

Southern Ontario Airport Analysis

Final Report



MIER

PLANNING & CONSULTING

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List of Abbreviations

AEGD	Airport Employment Growth District
AZR	Airport Zoning Regulations
CBSA	Canada Border Service Agency
CN	Canadian National Railway
CP	Canadian Pacific Railway
GGH	Greater Golden Horseshoe
GLIAA	Greater London International Airport Authority
GRT	Grand River Transit
GTA	Greater Toronto Area
HIA	Hamilton International Airport
HSR	Hamilton Street Railway
MRO	Maintenance Repair Overhaul
NAFTA	North America Free Trade Agreement
NAS	National Airport Network
NEF/NEP	Noise Exposure Forecasts / Noise Exposure Planning Contours
OGS	Ontario Growth Secretariat
RCMP	Royal Canadian Mounted Police
SOAN	Southern Ontario Airport Network
SWOC	Strength, Weakness, Opportunity, Constraint



Executive Summary

“Southern Ontario’s airports are drivers of connectivity and economic activity; they promote economic development both directly and indirectly and generate significant economic impact through catalytic effects on other industries. “— SOAN, 2017

Airports have been proven to play a significant role not only internationally as a tool to connectivity, but throughout the regional and municipal communities that they are a part of.

Southern Ontario is one of the fastest growing regions in Canada. By 2043, the population in the region is projected to be more than 15 million people. The increase in population will account for additional passenger demand of 60 million and cargo demand of 530,000 tonnes per year by 2043.

Ontario is well served by 12 SOAN airports located in or adjacent to the population centres. These airports must accommodate and manage the growth that the Province is and will continue to experience over the next decade.

This study demonstrates the critical role that airports play in driving regional economic

development and growth, not just within airport lands but also outside the airport fence.

The airports selected for this analysis include: Region of Waterloo International Airport, Hamilton International Airport, Windsor International Airport, London International Airport, and Kingston Airport. These Airports were selected in consideration of their geographical locations, primary functions and amenities.

Through this Report, the project team delivered an initial scan of the five studied airports pertaining to their impact at the regional and municipal level. Based on the Strengths, Weaknesses, Opportunities and Constraints (SWOC) analyses, future growth potential (in terms of airport operations) is identified for these airports. Some of the key observations for each airport are as below:

The Region of Waterloo International Airport’s biggest strength is its location close to an urban centre which is expected to grow by 39% in terms of population by 2031. However, the existing runway and other airport infrastructure does not support operations of wide body international aircrafts. The Airport has the potential to cater to future passenger traffic demand but needs moderate interventions including runway and terminal

building expansions, public-transit connectivity (in planning stage), incorporation of airport and surrounding land in official plans.

The Hamilton International Airport's infrastructure can support large scale overnight cargo operations and the terminal building can handle up to 400 passengers at a time. Other strengths of the Airport include good transit connectivity, access to Hwy 403 and proximity to the US border and Niagara Region, which provides a significant opportunity to cater to both passenger and cargo air travel demand. However, the Airport requires infrastructure expansion to accommodate wide-body international passenger aircrafts, which can be a challenge as the surrounding vacant land is privately owned.

The Windsor International Airport has a significant location advantage. Its proximity to larger market (Detroit, GTA) and transport corridors allows it to leverage various regional and cross border economic activities. The Airport has a strong policy support which provides appropriate direction for future growth. The Airport infrastructure (MRO, Cargo facility) supports the development of diverse economic activities in and around the airport. Windsor is the only airport which has a multimodal connectivity through road, rail and seaport, thus, has the potential to be developed as a multi-modal logistics hub. However, the surrounding transport infrastructure also acts as a physical constraint for future runway expansion to accommodate wide body passenger aircrafts.

The infrastructure at **London International Airport** supports passenger (multiple aircrafts at a time) and small-scale cargo operations. However, due to the presence of competing airport (Hamilton, Toronto, Windsor) and low demand of regional air cargo, the Airport can focus its development and future growth towards passenger operations.

The runway at the **Kingston Airport** was recently expanded to accommodate larger aircrafts (restricted to narrow body aircrafts). The Airport's existing infrastructure does not support cargo operations. Also, the airport is located along the Toronto - Montreal corridor (mainly dominated by trucking industry), therefore, despite of huge cargo traffic flow in the region, it is difficult for the airport to leverage that demand in the future. In addition, physical constraints (Lake Ontario, residential areas, natural conservation areas) also limits the further expansion and development of airport related businesses in the area.

In recognition of the future air travel demand in Southern Ontario and current limited handling capacity of the regional airports, the Report identifies the need for these airports to maximize their capacity utilization in medium term (5-10 years) while increasing their capacity in long term (15-20 years). Certain provisions to do so are also identified in this report.

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1 Introduction

Southern Ontario is the most densely populated and economically productive region in Canada and has become a highly attractive place for people of all ages to live, work, invest and retire. Approximately 88 per cent of the Southern Ontario population lives in the metropolitan areas of the Greater Toronto Area, Hamilton, Kingston, Kitchener-Waterloo, London, Simcoe County, Niagara, Oshawa, Peterborough and Windsor. Each of these census metropolitan areas have airports and are projected to experience an increasing demand for economic activity, services, and air service.

The expected growth presents significant challenges to the airports within the region in terms of size and scale of activities. With the challenges also come significant opportunities.

This study demonstrates the critical role that airports play in driving regional economic development and growth, not just within airport lands but also outside the airport fence. The purpose of this study is to assist urbanMetrics and Southern Ontario Airport Network (“SOAN”) in understanding the challenges and opportunities Southern Ontario’s airports might face in the coming decades due to the projected growth. The study assesses economic opportunities both on and

off airport sites for five major regional airports in Southern Ontario and also suggests the strategic directions for the future growth of these airports.

1.1 SOAN Organization

The Southern Ontario Airport Network is an informal organization that was established in 2017 to support the region’s Airports in addressing their strengths, challenges, and opportunities. SOAN believes that with access to a high concentration of qualified employees, vendors, suppliers, and a strong customer base, businesses within Southern Ontario can benefit significantly from a strong network of regional Airports. Approximately 88 per cent of Ontario residents live in the metropolitan areas serviced by the SOAN member Airports.

1.2 SOAN Airports

The 12 SOAN Airports and their location in the Southern Ontario region is provided below:

- Billy Bishop Toronto City Airport (YTZ),
- Toronto Pearson International Airport (YYZ),
- Hamilton John C. Munro International Airport (YHM),
- Niagara District Airport (YCM),

- Kingston Norman Rogers Airport (YGK),
- Peterborough Airport (YPQ),
- Lake Simcoe Regional Airport (YLK),
- Region of Waterloo International Airport (YKF),
- London International Airport (YXU),
- Windsor International Airport (YQG),
- Oshawa Executive Airport (YOO), and
- Sarnia Chris Hadfield Airport (YZR).

Figure 1: Location of SOAN Airport



Together, these 12 member airports are expected to secure more than 110 million annual passengers and over 1 million annual tonnes of cargo in the next 25 years. This represents an approximately 124% growth in passenger and 112% increase in cargo air travel (SOAN,2017). SOAN recognizes the need for its member airports to grow and accommodate this large influx of air travel demand.

1.3 Scope of Work

There were initially 12 Airports for consideration as per the client proposal. Due to the limited timeframe, and resources available to conduct the study, five major regional airports (the “Study Airports”) are assessed in detail. These Airports are the following:

- Region of Waterloo International Airport
- Hamilton International Airport

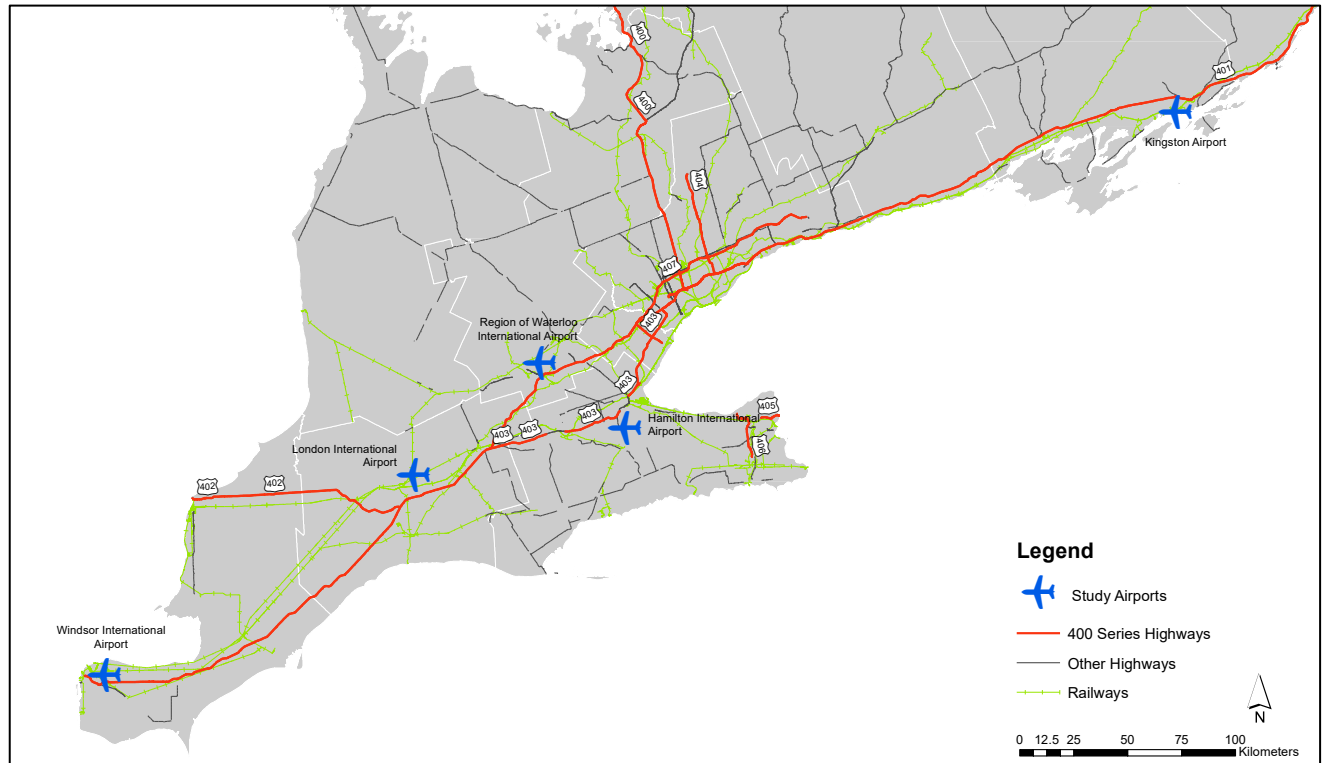
- Windsor International Airport
- London International Airport
- Kingston Norman Rogers Airport

The selection process is explained in detail in Section 1.3.1 below.

1.3.1 Selection Criteria of Study Airports

Of the 12 SOAN Airports, five airports were selected for the economic opportunities' assessment based on distinctions in their operations and their geographic location, the latter of which is presented in the map below.

Figure 2: Location of Study Airports and Regional Transportation Network



These five airports represent a range of air-related services and strategic roles. Additionally, these airports are spread across the geographic landscape of Southern Ontario, which allows them to cater to the regional air travel demand without unduly competing with and cannibalizing each other. The five airports are selected based on the following parameters, with at least one airport in each operational and ownership categorization selected.

1. Primary Operations:

- **Cargo** – Hamilton International Airport, Windsor International Airport
- **Passenger** – Region of Waterloo International Airport, Kingston Airport, London International Airport
- **International Operations** – Hamilton International Airport, London International, Region of Waterloo International Airport, and Windsor International Airport
- **Domestic Operations** – Kingston Airport

2. Location within the Southern Ontario Region:

- Selected airports are a significant distance from each other and from the mega airport (Toronto Pearson Airport) to avoid competition and cannibalization;
- Selected airports are in proximity to major urban centers with a population of more than 100,000.

3. Ownership of Airport and its Operations:

- **Private Operations** – Windsor and Hamilton Airports are owned by their respective municipal governments and operated by private organizations Your Quick Gateway Inc. and Trade Port International Corporation respectively.
- **Public Operations** – Region of Waterloo International Airport is owned and operated by the Regional Municipality of Waterloo. Kingston Norman Rogers airport is owned and operated by the City of Kingston.
- **Airport Authority** - London International Airport is owned by Transport Canada and operated by Greater London International Airport Authority.

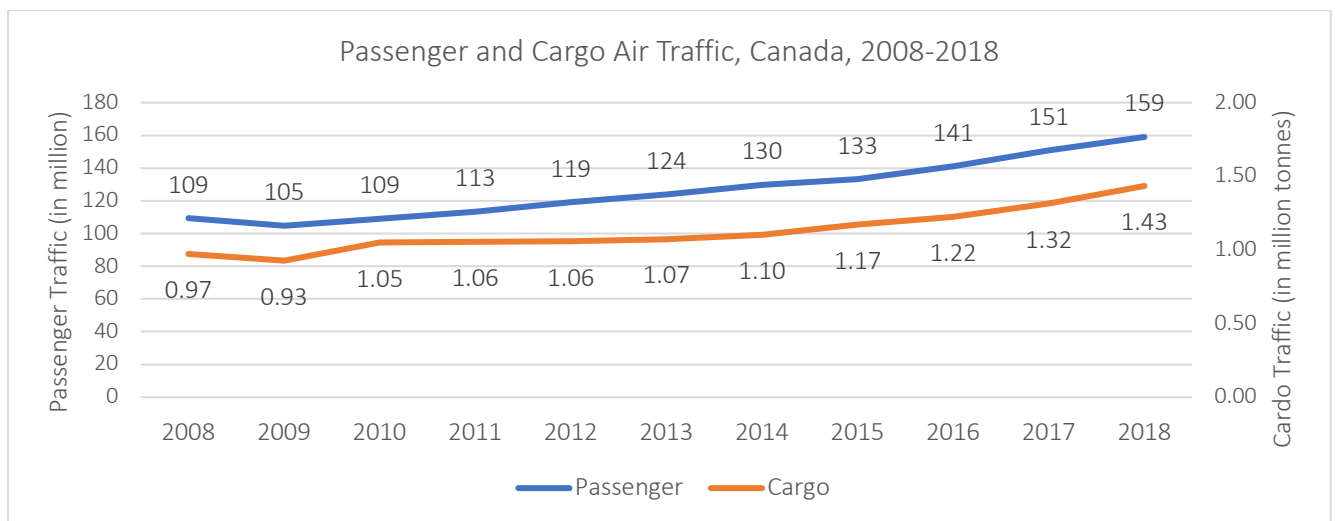
It is of note that due to the difference in size and scale of operations comparative to other SOAN Airports, Toronto Pearson and Billy Bishop Airports were excluded from the study. Also, unlike other regional airports, Toronto and Billy Bishop are operating at maximum capacity. Therefore, strategic options for future development of these Airports would be of a different nature to airports with excess capacity. Due to limited data availability, Sarnia Airport was also excluded.

