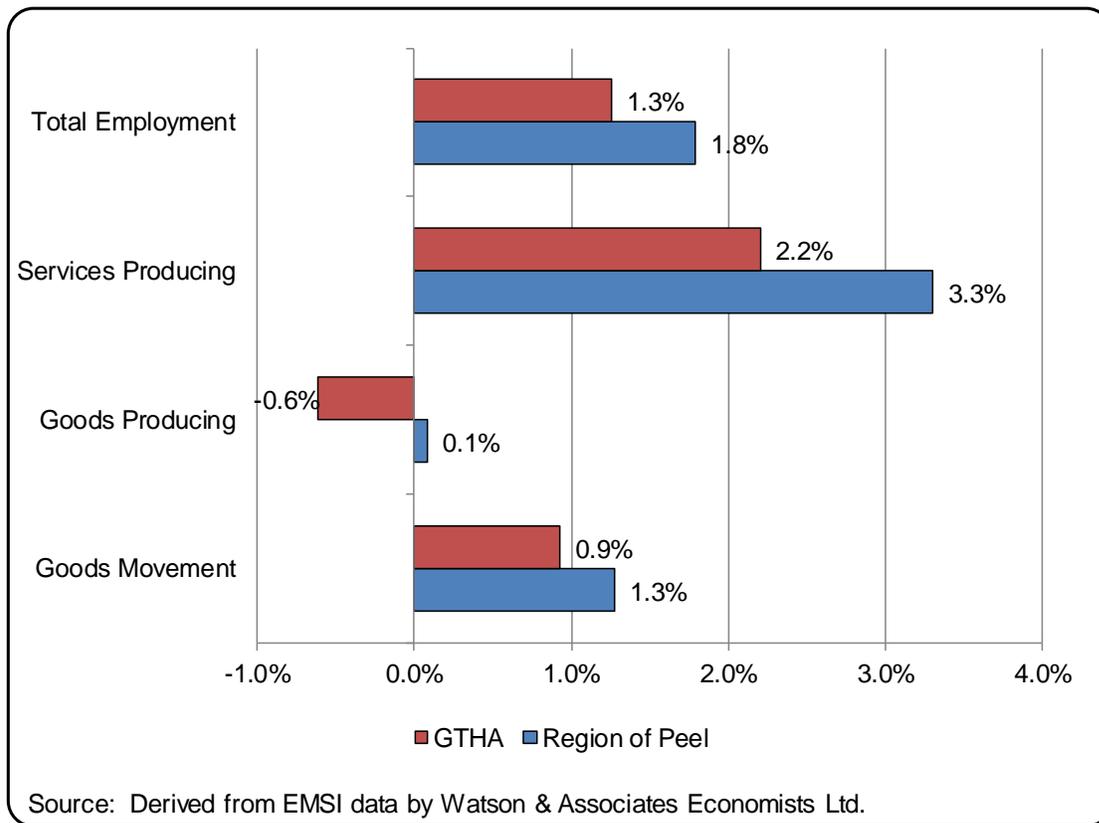
⁸ Richard Florida, *The Rise of the Creative Class*. 2002

PEEL GOODS MOVEMENT – REGION OF PEEL

and represent a growing share of the employment base on employment lands, most notably in heavily populated urban GTHA municipalities.

While the GTHA has experienced relatively strong employment growth over the 2006 to 2014 period, employment growth in Peel outpaced the GTHA as a whole due to a 3.3% average annual growth rate in the service sector, as shown in **Figure 3-1**. The goods-producing sector also experienced minimal employment growth over this period in the Region of Peel. This sector declined across the GTHA as a whole, despite positive employment growth trends in the Goods Movement sector, as illustrated in **Figure 3-1**.

FIGURE 3-1: GTHA AND PEEL REGION EMPLOYMENT GROWTH, 2006 TO 2014



As previously mentioned, the GTHA economy is comprised of a highly diverse mix of industry clusters related to manufacturing, technology and services. This diversity is a key strength of the GTHA economy, with most of the top traded industry clusters throughout North America having a strong presence in this region. This includes the Goods Movement sector which is a dominant GTHA employment cluster. The Goods Movement sector represents 11% of the GTHA employment base and its share of total employment has remained relatively stable since 2006.

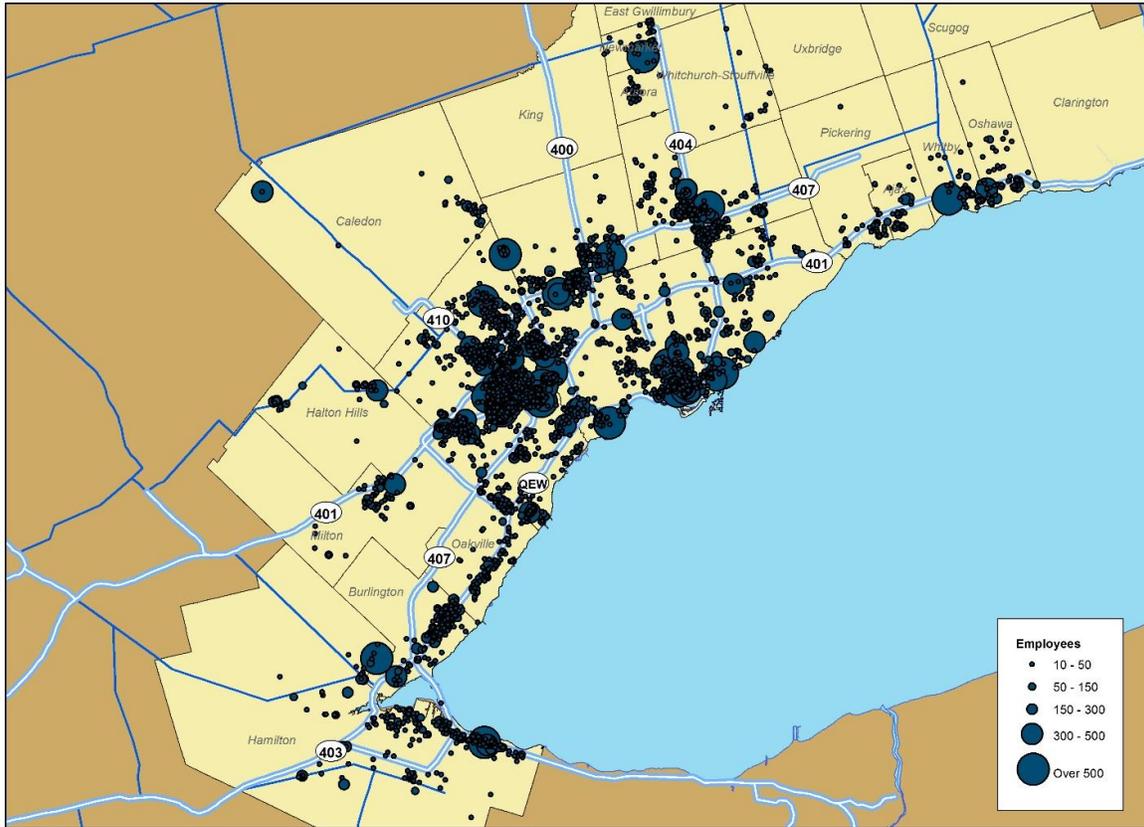
PEEL GOODS MOVEMENT – REGION OF PEEL

Ontario's Goods Movement sector is highly concentrated in the GTHA municipalities which are located within proximity to the Toronto Pearson International Airport (TPIA). Other regional infrastructure attributes, including access to 400-series highways and intermodal facilities in Brampton and Vaughan, have also played a key role in driving demand and spatial distribution patterns within this sector across the GTHA.

The spatial distribution of the Goods Movement sector in the GTHA is illustrated in **Figure 3-2**. As shown, the Goods Movement sector is primarily concentrated in the west and north of the GTHA. The location of transportation and warehousing businesses is largely concentrated in Peel Region and the City of Toronto. In Peel Region, businesses are concentrated near the TPIA, the Brampton CN Intermodal and major 400-series highway corridors, particularly where two 400-series highways intersect. Other major Goods Movement nodes outside of Peel include the Highway 400/407 area of Vaughan, the Highway 404/407 area of Richmond Hill/Markham and the Highway 401 corridor in Milton. The Canadian Pacific Intermodal Facility within the Vaughan Enterprise Zone will continue to drive growth and investment in the transportation and warehousing sector in York Region, particularly in the City of Vaughan.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 3-2: GTHA GOODS MOVEMENT SECTOR BUSINESSES BY EMPLOYEE SIZE



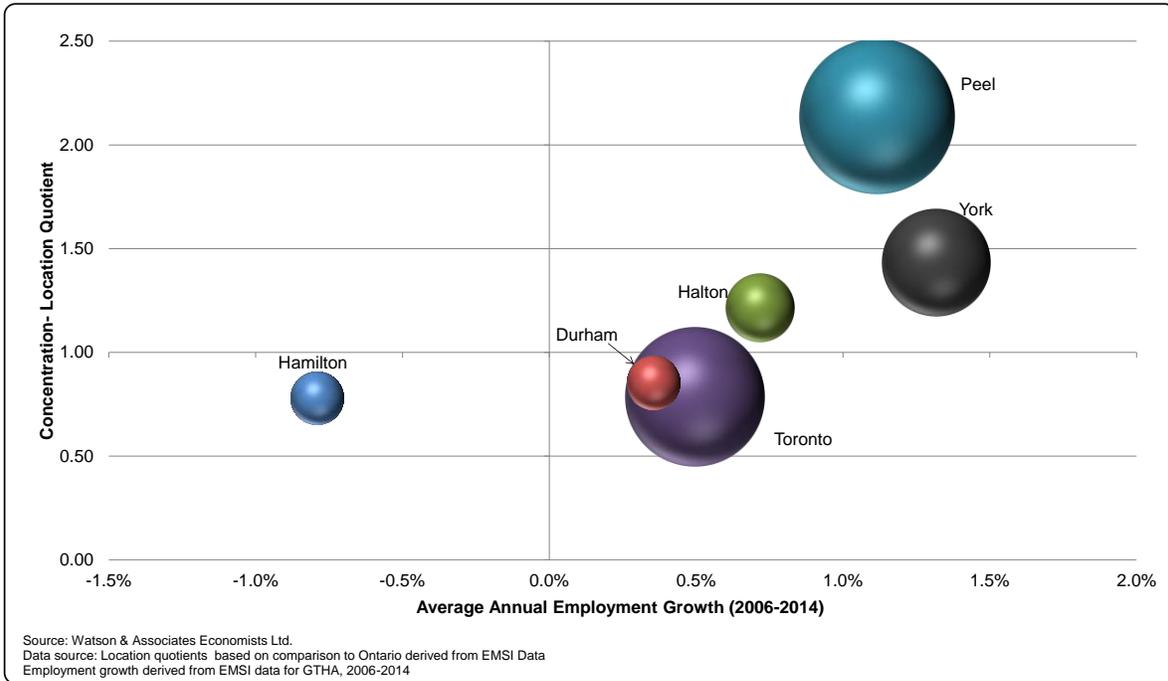
Source: Watson & Associates Economists Ltd., data adapted from Hoovers Business Directory, 2011. Reflects businesses engaged in wholesale trade and transportation & warehousing.



The greatest concentration of employment in the Goods Movement sector in the GTHA is in Peel Region followed by York Region, as illustrated in **Figure 3-3**. York Region and Peel Region have experienced strong annual employment growth in the Goods Movement sector compared to other municipalities in the GTHA. While the City of Toronto has a significant employment base in the Goods Movement sector, it has experienced modest growth in this sector in recent years.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 3-3: GTHA GOODS MOVEMENT SECTOR CLUSTER SIZE AND GROWTH MATRIX

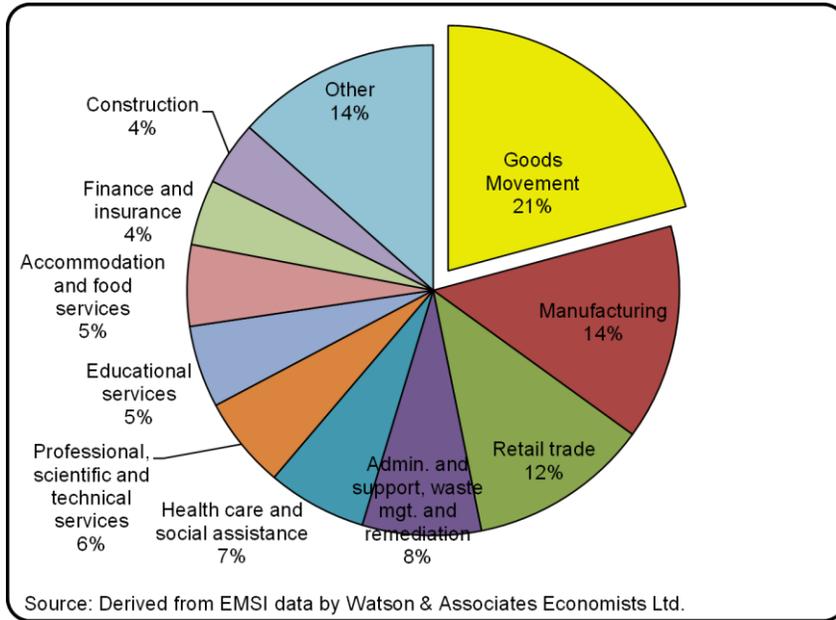


3.2 Importance of Goods Movement Sector in Peel Region

Peel Region is home to a broad range of employment sectors. The Goods Movement sector is the largest sector in Peel Region, accounting for 21% of employment, as illustrated in **Figure 3-4**. Comparatively, the composition of the employment base by sector in Peel Region is similar to the GTHA as a whole, however, the overall economy is weighted heavily towards goods-producing sectors including the Goods Movement sector.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 3-4: PEEL REGION EMPLOYMENT BY SECTOR, 2014



Peel Region has a total of 118,400 jobs and 4,370 businesses in the Goods Movement sector. Key sub-sectors in the Goods Movement sector in Peel Region include support activities for transportation, truck and air transportation and a range of merchant wholesalers related to machinery, equipment and supplies, personal and household goods, food, beverage and tobacco and building material and supplies.

By local municipality, the Goods Movement sector accounts for 22% of employment in the City of Mississauga, 17% in Brampton and 14% in Caledon. Approximately three-quarters (76%) of Peel's Goods Movement employment, representing 89,800 jobs, is located in Mississauga. This is compared to 22% (22,800 jobs) in Brampton and 2% (2,000 jobs) in Caledon.

The Goods Movement sector in Peel Region is clustered around the TPIA in Mississauga and the CN Intermodal facility in Brampton. Approximately half the Goods Movement sector businesses and associated employment are located within 1 km of a 400-series highway (Highways 401, 410, 407 and 403) and 72% are within 2 km.

3.3 Goods Movement Employment Forecast in Peel Region, 2006-2041

Historically, employment within the Goods Movement sector has accounted for a significant portion of the employment base in Peel Region. Over the 2006 to 2015 period, it is estimated that the Goods Movement sector experienced an annual employment growth rate of 1.2% and added approximately 15,000

PEEL GOODS MOVEMENT – REGION OF PEEL

jobs. While the rate of annual employment growth within the Goods Movement sector has been steady, the share of Goods Movement employment in the Region of Peel to total employment declined modestly from 21.0% to 20.6% during the 2006 to 2015 period. This gradual decline in Goods Movement employment share is anticipated to continue over the forecast period as a result of relatively stronger employment growth in the service and knowledge-based sectors.

It is anticipated that the Goods Movement sector will continue to be a significant driver of employment growth in the Region of Peel and the local Employment Areas, given the location strength it offers. It is anticipated that the share of employment in the Goods Movement sector to total employment will modestly decline from 20.6% to 19.4%. **Table 3-1** summarizes the employment forecast for the Goods Movement sector in the Region of Peel in accordance with the 2041 employment forecast (as per Schedule 3 of the Growth Plan).

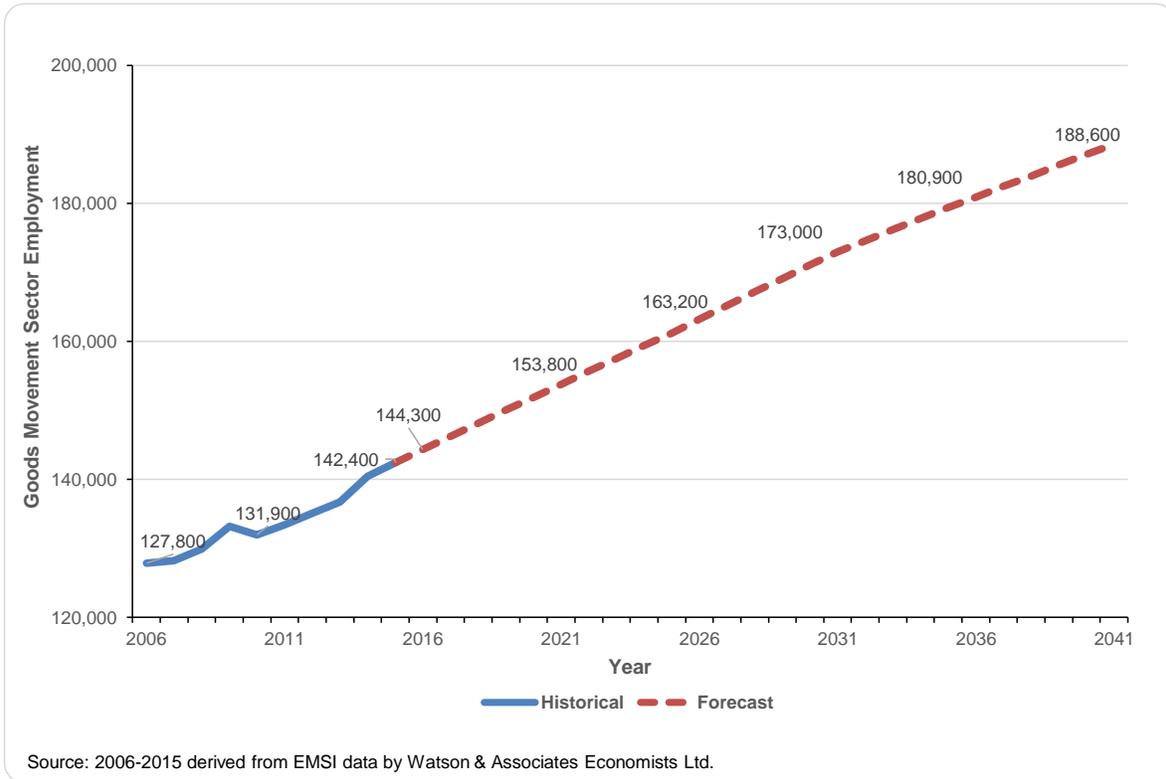
TABLE 3-1: SUMMARY OF GOODS MOVEMENT EMPLOYMENT FORECAST IN PEEL REGION, 2016 TO 2041

Year	Goods Movement Employment	Total Employment	Percentage Goods Movement Employment
2016	144,300	700,800	20.6%
2041	188,600	970,000	19.4%
2016 to 2041	44,300	269,200	16.5%

Figure 3-5 graphically summarizes the historical and forecast population growth for Peel Region between 2006 and 2041.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 3-5: HISTORICAL AND FORECAST GOODS MOVEMENT EMPLOYMENT GROWTH IN PEEL REGION, 2006 TO 2041



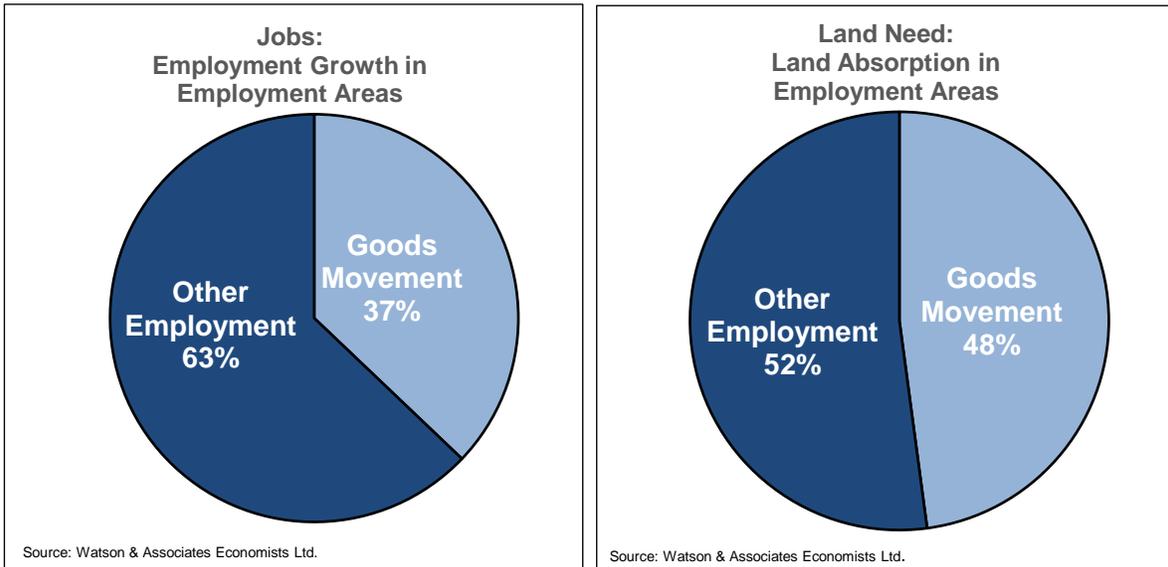
3.4 Impact of Goods Movement Sector on Peel Region Employment Land Needs

It is estimated that approximately 90% of the total Goods Movement sector jobs added to the Region of Peel over the 2016 to 2041 period are anticipated to be accommodated in Peel's Employment Areas, which consists of 39,200 jobs (conceptual). The estimated 39,200 Goods Movement sector jobs added to Employment Areas over the 2016 to 2041 period would represent approximately 37% of the forecast jobs in Employment Areas in the Region of Peel over the same period, as illustrated in **Figure 3-6**. Using a density assumption of 19 jobs per ha,⁹ a land need of 2,100 ha is expected over the 2016 to 2041 period. It is anticipated that the land need for the Goods Movement sector over that period would account for 48% of the land absorption in Employment Areas within the Region of Peel over the 2016 to 2041 period.

⁹ 19 jobs per ha is the historical average density observed for the Goods Movement sector over the 2000 to 2014 period.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 3-6: REGION OF PEEL, CONCEPTUAL FORECAST OF EMPLOYMENT GROWTH IN EMPLOYMENT AREAS AND ASSOCIATED LAND NEED ABSORPTION FORECAST, 2016 TO 2041



Employment Areas	Employment Growth 2016 to 2041	Percentage of Employment	Density (jobs/per hectare)	Land Need Area (ha) 2016 to 2041	Percentage of Land Area Absorbed
Goods Movement	39,900	37%	19	2,100	48%
Other Employment	67,500	63%	30	2,300	52%
Total Employment Area	107,400	100%	24	4,400	100%

Source: Watson & Associates Economists Ltd.

3.5 General Location and Market Attributes Related to the Goods Movement Sector

At both the Regional and local levels, location requirements of industry can vary considerably depending on the nature of the employment sector/use.

Goods Movement land uses can be found dispersed throughout the GTHA; however, clear concentrations do exist in the Region of Peel. In general, Goods Movement industries tend to concentrate when a series of key factors come into alignment, including:

- Access via highway networks;
- Proximity and access to Employment Areas via arterial roads;
- Links to major trading destinations;
- Competitive land costs;
- Proximity to a major urban centre; and
- Proximity to multi-modal hubs (airports, rail and ports).

PEEL GOODS MOVEMENT – REGION OF PEEL

Historically Peel Region has offered all of these attributes. Of particular importance in Peel Region is the presence of the following:

- TPIA;
- CN Intermodal Yard in Brampton;
- 400-series highway connections to surrounding Ontario and U.S. employment markets; and
- Market choice of greenfield employment lands.

3.6 Employment Land Supply Opportunities in Peel Region

As of 2016, the Region of Peel has a designated vacant employment land supply of approximately 1,850 hectares. A map of the land supply can be found in **Appendix A**. The majority of the vacant designated employment lands are in the City of Brampton, which accounts for 45% of the designated land supply. The bulk of the designated Employment Areas in the City of Brampton are located in the Bram West Employment Area (southwest Brampton) and the Highway 427 Industrial Area (northeast Brampton). While the City of Brampton has greenfield lands available for employment, development has started on these lands with Secondary Plans in place to include a wider range of uses other than those specific to the Goods Movement sector. The Secondary Plans in place and the parcel fabric of these areas do not provide a strong opportunity to accommodate a PEZ concept identified herein. Future employment land development opportunities also exist through the intensification of established Employment Areas within the City of Mississauga and the City of Brampton.

