



2022 MASTER PLAN UPDATE

Peterborough Airport

Final Report | July 2022

Executive Summary

HM Aero Aviation Consulting was retained by the City of Peterborough to prepare a Master Plan Update for Peterborough Airport to act as a comprehensive planning guide within a 15-year timeframe to 2037, with the goal of providing the support required for additional business growth at the facility.

The Peterborough Airport Master Plan Update has many objectives, beginning with updating the current profile and confirming the role of the Airport for the next 15 years to position the facility as an economic driver within the region. Existing activities at the Airport that were identified in previous planning studies have been updated, activity forecasts have been prepared, and estimates of the economic benefits of the Airport are articulated to reaffirm the Airport's importance to the City, and the region. Building upon previous planning studies, the Master Plan Update also assesses current infrastructure facilities and identifies constraints, deficiencies, opportunities, and requirements to achieve identified business development opportunities within the study time horizon. Updated strategies to achieve the identified business development opportunities are presented for the short (5 year), medium (5-10 year), and long term (11-15 year) planning horizons, and are accompanied by cost estimates and the identification of new revenue streams, potential funding sources, and a detailed implementation plan.

An extensive stakeholder outreach and engagement program was executed to provide information to residents, business, and stakeholders on the purpose of the Master Plan Update, and to receive the input of interested parties as they relate to the future of the Airport. Stakeholder engagement opportunities were advertised through Connect Peterborough, radio advertisements, online and print news articles of the Peterborough Examiner, and through the City's Social media channels, as well as two virtual project open houses targeting the public and general aviation tenants. These engagement opportunities – including links to resident and business outreach surveys – were supported and communicated by Peterborough Kawartha Economic Development (PKED), on-airport businesses, and the Mayor and Council of Peterborough.

The project team prepared, distributed, and analyzed data from an online resident outreach survey to determine places of residence, total annual house trips made via air, preferred destinations, price sensitivity, and other information to identify potential air service opportunities at Peterborough for consideration within the timelines of the Master Plan Update. The survey received a total of 623 responses, with approximately half of respondents that provided place of residence information being from the City or Peterborough County (49% of respondents). 43% of respondents were from neighboring municipalities, including the City of Kawartha Lakes, Durham Region, and Northumberland County. 79% of respondent households indicated that they generate an average of between 1 and 5 trips via air per annum – 59% domestically, and 80% to international destinations (e.g., United States, Caribbean, Mexico, etc.). 522 respondents provided data on their destinations of interest, allowing the project team to identify key trends including Peterborough's catchment area's propensity to travel internationally to "Sun destinations" in the Caribbean, Florida, and Mexico. Although the survey dataset may not be representative of the views and priorities of all residents in the catchment area, it is a useful tool to explore priorities and potential opportunities.

A business respondent survey was also prepared, distributed, and analyzed – comprised of 24 questions on the passenger and cargo air service needs of businesses and organizations in the catchment area, and factors that influence demand for commercial air services. A total of 16 business survey responses were received. Most business were located in the City of Peterborough (63%), with others indicating business locations in Northumberland County and Marmora. Due to the low response rate for the business outreach survey, it is difficult for the project team to appropriately gauge demand for business travel within Peterborough's catchment area. Nonetheless, in-person consultations with Peterborough and area businesses indicated that most prefer the flight frequencies and multitude of destinations provided from Toronto Pearson to support their travel requirements. The project's stakeholder engagement process was complemented by direct in-person or virtual interviews with 83 individuals representing 38 stakeholder groups.



The current and anticipated future state of the Canadian aviation industry is important to consider as far as it influences the Master Plan Update. The COVID-19 pandemic has had significant negative impacts on travel demand, until recently when substantial pent-up demand has been realized within both the leisure and business travel markets. In addition, the regional domestic passenger air service market in Canada has changed considerably in the past three years with Air Canada Express retiring their 18-seat B1900D, 37-seat DHC8-100, and 50-seat DHC8-300 aircraft – negatively impacting air service availability at regional airports, as appropriate aircraft are not available to meet demand. Other smaller carriers also operate regional air services in Ontario; however, direct consultations indicated that they do not have plans to expand services in Ontario. Nonetheless, it is important to consider that only 9% of the resident survey responses identified air travel within Ontario as a preferential service option from Peterborough.

Interprovincial domestic air services are commonly operated by higher capacity turboprop aircraft, such as the Airbus A319 / A320 / A321, Boeing 737, and other narrowbody and regional aircraft. The interprovincial domestic air service market is predominantly served by Air Canada, WestJet, and a range of upstart Ultra Low-Cost Carriers (ULCCs) attempting to capture a new Canadian market. Air Canada and WestJet have essentially operated as a duopoly in Canada's metropolitan city pair market; however, Porter Airlines is planning to introduce domestic and transborder air services from Toronto Pearson Airport as early as November 2022. Consultations with Air Canada, WestJet, and Porter Airlines did not indicate opportunities for interprovincial air services at Peterborough within the time horizons of the Master Plan Update.

The Ultra Low Cost Carrier (ULCC) model has been successful in parts of Europe and the United States where high density routes exist that permit healthy competition with mainline carriers. ULCCs commonly operate at airports that offer low fees and are located near major population centres with significant catchment areas, with examples including the Region of Waterloo International Airport and Abbotsford International Airport. As of the spring of 2022, four ULCCs were providing, or planning to provide, interprovincial domestic air services connecting Ontario to other parts of Canada: Swoop, Flair Airlines, Lynx Air, and Canada Jetlines. The entry of these four ULCCs into the Canadian domestic market presents opportunities for regional airports with larger catchment areas and lower operating costs to attract new scheduled passenger air services – like Peterborough with the opportunity to serve the eastern Greater Toronto Area (GTA), Durham Region, Peterborough County, Northumberland County, and other regions defined within the Airport's catchment area. Peterborough Airport may be well-suited as a potential site for a new domestic ULCC air service within the timelines of the Master Plan Update.

Passenger charter air services have had success at regional airports in Ontario including Peterborough, where Stewart Travel continues to offer boutique passenger air charter services to select destinations. Charter air services in Canada are offered from regional airports in Ontario by carriers such as Sunwing Airlines and WestJet. This market is popular for Canadians wishing to travel to warmer destinations during the winter months – this was evident in the responses from resident surveys. The passenger charter air service market has high potential at Peterborough Airport and specific requirements and strategies to secure this type of air service are provided within the Master Plan Update.

The City's historically aggressive investment strategy has established a successful general aviation and aerospace niche for the facility. This niche, combined with the uncertainty of the future development of an airport on the Pickering Lands and capacity limitations at Oshawa Airport continues to position Peterborough to attract additional general aviation and aerospace opportunities. Corporate generation aviation trends have shifted in recent years towards a tendency for short-term leasing and booking of charter flights at all-inclusive rates, or through fractional ownership agreements. The number of occasions where these short-term rental or leasing agreements occurred at Peterborough were reported as minimal in recent years.

Oshawa Executive Airport markets itself as the executive airport supporting the GTA – a metropolitan centre with numerous high-value companies with executive air transportation needs, unlike Peterborough where the need for corporate travel is currently minimal in comparison.

Organizations within the Maintenance Repair and Overhaul (MRO) sector at Peterborough include Flying Colours Corporation, Kadex, Airtech, and Toronto Avionics. Despite the industry downturn because of the COVID-19 pandemic, these organizations are continually experiencing growth in business, and Flying Colours continues to act as an aircraft completions partner with Bombardier – a global leader in aerospace manufacturing.

Recreational general aviation activity continues to grow at Peterborough. The potential introduction of mandatory noise abatement procedures at Oshawa Airport, as well as the impending future closure of Buttonville Airport may bring additional recreational aircraft operators to Peterborough in the short and medium-term. Furthermore, the global demand for pilots continues to increase and as flight training organizations in Canada have historically been attractive to foreign students. It is anticipated that pilot shortages will continue to drive the demand for flight training, which in turn could increase flight training activity levels at Peterborough Airport.

Peterborough Airport currently supports the operations of twenty (20) private businesses and approximately 27 private hangar tenants. Organizations with more than five employees include Airtech, Flying Colours Corporation, Kadex Aero Supply, Loomex Group, Stewart Aviation, Seneca College, and W.M. Aeroflight. These businesses provide significant contributions to the regional economy and form the nucleus of the Peterborough aerospace cluster.

Aircraft movement levels at Peterborough Airport were recorded at an annual average of approximately 51,000 between 2015 and 2019. Activity decreased from 44,000 annual movements in 2019 to approximately 20,000 movements in 2020 due to the COVID-19 pandemic but recovered to near 2019 levels with more than 44,000 movements in 2021.

The social benefits of Peterborough Airport include aviation services that enhance the quality of life for residents in the area, either through access to emergency response services, or through the availability of education opportunities. The proximity of Canadian Forces Base Trenton allows the Airport to support military training exercises on a frequent basis, and the Airport is used on a mission-specific basis by both the Ontario Provincial Police (OPP) and the Royal Canadian Mounted Police (RCMP). Seneca College's School of Aviation is based at Peterborough Airport and offers an Honours Bachelor of Aviation Technology program and a diploma program in Aviation Operations. Consultation with Seneca College indicated that the Peterborough Campus will have over 150 students enrolled in 2022. Hydro One has used the Airport as recently as June 2022 for the repositioning of crews and staging of air operations to coordinate repairs to their network, and the facility is regularly used by the Ministry of Mines, Ministry of Northern Development, and Ministry of Natural Resources and Forestry to support evacuations as well as conservation and monitoring activities. Furthermore, where patient care needs exceed the services that can be provided in Peterborough, individuals are transported to higher level of care facilities by air ambulance from Peterborough Airport.

Peterborough Airport is located south of the City in the Township of Cavan Monaghan – immediately west of the Township of Otonabee South Monaghan. The facility's location outside of the City's boundary introduces some unique complexities as the City provides 100% of funding support to the Airport, however, the Township of Cavan Monaghan collects property taxes from airport tenants and employment numbers are credited to the Township by Statistics Canada. Understandably, both the City and the Township have an interest in the operation and development of the Airport with respect to employment, air services, land uses, and aircraft noise, however, they do not collaboratively participate in the governance of the facility. Adding further complexity, the Airport is also located within Peterborough County which also does not participate in airport governance activities. Consultations with the County and neighboring townships identified a common support for the Airport and a vested interest in its continued operation.

It is recommended that an Airport Governance Study be completed in the short-term to identify and recommend options for the increased participation of interested jurisdictions including funding and decision making.

The economic benefits generated by Peterborough Airport were also revisited as part of the Master Plan Update. Direct jobs increased from 382 in 2016 to 507 in 2022 while total jobs (direct, indirect, and induced) declined in part to an update of Statistics Canada's multipliers factoring in the impact of COVID-19 on the aviation sector. Contribution to GDP increased from \$74M in 2016 to \$90M in 2022 which was influenced by capital investments made by airport tenants. Conversely, labour income remained stable between the two assessments. While direct labour income increased, like jobs, the use of updated Statistics Canada multipliers resulted in a decline in indirect and induced labour income. Positive and negative fluctuations in employment by different business types on airport may have also been a contributing factor.

Opportunities for future activity growth within the 15-year master planning time horizon have been identified for Peterborough Airport based on research, consultations, analysis, the project team's understanding of industry trends, and the business environment at Peterborough. A SWOT analysis identified strengths including the longest public runway between Toronto and Ottawa capable of supporting B737 operations; the Airport's strategic location to support the eastern Greater Toronto Area (GTA), Durham, Northumberland County, Peterborough County and beyond; a catchment area of 1.2 million residents; serviced development lots available for lease, and accommodation of a diverse aviation business base as the primary strengths of the Airport. In terms of weaknesses, the Airport is constrained by provincially-significant wetlands and the Otonabee River flood plain. It is also perceived by some users as having limited airport availability based on a Non-Instrument designation for Runway 09-27 and the lack of an Air Traffic Control Tower (ATCT) or a Flight Service Station (FSS) to provide local air traffic services. Opportunities include the growth of existing charter passenger air services, supporting new entrants to the ULCC market to increase revenues and become eligible for Airport Capital Assistance Program (ACAP) funding, green initiatives such as the distribution and use of unleaded aviation gasoline, and supporting hybrid and electric aircraft development and operation. Threats were also identified including competing airports such as Lake Simcoe Regional, Oshawa and Kawartha Lakes Airport, aircraft noise exposure, and competing modes of transportation – mainly road connections to Toronto and Ottawa via Highway 115/407 and Highway 7, respectively.

Scheduled passenger air services have been identified as a high potential growth opportunity for Peterborough Airport within the 15-year time horizon of the Master Plan Update, specifically the introduction of ULCC air services from Peterborough Airport to/from western Canada. The Master Plan Update assumes that a ULCC service will commence in the short-term (2026) with a once per week return service, operated by a B737 Max 8 aircraft with 189 seats. Frequencies are assumed to increase to 2 flights per week in 2029, later expanding to a three times per week service to 2 destinations. Although stakeholder consultations and survey results did not indicate specific demand for regional scheduled air services at Peterborough within the time horizons of the Master Plan Update, infrastructure and facilities currently exist at Peterborough Airport to support a service with 19 or fewer passengers. The Master Plan Update projects that a regional scheduled air service will commence in 2029 with a twice daily service to Montreal using a 9-seat BE10 aircraft, with the service expanding in frequency and capacity throughout the 15-year planning horizon.

The growth of existing boutique passenger charter air service and new passenger charter opportunities are also areas of growth that have been identified, including the continuation of high value vacation packages to select destinations using B737-700 aircraft, and similar types. The Master Plan Update projects that this service will continue with 11 return trips per year in 2023, increasing to 16 trips per year in 2028 and continuing at this frequency until 2037 utilizing Boeing 737-700 and similar aircraft. Charter passenger air services to Mexico and the Caribbean were also indicated as a high potential opportunity based on resident survey responses and consultations with representative air carriers.

The Master Plan Update projects that these services will commence in 2026 on a 16-week seasonal rotation in the winter months, utilizing a B737-800 aircraft with 189 passenger seats. It is expected that this service will expand to 32-week rotations in 2036. Similar demand for charter passenger air services to the southern U.S., such as Florida, was also identified as a medium to high potential opportunity for Peterborough and the Master Plan Update assumes that 16 seasonal rotations will be operated in the winter months, using a 189 passenger seat B737 Max 8 aircraft, beginning in 2029.