2 Regional Aviation Industry

Aviation is an important component of Canada's transportation network. There are 26 large international airports under the National Airports System (NAS), as well as approximately 570 registered regional airports which serve as

feeders for these large airports. This air network represents a gateway to the world for Canada. In the last decade passenger air traffic increased by 45% and cargo traffic increased by 48%. The following graph demonstrates the air traffic growth in Canada from 2008-2018 (Statistics Canada).

Figure 3: Passenger and Cargo Air Traffic Growth in Canada



Source: Statistic Canada, Table 23-10-0253-01 and Table 23-10-0254-0

2.1 Existing Traffic

In 2018, approximately 37% (59.54 million) of passenger traffic, and 42% (0.60 million tons) of cargo traffic in Canada was generated in Ontario. Statistics shows that 80% of this traffic was handled by Toronto Pearson International Airport and the remaining 20% by the other regional airports (Statistics Canada).

However, in 2018 the five Study Airports were handling less than 3% of passenger traffic and approximately 17.5% of cargo traffic. The following table shows the proportion of traffic handled by the Study Airports and Toronto Pearson in Ontario.

Table 1: Passenger and Cargo Traffic of SOAN Airports

Airports	Year 2018		Year 2017	
	Passenger Traffic	Cargo Traffic	Passenger Traffic	Cargo Traffic
All Ontario	59.54 million	604,720 tons	56.78 million	559,660 tons
Toronto Pearson	81%	80%	81%	79%
Region of Waterloo Airport	N.A.	N.A.	N.A.	0.0%
Hamilton Airport	1.23%	17.5%	1.06%	17.5%
Windsor Airport	0.54%	N.A.	0.54%	N.A.
Kingston Airport	N.A.	N.A.	N.A.	N.A.
London Airport	0.90%	N.A.	0.90%	0.06%

Source: Statistics Canada, N.A. – Data not available

Table 2: Passenger Handling Capacity and Utilization of SOAN Airports

SOAN Airports	Maximum Handling Capacity (million people) per annum	Current Utilization (%)
Toronto Pearson	45	91%
Region of Waterloo Airport	0.26	53%
Hamilton Airport	3	11%
Windsor Airport	0.4	36%
Kingston Airport	0.1	68%
London Airport	1.2	40%
Lake Simcoe Airport	0.05	0%
Peterborough Airport	0.05	0%
Toronto Billy Bishop	3.6	70%
Niagara District Airport	0.05	0%
Total Capacity	53.71 Million People per annum	

Source: Business Plan 2017-2022, Region of Waterloo International Airport

2.2 Future Outlook

Southern Ontario is one of the fastest growing regions in Canada. By 2043, the population in the region is projected to be more than 15 million people. The increase in population will account for additional passenger and cargo demand of 60 million passengers and 530,000 tonnes, respectively, per year¹. However, the existing infrastructure capacity for passenger handling of all SOAN airports combined is only 54.61 million people per year, 82% of which can be accommodated

at Toronto Pearson. The Table-2 above presents the passenger handling capacity and utilization of all SOAN airports. The Study Airports are highlighted.

Toronto Pearson and Toronto Billy Bishop are currently at or are approaching their maximum capacities, while most of the other regional airports are relatively under-utilized. With the existing infrastructure these airports cannot accommodate the future increase in passenger traffic demand.

¹ Flying Together: The Southern Ontario Airport Network, May 2017

Conclusion

There is a significant growth potential in aviation sector in Southern Ontario region. Considering the development constraints of Toronto Pearson and Billy Bishop Airports, a lot of growth can be directed towards other regional airports by formulating and implementing suitable growth strategy. This study is an attempt to create such strategy for five SOAN airports.





3 Provincial Policy Scanning

This section discusses the policies that are set out on the provincial level as they relate to general airport planning. The two provincial policies that aid in the review of municipal planning documents surrounding airport and employment land development include the Provincial Policy Statement (PPS) and the Growth Plan, details of which are provided below.

3.1 Provincial Policy Statement

The *Provincial Policy Statement* understands the importance of airports in fueling the local economy and establishes policies to guide provincial planning both on and off airport land. They include:

Section 1.6.9.1 (a) of the *PPS*, which suggests that planning for land uses within the vicinity of airports shall be undertaken in a way that their long-term operation and economic role is protected, and airports are appropriately designed, buffered, and/or separated from each other. In addition, Section 1.6.9.2 suggests that airports shall be protected from incompatible land uses and development by:

- Prohibiting new residential development and other sensitive land uses in areas near airports above 30 NEF/NEP;
- Considering redevelopment of existing residential uses and other sensitive land uses or infilling of residential and other sensitive land uses in areas above 30 NEF/NEP only if it has been demonstrated that there will be no negative impacts on the long-term function of the airport; and
- Discouraging land uses which may cause a potential aviation safety hazard.

As each airport examined throughout this analysis is in Ontario, all associated planning guidelines must respect and adhere to the PPS and provincial interests at the macro-level.

3.2 Growth Plan

A Place to Grow: Growth Plan for the Greater Golden Horseshoe sets out guidelines for growth within the Greater Golden Horseshoe (GGH). Within the Plan, airports are designated under Major Goods Movement Facilities and Corridors. The Plan sets out planning guidelines for municipalities to designate and preserve lands within settlement areas located adjacent to or near major goods, coordinated goods movement network that links major goods movement facilities and corridors to provincial highway networks.

Linking major goods movement facilities and corridors, international gateways, and employment areas to facilitate efficient goods movement will be the first priority of highway investment.

Two of the airports included within this analysis are within the Growth Plan Region, namely, the Region of Waterloo International Airport and the Hamilton International Airport. An interview was conducted on October 29th with the Ontario Growth Secretariat to discuss Growth Plan influences on the airports around Southern Ontario.

Ultimately, the roles in which airports play to the network are different. While the Region of Waterloo International Airport is close to provincially significant employment lands, it is not within settlement areas, and thus has limited direct implications for Growth Plan policies. On the other hand, the Hamilton International Airport is part of a provincially significant employment zone, with large parcels of land surrounding it. While the Airport has considerable potential for direct airport related employment on its surrounding lands, an obstacle that the OGS believes the airport may face is its connectivity, especially in its proximity to the Green Belt.

Conclusion

The two provincial policies discussed above have showcased the provincial interest in protecting airport surrounding areas that are incompatible with airport operations, while also promoting growth in the surrounding areas to further contribute to the long-term success of the Airports. The Provincial Policy Statement has regard to all Airports analyzed within this study, and the 12 SOAN member airport at large. The Ontario Growth Plan has regard to two airports within this report, the Hamilton International Airport and the Region of Waterloo International Airport, as well as some of the remaining SOAN member Airports.

An aerial photograph of an airport tarmac at dusk or dawn. A large commercial aircraft is parked on the right side of the frame, with its engines and landing gear visible. Several ground crew members wearing high-visibility vests are scattered across the tarmac. A white service vehicle is positioned near the aircraft. The tarmac is marked with white and red lines. The overall scene is illuminated by the warm light of the setting or rising sun.

Assessment of Regional Airport

The following chapters (Chapter 4 to 8) contain assessments of the Study Airports pertaining to municipal planning policies and existing infrastructure. The analysis begins by overviewing the Official Plans, land use designations and Zoning By-laws of the municipalities that each Airport is under the jurisdiction of. Further, the existing capacities of individual airports are assessed based on their airside, landside infrastructure and their surrounding area facilities which includes transport connectivity and access to municipal services. Also, economic opportunities within the airport fence and for the areas adjacent to airport are assessed.

The policy analysis was conducted at the regional and municipal level whereas infrastructure analysis was restricted to the areas adjacent to the airports. It should be noted that the information provided in this chapter is limited to what was made available for public knowledge at the time of writing.



4 Region of Waterloo International Airport

The Region of Waterloo International Airport is spread on approximately 405 hectares of land and is adjacent to the Grand River. The Airport is owned and operated by the Regional Municipality of Waterloo and serves the various communities in Waterloo Region, Wellington County and the City of Guelph.

4.1 Applicable Policies and Plans

The Region of Waterloo International Airport is located within Woolwich Township (“Township”). The Airport’s land is prescribed by the following Regional and Township policies:

- *Region of Waterloo Official Plan;*
- *Region of Waterloo Master Plan;*
- *Township of Woolwich Official Plan;*
- *Township of Woolwich Zoning By-Laws; and*
- *Regional Airport Master Plan.*

A complete list of policies can be found in the Appendix.

4.1.1 Region of Waterloo Official Plan

The *Region of Waterloo Official Plan* contains two policies which directly affect the airport:

- **Policy 2.G.17** which touches upon Noise Exposure Forecast (NEF) and protection areas.
- **Policy 5.A.20** which looks at land uses within the airport and its surrounding areas.

In addition, the *Regional Official Plan* identifies Airport Noise Protection Area (refer map in Appendix-1) and its guidelines suggest the area will follow natural and manmade boundaries encompassing a contour limit of 20 NEF. The Regional Official Plan identifies and protects a ‘Greenlands Network’ of environmental features and linkages among them.

4.1.2 Township of Woolwich Official Plan

It is the Townships responsibility to set guidelines for planning within and outside of the airport. The Township Official Plan states the Township’s duty to monitor proposals for future development of the Airport, through consultation with residents and businesses within the Township, Region of Waterloo, and the County of Wellington.

In addition, the Township holds the ability to restrict development in areas surrounding the airport with the potential to jeopardize future economic development within the facility, through specific provisions for zoning and development considerations,

land uses, and developments in areas surrounding the Airport. The final pertinent guideline for airports within the Township Official Plan is that the Township shall consider the adoption of a by-law to regulate the maximum permitted height of buildings or structures in the areas surrounding the airport.

4.1.3 Township of Woolwich Zoning By-law

Within the Township, The Region of Waterloo International Airport is situated in

Breslau, and the lands located north, east and south of the Airport are primarily agricultural (A) and Industrial (I) lands. In addition, the Airport is in close proximity to urban residential (UR) communities, including Breslau, Kitchener, and Cambridge. To the west of the airport, located on the west side of Grand River, there is a new residential subdivision. Commercial (C) and industrial (I) lands are located immediately to the northwest and further Northwest are existing residential properties, all within a 1.6 m threshold of Runway 14.

Figure 4: Region of Waterloo International Airport Layout



4.2 Infrastructure Review

The subsequent sections provide details on infrastructure and facilities on the airside, landside and in the surrounding areas of the airport.

4.2.1 Airside Infrastructure

Airports are divided into landside and airside areas with highly regulated access on the airside. The active operations on the airside mainly deal with the aircraft movement on runways, taxiways, parking spaces and aerobridges. Airside infrastructure is one of the key elements to determine the size of the airport as it determines the handling capacity (both passenger and cargo) and also defines the

operations of different types of aircrafts at the airport.

The Region of Waterloo Airport's airside infrastructure includes two runways and six taxiways. The layout and dimensions of the runway determines the growth and development potential of the airport. The two runways at the airport have a landing distance available of 7,002 ft (primary runway) and 4,100 ft, respectively. However, as per the international aviation standards, widebody long-distance international aircrafts (Boeing 747, seating capacity of 416-660 passengers) typically have a landing requirement of at least 10,000 ft. The following table presents the runway length available at Waterloo Airport and minimum requirements for large international aircraft

Table 3: Runway Measurements

Run-Way Distances at Windsor Airport	Primary Runway	Secondary Runway	Min Requirements for large international carriers
Take-Off Run Available	7,002ft	4,100 ft	11,000 ft
Take-Off Distance Available	7,986 ft	5,084 ft	11,000 ft
Landing Distance Available	7,002 ft	4,100 ft	10,000 ft

Therefore, in order to be able to operate large international flights the Waterloo Airport requires runway expansions. The primary runway of the airport is considered a precision facility runway by Transport Canada and is fit for landing and takeoff of medium and large size commercial aircrafts as it provides both horizontal and vertical instrumental guidance to the pilot.

The six taxiways connect the runways to the six parking aprons. Of these only one is available for public use and the rest are mainly used by private businesses.

The current airside lighting infrastructure allows night operations at the airport, however, there are currently no scheduled night-time flights. The airside infrastructure is currently underutilized due to the limited amount of commercial air services operating at the airport.