Within the Town of Caledon, there are future employment land opportunities surrounding Tullamore, Sandhill and Bolton to potentially accommodate large-scale development focused on Goods Movement. Employment land opportunities are largely associated with the “Whitebelt” in Caledon.

3.7 Conclusions

The Goods Movement sector forms an integral part of the Region of Peel's economic development and employment growth potential. Peel comprises a high concentration of Goods Movement related industries which contribute significantly to the local, provincial and national economies. Freight transportation, warehousing and manufacturing account for approximately one-fifth of Peel's employment base and a significant share of industrial development activity over the past decade has been in the Goods Movement sector. Peel Region accommodates over 2,000 trucking companies, which represents 25% of all truck activity in Ontario and accounts for approximately

PEEL GOODS MOVEMENT – REGION OF PEEL

\$1.8 billion worth of Goods Movement through Peel every day.¹⁰ As Goods Movement is the largest industrial employment growth sector within the GTHA, the Region of Peel must ensure the efficient movement of goods through and within the Region to attract industry and investments.¹¹

The outlook for the Goods Movement sector in Peel Region looks strong. It is anticipated that the Goods Movement sector will continue to be a significant driver of employment growth in Peel and more specifically the Region's Employment Areas given the location strength that supports this sector. While there is demand for this sector in Peel, the current vacant designated employment land supply is diminishing and as a result, the opportunity to accommodate this industry on designated employment lands may be limited.

¹⁰ Peel Goods Movement, Strategic Goods Movement Network Study Technical Report, April 25, 2013, Region of Peel.

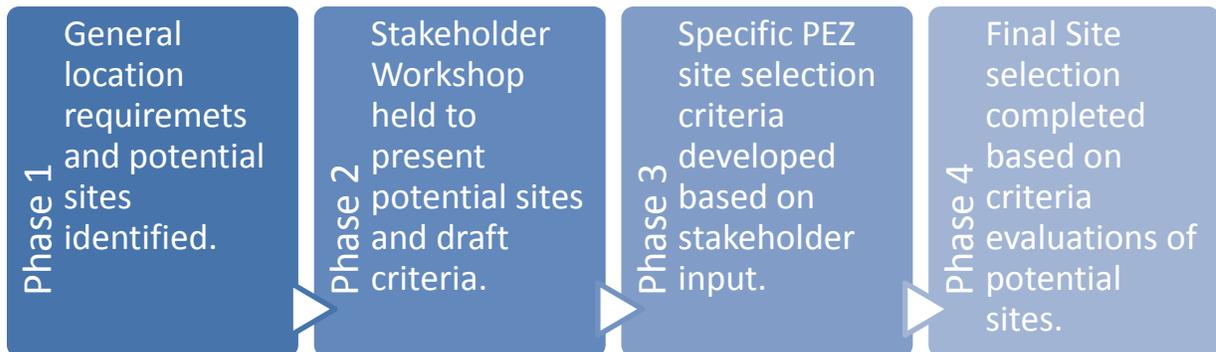
¹¹ Peel Region Goods Movement Strategic Plan (2012-2016). Status Update. June, 2014.

4. SITE SELECTION ANALYSIS

A business case is premised on a fiscal and economic feasibility assessment of a PEZ. For this, an assessment of land use and infrastructure is needed, requiring analysis that is informed by a specific site within the Region. This section explores conceptual characteristics of a site needed to support a PEZ in Peel Region, with costing estimates informed by a specific site. A short list of potential sites was identified that had characteristics most suitable for a PEZ. With stakeholder input and informed by a literature review, site-selection criteria were used to evaluate a preferred site to be used to assess the capital, serving and operating costs and their fiscal and economic impacts.

The process for the preferred site selection is summarized in the figure below and described in the remainder of this section.

FIGURE 4-1 SITE SELECTION PROCESS



4.1 General Location Requirements

While a PEZ could offer value to Peel in terms of offering benefits such as reduced truck traffic on roads and responding to demand among transportation and logistics firms, an important consideration is location. To analyze this, an initial planning exercise was undertaken to highlight several guiding factors based on best practices. An ideal location for a freight village will exhibit the following characteristics:

1. A large contiguous area of greenfield land available for development, preferably on employment designated land.

PEEL GOODS MOVEMENT – REGION OF PEEL

2. Serviced land or planned to be serviced lands, in terms of water and wastewater infrastructure.
3. Close to existing or planned capital improvements in transportation infrastructure.
4. Close to existing or planned major highways.
5. Close to existing or planned rail intermodal facilities.
6. Separate from conflicting land uses.

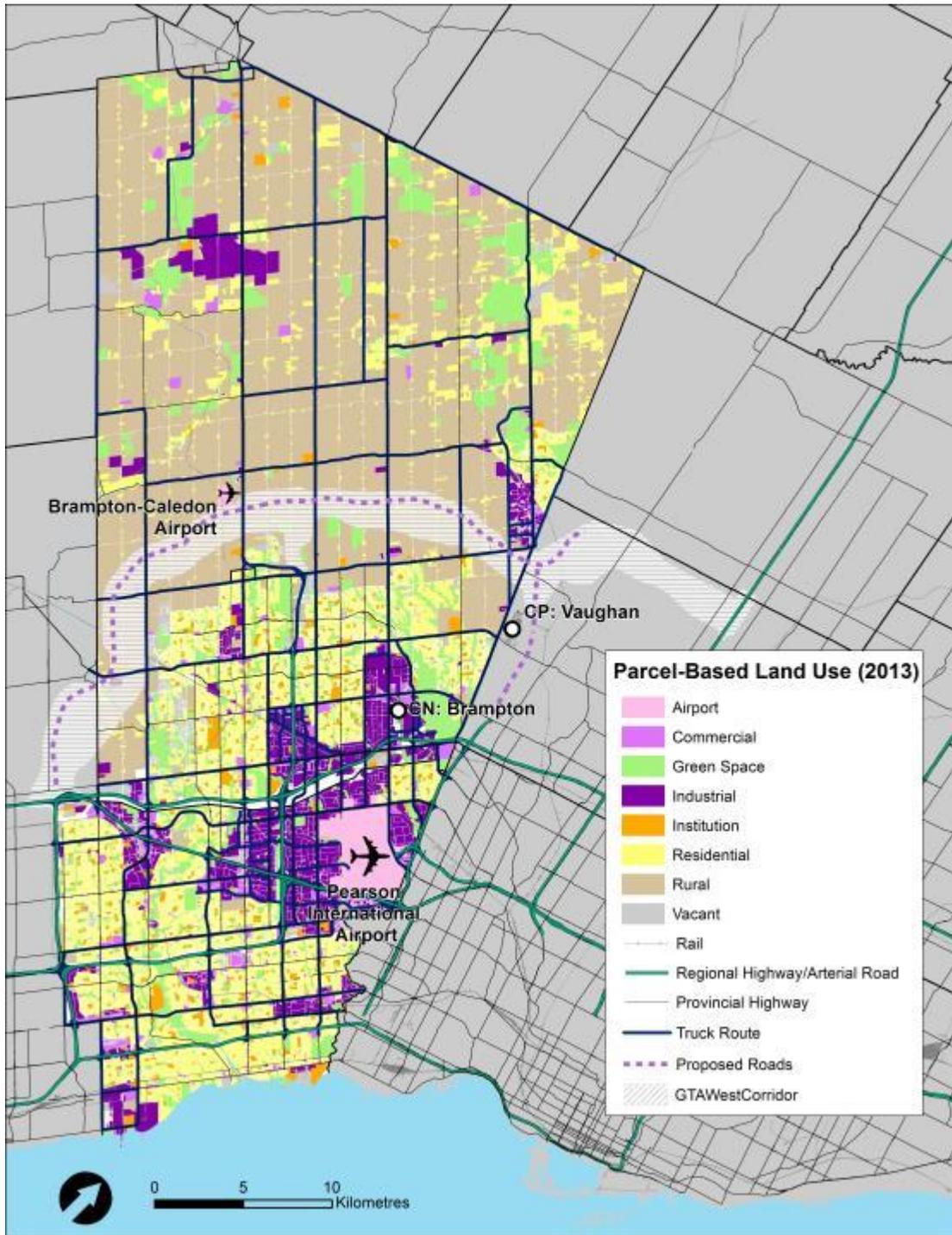
To assess potential locations using the above guiding factors, geospatial analytical approaches were used. Data utilized in the analysis included:

- Road network shapefiles including existing local roads, arterials, major highways as well as potential GTA West alignment corridors.
- Information on other future public works capital improvements to road transportation infrastructure in the Region.
- Existing land uses at the parcel level for the Region of Peel.
- GIS shapefile of water and sewer serviced areas in the Region.
- Employment area land GIS Shapefile created from digitization of relevant municipal secondary plans.
- Built-up area and Greenbelt GIS shapefile from the Growth Plan for the Greater Golden Horseshoe.
- Other regional and parcel boundary GIS shapefiles for key points of interest such as airports and rail intermodal terminals.
- Assessed land values from the Municipal Property Assessment Corporation (MPAC).
- Travel times to key destinations derived from an ESRI Network Analyst file for the Greater Golden Horseshoe.

Figure 4-2 shows the existing context of the Region of Peel in terms of the existing built-up area using parcel-based land-use, existing high-order transportation infrastructure and airports, existing rail intermodal terminals and potential location of the GTA West Corridor and Highway 427 extension. This developed land use map was used in conjunction with each local municipality's land use schedules and relevant secondary plans (**Appendix A**). This provides a context to where current industrial, employment and residential areas are located and how the local municipalities are planning for future employment lands.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 4-2: PEEL REGION PARCEL-BASED DEVELOPED LAND USE - 2013



Source: Region of Peel, WSP

This map was used to identify undeveloped sites (i.e. greenfields). Areas with greatest potential are those near transportation infrastructure such as those located on/near regional roadways, provincial highways, provincial freeways,

PEEL GOODS MOVEMENT – REGION OF PEEL

Toronto Pearson International Airport, CN Brampton Intermodal Terminal and CP Vaughan Intermodal Terminal.

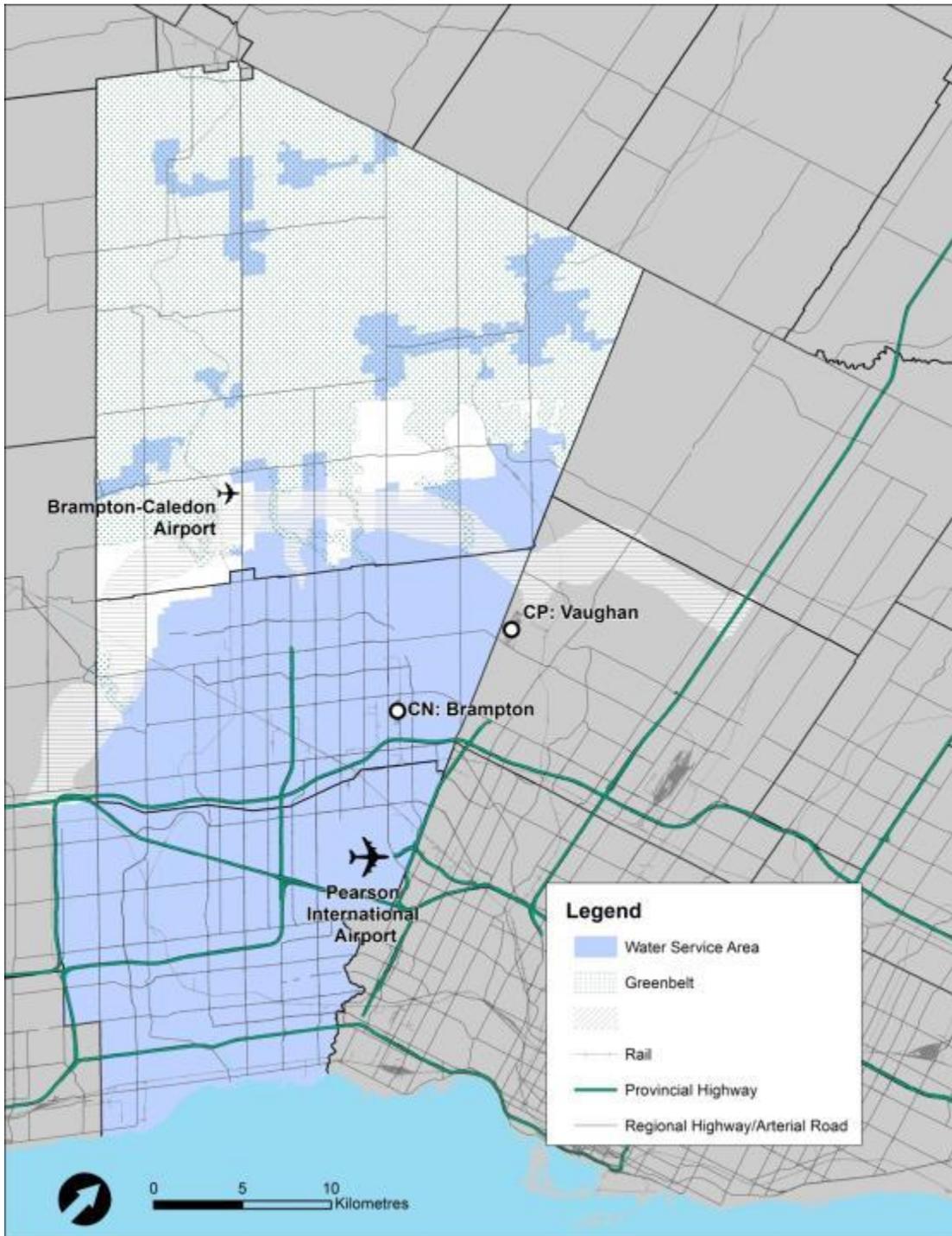
Figure 4-3 and **Figure 4-4** display the extent of existing water and sewer service area in Peel. Due to the high cost of extending the municipal infrastructure for water and wastewater, the process for identifying potential sites only looked at areas that are already serviced by water and wastewater or are planned for servicing in the foreseeable future.

Figure 4-5 displays the public works road program for planned road improvements in the Region over the 2017 to 2031 period. This provides context for future improvements that may increase capacity of roads to support the demand from a PEZ.

The Peel Region Goods Movement Economic Impact Analysis Study and the on-going research of the Peel Region Goods Movement Employment Density Discussion Paper each completed a similar site selection analysis for a potential freight village. Both those studies limited the analyses to designated employment lands. This planning exercise for a PEZ site utilized the analysis from both those studies but has also expanded the general selection criteria to include lands that are not specifically designated for employment. The reason for this is to best accommodate growth despite employment land constrictions.

PEEL GOODS MOVEMENT – REGION OF PEEL

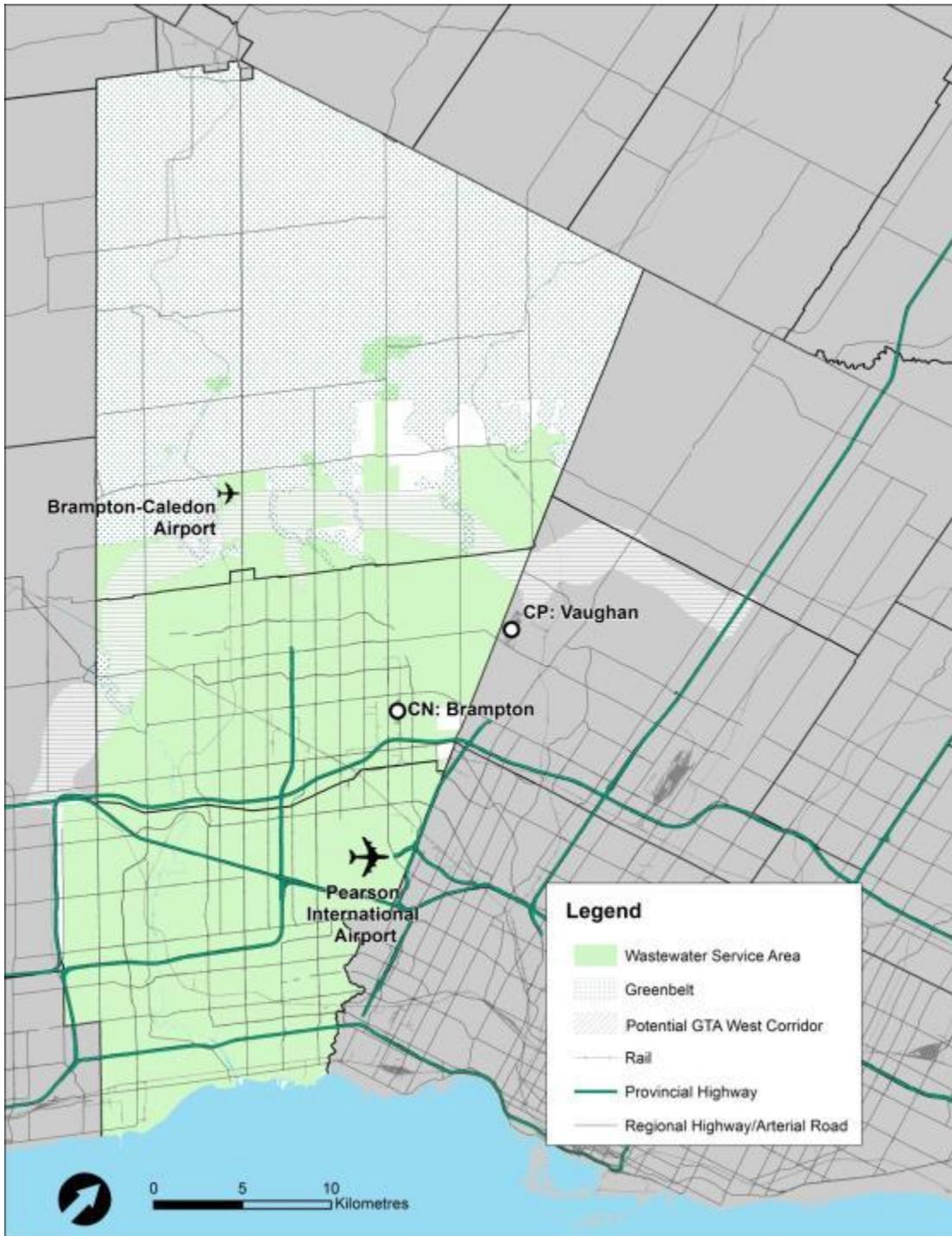
FIGURE 4-3: PEEL REGION WATER SERVICE AREA



Source: Region of Peel, WSP

PEEL GOODS MOVEMENT – REGION OF PEEL

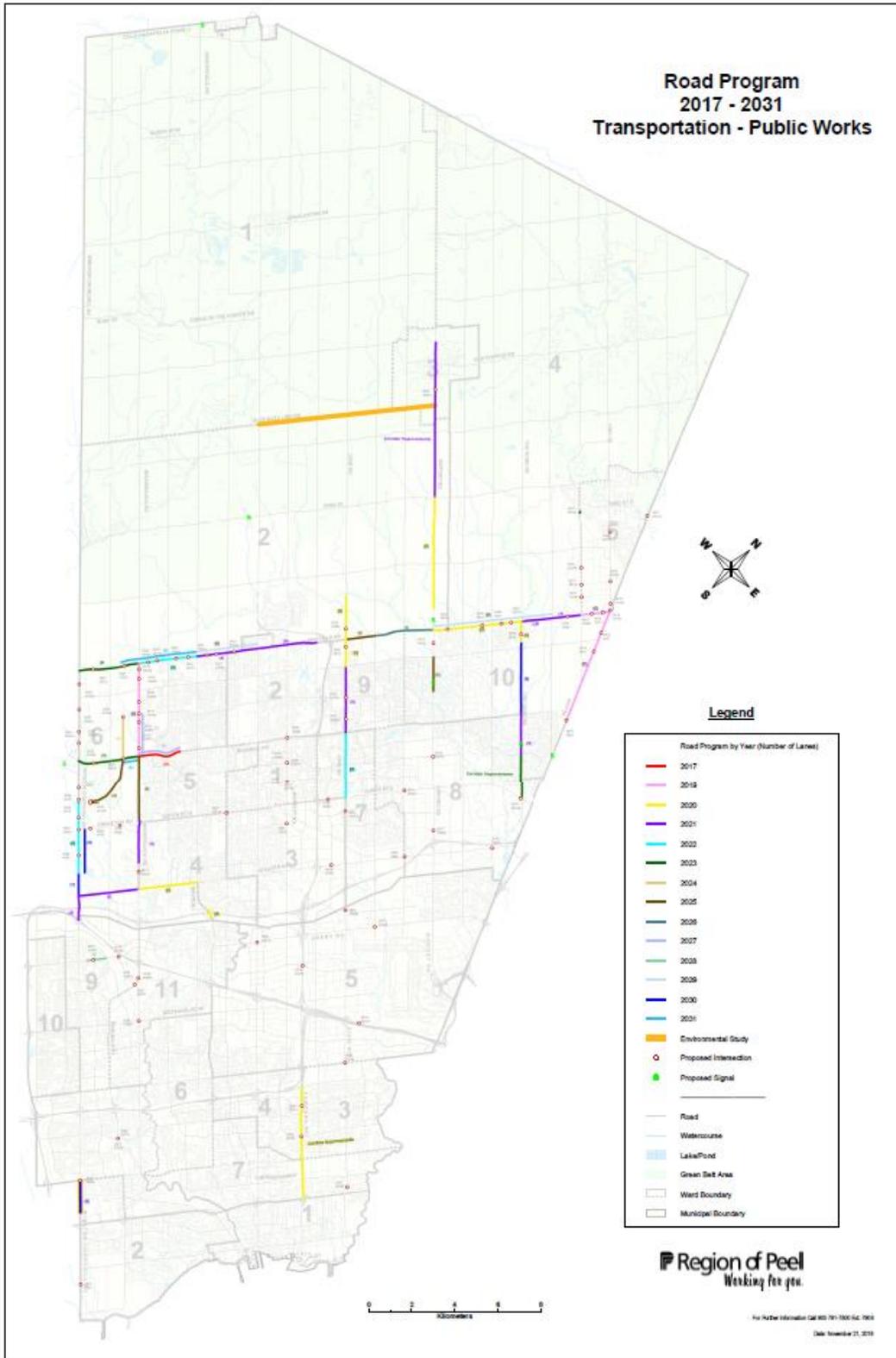
FIGURE 4-4: PEEL REGION WASTEWATER SERVICE AREA



Source: Region of Peel, WSP

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 4-5: PEEL PUBLIC WORKS ROAD PROGRAM 2017-2031



Source: Region of Peel. Public Works. 2016

4.2.1 Potential Site Selection Options

Four potential site options for further investigation in this business case were selected based on the general location requirements in Section 4.1 and the observations of previous or on-going Goods Movement studies.

The sites are illustrated in **Figure 4-6** and summarized below.

Site 1: Located in the City of Brampton near Highways 401 and 407, and the potential GTA West Corridor. The site is within 30 minutes of all major intermodal terminals (Pearson Airport, CN Brampton Terminal, CP Vaughan and CN Milton). The site has large and contiguous lands near existing industrial parks. Compared to the other three sites, this site is furthest from rail and air intermodal connections, necessitating greater levels of road travel for existing and potential tenants. As such this limits the potential of intermodal synergies, concentrates movements within a site and minimizes negative externalities to neighbouring land uses and the region on the whole. While these outcomes mean the site cannot achieve all the benefits of a freight village, there is still potential to utilize it to concentrate road-based transportation and logistics activities.

Site 2: Located in the Town of Caledon off Highway 10, the site is near the Brampton-Caledon airport and Orangeville-Brampton Railway. The site is mainly designated for agricultural and industrial land uses. The location is situated near the terminus of Highway 410 and the potential GTA West Corridor. It is over 25 kilometers to both CN Brampton Terminals and Pearson Airport, but may have opportunity to use the Orangeville-Brampton Railway for onsite rail access. There is potential to utilize this site for road-based transportation and logistics activities. This necessitates greater levels of road travel for tenants, minimizing the potential to reduce negative externalities. The site does have a considerable buffer between residential developments and does not require travel through built up areas to the closest 400-series highway.

Site 3: This site is located in the Town of Caledon near the Tullamore industrial areas at Mayfield and Airport Roads. The site is located approximately 11 kilometers from the CP Vaughan Intermodal Terminal and 15 kilometers to Pearson Airport with connections to the potential GTA West Corridor. Travel through Regional roads will be required for access to Highway 410 and the upcoming Highway 427 extension. Mayfield Road has planned road improvements over the next 10-years to facilitate increased traffic movements. The site is designated for industrial with surrounding land uses for agriculture.