In recent years there has been a limited volume of air cargo transferred through Peterborough Airport. Considering the lack of demand and local connections to provincial highway networks resulting in efficient access to air cargo integrators at Toronto Pearson and Hamilton Airport, trucking is expected to continue to be the preferred option for major shippers within Peterborough Airport's catchment area within the time horizons of the Master Plan Update. Opportunities for dedicated air cargo services and facilities were not identified within the Master Plan Update.

Private entities consulted during the stakeholder engagement process indicated a desire to develop a larger-scale FBO at the Airport within the planning horizons of the Master Plan Update to better support existing clients, provide additional hangar space, and allow capacity for future growth in Peterborough. Furthermore, a need for ad-hoc air charter services was indicated as a short-term requirement at Peterborough Airport; however, short-term opportunities related to the development of a base for a fractional ownership or a larger scale private jet charter organization were not identified within the time horizons of the Master Plan Update.

Recreational general aviation activities at Peterborough Airport have continued to increase since the publication of the 2009 Airport Master Plan Update and the announcement of the planned closure of Buttonville Airport, residents moving from the GTA to smaller communities, and higher levels of disposable income post-pandemic are factors that are expected to continue to drive development for recreational aviation at Peterborough Airport. Demand for flight training is likely to increase due to the significant global requirement for professional pilots, stemming from the resurgent demand for air travel post-pandemic and long-term forecasts projecting continued growth in air travel.

Two specific emerging technologies have been identified that are considered to have high potential applicability within the planning horizons of the Master Plan Update: 1) the introduction of unleaded aviation gasoline; and 2) the future development and certification of hybrid electric and electric aircraft. The trial distribution and use of unleaded aviation gasoline (avgas) at Peterborough Airport is currently being contemplated by Seneca College who operates a large fleet of piston-engine aircraft to support their Bachelor of Aviation Technology program. If Seneca's trial is successful, the City could consider retailing unleaded aviation gasoline at the Airport. The introduction of unleaded avgas at Peterborough Airport could also bring additional aviation commercial business opportunities, such as engine and component manufacturing and testing within the time horizons of the Master Plan Update and would align with City environmental initiatives. The introduction of electric aircraft for recreational and flight training activities is identify a unique opportunity for Peterborough Airport – certification and future development of electric aircraft at Peterborough Airport aligns with the City's commitment to reduce greenhouse gas emissions and the City's brand as the 'Electric City.' The introduction of electric flight training aircraft could also result in significant aircraft noise reductions, assisting the City in mitigating noise exposure issues with surrounding residents.

Aircraft movement and passenger activity levels for Peterborough Airport are forecast based on the introduction of potential air service and business opportunities within the 15-year planning horizon of the Master Plan Update. Local movements are forecast to increase by 1% per annum beginning with 2021 baseline volumes, aircraft activity related to air carrier movements is expected to increase as per the identified business development opportunities and assumed frequencies, and other itinerant movements related to other commercial, private, government civil and government military movements are forecast to grow at 1% per annum throughout the study's 15-year horizon. Total movements are forecast to increase to nearly 54,000 per annum by the end of the long-term planning horizon.

Annual enplaned/deplaned passenger volume projections within the Master Plan Update have also been developed based on the identified air carrier business opportunities and are expected to increase to 90,000 per annum by 2037.

The Master Plan Update also makes recommendations to update the facility's corporate strategy and presents a five-part role statement identifying industrial aerospace, aviation and aerospace education, intercommunity connectivity, essential public services, and general aviation as the primary support roles at Peterborough Airport. The Airport's mission is to effectively meet the needs of the aviation and aerospace sectors and to serve as an economic and social driver for Peterborough and the surrounding region.

Over the 15-year horizon of the Master Plan Update, a systematic strategy has been outlined for the rehabilitation, reconstruction, and replacement of the Airport's airfield and groundside infrastructure, and supporting systems. The asset rehabilitation recommendations provided within the Master Plan Update are based on their assessed conditions as of April 2022. Major projects recommended within the Master Plan Update include the rehabilitation / reconstruction of the runways, aprons, and select taxiways; the upgrade of airfield lighting to LED technology; and water and sewer upgrades to facilitate future development and employment opportunities.

In addition to providing recommendations for the rehabilitation, reconstruction, and improvement of infrastructure, the Master Plan Update also considers the feasibility of improvements to the level of service of Runway 09-27 as well as its potential widening. The current Non-Instrument level of service allows for a Minimum Descent Altitude (MDA) of 500 ft. Above Ground Level (AGL). Conversely, a Non-Precision facility can achieve an MDA as low as 250 ft. AGL, allowing a pilot to be closer to the ground when required to have the airfield in view in Instrument Meteorological Conditions. Upgrading the level of service from Non-Instrument to Non-Precision would potentially increase the availability of the Airport and reduce missed approaches and operational disruptions to users. To quantify the potential benefit of achieving a Non-Precision level of service, the project team completed an analysis of historical ceilings and visibility at the Airport. Transport Canada recommends that an airport achieve 95% availability. The analysis concluded that there was a historical difference of 1.62% in the frequency of Non-Instrument (96.83% annual availability) and Non-Precision (98.45% annual availability) conditions. When analyzed by season, winter operations (December, January, and February) would benefit most from Non-Precision level of service, with average seasonal availability increasing from 94.39% to 97.74% (+3.35%). Availability during the summer season (June, July, and August) would improve modestly from 98.84% to 99.34% (+0.50%). However, the actual benefit realized would be dependent on the nature of the operations of current and future airport users (i.e., time of day, time of year, flight frequencies, etc.). The analysis also indicated the lowest frequency of suitable ceilings and visibility was typically in the morning between 6 a.m. and 7 a.m. and the highest frequency typically between 11 a.m. and 6 p.m., depending on season.

The primary cost associated with achieving a Non-Precision level of service would be the realignment of Taxiway B to satisfy the minimum offset standards for a Non-Precision runway. The project team estimated the cost of two options for the realignment of Taxiway B: complete realignment is estimated at \$7.6M and partial realignment is estimated at \$6.6M. Consultations with prospective Airport users, including passenger air carriers, indicated that the provision of a Non-Precision level of service is preferred but is not a prerequisite for future operations. As noted previously, a marginal improvement in the annual availability of the Airport would also result – however, the existing annual availability of the facility exceeds Transport Canada's recommended level of 95%. It is therefore recommended that all development planning account for the future realignment of existing Taxiway B and that the requirement for Non-Precision level of service be re-evaluated with the potential introduction of forecast passenger air services.

Additionally, the project team evaluated the width of Runway 09-27 taking into consideration the design aircraft and consultations with current and prospective users. Runway 09-27 is currently 30 m (98.4 ft.) in width and was designed to satisfy the performance requirements of the Boeing 737-900 adhering to TP312 4th Edition standards. Under TP312 5th Edition standards, the design aircraft requires a minimum runway width of 30 m. As Runway 09-27 satisfies Transport Canada's minimum width standards for the design aircraft and consultations did not identify a requirement for the runway to be widened beyond 30 m, a cost estimate to widen the runway is not included in the capital forecast of the Master Plan Update. However, it is recommended that the City engage in regular dialogue with current and prospective Airport users to identify operational and aircraft performance limitations for year-round scheduled operations based on runway width.

The continued development of Peterborough Airport must take into consideration a number of constraints, which have been accounted for in the Airport Development Plan. In addition to the aeronautical constraints of the Obstacle Limitation Surfaces protecting the airspace surrounding both runways, environmental and land use constraints will also influence future development. Of primary concern to the future development of the Airport are wetlands deemed to be significant by the province or local authorities. In addition, other factors influencing the Airport Development Plan including privately owned properties located to the north of Runway 09-27; the surrounding road network, including the Airport Road realignment, Mervin Line, Moncrief Line, and Highway 115; and Cavan Creek.

The Airport Development Plan has been prepared to meet the current and future needs of the Airport throughout the 15-year planning horizon of the Master Plan Update and protects sufficient land to accommodate growth beyond the long-term. The Airport Development Plan contains three distinct development areas: the Core Development Area, East Development Area, and South Development Area.

The Core Development Area consists of Aprons I, II, and III; Taxiway C; existing Terminal Building, Seneca College facility, the Operations Centre, commercial facilities, and Skyway Drive. The Core Development Plan includes the realignment of the Apron I taxilane; the designation of preferred areas for aviation fuel storage and distribution, Fixed Base Operations, air traffic control facilities, and expanded contracted operator facilities; the expansion of the Operations Centre; construction of a sand storage building; preparation of general aviation and commercial development lots; and the construction of a dedicated Passenger Processing Facility and supporting road access and parking.

With respect to the East Development Area, the extension of Taxiway I and the preparation of additional industrial development lots is recommended. While this area contains locally significant wetlands, the City has received approval for development.

The South Development Area is intended to increase capacity for general aviation activity. In this area, the Airport Development Plan includes the construction of additional taxiways and roads to access general aviation lots and two t-hangar lots, the provision of a tenant services building and supporting apron, and the inclusion of an aviation fuel cardlock system.

The Passenger Processing Facility is recommended to be basic and of sufficient size to allow for the efficient simultaneous arrival and departure of a Boeing 737-type aircraft. To facilitate the movement of passengers to transborder and international destinations, the following minimum functions would be recommended for inclusion: passenger check-in, passenger and baggage screening (CATSA), government inspection (CBSA), a passenger holdroom, and baggage claim. Completion of a preliminary functional area sizing exercise and a review of other comparable limited-service facilities with similar roles in Canada and the United States indicates an area requirement of approximately 1,500 m². Additionally, consultations revealed demand for the provision of rentable office space within the Passenger Processing Facility, potentially on a mezzanine level.

The Master Plan Update recommends that additional analysis be undertaken through a Passenger Processing Facility Feasibility Study to better understand the potential role, size, timing, cost, and funding of this facility as well as additional market analysis to quantify demand for scheduled passenger air service to and from Peterborough.

Additionally, the Airport Development Plan recommends the extension of Taxiway B in the short-term planning horizon to address traffic congestion and runway capacity concerns. It is recommended that Taxiway B be extended from Taxiway H to the threshold of Runway 09.

Land use designations have been assigned through the Airport Land Use Plan to protect for the full range of current and future activities that are expected at the Airport. The Airport Land Use Plan identifies the acquisition of all or portions of the properties north of Runway 09-27 and south of Mervin Line to facilitate the construction of the Taxiway B extension. The acquisition of the properties north of Mervin Line east and west of Airport Road has also been identified in the 15-year Master Plan horizon; however, the highest and best use of these lands would be determined in subsequent master plans, depending on future activity levels and the evolving role of the Airport.

Following the identification of business opportunities that have medium and high potential for success at Peterborough Airport within the 15-year timeframe of the Master Plan Update, strategies to pursue activity growth and decrease annual cost-revenue gaps have been prepared. The pursuit of additional passenger air services at Peterborough Airport is one of the most important objectives identified within the short-term planning horizon of the Master Plan Update, especially within the passenger charter segment. A high-level air service development methodology has been prepared for implementation by the City and their aligned partners to: determine the number of potential passengers between city pairs or types of markets, develop a Business Case for presentation to perspective carriers, engage with carriers to discuss technical infrastructure and operational requirements, and to negotiate on the terms of service with the Airport. It is recommended that the City retain a consultant in the immediate-term to further advance the air service marketing and development process.

Peterborough Airport continues to have strong potential to support a wide range of general aviation and aerospace opportunities and continue building the Peterborough aerospace cluster within the 15-year time horizon of the Master Plan Update, including unleaded aviation fuel support and distribution, electric aircraft support, aerospace research and development, aerospace education, recreational general aviation, small passenger air charters, aircraft maintenance, aerospace manufacturing and MRO facilities, establishment of a Fixed Base Operator (FBO), and flight training growth. Five business development initiatives are identified within the Master Plan Update to support the continued marketing of business development and passenger travel opportunities at Peterborough Airport: continued use of the Airport website, regular updating of social media pages, cross promotion with PKED, hosting of events, and acting as a leader in terms of making positive efforts to reduce greenhouse gas and lead emission levels as part of the City's Corporate Climate Change Action Plan.

A financial outlook and strategy is presented within the Master Plan Update to act as a financial planning tool for Peterborough Airport to appropriately budget within the Master Plan Update time horizons and identifies \$80M in investments within the 15-year timeframe of the Master Plan Update. However, it also demonstrates that minimal investment is required in the short-term to support higher volume passenger air services. Approximately \$50M in capital spending has been identified for the short term, with \$22M required for water and sewer improvements. \$21M in capital expenditures is also identified within the first five years of the Master Plan Update, with \$12M related to lot preparations in the east development area.

Pro-forma financial statements are presented within the Master Plan Update for each of the three planning horizons based on the forecasts and activity projections developed by the project team, and a documented set of assumptions. The financial forecast demonstrates that the identified business development opportunities are expected to have a positive impact on the long-term financial stability of the Airport, and the facility is currently experiencing an operating deficit of approximately \$3M per annum.

This operating deficit is projected to decrease and become a surplus in 2029 because of increased revenues related to passenger activity. Operating surpluses are projected to range between \$800,000 in 2029 to almost \$2M in 2037 at the end of the long-term planning horizon. Peterborough Airport is projected to close the cost-revenue gap in 2032 when considering all operational and capital expenses; however, additional capital rehabilitation and expansion requirements in the long-term result in anticipated cost-revenue gap fluctuations, except for 2035 and 2037 when approximately \$1.2M is projected to be realized.

It is recognized that given the significant capital costs associated with the implementation of the Master Plan Update, securing financial support from the provincial and federal levels of government will be of high importance to the City. Peterborough Airport is currently eligible for funding through four existing programs: the Eastern Ontario Development Fund, Community Economic Development and Diversification, Regional Innovation Ecosystem, and Canada Community Building Fund. It is recommended that the City continue to monitor for announcements related to new funding programs or program changes to capitalize on any opportunities to financially support airport infrastructure improvements throughout the time horizon of the Master Plan Update. If scheduled passenger services are retained at Peterborough Airport, it is estimated that 15% to 20% of the total value of the Capital Plan will become eligible for funding under Canada's ACAP program.