4.2.2 Landside Infrastructure

The landside area of the airport is open to public use and includes the terminal building, user-parking space, maintenance facilities and rental spaces. The terminal building at the

Waterloo airport has one floor with a floor area of 30,000 square feet. The facilities at the building can handle up to 250,000 passengers annually. Other landside facilities at the airport include a maintenance garage and a fire hall facility solely for the Airport. The Airport rescue and firefighting services satisfy the standard of the aircrafts in operation at the Airport. There are other buildings within the airport fence which are mainly operated by private business. Some of these businesses include: (1) Waterloo Wellington Flight Centre, a private flight school; (2) Flite Line Services, which provides airplane maintenance services; (3) Hammond Aviation, which sells pilot supplies and (4) Mid-Canada MOD Center, which provides airplane maintenance and modification. Other small businesses including air ambulance services and smaller scale airplane maintenance are located in the southern section of the airport.

4.2.3 Surrounding Infrastructure

The Region of Waterloo International Airport is connected to Highway 7, Highway 8 and Highway 401 by Fountain Street located west of the airport terminal building. The airport is within 20 minutes of Downtown Kitchener and Uptown Waterloo by vehicle. The Airport is currently not served by Grand River Transit (GRT), the Regional public transit agency, however plans are being made to provide bus services for greater connectivity between the Airport and the Region. Currently, taxi and car rental services are the only means of ground transportation available at the Airport.

There is developable land available at Apron VII that consists of 8.5 acres of fully serviced land and it is zoned to permit light-

industrial, commercial and aviation related business. As per the *2017 Master Plan*, the airport is planning to develop Apron VI, located on the south of Taxiway A beside the Air Traffic Control Tower and Airport Operation Centre. In addition, over 200 acres of non-serviced land is available for development within the airport boundary.

4.3 Economic Opportunities

The strategic vision of the Region of Waterloo Airport is geared towards contributing to the local economy of the Region. Within the airport, a new passenger terminal was developed and completed in 2004 to attract more flights to and from the Region. On top of enhanced customs and immigration facilities, concessions are also available to enhance customer experience and convenience.

4.3.1 Adjacent to the Airport

As per the *Airport Master Plan*, an Aviation Business Park is proposed adjacent to Apron IV, VI and VII and has over 30 acres of serviced land available for development. There are additional lands on the airport that are available to airport companies to facilitate their operations, but the lands are not serviced. Additionally, to support airport and aviation businesses, there are 300 hectares of lands that are designated for employment to the south and northwest of the Airport known as the East Side Lands. The *Master and Business Plans* for the Airport indicate there is opportunity to generate increased employment in and around the Airport with the Business Park and East Side Lands.

Figure 5: Land Reserved for Business Park



Source: *Region of Waterloo International Airport, Ontario*²

Within the Region, the Airport serves the local economy through connecting passengers and businesses to other key cities and regions with the goal to support the innovation sector within the Region. The *Master Plan and Business Plan* highlight the aeronautics sector as a growing industry within the Region. The Airport is an investment centre for the 40 established companies in this space, and the Post-Secondary Institutions in the Region that support the aeronautics sector with Research & Development (R&D). There is opportunity for increased employment and economic activity from the Region's institutions in conjunction with private business.

Additionally, the Airport supports investment in its role as a key connection that is accessible and close to technology focused enterprise within the Region. Increased connectivity between the GTA with all day, two-way GO service, and a new GO Train station in Breslau (which is in close proximity to the Airport) is slated to be an important connection

for businesses located around the airport and in Kitchener-Waterloo.

4.3.2 Regional Economic Opportunities

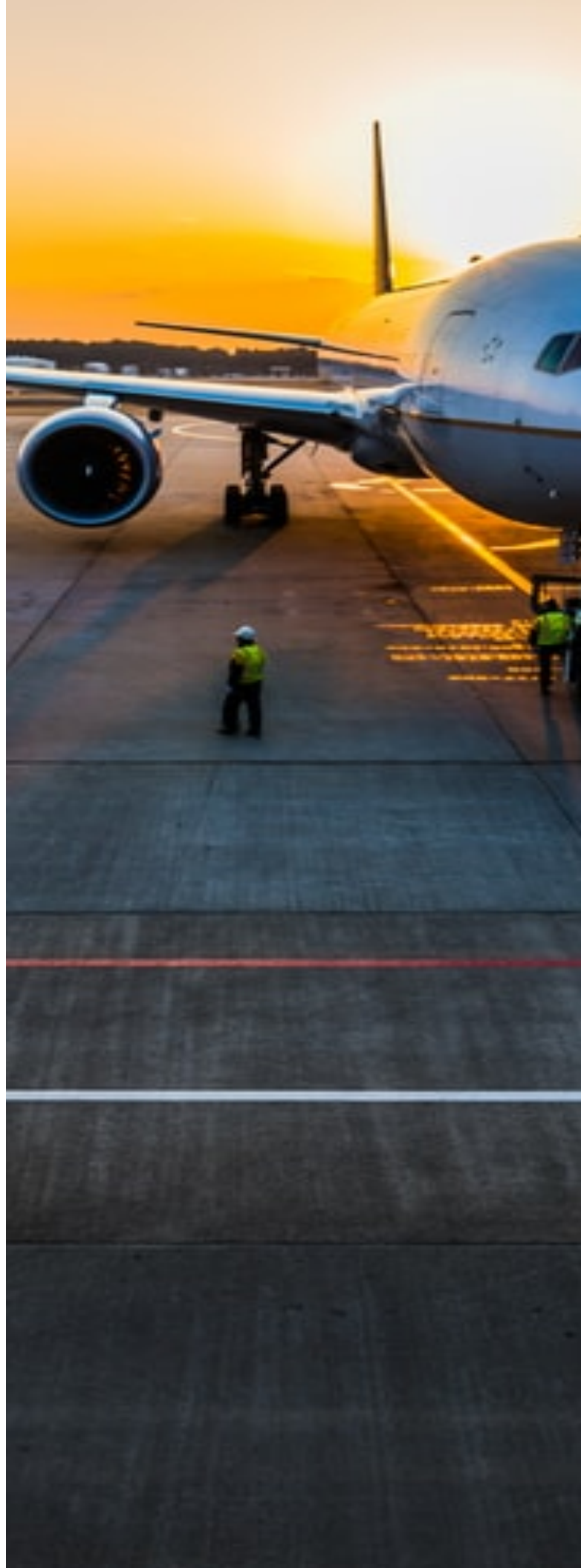
The strategy of the Airport is geared primarily towards the Region primarily. With a lower volume of flights compared to other airports in Southern Ontario, the economic impact on a broader level is not as substantial as that within the Region. This is further exacerbated by the lack of cargo and freight to facilitate the logistics, manufacturing and fulfillment centers between the GTA and Region of Waterloo. In 2015, the economic impact of the Airport in the Region was approximately \$90 Million³.

² <https://www.waterloairport.ca/en/business/available-buildings-and-land.aspx>

³ Wilfrid Laurier Economic Impact Study 2015

Conclusion

The Region of Waterloo Airport Master Plan highlights a clear vision for the airport's future. The Township of Woolwich Official Plan sets out the guidelines for planning within and outside the airport and future development. The current facilities and operations at the Region of Waterloo International Airport can accommodate 250,000 passengers per year, however, the terminal building would require expansion to handle two flights at the same time. The Airport is well connected to the Region of Waterloo and Wellington County through major highways and roadways, making it an ideal location for airport passenger traffic. The Airport is an investment centre for the 40 established companies in this space, and the Post-Secondary Institutions in the Region that support the aeronautics sector with research and development. The future of Metrolinx GO Train expansion will increase the connectivity between the GTA and the Region, supplemented by the Airport.





5 Hamilton International Airport

John C. Munro Hamilton International Airport is owned by the City of Hamilton and operated by Trade Port International Corporation. The facility is situated on 566 hectares of land and serves the Greater Toronto and Hamilton Area. The Airport serves as Canada's largest overnight express cargo airport.

5.1 Applicable Policies and Plans

The Hamilton International Airport and its surrounding land is governed by the following policies:

- *Hamilton Rural Official Plan;*
- *Rural Hamilton Zoning By-law;*
- *Airport Employment Growth District Secondary Plan and Zoning By-law*
- *Noise Management Plan;*
- *Environment Management Plan; and*
- *Hamilton International Airport Master Plan.*

A complete list of policies can be found in the Appendix-2.

5.1.1 Hamilton Rural Official Plan

The *Hamilton Rural Official Plan* contains one regulation which directly affects airports:

- **Regulation 30** mandates permitted and prohibited uses, future needs of the airport, and the development regulations of the airport reserve. In this section, it is noted that the Airport shall require additional lands in order to provide runway and airport operational expansion possibilities for the future. Interim land uses are not permitted, as they may create conflicts with feasible expansion of the Airport. The *Official Plan* recognizes that certain lands must be reserved specifically for the Airport's future needs. The permitted uses are its current existing land uses, and Airport storage, maintenance, and operation facilities.

The *Official Plan* states that expansions to existing uses, lot severances, and lot additions shall not be permitted, if they do not serve the current or future needs of the Airport. In addition, the Airport shall not be permitted to expand on lands that are designated as Airport Reserve, until stormwater management facilities have been approved on Airport land, by City approval.

5.1.2 Rural Hamilton Zoning By-law

The lands surrounding the Airport are currently zoned as rural (RU) and agricultural (A), with the exception of the Mount Hope Urban Area, designated as residential (R), and a strip of land adjacent to Upper James street, designated as general commercial (C). For the most part, the land immediately surrounding the Airport on the north, west, and south are subject to the *Airport Employment Growth District Secondary Plan*.

The *Airport Employment Growth District Secondary Plan (AEGD)* sets out provisions for land uses surrounding the Airport through Policy 4.8.5.

Policy 4.8.5 states that the City shall minimize future conflicts between operation of the Airport and surrounding land uses to ensure that there are no negative impacts on the long-term operations of the Airport, the opportunities for Airport expansion are not limited, and there are no land uses in the vicinity which may cause a potential aviation hazard.

5.1.3 Airport Employment Growth District Secondary Plan

The Airport Employment Growth District (AEGD), as **Figure - 7** shows within the Economic Development section, has a zoning by-law in place which ensures the protection of land within the growth district. This *Zoning By-law* sets out several permitted uses within the district. The area zoned 'Airport Prestige Business' permits 3 different types of uses:

- manufacturing, assembly, warehousing, repair services, transit terminals, research and development offices, high technology, private power generation, offices, and communication establishments;
- hotels, trade schools, training facilities, labour association halls, car rental establishments, etc.; and
- the area permits use that primarily support employees, such as cafes, fitness centers, and personal services.

This designated area prohibits uses that do not compliment the Airport and its design policies, such as outdoor storage, waste processing and transfer facilities, and salvage yards. The AEGD also permits limited agricultural uses in specifically zoned areas, which include only cannabis growing and harvesting facilities, greenhouses, and aquaponics facilities.

Within the AEGD is also the Airport Business Park, a 25-hectare parcel of land located between Dickenson Road and Runway 12-30. This strip of land is designated for commercial (C) and light industrial (I) uses.

5.1.4 Noise Management Plan

The Hamilton International Airport has adopted a *Noise Management Plan* in order to mitigate noise impacts to their lowest possible level, while allowing airport operations. The City has implemented an Airport Influence Area, shown in the Appendix, that restricts development of residential parcels within the 28 NER contour. Within this Plan, the Airport has made an effort to include community consultation within each explored topic,

including: Aircraft Flight Tracking and noise Monitoring System, Noise Abatement Procedures, and Ground and Maintenance Operations Directives. The *Hamilton International Master Plan* also recommends that on-airport lands be reserved, and additional lands be acquired by the City for runway extension to accommodate future airside development.

5.2 Infrastructure Review

Owned by the City of Hamilton, the Hamilton International Airport acts as a secondary facility in relieving the demands of cargo flights from Toronto Pearson Airport. The subsequent sections provide details on infrastructure and facilities on the airside, landside and in the surrounding areas of the airport. The following figure provides the layout and surrounding designations of the airport.

Figure 6: Hamilton International Airport Layout



5.2.1 Airside Infrastructure

The Airport airside infrastructure consists of two runways and eight taxiways. The two runways at the airport have a landing distance available of 9,600 ft (primary runway)

and 6,010 ft, respectively. The main runway is certified to Transport Canada Standards and can accommodate larger wide body aircraft that seats up to 400 passengers in a two-class configuration, such as the Boeing 767 and certain variances of the Boeing 747. The

airport's lighting infrastructure supports night operations, however, night-flights are not currently scheduled. There are three major aprons at the airport, whose capacities were increased in the early 2000s to accommodate larger aircraft including the Boeing 737 and the Boeing 767. Other smaller aprons were designated to the existing businesses that have their own hangars. There are three different Aprons that can provide de-icing services.

5.2.2 Landside Infrastructure

The Airport Terminal Building is approximately 91,493 square feet in size and currently has an annual handling capacity of 540,000 passengers. The Airport is a port-of-entry that is staffed by Canada Border Service Agency (CBSA) for international flights. International passengers enter a separate section of the ground floor to go through immigration and customs. There are designated arrival and luggage pick up areas for international flights.

The current air traffic control tower and support facility at the airport were constructed in 1987. The support facility accommodates administrative office, equipment storage, workshops and staff amenity areas. There are many buildings and hangars at the Airport which are used primarily as private businesses. UPS, DHL and Purolator have logistics centers and Cargo Jet owns a hanger and separate building for its cargo processing at the Airport. Other private businesses which operates at the Airport include the Canadian Warplane Heritage Museum, Ornge, Transport Canada, private flight club and flight schools.

5.2.3 Surrounding Infrastructure

The Airport is located near Highway 6 which provides access to other nearby municipalities, including the City of Toronto via Highway 403 and the Niagara Region via Lincoln M. Alexander Parkway and Queen Elizabeth Way.

For public transit access, Hamilton Street Railway (HSR) Route 20-A Line Express, connects the Airport and Hamilton Waterfront Pier 8 via Downtown Hamilton and the Hamilton GO Centre. The current express route service is a limited to running on weekdays, from early morning to early evening. Currently, taxi and car rental services are available at the airport. Other shuttle services, such as Megabus Canada, provide bus service once every Friday between the Toronto Coach Terminal and the Airport. King Shuttle provides private airport shuttle services as well.