PEEL GOODS MOVEMENT – REGION OF PEEL

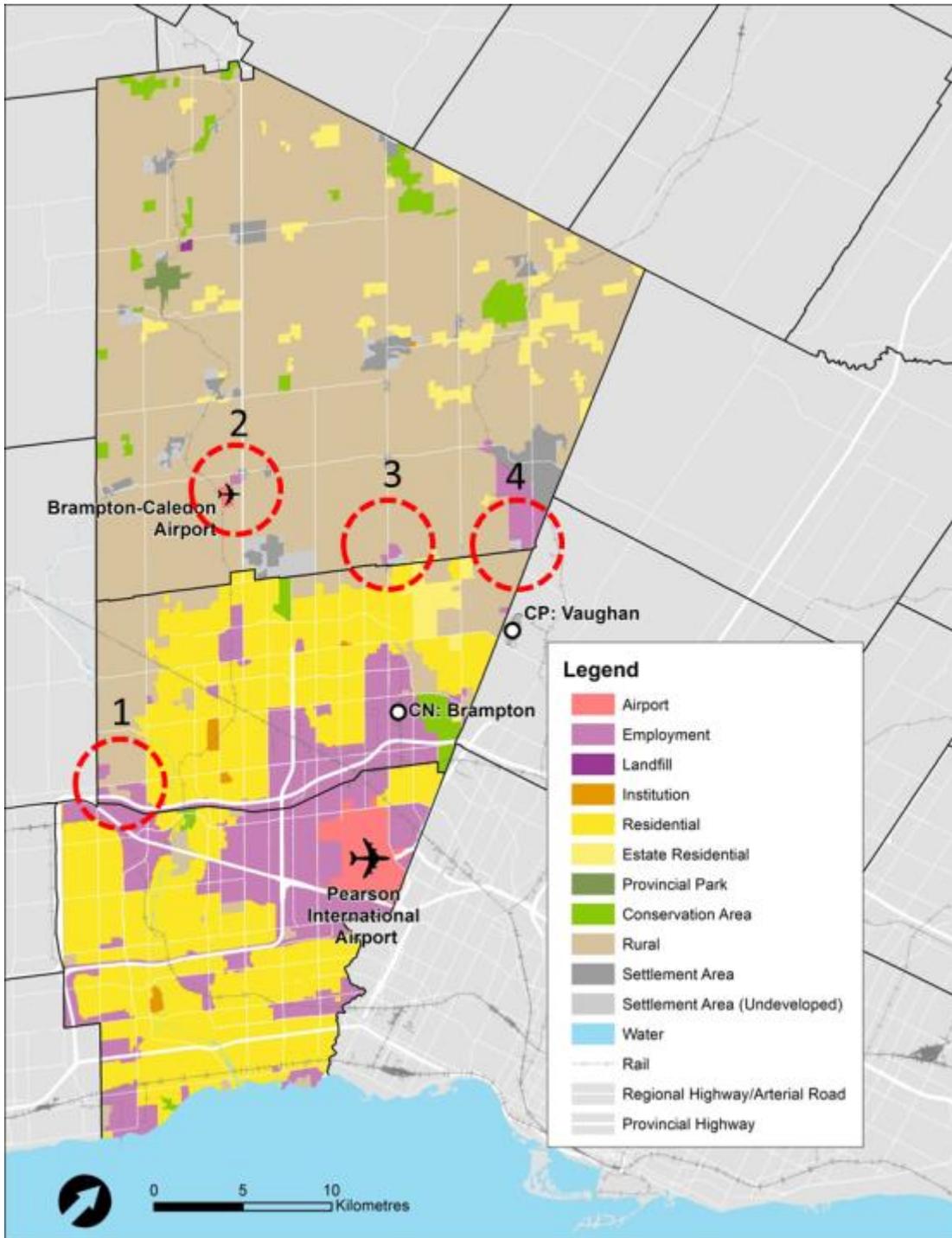
There are residential developments to the south in Brampton, but otherwise the site benefits from minimal surrounding urban areas.

Site 4: Located at the border of Caledon and Brampton, the site is large and adjacent to the existing CN Vaughan Intermodal Terminal in York Region and will have close connections to the upcoming Highway 427 extension and potential GTA West corridor. Travel times to Pearson and CN Brampton are under 20 minutes. Proposed GTA West alignments have the potential of removing significant area from the site. Furthermore, a protected ravine divides the site, reducing the potential to implement a freight village which consists of a campus-style transportation and logistics park. The Coleraine Business Park is already located within the site area and will compromise the amount of available developable lands. Furthermore, a significant portion of the site's land area has a development proposal submitted to the City of Brampton, one that would see several warehouses erected on site. With that in mind, there may be potential to work with the developers of the future site and existing business park to integrate these projects into a larger freight village plan.

These four sites were vetted and presented to the project's stakeholders in a workshop format to develop formal evaluation criteria, as described in the next section.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 4-6: POTENTIAL SITE OPTIONS



Source: Region of Peel, WSP

PEEL GOODS MOVEMENT – REGION OF PEEL

4.2 Stakeholder Workshop

The stakeholder engagement was a process for informing, consulting and collaborating with select stakeholders. This process is summarized in **Figure 4-7** below. The stakeholders from the project included:

- Technical agency representatives
- Industry representatives
- Provincial, municipal and regional land use and transportation planning staff

FIGURE 4-7: STAKEHOLDER ENGAGEMENT PROCESS



The workshop's purpose was to gather feedback on local and regional land use and transportation planning preferences, economic development opportunities and business and industry needs as they relate to a PEZ in the context of Peel Region.

Stakeholder feedback was used as key inputs to identifying preferred location options for a potential PEZ in Peel Region. Stakeholders provided knowledge of existing local and regional land use and transportation planning, preferred planning characteristics to select a PEZ site for further feasibility assessment, economic development opportunities and communicating Goods Movement business and industry needs.

The workshop consisted of a formal presentation delivered by Peel Region, Watson and WSP. Following the presentation, attendees participated in round table discussions facilitated by the project team. The discussion guide used for the workshop can be found in **Appendix B**.

The presentation discussed the following topics:

- Project Overview and Planning Context
- PEZ Overview
- Market Analysis
- PEZ Concept
- Case Studies
- Proposed selection criteria
- Potential sites for further feasibility analysis

PEEL GOODS MOVEMENT – REGION OF PEEL

A summary of the feedback received during the workshop is summarized by category in **Table 4-1**.

TABLE 4-1: SUMMARY OF STAKEHOLDER INPUT

Transportation	<ul style="list-style-type: none"> • Rail access is the preferred intermodal option • Transportation is key, but should consider the impacts of the community along access routes • Consider employee access and public transit • Hwy 407 is not a route used by industry • Take advantage of existing infrastructure
Land Use	<ul style="list-style-type: none"> • Insufficient employment lands for demand • Consideration for residential growth and impacts on operation • Consideration for expansion opportunities • The impacts a PEZ has on employment density • Consideration for municipal planning goals
Benefits	<ul style="list-style-type: none"> • PEZ would be good to control trucks traffic and potentially congestion in the Region • Potential to attract future business to the Region • Can encourage mixed use for tech jobs and universities • Opportunity to maximize off-peak traffic
Considerations?	<ul style="list-style-type: none"> • Considerations/challenges noted by stakeholders?
Governance	<ul style="list-style-type: none"> • Provincial role to help mitigate development risk • Would allow proactive role in land selection • Potential collaboration with York Region around the Vaughan Intermodal Terminal • P3 potential, but private model may be preferred by industry
Sites	<ul style="list-style-type: none"> • Transportation access is important • Current parcel availability, ownership and any development plans • Consideration for the various land values and its appeal to businesses • Water/wastewater consideration

Following the workshop, the project team analyzed the feedback to develop formal evaluation criteria. These draft criteria were again circulated to municipal staff stakeholders for review and comment. The finalized criteria were then used to evaluate sites and identify the preferred site to be further assessed. The site selection criteria are discussed in the next section.

PEEL GOODS MOVEMENT – REGION OF PEEL

4.3 Site Selection Criteria

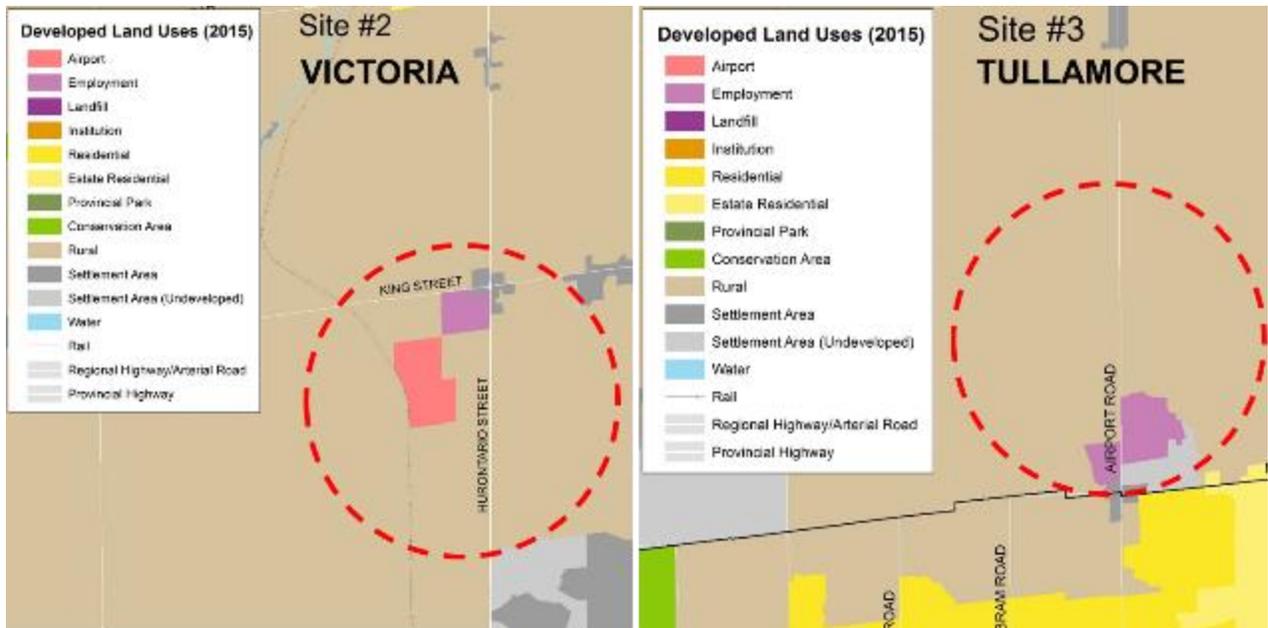
Site-selection criteria had to be developed to evaluate the potential sites outlined in Section 4.2 and select a preferred location option among them for further investigation.

Preliminary Selection Review

During the stakeholder workshop and subsequent follow up with local municipal staff, a preliminary review of the sites was completed. Feedback received from local municipalities discussed the vision of both Mississauga and Brampton and the compatibility with a PEZ. The preliminary review showed that sites in both Mississauga and Brampton would not be viable options for a PEZ. The rationale for this is premised on land availability constraints, cost of land and differing planning objectives and visions with the proposed PEZ.

Therefore, the developed criteria have only evaluated the two remaining sites located in Caledon, site #2 Victoria and site #3 Tullamore (**Figure 4-8**). The PEZ vision is appropriate for the economic development goals of the Town and was seen as advantageous by municipal stakeholders. The areas circled in **Figure 4-8** are only conceptual in nature, the site boundaries have not been identified at this phase in the study.

FIGURE 4-8: POTENTIAL SITES FOR EVALUATION



Source: WSP

Overview of the Site Selection Criteria

These site-selection criteria were used to select a preferred location option from the two potential sites. The final criteria are shown in **Table 4-2**. The criteria are comprised of 16 criteria in four categories: transportation, infrastructure, land use and market.

Transportation criteria are related to connectivity and proximity: the sites proximity to key transportation nodes in the region (e.g. highways, airport, rail) and available infrastructure to provide sufficient access to the site for both Goods Movement and for future employees.

Infrastructure criteria is related to non-transportation infrastructure that is needed to support the development of the site (e.g. water and wastewater). These criteria prioritize sites with existing or planned infrastructure that can support the site as they require large capital investments to be expanded.

Land Use criteria assess the site's compatibility with the appropriateness of the site in terms of size/configuration, surrounding land uses, and potential for expansion.

Market criteria measure the sites appeal to industry and potential tenants of the PEZ site.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 4-2: FINAL SITE EVALUATION CRITERIA

#	Category	Criteria	Description
1	Transportation	Connectivity and access to Pearson International Airport	Approx. travel time via SGMN truck routes
2	Transportation	Connectivity and access to CN/CP Intermodal Rail (Current and Planned)	Approx. travel time via SGMN truck routes
3	Transportation	Proximity to Rail Line (Current or Planned)	Distance in km
4	Transportation	Proximity, access, exposure to 400-Series Highways (Current and Planned)	Driving distance in km via SGMN truck routes
5	Transportation	Located on Peel SGMN Truck Network	Y/N
6	Transportation	Proximity to Transit Network (Current and Planned)	Walking distance in km
7a	Infrastructure	Site Serviced by Water (Current and Planned)	Y/N
7b	Infrastructure	If the site is not serviced, have servicing impediments been identified?	Y/N
8a	Infrastructure	Site Serviced by Wastewater (Current and Planned)	Y/N
8b	Infrastructure	If the site is not serviced, have servicing impediments been identified?	Y/N
9	Infrastructure	Telecommunications infrastructure	Y/N
10	Land Use	Available Land Area/Parcel Size, Lot Configuration/Land assembly constraints (i.e. has the site been subdivided)	1-4 scale
11	Land Use	Compatibility of Existing/Future Employment Areas to Goods Movement sector	Poor, Adequate, Good
12	Land Use	Does the site allow for future land expansion?	Y/N
13	Land Use	Proximity to Residential Land Use (Current and Planned)	1-4 scale
14	Land Use	Physical and/or Environmental Constraints	1-4 scale
15	Market	Development costs	1-4 scale
16	Market	Market demand	1-4 scale

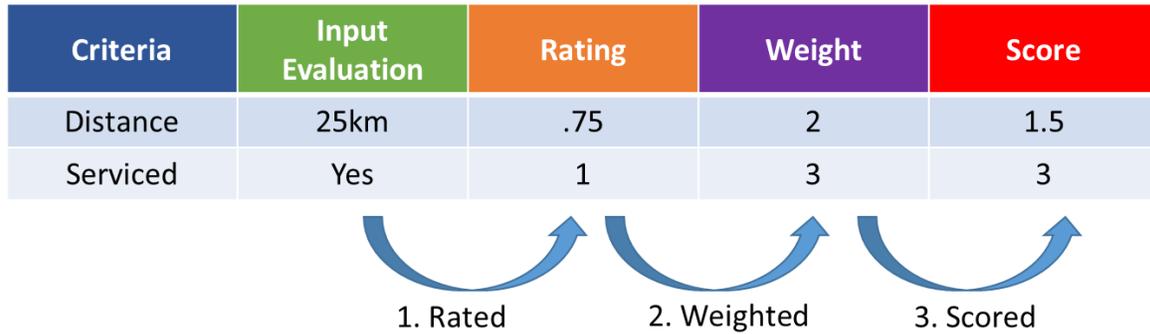
4.4 Preferred Location Option

The criteria presented in **Table 4-2** was weighted to have varying levels of priority. The priority level was based on the feedback and input of the project stakeholders and Region of Peel staff. Once the criteria and weightings were

PEEL GOODS MOVEMENT – REGION OF PEEL

finalized, the sites were evaluated for each criterion. These input evaluations were quantitative (e.g. proximity, travel time), polar (yes or no), or qualitative (e.g. estimated market demand, compatibility). These were all quantified to produce a rating out of 1. Some of the quantitative inputs were given a rating in relation to the other site (i.e. the site in closest proximity received a rating of 1, the difference in distance was used to calculate a ratio out of 1 for the second site). The ratings were multiplied by the weighting for each criterion to produce a final score. The summation of scores for each site conceptually determined the Preferred Location Option for further investigation (**Figure 4-9**).

FIGURE 4-9: CRITERIA EVALUATION PROCESS (EXAMPLE)



The results for the criteria evaluation for the Victoria and Tullamore site are summarized in **Table 4-3**. The detailed criteria evaluation can be found in **Appendix C**.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 4-3: SITE EVALUATION

#	Criteria	Evaluation	
		Victoria	Tullamore
1	Connectivity and access to Pearson International Airport		
2	Connectivity and access to CN/CP Intermodal Rail (Current and Planned)		
3	Proximity to Rail Line (Current or Planned)		
4	Proximity, access, exposure to 400-Series Highways (Current and Planned)		
5	Located on Peel SGMN Truck Network		
6	Proximity to Transit Network (Current and Planned)		
7a	Site Serviced by Water (Current and Planned)		
7b	If the site is not serviced, have servicing impediments been identified?		
8a	Site Serviced by Wastewater (Current and Planned)		
8b	If the site is not serviced, have servicing impediments been identified?		
9	Telecommunications infrastructure		
10	Available Land Area/Parcel Size, Lot Configuration/Land assembly constraints (i.e. has the site been subdivided)		
11	Compatibility of Existing/Future Employment Areas to Goods Movement sector		
12	Does the site allow for future land expansion?		
13	Proximity to Residential Land Use (Current and Planned)		
14	Physical and/or Environmental Constraints		
15	Development costs		
16	Market demand		
Recommendation			Preferred

PEEL GOODS MOVEMENT – REGION OF PEEL

Preferred Location Option

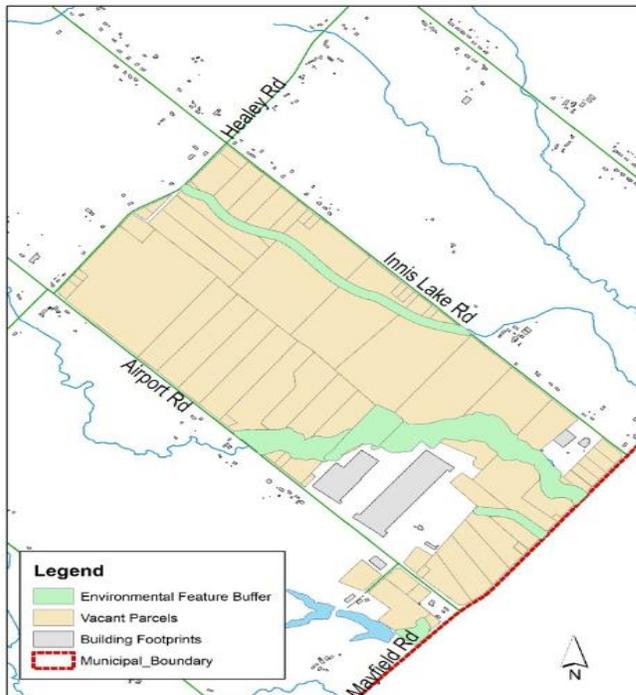
The results of the evaluation criteria identify Tullamore to be the preferred location to further investigate the feasibility of a PEZ in Peel Region. The characteristics of the site that make it preferable over the Victoria site include:

- Proximity to rail intermodal
- Proximity to transit
- Serviced by water
- Market demand

Site Characteristics

The preferred site is located in the Tullamore Land Use Area in the Town of Caledon. Again, it is important to stress that the preferred site location has been identified to conceptually establish the feasibility of a developing PEZ within Peel Region. The analysis provided herein does not necessarily recommend that a PEZ is to be planned for within this area. The subject site is bound by Airport Road to the west, Innis Lake Road to the east, Healey Road to the north and Mayfield Road to the south, as shown in **Figure 4-10**.¹² The total gross development land area, excluding environmental features, is 315 hectares.

FIGURE 4-10: TULLAMORE VACANT LAND SITE



Source: Watson & Associates Economists Ltd.

¹² Geographic delineation of the preferred site is conceptual and may be subject to change.

PEEL GOODS MOVEMENT – REGION OF PEEL

Employment

Geographic characteristics of the site were analyzed and are provided in **Table 4-4**. With these land characteristics and an understanding of the potential land uses to occupy the PEZ, employment forecasts were developed for the site. These are summarized in **Table 4-5** and represent employment forecasts for 2041 in various employment sectors.

TABLE 4-4: EXISTING TULLAMORE LAND CHARACTERISTICS

Total Gross Development Land Area (Net of Environmental Features)	315	Hectares
Net to Gross Adjustment	80%	
Net Developable Area	252	Hectares
Land Vacancy	15%	
Net Developable Area Adjusted for Land Vacancy	214	Hectares
Existing Job Base	800	

Source: Watson & Associates Economists Ltd.

TABLE 4-5: 2041 EMPLOYMENT FORECASTS FOR TULLAMORE SITE

Employment Sector	Percentage Employment by Sector	Average Emp. Density (Emp./Net ha)	Weighted Employment Density	Total Developable Land Area	Percentage Land Area by Employment Type	Employment Yield
Employment Supportive Uses ¹³	8%	53.8	2.15	8.6	4%	461
Manufacturing	22%	29.4	5.88	42.8	20%	1,258
Multi-Tenant Office ¹⁴	8%	108.6	2.17	4.3	2%	465
Goods Movement ¹⁵	62%	22.7	16.80	158.4	74%	3,595
Total	100%	27.00	27.00	214.0	100%	5,778

Source: Watson & Associates Economists Ltd.

Average Floor Space per Worker (FSW) Assumptions

¹³ Includes ancillary retail and standalone commercial uses intended to support the Good Movement Employment Growth District (e.g. truck and travel plaza, restaurants, maintenance and repair operations, freight forwarding operations)

¹⁴ Multi-tenant office is a commercial property that hosts multiple users/businesses rather than a single tenant occupying all available space.

¹⁵ Includes air, rail, water, pipeline and truck transportation industries, as well as warehousing, storage and logistics companies and support activities for transportation.

5. OVERVIEW OF CAPITAL INFRASTRUCTURE NEEDS AND SERVICING COSTS

A PEZ will increase the demand on local infrastructure in the selected site and surrounding area. This section will describe the infrastructure needs for water, wastewater, storm water and roadway infrastructure for the Tullamore site. A broad assessment of each will inform the business case for development.

5.1 Roads

WSP completed a high-level review of the current and future capital infrastructure needs around the Tullamore site in order to determine the feasibility of a PEZ. This review provides an overview of the road network conditions around the site, identifies current and potential constraints and estimates the increase in traffic. This review also proposes transportation improvements to account for the growth in truck volumes expected from a PEZ.

Study Area Road Network

A visual inspection of the major roads surrounding the proposed site was conducted using Google Earth. The inspection focused on identifying any potential infrastructure attributes and restrictions that would impede truck circulation; such as lane configurations, truck restrictions, storage lanes and curb radii. The road segments inspected were:

- | | |
|---------------------------|--|
| 1. Healey Road | from Airport Road to the Gore Road |
| 2. Innis Lake Road | from Mayfield Road to King Street |
| 3. Airport Road | from Highway 407 to King Street |
| 4. Mayfield Road | from the Gore Road to Highway 410 |
| 5. The Gore Road | from Mayfield Road to King Street |
| 6. King Street | from Innis Airport Road to the Gore Road |

The study intersections were selected based on their proximity to the subject site and the potential for truck traffic to impact the intersections.

The intersections that were visually inspected include:

1. Mayfield Road at Airport Road (Signalized)
2. Airport Road at Healey Road (Minor Street Stop Control)
3. Healey Road at Innis Lake Road (Minor Street Stop Control)
4. Mayfield Road at Innis Lake Road (Signalized)

PEEL GOODS MOVEMENT – REGION OF PEEL

5. The Gore Road at Mayfield Road (Signalized)
6. Mayfield Road at Bramalea Road (Signalized)
7. Airport Road at Castlemore Road/ Bovaird Drive East (Signalized)
8. Airport Road at King Street (Signalized)

Current Road Characteristics

The road classifications for the study network as presented in **Table 5-1** are based on the current road network maps in the City of Brampton and the Town of Caledon Master Plans. The maps are attached in **Appendix D**.

TABLE 5-1: CHARACTERISTICS OF ROADS SURROUNDING THE SITE

ROAD	CATEGORY	SPEED LIMIT	LANE CONFIGURATION
AIRPORT ROAD	High Capacity Arterial	60 km/hour	Two lanes per direction south of Mayfield Road One lane per direction north of Mayfield Road
MAYFIELD ROAD	High Capacity Arterial	60 km/hour	One lane per direction
HEALEY ROAD	Collector	80 km/hour	One lane per direction
INNIS LAKE ROAD	Collector	80 km/hour	One lane per direction
THE GORE ROAD	Medium Capacity Arterial	80 km/hour	One lane per direction
KING STREET	Medium Capacity Arterial	70 km/hour	One lane per direction

Current Road Constraints

Based on our review of the road network, the existing infrastructure south of Mayfield Road along Airport Road is already designed to accommodate heavier truck traffic volumes. As a result, the road network south of the subject site does not require any additional improvements.