It is recognized that the Master Plan Update is being completed at a unique time in history – new air carriers are emerging in Canada's domestic air service market, pent up travel demand post-pandemic is being experienced resulting in an increase in demand for air travel, and new technologies are emerging in the industry that, if embraced, could position Peterborough as an industry leader in greener aviation technologies. The Master Plan Implementation Strategy outlines the key initiatives and recommendations of the Master Plan Update within specified categories – Airside, Groundside, and Air Terminal, and Other. Recommendations for each of the categories are identified within their respective short, medium, and long-term planning horizons, and the anticipated year of project execution is shown.

As with all municipal plans and strategies, implementation of a Master Plan Update becomes the priority upon completion. The Master Plan Update is available for use by City Staff, City Council, and the Airport Strategic Initiatives Committee to guide decision making pertaining to the facility and advance its priorities in a systematic manner. It is recommended that the Master Plan Update be reviewed on an annual basis to establish action plans and budget requests, which can then be implemented in the following 12-month period.

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1 INTRODUCTION

HM Aero Aviation Consulting (“HM Aero”) was retained by the City of Peterborough (the “City”) to prepare a Master Plan Update for Peterborough Airport (the “Airport”). The intent of the Master Plan Update is to act as a comprehensive planning guide from 2022 until 2037, with the goal of providing the support required for additional business and activity growth with the goal of positioning the airport as an economic leader to meet future aviation demand and create employment. The Master Plan Update focuses on a fifteen-year period across three planning horizons: short-term (1-5 years), medium-term (6-10 year), and long-term (11-15).

1.1 Background

The 2009 Peterborough Airport Master Plan recommended a wide range of investments in the facility’s runway, taxiway, apron, air terminal, and groundside infrastructure. Since the finalization of the 2009 Airport Master Plan, numerous of these recommendations have been implemented to support the growth of the Peterborough aerospace economic cluster. The increase in activity experienced at the Airport since 2009 has been significant – the City’s capital investments of approximately \$40M between 2008 and 2016 contributed to the creation of almost 380 Full Time Equivalent (FTE) employment positions, and this number was projected to continually grow at 3.5% per year. This, combined with the arrival of Seneca College’s Aviation Technology post-secondary program in 2014, has contributed significantly to the regional economy. 13 years following the completion of the 2009 Airport Master Plan, the completion of the 2022 Master Plan Update is a key opportunity to re-examine the economic impact of Peterborough Airport, examine potential future growth and the Airport’s role considering forces such as the COVID-19 pandemic, and establish a revised guide to achieving the desired future for the facility.

1.2 Master Plan Objectives

A core consideration of the master planning process is an understanding of what elements are in the control of the City as the owner of the Airport, and what factors are external from the City’s influence. Within the City’s control is the degree to which it is a responsible and proactive airport owner, encompassing dimensions such as infrastructure investments, ensuring safe and effective governance and operations, and marketing the opportunities that exist. External to the Master Plan Update are factors such as travel patterns and household earnings, demographic shifts, and the broader health of the regional economy. While such factors may be addressed under the purview of community and economic development, such dimensions generally transcend the Master Plan Update.

It is important to note that the Master Plan Update is not a statutory document and the recommendations put forth in this report do not bind or oblige the City to proceed per the direction established herein. While it is the recommendation of the project team that the Master Plan Update should be followed to the highest degree possible, it is recognized that doing so is at the discretion of the City as the Airport’s owner and governing authority.

The objectives of the Peterborough Airport Master Plan Update are to:

- Engage with stakeholders to determine opportunities, deficiencies, and requirements at the Airport within the next 15 years;
- Update the profile and role of the Airport for the next 15 years;
- Reaffirm existing activities and identify new business development opportunities to continue to position the Airport as an economic driver within the region;
- Prepare activity forecasts to quantify short, medium, and long-term demand of the Airport's catchment area in terms of aircraft movements, passenger traffic, and cargo volumes;
- Update the economic impact estimate of the Airport;
- Assess current facilities and identify constraints, deficiencies, opportunities, and requirements;
- Determine the options, feasibility, costs, and benefits of upgrading the level of service associated with Runway 09-27 to Non-Precision;
- Identify impacts and Rough Order-of-Magnitude (ROM) cost estimates related to increasing the operational width of the primary runway;
- Document a strategy for short (5 year), medium (6-10 year), and long-term (11-15 year) development initiatives required to meet future demand;
- Guide future airport development in a safe, cost-effective manner while complying with relevant Transport Canada Regulations;
- Prepare a 15-year Capital Plan identifying all required infrastructure investments; and
- Identify new revenue streams, potential funding sources, and strategic goals and objectives.



RCAF CC-130 Approaching Peterborough Airport

2 STAKEHOLDER ENGAGEMENT PROGRAM

An extensive stakeholder outreach and consultation program was executed by HM Aero to support the Master Plan Update, in close coordination with City staff. The project stakeholder engagement program was structured to accomplish two primary objectives: 1) to provide information to residents, businesses, and stakeholders on the purpose of the Master Plan Update and the planning process (“Informing”); and 2) receiving the views of interested parties as they relate to the future of the Airport (“Engaging”).

2.1 Informing

To distribute information regarding the Master Plan Update assignment and ensure that residents, businesses, and other stakeholders were provided access to resources regarding the project, three primary engagement initiatives were completed in the spring of 2022.

2.1.1 Advertising

Outreach and marketing for the Master Plan Update was completed by the City under the oversight of the Airport Superintendent. Opportunities to engage in the master planning process were advertised through the City’s online community engagement platform (Connect Peterborough), radio advertisements, online and print news articles of the Peterborough Examiner, and on the City’s social media channels. The Connect Peterborough website included links to travel surveys targeted for local businesses and residents within Peterborough County, Northumberland County, and Durham Region.

In addition to City staff-led project advertising initiatives, aligned organizations such as Peterborough & the Kawarthas Economic Development (PKED), on-Airport businesses, and the Mayor and Council assisted in informing known and potential stakeholders about the Master Plan Update assignment and the engagement opportunities available.

2.1.2 Project Open House

A virtual open house was hosted by HM Aero and the City via a Zoom Webinar on April 25, 2022 to provide an overview of the Master Plan Update. The open house included a presentation facilitated by HM Aero describing the profile of the Airport; the Master Plan Update objectives and processes, including opportunities for engagement; and select focus areas of the assignment. A question-and-answer session was held following the presentation facilitated by two representatives from HM Aero and the City’s Airport Superintendent. Eight individuals attended the webinar. A similar project open house was held for general aviation tenants, as described in Section 2.2.1.

2.2 Engaging

Stakeholder input relevant to the Master Plan Update was collected through three primary means: 1) project open houses and information sessions; 2) outreach surveys with residents and businesses; and 3) detailed in-person, telephone, and virtual interviews with Airport and aviation industry stakeholders and key regional representatives. Findings from the stakeholder engagement program are documented through the Master Plan Update document where applicable, and many of the inputs received have enabled the project team to identify future businesses opportunities that are believed to have a high probability of success at Peterborough Airport.

2.2.1 Project Open Houses

As noted previously, the April 25, 2022 virtual open house was attended by eight individuals. In addition, an online stakeholder engagement session was held for general aviation tenants at the Airport, primarily individuals who are leaseholders in the general aviation development area supported by Apron III, and the Tiedown Area. Similar to the virtual open house, views expressed during this online engagement opportunity were used to inform research and analysis efforts related to the Master Plan Update.

2.2.2 Resident Outreach Survey

A resident outreach survey was prepared, distributed, advertised, and analyzed as part of the Master Plan Update process. The intent of the resident outreach survey was to determine places of residence, total annual household trips made via air, top preferred destinations, price sensitivity, and other information to identify potential air service opportunities at the Airport that could be considered within the Master Plan Update. The places of residence of survey respondents are shown in Table 2.1.

The resident outreach survey received a total of 623 responses, with approximately half of respondents that supplied place of residence information being from the City or Peterborough County (49% of respondents). 43% of respondents were from neighbouring municipalities, including the City of Kawartha Lakes, Durham Region, and Northumberland County.

Table 2.1 – Resident Survey Responses – Places of Residence

Place of Residence	Respondents	Proportion
Peterborough County	185	30%
City of Kawartha Lakes	137	22%
City of Peterborough	120	19%
Durham Region	67	11%
Northumberland County	63	10%
Other	51	8%
Total	623	100%

Survey respondents were asked to provide the average number of trips per year that their household generates. As shown in Table 2.2, 79% of respondent households generate an average of between 1 and 5 trips annually, with a further 12% generating between 6 and 10 trips per year. A limited proportion of respondents (6%) do not travel by air in a typical year, while 4% of respondent households travel 11 times or more by air per year. Approximately one third (33%) of respondents do not travel domestically by air in a typical year, versus 14% for international trips. The propensity for international travel among the survey respondents is mirrored when analyzing the number of respondents that travel between 1 and 5 times annually by air – while 59% of respondents do so domestically, 80% of respondents travel at this frequency internationally in a typical year.

Table 2.2 – Resident Survey Responses – Annual Trips and Destinations

Household Annual Trips by Air	Total Trips		Domestic (Canada)		International (e.g., United States, Caribbean, Mexico, etc.)	
	Respondents	Proportion	Respondents	Proportion	Respondents	Proportion
0	36	6%	200	33%	85	14%
1 to 5	486	79%	353	59%	483	80%
6 to 10	75	12%	28	5%	29	5%
11 to 20	12	2%	13	2%	4	1%
21 or more	10	2%	7	1%	3	0%
Total	619	100%	601	100%	604	100%

As Peterborough Airport does not currently support scheduled passenger air services, respondents were asked to identify the primary alternative airport that they use for their travels:

1. Toronto Pearson International Airport (1h30m drive) – 91% of respondents;
2. Billy Bishop Toronto City Airport (1h45m drive) – 6% of respondents; and
3. Ottawa International Airport (3h20m drive) – 3% of respondents.

The proximity of Peterborough and its catchment area to Toronto Pearson International Airport (within a 2-hour drive depending on the route taken and traffic conditions) and the considerable number of airlines and routes served from Toronto positions Peterborough Airport as the primary airport for catchment area leakage.

To better understand the air service decision-making priorities of catchment area residents, respondents were asked to rank a series of travel-related factors. Ticket price was ranked as the highest priority by 374 of the 597 respondents that answered this question, or 63% of all respondents. Flight convenience was ranked as the highest priority by 108 respondents (18%), while the perceived reliability of the service was the highest priority for 78 respondents (13%). The cost sensitivity of the Peterborough market was explored through a question asking respondents what premium per one-way economy class ticket they would pay to fly from Peterborough versus an alternative airport. As shown in Table 2.3, 70% of respondents would be willing to pay a premium of between \$1 and \$200 per one-way ticket to fly from Peterborough, while a further 23% of respondents would be willing to pay a premium of \$200 or more. This indicates that catchment area survey respondents are willing to pay a modest premium per ticket for the convenience of flying from Peterborough versus an alternative airport, such as Toronto Pearson International Airport.

Table 2.3 – Resident Survey Responses – Airfare Price Sensitivities

Premium per One-Way Economy Ticket	Respondents	Proportion
\$0	37	7%
\$1 to \$100	234	45%
\$101 to \$200	133	25%
\$201 to \$300	57	11%
\$301 to \$400	7	1%
\$400 or more	57	11%
Total	525	100%

With respect to airport-specific factors that contribute to respondent traveller decision-making, convenience was cited by 546 of 592 respondents (92%) as being the primary factor of importance, including the distance of the airport from their home and / or the ease of the arrival and departure experience. The cost and availability of parking was the highest priority for 27 respondents (5%), while the terminal building experience was the highest priority for 19 respondents (3%).

A total of 552 respondents provided data on their destinations of interest, with this data aggregated by HM Aero to identify key trends. Destinations in the following five regions were identified most by respondents as being a priority for service:

1. Caribbean (e.g., Cuba, Dominican Republic) – 254 respondents (46%);
2. Florida (e.g., Orlando, Tampa) – 179 respondents (32%);
3. British Columbia (e.g., Victoria, Vancouver) – 127 respondents (23%);
4. Mexico (e.g., Puerto Vallarta, Cancún) – 109 respondents (20%); and
5. Alberta (e.g., Edmonton, Calgary) – 89 respondents (16%).

Consistent with the data provided above showing the international travel propensity for individuals in the Peterborough catchment area, “sun destinations” in the Caribbean, Florida, and Mexico were commonly cited by survey respondents. Destinations in western Canada were also commonly identified by resident survey respondents.

While this dataset may not be representative of the views and priorities of all residents in the catchment area of the Airport, it is a useful tool to explore priorities and potential opportunities through the perspectives shared by resident survey respondents.

2.2.3 Business Outreach Survey

As with the resident survey, the business outreach survey was launched in April 2022 and extended until mid-May 2022. The survey included 24 questions and was structured to collect data on the passenger and cargo air service needs of businesses and organizations within the catchment area, as well as factors that influence demand for such services. A total of 16 responses were received to the business survey. Most business were located in the City of Peterborough (63%), with others indicating business locations in Northumberland County and Marmora.

Due to the low response rate for the business outreach survey, it is difficult for the project team to appropriately gauge demand for business travel within Peterborough’s catchment area. Nonetheless, in-person consultations with Peterborough and area businesses indicates that most prefer the flight frequencies and multitude of destinations provided from Toronto Pearson to support their travel requirements, although if a transborder air service to the United States with high frequency was provided to/from Peterborough Airport, this would be beneficial to them. It is the opinion of the project team that the relatively low demand for this type of service, combined with the fact that air services of this nature do not exist in the southern Ontario market as of 2022, does not justify the identification of a transborder hub connection air service opportunity within the planning horizons of the Master Plan Update.