For the areas adjacent to the airport, the water and hydro lines lay along the major roads that surround the Airport. However, the wastewater lines only extend along Airport Road on the south, and Homestead Drive and Upper James Street on the east. The rest of the undeveloped land in surrounding area is currently not served by wastewater services.

5.3 Economic Opportunities

The Hamilton International Airport offers multiple economic opportunities for the Municipality and for the broader Southern Ontario region with strong cargo operations and multiple ancillary services for passengers and businesses utilizing the airport.

5.3.1 Within the Airport Fence

Within the Airport fence, the Airport offers multiple services to implement its strategy of becoming a low-cost option in the Southern Ontario region, and a prominent intermodal air freighter gateway in the nation. There are various objectives that are outlined that aim to increase economic activity within

the airport grounds. These objectives are two-fold: (1) seeking a return on investment in infrastructure and facilities that are customer focused, and (2) enhance revenue opportunities. Additionally, the airport is suited to attract distribution and freighting businesses, through the development of a multi-tenant cargo facility.

Figure 7: Employment Growth District, Hamilton Airport



Source: Map B.8-1 - Airport Employment Growth District Land Use Plan

To achieve objective #1, Hamilton International Airport aims to deliver passenger and cargo facilities to support market growth, maintain its low-cost structure, partner with other stakeholders for investment, and ensure that operations are cost effective within the terminal. *The Master Plan* identifies the importance of capital requirements, both now and in the future if the airport expands. For objective #2, the *Airport Master Plan* highlights multiple strategies and initiatives to generate additional revenue, such as maximizing parking revenues, ground transportation, concession

opportunities, and advertising revenues. It is noted that through development on airport lands, there is a focus to ensure that revenue growth is sustained.

5.3.2 Adjacent to the Airport

The Hamilton Airport Business Park, located adjacent to the Airport, constitutes areas designated for commercial and light industrial uses, to facilitate the airport's function as a freight and cargo hub. The City of Hamilton has designated this as an Employment

Growth District, and the lands are the busiest in the nation for overnight express cargo among competing airports. Businesses near the airport support the movement of cargo through logistics, manufacturing, warehousing and fulfillment centre operations. The Airport lands that are designated to support the Business Park are best suited to attract employment in aviation, distribution/logistics and light industry suited to airport businesses. Currently, there is a large portion of the Employment Growth District that is either vacant land or has the potential for redevelopment. These lands are slated for future development if the Airport continues to experience growth in cargo flights.

5.3.3 Regional Economic Opportunities

The Airport is located conveniently between Toronto and the USA border, which facilitates economic opportunities for cargo and freight, service industries, and regional tourism (more specifically for the Niagara Region). A 2018 report⁴ from ICF noted that the Airport is the fastest growing airport in North America based on passenger traffic in 2017, and cargo activity also increased by 14% in the same year. As of 2017, Within the Hamilton Region, 3,500 direct and indirect jobs have been facilitated through the Airport's growth and development. The report also indicates that an additional 4,000 jobs within Southern Ontario can be attributed to the Airport's activity. All in all, \$1.2 Billion of economic activity has been attributed to the Airport, which is a nearly 100% increase from a study of the Airport's economic impact since 2013.

⁴ John C. Munro Hamilton International Airport Economic Impact Analysis, October 2018, ICF.

Conclusion

The *Hamilton International Airport Master Plan* highlights a clear vision for the airport's future. The *City of Hamilton Rural Official Plan* set out the guidelines for planning within and outside the airport and future development. The *Airport Employment Growth District Secondary Plan* sets out several permitted uses within the district that is surrounding the Airport. The current facilities and operations at the Hamilton International Airport can accommodate 540,000 passengers per year, and there are designated aprons, MROs, hangars and third-party logistics centres to accommodate cargo traffic. The Airport is well connected to the City of Hamilton and GTA through major highway corridors, making it an ideal location for additional future cargo traffic. With nearly 3,500 direct and indirect jobs facilitated through the Airport's growth and development as of 2017, the Airport has demonstrated a strong ability to benefit the City of Hamilton and surrounding areas.



6 Windsor International Airport

The Windsor International Airport is owned by the City of Windsor and operated by Your Quick Gateway Inc. Located in the southwestern Ontario, the Windsor International Airport is spread on 813 hectares of land. The Airport is located within the City of Windsor and is about 330 km from Toronto and 163km from London, Ontario. The Airport is strategically located close to the US-Canada border in the Windsor-Essex region and as a result is classified as an airport of entry by NAV Canada. The airport is staffed by Canada Border Service Agency (CBSA) which provide on-site Canadian customs clearance services. The proximity to the Metro Detroit area makes it a center of The North American Free Trade Agreement (NAFTA) trans-border activities. The Airport competes with two other international airports – London International Airport which is approximately 170 km and Detroit Metro Airport which is approximately 32 km from Windsor. The following figure provide the layout and surrounding designations of the Airport.

6.1 Applicable Policies and Plans

The Windsor International Airport and its surrounding land is governed by following municipal policy and airport specific plans.

- *City of Windsor Official Plan;*
- *Township of Tecumseh Official Plan;*
- *City of Windsor Zoning By-Law; and*
- *Windsor International Airport Master Plan.*

A complete list of Airport related policies can be found in the Appendix.

6.1.1 City of Windsor Official Plan

The *City of Windsor's Official Plan* sets out various policies for development and land permissions surrounding the Airport. There is one significant provision which addresses future planning for the Airport:

- Policy 6.12 Windsor Airport discusses the importance to recognize and strengthen the airport's role as a key component of the transportation system, the importance of minimizing of incompatible land uses by strict permitted uses and provide for suitable groundside and airside uses and services;
- Subsection 6.12.2 discusses the permitted uses in the Airport. They include: Civilian or military airport, Airport terminal facilities and communications structures, Uses permitted in Employment Areas (as described by Section 6.4) provided that they do not conflict with Airport operations, hotels and related commercial uses, and

other uses in accordance with the Windsor Airport Master Plan, Land Use and Reserve Land Plan, as amended from time to time.

The Little River Corridor is identified as an Environmental Policy Area. The environmental reserve incorporates a minimum buffer of 120 metres adjacent to existing woodlands, while also allowing for the potential to include stormwater management facilities. Airport Woodlands are considered provincially significant within the Official Plan and should thus be protected as natural heritage areas where a buffer of 50 metres may be appropriate.

6.1.2 Township of Tecumseh Official Plan

The *Township of Tecumseh Official Plan* sets out various policies for development and land permissions surrounding the Airport. There are three significant provisions which addresses future planning for the Airport:

- Policy 2.16 - Development near the Windsor Airport this policy sets out direction to protect the airport from incompatible development. It states that new residential development and other sensitive land uses will not be permitted in areas near the Airport of above 30 NEF. Re-development within this area may only be considered if it has been demonstrated that there will be no other negative impacts on the future long-term operations of the Airport.
- Policy 7.2.10 - Air Transportation Policies states that Council shall maximize economic development potential provided by the Airport, by promoting the development of commercial and employment uses, such as

multimodal facilities surrounding the Airport. This policy states that other lands may be permitted within the Airport Operating Area provided a complete noise study.

- Policy 10.2.11 - Noise and Vibration Study discusses proposed ways in handling proposed development in accordance with noise contours with uses, such as airports. NEF contours may be impacted in the future due to increased activity levels at the Airport.

The Regional Official Plan highlights the Township of Tecumseh Agricultural Areas (A) which are designated by the Official Plan to be east and south of the Sandwich South Lands. Lands south of the 401, east of 9 Concession Street are designated as Business Park and Settlement Areas.

6.1.3 City of Windsor Zoning By-law

The Windsor International Airport occupies land zoned as Airport within the *City of Windsor Zoning By-law*. Active Airport Use comprises of 431 hectares of this land. This designation has a variety of land assignments, including:

- Airfield,
- Air Terminal and Operations,
- Airside Employment,
- Groundside Employment, and
- Airport Reserve.

In addition, the *Airside Land Reserve Plan* identifies surplus lands on airport property for future economic development considerations. Specific provisions regarding

land use and designations have been made pertaining to the land surrounding and adjacent to the airport.

As noted above, east and south of the Sandwich South Lands are Agricultural (A) designated lands, and lands south of the 401 are designated Business Park and Settlement Area lands. Areas west of the airport are designated Industrial (I) along Walker Road Commercial Corridor, and along EC Row expressway designated Industrial (I) and Business Park. The areas towards the centre of the Township are designated as Future Urban Areas, while the areas south of the Airport border and adjacent to Highway 401 are

designated as Future Employment Area. There are over 250 hectares of land on airport property that is designated for Future Employment, located to the east of operating Airport area and being planned as a Business Park to accommodate non-airport related employment uses.

6.2 Infrastructure Review

The subsequent sections below provide a brief description about the infrastructure of the airport and of surrounding areas. The following figure provide the layout and surrounding designations of the Airport.

Figure 8: Windsor International Airport Layout



6.2.1 Airside Infrastructure

The Windsor International Airport's airside infrastructure includes two runways and

seven taxiways. The layout and dimensions of runway determines the growth and development potential of the airport. The two runways at the Airport have a landing distance

available of 8,098 ft (primary runway) and 4,829 ft respectively. However, as per the international aviation standards, widebody long-distance international aircraft (Boeing 747, seating capacity of 416-660 passengers)

typically have a landing requirement of at least 10,000 ft. The following table presents the runway length available at the Windsor Airport and minimum requirements for large international aircraft.

Table 4: Runway Measurements

Run-Way Distances at Windsor Airport	Primary Runway	Secondary Runway	Min Requirements for large international carriers
Take-Off Run Available	9,000 ft	5,150 ft	11,000 ft
Take-Off Distance Available	9,984 ft	5,445 ft	11,000 ft
Landing Distance Available	8,089 ft	4,580 ft	10,000 ft

Therefore, to be able to operate large international flights, the Windsor Airport requires runway expansions. The primary runway of Windsor airport is considered as a precision facility runway by Transport Canada and is therefore fit for landing and takeoff of medium and large size commercial aircrafts as it provides both horizontal and vertical instrumental guidance to the pilot. The Airport currently operates two public aprons, one of which is primarily used by cargo aircrafts and another by small passenger aircrafts of seating capacity 85-215. There are several small private aprons located in the airport’s core area which are mainly used by airport tenants for business and recreational flying purposes. Other airside infrastructure available at the Windsor airport which allow safe aircraft operations are (1) **Air navigation facilities** include instrument landing system and visual aids which provides safe aircraft operations during periods of darkness and low visibility. (2) **Aviation service and support facilities** include air traffic control, de-icing, minor aircraft repair, airside maintenance services, aircraft rescue and fire-fighting and short-term public aircraft parking

6.2.2 Landside Infrastructure

The primary landside infrastructure at the Windsor International Airport includes a terminal building which facilitates passenger and cargo operations at the airport. The terminal building is a two-storey structure that encompasses 48,200 square feet in area. The main floor provides space for aircraft carriers, traveling passengers and other airport-based employments. The second floor has an office space that is mostly used for airport administrative activities and third-party businesses. In the *Windsor International Airport Master Plan*, the City of Windsor invested approximately \$1.2 million to improve circulation and to expand passenger handling capacity at the terminal building. Currently, there is only limited space at the international arrivals and baggage hall area of the terminal building which hinders the processing of multiple flights at the same time. The Airport does not provide dedicated cargo services but facilitates the operations of expedited cargo through private/charter company on ad-hoc basis.

6.2.3 Surrounding Infrastructure

The Windsor International Airport can be easily accessed through network of major arterial roads (Walker Road, Jefferson Boulevard), expressways and highways (Hwy 401, 22 and 3). The E.C Row Expressway, running on the north of the airport is an access-controlled highway which connects the Windsor Airport to major cities including Chatham-Kent, and London via Hwy 401 and Detroit via Hwy 3. The Airport is served by Transit Windsor by bus that connects to downtown Windsor. The Airport is also in a relatively close distance to VIA Rail, Port of Windsor and Windsor Transit Terminal which are approximately 9 km, 15 km and 11 km from the airport respectively. The Airport borders the Canadian National (CN) railway's spur line on the west and the Canadian Pacific (CP) railway line on the north east side. These railway lines provide significant potential for developing cargo related activities at the airport but also acts as a major physical constraint in the expansion of existing runways. The CP's Windsor rail subdivision has direct access to its international cargo traffic which provides a huge potential to develop a multi-modal logistics or cargo handling hub in the area. The Port of Windsor is the third largest port on the Great Lakes which provide connectivity to the ocean. As a result, the area surrounding the airport property is well served with utilities and transport infrastructure.

6.3 Economic Opportunities

Windsor International Airport provides multiple opportunities for economic activity to support airport and air related businesses using the lands within the Airport and adjacent to them.

6.3.1 Within the Airport Fence and land adjacent to the airport

Within the Airport fence, the Airport offers multiple services to implement its strategy of facilitating economic activity and growth for the industries that rely on air transportation within the Windsor/Detroit region. The *Master Plan* also notes the large number of people who live within an eight-hour drive of the airport and the economic opportunities within these markets. Airport operations and services support the traffic that comes through the Windsor Airport as it pertains to further transport of goods through the 401 to Southern Ontario and into the Detroit Metropolitan region. Major drivers of economic activity within the Airport fence are Maintenance, Repair and overhaul (MRO) operations, Cargo, general aviation, land development and other ancillary services. The MRO segment is facilitated through low costs and close proximity to large hubs that allow for a large number of customers and skilled workers to utilize the MRO operations to meet its full potential. The 20-year Airport Master Plan identifies maintenance, repair and overhaul services as future Airport land development use. This ensures that the future sustainability of economic activity and employment is enhanced, with added accommodations to support the businesses that would utilize the MRO operations.