Some constraints have been identified north of Mayfield Road. They are categorized into heavy truck restrictions, number of lanes available, and short left-turn storage lanes. The findings of the review are outlined below.

Heavy Truck Restrictions

The site is surrounded by two roads with heavy truck restrictions: Innis Road and Healey Road as shown in **Figure 5-1** (red lines denoting roads with truck restrictions). As a result of these restrictions, all of the truck traffic generated by the site would need to use Airport Road and Mayfield Road to access and egress the site. The site driveways onto these two roads will have to be designed so that they are acceptable to the City of Brampton and Town of

PEEL GOODS MOVEMENT – REGION OF PEEL

Caledon while considering access requirements onto high capacity arterial roads (i.e. intersection spacing, sightline analysis, and speed differentials).

FIGURE 5-1: HEAVY TRUCK RESTRICTIONS AROUND SITE AREA



Source: WSP

Number of Lanes

The roads in proximity of the site (Mayfield Road, Innis Lake Road, Healey Road, The Gore Road and King Street) are all single lane roads. As noted earlier, Airport Road is a single lane arterial north of the site. This road configuration is currently acceptable due to the low traffic volumes in the vicinity of the site. However, it may not be able to accommodate the future general growth and the increase in truck traffic generated from a potential PEZ. From a site access safety and operation perspective, exclusive turn lanes may be required at the site access on Airport Road and Mayfield Road. Otherwise, trucks waiting for a gap in the opposing lane to turn into the site could block trailing traffic and create a queuing issue. The number of lanes on the boundary road network may also pose a safety concern if unsafe overtaking on single lane roads becomes a pattern; this would increase the potential for head on collisions. Based on the above reasons, the number of lanes on the boundary road network may be constrained to the feasibility of the subject site.

Left-turn Storage Lanes

Some of the left-turn lanes exhibit a short storage length and may not accommodate accumulating truck traffic turning left.

- **Along Airport Road:** Short storage lanes of 40 meters and less have been identified at Yellow Avens Boulevard (30 meters), Lacoste Boulevard (35 meters), Mayfield Road (40 meters) and King Street (40 meters). With the increase in truck traffic and their length of 10 m or longer, further queuing analyses should be completed in the future once more information becomes available (i.e., turning movement counts and signal timing plans).
- **Along Mayfield Road:** A storage lane of 30 meters was identified at Innis Lake Road.

There are currently Brampton Transit buses operating along Airport Road and Mayfield Road. Thus, the design of future driveway locations to the subject site should be coordinated with the transit authorities to avoid truck and bus movement conflicts.

Transit System

In order to prevent conflicts with buses operating along the Mayfield Road and Airport Road transit lines, the design of site access driveways should take into consideration the established and future transit system along Airport Road and Mayfield Road.

Traffic Analysis

Emme model outputs were used to analyze and forecast traffic growth in the vicinity of the subject site. The traffic data provided by the Region of Peel represents auto link volumes on the boundary road network during the weekday AM peak hour for the horizons 2011 and 2021. It is anticipated that the weekday PM peak hour volumes would generally reflect opposite flows to the AM peak hour volumes. Link volumes allow for throughput analysis on the boundary roadways. Turning movement counts at the boundary intersections would be required to complete intersection-level assessment. This review focuses on the link-based volumes.

Existing Traffic Conditions

The 2011 AM peak hour auto volumes were treated as existing (base) conditions and presented in **Figure 5-2** below. The traffic volumes along Airport Road declined substantially north of Mayfield Road, which was expected

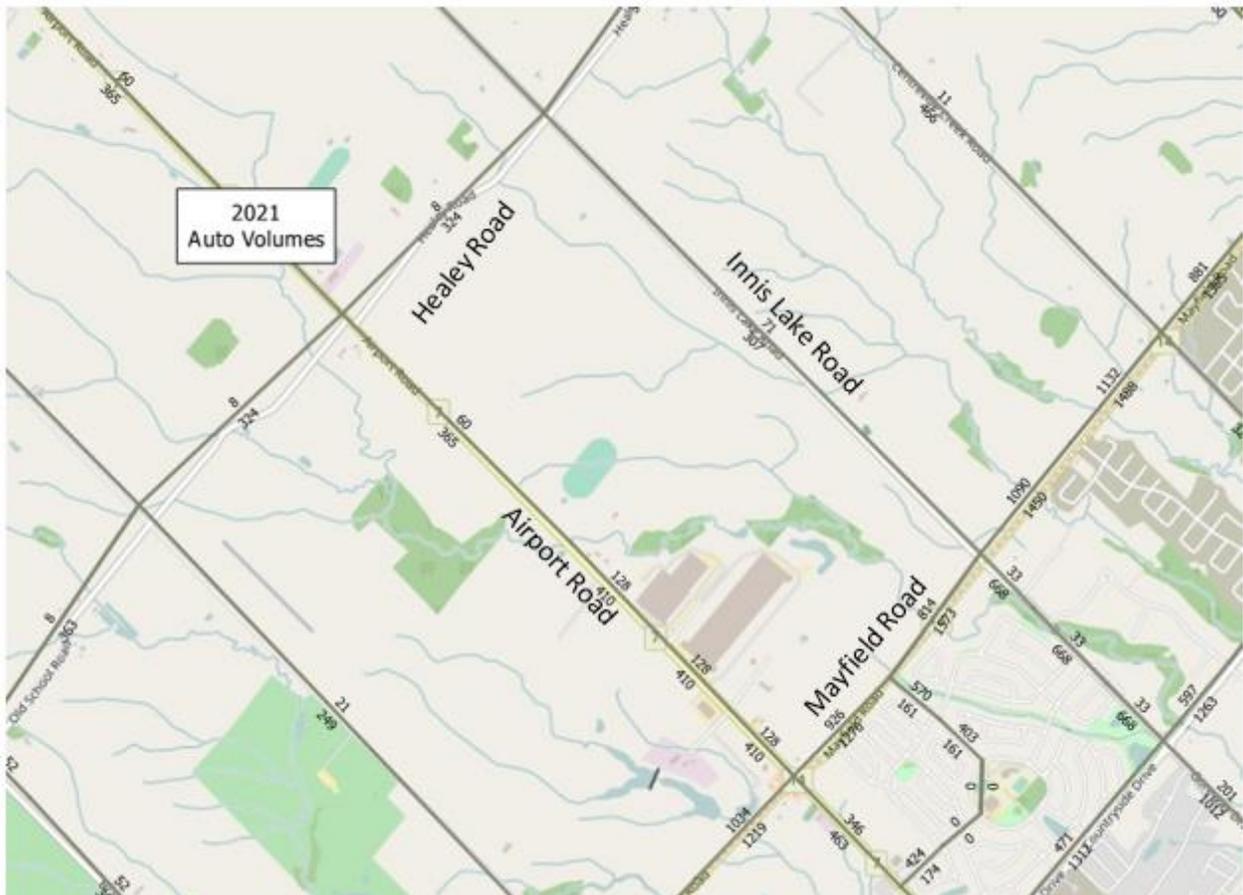
PEEL GOODS MOVEMENT – REGION OF PEEL

Future Background Traffic Operations

The 2021 AM peak hour auto volumes were applied as future background (business as usual) conditions and presented in **Figure 5-3** below. Based on the link volumes on Airport Road and Mayfield Road, the following items were noted:

- The dominant flow (southbound) along Airport Road (between Healey Road and Mayfield Road) increased by approximately 35%;
- The growth in the southbound direction during the AM peak hour was also observed in the other north-south parallel links;
- The traffic flow in both directions increased significantly along Mayfield Road by more than 75%. Again, the growth in the east-west direction was also observed in the parallel east-west roads; and
- Airport Road and Mayfield Road remained the busiest roads in the vicinity of the subject site.

FIGURE 5-3: 2021 AUTO VOLUMES FOR THE AM PEAK HOUR



Source: WSP

Trip Generation and Assignment

The site anticipating land uses that include manufacturing, transportation, communication, utilities, wholesale trade, retail trade and office uses. Truck trip generation associated with these uses were calculated by the project team as a function of developable area and subsequent employment generated. Details of the trip generation forecast are provided in **Appendix E**. It is estimated that the site will generate approximately 217 total truck trips per hour. Based on the nature of the land uses being considered in the subject lands, no significant truck peak patterns are expected and thus 217 truck trips are assumed to be generated during the AM peak hour (as a worst case).

In addition to the truck trip generation, the one-way private auto trip generation for the AM peak hour was assumed to be 200 inbound vehicles per hour. This assumption is conservative since it assumes that almost all of the truck drivers arrive during the AM peak hour via single-occupant trips to the site.

Given that trucks are not allowed to take Innis Lake Road and Healey Road to access the site, all of the truck trips generated will take Airport Road or Mayfield Road to access and egress the site.

To evaluate the worst-case trip assignments, two scenarios have been considered. The first scenario assigns all of the truck trips generated to Airport Road and the second scenario assigns the truck trips to Mayfield Road instead. These are conservative since truck drivers will likely gravitate to the route that minimizes their delay and may be destined to different directions.

Since the Auto trips generated are not subject to any restrictions, only 50% of the Auto trips would be assigned to each of the roads around the site.

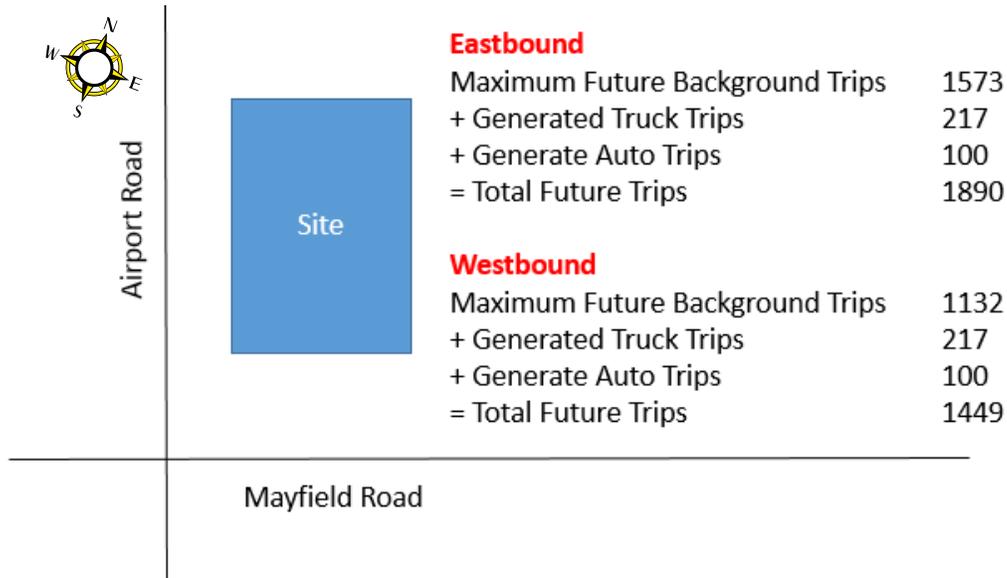
Future Total Operations

The 2021 future total (FT) link volumes were developed by superimposing the truck and private auto trip generation onto the 2021 future background link volumes. As an example,

Figure 5-4 illustrates how future total volumes were calculated on Mayfield Road in each direction.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 5-4: CALCULATION OF FUTURE TOTAL VOLUMES ON MAYFIELD ROAD



Since both Airport Road and Mayfield Road are classified as high capacity arterials, a link capacity of 900 vehicles per lane per hour has been assumed. The calculated future total link volumes on these two roads are related to the link capacity to develop the volume to capacity ratio (v/c) as shown in **Table 5-1** and **Table 5-2**.

TABLE 5-1: AIRPORT ROAD EVALUATION

ROAD SEGMENT	2021 FT VOLUME NORTH-BOUND	2021 FT VOLUME SOUTH-BOUND	NUMBER OF LANES PER DIRECTION	CURRENT ESTIMATED CAPACITY	V/C NORTH-BOUND	V/C SOUTH-BOUND
AIRPORT ROAD NORTH OF MAYFIELD ROAD	445 vehicles per hour	727 vehicles per hour	1	900 vehicles per hour	0.49	0.81
AIRPORT ROAD SOUTH OF MAYFIELD ROAD	663 vehicles per hour	780 vehicles per hour	2	1800 vehicles per hour	0.37	0.43

TABLE 5-2: MAYFIELD ROAD EVALUATION

ROAD SEGMENT	2021 FT VOLUME EASTBOUND	2021 FT VOLUME WESTBOUND	NUMBER OF LANES PER DIRECTION	CURRENT ESTIMATED CAPACITY	V/C WESTBOUND	V/C EASTBOUND
MAYFIELD ROAD	1890 vehicles per hour	1449 vehicles per hour	1	900 vehicles per hour	2.1	1.61

PEEL GOODS MOVEMENT – REGION OF PEEL

Innis Lake Road and Healey Roads were assigned a vehicle capacity of 700 vehicles per lane per hour because they are classified as collectors. The v/c results are presented in **Table 5-3** and **Table 5-4**.

TABLE 5-3: EVALUATING INNIS LAKE ROAD EVALUATION

ROAD SEGMENT	2021 VOLUME NORTH-BOUND	2021 VOLUME SOUTH-BOUND	NUMBER OF LANES PER DIRECTION		CURRENT ESTIMATED CAPACITY	MAXIMUM V/C
INNIS LAKE ROAD	171 vehicles per hour	407 vehicles per hour	1		700 vehicles per hour	0.58

TABLE 5-4: EVALUATING HEALEY ROAD FOR AUTO TRAFFIC

ROAD SEGMENT	2021 VOLUME EASTBOUND	2021 VOLUME WESTBOUND	NUMBER OF LANES PER DIRECTION	CURRENT ESTIMATED CAPACITY	MAXIMUM V/C
INNIS LAKE ROAD	424 vehicles per hour	108 vehicles per hour	1	700 vehicles per hour	0.61

The above results indicate that the only roadway link that is forecast to operate at over capacity with v/c greater than 1 is along Mayfield Road (2.1 and 1.61 v/c). This is primarily due to the significant background growth projected by the Emme model along Mayfield Road.

Planned Road Improvements

Table 5-5 summarizes the list of road improvements that are already proposed by the Region of Peel for the 2021 and 2031 planning horizons.

TABLE 5-5: PLANNED IMPROVEMENTS

ROAD	CATEGORY	LANE CONFIGURATION 2011 (EXISTING)	LANE CONFIGURATION 2021	LANE CONFIGURATION 2031
MAYFIELD ROAD	High Capacity Arterial	One lane per direction	Two Lanes per direction	Three lanes per direction

Table 5-6 and **Table 5-7** summarize the traffic conditions for the 2021 and 2031 horizons with the planned improvements implemented.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 5-6: 2021 TRAFFIC CONDITIONS ON MAYFIELD ROAD

ROAD SEGMENT	2021 FT VOLUME EASTBOUND	2021 FT VOLUME WESTBOUND	NUMBER OF LANES PER DIRECTION	CURRENT ESTIMATED CAPACITY	V/C WESTBOUND	V/C EASTBOUND
MAYFIELD ROAD	1890 vehicles per hour	1449 vehicles per hour	2	1800 vehicles per hour	1.05	0.81

TABLE 5-7: 2031 TRAFFIC CONDITIONS ON MAYFIELD ROAD

ROAD SEGMENT	2021 FT VOLUME EASTBOUND	2021 FT VOLUME WESTBOUND	NUMBER OF LANES PER DIRECTION	CURRENT ESTIMATED CAPACITY	V/C WESTBOUND	V/C EASTBOUND
MAYFIELD ROAD	1890 vehicles per hour	1449 vehicles per hour	3	2700 vehicles per hour	0.70	0.54

The above results indicate that by the 2021 horizon with the planned widening of Mayfield Road to two lanes in each direction, the westbound link would be slightly over capacity during the weekday AM peak hour. However, it should be noted that this is based on a very conservative assessment since the majority of site traffic was assigned to Mayfield Road in the evaluation. By 2031, with three lanes in each direction, Mayfield Road will operate with moderate residual capacity in both directions. These findings suggest that the timing of the subject site development (i.e. phasing) should consider the timing of the planned improvements along the boundary road network.

Capital Improvements

Under current assumptions, the planned roadway improvements for Mayfield Road indicate adequate capacity to account for the increased traffic volume, no capital improvements have been suggested.

Summary

Based on the preliminary traffic assessment, the subject site located in Tullamore Land Use Area is feasible for a potential PEZ, provided a few transportation infrastructure improvements are implemented to accommodate safe truck circulation and to account for increased traffic volumes. **Table 5-8** summarizes the improvements and measures required to successfully develop a PEZ on the site.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 5-8: RECOMMENDED MEASURES

TYPE OF IMPROVEMENT
1. Monitor traffic volumes on Airport Road and Mayfield Road in the vicinity of the subject site – since all of the truck volumes will be utilizing the roadways.
2. The timing of the Improvements on Mayfield Road should be considered when planning the timing and phasing of the subject site.
3. Collect turning movement count data at the key boundary intersections (i.e., Airport Road and Mayfield Road) so that the intersection can be analyzed to better understand the need to increase turning lane storage or adjustments to signal timing plans in order to accommodate the trips associated with the subject site.
4. Site access design along Airport Road and Mayfield Road should consider the existing transit operations as well as the access design requirements onto an arterial roadway.
5. Review the potential to relax truck restrictions on Innis Lake Road and Healey Road as the lands in the study area intensifies and the need to provide alternate routes to Mayfield Road and Airport Road arises. In order to facilitate truck movements on Innis Lake Road and Healey Road, the following should be considered: <ul style="list-style-type: none"> <li data-bbox="332 877 1218 976">a. Increase curb radii of right turns at the intersection of Airport Road and Healey Road and the intersection of Healey Road and Innis Lake Road; and <li data-bbox="332 976 1218 1029">b. Increase length of left turn storage lane along Mayfield Road at Innis Lake Road.

The site could be used as a PEZ without removing the truck restrictions imposed on Innis Lake Road and Healey Road. However, removing the truck restrictions will improve truck traffic around the site and should still be considered as a potential improvement by the Region.

5.2 Water & Wastewater

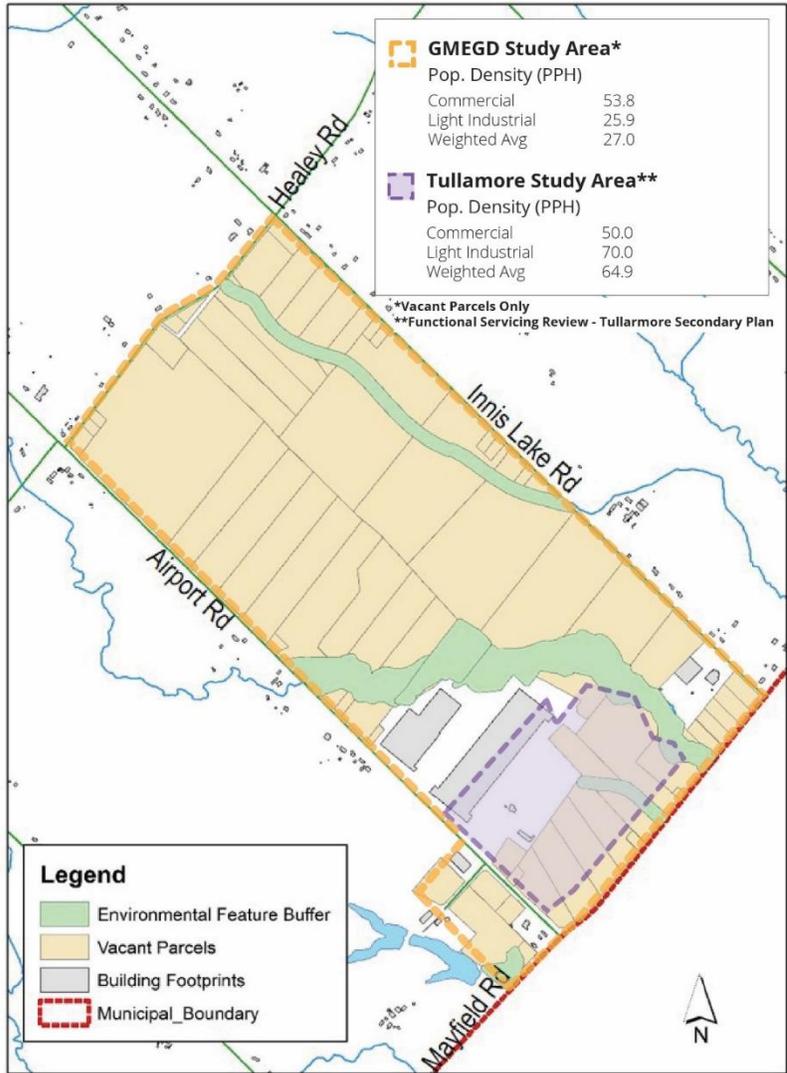
WSP estimated the water demands and wastewater flows corresponding to the PEZ development. This estimate was based on the forecasted 2041 total population (employment) estimates for the PEZ site as well as proposed land uses on the site.

As part of the *Functional Servicing Report Review* of the Tullamore Secondary Plan Peel Region updated their Region-wide water and wastewater hydraulic models to assess the infrastructure requirements to service the Tullamore Study Area.

The Tullamore Study Area corresponds to a subset of the PEZ site as shown in **Figure 5-5**.

PEEL GOODS MOVEMENT – REGION OF PEEL

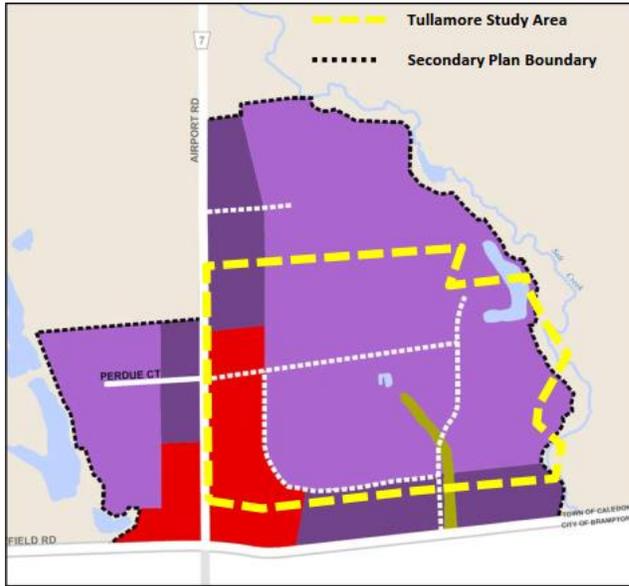
FIGURE 5-5: COMPARISON OF PEZ AND TULLAMORE SECONDARY PLAN LAND AREA AND POPULATION DENSITY



A comparison of the WSP/Watson forecasted 2041 land use areas, employment and employment density are provided below in **Table 5-9**. These figures have been compared with the values from the *Functional Servicing Report Review* study area and the Tullamore Secondary Plan area.

PEEL GOODS MOVEMENT – REGION OF PEEL

FIGURE 5-6: COMPARISON OF THE TULLAMORE STUDY AREA AND SECONDARY PLAN



Source: Region of Peel, Functional Servicing Report Review – Tullamore Secondary Plan Study Area Town of Caledon

TABLE 5-9: COMPARISON OF PEZ AND TULLAMORE SECONDARY PLAN AREA, EMPLOYMENT AND DENSITY

Area (ha)		Employment		Density (PPH)	
Tullamore Secondary Plan	118				
Tullamore Study Area	57.0				
Commercial	10.5	Commercial	525.0	Commercial	50.0
Light Industrial	30.3	Light Industrial	2121.0	Light Industrial	70.0
				<i>Weighted Average</i>	64.9
PEZ Site					
Commercial	8.6	Commercial	460.5	Commercial	53.8
Light Industrial	205.4	Light Industrial	5317.9	Light Industrial	25.9
				<i>Weighted Average</i>	27.0

WSP worked with the Region to define water and wastewater design criteria required to estimate the water demand and wastewater flows associated with the PEZ site. The water and wastewater design criteria used in the analysis are provided in **Table 5-10** and **Table 5-11**.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 5-10: WATER DESIGN CRITERIA

Water Design Criteria	Value	Unit
Average Day Demand per Capita	0.300	m ³ /cap/d
Max Day Peaking Factor	1.40	
Peak Hour Peaking Factor	3.00	
Fire Flow	140	L/s

TABLE 5-11: WASTEWATER DESIGN CRITERIA

Wastewater Design Criteria	Value	Unit
Average Day Flow per Capita	302.8	L/cap/d
Inflow & Infiltration Allowance*	0.2	L/ha/s

*Inflow is defined as water other than sanitary flow that enters during wet weather. Infiltration is defined as groundwater that infiltrates a sewer through defective pipes, pipe joints, connections or manholes.