2.2.4 Stakeholder Interviews

HM Aero and the City collaboratively developed a list of project stakeholders with a current or potential future vested interest in the Airport within the 15-year time horizon of the Master Plan Update. Meetings were convened with interested parties in-person, virtually, and through the receipt of written comments. Interviews were completed with 83 individuals representing 38 different stakeholder groups, as documented in Table 2.4. The project team made at least three attempts to contact each of the stakeholders identified at the project outset.

A response rate of more than 75% was achieved when considering direct stakeholder outreach attempts to the 50 organizations contacted and resulting successes – a value considered appropriate to inform the Master Plan Update.

Table 2.4 – Stakeholder Interviews

Stakeholder Group	Number of Interviewees
Government Stakeholders	
City of Peterborough (Mayor and Council)	9
City of Peterborough (Staff)	2
Otonabee Region Conservation Authority	2
Peterborough County	2
Township of Cavan Monaghan	2
Township of Otonabee South Monaghan	3
Aviation Stakeholders	
Air Canada	1
Air Canada Express	1
Airtech Canada Aviation Services	1
Canada Border Services Agency (CBSA)	2
Flair Airlines	2
FlyGTA	1
Flying Colours Corporation	2
Health Care Relocations Ltd.	1
Horizon Aircraft	2
Kadex Aero Supply	1
Loomex Group	3
NAV CANADA	6
Perimeter Airlines	1
Peterborough Airport Strategic Initiatives Committee	7
Porter Airlines	1
President Air Charter	1
Private General Aviation Tenants	3
Seneca College	3
Stewart Aviation/BST Vacations	2
Sunwing Airlines	1
Swish	1
Toronto Avionics	1
Ultra/Peak Aviation	1
Vector Air	1
W. M. Aeroflight	1
WestJet/WestJet Encore	1
Private Businesses, Organizations, and Other Stakeholders	
Amer and Associates	1
Fleming College	3
Northumberland Manufacturers Association	7
Peterborough & the Kawartha Economic Development (PKED)	2
Shorelines Casino	1

3 CONTEXT REVIEW

3.1 Plans and Previous Studies

The City has historically been proactive in examining the role of the Airport and planning future development based on identified business development opportunities. This has been accomplished through the development of plans and studies, including the: 1) 2009 Airport Master Plan; 2) 2010 Marketing Plan and 2015 Marketing Update; and 3) 2017 Airport Strategic Plan. Several elements of these studies that continue to be applicable in 2022 have assisted in informing the Airport expansion, land use, and business development opportunities identified herein.

3.1.1 2009 Airport Master Plan

This study was prepared following the publication of the 2008 Business Case for Infrastructure Development. The 2009 Airport Master Plan recommended the extension of Runway 09-27 to 7,000 ft., the construction of Apron II, the preparation of development lots, facility availability based on a Non-Instrument level of service for Runway 09-27, the requirement for a modest passenger terminal, and numerous other elements. This document supported an application for financial support through the Government of Canada's Infrastructure Stimulus Fund (ISF) whereby the provincial, federal, and municipal levels of government collaborated to fund a nearly \$30M expansion project that transformed the Airport and allowed for the growth of existing businesses and the attraction of new tenants, such as Seneca College.

3.1.2 2010 Airport Marketing Plan and 2015 Marketing Update

Following the development of the 2009 Airport Master Plan, and to coincide with expansion activities funded through the ISF program, an Airport Marketing Plan was prepared in 2010. The intent of the Plan was to identify and confirm business development opportunities and to prepare a Development Mission, Portfolio of Opportunities, and a Database of Companies that were considered appropriate direct marketing targets, as well as a promotional strategy to support marketing efforts. The Marketing Plan formed the basis for direct marketing efforts by the City, external consultants, and PKED. Resulting marketing tasks actioned included the creation of brochures and marketing materials, the creation of a new Airport brand and logo, participation at trade shows and industry association events, and direct outreach. Target firms were identified within the Maintenance Repair and Overhaul (MRO), General Aviation, and Aerospace Manufacturer Categories, including Seneca College who established operations at Peterborough in 2013. Limited success was achieved in attracting new business opportunities at Peterborough Airport beyond securing Seneca College as a tenant.

In 2010, the City retained the services of an external consultant and continued their partnership with PKED. to identify, explore, and create proposals for prospective business development opportunities – including a proposal for fixed wing search and rescue MRO facilities development at the Airport that was presented to Provincial Aerospace. This proposal was not successful; however, Peterborough was short listed as a preferred site for this facility. In 2015 a Marketing Update was provided to the City that indicated the status of the business development opportunities explored by the external consultant and recommended next steps in terms of marketing efforts. Many of the general opportunities for development are applicable to the 2022 Master Plan Update; however, some of the specific business development targets are no longer applicable as opportunities have been realized by other airports.

3.1.3 2017 Airport Strategic Plan

Following the publication of the 2009 Airport Master Plan, expansion efforts supported by ISF funding and aggressive growth in the general aviation and flight training sectors drove the requirement for the development of a Strategic Plan in 2017. The 2017 Airport Strategic Plan reviewed business objectives, assessed activity growth and market demand, and recommended a path forward in terms of highest value investments and strategies for the Airport. The 2017 Strategic Plan considered the South Development Area to support general aviation activities, and it also provided an opportunity estimate economic impacts FTE positions, GDP contributions, and labour income. At the time, the Airport contributed almost 1,100 FTEs to the regional economy and accounted for more than \$100M in GDP contributions and \$71M in labour income.

3.2 Aviation Industry Review

The current and anticipated future state of the Canadian aviation industry is important to consider as far as it influences the 15-year Master Plan Update. Provided herein is a discussion around the primary external factors within the aviation industry that are expected to shape the infrastructure and business development recommendations presented in later sections of the Master Plan Update.

3.2.1 Scheduled Passenger Air Services

The COVID-19 pandemic has had significant negative impacts on the global aviation industry, including with changes to air service destinations and frequencies in Canada. Significant pent-up demand is believed to exist within the leisure and business travel markets coinciding with the COVID-19 recovery. This post-pandemic demand in combination with labour shortages and remaining public health measures has caused lengthy delays at Canada's major airports, such as Toronto Pearson. These delays and congestion have caused widespread frustration among travellers, and input received through the stakeholder engagement process confirmed this challenge by residents and businesses within the Airport's catchment area.

Regional Domestic Air Services

Regional domestic passenger air services in Canada are provided by carriers operating aircraft with fewer than 80 seats, connecting smaller centres to air carrier hubs such as Toronto, Montreal and Halifax in the east, and Winnipeg, Calgary, Edmonton, and Vancouver in the west, for example. The Ontario regional domestic air service market has changed considerably in the past three years. The retirement of the 18-seat B1900D, 37-seat DHC8-100, and 50-seat DHC8-300 aircraft operated as part of the Air Canada Express Capacity Purchase Agreement has been a key development. Air Canada Express historically connected regional populations centers such as Sarnia, Kingston, and other locations with these regional aircraft. However, the retirement of these aircraft and subsequent withdrawal by Air Canada from these destinations has left a gap in the regional air service market. Although Peterborough was not included in the network of airports formerly served by Air Canada Express, the removal of 18-50 seat aircraft types has an overall impact on air service availability at regional airports, as aircraft appropriately-sized for this market are not available to meet desired routes and frequency. As of 2022, the smallest aircraft types operated by Air Canada Express are the 50-seat CRJ-200 and 78-seat DHC8-400. This is important context for the Master Plan Update, especially in the short-term. This is further supported by WestJet's recent announcement to focus rebuilding their western Canada market by deploying Encore's DHC8-400 aircraft fleet westward from those routes that were served in Ontario.

Other smaller carriers provide regional air services in Ontario, such as FlyGTA who operates the nine-seat BE10 between Billy Bishop Toronto City Airport and Niagara, Kingston, and Muskoka. FlyGTA's passengers typically are travelling as part of tourism destination packages, although some individuals use the service to commute to Toronto. While FlyGTA indicated that they do not have plans to expand their services in Ontario, this type of carrier could be suitable for Peterborough if demand for a smaller capacity air service is identified for Peterborough. However, it is important to consider that only 9% of the Master Plan Update public survey respondents identified air travel within Ontario as a preferential service option from Peterborough.

Interprovincial Domestic Air Services

Interprovincial domestic air services are commonly operated by higher capacity turboprop aircraft, such as the Airbus A319 / A320 / A321, Boeing 737, and other narrowbody and regional aircraft. The interprovincial domestic air service market is predominantly served by Air Canada, WestJet, and a range of upstart Ultra Low-Cost Carriers (ULCCs) attempting to capture a new Canadian market. The ULCC model that has been successful in parts of Europe and the United States where high density routes exist that permit healthy competition between mainline carriers and ULCCs.

Air Canada and WestJet have essentially operated as a duopoly in Canada's metropolitan market for several years. Air Canada's hubs in Montreal, Toronto, and Vancouver support their network of domestic travel, while WestJet operates a base in Calgary and has a significant presence at Toronto Pearson. In general, the service offerings of both carriers are similar in nature and pricing for flights is comparable. Consultations with Air Canada and WestJet did not indicate opportunities for interprovincial air services at Peterborough within the time horizons of the Master Plan Update.

Porter Airlines operates an Ontario-focused network currently served by 78-seat DHC 8-400 aircraft. In 2021, Porter confirmed an order for up to 19 132-seat Embraer E195-E2s to be delivered in 2022 and 2023 to support their planned expanded service to the U.S. and Caribbean. The airline announced in late June 2022 that their expansion plans are moving forward as planned and it is expected that Porter will commence E195-E2 operations from Toronto Pearson Airport as early as November 2022. Consultations conducted in support of the Master Plan Update indicate that Porter does not currently consider Peterborough to be a viable destination within their network due to acceptable driving times to Toronto Pearson and Billy Bishop Toronto City Airport.

The interprovincial domestic air service market was relatively stable prior to the COVID-19 pandemic; however, the ending of pandemic-related restrictions and the introduction of ULCCs to the Canadian market has created additional competition and influenced airfares. ULCCs commonly operate at airports that offer low fees and are located near major population centres with significant catchment areas, with examples including the Region of Waterloo International Airport and Abbotsford International Airport. As of the spring of 2022, four ULCCs were providing, or planning to provide interprovincial domestic air services connecting Ontario to other parts of Canada:

1. Swoop, a subsidiary of WestJet, launched in 2017 and operates a fleet of Boeing 737-800 and 737 MAX 8 aircraft to 18 destinations in Canada, seven (7) destinations in Mexico and the Caribbean, and 10 destinations in the United States. Swoop has increased its route network over the course of its five years of operations and has recently inaugurated new routes such as Toronto to Regina and Toronto to New York City.
2. Flair Airlines operates a fleet of 189-passenger Boeing 737-800s and 737 MAX 8 aircraft and commenced ULCC services in 2017. As of June 2022, Flair serves more than 35 destinations in Canada, the United States, and Mexico from numerous Canadian airports, such as Vancouver, Abbotsford, Calgary, Winnipeg, Toronto, Kitchener/Waterloo, Halifax, and others.

3. Lynx Air flew its inaugural revenue flight in 2022 and current operates a fleet of four (4) Boeing 737 MAX 8 aircraft with orders for up to 46 additional aircraft by 2029. Lynx Air is part of the Indigo Partners Airline Group who focusses on air transportation investments, primarily the establishment of ULCCs worldwide. Lynx Air currently operates a base in Calgary and offers flights to destinations such as Edmonton, Halifax, Hamilton, Kelowna, St. John's, Toronto, Vancouver, Victoria, and Winnipeg. Lynx Air is expected to make an aggressive entrance into the marketplace.
4. Canada Jetlines is planning to commence operations within the short-term planning horizon of the Master Plan Update. The Canadian Transportation Agency (CTA) has granted Stage 2 approval to the carrier. The company has indicated that they will be operating Airbus A320-200 aircraft with the capacity for a maximum of 180 passengers. The carrier received their first A320 in December 2021 and has plans to increase their fleet to 15 aircraft by 2025.

The entry of four ULCCs into the Canadian domestic market is expected to result in lower fares and new service options for travellers. It also presents opportunities for regional airports with larger catchment areas and lower operating costs to attract new scheduled passenger air services – in southwestern Ontario, the rapid growth of the Region of Waterloo International Airport, primarily supported by increased service by Flair Airlines, is a leading example of this opportunity. This opportunity is believed to exist in the eastern Greater Toronto Area (GTA), Durham Region, Peterborough County, Northumberland County, and other regions defined within the Airport's catchment area. Peterborough Airport may be well-suited as a potential site for a new domestic ULCC air service within the timelines of the Master Plan Update.

Passenger Charter Air Services

Passenger charter air services have had success at regional airports in Ontario, including Peterborough where BST Vacations continues to offer boutique passenger air charter services to select destinations. Charter air services in Canada are offered from regional airports in Ontario by carriers such as Sunwing Airlines and WestJet. Air Transat provides passenger air charter services to Europe, southern destinations, and the U.S., although their operations are generally focussed on larger airports such as Montreal, Vancouver, and Toronto.

The passenger charter air service market is popular for Canadians wishing to travel to warmer destinations during the winter months. This was evident in the responses from resident surveys completed as part of the Master Plan Update. Typically, passenger charter air services connect to destinations in Mexico, the Caribbean and Florida and operate based on a number of seasonal rotations – 16 weeks being a half season, and 32 weeks representing a full season.

Consultations with Sunwing Airlines were completed as part of the stakeholder engagement program and charter operations from smaller regional airports such as Sudbury and North Bay were discussed. Sunwing operates half-season passenger charter air services to sun destinations using 189 seat Boeing 737-800 aircraft from these two cities. They noted that Peterborough may represent a candidate for this type of service based on its geographic location and large catchment area. The passenger charter air service market has high potential for Peterborough Airport and specific requirements and strategies to secure this type of air service are provided within later sections of the Master Plan Update.

3.2.2 Southern Ontario Airport Network

As identified within the 2017 Strategic Plan, the Southern Ontario Airports Network was formed by the Greater Toronto Airports Authority (GTAA) to bring together and market a group of airports with the capability to meet the overall capacity demands of both the market and population of the GTA. Eleven airports are part of SOAN, including Peterborough. Each airport in the SOAN operates as independent entities and is responsible for making their own strategic decisions.