The cargo line of business for the Airport is noted as a key facet due to the proximity of Windsor International to the US-Canada border, key population centres within 800km (GTA, Detroit, etc) and overall, an industrial cargo catchment of over 100 million people. Windsor positions itself as a potential cargo and logistics

hub. There are multiple companies who provide cargo services for logistics companies and carriers. Additionally, similar to MRO, the development area for cargo and multi-modal logistics services is noted as a land

development use and slated for future development. The Airport offers ancillary services for charter, freight, cargo, baggage handling and aircraft maintenance to airlines and tenants.

Figure 9: MRO and Multimodal Facility at the Airport



Source: Windsor International Airport, <http://www.yqq.ca/cargo/>

Multiple institutional employers use the land, namely the RCMP and the University of Windsor Aeronautics Leadership Program. In the private sector, there is also a flying club and the Canadian Historical Aircraft Association Aircraft Museum who utilize the facility. Finally, the Airport offers advertising opportunities and a conference room that offer immaterial but additional revenue streams, as well as employment on the lands.

6.3.2 Regional Economic Opportunities

The Airport generally serves the Windsor-Essex Region, however, the location of

the Airport along major transportation networks and close to the US-Canada border renders the reach of the Airport much larger than the regional boundaries it resides in. The Master Plan notes that the output of the corridor through the United States and Canada comprises over \$4 Billion⁵. The Airport generally stands to benefit from the connectivity to these markets, but there is no emphasis for the potential for increased passenger traffic. This facilitation of cargo stands to increase economic activity, especially along the 401 corridor.

⁵ YQG-Windsor International Airport, <http://www.yqq.ca/cargo/>



Conclusion

The *City of Windsor* and *Town of Tecumseh Official Plan* and *Zoning By-laws* provide a strong direction for the Airport's future needs and accommodations. At its current state, the facilities at the airport are not able to accommodate a large growth in passengers. As discussed, the Airport is an ideal location for developing cargo handling/ logistics hub mainly due to its close proximity to Detroit and availability of multi-modal transport infrastructure. The facilitation of cargo within the Airport will be the driving force of increased economic activity in the future.



7 London International Airport

London International Airport is located on the eastern boundary of the City of London and spread on 540 hectares of land. The Airport is owned by Transport Canada and operated by the Greater London International Airport Authority (GLIAA). The GLIAA has full operational and financial control of the Airport under the Federal Government's National Airport Policy. The airport serves the City of London and the nearby Middlesex and Oxford County. The following figure provides the layout and surrounding designations of the airport.

7.1 Applicable Policy and Plan

The London International Airport and its surrounding land is governed by the following municipal policies. A brief description of these policies is provided in the subsequent sections.

- *City of London Official Plan; and*
- *City of London Zoning By-law.*

7.1.1 City of London Official Plan

The City of London Official Plan mainly looks at one regulation concerning future development at the airport and surrounding areas:

- Policy 18.2.16 emphasizes the promotion of development of the Airport and its passenger and freight facilities and services through (a) the control of land use, (b) access improvement opportunities, and (c) the economic role of the airport.
- Land uses that will be exposed to airport-related noise levels that exceed established noise contour guidelines will be prohibited.
- Continued development of municipal and regional serviced roads and provincially owned highways will be encouraged in order to improve the Airport and surrounding areas overall accessibility.
- The economic role of the Airport for the long-term operations is discussed within this policy as well. The Official Plan states that the Airport's economic role will be supported by encouraging land uses compatible with the Airport's operations, such as industrial development within airport lands.

7.1.2 City of London Zoning By-law

Under the consolidated City of London Zoning By-law, no specific by-laws and provisions have been found for the Greater London International Airport. The Airport

Zoning Regulations (AZR) applies to the City of London’s International Airport, particularly in regard to all lands within the approaching, outer, or transitional surfaces of the Airport, as per Section 40 of the City of London Zoning By-law.

7.2 Infrastructure Review

The subsequent sections below provide a brief description about the infrastructure of the airport and of surrounding areas. The following figure provides the layout and surrounding designations of the airport.

Figure 10: London International Airport Layout



7.2.1 Airside Infrastructure

The Airport’s airside consists of two runways and seven taxiways. The two runways at the airport have landing distance available of 8,800 ft (primary runway) and 6,300 ft respectively. The main runway is certified by Transport Canada Standards and can accommodate larger wide-body aircraft that seats up to 250 passengers in a two-class

configuration, such as those within the Boeing family. There are seven taxiways connects the runways to the seven aircraft parking aprons. Parking space of approximately 165,000 square feet is designated for cargo aircrafts. The current airside lighting infrastructure facilitates the night operations.

7.2.2 Landside Infrastructure

The terminal building provides the interface between landside and airside for passengers. The main building has a floor area of 80,000 square feet and which can handle up to 1.2 million passengers per year. There are four bridges and five ground gates which provide convenient boarding and deboarding services for domestic as well as international passengers. The Airport is served as a port-of-entry and staffed by Canadian Border Service Agency (CBSA) for international flights.

7.2.3 Surrounding Infrastructure

London International Airport connects to Highway 401 through local roads and Veterans Memorial Parkway with a 10-minute drive. The Airport is approximately a 15 minute drive from the downtown core. London Transit Commission Route 36 is currently serving the Airport on weekdays with a 30 min frequency starting from 5:30 AM to 6:00 PM. The two late-night limited services are also available which connects the airport with the Fanshawe College Station. Car rental, taxi, and limousine services are available at the Airport. Also, there is an airport shuttle service which operates between London International Airport and Toronto Pearson Airport.

7.3 Economic Opportunity

London International Airport serves as a facilitator for cargo to and from local businesses within London. With increased flights to major cities in Canada, there is an emphasis on passenger traffic growth.

7.3.1 Within Airport Fence and land adjacent to the airport

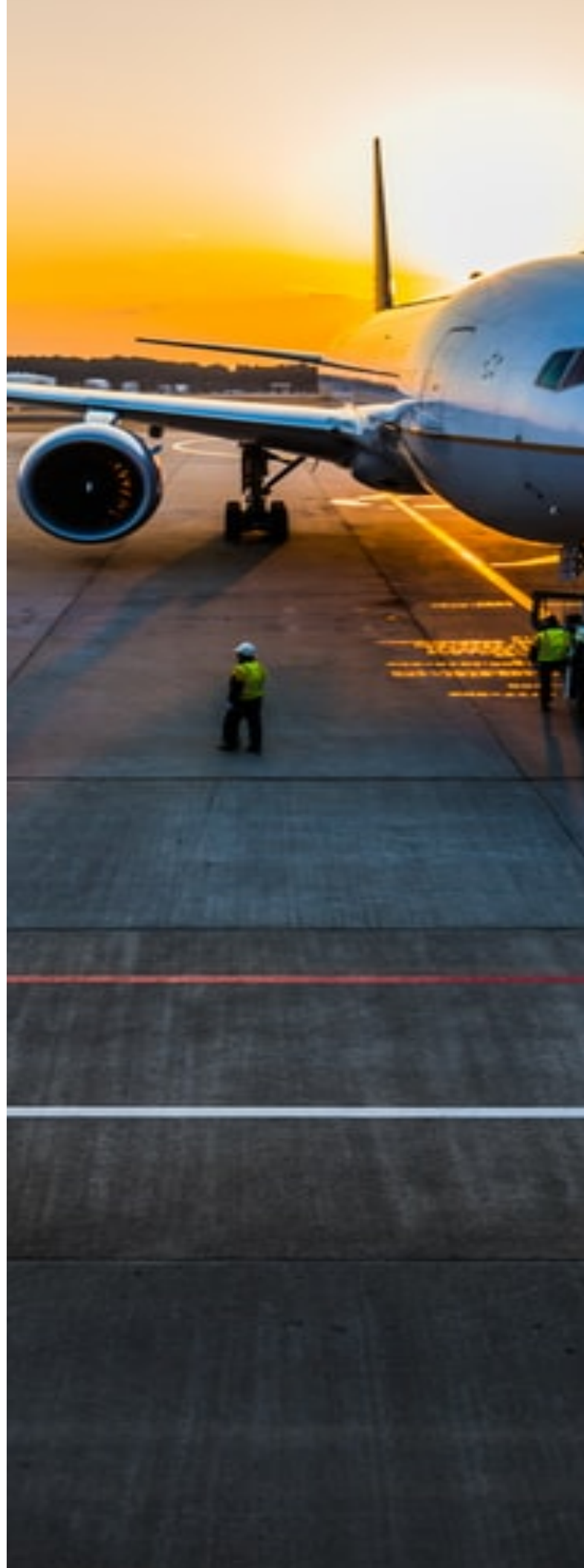
London International Airport serves passenger traffic and cargo traffic, mainly for local businesses and enterprises. The 2018 Annual Report notes that there are nearly 1,000 people who are employed on the lands by the Airport, airline partners, institutions, flight schools, and other companies. Over 500,000 passengers passed through the airport in the previous year, generally facilitated with additional daily flights to Montreal and Toronto. Two hangars were recently developed, increasing the potential for employment on the lands in the airport and air related industries.

7.3.2 Regional Economic Opportunities

Outside of the Airport lands and the areas adjacent to it, the Greater London International Airport serves the Greater London Region and surrounding areas. The Airport Annual Reports note the location advantages it has, namely the uncongested roadways that serve the Airport. While it is acknowledged that 2 million people live within a 90-minute drive from the airport, most of that emphasis is geared towards passenger traffic potential rather than economic development through cargo and transport of goods outside of the immediate London region.

Conclusion

The *City of London Official Plan* highlights a clear vision for the airport's future, and the importance of controlling land uses, accessing improvement opportunities, and enhancing the economic role of the airport. There are large gaps between the Airport vision and the *City Zoning By-law* as provisions regarding the Airport were not available for review. The current facilities and operations at the London International Airport can accommodate 1.2 million passengers per year that is currently only utilized at around 55%. The Airport is well connected to the City of London through transportation, as well as to major Highway corridors making it an ideal location for future cargo traffic. With nearly 1,000 people employed on Airport lands, the Airport is a notable employer and has great ability to benefit the Greater London Region and surrounding areas.





8 Kingston Airport

The Kingston Norman Rogers Airport is located on the west boundary of the City of Kingston and spread across 275 hectares. The airport is owned by the City and serviced by Air Canada. The following figure provides the layout and surrounding designations of the airport.

8.1 Applicable Policies and Plans

Planning for the Kingston Airport and its surrounding land are prescribed by the following municipal policies:

- *City of Kingston Official Plan;*
- *City of Kingston Zoning Bylaws; and,*
- *City of Kingston Norman Rogers Airport Master Plan.*

The brief description of the policies/plans and their influence on development in and around the airport is provided in the subsequent sections.

8.1.1 City of Kingston Official Plan

The City's *Official Plan* provides a detailed vision on future growth in the Kingston and Frontenac Region. The *City of Kingston Official Plan* has a variety of different policy provisions regarding the Airport and its future economic development opportunities.

- Policy 2.2.6 Business District recognizes the Airport as being in a Business District under airport designation.
- Policy 3.6.A.7 discusses land uses within the Business Park to be limited in accordance to NEF levels and restricted to uses more compatible with the operation of the airport and nearby residential uses.
- Policy 3.7.6 discusses the permitted uses for the airside portion of the Airport.
- Policy 3.7.7 relates to the permitted uses within the groundside proportion of the Airport.

A complete list of Official Plan Policies, as well as the above policies in full can be found in the Appendix.

8.1.2 City of Kingston Zoning By-law

Zoning By-law Number 76-26 indicates 4 basic zoning categories for Airport lands. They include:

- Airport Zone (AP) permits an airport, an existing racquet and fitness club, and a professional office.
- Special Airport Zone (AP-1) permits a golf course, a driving range, an existing professional office, and a golf clubhouse.

- Business Park Zone (BP-H) permits data processing, business and professional offices, hotels, scientific and research labs, development facilities, financial institutions, public use, and uses permitted in the AP and AP-1 Zones. **BP-H is subject to a Holding Symbol*
- Residential Type 1 Zone (R1) permits a single-family dwelling house, a converted dwelling house, a home occupation or a public use.