The resulting water and wastewater requirements for the PEZ site in comparison with the Tullamore Secondary Plan Study Area are provided in **Table 5-12** and **Table 5-13**.

TABLE 5-12: WATER REQUIREMENTS FOR PEZ AND TULLAMORE SECONDARY PLAN

	Design Population	Gross Service Area (ha)	Average Day Demand (m ³ /d)	Average Day Demand (L/s)	Max Day Demand (L/s)	Peak Hour Demand (L/s)	Max Day + Fire Flow (L/s)
Tullamore Secondary Plan	2646	57	795	9.2	12.9	27.6	152.9
PEZ Site	5778	214	1736	20.1	28.2	60.3	168.2

TABLE 5-13: WASTEWATER REQUIREMENTS FOR THE PEZ AND TULLAMORE SECONDARY PLAN

	Design Population	Gross Service Area (ha)	Average Day Flow (L/s)	Harmon PF	Peak Dry Weather Flow (L/s)	Extraneous Flow (L/s)	Peak Flow (L/s)
Tullamore Secondary Plan	2646	57	9.3	3.49	32.3	11.4	45.0
PEZ Site	5778	214	20.3	3.19	64.5	42.8	107.3

PEEL GOODS MOVEMENT – REGION OF PEEL

WSP presented the revised water and wastewater requirements to the Region's Infrastructure Planning and Studies group, which then updated the Region's hydraulic models to incorporate the PEZ site development areas and flow projections. The Region then identified existing servicing constraints in the water transmission and wastewater collection systems. **Note that the Region did not identify the need to expand the water treatment plants or wastewater treatment plants to service the PEZ site.**

There are Zone 6 mains on Airport (300 mm), Healey (200 mm) and Innislake (200 mm). The regional guidelines state all industrial, commercial, or institutional (ICI) related development should connect at a minimum to a 300-mm main. In the case of the PEZ, this would be the Airport Road main. Since the Region does not have any plans to upsize the Healey or Innis Lake mains, any attempt to connect to those mains for the PEZ development would either mean upsizing these mains, or on a case by case basis for individual connections.

For water infrastructure costing purposes, it has been assumed that 5,000 m of 300 mm diameter watermain is required to service the PEZ. This only includes trunk watermains within the development area. The length is based on extending the watermain from west from Maisonneuve to Airport and north from Airport to Healey. The costing assumptions and values are provided in **Table 5-14** below.

TABLE 5-14: WATER ADDITIONAL INFRASTRUCTURE COSTING

Description	Quantity	Unit	Unit Cost	Total Cost
300 mm Diameter Watermain	5000	m	\$650	\$3,250,000
Contingency (30%)				\$975,000
Subtotal				\$4,225,000
Engineering (15%)				\$633,750
Total				\$4,858,750

The peak wastewater flow flow projections are significantly higher for the PEZ versus the Tullamore Secondary Plan (107.3 L/s and 45.0 L/s respectively). Peel Region staff therefore updated their wastewater hydraulic model to reflect the increased area. For modelling purposes, it was assumed that the additional 3,132 population resulting from the PEZ would be distributed between Area 1 and Area 2 as shown in **Figure 5-7**. Based on topography and existing sewer inverts, Area 1 can be connected to SMH-308109. The 750-mm sewer along Airport Road has capacity to accommodate 107 L/s flow. Therefore, the Region prefers the majority of the flow to go to the Airport Road sewer. The

PEEL GOODS MOVEMENT – REGION OF PEEL

map below shows a pink line in Area 1 which schematically shows the potential for this connection.

Area 2 cannot be connected to Airport Road by gravity since it is too low. It can be however discharged to SMH-6518196 which will go to the McVean SPS. A new sewer will be required, as shown on the map as the pink line along Innis Lake Road. The Region of Peel wastewater strategy is based on diverting as much flow as possible away from the McVean SPS. As a result, it is recommended to discuss the details of the plans for Area 2 with the Region wastewater staff prior to going forward.

FIGURE 5-7: WASTEWATER MAP OF AREA 1 AND AREA 2 WITH ADDITIONAL CONNECTION REQUIREMENTS (PINK)



For wastewater infrastructure costing purposes, it has been assumed the costing includes the trunk sewers with the development area. These trunk sewers would include 3,200 m of 375 mm diameter sewer. The costing assumptions and values are provided in the table below.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 5-15: WASTEWATER ADDITIONAL INFRASTRUCTURE COSTING

Description	Quantity	Unit	Unit Cost	Total Cost
375 mm Diameter Sewer	3200	m	\$750	\$2,400,000
Contingency (30%)				\$720,000
Subtotal				\$3,120,000
Engineering (15%)				\$468,000
Total				\$3,588,000

Summary

Preliminary analysis of the water and wastewater infrastructure reveals need for capital improvements of the existing systems in order to accommodate a large development such as the PEZ. The preliminary estimate of these capital costs is \$8,446,750 (**Table 5-16**). All capital costs are assumed to be expended in 2020.

TABLE 5-16: TOTAL WATER & WASTEWATER CAPITAL COSTS

Description	Est. Cost
Water	\$4,858,750
Wastewater	\$3,588,000
Total	\$8,446,750

6. GOVERNANCE STRUCTURE

The genesis of different freight villages around the world has occurred in a variety of ways. Within the European Union it is common to see freight villages result from public-private partnerships (PPPs) between different levels of government, local transportation and logistics associations and private-sector firms. In contrast, many in the United States have emerged from predominately private investment, though, even in these cases, projects have benefitted from public investments in infrastructure surrounding and within the site.

In terms of what the governance structure of freight village would look like in Peel, the most effective option would be to follow the European model of public-private partnership. This is the case for two reasons. First, the option to replicate the private freight village developments seen in the United States is generally not available in the Canadian context. Many freight village and other large logistics centre developments in the US resulted from the private purchase of decommissioned military bases, offering their owners a large contiguous parcel of land suitable for a variety of industrial and other employment uses. In contrast, the fragmented ownership of existing parcels of land around key transportation and logistics infrastructure in much of Canada (including Peel Region) would necessitate a high level of private land assembly.

Instead, a project structure similar to that seen in Europe and the two Canadian cases (Regina Global Transportation Hub and CentrePort Canada) explored in Section 2.2 seems more promising. Here the public sector can assemble the large land area required to implement a freight village, or at least part of it. In contrast to private ownership, which would likely require the quick development of land to maximize the return on what would be a significant investment in land assembly, public ownership can be used to master plan an area at a more calculated pace to achieve high levels of efficiency and synergies among tenants.

Beyond the role of public capital in securing project feasibility, a PPP structure also brings private-sector actors to the table as partners in managing a freight village project, ensuring their voices are heard in management decisions and soliciting greater buy-in from firms for locating on site.

7. FISCAL IMPACT ANALYSIS

Building on sections 2 through 6, a high-level assessment of the Regional fiscal impacts associated with the preferred PEZ site selection option has been undertaken.¹⁶ Further details are provided in **Appendix F**.

Fiscal Impact Approach

The fiscal impact assessment methodology provides an operating and capital cost analysis related to the preferred PEZ site location. The operating cost analysis involves calculating the revenues and expenditures attributable to the existing development, which are estimated on a proportionate basis. That is, operating revenue and expenditure dollars are assigned by distributing the operating cost and revenues on a per capita and per employee basis. Tax revenue is calculated based on the total tax rate applicable to the subject area and proposed non-residential development types. The assessment assumptions are based on a survey of similar non-residential buildings within the local and regional market area in Peel Region.

The capital cost (lifecycle) analysis considers the infrastructure anticipated to be assumed by the Region and allocates the annual lifecycle cost of the asset over its useful life. We would note that as planning is in the conceptual stages, local service costs have been estimated. Local service works such as water and sewer mains have an annual lifecycle impact which has been included in the net fiscal impact calculations. These costs should be reviewed by the Region once more detailed development plans are provided.

Summary of the Anticipated Development

Table 7-1 summarizes employment and the associated gross floor area (GFA) to be generated from the preferred PEZ site. The preferred PEZ site is anticipated to be fully built out by the year 2041. Forecast employment within the subject lands is expected to be concentrated by the Goods Movement sector as well as other industrial land uses. Office uses and employment-supportive sectors such as retail, and accommodation and food, are assumed to comprise a small percentage of forecast employment growth for this area.

¹⁶ It is noted that the local fiscal impacts related to the Town of Caledon have not been determined as part of this review, due to the preliminary nature of the PEZ development concept.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 7-1: SUMMARY OF NON-RESIDENTIAL GROWTH FORECAST (AT FULL BUILDOUT)

Non-Residential

Building Area (sq.ft./sq.m.)

Type of Development	Sq.ft. Increment	Sq.m. Increment
Employment-Supportive Uses	230,000	21,370
Manufacturing/Utilities/Construction	1,383,800	128,560
Multi-Tenant Office	139,800	12,990
Goods Movement	6,830,500	634,570
Total	8,584,100	797,490

Employment

Type of Development	Estimated Employment (Rounded)	Percent of Total Employment
Employment-Supportive Uses	460	8%
Manufacturing/Utilities/Construction	1,260	22%
Multi-Tenant Office	470	8%
Goods Movement	3,600	62%
New Employment	5,790	100%

Table 7-2 provides a description of each type of development, along with how each type is categorized for development charge and assessment purposes.

TABLE 7-2: DESCRIPTION OF EMPLOYMENT CATEGORIES IDENTIFIED FOR THE PROPOSED PEZ

Type of Development	Description	DC Category	Assessment Category
Employment-Supportive Uses	Includes retail trade, accommodation, food, and other related services.	Non-industrial	Commercial
Manufacturing/Utilities/Construction	Includes utilities, construction, and manufacturing uses.	Industrial	Industrial
Multi-Tenant Office	Includes multi-tenant offices for information and cultural industries, finance, insurance, real estate, professional, scientific, and technical services, management of companies and enterprises, administrative and support, waste management and remediation services, and education services.	Non-industrial	Office
Goods Movement	Includes wholesale trade, transportation, and warehousing uses.	Industrial	Commercial

The fiscal impact assessment provided herein evaluates the cost of services related to the additional employment identified for the subject area which benefits from using or having access to those services, and are described as follows. The basis for the operating analysis is Peel Region's 2016 Financial Information Return (FIR) data.

FIR Operating Analysis

- The Region's annual operating costs (net of debt charges, external transfers and amortization) for regional services provided to residents and employees is approximately \$1.52 billion. Allocating these costs between total residents and employees provides for an operating cost per employee of \$440.
- It is anticipated that the expenditures per employee may increase at different rates, depending on the service provided. Based on our assumptions, the net annual operating expenditures for the anticipated development are approximately \$407 per employee or \$2,353,700 (see **Appendix F, Tables F-1 through F-5** for further details).
- There are a number of annual operating revenues (fees, fines, etc.) which generally are directly related to population and employment. These annual revenues amount to \$545 per employee.
- It is anticipated that revenues per capita and employee may also increase at different rates, depending on the service provided. In accordance with the above operating expenditure and revenue assumptions, the net operating revenues for the proposed PEZ are estimated at approximately \$289 per employee or \$1,670,600 (see **Appendix F, Tables F-6 through F-9** for further details).

Property Tax Revenue

- Upon development, Peel Region will receive property tax revenue associated with non-residential development in the proposed PEZ. Based on a survey of assessment of similar properties and properties currently adjacent to the development site, anticipated tax assessment is estimated as follows at full buildout of the PEZ.

TABLE 7-3: ESTIMATED PROPOSED PEZ ASSESSED VALUE, (2016 \$)

Non-residential

Type Description	Est. GFA	Assessed Value (2016 \$)
Employment-Supportive Uses	230,000	\$57,500,000
Manufacturing/Utilities/Construction	1,383,800	\$138,380,000
Multi-Tenant Office	139,800	\$26,562,000
Goods Movement	6,830,500	\$819,660,000
Total	8,584,100	\$1,042,102,000

PEEL GOODS MOVEMENT – REGION OF PEEL

- In accordance with the estimated assessed value of the proposed PEZ at buildout, it is estimated that new developments would generate approximately \$4.48 million in annual revenues (see **Appendix F, Table F-10** for further details).

Lifecycle Costs

- In addition to the above expenditures, the Region will incur direct and indirect lifecycle costs as a result of new direct and indirect infrastructure requirements.
 - Direct Lifecycle Costs include:
 - Roads: Through the analysis conducted by WSP, no additional road works have been identified. The Region has already accounted for expansions to Airport Road and Mayfield Road. It is noted that there may be the need for turning lanes on Airport Road; however, it is unclear whether these costs would be funded by development charges (DCs) or be a direct developer responsibility. This requirement should be considered in future Regional DC background study processes.
 - Water: Approximately 5 km of watermains (300 mm diameter) external to the development have been identified. As the proposed PEZ is in the early concept stage, an estimate of length of local watermains internal to the development site was not undertaken by WSP. To provide an estimate for lifecycle purposes, it is assumed that the internal roads will require approximately 15% of the developable land area of the subject lands. At an estimated 12.5 metre width, this would result in 26 km of local roads. This length was utilized in the assumption of local mains that would be required at full buildout of the development (and ultimately assumed by the Region).
 - Wastewater services: Approximately 3.2 km of sewer mains (375 mm diameter) have been identified as well as a pumping station. It was assumed that the length of local sewer mains required would also be 26 km, similar to the above analysis for water mains. The sewer mains would also be assumed by the Region.
 - In total, these works would provide an annual lifecycle contribution of \$559,300.

PEEL GOODS MOVEMENT – REGION OF PEEL

- Indirect Lifecycle Costs: The Region's 2013 DC background study¹⁷ provides an estimated lifecycle cost for each service identified in the DC calculation. A proportionate share of the lifecycle costs has been identified based on the projected growth of the development relative to the anticipated growth in the Peel Region DC background study. This provides for additional external lifecycle costs required for services which may be indirectly impacted by the proposed PEZ. Annual indirect lifecycle contributions attributable to the proposed PEZ are approximately \$792,800 (see **Appendix F, Tables F-11** and **F-12** for further details).

Based on the foregoing, the estimated annual net fiscal impact on the Region of Peel is summarized below in **Table 7-4**. In accordance with the estimated annual revenues and expenditures assigned to the PEZ, an annual net fiscal surplus of \$2.45 million has been identified at full buildout of the subject lands.

¹⁷ The Regional Municipality of Peel Development Charge Background Study – Office Consolidation, dated November 25, 2015

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 7-4: PROPOSED PEZ - SUMMARY OF NET FISCAL IMPACT (AT FULL BUILDOUT)

	(2016 \$)
	At Buildout
1. <u>Revenues</u>	
1.1 Property Tax	
Residential Growth	-
Non-residential Growth	4,484,809
Total Property Tax Revenue	4,484,809
<hr/>	
1.2 Non-Tax	
Residential Growth	-
Non-residential Growth	1,670,593
Total Non-Tax Revenue	1,670,593
<hr/>	
1.3 Total Revenue	
Residential Growth	-
Non-residential Growth	6,155,402
Total Revenue	6,155,402
2. <u>Expenditures</u>	
2.1 Operating	
Residential Growth	-
Non-residential Growth	2,353,729
Total Operating Expenditures	2,353,729
2.2 Lifecycle	
Total Internal Lifecycle Expenditure	559,300
Broader Region-wide Lifecycle Imp	792,751
Total Lifecycle Expenditures	1,352,051
Total Expenditures	3,705,780
3. Surplus (Deficit)	2,449,623

Other Discussion Items

- Summary of Capital Costs
 - The table below (**Table 7-5**) provides for a summary of the water and wastewater capital costs identified for the proposed PEZ. It is noted that local water and wastewater capital costs have been estimated by Watson. It is further noted that capital cost impacts

PEEL GOODS MOVEMENT – REGION OF PEEL

associated with other Regional services have not been assessed as part of this analysis. Furthermore, local municipal capital costs (e.g. roads) have not been assessed as part of this analysis. DCs are the primary financing source for eligible growth-related capital works. DCs represent a one-time capital funding source, which will fund a portion of the Region's capital costs. The external water and wastewater works may have a benefit to existing development component (i.e. non-growth-related component) as well as some post-period benefit component. As planning is still in the early stages, this has yet to be determined but should be reviewed as part of the Region's next DC study process. The local water and sewer mains may be required as a local service and thus would be constructed and paid for by the developer(s).

TABLE 7-5: PROPOSED PEZ - SUMMARY OF ESTIMATED CAPITAL COSTS (2017 \$)

Service	Total Capital Cost Included
Water	
Local Watermains (m)	26,000,000
Watermain (300 mm diameter) (m)	5,000,000
Wastewater	
Local sewer mains (m)	28,600,000
Sewer main (375 mm diameter) (m)	3,520,000
Pumping Station	1,100,000
Total	64,220,000

- Development Charge Revenues
 - As development proceeds, the Region will receive DC revenue related to new non-residential development. **Table 7-6** provides a summary of estimated DC revenues at full buildout of the PEZ, based on (current) 2017 DC rates:

Roads

- No external works were identified above and beyond the works already considered in the Peel DC 2013 Background Study (e.g. intersection improvements, turning lanes, traffic signals) to facilitate the proposed development area. Traffic impact and other related studies may be required once more specific development plans are defined for this area. These studies should

PEEL GOODS MOVEMENT – REGION OF PEEL

review the need for additional turning lanes to enter the proposed PEZ.

Water and Wastewater

- o Construction of water and sewer mains were identified to service the proposed PEZ. Local water and sewer mains have been estimated based on 15% coverage of the developable land area for the internal road network. The local water and sewer mains may be a direct developer responsibility; however, there will be annual Regional lifecycle contributions associated with the future replacement of these assets as they will be assumed by the Region. WSP has reviewed the treatment capacity needs for water and wastewater and determined that no additional capacity is required to accommodate the proposed PEZ.

TABLE 7-6: PROPOSED PEZ - SUMMARY OF ESTIMATED DEVELOPMENT CHARGES REVENUES (2017 \$)

Development Charge Revenues	Total
Employment-Supportive Uses	4,464,140
Manufacturing/Utilities/Construction	18,021,432
Multi-Tenant Office	2,713,421
Goods Movement	88,954,613
Total	\$114,153,606

8. ECONOMIC IMPACT ANALYSIS

The development of and operations within a PEZ would create opportunities for increased economic activity in the form of jobs, GDP and economic output. This economic activity will be generated from both the construction of the necessary infrastructure needed for the facility and through the business operations occurring on the site.

8.1 Methodology

The economic impacts assessed in this study are the result of the construction of the PEZ (short-term) and employment creation and spending due to the PEZ (long-term).

An Input-Output (I-O) model was used to simulate the economic impacts of expenditures on a given basket of goods and services related to construction (short-term) and freight industries (long-term). An I-O model can be used to explain how one sector or industry can affect others in the same region, province or nation. These models are used to simulate the economic impact of an expenditure on a given basket of goods and services or the output of one of several industries. I-O analysis is based on information about the flow of goods and services among various sectors of the economy. It allows for the calculation of relationships between various aspects of a given economy, including production, consumption and all inter-industry relationship associated with the factors of production (labour and capital) and consumption (wages and income).¹⁸

An I-O model relies on the concept that the output of one sector can in turn become the input for another sector. Within an I-O model the economy is divided into a matrix of industries, which maps the relationship of the production of one industry onto the consumption of another industry. Intermediate goods and services which are used during the production of final commodities to be used by consumers can be identified within the model. The simulation results from a "shock" to an I-O model will show the direct and indirect impacts.¹⁹ This allows for the aggregation of all the employment and value-added (GDP) in the supply chain as goods are produced.

¹⁸ Washington State Department of Transportation (WashDOT). Development of a Freight Benefit/Cost Methodology for Project Planning. June 2013.

¹⁹ Statistics Canada. Input-Output Model Simulations: Interprovincial Model. 2013.

PEEL GOODS MOVEMENT – REGION OF PEEL

For the purposes of this study, the Statistics Canada Provincial Input-Output Multipliers were used to develop the current and future economic impacts.²⁰ The most current year for which provincial Input-Output multipliers are available is 2013. As a result, one of the main underlying assumptions in this model is inter-industry relationships associated with the factors of production (labour and capital) and consumption (wages and income) in Ontario are the same as those in Peel.

Another further assumption when using the Statistics Canada I-O tables is industry relationships are fixed, and does not account for changes in industry relationship. For example, the I-O tables assume technology remains constant as an input to production for a given industry. Therefore, major future technological shifts such as automated vehicles are not captured. The current make-up an industry, and its required inputs, are assumed to remain constant in the analysis.

8.2 Output, GDP, Labour Income and Jobs

The short- and long-term economic impacts include: output, GDP, labour income and jobs. A description of these impacts is included in this section.

Output

Output represents the value of industry production. Output consists of goods and services which are produced during construction of the PEZ and within a Goods Movement establishment that become available for use outside that establishment, plus any goods and services produced for own final use by the establishment.

The price for these goods and services are their selling price at the boundary of the producing establishment excluding sales and excise taxes levied after the final stage of production.²¹ Output by industry is measured as the sum of the transaction prices of these goods and services, which equates to total business revenues.

GDP

GDP is the total value-added produced in a region or country, measured as the monetary value of all the finished goods and services. It includes all public and private consumption, government outlays, investments and net exports which occur within a region.

²⁰ Statistics Canada, Industry Accounts Division. Ontario Provincial Input-Output Multipliers. 2013.

²¹ Statistics Canada. Provincial Input-Output Multipliers. Industry Accounts Division. 2010.

PEEL GOODS MOVEMENT – REGION OF PEEL

GDP is the most appropriate measure for assessing the overall economic impact of the PEZ construction and subsequent Goods Movement industry activity, since the value of the productive work is only counted once.

GDP presented herein excludes sales and excise taxes levied after the final stage of production. For the purposes of this study, GDP is a measure of the value-added (the unduplicated value of goods and services) to the Peel economy attributable to the productive activities of PEZ construction and PEZ tenant industries. For individual companies, GDP represents the difference between the value of its sales and the cost of its purchases from suppliers.

Jobs

Jobs represent the total employment impact created as a result of construction (short-term jobs) and PEZ Goods Movement industries (long-term jobs). Jobs numbers are a function of total annual business revenue for goods moving industries. Jobs are measured in terms of full-year equivalent positions for ongoing employment.

Jobs include employees of businesses in the PEZ (direct), those generated by businesses that support the PEZ (indirect), and those generated from spending of labor income (induced).

Labour Income

Labour income represents total earnings of employees, consisting of wages and salaries as well as supplementary labour income. Supplementary labour income includes items such as: employer contributions to pension funds, employee welfare funds, unemployment insurance and workers compensation funds.

The labour income economic impacts will be estimated for the labour income generated by employees during the construction phase (short-term) of the PEZ develop and during the business activities occurring in the PEZ (long-term).

8.3 Direct Effects, Indirect Effects, and Induced Effects

The construction and operating activities of a PEZ would impact other industry sectors through economic multiplier effects. The multiplier effected are expressed as direct, indirect, and induced effects.

Direct Effects

Direct effects are the economic impacts which result from immediate activities directly associated with the construction and Goods Movement industries

PEEL GOODS MOVEMENT – REGION OF PEEL

related to the PEZ. Direct effects include the contribution to GDP, labour income, jobs and revenue from businesses (output). Direct effects have a multiplying economic impact on business spending on services and supplies required to support construction and freight supply chains, as well as the spending of disposable income from employees working in construction and Goods Movement industries on personal household needs. These two multiplying effects are referred to as indirect and induced effects respectively and are described in more detail below.

Indirect Effects

Indirect effects measure the changes due to inter-industry purchases as they respond to the new demands of the directly affected construction and Goods Movement industries. This includes all the chain reaction of output up the supply chain since each of the products purchased and transported will require, in turn, the production of various inputs.²² The suppliers of these inputs will in turn employ workers, earn their own business revenue, and pay taxes which constitute indirect effects. These suppliers will also generate demands for labour and goods and services produced by other industries.

Induced Effects

Induced effects measure the changes in the production of goods and services in response to consumer expenditures induced by households' incomes (i.e., wages) generated by the production of the direct and indirect requirements by construction and Goods Movement industries.²³ As the employees of the direct and indirect industries incur pay, they will spend their disposable income on household needs within the broader economy. This spending will create further induced effects of the output generated by the Goods Movement industries.