SOAN is intended as a forum to serve the capacity needs of southern Ontario, including through the redistribution of select market segments that cannot be accommodated at Toronto Pearson International Airport on account of the facility's strategic vision and / or capacity. Transferring this traffic and the related business opportunities to airports within Toronto Pearson's periphery allows the GTAA to preserve capacity for higher revenue aircraft movements and activities. This does allow airports within southern Ontario to potentially secure business development opportunities.



BST Vacations Charter Operations at Peterborough Airport

3.2.3 General Aviation and Aerospace

As indicated in the 2017 Airport Strategic Plan, the City of Peterborough's historical aggressive investment strategy and focus on aviation commercial and industry business development has established a successful niche for the facility within SOAN. This role, combined with the uncertainty of the future development of an airport on the Pickering Lands and activity and business development limitations at Oshawa Airport continues to make Peterborough well-positioned to attract additional general aviation and aerospace opportunities. Provided herein is a brief description of the general aviation and aerospace sector trends that impact the Master Plan Update and related business development strategies described herein:

Corporate General Aviation

In the context of the Master Plan Update, corporate general aviation activities refer to those that occur in support of business-related transportation for executives and high time value employees typically traveling for meetings and other job-related activities and events. The Beechcraft King Air, Bombardier Challenger and Global Express, and Dassault Falcon are examples of corporate aircraft that regularly use Peterborough Airport.

The corporate general aviation market has seen a shift in recent years from private ownership and operation of aircraft to short-term leasing and booking of charter flights at an all-inclusive rate, or through fractional ownership arrangements. Wheels Up and NetJets are two examples of these types of organizations. Although not based in Peterborough, stakeholder consultations indicated that individuals within the Peterborough area have utilized these types of services, but the number of occasions was minimal. Nearby Oshawa Executive Airport markets itself as the executive airport supporting the GTA – a metropolitan centre with numerous high-value companies with executive air transport needs, however, Oshawa's primary runway length of 4,250 ft. limits its use to small and medium-sized corporate aircraft. Lake Simcoe Regional also markets to corporate aircraft operators and with a current runway length of 6,001 ft. supports use by larger corporate aircraft types.

MRO and Aerospace Manufacturing

Similar to what was noted within the 2017 Airport Strategic Plan, organizations within the MRO sector at Peterborough include Flying Colours Corporation, Kadex, Airtech, and Toronto Avionics. The COVID-19 pandemic has had significant negative impacts on the aviation industry, and this has rippled through to the MRO and Aerospace Manufacturing sector.

The heavy aircraft maintenance industry has had notable changes since the 2017 Strategic Plan was published – JD Aerospace secured a contract for ongoing nightly maintenance, heavy check projects and field support line maintenance for Porter Airlines' fleet of DHC8-400 aircraft. Mitsubishi Heavy Industries was identified as a high potential MRO opportunity for Peterborough Airport in the recent past; however, the organization made to decision to expand on their current manufacturing site in Mississauga instead of establishing operations at another location.

Bombardier has also experienced significant changes in their aerospace manufacturing focus, as the organization sold major interests in the CSeries aircraft program to Airbus, the Q400 program to Longview Aircraft, the CRJ to Mitsubishi Heavy Industries and its aerostructures operations to Spirit AeroSystems. Flying Colours Corporation continues to act as an aircraft completions partner with Bombardier at Peterborough Airport.



Aircraft Completion Activities by Flying Colours Corporation

Recreational General Aviation

Recreational general aviation activity growth rates have been historically low in Canada; however, the growth rate of this sector in terms of demand for hangar space and aircraft storage suggests that activity levels experienced at Peterborough Airport in recent years are likely to continue. The potential introduction of mandatory noise abatement procedures at Oshawa Airport as part of the City's attempt to mitigate noise exposure issues as well as the potential future closure of Buttonville Airport may bring additional recreational aircraft operators to Peterborough in the short and medium-term.

Flight Training

The global demand for pilots continues to increase, recently more rapidly following the pandemic as pent-up demand for passenger air travel is realized. Most recently in the U.S., airlines are experiencing widespread staffing shortfalls, and several have announced that they are lowering their training requirements to staff key First Officer and Captain positions. In Canada, smaller regional air carriers such as Pascan Aviation have reported that they have lost nearly 33% of their pilot workforce to larger air carriers since the start of 2022. Additionally, Air Canada announced in July 2022 plans to reduce their domestic flight offerings to a level that the air transportation system can accommodate, partly related to shortages of air crews. Flight schools in Canada have historically been attractive to foreign students intending on training to become pilots. It is anticipated that pilot shortages will continue to drive the demand for flight training, which in turn could increase flight training activity levels at Peterborough Airport.

3.3 Regulatory Context

The operation and development of Peterborough Airport is influenced by regulatory and government bodies with different mandates and interests. Each of their respective roles as they relate to the ownership, operation and future planning of Peterborough Airport are described herein.

3.3.1 Transport Canada

Aeronautics in Canada is under the jurisdictional purview of Transport Canada, including the certification of airports. Airports in Canada can be classified as either registered aerodromes or certified airports. Certified airports are aerodromes for which a certificate has been issued by Transport Canada; per Canadian Aviation Regulation 302.01(1), there are three triggers for certification:

1. An aerodrome is located within the built-up area of a city or town;
2. Scheduled passenger air services are provided; or
3. If the Minister of Transport deems certification to be in the public interest and would further the safe operation of the aerodrome.

Peterborough Airport's certificate is held by the City and confirms compliance to the Canadian Aviation Regulations (CARs). The obligations imposed through the CARs on the certificate holder are numerous, and the Airport is subject to the regulatory oversight of Transport Canada. Among the obligations imposed on the Airport are the requirement for regular quality assurance audits; conducting operations in accordance with the Airport Operations Manual, Safety Management System, Emergency Response Plan, Wildlife Management Plan, Winter Maintenance Plan; and ensuring that the physical infrastructure and obstacle environment are compliant with TP312 – Aerodrome Standards and Recommended Practices. Development recommendations within the Master Plan Update are in accordance with to TP312 5th Edition, Amendment 1.

Maintaining the Airport's certification is a requirement to ensure that the facility can support scheduled passenger air services. Further, maintaining the Airport in compliance with its obligations as a certified facility ensures that users, the travelling public, staff, and other parties are afforded a minimum standard of safety.

3.3.2 City of Peterborough

The City of Peterborough is the owner of Peterborough Airport, and the facility is operated under a contract with a third party – the Loomex Group. Peterborough City Council holds the ultimate decision-making power in terms of infrastructure and operational funding, and the future strategic direction of the Airport. The Airport is administered through the Airport Superintendent, under the direction of the Commissioner of Infrastructure and Planning Services. The Airport Superintendent is based at the Airport full-time to provide appropriate City representation and oversight on an ongoing basis.

Aside from owning the facility and being financially responsible for operations and infrastructure, the City also administers a program of site/building development review to ensure that all construction projects at the Airport meet aesthetic guidelines, are safe, energy efficient and suitable for their intended occupancy.

3.3.3 Township of Cavan Monaghan

Peterborough Airport is located within the eastern portion of the Township of Cavan Monaghan. The Township does not contribute toward operational and capital costs related to the Airport. Authority regarding planning and operation activities at the airport remains with the City of Peterborough. Notwithstanding the above, the Township of Cavan Monaghan Official Plan establishes the high-level priorities and direction for land use in the municipality. The Township of Cavan Monaghan Official Plan provides a variety of directions with respect to the Airport, including directing appropriate employment opportunities to the Airport and assessing land use proposals for their compatibility with the Airport. The Airport property is designated as Rural Employment with a special Airport Employment sub-designation. Permitted uses in this sub-designation include:

- Automotive, aircraft or recreational vehicle sales including accessory service uses;
- Business and professional offices;
- Data processing centres;
- Research and development facilities;
- Manufacturing, assembling, processing, fabricating, warehousing, and wholesaling;
- Restaurants;
- Service and trade related uses;
- Maintenance and servicing of aircraft;
- Storage of cargo for the purposes of transfer between air and road modes of transport; and
- Flight Training Units.

Direction is also provided through the Official Plan that identifies airport zoning as a development consideration, as well constraints related to wetlands and floodplains will be assessed as far as they apply to new development at the Airport. Consultations with the Township indicated that there is support from Cavan Monaghan for a successful Airport. It was also noted during consultations that a Ministerial Zoning Order (MZO) was approved in March 2022 in the vicinity of Kawartha Downs approximately 4 km southwest of the Airport, where almost 600 residential dwellings are planned. Township staff, officials, and residents have expressed concerns regarding aircraft noise exposure at the Airport in recent years, primarily related to continuous circuit traffic from flight training activities.

3.3.4 Township of Otonabee South Monaghan

The Township of Otonabee-South Monaghan is located immediately east of the Airport, on the eastern side of the Otonabee River. Although the Peterborough Airport lands fall outside the Township, the protective Obstacle Limitation Surfaces for the airport overlay lands within the jurisdiction of the Township.

The Township of Otonabee-South Monaghan Official Plan was approved by the Ontario Municipal Board in 2015. The Official Plan recognizes the proximity of Peterborough Airport to the municipality and provides direction on land use compatibility, including the assessment of new residential development applications against the Airport's Noise Exposure Forecast contours and discouraging uses with a potential aviation safety hazard.

The County of Peterborough is currently updating their Official Plan, and the Township is partnering with the County to accomplish the update. The County of Peterborough's Official Plan is expected to be completed by July 1, 2022.

3.3.5 County of Peterborough

Peterborough Airport resides within the boundaries of Peterborough County; however, the County is not involved in its operations and development. Peterborough County's involvement in airport-related matters is limited to the maintenance, operation and planned expansion of County roads connecting to, and adjacent to the property. Consultations with County staff indicated that the resurfacing of Airport Road between Highway 115 and Mervin Line was in the planning phase for re-construction, and that the preparation of a 30-year Transportation Master Plan is being contemplated in the short term.

Peterborough County's population grew by 12.5 per cent in 2021 to 64,030 from 56,934 in 2016 according to most recent Census data.

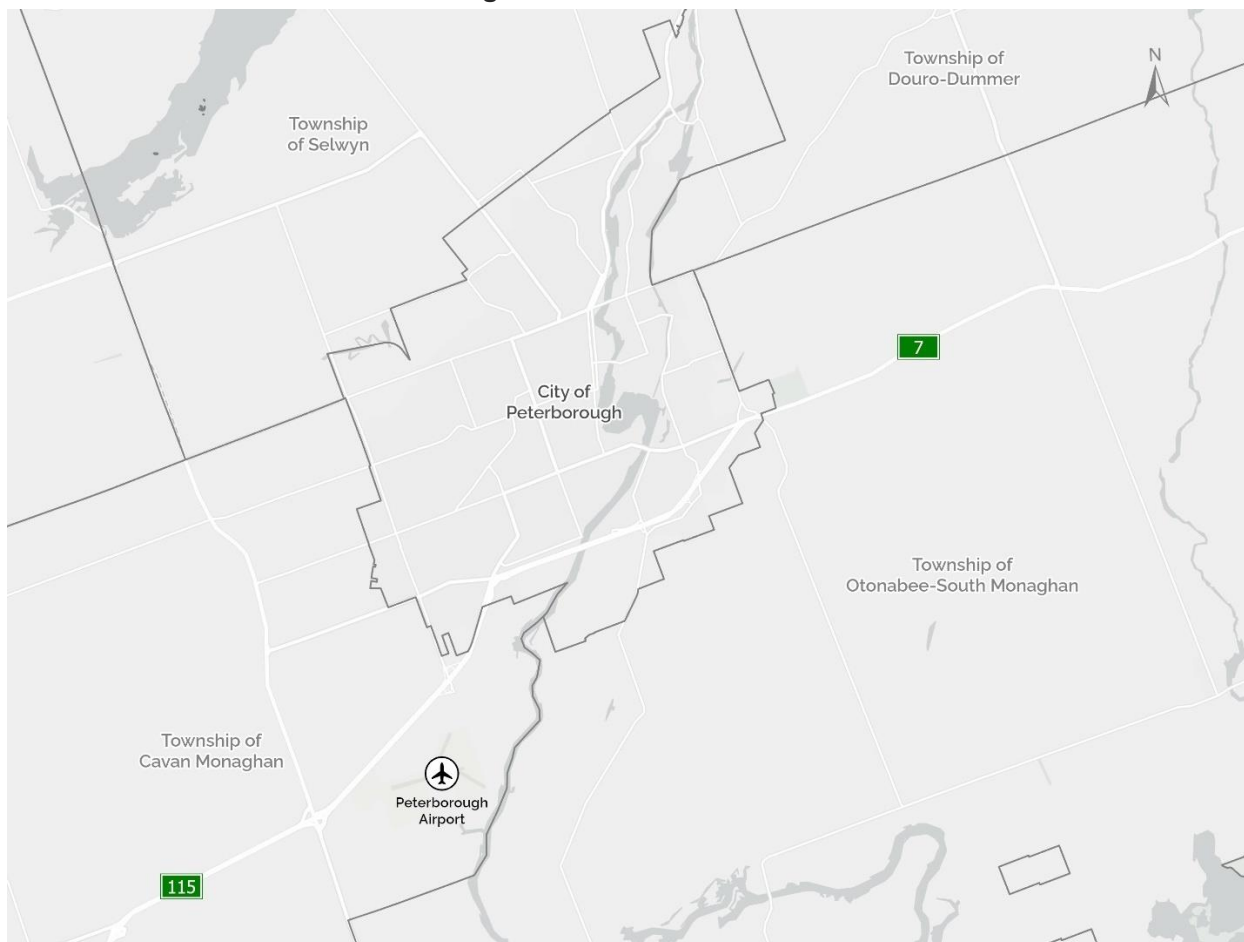
3.4 Geographic Context

3.4.1 Local Context

Peterborough Airport is located within the municipal boundary of the Township of Cavan Monaghan, approximately 2.5 km south of the main urban area and 8 km southwest of the downtown core. The Airport is accessible by road from Peterborough via Highway 115 and Airport Road, with the interchange with Highway 115 located 1 km north of the site. The Airport can be reached by road from most points in the City of Peterborough within an approximately 25-minute drive.