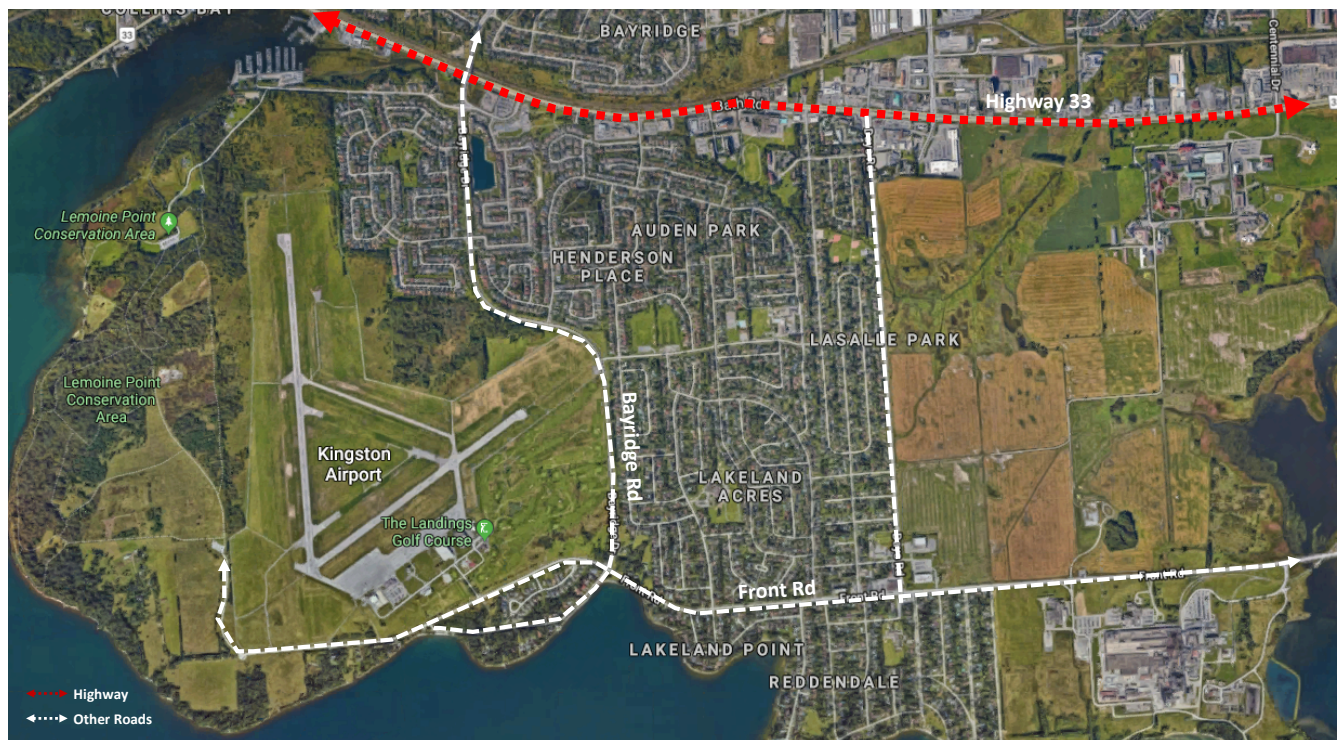
The areas to the south of the Airport are mainly Residential (R) and Open Space (OS) with frontage of Lake Ontario. This area is zoned as Low Density Residential within the City’s Official Plan, with vacant lands zoned as Development (D), and existing residential lands zoned as Residential. Lake Ontario is zoned as

an Environmental Protection Area (EPA). To the west of the Airport lands are designated open space (OS) for the Lemoine Point Conservation Area. The areas surrounding the Airport to the north is the Collins Bay Marina, with direct frontage onto Collins Bay. This area is zoned as commercial use (C4). Finally, to the east of the airport is primarily residential land. This area is comprised of West and Auden Parks and their residential subdivisions. It is zoned as Low Residential Density for one to two family dwellings (R1, R2, R2-19, R1-3).

8.2 Infrastructure Review

The subsequent sections below provide a brief description about the infrastructure of the airport and of surrounding areas. The following figure provides the layout and surrounding designations of the airport.

Figure 11: Kingston Airport Layout



8.2.1 Airside Infrastructure

The Airport's airside consists of two runways and two taxiways. The two runways at the airport have landing distance available of 6,001 ft (primary runway) and 3,909 ft respectively. The primary runway is certified by Transport Canada Standards and can accommodate narrow body type aircraft of seating capacity up to 100 passengers. The infrastructure facilitates the night operations however, no airlines operate in the night-time at the airport.

The Airport Authority recently expanded their main runway which can now accommodate larger aircraft of seating capacity up to 200 passengers (such as Boeing 737), however, the expansion of the terminal building to handle such aircraft is still under construction.

There is only one aircraft parking apron available at the Airport. The west portion of the apron provides aircraft access and parking facilities. In addition, two helipads are located at the northeast corner of the apron. The east portion of the apron offers aircraft parking as well as access to the three Hangars.

8.2.2 Landside Infrastructure

The two-storey main airport terminal building has a floor area of 11,044 square feet. As of writing, the terminal building can only accommodate up to 60 passengers at a time and about 70,000 passengers per year. The building is currently being expanded and reconfigured to accommodate a greater number of passengers.

Other facilities at the airport include the Nav Canada Flight Service Station which is a multi-story building with 3 storeys. The facility provides navigation services to the Airport and surrounding airspace. There is an unoccupied Transport Canada building which is located beside the Flight Service Station. There is also a separate Airport Maintenance Building which provides regular airport maintenance services.

Another building occupied by Central Airways is used as ground handling and fueling services for the scheduled service provider. The building also provides a kitchen/restaurant facility for pilots and the public.

8.2.3 Surrounding Infrastructure

The Kingston Airport is within a 15 minute drive from Highway 401 to the north, Downtown Kingston to the east, and Kingston VIA Rail Station to the northeast of the Airport by vehicle. Currently there is no public transit service to the Airport, however, rental car service and taxis are available at the Airport.

8.3 Economic Opportunities

The Kingston Airport's function as a domestic regional airport minimizes the opportunity to have a larger economic impact within the region. Additionally, competition from other forms of cargo transport render economic impact to be confined mostly within Kingston.

8.3.1 Within Airport Fence and land adjacent to the airport

Within the fence, operations for the Airport are mainly suited to support passenger traffic. The *Master Plan* notes that the amount

of cargo traffic is insignificant due to multiple disadvantages, namely in its location and other competitive methods of transport for companies in the logistics industry. As a result, most employment and economic activity on the lands are geared towards the Airport and the Business Industrial Park, which have both been designated in the Official Plan for the City of Kingston. In 2018, an expansion project began for the terminal to support increased passenger traffic. The City invested \$16.1M for the project. As of 2009, there was an estimated 336 employees⁶ (Full-Time Equivalent) at the Airport, and revenues generated of \$49.5M⁷.

8.3.2 Regional Economic Opportunities

As noted in the above segment, there is an insignificant amount of cargo that goes through the Airport. There is limited economic activity outside the Kingston region that can be attributed to the Airport.

⁶ 2009, Economic Impact Study, Kingston Airport

⁷ About Airport Expansion, City of Kingston, <https://www.cityofkingston.ca/city-hall/projects-construction/airport-expansion>

Conclusion

The *City of Kingston Official Plan* and *Zoning By-law* identifies significant policies in regard to the future accommodations and visions for the Norman Rogers Airport. The Kingston Airport is mainly suited to support regional passenger traffic, and little cargo transfers through the Airport. While the current terminal building can only accommodate up to 60 passengers at a time and about 70,000 passengers per year, the building is currently being expanded and reconfigured to accommodate a larger number of passengers. The Airport is looking for ways to connect its facility to the City as a whole, and Highway 401.



9 SWOC Analysis and Future Growth Potential

This chapter compares the five Study Airports in regard to their existing infrastructure, policy framework, potential to expand in the future and economic opportunities which are discussed in the previous sections. The comparison is provided mainly to identify the airport’s strengths, weaknesses, opportunities and constraints (SWOC). The SWOC analysis is further used to identify the growth potential of the airports for three scenarios: (1) no changes

to the existing infrastructure; (2) having minimum interventions to existing infrastructure and (3) having moderate interventions to existing infrastructure, details of which are explained below.

9.1 Airports Comparison

The following tables provide a summary of different types of infrastructure available, policy support and economic opportunities available at the five airports.

Table 5: Summary Table - Infrastructure at 5 Study Airports

Elements	Waterloo	Hamilton	Windsor	London	Kingston
Runway Capacity to accommodate different aircraft	Narrow Body Aircrafts (up to 200 passengers)	Wide Body up to 400 passengers	Narrow Body up to 215 passengers	Wide Body up to 250 passengers	Narrow Body up to 200 passengers
Runway Expansion Potential, any existing plans	YES, current runway expansion plan is under public consultation	YES, currently no expansion plan	Limited potential for expansion	YES, currently no expansion plan	Limited, main runway expanded recently
Night Operations	YES	YES	YES	YES	YES
Parking facilities for Commercial Passenger Aircrafts	Main Apron allows 4 narrow body aircraft parking at the same time	Main Apron can accommodate up to 7 narrow body aircrafts or 2 wide body aircrafts at the same time	Main Apron can accommodate 4 narrow body aircraft	Main Apron has 8 passenger aircraft parking spots	Main Apron has 2 narrow body passenger aircraft parking spot and 2 helipads

Elements	Waterloo	Hamilton	Windsor	London	Kingston
Terminal Building (passenger handling capacity for departure)	2-storey, hold up to 200 passengers at a time (1 narrow body jet)	2-storey, departure lounge room can hold up to 600 passengers	2-storey, departure lounge can hold up to 160 passengers	Information Not Available	2-storey, current can hold only up to 57 passengers
Cargo Facilities	No Facility to Support Cargo Operations	Infrastructure supports large scale cargo operations	No Facility to Support Cargo Operations	Cargo Apron is available, can accommodate small private cargo operations	No Facility to Support Cargo Operations
Passenger Handling Capacity (per year)	260,000	3,000,000	400,000	1,200,000	100,000
Current Capacity Utilization	53%	11%	36%	40%	68%

Table 6: Summary Table – Policy Framework of 5 Study Airports

Elements	Waterloo	Hamilton	Windsor	London	Kingston
Relevant Plans	Township of Woolwich to update Official Plan, 2002	All plans are recent	All plans are recent	New Official Plan is under LPAT review, Need an Airport Master Plan	Need to update master plan in accordance with the City's new Official Plan
Development Plan for Airport Surrounding Areas	No such Plan	Airport Employment Growth District By-law sets out 3 permitted uses and prohibits uses not compliant with supporting Airport	Designations for future employment areas, plans for developing new business park	No such plans	A Business Park has been established by the City, under airport designation, allowing for certain permitted uses
Level of Policy Support	Strong Airport Master Plan includes an Airport Reserve area for future development, Official Plan policies / Woolwich Zoning By-laws are not in place / are too restrictive to support future development	Strong policy support for future airport development through Master Plan, Official Plans, Zoning By-laws	Strict permitted uses within the Airport fence. Airside Land Reserve Plan identifies a surplus of lands on airport property for future employment uses	Does not have specific policies to encourage future airport development. Official Plan states that the City will continue supporting industrial development within airport lands	Policy largely supports the surrounding residential uses of the airport, allowing uses compatible with its residential use and operations of the Airport.

Table 7: Summary Table – Economic Opportunities at 5 Study Airports

Elements	Waterloo	Hamilton	Windsor	London	Kingston
Land available for development/ use by private businesses	30 acres for aviation business park within the airport and 741 acres on the east side land	1,371 acres for airport employment growth district	1,100 acres for aviation/non-aviation industrial development	No land earmarked for future development	No land earmarked for future development
Economic opportunities outside regional market	Limited opportunity outside the region	Notable cargo activity for the Greater Toronto and surrounding areas; demand for tourism within Niagara Region	Cargo activity for the metro Detroit area, businesses along Hwy 401 corridor, Southwestern Ontario, Greater Toronto Area	Limited opportunity outside the region	Limited opportunity outside the region
Transport Connectivity	Hwy 401, CN Rail line in close proximity	Hwy 407, 403, QEW	Hwy 401, E.C Row Expressway, VIA Rail station, Windsor Port, Windsor Transit Terminal	Hwy 401, VIA Rail station at 15 min drive from airport	Hwy 401, VIA Rail station at 15 min drive from airport
Multiple and material revenue streams	Only Passengers Operations	Passenger, Cargo, Ancillary	Passengers, Ancillary, MRO	Only Passengers Operations	Only Passengers Operations
Proximity to US Border	At considerable distance	Close to Buffalo, Niagara Falls and Queenston/Lewiston borders, facilitates cargo movement	Very close to Windsor/Detroit Border	At considerable distance	Close to Thousand Islands Border
Population Growth by 2031	742,000 people, 39% growth	680,000 people, 26% growth	225,466 people, 4% growth	465,900 people, 21% growth	140,100 people, 13% growth

Note: The red colour in the above tables represent the poor infrastructure, policy support and economic opportunities at the five airports whereas green colour represents relatively better conditions.

9.2 SWOC Analysis

Based on the analysis provided in the previous chapters, strengths, weaknesses,

opportunities and constraints for future development of the five study airports are identified and provided in the section below.

9.2.1 Region of Waterloo International Airport

The following figure provides strengths, weaknesses, opportunities and constraints for future development of the Regional of Waterloo International Airport.

Figure 12: SWOC, Region of Waterloo International Airport



The Region of Waterloo International Airport’s biggest strength is its location close to an urban centre which is expected to grow by 39% in terms of population by 2031. However, the existing runway and other airport infrastructure does not support operations of wide body international aircrafts. Also, the scope of developing this airport as a cargo hub is limited due to the presence of competing airports like Hamilton and Windsor in the vicinity. The policy framework supports the

future airport growth but is restricted due to surrounding residential use. The Airport has the potential to cater to future passenger traffic demand but needs moderate interventions including runway and terminal building expansions, public-transit connectivity (in planning stage), incorporation of airport and surrounding land in the Official Plans.

9.2.2 Hamilton International Airport

The following figure provides strengths, weaknesses, opportunities and constraints for

Figure 13: SWOC Analysis, Hamilton International Airport



The Hamilton International Airport's infrastructure can support large scale overnight cargo operations and the terminal building can handle up to 400 passengers at a time. Other strengths of the Airport include good transit connectivity, access to Hwy 403 and proximity to the US border and Niagara Region, which

future development of the Hamilton International Airport.

provides a huge opportunity to cater to both passenger and cargo air travel demand. However, the Airport requires infrastructure expansion to accommodate wide-body international passenger aircrafts, which can be a challenge as the surrounding vacant land is privately owned.

9.2.3 Windsor International Airport

The following figure provides strengths, weaknesses, opportunities and constraints for

Figure 14: SWOC Analysis, Windsor International Airport



future development of the Windsor International Airport.

The Windsor International Airport has a significant location advantage. Its proximity to larger market (Detroit, GTA) and transport corridors allows it to leverage various regional and cross border economic activities. The airport has a strong policy support which provides appropriate direction for future

growth. The airport infrastructure (MRO, Cargo facility) supports the development of diverse economic activities in and around the airport. Windsor is the only airport which has a multimodal connectivity through road, rail and seaport, thus, has the potential to be developed as a multi modal logistics hub. However, the

surrounding transport infrastructure also acts as a physical constraint for future runway expansion to accommodate wide body passenger aircrafts.