8.4 Short-Term Economic Impacts (Construction)

The short-term economic impacts have been calculated based on the estimated water/wastewater capital expenditures required to develop the PEZ site. The development of water/wastewater construction capital costs are described in section 5.2. All capital costs are assumed be expended in 2020. As a result, the short-term economic impacts represent a 2020 forecast.

It has been assumed no transportation capital costs are required to provide sufficient capacity to the PEZ. Under current assumptions, the planned

²² Statistics Canada. Provincial Input-Output Multipliers. Industry Accounts Division. 2010.

²³ Ibid.

PEEL GOODS MOVEMENT – REGION OF PEEL

roadway improvements for Mayfield Road in the Peel Region Roads Program indicate adequate capacity to account for the increased traffic volume, therefore no capital improvements have been suggested.

Capital cost line items have been mapped to Input Output Industry Classifications (IOIC) for the purposes of creating inputs for the I-O model. The mapping to IOIC codes is summarized in **Table 8-1**. Capital expenditures are equal to the revenue (output) each construction industry will produce. These output values for the construction industry have been used to estimate the short-term economic impacts.

TABLE 8-1: PEEL EMPLOYMENT VALUES AND SHORT-TERM IOIC MAPPING

NAICS Code (2-Digit)	Sector
23	Construction
54	Professional, scientific and technical services

A summary of the short-term economic impacts is shown in **Table 8-2**. It is estimated that the short-impacts due to the capital infrastructure investment will general an estimated \$7.7 million in GDP and generate 75 full time equivalent employees during the construction period in 2020.

TABLE 8-2: SHORT-TERM ECONOMIC IMPACTS (IN \$2017)

Impact	2020 Forecast
Output	\$15,700,000
GDP	\$7,700,000
Labour	\$5,000,000
Jobs (Construction)	75

8.5 Long-Term Economic Impacts (Goods Movement Employment)

The long-term economic impacts have been calculated based on the estimated employment creation due to the PEZ. The PEZ employment forecasts are presented in **Table 8-3** below. The PEZ employment forecasts were based on the following sectors: employment supportive uses, manufacturing, multi-tenant office and Goods Movement. As seen in **Table 8-4** below, these employment sectors have been mapped to IOIC codes for the purposes of creating inputs for the I-O model. The job creation by year for each employment industry type have been used to estimate industry output values, which subsequently have been used to estimate the long-term economic impacts by year.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE 8-3: GOODS MOVEMENT EMPLOYMENT FORECAST

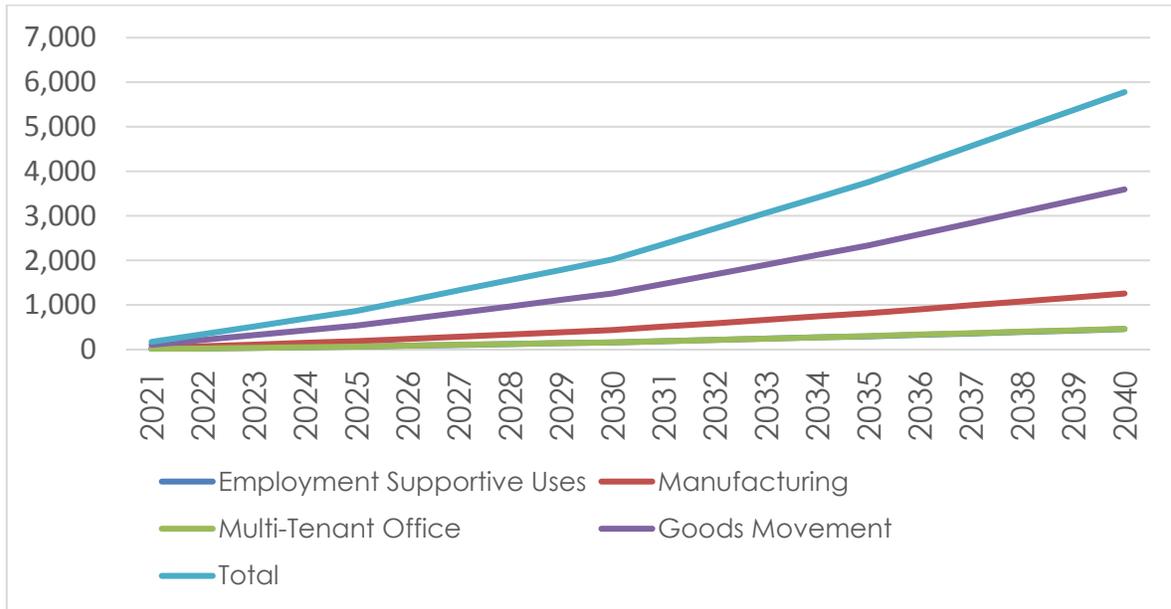


TABLE 8-4: GOODS MOVEMENT EMPLOYMENT SECTORS AND IOIC MAPPING

NAICS Code (2-Digit)	Sector
11	Agriculture, forestry, fishing and hunting
22	Utilities
23	Construction
31	Manufacturing
32	Manufacturing
33	Manufacturing
41	Wholesale trade
44	Retail trade
45	Retail trade
48	Transportation and warehousing
49	Transportation and warehousing
51	Information and cultural industries
52	Finance and insurance
53	Real estate and rental and leasing
54	Professional, scientific and technical services
55	Management of companies and enterprises
56	Administrative and support, waste management and remediation services
61	Educational services
81	Other services (except public administration)

PEEL GOODS MOVEMENT – REGION OF PEEL

A summary of the long-term economic impacts is shown in the table below. The cumulative economic impacts for GDP is estimated to be \$1.1 billion, with a compounded annual growth rate of 19.2%.

TABLE 8-5: SUMMARY OF LONG-TERM PEZ ECONOMIC IMPACTS (IN \$2017 MILLIONS)

Impact	2021 Forecast	2041 Forecast
Output	\$64.7	\$2,154.5
GDP	\$32.5	\$1,083.6
Labour	\$19.1	\$635.9
Jobs	331	11,070

8.6 External Economic Impacts

External impacts do not affect the site directly, but the society as a whole. These externalities are the cost that affects a party that did not choose to incur the cost. This analysis compared the difference in number of truck trips generated without the proposed freight village (No-Build) and with the proposed freight village (Build) to determine the cost of externalities due to increased trucks. The industry type and facility size were used to determine employment and truck generation estimates from the implementation of the site. Using the annual estimated truck yield for the project horizon period along with the average distance travelled by truck and an annualization factor²⁴, vehicle kilometer travelled (VKT) was determined in order to quantify the external impacts.

The externalities that were considered for this project include were for collisions, greenhouse gas emissions and air quality. These impacts were then commodified to understand the full economic cost.

Truck VKT Increase

With the implementation of the freight village, traffic will increase due to the number of additional trucks using the road network. This has a cost on society in terms of travel time and vehicle operating costs. In terms of VKT, it is estimated that truck travel will increase by approximately 6,100,000 km in 2021 to 14,200,000 km in 2041. Over the study period (2017 to 2041), it is expected that, cumulatively, VKT will increase by 202,400,000 km.

²⁴ 295.5 factor used

1. Collision Impacts

Automobile accidents that involve other vehicles, pedestrians, cyclists and etc. are a cost of driving. With the implementation of PEZ and increased employment and trucks in the area, accident costs will increase. The external cost in this section is the difference between the expected social cost of an accident and the insurance paid. Based on the study entitled *Operating Costs of Trucking and Surface Intermodal Transportation in Canada*, it was determined that the average insurance rate per kilometre for trucks in 2008 was \$0.04. The Metrolinx Business Case Development Handbook suggests that 15% of the cost of insurance will be considered the expected external cost of accidents. Therefore, the unit rate was determined to be \$0.0068 per VKT in 2017 dollars. Therefore, the total collision impacts are estimated to be \$872,776, discounted at 3.5% over the study horizon period.

2. Greenhouse Gas Impacts

Greenhouse gases (GHG) are currently considered an external cost to the community. Transportation, through automobile, public transit and goods delivery, account for approximately 24% of GHG emissions in Canada.²⁵ In order to quantify this impact, a 2017 social cost of carbon of \$164.93 per tonne of emissions is assumed in 2017 dollars.²⁶ Using an estimate of carbon emission from trucks of 1580 g of carbon dioxide and 10.91 g of nitrogen oxide per vehicle mile travelled²⁷ (VMT), as well as a global warming potential after of 298²⁸ for nitrogen oxide, the unit rate for the GHG impact is \$0.4967 per VKT in 2017 dollars. Therefore, the total cost of greenhouse gas impacts is estimated at \$63,654,620, discounted at 3.5% over the study horizon period.

3. Air Quality Impacts

Air quality is affected by Criteria Air Contaminants (CAC) which differ from GHG emissions as the end user impacts are different. This analysis involved valuing the changes in local air quality by the increase in emissions from trucks. The cost per tonne of CAC is delineated in the Metrolinx Business Case Development Handbook in 2014. These values along with CARB EMFAC's CAC emissions in tonnes per VMT create an impact factor of \$0.0442 per VKT in 2017 dollars. Therefore, the total cost of air quality impacts is estimated at \$5,665,156, discounted at 3.5% over the study horizon period.

²⁵ Metrolinx Business Case Development Handbook. September 2015.

²⁶ Metrolinx Business Case Development Handbook. September 2015.

²⁷ From the California Air Resources Board (CARB) Emission Factors model (EMFAC)

²⁸ Global Warming Potential factors from Ecometrica *Greenhouse Gases, CO₂, CO_{2e}, and Carbon. What Do These Mean?*

PEEL GOODS MOVEMENT – REGION OF PEEL

Summary

Based on the VKT impact factors for collisions, greenhouse gas emissions, and air quality as well as the total VKT over the study horizon period, the total cost of the impacts were monetized for each year in the study horizon period (2021 to 2041). These costs were then discounted by the Metrolinx discount factor of 3.5%. The results or present value of the external economic impacts are summarized in **Table 8-6**.

TABLE 8-6: PRESENT VALUE OF EXTERNAL IMPACTS (IN \$2017 DOLLARS)

Impact	Present Value (Discounted at 3.5%)
Collision Impact	\$872,776
Greenhouse Gas Impact	\$63,654,620
Air Quality Impact	\$5,665,156
Total Impact	\$70,192,552

8.7 Summary of Economic Impact Analysis

The short-term (construction) and long-term (operational) benefits of the PEZ are presented in the tables below. These economic impacts represent the contribution the PEZ would make to the regional economy in terms of total output (revenue), GDP (value-add), labour income and job creation.

TABLE 8-7: SHORT-TERM PEZ ECONOMIC IMPACTS – CONSTRUCTION (IN \$2017)

Impact	2020 Forecast
Output	\$15,700,000
GDP	\$7,700,000
Labour	\$5,000,000
Jobs (Construction)	75

TABLE 8-8: LONG-TERM PEZ ECONOMIC IMPACTS - OPERATIONS (IN \$2017 MILLIONS)

Impact	2021 Forecast	2041 Forecast
Output	\$64.7	\$2,154.5
GDP	\$32.5	\$1,083.6
Labour	\$19.1	\$635.9
Jobs	331	11,070

The external economic impacts due to the PEZ are presented in the table below. These external impacts are related to incremental trucking and the damages caused in terms of increased risk of collisions, greenhouse gas emissions and air quality impacts.

PEEL GOODS MOVEMENT – REGION OF PEEL

With the implementation of the freight village, traffic will increase due to the number of additional trucks using the road network. This has a cost on society in terms of travel time and vehicle operating costs. In terms of VKT, it is estimated that truck travel will increase by approximately 6,100,000 km in 2021 to 14,200,000 km in 2041. Over the study period (2017 to 2041), it is expected that, cumulatively, VKT will increase by 202,400,000 km.

These VKT will lead to increased collisions, greenhouse gas emissions and air quality impacts. Based on the VKT monetization factors for collisions, greenhouse gas emissions, and air quality as well as the total VKT over the study horizon period, the total cost of the impacts were monetized for each year in the study horizon period (2021 to 2041). These costs were then discounted by the Metrolinx discount factor of 3.5%.

TABLE 8-9: PRESENT VALUE OF EXTERNAL IMPACTS (IN \$2017 DOLLARS)

Impact	Present Value (Discounted at 3.5%)
Collision Impact	\$872,776
Greenhouse Gas Impact	\$63,654,620
Air Quality Impact	\$5,665,156
Total Impact	\$70,192,552

9. CONCLUSION

Continuing the efforts of previous studies on freight villages, the Region of Peel is exploring the feasibility of a Peel Enterprise Zone (PEZ) in the Region as a strategy to address issues related to Goods Movement land use and employment density. This business case report looks exclusively at the feasibility of a PEZ in the Region of Peel.

The study undertakes a feasibility analysis through planning, economic and fiscal factors. For the purposes of this type of study, a specific site was selected for which to measure these factors. The conclusion of the study is to understand the feasibility of a PEZ for the selected site and for sites that share similar features.

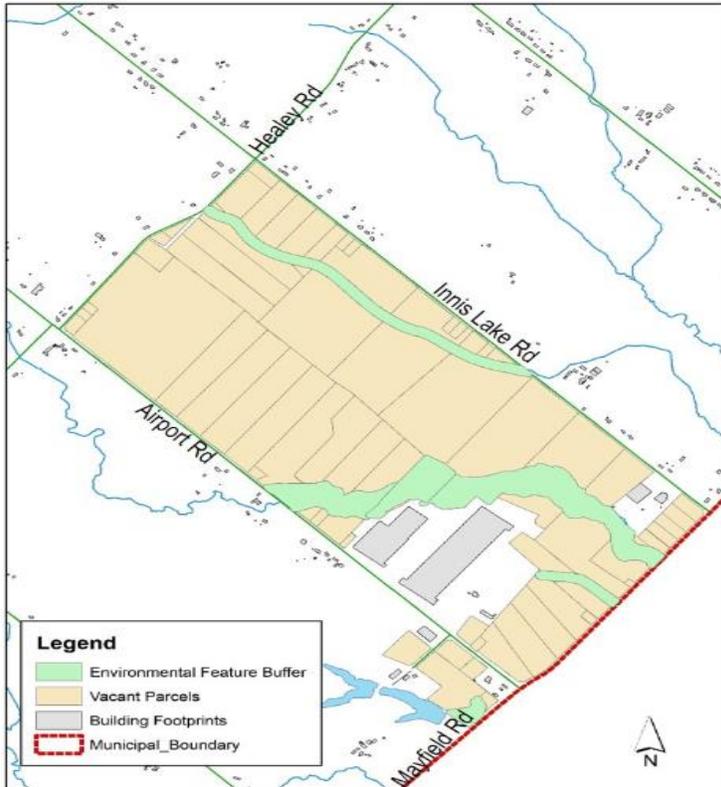
The Goods Movement sector forms an integral part of the Region of Peel's economic development and employment growth potential. The Region of Peel comprises a high concentration of Goods Movement related industries which contribute significantly to the local, provincial and national economies.

Based on a detailed site selection analysis, a preferred site has been identified in the Town of Caledon to conceptually establish the feasibility of developing a PEZ within Peel Region. The subject site is bound by Airport Road to the west, Innis Lake Road to the east, Healey Road to the north and Mayfield Road to the south, as shown in the figure below.²⁹ The total gross development land area, excluding environmental features, is 315 hectares.

²⁹ Geographic delineation of the preferred site is conceptual and may be subject to change.

PEEL GOODS MOVEMENT – REGION OF PEEL

TULLAMORE VACANT LAND SITE



Source: Watson & Associates Economists Ltd.

A high-level review was completed of the current and future transportation and water/wastewater capital infrastructure needs around the Tullamore site in order to determine the feasibility of a PEZ. Under current assumptions, the planned roadway improvements for Mayfield Road indicate adequate capacity to account for the increased traffic volume, no capital improvements have been suggested. The site could be used as a PEZ without removing the truck restrictions imposed on Innis Lake Road and Healey Road. However, removing the truck restrictions will improve truck traffic around the site and should still be considered as a potential improvement by the Region.

The water demands and wastewater flows were estimated corresponding to the PEZ development. This estimate was based on the forecasted 2041 total population (employment) estimates for the PEZ site as well as proposed land uses on the site. Preliminary analysis of the water and wastewater infrastructure reveals need for capital improvements of the existing systems in order to accommodate a large development such as the PEZ. The preliminary estimate of these capital costs is \$8,446,750.

PEEL GOODS MOVEMENT – REGION OF PEEL

The development of and operations within a PEZ would create opportunities for increased economic activity in the form of jobs, GDP and economic output. This economic activity will be generated from both the construction of the necessary infrastructure needed for the facility and through the business operations occurring on the site.

The short-term economic impacts have been calculated based on the estimated water/wastewater capital expenditures required to develop the PEZ site. It is estimated that the short-impacts due to the capital infrastructure investment will generate an estimated \$7.7 million in GDP and generate 75 full time equivalent employees during the construction period in 2020.

The long-term economic impacts have been calculated based on the estimated employment creation due to the PEZ. The PEZ employment forecasts were based on the following sectors: employment supportive uses, manufacturing, multi-tenant office and Goods Movement. The cumulative economic impacts for GDP is estimated to be \$1.1 billion, with the creation of upwards of 11,000 full time equivalent jobs by 2041.

APPENDIX A

Land Use Schedules of Local Municipalities

APPENDIX B

Stakeholder Workshop Discussion Guide

Business Case for a Goods Movement Employment Growth District

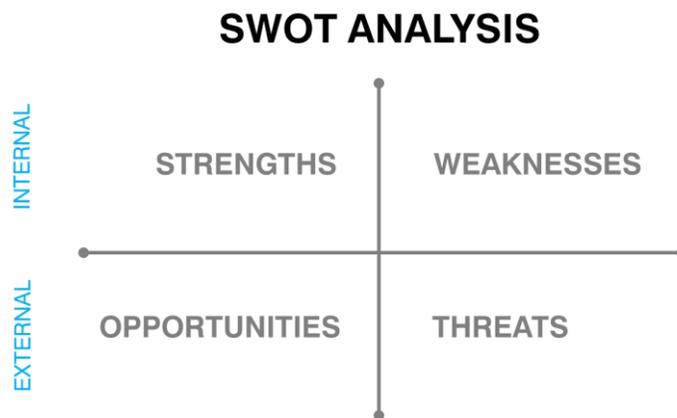
Stakeholder Workshop

Goal

- Feedback on local and regional land use and transportation planning characteristics for a potential GMEGD.
- Identify economic development opportunities related to the goods movement industry.

Instructions

- Break out into smaller groups.
- Review the preliminary site locations.
- Discuss the land use and transportation planning characteristics of each site.
- Do not convey your preference for a particular site.
- The preliminary sites are more conceptual.
- Your input will be used to refine the criteria for a preferred location option for a potential GMEGD in Peel.



Next Steps

- We will take the feedback and develop more refined criteria for site selection.
- The criteria will be used to identify a preferred site location for a potential GMEGD.
- A feasibility assessment will be conducted on the preferred site location.

APPENDIX C

Site Evaluation Scoring

TABLE: SITE EVALUATION SCORING

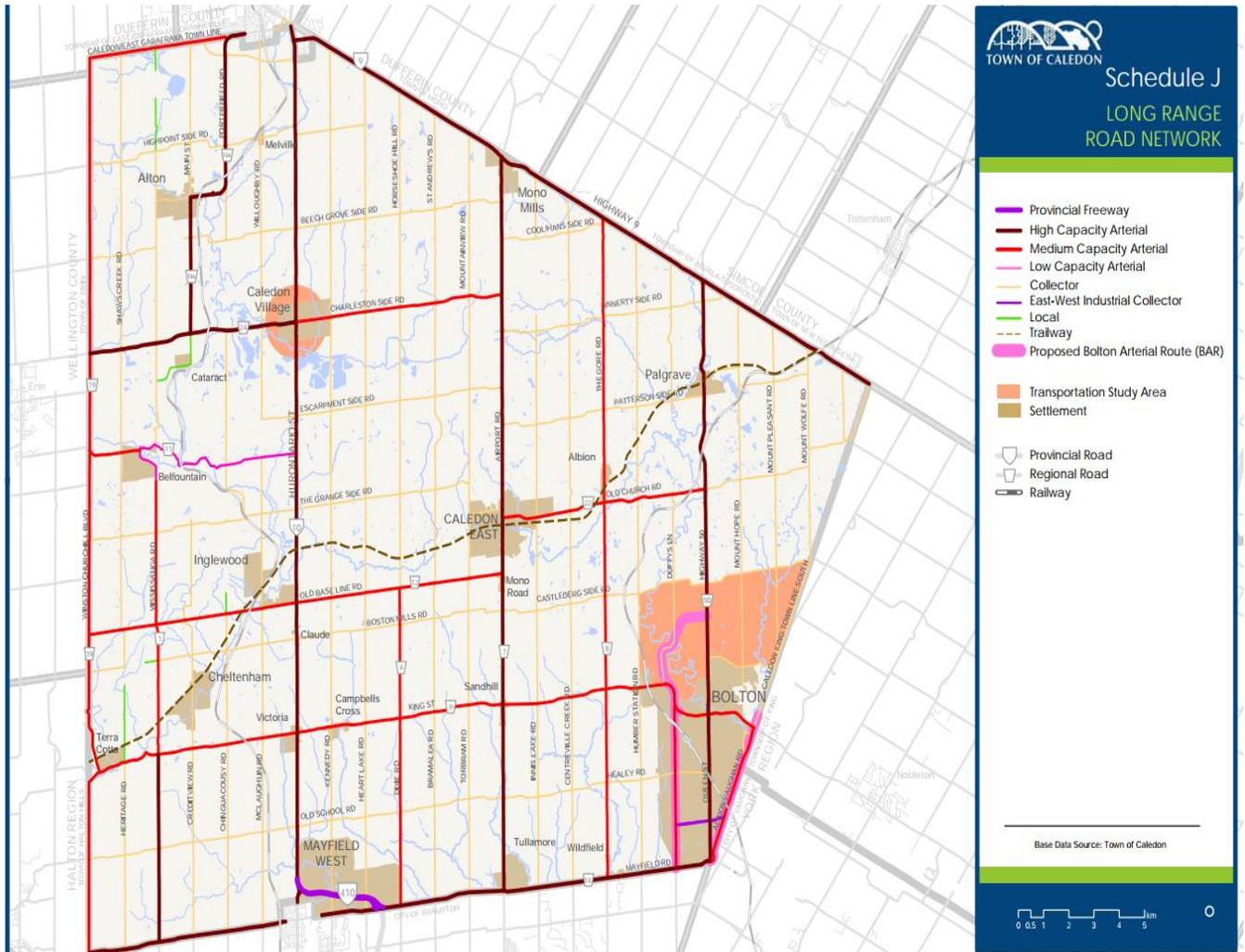
#	Criteria	INPUT EVALUATION		RATING		WEIGHT	SCORE	
		Victoria	Tullamore	Victoria	Tullamore		Victoria	Tullamore
1	Connectivity and access to Pearson International Airport	24	30	1.00	0.80	3	3.00	2.40
2	Connectivity and access to CN/CP Intermodal Rail (Current and Planned)	26.5	18	0.68	1.00	2	1.36	2.00
3	Proximity to Rail Line (Current or Planned)	0.1	7	1.00	0.01	2	2.00	0.03
4	Proximity, access, exposure to 400-Series Highways (Current and Planned)	3.5	6.5	1.00	0.54	3	3.00	1.62
5	Located on Peel SGMN Truck Network	y	y	1.00	1.00	3	3.00	3.00
6	Proximity to Transit Network (Current and Planned)	4.4	1.7	0.39	1.00	1	0.39	1.00
7a	Site Serviced by Water (Current and Planned)	n	y	0.00	1.00	4	0.00	4.00
7b	If the site is not serviced, have servicing impediments been identified?	Y	-	0.00	0.00	1	0.00	0.00
8a	Site Serviced by Wastewater (Current and Planned)	y	y	1.00	1.00	4	4.00	4.00
8b	If the site is not serviced, have servicing impediments been identified?	-	-	0.00	0.00	1	0.00	0.00
9	Telecommunications infrastructure	y	y	1.00	1.00	3	3.00	3.00
10	Available Land Area/Parcel Size, Lot Configuration/Land assembly constraints (i.e. has the site been subdivided)	4	3	1	0.75	4	4.00	3.00
11	Compatibility of Existing/Future Employment Areas to Goods Movement Sector	Good	Good	1	1	4	4.00	4.00
12	Does the site allow for future land expansion?	Y	Y	1.00	1.00	3	3.00	3.00
13	Proximity to Residential Land Use (Current and Planned)	3	2	0.75	0.5	4	3.00	2.00
14	Physical and/or Environmental Constraints	3	3	0.75	0.75	4	3.00	3.00
15	Development costs	4	4	1	1	1	1.00	1.00
16	Market demand	1	3	0.25	0.75	3	0.75	2.25
						50.00	38.49	39.29

APPENDIX D

Road Network Maps

Road networks

Town of Caledon Road Classification



City of Brampton Road Classification



APPENDIX E

Trip Generation Forecast



Trip Generation Calculations

Employment Estimate						
Employment Sector	Percentage Employment by Sector	Average Emp. Density (Emp./Net Ha)	Weighted Employment Density	Total Developable Land Area	Percentage Land Area by Employment Type	Employment Yield
Employment Supportive Uses	8%	53.8	2.15	8.6	4%	461
Manufacturing	22%	29.4	5.88	42.8	20%	1,258
Multi-Tenant Office	8%	108.6	2.17	4.3	2%	465
Goods Movement	62%	22.7	16.80	158.4	74%	3,595
Total	100%	27.00	27.00	214.0	100%	5,778

Source: Watson & Associates Economists Ltd. 2017

1. Includes ancillary retail and stand alone commercial uses intended to support the Good Movement Employment Growth District

Truck Generation Estimate: 12.5-h Trip-Generation Calibrated Rates²				
	Manufacturing, transportation, communication, utilities, wholesale trade	Retail Trade	Office and services	Total
Employment Yield	4,853	461	465	5,778
Calibrated Rates	0.517	0.323	0.109	0.949
Truck Yield	2,509.05	148.75	50.66	2,708.46

APPENDIX F

Supplementary Fiscal Impact Analysis

APPENDIX F – SUPPLEMENTARY FISCAL IMPACT ANALYSIS

This Appendix provides additional detailed tables which assess the potential impact of the proposed G.M.E.G.D. to the Region at full buildout of anticipated non-residential development for this area. This is done by examining the revenue and expenditure implications separately, and then together with reference to the net operating position. Further, a lifecycle cost analysis is provided for the works required, for both direct and indirect (external works) lifecycle costs.