The Airport is primarily accessed by personal automobiles, taxis, and commercial vehicle services. Peterborough Transit does not have a regularly scheduled route serving the Airport, although a stop at the intersection of Fisher Drive and Airport Road is served by Route 5 – The Parkway, 1.8 km north of the site. Consideration should be given to the completion of engagement program and needs analysis with airport businesses and users in the short-term to identify required improvements to airport access using Peterborough Transit's conventional and specialized services, taxicab services, and potential future transit systems serving the County of Peterborough.

Figure 3.1 – Local Context



3.4.2 Regional Context

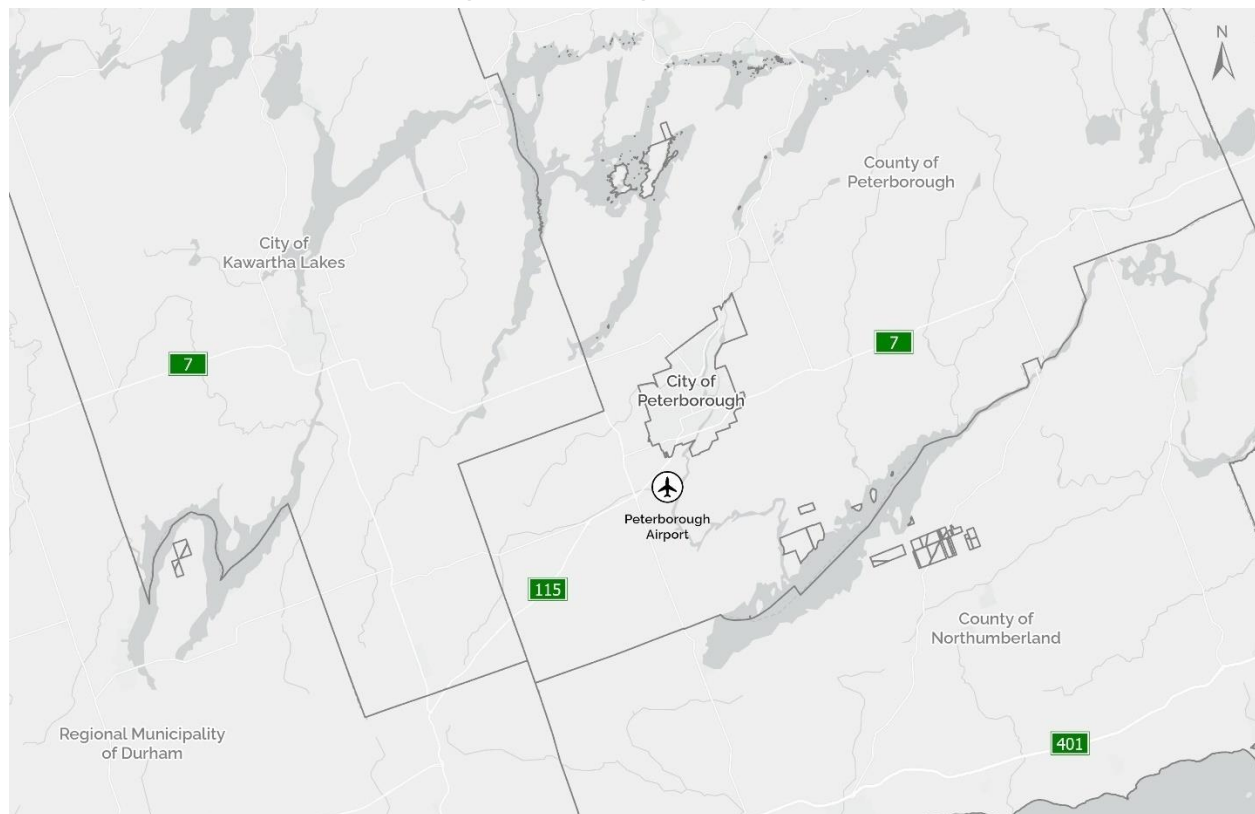
The City of Peterborough is located in the southwestern portion of the County of Peterborough adjacent to the Otonabee River and Trent Canal. The central location of Peterborough results in relatively short travel distances to the Greater Toronto Area and Ottawa (Table 3.1).

Table 3.1 – Driving Distances and Times to Key Destinations (From Peterborough)

Community / Destination	Driving Distance	Driving Time
Greater Toronto Area – Toronto Pearson International Airport (via Highway 407)	145 km	1h20m -1h40m
Greater Toronto Area – Downtown Toronto (via Highway 407)	140 km	1h20m -1h50m
Durham Region (Whitby)	84 km	50m – 1h10m
Belleville	105 km	1h20m – 1h50m
Kingston	181 km	2h00m – 2h40m
Ottawa – Ottawa Macdonald-Cartier International Airport	279 km	3h10m – 4h00m
Ottawa – Downtown Ottawa	271 km	3h00m – 4h00m
* All driving time estimates are based on typical traffic conditions and may increase		

Peterborough benefits from excellent connectivity to Ontario's highway network including Highway 401 and Highway 407 via Highway 115 accessing the GTA and Southern Ontario. Destinations east of Peterborough, including Belleville, Kingston, and Ottawa, can be accessed via Highway 401 and Highway 7.

Figure 3.2 – Regional Context



3.5 Intercommunity Transportation

3.5.1 Road Network

Intercommunity travel by road is primarily facilitated through Highway 7, connecting Peterborough with Ottawa to the northeast, and an interchange with Highway 115 and Peterborough Road 28 to the southwest. Highway 115 extends southwest to Highway 407, which leads to the northern portion of the Greater Toronto Area. Both Highway 115 and Peterborough Road 28 terminate at Highway 401, accessing the GTA to the west and Kingston to the east. There are no intercity bus routes servicing Peterborough, although private shuttle services are available connecting to Toronto Pearson International Airport, Billy Bishop Toronto City Airport, and Hamilton International Airport. As such, intercommunity travel by road primarily occurs by personal vehicles, with the driving distances and times between Peterborough and key destinations as noted above in Table 3.1 – Driving Distances and Times to Key Destinations (From Peterborough).

As examined in the Geographic Context, the distance and associated driving times of Peterborough to other urban centres and key destinations in Ontario positively influences local demand for more time-effective air services. However, demand for air travel to and from Peterborough Airport will also be affected by the financial implications of flying versus driving; for more cost-conscious market segments, the real or perceived financial savings of driving may outweigh the time savings of flying. Accordingly, travel by road is a competing intercommunity transportation option.

The movement of goods and cargo by truck and other commercial vehicles (e.g., courier services) is a significant transportation category. Through consultations with local economic representatives and businesses, it is understood that high value of time shipments (e.g., just in time deliveries) are commonly flown to or from a nearby airport with air cargo services (e.g., Ottawa, Toronto Pearson, Hamilton) and then moved by road to or from Peterborough. The movement of freight by road, while typically a slower transportation option versus air cargo, is viewed as a competing force that influences demand for air cargo services at the Airport.

3.5.2 Rail Network

No passenger rail service is currently offered by VIA Rail through Peterborough, with the closest station located in Cobourg (approximately 0h40m away). Cobourg is transited by eight trains daily enroute to Toronto Union Station. The Havelock Subdivision passes through the City of Peterborough is being considered for the alignment of the proposed High Frequency Rail network between Quebec City and Toronto. For travellers with higher values of time or for whom VIA Rail's schedule does not align with their plans, the restoration of passenger air services at Peterborough Airport may represent a competitive travel option. Conversely, more frequent and / or faster rail service to and from Peterborough has the potential to decrease demand for regional air services from Peterborough Airport.

Freight rail services are provided by Canadian National Railway, which connects Peterborough through its various sidings and subdivisions in the region to its network in Canada and the United States. Typically, the types of goods moved by rail differ from those moved by air, and the availability of freight rail services in Peterborough is not viewed as a significant competing factor for air cargo services.

3.5.3 Marine Network

Peterborough is transited by the Otonabee River and Trent Canal, both of which are commonly utilized for recreational boating. The availability of water transportation services through Peterborough does not represent competition to the Airport for either passenger service or the movement of goods and cargo.

4 AIRPORT PROFILE

The Airport Profile outlines the historical and current usage of the facility, including on-site businesses and tenants, activity levels, economic and social benefits, and community perspectives.

4.1 History

In 1957, the City of Peterborough announced plans to develop the present-day Airport lands as an airfield. The lands were purchased by Harry Oakman in the early 1960s, and he jointly developed the airport with the City of Peterborough, establishing two turf runways. Subsequently in 1965, Bradley Air Services (later known as Trent Air) began offering flight training, charter, and aircraft sale, service, and maintenance services, as the first commercially operated business at the Airport.

The City of Peterborough acquired the airport lands from Harry Oakman in 1967, and in an expansion and licensing effort directed by Transport Canada, installed a 5,000-foot asphalt runway complete with lighting and a meteorological office. This enabled operations for aircraft sized up to the DC-9, with a gross takeoff weight of up to 25,000 kg. As such, the Peterborough Municipal Airport was officially opened in 1969.

Rehabilitation, expansions, and upgrades to the runway and taxiway first occurred in 1995 and following the completion of the Airport Master Plan in 2009, Runway 09-27 was expanded to 7,000 ft to provide its present-day capabilities of serving narrow-body aircraft. The parallel Taxiway B has also been extended eastward to include a holding bay, and westward to the midpoint of Runway 09-27. The latest installation of a 2,000-foot crosswind runway and supporting taxiways was completed in 2013 alongside the westward extension of Taxiway B.

The 2009 Airport Master Plan also led to the latest iteration of the airport core, including two aprons and adjacent commercial and industrial lots, the Air Terminal Building in 2011, maintenance facilities, and expanded general aviation area. Seneca College opened a new flight training campus in 2014, altogether relocating its aviation program to Peterborough Airport.

4.2 Airport Businesses and Tenants

Peterborough Airport currently supports the operations of twenty (20) private businesses and 27 private hangar tenants. Aviation businesses with five or more employees are listed below with a description of their service offerings:

- **Airtech:** Specializes in aircraft modifications and repairs of fixed and rotary wing aircraft.
- **Flying Colours:** An international aviation services company providing customers with an integrated resource for aircraft maintenance, repair and overhaul services, completions, refurbishments, special mission modifications, avionics upgrades and installations, exterior paintwork, and aircraft transaction support.
- **Kadex Aero Supply:** Distributor of aircraft parts and supplies.
- **Loomex Group:** Responsible for the management and operations of Peterborough Airport and is a provider of training, emergency management, and emergency services.
- **Stewart Aviation:** Provides Fixed Base Operator services including aircraft fuelling, aircraft de-icing, and pilot and visitor support services.
- **Seneca College Peterborough Campus:** Base of operations of the Seneca School of Aviation's Honours Bachelor of Aviation Technology and Airline Pilot Flight Operations programs.

- **W.M. Aeroflight:** Provides flight training services using single and twin-engine aircraft supplemented by flight training simulators.
- **Private Tenants:** 27 private tenants have developed hangars for their aircraft.

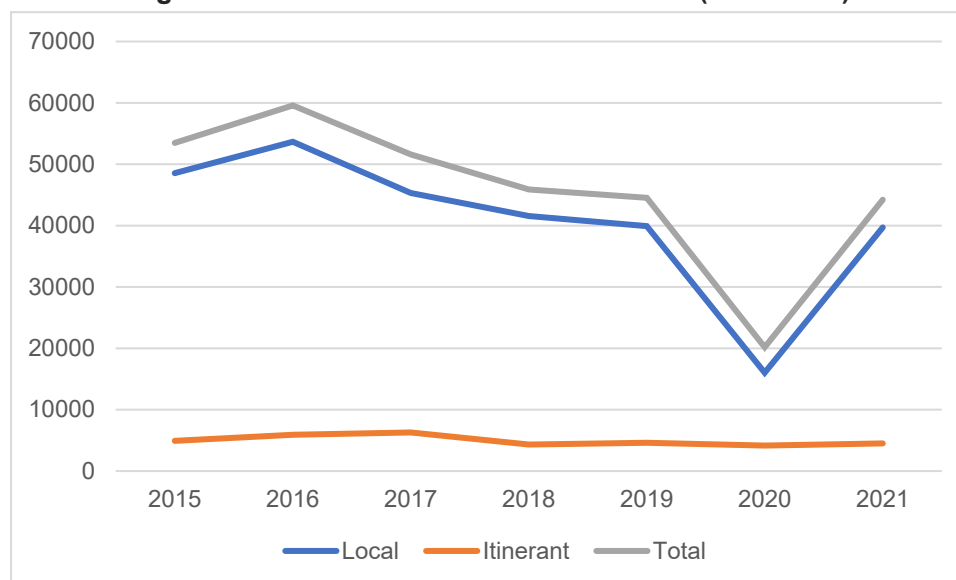
4.3 Activity Levels

The historical usage and activity of the Airport can be quantified through data available on the number of aircraft landings at the facility, as well as the number of passengers departing on air carrier services.

4.3.1 Aircraft Movements

Aircraft movement records were available for the period of 2015-2021. As shown in Figure 4.1, recorded aircraft movements decreased from 59,583 movements in 2016 to 44,520 movements in 2019. This decrease may be attributed to a change in Statistics Canada methodology for reporting flight training movements. Between 2015 and 2019, an annual average of 51,014 movements were recorded. Activity subsequently decreased to 20,184 movements in 2020 because of the COVID-19 pandemic but recovered to near 2019 levels with 44,214 movements in 2021.

Figure 4.1 – Historical Aircraft Movements (2015-2021)



An aircraft movement in which the aircraft remains in the proximity of the airport is referred to as a 'local' movement. An 'itinerant' aircraft movement is one in which the aircraft arrives from or departs to a point other than the reporting airport or leaves the proximity of an airport and returns without landing at another airport. Between 2015 and 2021, local movements accounted for 79% to 91% of total movements at Peterborough Airport and itinerant between 9% and 21%. During the same period, Seneca College accounted for between 39% and 66% of total movements.

4.3.2 Passenger Activity

Historical passenger activity related to scheduled air services has been limited at Peterborough Airport. Passenger air services to Montreal were offered during the 1970s while General Electric had a significant corporate presence in Peterborough. Air services were also attempted in the late 2010s by Prop Air between Gatineau, Peterborough, and Kitchener/Waterloo; however, only a few flights operated, and the service was deemed unreliable.