9.2.4 London International Airport

The following figure provides strengths, weaknesses, opportunities and constraints for future development of the London International airport.

Figure 15: SWOC Analysis, London International Airport



The infrastructure at London International Airport supports passenger (multiple aircrafts at a time) and small-scale cargo operations. However, due to the presence of competing airport (Hamilton,

Toronto, Windsor) and low demand of regional air cargo, the airport can focus its development and future growth towards passenger operations.

9.2.5 Kingston Airport

The following figure provides strengths, weaknesses, opportunities and constraints for future development of the Kingston Airport.

Figure 16: SWOC, Kingston Airport



Also, the Airport is located along the Toronto - Montreal corridor, therefore, despite of huge cargo traffic flow in the region, it is difficult for the airport to leverage that demand in the future. In addition, physical constraints

The runway at the Kingston Airport was recently expanded to accommodate larger aircrafts (restricted to narrow body aircrafts). The Airport's existing infrastructure does not support cargo operations.

(Lake Ontario, residential areas, natural conservation areas) also limits the further expansion of the Airport and the future development of airport related businesses.

10 Proposals for Future Growth

The future growth potential of the five study airports is identified based on the SWOC analysis for 3 following scenarios:

- **No changes in the existing infrastructure** – driven by natural growth in the aviation industry;
- **Minimum Interventions (Medium Term, 5-10 years)** - utilizing the current capacity by facilitating the airport businesses; and

- **Moderate Interventions (Long Term, 15-20 years)** -increasing current capacity through runway and terminal building expansion plans and by facilitating airport businesses.

Following table presents the future growth potential (high, medium and low potential) of the 5 airports in terms of passenger and cargo operations for the above three scenarios

Table 8: Growth Potential of the Five Study Airports

Study Airports	No Changes	Minimum Interventions (Medium Term) 5-10 years	Moderate Interventions (Long Term) 15-20 years
Waterloo Airport	Passenger	Passenger	Passenger and Cargo
Hamilton Airport	Cargo	Passenger and Cargo	Passenger and Cargo
Windsor Airport		Cargo	Cargo
London Airport			Passenger
Kingston Airport			
Growth Potential	High	Medium	Low

Given the existing infrastructure, policy framework, location advantage and economic opportunities, Waterloo and Hamilton Airports have high growth potential in terms of passenger and cargo operations respectively. However, to improve the growth potential of other airports in the future minimum and moderate interventions are required, which are discussed in the section below.

10.1 Interventions to Improve Airport Growth Potential

In recognition of the future air travel demand in Southern Ontario and the current limited handling capacity of the regional airports. The Study Airport’s should work towards utilizing their maximum capacity in the medium term (5-10 years) while increasing the existing capacity for the long term (15-20 years).

Based on the analysis provided in this report, the following interventions can help the Airports improve their growth potential in the future.

Table 9: Improvements to Support Future Growth of the 5 Study Airports

Interventions	Waterloo		Hamilton		Windsor		London		Kingston	
	Medium Term	Long Term	Medium Term	Long Term	Medium Term	Long Term	Medium Term	Long Term	Medium Term	Long Term
Infrastructure										
Runway Expansion		✓		✓		✓		✓		
Terminal Building Expansion		✓		✓		✓		✓		
Providing MRO	✓		✓				✓			
Parking facility for Cargo Flights			✓		✓					
Parking facility for Passenger Flights	✓					✓	✓			
Fueling and other aircraft support	✓		✓		✓		✓			
Policy and Planning										
Airport Master Plan							✓			
Surrounding Area Growth Plan	✓						✓			
Updating Existing Plans	✓								✓	
Facilitating Airport Businesses - Economic Growth										
Rental Spaces within existing Building	✓		✓		✓		✓		✓	
Developing new spaces for private businesses		✓		✓		✓		✓		✓
Multi Modal Logistics Hub			✓							
Other Support Infrastructure										
Airport Business Parks										
Provide Transit Services/ Improve existing	✓						✓			✓

Appendices



Appendix-1 Maps

Map-1: Hamilton International Airport Influence Area



Source: City of Hamilton

Maps-2: Region of Waterloo Airport Land Use



Source: Region of Waterloo Airport Master Plan

Appendix-2 Policy

WATERLOO INTERNATIONAL AIRPORT

The following section is a complete list of policies governing planning within the Region of Waterloo.

- Region of Waterloo Official Plan
- The Region of Waterloo Official Plan mainly looks at two policies which concerns the airport:
- Policy 2.G.17 which touches upon noise exposure contours (NEF) and protection areas.
- Policy 5.A.20 which looks at land uses within the airport and its surrounding areas.

In addition, the *Regional Official Plan* identifies a Airport Noise Protection Area and its guidelines suggest the area will follow natural and manmade boundaries encompassing a contour limit of 20 NEF. The Regional Official Plan identifies and protects a ‘Greenlands Network’ of environmental features and linkages among them.

The *Township’s Official Plan* will look at the monitoring of proposals for future development and its permissions, and its *Zoning By-law* will address the surrounding land designations. The *Regional Official Plan* identifies an Airport Noise Protection Area and its guidelines suggest the area will follow natural and manmade boundaries encompassing a contour limit of 20 NEF.

Township of Woolwich Official Plan

The Region of Waterloo International Airport is a part of Woolwich Township within the Region. That said, it is the Townships responsibility to set out guidelines for planning within and outside of the airport. The municipal Official Plan states the Township’s duty to monitor proposals for future development of the Airport, through consultation with residents and businesses within the Township, Region, and the County of Wellington.

In addition, the Township holds the ability to restrict development in areas surrounding the airport with potential to jeopardize the future economic developments of the facility, through specific provisions for zoning and development considerations, land uses, and developments in areas surrounding the Airport. The last guideline in regard to airports within the Township Official Plan is that the Township shall consider the adoption of a by-law to regulate the maximum permitted height of buildings or structures in the areas surrounding the airport.

Township of Woolwich Zoning By-law

The Region of Waterloo International Airport is situated in Breslau, and the lands located North, east and south of the Airport are primarily agricultural (A) and Industrial (I) lands. In addition, the Airport is in close proximity to urban residential (UR) communities, including Breslau, Kitchener, and Cambridge. To the west of the airport, located on the west side of Grand River, there is a new residential subdivision.

Immediately to the Northwest, commercial (C) and industrial (I) lands are located, and further Northwest are existing residential properties, all within a 1.6 m threshold of Runway 14.

Airport Zoning Regulations are the requirements set by Transport Canada to establish a set of imaginary surfaces which extend beyond the boundary of the Airport. The Region of Waterloo International Airport is in the process of updating its AZR and is projected to be done by early 2020. These regulations will be inclusive of the new runway expansion, air configuration, as well as future generational needs.

Region of Waterloo Airport Master Plan

The Region has set out an Airport Master Plan to communicate the facility's strengths and weaknesses, and areas to improve in the future. The Master Plan noted 5 land areas that the airport comprised of which includes: Airfield, Commercial Development, Airport Terminal and Operations, Environmentally Sensitive Areas, and Airport Reserve, represented in the Appendix. These areas are discussed at greater length in the economic development and infrastructure sections of the Region of Waterloo International Airport analysis.

HAMILTON INTERNATIONAL AIRPORT

The Hamilton International Airport and its surrounding land is governed by following municipal policy and airport specific plans. Brief description of these policies is provided in the subsequent sections.

- Hamilton Rural Official Plan;
- Rural Hamilton Zoning By-law;
- Airport Employment Growth District Zoning By-law
- Noise Management plan;
- Environment Management Plan; and
- Hamilton International Airport Master Plan
- Hamilton Rural Official Plan

The Hamilton Rural Official Plan mainly looks at one regulation which concerns airports:

Regulation 30 touches upon permitted and prohibited uses, future needs of the airport, and the development regulations of the airport reserve. In this section, it is noted that the Airport shall require additional lands in order to provide runway and airport operational expansion possibilities for the future. Interim land uses are not permitted, as they may create conflicts with feasible expansion of the Airport. That said, the *Official Plan* recognizes that certain lands must be reserved specifically for the Airport's future needs. The permitted uses are its current existing land uses, and Airport storage, maintenance, and operation facilities.

The *Official Plan* states that expansions to existing uses, lot severances, and lot additions shall not be permitted, if they do not serve the current or future needs of the Airport. In addition, the Airport shall not be permitted to expand on lands that are designated as Airport Reserve, until stormwater management facilities have been approved on Airport land, by City approval.

Rural Hamilton Zoning By-law

The lands surrounding the Airport are currently designated as rural (RU) and agricultural (A), with the exception of the Mount Hope Urban Area, designated as residential (R), and a strip of land adjacent to Upper James street, designated as general commercial (C). For the most part, the land immediately surrounding the Airport on the north, west, and south are subject of the *Airport Employment Growth District Secondary Plan*.

The *Rural Hamilton Zoning By-law* sets out provisions for land uses surrounding the Airport through By-law 4.8.5.

By-law 4.8.5 states that the City shall minimize future conflicts between operation of the Airport and surrounding land uses to ensure that there are no negative impacts on the long-term operations of the Airport, the opportunities for Airport expansion are not limited, and there are no land uses in the vicinity which may cause a potential aviation hazard. In addition, By-laws states that developments that are noise or land use sensitive to Airport operations or limit the opportunity of expansion shall be restricted.

Amendments are currently being made to Hamilton International Airports AZR in order to accommodate the extension of one of the runways. In addition, the amended AZR will strive to protect the current and future approach and departure flight paths from both natural, including trees, and man-made obstructions.

Airport Employment Growth District Zoning By-law

The Airport Employment Growth District , as Map - shows within the Economic Development section, has a zoning by-law in place which ensures the protection of land within the growth district. This *Zoning By-law* sets out several permitted uses within the district. The area designated 'Airport Prestige Business' permits 3 different types of uses:

- manufacturing, assembly, warehousing, repair services, transit terminals, research and development offices, high technology, private power generation, offices, and communication establishments.
- the growth district permits use which primarily support the Airport and its economy, including hotels, trade schools, training facilities, labour association halls, car rental establishments, etc.
- the area also permits uses that primarily support employees, such as cafes, fitness centers, and personal services.

This designated area prohibits uses that do not compliment the Airport and its design policies, such as outdoor storage, waste processing and transfer facilities, and salvage yards. The Airport Employment Growth District also permits limited agricultural uses in specifically zoned areas, which include only cannabis growing and harvesting facilities, greenhouses, and aquaponic facilities.

Within the Airport Employment Growth District is also the Airport Business Park, a 25-hectare parcel of land located between Dickenson Road and Runway 12-30. This strip of land is designated for commercial (C) and light industrial (I) uses.

Noise Management Plan

The Hamilton International Airport has adopted a *Noise Management Plan* in order to better mitigate noise impacts to their lowest possible level, while allowing airport operations. The City has implemented an Airport Influence Area, shown in the Appendix -1, that restricts development of residential parcels within the 28 NER contour. Within this Plan, the Airport has made an effort to include community consultation within each explored topic, including: Aircraft Flight Tracking and noise Monitoring System, Noise Abatement Procedures, and Ground and Maintenance Operations Directives. The *Hamilton International Master Plan* also recommends that on-airport lands be reserved, and additional lands be acquired by the City for runway extension to accommodate future airside development.

Environmental Management Plan

The Hamilton International Airport has adopted an *Environmental Management Plan (EMP)* to address the management and implementation strategies in regard to environmental issues at the Airport. The *EMP* has 5 key objectives that influence development in and surrounding airport land.

- establishing and maintaining the Airport as an environmentally responsible and sustainable facility;
- ensure compliance of all legislation;
- informing airport tenants and employees of environmental responsibilities;
- familiarizing the public with environmental policies; and
- ensuring all parties understand the concept of sustainable growth.

LONDON INTERNATIONAL AIRPORT

The London International Airport and its surrounding land is governed by following two municipal policies. A brief description of these policies is provided in the subsequent sections.

- City of London Official Plan; and
- City of London Zoning By-law.
- City of London Official Plan

Policy 18.2.16 discusses the promotion of development of the Airport and its passenger and freight facilities and services through (a) the control of land use, (b) access improvement opportunities, and (c) the economic role of the airport.

Land uses that will be exposed to airport-related noise levels that exceed established noise contour guidelines will be prohibited.

Continued development of municipal and regional serviced roads and provincially owned highways will be encouraged in order to improve the Airport and surrounding areas overall accessibility.

The economic role of the Airport for the long-term operations is discussed within this policy as well. The Official Plan states that the Airport's economic role will be supported by encouraging land uses compatible

City of London Zoning By-law

Under consolidated City of London Zoning By-law, no specific by-laws and provisions have been set for the Greater London International Airport. The Airport Zoning Regulations (AZR) applies to the City of London's International Airport, particularly in regard to all lands within the approaching, outer, or transitional surfaces of the Airport, as per Section 40 of the City of London Zoning By-law.

WINDSOR INTERNATIONAL AIRPORT

The Windsor International Airport and its surrounding land is governed by following municipal policy and airport specific plans. Brief description of these policies is provided in the subsequent sections.

- City of Windsor Official Plan;
- Township of Tecumseh Official Plan;
- City of Windsor Zoning By-Laws; and,
- Windsor International Airport Master Plan
- City of Windsor Official Plan

The *City of Windsor's Official Plan* sets out various policies for development and land permissions surrounding the Airport. The Plan states that council shall maximize economic development potential of the airport by promoting the development of employment land uses, protect the facility from incompatible development and designate lands for diverse employment types. It can be concluded from the *City Official Plan* that there are an array of land uses surrounding the airport, which can ultimately facilitate the diversification of the economy.