Operating Expenditure Implications

Table F-1 summarizes the Region's "Revenue Fund" or "Operating Fund" transactions for 2016 (based on the Region's Financial Information Return (F.I.R.)). This represents a simple "model" of the Region's financial position for the operating fund and provides the structure of the financial impact analysis.

Table F-2 modifies the operating expenditures shown in Table F-1 by netting "Interest on Long Term Debt," "External Transfers," and "Amortization" from the total. The debt charges are for "sunk" investments, unaffected by growth. The external transfers can vary significantly from year to year and relate largely to capital expenditures and general reserves, which are addressed separately in this analysis. Further, amortization is an accounting allocation which seeks to capture annual replacement costs. As this is based on historic costs, a separate analysis on lifecycle expenditures (based on future replacement cost) is conducted later in this appendix. It is therefore appropriate to remove these three classes of expenditures from the spending base, before determining incremental loss and/or average operating fund spending levels per capita and employee.

Table F-3 allocates the Region's existing operating expenditure components between the needs of residential development and non-residential development (i.e. industrial, commercial and institutional), based on differences in the amount of such development and the need for particular types of services in each case. The expenditure allocation is then presented on a per household/per employee basis.

Table F-4 assesses each of the Region's key service components in relation to the proposed development, to determine how the operating costs are likely to be impacted, based on the characteristics and location of the subject development.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-1: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, SUMMARY OF CONSOLIDATED EXPENDITURES, REVENUES, AND TAX RATES, 2016 F.I.R. DATA

	General Levy
1. GROSS EXPENDITURES	
1.1 General Government	91,488.9
1.2 Police	409,545.9
1.3 Court Security	11,520.1
1.4 Prisoner Transportation	176.7
1.5 Conservation Authority	45,753.7
1.6 Emergency Measures	2,066.3
1.7 Roadways & Winter Control	100,036.4
1.8 Transit	42,265.5
1.9 Street Lighting	(1,784.0)
1.10 Other: Admin/Gas Tax	33,520.2
1.11 Wastewater Collection/Conveyance	106,791.7
1.12 Wastewater Treatment & Disposal	79,431.0
1.13 Urban Storm Sewer System	(4.3)
1.14 Water Treatment	112,351.6
1.15 Water Distribution/Transmission	131,843.7
1.16 Solid Waste Collection	26,685.8
1.17 Solid Waste Disposal	25,055.9
1.18 Waste Diversion	84,588.9
1.19 Public Health Services	70,596.1
1.20 Ambulance Services	82,733.7
1.21 General Assistance	268,628.7
1.22 Assistance to Aged Persons	92,719.0
1.23 Child Care	137,717.4
1.24 Other: Admin & Strategy Policy	4,884.9
1.25 Public Housing	33,788.5
1.26 Non-Profit/Cooperative Housing	107,943.7
1.27 Rent Supplement Programs	36,200.8
1.28 Cultural Services	2,295.8
1.29 Planning and Zoning	6,598.1
Total Gross Expenditures	2,145,440.9
2. REVENUES	
2.1 Payment in Lieu of Taxes	14,509.4
2.2 Unconditional Grants	0.0
2.3 Specific Grants	570,496.6
2.4 Revenue from Other Municipalities for Tangible Capital Assets	27,893.2
2.5 Other Municipal Grants and Fees	26,080.4
2.6 User Fees and Service Charges	418,193.7
2.7 Licenses, Permits, Rents, etc.	63,725.2
2.8 Tax Penalties/Interest and Fines	1,325.8
2.9 Investment Income & Donations	8,844.1
2.10 Interest Earned on Reserves and Reserve Funds	52,285.9
2.11 Deferred Revenue Earned	311,057.0
2.12 Donated Tangible Capital Assets	58,615.0
2.13 Other ¹	16,867.8
2.14 (Surplus) / Deficit	(387,938.4)
Total Revenues	1,181,955.7
NET EXPENDITURES	963,485.3
3. PROPERTY TAXATION	963,485.3

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-1 (CONT'D): REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, SUMMARY OF CONSOLIDATED EXPENDITURES, REVENUES, AND TAX RATES, 2016 F.I.R. DATA

	General Levy		
	Market Assessment	Tax Ratio	Weighted Assessment
4 CALCULATION OF TAX RATES			
<u>Weighted Assessment (000's)</u>			
4.1 Residential Assessment (RT)	11,614,138.7	1.0000	11,614,138.7
4.2 Multi-Residential Assessment (MT)	34,021.0	1.6843	57,301.6
4.3 Commercial Assessment (CT)	679,980.4	1.3124	892,380.4
4.4 Commercial Excess and Vacant Land (CU, CX, SU, XU)	70,315.3	1.3124	92,279.1
4.5 Office Assessment (DT)	937.0	1.3124	1,229.7
4.6 Shopping Centre and Parking Lot Assessment (GT, ST, XT, ZT)	612,744.2	1.3124	804,142.2
4.7 Industrial Assessment (IT, IH, JT)	311,768.5	1.5805	492,750.1
4.8 Industrial Vacant Assessment (IU, IK, IX, JX)	211,916.3	1.5805	334,933.7
4.9 Large Industrial Assessment (LT)	100,462.5	1.5805	158,781.0
4.10 Large Industrial Vacant Assessment (LU)	545.0	1.5805	861.4
4.11 Pipeline Assessment (PT)	19,136.0	0.9239	17,679.8
4.12 Farmlands (FT)	924,977.1	0.1668	154,286.2
4.13 Res, Commercial and Industrial Farm Awaiting Development (R1, C1, I1)	4,332.0	1.0000	4,332.0
4.14 Managed Forests Assessment (TT)	88,925.8	0.2500	22,231.5
4.15 Total Weighted Assessment (000's)	14,674,199.8		14,647,327.3
4.16 2016 Residential Tax Rate (RT)			0.319267%
4.17 2016 Multi-Residential Tax Rate (MT)			0.537742%
4.18 2016 Commercial Tax Rate (CT)			0.418994%
4.19 2016 Commercial Excess and Vacant Land Tax Rate (CU, CX, SU, XU)			0.293296%
4.20 2016 Office Building Tax Rate (DT)			0.418994%
4.21 2016 Shopping Centre and Parking Lot Tax Rate (GT, ST, ZT, XT)			0.418994%
4.22 2016 Industrial Tax Rate (IT, IH, JT)			0.504602%
4.23 2016 Industrial Vacant Tax Rate (IU, IK, IX, JX)			0.353221%
4.24 2016 Large Industrial Tax Rate (LT)			0.504602%
4.25 2016 Large Industrial Vacant Tax Rate (LU)			0.353221%
4.26 2016 Pipeline Tax Rate (PT)			0.294971%
4.27 2016 Farmlands Tax Rate (FT)			0.053254%
4.28 2016 Res, Commercial, and Industrial Farm Awaiting Development (R1, C1, I1) Tax Rates			0.095780%
4.29 2016 Managed Forests Tax Rate (TT)			0.079817%

Source: Region of Peel 2016 Financial Information Return

¹ Other revenues include gain/loss on sale of land & capital assets, sale of publications, equipment etc., other revenues from recyclables/other and forgivable loan

Note: the tax rates above provide for the general tax levy for Caledon only.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-2: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, SUMMARY OF NET OPERATING EXPENDITURES

Category	Total Gross Expenditures	Interest on Long Term Debt	External Transfers	Amortization	Net Operating Expenditures
1.1 General Government	91,488,940	3,044,330	-	18,006,067	70,438,543
1.2 Police	409,545,917	-	-	11,893,454	397,652,463
1.3 Court Security	11,520,117	-	-	-	11,520,117
1.4 Prisoner Transportation	176,743	-	-	-	176,743
1.5 Conservation Authority	45,753,690	-	40,251,200	-	5,502,490
1.6 Emergency Measures	2,066,299	-	-	-	2,066,299
1.7 Roadways & Winter Control	100,036,426	647,492	-	52,820,471	46,568,463
1.8 Transit	42,265,534	-	18,284,082	1,238,018	22,743,434
1.9 Street Lighting	(1,783,952)	-	-	-	(1,783,952)
1.10 Other: Admin/Gas Tax	33,520,204	-	32,724,638	-	795,566
1.11 Wastewater Collection/Conveyance	106,791,736	23,133,501	-	31,857,666	51,800,569
1.12 Wastewater Treatment & Disposal	79,430,976	-	-	32,618,732	46,812,244
1.13 Urban Storm Sewer System	(4,332)	-	-	-	(4,332)
1.14 Water Treatment	112,351,630	31,931,783	-	32,578,533	47,841,314
1.15 Water Distribution/Transmission	131,843,729	-	-	53,784,358	78,059,371
1.16 Solid Waste Collection	26,685,753	-	-	3,589,722	23,096,031
1.17 Solid Waste Disposal	25,055,941	-	-	839,801	24,216,140
1.18 Waste Diversion	84,588,902	-	-	8,635,325	75,953,577
1.19 Public Health Services	70,596,143	-	577,385	217,947	69,800,811
1.20 Ambulance Services	82,733,741	-	45	3,729,011	79,004,685
1.21 General Assistance	268,628,658	-	-	257,698	268,370,960
1.22 Assistance to Aged Persons	92,718,990	-	-	3,275,445	89,443,545
1.23 Child Care	137,717,417	-	122,597,453	110,907	15,009,057
1.24 Other: Admin & Strategy Policy	4,884,863	-	6,725,407	-	(1,840,544)
1.25 Public Housing	33,788,482	8,107,678	(48,218,000)	10,913,227	62,985,577
1.26 Non-Profit/Cooperative Housing	107,943,745	765,465	77,074,257	3,725,588	26,378,435
1.27 Rent Supplement Programs	36,200,763	-	34,590,804	-	1,609,959
1.28 Cultural Services	2,295,830	-	-	-	2,295,830
1.29 Planning and Zoning	6,598,053	-	30,000	18,295	6,549,758
TOTAL	2,145,440,938	67,630,249	284,637,271	270,110,265	1,523,063,153

Source: Region of Peel 2016 Financial Information Return

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-3: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, SUMMARY OF NET OPERATING EXPENDITURES

Category	Total Net Operating Expenditure	Residential Share		Cost Per Capita	Non-Residential Share		Cost Per Employee
		%	\$		%	\$	
1. Expenditures							
1.1 General Government	70,438,543	70%	49,568,238	35.87	30%	20,870,305	35.87
1.2 Police	397,652,463	70%	279,831,626	202.52	30%	117,820,837	202.52
1.3 Court Security	11,520,117	70%	8,106,810	5.87	30%	3,413,307	5.87
1.4 Prisoner Transportation	176,743	70%	124,376	0.09	30%	52,367	0.09
1.5 Conservation Authority	5,502,490	70%	3,872,152	2.80	30%	1,630,338	2.80
1.6 Emergency Measures	2,066,299	70%	1,454,073	1.05	30%	612,226	1.05
1.7 Roadways & Winter Control	46,568,463	70%	32,770,648	23.72	30%	13,797,815	23.72
1.8 Transit	22,743,434	70%	16,004,760	11.58	30%	6,738,674	11.58
1.9 Street Lighting	(1,783,952)	70%	(1,255,383)	(0.91)	30%	(528,569)	(0.91)
1.10 Other: Admin/Gas Tax	795,566	70%	559,847	0.41	30%	235,719	0.41
1.11 Wastewater Collection/Conveyance	51,800,569	70%	36,452,528	26.38	30%	15,348,041	26.38
1.12 Wastewater Treatment & Disposal	46,812,244	70%	32,942,199	23.84	30%	13,870,046	23.84
1.13 Urban Storm Sewer System	(4,332)	70%	(3,049)	0.00	30%	(1,284)	0.00
1.14 Water Treatment	47,841,314	70%	33,666,364	24.37	30%	14,174,950	24.37
1.15 Water Distribution/Transmission	78,059,371	70%	54,931,084	39.76	30%	23,128,287	39.76
1.16 Solid Waste Collection	23,096,031	100%	23,096,031	16.72	0%	0	0.00
1.17 Solid Waste Disposal	24,216,140	70%	17,041,116	12.33	30%	7,175,024	12.33
1.18 Waste Diversion	75,953,577	100%	75,953,577	54.97	0%	0	0.00
1.19 Public Health Services	69,800,811	90%	62,820,730	45.46	10%	6,980,081	12.00
1.20 Ambulance Services	79,004,685	90%	71,104,217	51.46	10%	7,900,469	13.58
1.21 General Assistance	268,370,960	100%	268,370,960	194.23	0%	0	0.00
1.22 Assistance to Aged Persons	89,443,545	100%	89,443,545	64.73	0%	0	0.00
1.23 Child Care	15,009,057	95%	14,258,604	10.32	5%	750,453	1.29
1.24 Other: Admin & Strategy Policy	(1,840,544)	100%	(1,840,544)	(1.33)	0%	0	0.00
1.25 Public Housing	62,985,577	100%	62,985,577	45.58	0%	0	0.00
1.26 Non-Profit/Cooperative Housing	26,378,435	100%	26,378,435	19.09	0%	0	0.00
1.27 Rent Supplement Programs	1,609,959	100%	1,609,959	1.17	0%	0	0.00
1.28 Cultural Services	2,295,830	95%	2,181,039	1.58	5%	114,792	0.20
1.29 Planning and Zoning	6,549,758	70%	4,609,124	3.34	30%	1,940,634	3.34
TOTAL	1,523,063,153		1,267,038,642	917.00		256,024,511	440.09

2016 Population Estimate 1,381,739 70%
 2016 Employment Estimate 581,770 30%

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-4: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, OPERATING EXPENDITURES – GROWTH SENSITIVITY ANALYSIS

Expenditure Category	NON-RESIDENTIAL		
	Net Expenditure per Employee	Growth Share %	Net Expenditure Recast
1.1 General Government	35.87	25%	8.97
1.2 Protection to Person and Property			
1.2.1 Police	202.52	100%	202.52
1.2.2 Court Security	5.87	100%	5.87
1.2.3 Prisoner Transportation	0.09	100%	0.09
1.2.4 Conservation Authority	2.80	100%	2.80
1.2.5 Emergency Measures	1.05	100%	1.05
1.3 Transportation Services			
1.3.1 Roadways & Winter Control	23.72	100%	23.72
1.3.2 Transit	11.58	100%	11.58
1.3.3 Street Lighting	(0.91)	0%	-
1.3.4 Other: Admin/Gas Tax	0.41	100%	0.41
1.4 Environmental Services			
1.4.1 Wastewater Collection/Conveyance	26.38	100%	26.38
1.4.2 Wastewater Treatment & Disposal	23.84	100%	23.84
1.4.3 Urban Storm Sewer System	-	n/a	-
1.4.4 Water Treatment	24.37	100%	24.37
1.4.5 Water Distribution/Transmission	39.76	100%	39.76
1.4.6 Solid Waste Collection	-	n/a	-
1.4.7 Solid Waste Disposal	12.33	100%	12.33
1.4.8 Waste Diversion	-	n/a	-
1.5 Health Services			
1.5.1 Public Health Services	12.00	75%	9.00
1.5.2 Ambulance Services	13.58	75%	10.19
1.6 Social and Family Services			
1.6.1 General Assistance	-	n/a	-
1.6.2 Assistance to Aged Persons	-	n/a	-
1.6.3 Child Care	1.29	75%	0.97
1.6.4 Other: Admin & Strategy Policy	-	n/a	-
1.6.5 Public Housing	-	n/a	-
1.6.6 Non-Profit/Cooperative Housing	-	n/a	-
1.6.7 Rent Supplement Programs	-	n/a	-
1.7 Recreation and Cultural Services			
1.7.1 Cultural Services	0.20	50%	0.10
1.8 Planning and Development			
1.8.1 Planning and Zoning	3.34	100%	3.34
TOTAL	440.09		407.29

Source: Region of Peel 2016 Financial Information Return

PEEL GOODS MOVEMENT – REGION OF PEEL

The “Growth Share %” column denotes a particular percentage factor in each case. This factor reflects any variation from the current overall average per household expenditure level, which is called for in dealing with a development increment. For instance, if the average existing expenditure for a service is \$100 per employee, economies of scale or other efficiencies may indicate that service costs for the growth increment alone are likely to be lower than 100% of existing per capita expenditures. This determination has been based on analysis of the Region’s budget, discussions with Regional staff as well as experience and best practices associated with related studies. The provisions made are considered to be adequate with respect to the proposed development and existing service capacity in the Region.

These percentage attributions are used to compute average incremental operating costs per employee, which is reflected in the “Net Expenditure” column. The per employee expenditure averages are utilized, subsequently, to estimate the incremental expenditure requirement generated by growth.

Based on the analysis provided in Table F-4, forecast annual expenditures have been determined. Table F-5 provides for the per employee expenditure by service amount multiplied by the assumed absorption of growth over the assumed development horizon. The total line provides for the product of this calculation.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-5: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, OPERATING EXPENDITURE SUMMARY

CATEGORY	Cost per Employee	Incremental Expenditures (2016 \$)
1. Expenditures		
1.1 General Government	8.97	51,838
1.2 Police	202.52	1,170,363
1.3 Court Security	5.87	33,923
1.4 Prisoner Transportation	0.09	520
1.5 Conservation Authority	2.80	16,181
1.6 Emergency Measures	1.05	6,068
1.7 Roadways & Winter Control	23.72	137,078
1.8 Transit	11.58	66,921
1.9 Street Lighting	-	-
1.10 Other: Admin/Gas Tax	0.41	2,369
1.11 Wastewater Collection/Conveyance	26.38	152,450
1.12 Wastewater Treatment & Disposal	23.84	137,771
1.13 Urban Storm Sewer System	-	-
1.14 Water Treatment	24.37	140,834
1.15 Water Distribution/Transmission	39.76	229,773
1.16 Solid Waste Collection	-	-
1.17 Solid Waste Disposal	12.33	71,255
1.18 Waste Diversion	-	-
1.19 Public Health Services	9.00	52,011
1.20 Ambulance Services	10.19	58,888
1.21 General Assistance	-	-
1.22 Assistance to Aged Persons	-	-
1.23 Child Care	0.97	5,606
1.24 Other: Admin & Strategy Policy	-	-
1.25 Public Housing	-	-
1.26 Non-Profit/Cooperative Housing	-	-
1.27 Rent Supplement Programs	-	-
1.28 Cultural Services	0.10	578
1.29 Planning and Zoning	3.34	19,302
TOTAL	407.29	2,353,729

Operating Revenue Implications

Table F-6 sets out the 2016 non-tax revenues for the Region as outlined in Table F-1. The table distinguishes the revenues by service specific revenues in Section 2.1 (defined as being directly related to individual programs) and those being of a general nature (Section 2.2).

Table F-7 assesses the 2016 non-tax revenues as to those which may be directly affected by growth. Generally, any grants and subsidies have been eliminated and the residual amounts are assessed as to their applicability to growth. The costs are then allocated between households and employees to provide a per household and per employee revenue.

Table F-8 assesses the estimated proportionate share of growth in a similar manner as provided in Table F-5. Table F-9 then determines the forecast non-tax revenue to be generated annually based on the anticipated growth.

Taxation Revenue

Based on the Assessment Increment calculations provided in the main body of the report, a forecast of the annual taxation revenue to be generated was undertaken using the 2016 tax rates. Table F-10 provides for this calculation at buildout of the proposed G.M.E.G.D.

Lifecycle Analysis

Table F-11 provides a summary of anticipated annual lifecycle costs by service associated with the direct capital works identified. These works (i.e. water and wastewater etc.) are either a direct developer responsibility or may be included in future D.C. studies, however once these works are assumed, the Region will incur lifecycle costs associated with the future replacement of the works at the end of their useful life. Local water and sewer mains have been estimated based on 15% coverage of the developable land area for the internal road network. It is assumed that there would need to be at least as many km of mains as there are local roads. The replacement of capital is often referred to as asset management or lifecycle cost. The method selected in this analysis to assess future asset replacement costing is the sinking fund method which provides that money will be contributed annually and invested, so that those funds will grow over time to equal the amount required for future replacement. The following factors were utilized to calculate the annual replacement cost of the capital projects (annual contribution = factor X capital asset cost) based on an annual growth rate of 2% (net of inflation) over the

PEEL GOODS MOVEMENT – REGION OF PEEL

average useful life of the asset. These costs are included in the net impact calculations.

Table F-12 provides for an analysis of the indirect capital costs identified in the Region's 2015 D.C. study for each concept. The Region's 2015 D.C. background study identifies forecast growth of 286,800 persons and employees combined in Peel over the 10-year forecast. The combined population and employment forecast is estimated at 439,800 over the 18-year forecast as per the 2015 Peel Region D.C. Background Study. Table F-12 calculates the share of the annual lifecycle contributions identified in the 2015 Peel Region D.C. Background Study by service which can be allocated to the subject development area. These costs are included in the net impact calculations.