Boutique passenger air charter services offered by BST Vacations have generated passenger activity at Peterborough since the tours began being offered in 2014. BST Vacations offers boutique vacation packages with round trip air services departing from Peterborough to select destinations such as New Orleans, Nashville, Savannah, St. John's, Las Vegas, and Cape Breton. Seven charter tour packages are planned to be offered in 2022, increasing to 11 in 2023 and beyond.

4.4 Social Benefits

The social benefits of the Airport include aviation services that enhance the quality of life for regional residents, either through access to emergency response services (i.e., law enforcement) and or through the availability of education opportunities.

4.4.1 Military

Peterborough Airport's proximity to Canadian Forces Base Trenton allows the Airport to support training exercises on a frequent basis. The base is home to transport, rescue, and training squadrons operating CC-130, CC-146, CC-177, and CC-150 aircraft. Between 2015 and 2021, Peterborough Airport has experienced an average of 104 military aircraft movements per year with a peak of 152 movements in 2019.

4.4.2 Law Enforcement

Peterborough Airport is used on a mission-specific basis by both the Ontario Provincial Police (OPP) and Royal Canadian Mounted Police (RCMP). Law enforcement air missions typically include but are not limited to fixed-wing and rotary-wing assets performing traffic enforcement, support to investigations, personnel transportation, and searches for wanted persons and high-risk warrants.

4.4.3 Education

Seneca College's School of Aviation is based at Peterborough Airport and offers an Honours Bachelor of Aviation Technology program and a diploma program in aviation operations. Consultation with Seneca College indicates that the Peterborough Campus will have over 150 students enrolled in 2022.

In May 2021, Fleming College announced a new intake for their Altitude Aircraft Interior program. The program, based at Peterborough Airport, is designed to assist the aerospace industry in sourcing qualified candidates in the field of upholstery and aircraft interiors. The program is funded by SkillsAdvance Ontario with no costs to program participants.

WM Aeroflight offers single and multi-engine flight training, including the Recreational Pilot Permit, Private Pilot Licence (PPL), Night Rating, Multi Engine Rating, and Instrument Rating. Additionally, Aerotrike Aviation offers flight training for ultralight aircraft.

Loomex Group, which is responsible for the management and operations of the Airport, also provides professional learning services including fields of study such as emergency and risk management, business and economic development, and conflict resolution.

4.4.4 Utility Providers

Hydro One has used the Airport as recently as June 2022 for the repositioning of crews and staging of air operations to coordinate repairs to their network.

4.4.5 Provincial Ministries

The Airport is regularly used by the Ministry of Mines, Ministry of Northern Development, and Ministry of Natural Resources and Forestry to support evacuations as well as conservation and monitoring activities.

4.4.6 Air Ambulance and Patient Transfer

Where patient care needs exceed the services that can be provided in Peterborough, individuals are transported to higher level of care facilities via ground and air ambulances. Ornge is the not-for-profit corporation that is responsible for providing air ambulance interfacility transportation services in Ontario. This mandate is fulfilled by Ornge's in-house fleet of fixed-wing and rotary-wing aircraft, as well as by contracted fixed-wing aircraft operators. Peterborough Airport is used to support interfacility patient transfer flights.

4.5 Economic Benefits

4.5.1 Economic Impact Assessment

The first dimension of economic impact considers the broad types of activities performed at the facility. Commonly, it will serve as an employer and a purchaser of goods and services. However, some entities, such as amusement parks, and special events such as the film festivals are important attractors of tourists. An economic impact analysis could then focus on the benefits of attracting tourists to a region and will focus on tourism variables including hotel bed-nights. Catalytic benefits are a third broad class of economic activity that refer to the degree to which the entity lowers a region's costs of production, thereby attracting new types of economic activity.

The second dimension of economic impact considers the different types of economic benefits that an entity can generate. An increase in local employment, a larger Gross Domestic Product (GDP), increased labour incomes, increased local tax receipts, higher regional property values and greater regional exports are all possible economic consequences of the facility or event.

The third dimension of economic impact refers to the benefits that flow to the community at large. The **direct** impacts occur on the site and result from the activities that are immediately supporting the entity. The **indirect** effects result from purchases of goods and services made off-site by businesses operating on the site. The direct and indirect activities stimulate household incomes and expenditures, with households spending a portion of their increased income making purchases of goods and activities throughout the region. These expenditures in turn stimulate local businesses, increase consumer incomes again, and result in further expenditures. The sum of all income-increased spending benefits such as income, GDP, and employment earnings will result in a multiple of the original stimulus which will depend on leakages to savings, expenditures outside the region, taxes, and other factors. The outcome of increased consumer spending, resulting from the direct and indirect expenditures, are termed **induced** benefits.

The measurement of the economic impact of the Peterborough Airport considers those activities of the airport management and on-airport tenants, including the activities of aviation students at Seneca College and other educational programs. It views the airport and its tenants as an employer and purchaser of goods and services off-airport. The analysis measures economic impact in terms of employment, labour income (salaries and benefits), and the contribution to the region's GDP differentiating between direct, indirect, and induced impacts.

4.5.2 Measuring Economic Impact

The first step of an economic impact study is to define the entity being examined. The second step involves measuring the direct impacts. This requires a detailed survey of all tenants operating at the facility. For an airport, this would include airport management, airlines, fixed base operators, aircraft maintenance firms, flight training schools, and others. Tenant surveys usually rely on questionnaires or direct interviews. The information sought depends on what specific impacts are being measured.

Statistics Canada surveys firms throughout the country then assembles data by type of industry, number of employees, revenues, profitability and the quantities of goods and services that they buy and sell to other firms and industries. This firm-specific data is consolidated into large tables, each row and column corresponding to a specific industry. The tables also record the “final demands” of each industry; the quantity of output that is purchased by consumers, as opposed to the amounts purchased by other industries as intermediate inputs. The employees in all industries are expressed as multiples of the employment of each industry. Similar expressions define the relationships between contribution to GDP, labour income, local taxes, and other variables. Since each metric is expressed as a multiple of the revenues of the industry in question, the numbers expressing the relationships are called “multipliers” that define the indirect and induced impacts corresponding to each direct impact.

The Statistics Canada input-output tables provide estimates of the key economic metrics, all directly related to the gross sales of each industry. The number of employees of each tenant in turn permitted calculations of direct, indirect, and induced metrics. Some tenants provided their total wages bill or gross sales with their estimated impacts reflecting this extra information. The questionnaires and interviews captured the direct effects. Statistics Canada’s input-output model generated estimates of the indirect and induced effects corresponding to each direct impact.

4.5.3 Challenges

The aviation students at Seneca College posed a unique challenge in the analysis. “Indirect” expenditures usually represent off-airport purchases by airport tenants. For example, Seneca College School of Aviation might purchase stationery to support its teaching activities. However, the students make large expenditures in tuition, accommodations, and groceries. The latter two purchases are strictly off-site and could be viewed as indirect. These values are large, comprise a large share of student outlays, and are usually raised by the students before they come to Peterborough. These expenditures were considered direct, although they have characteristics of both direct and indirect impacts.

Not all tenants provided a complete survey with some electing to decline responding entirely. Excluding non-respondents altogether would cause any estimates of economic impact to understate their “true” values. Where necessary, the project team estimated the metrics by considering the size of the organization’s office, the number of vehicles in its parking lot, and other factors. In some instances, tenant respondents were able to estimate the size of other tenants. The estimation challenges can become greater with attempts to compare economic impact estimates from different time periods. Inflation can distort any findings. Some firms may submit a completed questionnaire for one period but not the other. Additionally, there is a continual turnover of tenants. Finally, the scope of the study may vary. In one year, the evaluation may be limited to the airport footprint. In another period the study may include aviation businesses who do not occupy land within the airport boundaries. Also, recessions, the entry and exit of firms from Airport, and changes in the regional transportation network can all complicate efforts to follow the economic impact over time.

4.5.4 Economic Impact of the Peterborough Airport

Table 4.1 summarizes the economic impact analysis for the Peterborough Airport in 2016 and in the spring of 2022. Direct jobs increased from 382 in 2016 to 507 in 2022 while total jobs (direct, indirect, and induced) declined in part to an update of Statistics Canada’s multipliers factoring in the impact of COVID-19 on the aviation sector. Contribution to GDP increased from \$74M in 2016 to \$90M in 2022 which was largely influenced by capital investments made by airport tenants.

Conversely, labour income remained stable between the two assessments. While direct labour income increased, like jobs, the use of updated Statistics Canada multipliers resulted in a decline in indirect and induced labour income. Positive and negative fluctuations in employment by different business types on airport may have also been a contributing factor.

Table 4.1 – Peterborough Airport Economic Impact Comparison (2016 and 2022)

		2016	2022
Jobs (FTE)	Direct	382	507
	Indirect	246	87*
	Induced	171	88*
	Total	799	682
GDP	Direct	\$36,510,000	\$51,830,000
	Indirect	\$19,350,000	\$8,050,000*
	Induced	\$18,180,000	\$30,460,000*
	Total	\$74,030,000	\$90,340,000
Labour Income	Direct	\$33,290,000	\$43,540,000
	Indirect	\$12,070,000	\$5,280,000*
	Induced	\$5,750,000	\$3,970,000*
	Total	\$51,110,000	\$52,790,000
Note * Indirect and induced economic benefits associated with jobs, GDP, and labour income in 2022 are lower as a result of the use of updated aviation industry multipliers produced by Statistics Canada.			

4.6 Airport Governance

In the context of the Master Plan Update, governance refers to the ownership, planning, marketing, and regional integration of airports. Peterborough City Council holds the ultimate decision-making authority regarding airport matters. The Airport Strategic Initiatives Committee (ASIC) – comprised of elected City officials, members of the community, and a representative of the aerospace industry provides advice to City staff and Council on strategic initiatives at the Airport including development, sustainability, and best practices. The City and the ASIC combined form the airport governance structure at Peterborough Airport.

Peterborough Airport is located south of the City in the Township of Cavan Monaghan – immediately west of the Township of Otonabee South Monaghan. The facility's location outside of the City's boundary introduces some unique complexities. The City provides 100% of funding support to the Airport, however, the Township of Cavan Monaghan collects property taxes from airport tenants and employment numbers are credited to the Township by Statistics Canada. Understandably, both the City and the Township have an interest in the operation and development of the Airport with respect to employment, air services, land uses, and aircraft noise, however, they do not collaboratively participate in the governance of the facility. Adding further complexity, the Airport is also located within Peterborough County who does not participate in airport governance activities.

Consultations with the County and neighboring townships identified a common support for the Airport and a vested interest in its continued operation. Also, many of these jurisdictions have expressed a desire for a more active role in the operation and future development of the Airport; however, they did not indicate if financial support would form part of this more active role. As a result, it is recommended that an Airport Governance Study be completed in the short-term to identify and recommend options for the increased participation of interested jurisdictions including fundings and decision making.

5 GROWTH OPPORTUNITIES AND DEMAND ASSESSMENT

Opportunities for future activity growth within the 15-year master planning time horizon have been identified for Peterborough Airport in the following sections. The opportunities identified herein are based on research, consultations, analysis, the project team's understanding of industry trends, and the business environment at Peterborough. Growth opportunities can be significantly affected by factors that cannot be foreseen such as periods of economic growth and recession and major external events (e.g., pandemics, airline bankruptcies and mergers, fleet groundings).

At the time of the Master Plan Update's preparation, the aviation industry is slowly recovering from the air travel demand downturn caused by the COVID-19 pandemic. The forecasts presented as part of the Master Plan Update consider pre-pandemic activity levels and industry trends, as well as industry changes because of the pandemic.

5.1 SWOT Analysis

A Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis is provided as a high-level overview of Peterborough Airport's internal Strengths and Weaknesses, and external Opportunities and Threats. These constitute conditions that influence development recommendations within the Master Plan Update. The SWOT analysis includes factors within the City of Peterborough's control and external considerations.

5.1.1 Strengths

- The Airport has the longest publicly available runway between Toronto and Ottawa and infrastructure designed to support Boeing 737 operations
- The Airport is strategically located to support eastern GTA, the Region of Durham, Northumberland County, Peterborough County, the City of Kawartha Lakes, County of Haliburton, Hastings County, Lennox and Addington County, and Prince Edward County.
- The Airport supports a large geographic catchment area with a population of approximately 1.2M residents.
- Serviced development lots are available for commercial and general aviation uses.
- The Airport has a large tenant base of aviation businesses, educational institutions, and private users.
- The Airport accommodates a diverse aviation business base supporting domestic and international aviation segments.
- The Airport is a well-managed and maintained facility with consultations indicating that users are satisfied with the level of service provided by the City and airport operator.

5.1.2 Weaknesses

- Long-term development of the Airport is constrained by provincially significant wetlands and the Otonabee River flood plain.
- Future commercial and industrial growth is constrained by existing municipal servicing which is nearing capacity.
- The Non-Instrument level of service is perceived as a limit on airport availability and the cause of missed approaches and cancelled flights.

- While there are concerns with current traffic congestion, the Airport has not sustained traffic levels considered by NAV CANADA to be sufficient to require the construction of an Air Traffic Control Tower (ATCT) or Flight Service Station (FSS).

5.1.3 Opportunities

- Growth of existing charter passenger services with increased frequency and additional destinations, including sun destinations.
- Identified demand and new entrants to the ULCC market may make scheduled service to western Canada feasible.
- A small regional commuter service using a 9-19 seat aircraft could provide access to urban centres for business travellers. Establishment of scheduled passenger services would also present the opportunity for the City to access funding through the Airports Capital Assistance Program (ACAP).
- With the closure of Buttonville Airport anticipated within the planning horizon of the Master Plan Update and the probable future closure of Oshawa Executive Airport, Peterborough Airport has the potential to serve as a base for corporate aviation.
- Green initiatives including the sale of unleaded aviation fuel and the support of electric aircraft through the provision of charging stations could represent a competitive advantage over similar airports in the region.
- Sufficient land is available to sustain continued aviation business attraction and development such as fixed base operations, research and development, light manufacturing, and aircraft maintenance.
- The expansion of air passenger services through the attraction of ULCCs and regional carriers will allow for regional tourism and economic development organizations, including PKED, to attract visitors to Peterborough and the Kawarthas and create reciprocal travel experiences with other destinations.