Little River Corridor is identified as an "Environmental Policy Area". This means that the area may be able to tolerate appropriately designed development. The environmental reserve incorporates a minimum buffer of 120 metres adjacent to existing woodlands, while also allowing for the potential to

include stormwater management facilities. Airport Woodlands are considered provincially significant within the Official Plan and should thus be protected as natural heritage areas where a buffer of 50 metres may be appropriate. Otherwise, outside of airport lands and Little River Corridor, there are no significant Natural Heritage Features that would be negatively impacted from future development.

Policy 6.12 Windsor Airport discusses the importance to recognize and strengthen the airport's role as a key component of the transportation system, the importance of minimizing of incompatible land uses by strict permitted uses and provide for suitable groundside and airside uses and services.

Subsection 6.12.2 discusses the permitted uses in the Airport land use designation. They include: Civilian or military airport, Airport terminal facilities and communications structures, Uses permitted in "Employment Areas" (as described by Section 6.4) provided that they do not conflict with Airport operations, hotels and related commercial uses, and other uses in accordance with the Windsor Airport Master Plan, Land Use and Reserve Land Plan, as amended from time to time.

Township of Tecumseh Official Plan

The Township of Tecumseh is where the Windsor International Airport is located. This *Official Plan* has specific policies in place in regard to the Airport and have regard to the *City of Windsor and Essex Region Official Plans*. There are three policies within the *Township of Tecumseh Official Plan* that pertain to Airport development and land use.

Policy 2.16 Development near the Windsor Airport this policy sets out direction to protect the airport from incompatible development, especially as it relates to noise contours. Specifically, it states that new residential development and other sensitive land uses will not be permitted in areas near the Airport of above 30 NEF. Re-development within this area may only be considered if it has been demonstrated that there will be no other negative impacts on the future long-term operations of the Airport.

Policy 7.2.10 Air Transportation Policies states that Council shall maximize economic development potential provided by the Airport, by promoting the development of commercial and employment uses, such as multimodal facilities surrounding the Airport. In addition, this policy addressed that all development proponents within the Development Constraint Areas shall be subject to: new sensitive land uses shall not be permitted in areas above 30 NEF, re-development within this area may only be permitted upon successful completion of a noise study, land uses causing aviation hazards will be discouraged, new development includes appropriate noise and vibration aviation measures. Finally, this policy states that other lands may be permitted within the "Airport Operating Area" provided a complete noise study.

Policy 10.2.11 Noise and Vibration Study discusses proposed ways in handling proposed development in accordance with noise contours with uses, such as airports. NEF contours may be impacted in the future due to increased activity levels at the Airport. The Windsor International Airport

Master Plan discusses plans for developing an inter-modal transfer hub on airport land in order to increase air cargo activities. This would have a significant impact on noise exposure levels.

The Regional Official Plan has regard to the Township of Tecumseh “Agricultural Areas” which are designated by the Official Plan to be east and south of the Sandwich South Lands. Lands south of the 401, east of 9 Concession Street are designated as “Business Park” and “Settlement Areas”.

City of Windsor Zoning By-law

The Windsor International Airport occupies approximately 813 hectares of land, zoned as “Airport” within the *City of Windsor Zoning By-law* (CITY OF WINDSOR). Active Airport Use comprises of 431 hectares of this land. This designation has a variety of land assignments, including airfield, air terminal and operations, airside employment, groundside employment and airport reserve. In addition, the Airside Land Reserve Plan identified surplus lands on airport property for future economic development considerations. Specific provisions regarding land use and designations have been made in regard to the land surrounding and adjacent to the airport.

As suggested above, east and south of the Sandwich South Lands are “Agricultural” designated lands, and lands south of the 401 are designated “Business Park” and “Settlement Area” lands. Areas west of airport are designated “Industrial” along Walker Road Commercial Corridor, and along EC Row expressway designated “Industrial” and “Business Park”.

The Windsor International Airport is located in the Town of Tecumseh, formerly known as Sandwich South Lands. The *Airport Master Plan* reviews land use designations within the Sandwich South Lands. As discussed, south and east of the airport are primarily designated as Agricultural. Official Plan Amendment #60 has designated a variety of uses for Sandwich South Lands, primarily Future Urban Area, Future Employment Areas, and Airport. Other planned land uses include Business Park, Industrial, Residential, Mixed Use, Open Space, and Natural Heritage. Within the Sandwich South Lands area, there is a large supply of potentially serviced vacant lands, suitable for new residential and employment land.

The areas towards the centre of the Township are designated as Future Urban Areas, while the areas south of the Airport border and adjacent to Highway 401 are designated as Future Employment Area. There are over 250 hectares of land on airport property that is designated for Future Employment Area, located to the east of operating Airport area and being planned as Business Park to accommodate non-airport related employment uses.

The *Airport Zoning Regulations (AZR)* set out by Transport Canada include preventing lands adjacent to or in the vicinity of the Airport from being used or developed in an incompatible manner with the safe operations of the airport, both today and in the future. This includes preventing land uses that could have the potential to cause interference with Airport operation signals, air-routes, sightlines, etc. *Township of Tecumseh Zoning By-law* 5.44 states that its height restrictions must also comply with the height limitations prescribed by AZR.

KINGSTON AIRPORT

The following section is a complete list of policies governing planning within the Region of Waterloo.

- City of Kingston Official Plan
- Policy 2.2.6 Business District recognizes the Airport as being in a Business District under airport designation.
- Policy 3.6.A.7 discusses land uses within the Business Park to be limited in accordance to NEF levels and restricted to uses more compatible with the operation of the airport and nearby residential uses.

Policy 3.7.6 discusses provisions for airside operations, specifically permitted uses. Within the airside site, the permitted uses allowed in relation and compatibility with the airport's operations, include facilities related to aircraft landing or take-off, terminal facilities, maintenance, communications, environmental reporting, management. Airport-related commercial uses such as aviation-related retail commercial, charter operations, air courier service, flight training, and aircraft manufacturing or repair shall also be considered.

Policy 3.7.7 relates to the groundside proportion of the Airport. Within this site, a business park, complementary service commercial uses and open space uses are permitted in accordance with specific provisions. The Business Park's permitted uses will be limited to manufacturing, warehousing, and industrial uses that do not produce dust or other emissions that may interfere with the operation of an airport or create adverse effects on surrounding land uses. Complementary service commercial uses include restaurants, financial institutions, personal services, medical and paramedical. Convenience commercial uses may also be permitted to serve surrounding residential neighborhoods and act as a buffer between residential and airport uses. Open spaces will be limited to the existing golf course, driving range, and passive recreational uses that buffer the airport uses from surrounding residential or open space uses.

Policy 3.7.10 discusses the requirement for municipal servicing on all airport lands. It states that any development of the Airport must be on the basis of full municipal servicing. A servicing analysis is required to demonstrate that adequate water and sewer capacity is available and stormwater treatment can be provided.

Policy 3.7.11 discusses the road network requirements within the City of Kingston in relation to its Airport. It states that the road network must be supported by a traffic analysis demonstrating that sufficient capacity is available within the road system to accommodate additional traffic volumes, and that the proposed internal road network within the Airport designation will: facilitate direct linkage to abutting arterial routes; provide an enhanced visual appearance for both the airport and surrounding area; and, restrict traffic related to the airport from entering into adjacent residential or open space areas.

Policy 3.7.12 discusses the promotion of pathways to be integrated surrounding the Airport. It states that pathways for active transportation are important components of the transportation system and must be accessible and integrated into the open space areas and the road network to provide safe and convenient access.

Policy 3.7.13 discusses the promotion of intermodal connections with rail and inter-city bus services to provide an effective and efficient connection between the Airport and the greater City through public transit.

City of Kingston Zoning By-law

The Kingston / Norman Rogers Airport has a few different zoning provisions surrounding it. The areas to the south of the Airport are mainly residential (R) and open space (OS) with frontage of Lake Ontario. This area is zoned as Low Density Residential within the City's Official Plan, with vacant lands zoned as Development (D), and existing residential lands zoned as Residential, Type 1 (R1, R1-4 and R1-21). Lake Ontario is zoned as an Environmental Protection Area (EPA). The areas to the west of the Airport are designated open space (OS) for outdoor recreational activities. This area is primarily the Lemoine Point Conservation Area. The areas surrounding the Airport to the north is the Collins Bay Marina, with direct frontage onto Collins Bay. This area is zoned as commercial use (C4). Finally, to the east of the airport is primarily residential land. This area is comprised of West and Auden Parks and their residential subdivisions. It is zoned as Low Residential Density for one to two family dwellings (R1,R2, R2-19, R1-3).

Zoning By-law Number 76-26 indicates 4 basic zoning categories for Airport lands. They include: Airport Zone (AP), Special Airport Zone (AP-1), Business Park Zone (BP-H), and Residential Type 1 Zone (R1). The Airport Zone (AP) permits an airport, an existing racquet and fitness club, and a professional office. The Special Airport Zone (AP-1) permits a golf course, a driving range, an existing professional office, and a golf clubhouse. The Business Park Zone (BP-H) permits data processing and related services, business and professional offices, hotels, scientific and research labs, development facilities, financial institutions, public use, and uses permitted in the AP and AP-1 Zones. This property is subject to an '-H' Holding Symbol that will not be removed until such time as detailed design and landscaping guidelines have been approved by Council for the property. Finally, the Residential Type 1 Zone (R1) permits a single-family dwelling house, a converted dwelling house, a home occupation or a public use.

References

Airport Growth District Secondary Plan. (2015). Retrieved from City of Hamilton website:

<https://www.hamilton.ca/sites/default/files/media/browser/2015-06-26/urbanhamiltonofficialplan-volume2-chapterb8-airportemploymentgrowthdistrict-oct2019.pdf>

City of Kingston Official Plan. (2010). Retrieved from the City of Kingston website:

<https://www.cityofkingston.ca/documents/10180/541790/Official+Plan/17793cad-90db-4651-8092-16c587600001>

City of Kingston Zoning By-law. (N/d). Retrieved from the City of Kingston website:

<https://www.cityofkingston.ca/business/planning-and-development/zoning>

City of London Official Plan. (1989). Retrieved from City of London website: <https://www.london.ca/city-hall/by-laws/Pages/Official-Plan.aspx>

City of London Zoning By-law. (N/d). Retrieved from City of London website: <https://www.london.ca/business/Planning-Development/zoning-by-law/Pages/Z1-Zoning.aspx>

City of Windsor Official Plan, (2005). Retrieved from City of Windsor website:

<https://www.citywindsor.ca/residents/planning/Plans-and-Community-Information/Windsor---Official-Plan/Pages/Windsor-Official-Plan.aspx>

City of Windsor Zoning By-law. (N/d). Retrieved from the City of Windsor website: <https://www.citywindsor.ca/cityhall/By-laws-Online/Documents/BL%208600%20REVISED%20OCTOBER%20,%202019.pdf>

City of Windsor International Airport Master Plan. (2010). Retrieved from Windsor International Airport website:

<http://www.yqg.ca/wp-content/uploads/2013/01/Windsor-International-Airport-Master-Plan.pdf>

Hamilton International Airport Master Plan. (2011). Retrieved from Fly Hamilton website: https://flyhamilton.ca/wp-content/uploads/2019/08/2010_hia_master_plan_c.pdf

Kingston Norman Rogers Airport Master Plan. (2007). Retrieved from City of Kingston website:

<https://www.cityofkingston.ca/documents/10180/14295/Airport+Master+Plan/b9729bf8-b1f7-491d-8df2-c43c3396a671>

London International Airport. (2019). About Us. Retrieved from <https://flylondon.ca/about-us>

London International Airport. (2019). Terminal Services. Retrieved from <https://flylondon.ca/terminal-services>

London International Airport. (2015). 2014 Annual Report. Retrieved from

https://flylondon.ca/sites/default/files/2014_lia_annual_report.pdf

Ontario Growth Secretariat. (2019). Presentation.

Provincial Policy Statement. (2014). Ontario. Retrieved from the Ministry of Municipal Affairs and Housing website:

<http://www.mah.gov.on.ca/Page215.aspx>

Region of Waterloo International Airport Master Plan. (2017). Retrieved from Waterloo Airport website:

<https://www.waterlooairport.ca/en/business/resources/Master-Plan-2017/YKF-2017--20-Year-Master-Plan---2017-2036-without-Appendices.pdf>

Region of Waterloo Official Plan. (2015). Retrieved from the Region of Waterloo website:

<https://www.regionofwaterloo.ca/en/regional-government/land-use-planning.aspx>

Rural Hamilton Official Plan. (2012). Retrieved from City of Hamilton website: <https://www.hamilton.ca/city-planning/official-plan-zoning-by-law/rural-hamilton-official-plan>

Rural Hamilton Zoning By-law. (N/d). Retrieved from City of Hamilton website: <https://www.hamilton.ca/city-planning/official-plan-zoning-by-law/rural-zoning>

Southern Ontario Airport Network. (2017). "Flying Together: The Southern Ontario Airport Network" Retrieved from:

<https://static1.squarespace.com/static/5a4bd6a164b05ff55f9fb6e7/t/5b05a79cf950b76fb5f0933f/1527097262649/Flying+Together+-+The+Southern+Ontario+Airport+Network+%282017%29.pdf>

Township of Tecumseh Official Plan. (2014). Retrieved from the Town of Tecumseh website:

<https://www.tecumseh.ca/en/business-and-development/resources/Documents/Planning-Department-Resources/Tecumseh-Official-Plan.pdf>

Township of Woolwich Official Plan (2000). Retrieved from the Township of Woolwich website:

<https://www.woolwich.ca/en/doing-business/resources/Official-Plan---Title-Page-and-Index.pdf>

Township of Woolwich Zoning By-law. (N/d). Retrieved from the Township of Woolwich website:

<https://www.woolwich.ca/en/doing-business/Zoning.aspx>



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