Assessment Sample

Table F-13 summarizes the assessment sample used to determine the anticipated tax revenues associated with the proposed G.M.E.G.D.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-6: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, OPERATING REVENUE SUMMARY

CATEGORY	NON-TAX OPERATING REVENUES (2016 \$)					
	Ontario Conditional Grants	Canada Conditional Grants	Other Municipalities	User Fees and Service Charges	Total User Fees, Service Charges, and Grants	Total Revenue - FIR 2016
2. Revenues						
2.1 <u>Service Specific Non-Tax Revenues</u>						
General Government	182,289	-	582,590	16,442,661	16,624,950	17,207,540
Police	15,147,157	1,680	552,070	22,367,096	37,515,933	38,068,003
Court Security	-	-	-	-	-	-
Prisoner Transportation	-	-	-	-	-	-
Conservation Authority	-	-	-	-	-	-
Emergency Measures	-	-	-	-	-	-
Roadways & Winter Control	117,487	-	621,615	5,318,205	5,435,692	8,781,689
Transit	-	-	-	1,951,093	1,951,093	1,951,093
Street Lighting	-	-	-	-	-	-
Other: Admin/Gas Tax	-	-	10,000	2,368,697	2,368,697	2,378,697
Wastewater Collection/Conveyance	5,437	-	5,131,046	139,510,824	139,516,261	147,491,302
Wastewater Treatment & Disposal	-	-	-	-	-	-
Urban Storm Sewer System	-	-	-	-	-	-
Water Treatment	36,397	-	9,368,910	99,529,658	99,566,055	114,054,308
Water Distribution/Transmission	37,882	-	9,751,315	104,063,632	104,101,514	131,077,728
Solid Waste Collection	461,528	-	-	120,190	581,718	581,718
Solid Waste Disposal	-	-	-	-	-	-
Waste Diversion	13,348,975	-	-	5,476,279	18,825,254	18,825,254
Public Health Services	47,073,430	-	-	396,614	47,470,044	47,470,044
Ambulance Services	40,151,087	-	43,375	55,269	40,206,356	40,249,731
General Assistance	217,829,438	-	-	125,541	217,954,979	217,954,979
Assistance to Aged Persons	40,438,872	-	-	16,486,767	56,925,639	56,925,639
Child Care	121,401,315	-	-	-	121,401,315	121,401,315
Other: Admin & Strategy Policy	225,435	-	-	66,591	292,026	292,026
Public Housing	-	-	-	-	-	-
Non-Profit/Cooperative Housing	8,684,877	24,305,736	-	3,098,403	36,089,016	40,244,016
Rent Supplement Programs	-	-	-	-	-	-
Cultural Services	46,782	-	-	-	46,782	46,782
Planning and Zoning	-	-	19,495	816,184	816,184	835,679
2.2 <u>Other Non-Tax Revenues</u>						
Payment in Lieu of Taxes						14,509,360
Unconditional Grants						-
Specific Grants						570,496,598
Revenue from Other Municipalities for Tangible Capital Assets						27,893,229
Other Municipal Grants and Fees						26,080,416
User Fees and Service Charges						418,193,704
Licenses, Permits, Rents, etc.						63,725,181
Tax Penalties/Interest and Fines						1,325,843
Investment Income & Donations						8,844,062
Interest Earned on Reserves and Reserve Funds						52,285,887
Deferred Revenue Earned						311,057,000
Donated Tangible Capital Assets						58,615,000
Other ¹						16,867,824
(Surplus) / Deficit						(387,938,437)
TOTAL	505,188,388	24,307,416	26,080,416	418,193,704		2,187,793,210

Source: Region of Peel 2016 Financial Information Return

¹ Other revenues include gain/loss on sale of land & capital assets, sale of publications, equipment etc., other revenues from recyclables/other and forgivable loan

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-7: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, NON-TAX OPERATING REVENUE SUMMARY

CATEGORY	Total Net Operating Revenue and Grants	Residential Share		Revenue Per Capita	Non-Residential Share		Revenue Per Employee
		%	\$		%	\$	
2. Revenues							
2.1 <u>Service Specific Non-Tax Revenues</u>							
General Government	16,624,950	70%	11,699,127	8.47	30%	4,925,823	8.47
Police	37,515,933	70%	26,400,301	19.11	30%	11,115,632	19.11
Court Security	-	70%	-	-	30%	-	-
Prisoner Transportation	-	70%	-	-	30%	-	-
Conservation Authority	-	70%	-	-	30%	-	-
Emergency Measures	-	70%	-	-	30%	-	-
Roadways & Winter Control	5,435,692	70%	3,825,146	2.77	30%	1,610,547	2.77
Transit	1,951,093	70%	1,373,002	0.99	30%	578,091	0.99
Street Lighting	-	70%	-	-	30%	-	-
Other: Admin/Gas Tax	2,368,697	70%	1,666,874	1.21	30%	701,824	1.21
Wastewater Collection/Conveyance	139,516,261	70%	98,178,852	71.05	30%	41,337,409	71.05
Wastewater Treatment & Disposal	-	70%	-	-	30%	-	-
Urban Storm Sewer System	-	70%	-	-	30%	-	-
Water Treatment	99,566,055	70%	70,065,531	50.71	30%	29,500,524	50.71
Water Distribution/Transmission	104,101,514	70%	73,257,175	53.02	30%	30,844,339	53.02
Solid Waste Collection	581,718	100%	581,718	0.42	0%	-	-
Solid Waste Disposal	-	70%	-	-	30%	-	-
Waste Diversion	18,825,254	100%	18,825,254	13.62	0%	-	-
Public Health Services	47,470,044	90%	42,723,040	30.92	10%	4,747,004	8.16
Ambulance Services	40,206,356	90%	36,185,720	26.19	10%	4,020,636	6.91
General Assistance	217,954,979	100%	217,954,979	157.74	0%	-	-
Assistance to Aged Persons	56,925,639	100%	56,925,639	41.20	0%	-	-
Child Care	121,401,315	95%	115,331,249	83.47	5%	6,070,066	10.43
Other: Admin & Strategy Policy	292,026	100%	292,026	0.21	0%	-	-
Public Housing	-	100%	-	-	0%	-	-
Non-Profit/Cooperative Housing	36,089,016	100%	36,089,016	26.12	0%	-	-
Rent Supplement Programs	-	100%	-	-	0%	-	-
Cultural Services	46,782	95%	44,443	0.03	5%	2,339	-
Planning and Zoning	816,184	70%	574,356	0.42	30%	241,828	0.42
2.2 <u>Other Non-Tax Revenues</u>							
Payment in Lieu of Taxes	14,509,360	70%	10,210,368	7.39	30%	4,298,993	7.39
Unconditional Grants	-	n/a	-	-	n/a	-	-
Specific Grants ²	-	n/a	-	-	n/a	-	-
Revenue from Other Municipalities for Tangible Capital Assets	27,893,229	70%	19,628,717	14.21	30%	8,264,512	14.21
Other Municipal Grants and Fees	26,080,416	70%	18,353,024	13.28	30%	7,727,392	13.28
User Fees and Service Charges	418,193,704	70%	294,286,683	212.98	30%	123,907,021	212.98
Licenses, Permits, Rents, etc.	63,725,181	70%	44,843,985	32.45	30%	18,881,196	32.45
Tax Penalties/Interest and Fines	1,325,843	70%	933,008	0.68	30%	392,835	0.68
Investment Income & Donations	8,844,062	70%	6,223,646	4.50	30%	2,620,416	4.50
Interest Earned on Reserves and Reserve Funds	52,285,887	70%	36,794,051	26.63	30%	15,491,837	26.63
Deferred Revenue Earned	311,057,000	70%	218,893,618	158.42	30%	92,163,382	158.42
Donated Tangible Capital Assets	58,615,000	70%	41,247,904	29.85	30%	17,367,096	29.85
Other ¹	16,867,824	70%	11,870,040	8.59	30%	4,997,784	8.59
(Surplus) / Deficit	(387,938,437)	70%	(272,995,779)	(197.57)	30%	(114,942,659)	(197.57)
TOTAL	1,559,148,577	-	1,242,282,711	899.08	-	316,865,866	544.66

2016 Population Estimate

1,381,739

2016 Employment Estimate

581,770

¹ Other revenues include gain/loss on sale of land & capital assets, sale of publications, equipment etc., other revenues from recyclables/other and forgivable loan

² Specific grants have been included in section 2.1 above.

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-8: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, NON-TAX OPERATING REVENUES – GROWTH SENSITIVITY ANALYSIS

REVENUE CATEGORY	NON-RESIDENTIAL		
	Net Revenue per Employee	Growth Share %	Net Revenue Recast
2.1 Service Specific Non-Tax Revenues			
General Government	8.47	25%	2.12
Police	19.11	100%	19.11
Court Security	-	100%	-
Prisoner Transportation	-	100%	-
Conservation Authority	-	100%	-
Emergency Measures	-	100%	-
Roadways & Winter Control	2.77	100%	2.77
Transit	0.99	100%	0.99
Street Lighting	-	0%	-
Other: Admin/Gas Tax	1.21	100%	1.21
Wastewater Collection/Conveyance	71.05	100%	71.05
Wastewater Treatment & Disposal	-	100%	-
Urban Storm Sewer System	-	n/a	-
Water Treatment	50.71	100%	50.71
Water Distribution/Transmission	53.02	100%	53.02
Solid Waste Collection	-	n/a	-
Solid Waste Disposal	-	100%	-
Waste Diversion	-	n/a	-
Public Health Services	8.16	75%	6.12
Ambulance Services	6.91	75%	5.18
General Assistance	-	n/a	-
Assistance to Aged Persons	-	n/a	-
Child Care	10.43	75%	7.82
Other: Admin & Strategy Policy	-	n/a	-
Public Housing	-	n/a	-
Non-Profit/Cooperative Housing	-	n/a	-
Rent Supplement Programs	-	n/a	-
Cultural Services	-	50%	-
Planning and Zoning	0.42	100%	0.42
Sub-total	233.25		220.52
2.2 Other Non-Tax Revenues			
Payment in Lieu of Taxes	7.39	n/a	-
Unconditional Grants	-	n/a	-
Specific Grants	-	n/a	-
Revenue from Other Municipalities for Tangible Capital Assets	14.21	0%	-
Other Municipal Grants and Fees	13.28	0%	-
User Fees and Service Charges	212.98	n/a	-
Licenses, Permits, Rents, etc.	32.45	100%	32.45
Tax Penalties/Interest and Fines	0.68	100%	0.68
Investment Income & Donations	4.50	100%	4.50
Interest Earned on Reserves and Reserve Funds	26.63	100%	26.63
Deferred Revenue Earned	158.42	0%	-
Donated Tangible Capital Assets	29.85	0%	-
Other 1	8.59	50%	4.30
(Surplus) / Deficit	(197.57)	n/a	-
Sub-total	311.41		68.56
TOTAL	544.66		289.08

Source: Region of Peel 2016 Financial Information Return

1 Other revenues include gain/loss on sale of land & capital assets, sale of publications, equipment etc., other revenues from recyclables/other and forgivable loan

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-9: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, NON-TAX OPERATING REVENUE SUMMARY

CATEGORY	Revenue per Employee	Incremental Revenues (2016 \$)
2. Revenues		
2.1 <u>Service Specific Non-Tax Revenues</u>		
General Government	2.12	12,251
Police	19.11	110,437
Court Security	-	-
Prisoner Transportation	-	-
Conservation Authority	-	-
Emergency Measures	-	-
Roadways & Winter Control	2.77	16,008
Transit	0.99	5,721
Street Lighting	-	-
Other: Admin/Gas Tax	1.21	6,993
Wastewater Collection/Conveyance	71.05	410,598
Wastewater Treatment & Disposal	-	-
Urban Storm Sewer System	-	-
Water Treatment	50.71	293,053
Water Distribution/Transmission	53.02	306,403
Solid Waste Collection	-	-
Solid Waste Disposal	-	-
Waste Diversion	-	-
Public Health Services	6.12	35,367
Ambulance Services	5.18	29,935
General Assistance	-	-
Assistance to Aged Persons	-	-
Child Care	7.82	45,192
Other: Admin & Strategy Policy	-	-
Public Housing	-	-
Non-Profit/Cooperative Housing	-	-
Rent Supplement Programs	-	-
Cultural Services	-	-
Planning and Zoning	0.42	2,427
2.2 <u>Other Non-Tax Revenues</u>		
Payment in Lieu of Taxes	-	-
Unconditional Grants	-	-
Specific Grants	-	-
Revenue from Other Municipalities for Tangible Capital Assets	-	-
Other Municipal Grants and Fees	-	-
User Fees and Service Charges	-	-
Licenses, Permits, Rents, etc.	32.45	187,529
Tax Penalties/Interest and Fines	0.68	3,930
Investment Income & Donations	4.50	26,006
Interest Earned on Reserves and Reserve Funds	26.63	153,895
Deferred Revenue Earned	-	-
Donated Tangible Capital Assets	-	-
Other ¹	4.30	24,850
(Surplus) / Deficit	-	-
TOTAL	289.08	1,670,593

¹ Other revenues include gain/loss on sale of land & capital assets, sale of publications, equipment etc., other revenues from recyclables/other and forgivable loan

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-10: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, PROPERTY TAX REVENUE

Property Tax Classes and Tax Rates	Property Tax Revenue
1. Property Tax¹	
Non-residential Growth <i>Commercial Assessment</i>	877,160,000
Property Tax Revenue 0.4190%	3,675,248
Total Commercial Property Tax Revenue	3,675,248
Non-residential Growth <i>Industrial Assessment (IT, IH, JT)</i>	138,380,000
Property Tax Revenue 0.5046%	698,268
Total Industrial Property Tax Revenue	698,268
Non-residential Growth <i>Office Occupied Assessment (DT)</i>	26,562,000
Property Tax Revenue 0.4190%	111,293
Total Office Property Tax Revenue	111,293
TOTAL PROPERTY TAX REVENUE	4,484,809

¹ Tax Rates (2016):	
2016 Commercial Tax Rate (CT)	0.4190%
2016 Industrial Tax Rate (IT, IH, JT)	0.5046%
2016 Office Building Tax Rate (DT)	0.4190%

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-11: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, ANNUAL ASSET REPLACEMENT COSTING FORECAST FOR NEW INFRASTRUCTURE

Service	Unit Measure	Unit Cost 2016 \$	Capital Cost	% of Cost	Asset Useful Life (years)	Lifecycle Factor	Annual Contribution Total
Water							
Local Watermains (m)	26,000	1,000	26,000,000	100%	100	0.0032	224,100
Watermain (300mm diameter) (m)	5,000	1,000	5,000,000	100%	100	0.0032	43,100
Wastewater							
Local sewer mains (m)	26,000	1,100	28,600,000	100%	100	0.0032	246,500
Sewer main (375mm diameter) (m)	3,200	1,100	3,520,000	100%	100	0.0032	30,300
Pumping Station			1,100,000	100%	80	0.0052	15,300
Total			64,220,000				559,300

Investment Rate	2%
-----------------	----

Notes: The replacement cost of the local water and sewer mains have been assumed to cost the same per m as the external mains.

A pump station may be required as per W.S.P.'s analysis. We have included the replacement cost to be conservative.

TABLE F-12: REGION OF PEEL – PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, ANNUAL INDIRECT LIFECYCLE EXPENDITURES

Service	Annual Lifecycle Contribution	Forecast Period	Share of Growth	Proportionate Share of Annual Lifecycle Costs for this Development
Wastewater Services	2,479,600	18 Year	1.31%	32,582
Water Services	7,871,500	18 Year	1.31%	103,432
Transportation	48,403,300	18 Year	1.31%	636,022
Police Services	417,100	18 Year	1.31%	5,481
Transhelp	3,700	10 Year	2.01%	75
Growth Studies	-	10 Year	2.01%	-
Long-Term Care	113,900	10 Year	2.01%	2,295
Shelters	69,400	10 Year	2.01%	1,398
Paramedics	100,600	10 Year	2.01%	2,027
Social Housing	468,400	10 Year	2.01%	9,438
Total	59,927,500			792,751

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-13: PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, SURVEY OF ASSESSMENT SAMPLES

Categories of Assessment	Average Assessment	Number in Sample
Retail	250	23
Manufacturing	100	10
Office	190	12
Warehousing	120	22

NAICS

44,45,72,81
22,23,31,32,33
51,52,43,54,55,56,61
41,48,49

Address	City	2016 Assessment	Site Area (acres)	Building Gross Floor Area (sq ft)	Building Gross Leaseable Area (sq ft)	Property Code	Category	Assessment per sq.ft.
6363 Millcreek Drive	Mississauga	\$36,716,000	38.350	501,923		545 - Major Distribution Centre	Warehousing	73
6520 Kestrel Road	Mississauga	\$5,831,000	5.050	63,441		530 - Warehousing	Warehousing	92
6765 Kennedy Road	Mississauga	\$68,256,000	49.690	924,592		545 - Major Distribution Centre	Warehousing	74
5425 Dixie Road	Mississauga	\$24,656,000	42.880	188,735		540 - Other Industrial	Warehousing	131
6130 Netherhart Road	Mississauga	\$9,599,000	18.860	49,676		544 - Truck Terminal	Warehousing	193
8301 Winston Churchill Boulevard	Brampton	\$30,861,000	66.810	480,615		527 - Abattoir/slaughter house/rendering plants	Manufacturing	64
8925 Torbram Road	Brampton	\$24,611,000	15.570	N/A	185,990	402 - Large office Building	Office	132
10410 Coleraine Drive	Brampton	\$3,180,000	3.290	32,022		510 - Heavy Manufacturing	Manufacturing	99
8 Cadetta Road	Brampton	\$3,242,000	2.050	16,273		530 - Warehousing	Warehousing	199
10 Cadetta Road	Brampton	\$2,128,000	2.050	21,978		520 - Standard Industrial Properties	Warehousing	97
12 Cadetta Road	Brampton	\$2,525,000	2.740	N/A	23,664	580 - Industrial Mall	Manufacturing	107
14 Cadetta Road	Brampton	\$3,171,000	4.670	23,210		540 - Other Industrial	Warehousing	137
16 Cadetta Road	Brampton	\$2,843,000	4.390	11,280		540 - Other Industrial	Warehousing	252
18 Cadetta Road	Brampton	\$1,710,000	2.270	13,281		540 - Other Industrial	Manufacturing	129
24 Cadetta Road	Brampton	\$1,706,000	2.050	7,882		520 - Standard Industrial Properties	Manufacturing	216
745 Intermodal Drive	Brampton	\$51,634,000	25.420	511,303		530 - Warehousing	Warehousing	101
8495 Goreway Drive	Brampton	\$31,645,000	30.670	370,356		530 - Warehousing	Warehousing	85
8550 Goreway Drive	Brampton	\$99,999,000	144.490	1,246,038		545 - Major Distribution Centre	Warehousing	80
7975 Heritage Road	Brampton	\$36,370,000	22.750	469,074		530 - Warehousing	Warehousing	78
20 Hereford Street	Brampton	\$28,330,000	17.530	448,703		530 - Warehousing	Warehousing	63
100 Edgeware Road	Brampton	\$31,297,000	25.180	450,614		530 - Warehousing	Warehousing	69
99 Hereford Street	Brampton	\$17,838,000	10.329	N/A	80,336	402 - Large Office Building	Office	222
99 Ironbridge Road	Brampton	\$14,122,000	4.520	N/A	69,426	402 - Large Office Building	Office	203
60 Hereford Street	Brampton	\$14,261,000	9.170	151,360		530 - Warehousing	Warehousing	94
40 Hereford Street	Brampton	\$27,171,000	18.187	385,919		530 - Warehousing	Warehousing	70
125 Edgeware Road	Brampton	\$27,487,000	15.180	371,072		530 - Warehousing	Warehousing	74
1 President's Choice Circle	Brampton	\$123,851,000	28.400	537,647		402 - Large Office Building	Office	230
55 Hereford Street	Brampton	\$34,764,000	14.382	128,805		530 - Warehousing	Warehousing	270
1 Hereford Street	Brampton	\$24,119,000	15.270	328,389		530 - Warehousing	Warehousing	73
2400 Meadowpine Blvd	Mississauga	\$10,113,000	3.790	N/A	59,354	402 - Large Office Building	Office	170
2455 Meadowpine Blvd	Mississauga	\$21,614,000	11.300	N/A	97,161	402 - Large Office Building	Office	222

PEEL GOODS MOVEMENT – REGION OF PEEL

TABLE F-13 (CONT'D): PROPOSED GOODS MOVEMENT EMPLOYMENT GROWTH DISTRICT, SURVEY OF ASSESSMENT SAMPLES

Categories of Assessment	Average Assessment	Number in Sample
Retail	250	23
Manufacturing	100	10
Office	190	12
Warehousing	120	22

NAICS
44,45,72,81
22,23,31,32,33
51,52,43,54,55,56,61
41,48,49

Address	City	2016 Assessment	Site Area (acres)	Building Gross Floor Area (sq ft)	Building Gross Leaseable Area (sq ft)	Property Code	Category	Assessment per sq.ft.
8501 Mississauga Road	Brampton	\$9,253,500	13.020	N/A	33,432	402 - Large Office Building	Office	277
18 Corporation Drive	Brampton	\$5,327,001	2.960	N/A	26,744	402 - Large Office Building	Office	199
21 Coventry Road	Brampton	\$3,299,750	1.400	N/A	26,237	402 - Large Office Building	Office	126
115 Midair Crt	Brampton	\$9,299,750	4.480	N/A	68,321	402 - Large Office Building	Office	136
66 Nuggett Crt	Brampton	\$1,895,000	1.770	N/A	18,468	402 - Large Office Building	Office	103
8460 Torbram Drive	Brampton	\$1,244,000	0.950	4,271		400 - Small Office Building	Office	291
10 Armthorpe Road	Brampton	\$19,293,500	7.390	184,021		528 - Food Processing Plant	Manufacturing	105
97 Walker Dr.	Brampton	\$16,717,250	15.250	198,212		528 - Food Processing Plant	Manufacturing	84
1995 Williams Parkway	Brampton	\$19,990,500	12.970	202,564		516 - Automotive Parts Production Plant	Manufacturing	99
2000 Williams Parkway	Brampton	\$108,358,000	243.800	3,177,930		514 - Automotive Assembly Plant	Manufacturing	34
6950 Creditview Rd	Mississauga	\$30,619,000	18.770	274,995		528 - Food Processing Plant	Manufacturing	111
2795 ARGENTIA RD	Mississauga	\$5,334,250	3.200	24,378		421 - Specialty Automotive Shop/Auto Repair/Collision Service/Car or Truck Wash	Retail	219
2926 ARGENTIA RD	Mississauga	\$20,566,000	9.740	115,761		435 - Free Standing Retail Building Centre	Retail	178
2980 ARGENTIA RD	Mississauga	\$2,987,250	1.500	9,191		420 - Automotive Fuel Station With or Without Service Facilities	Retail	325
3055 ARGENTIA RD	Mississauga	\$93,826,500	35.330	N/A	425,129	427 - Big Box Shopping/Power Centre	Retail	221
3120 ARGENTIA RD	Mississauga	\$38,341,501	11.790	N/A	113,672	427 - Big Box Shopping/Power Centre	Retail	337
7235 BELLISHIRE GATE	Mississauga	\$6,680,500	N/A	N/A	19,344	430 - Neighbourhood Shopping Centre	Retail	345
7205 COPENHAGEN RD	Mississauga	\$1,245,250	0.780	N/A	5,361	430 - Neighbourhood Shopping Centre	Retail	232
2980 CROSSCURRENT DR	Mississauga	\$3,501,250	1.350	N/A	12,442	430 - Neighbourhood Shopping Centre	Retail	281
7025 DANTON PROM	Mississauga	\$3,034,000	1.000	N/A	11,638	430 - Neighbourhood Shopping Centre	Retail	261
2760 DERRY RD W	Mississauga	\$5,365,000	2.230	N/A	18,325	430 - Neighbourhood Shopping Centre	Retail	293
3221 DERRY RD W	Mississauga	\$30,112,500	10.110	N/A	108,704	425 - Neighbourhood Shopping Centre	Retail	277
6950 FINANCIAL DR	Mississauga	\$27,686,251	11.570	N/A	80,214	430 - Neighbourhood Shopping Centre	Retail	345
7955 FINANCIAL DR	Brampton	\$5,808,000	2.680	N/A	22,430	430 - Neighbourhood Shopping Centre	Retail	259
8005 FINANCIAL DR	Brampton	\$7,092,000	2.340	N/A	28,152	430 - Neighbourhood Shopping Centre	Retail	252
6900 MILLCREEK DR	Mississauga	\$2,379,750	1.270	N/A	10,720	430 - Neighbourhood Shopping Centre	Retail	222
6905 MILLCREEK DR	Mississauga	\$5,357,000	3.940	N/A	48,338	430 - Neighbourhood Shopping Centre	Retail	111
7025 MILLCREEK DR	Mississauga	\$2,641,250	1.320	8,242		420 - Automotive Fuel Station With or Without Service Facilities	Retail	320
1990 STEELES AVE W	Brampton	\$1,826,250	1.090	7,370		420 - Automotive Fuel Station With or Without Service Facilities	Retail	248
55 AUCTION LANE	Brampton	\$8,391,250	9.860	41,651		421 - Specialty Automotive Shop/Auto Repair/Collision Service/Car or Truck Wash	Retail	201
130 DELTA PARK BLVD	Brampton	\$2,067,750	2.200	9,953		420 - Automotive Fuel Station With or Without Service Facilities	Retail	208
95 PARKHURST SQ	Brampton	\$14,498,000	14.710	150,659		425 - Neighbourhood Shopping Centre	Retail	96
12101 Airport Rd.	Caledon	\$888,250	0.840	6,846		410 - Retail - One Storey	Retail	130
12117 Airport Rd.	Caledon	\$4,350,500	9.610	16,534		421 - Specialty Automotive Shop/Auto Repair/Collision Service/Car or Truck Wash	Warehousing	263
12151 Airport Rd.	Caledon	\$3,654,000	15.770	7,429		520 - Standard Industrial Properties	Retail	492
12203 Airport Rd.	Caledon	\$91,973,500	56.410	1,122,870		545 - Major Distribution Centre	Warehousing	82