5.1.4 Threats

- Ontario airports including Lake Simcoe Regional, Region of Waterloo International, and Kawartha Lakes Municipal compete to attract businesses, tenants, and other users.
- Aircraft noise has led to an increase in resident complaints and may result in opposition to further airport development.
- The Airport competes with other modes of transportation including road and rail. The City is served by Highways 115, 7, and 407 resulting in reasonable driving times to major urban centres such as Toronto and Ottawa. Peterborough has also been identified as the location of a station on the proposed High Frequency Rail corridor between Toronto and Quebec City.

5.2 Passenger Air Services

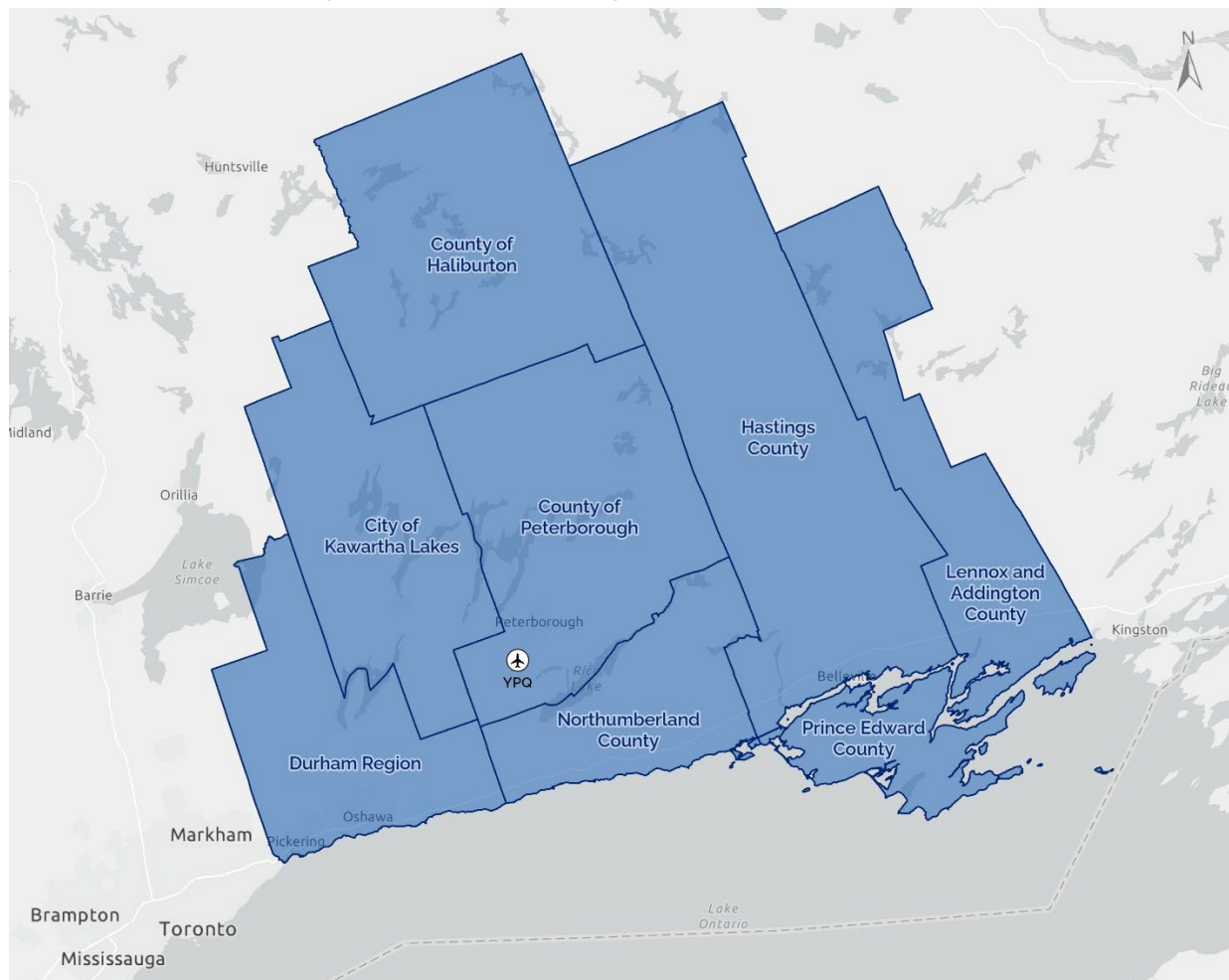
5.2.1 Catchment Area Size and Composition

A catchment area is the geographic zone within which an airport may be expected to attract users. The boundaries of a catchment area depend on a wide range of factors, including the distance to alternative airports (e.g., Toronto, Ottawa, Kingston), competing modes of transportation, and the ability of the services at the catchment airport to satisfy demand.

The representative catchment area for Peterborough Airport is presented in Figure 5.1 and has been approximated using public survey responses. The catchment area had a population of approximately 1,250,000 people in 2021, which includes the following 9 municipalities:

1. City of Peterborough;
2. County of Peterborough;
3. Durham Region;
4. City of Kawartha Lakes;
5. Northumberland County;
6. County of Haliburton;
7. Hastings County;
8. Lennox and Addington County; and
9. Prince Edward County.

Figure 5.1 – Peterborough Airport Catchment Area



The population of the catchment area was 1,250,488 in 2021, a 7.1% increase from 2016. This increase outpaced the growth rates seen in Ontario (5.8%) and Canada (5.2%). A growing population is representative of an increasing pool of prospective travellers who may make use of passenger air services, and population growth rates above averages seen elsewhere are an indicator of a potentially strengthening market.

Incomes can be used as an indicator of the propensity of households and individuals to engage in discretionary travel. Households with high incomes will have increased flexibility to travel for leisure, such as a winter vacation. As shown in Table 5.1, the median individual and household incomes in the Peterborough Population Centre is lower when compared to the median Ontario and Canadian incomes. This, when also considering a below-average employment rate, indicates potentially lower disposable income available for travel.

Economic changes in Peterborough may have occurred since the most recent 2016 Statistics Canada census period. Accordingly, the demographic analysis may be subject to change and should be re-evaluated following the release of the relevant 2021 census data products.

Table 5.1 – Population Composition (2016 Census of Canada)

	Peterborough	Ontario	Canada
Median Total Income	\$30,108	\$33,539	\$34,204
Median Household Income	\$58,381	\$74,287	\$70,336
Employment Rate	54.0%	59.9%	60.2%

5.2.2 Airport Competition

The presence and operation of regional and international airports in southern Ontario and the businesses and air services that they support requires consideration when identifying future growth opportunities for Peterborough Airport within the 15-year horizon of the Master Plan Update. Four airports that influence the identification of future business opportunities for Peterborough are identified and described in terms of their competitive influences: Toronto Pearson International Airport, Oshawa Executive Airport, Lake Simcoe Regional Airport, and Kawartha Lakes Municipal Airport (Lindsay).

Toronto Pearson International Airport

Toronto Pearson International Airport is the main passenger and commercial freight service airport within the GTA and is the primary international air service gateway for southern Ontario. Toronto Pearson is an integral part of Ontario's airport infrastructure and supports same-plane flights to 155 cities globally. Toronto Pearson Airport served almost 50 million annual passengers prior to the pandemic.

Prior to the pandemic, Toronto Pearson was further emerging as an international airport of importance and the GTAA continues to position the facility as an international and transborder air service hub.

Lake Simcoe Regional Airport

Conversely, Lake Simcoe Regional Airport is a major competitor to Peterborough. Located between Barrie and Orillia, Lake Simcoe Regional has recently put into effect a new governance model emphasising a strong commitment to the Airport and is currently implementing a \$60M strategic plan. Like Peterborough, Lake Simcoe Regional is expected to support air charter operations by BST Vacations starting in 2023 with a catchment area overlapping Peterborough's. Similarly, Lake Simcoe offers FBO services, customs and immigration, and developable land. Peterborough Airport's current advantage is its 7,000 ft. primary runway vs Lake Simcoe's 6,000 ft. runway. However, Lake Simcoe Regional's Strategic Plan includes the extension of the 150 ft. wide non-precision runway to 7,000 ft. in the first development phase.

Lake Simcoe Regional can be viewed as Peterborough Airport's main competitor in terms of attracting additional business development opportunities including the passenger air charter and ULCC service markets.

Kawartha Lakes Municipal Airport

Located in Lindsay, Kawartha Lakes Municipal Airport offers aircraft fuelling, a restaurant, and supports flight training activities. The Airport is also home to Horizon Aircraft which is currently developing a hybrid electric vertical take-off aircraft. With a 3,500 ft. paved runway and land available for development, Kawartha Lakes Municipal is not considered a competitor for passenger air services, although they could contend with Peterborough for prospective aerospace businesses and general aviation growth.

Oshawa Executive Airport

Oshawa Executive Airport is considered as the executive gateway to Toronto and the GTA. The Airport has a 4,500-foot runway capable of supporting small and medium corporate aircraft, recreational aviation, and high-volume flight training activities. Future development of the Airport is constrained by residential land uses to the east, south, and west resulting in substantial aircraft noise complaints. Additionally, the City of Oshawa has an agreement with the federal government to continue to operate the Airport until 2047, unless an airport is developed on the Pickering Lands at which point the Oshawa Airport can be closed but not sooner than 2033. The eventual closure of Oshawa Airport indicates that airports serving the region, including Peterborough, will compete to attract displaced businesses and services.

5.2.3 Scheduled Passenger Air Service Opportunities

Scheduled passenger air services have been identified as a high potential future growth opportunity for Peterborough Airport within the 15-year time horizon of the Master Plan Update. Primary research, analysis, and consultations have identified two scheduled passenger air service opportunities that are suitable for Peterborough Airport, as described herein:

Ultra Low-Cost Carrier Air Services – Peterborough Airport to/from Calgary Airport

As discussed previously, the ULCC market in Canada is aggressively expanding with the introduction of five airlines into the market within the short-term time horizon of the Master Plan Update. Consultations with ULCCs, consideration of the current air service market, as well as the lack of scheduled passenger air services in the eastern GTA, Durham, and Peterborough and Northumberland County presents an opportunity for Peterborough Airport. The Master Plan Update anticipates that a low frequency ULCC service connecting Peterborough to Calgary is feasible in the short term, operating at a once per week frequency using a 189-seat Boeing 737-800 or 737 MAX 8 aircraft, acting as a 'test market' for scheduled passenger air services at Peterborough. This is similar to historical activities that occurred at Kitchener/Waterloo Airport whereby a once-per-week service was provided by WestJet connecting the airport to Calgary and western Canada. With the additional introduction of ULCC service, passenger air service offerings at Kitchener/Waterloo have expanded since 2007 following the introduction of this air service. HM Aero anticipates that once a ULCC service is established at Peterborough, it may continue to gain popularity amongst residents within the catchment area, likely through the increase of flight frequencies and by potentially adding new destinations.

A summary of the introduction and growth of scheduled passenger air services operated by ULCCs is shown within Table 5.2. Assumptions employed to generate estimated activity levels are identified for the short, medium, and long-term planning horizons, as well as the year in which the service initiation or change is expected to occur. Furthermore, HM Aero has identified infrastructure requirements required to support activity growth, as well as potential revenue impacts.

The sum of all the infrastructure requirement to support the identified business development opportunities will define the Recommended Airport Development Plan, 15-year Capital Plan, and the Pro-Forma Financial Model.

Table 5.2 – ULCC Scheduled Passenger Air Service Growth

	Short-Term (1-5 Years)	Year	Medium-Term (6-10 Years)	Year	Long-Term (11-15 Years)	Year
<i>Potential Aircraft Type and # of Seats</i>	Boeing 737-800/MAX 8 189 Seats	2026	Boeing 737-800/MAX 8 189 Seats	2029	Boeing 737-800/MAX 8 189 Seats	2034
<i>Flight Frequency</i>	1 Per Week Service to YYC		2 Per Week Service to YYC		3 Per Week Service to Two Destinations	
<i>Load Factor</i>	90%		90%		90%	
<i>Annual Aircraft Movements</i>	104		208		312	
<i>Annual Pax (E/D)</i>	17,690		35,380		53,071	
<i>Passenger Peak Design Volume*</i>	340		340		340	
<i>Infrastructure Requirements</i>	Passenger Processing Facility Vehicle Parking Areas		Passenger Processing Facility Vehicle Parking Areas		Passenger Processing Facility Vehicle Parking Areas	
<i>Revenue Impacts</i>	Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking	

*Passenger peak design volumes include both arriving and departing passengers.

Regional Scheduled Air Services – Peterborough Airport to/from Montreal

Although stakeholder consultations and survey results did not indicate specific demand for regional scheduled air services at Peterborough within the time horizons of the Master Plan Update, infrastructure and facilities currently exist at Peterborough Airport to support a service with 19 or fewer passengers. Montreal has been identified as a potential destination; however, other air carriers may choose to offer other city pair connections from Peterborough.

HM Aero has assumed that this air service would commence in 2029 using a 9-seat BE10 aircraft, with the service expanding in frequency and capacity throughout the Master Plan Update time horizons. A summary of the projected activity levels related to the initiation of a new regional scheduled air service is shown in Table 5.3.

Table 5.3 – YPQ-YUL Regional Scheduled Air Service Growth

	Short-Term (1-5 Years)	Medium-Term (6-10 Years)	Year	Long-Term (11-15 Years)	Year
<i>Potential Aircraft Type and # of Seats</i>		BE10 9 Seats	2029	BE10 9 Seats	2036
<i>Flight Frequency</i>		Twice Daily Service to Montreal - YUL (Mon-Fri)		Twice Daily Service to YUL (7 Days)	
<i>Load Factor</i>		85%		85%	
<i>Annual Aircraft Movements</i>		1,040		1,456	
<i>Annual Pax (E/D)</i>		7,956		11,138	
<i>Passenger Peak Design Volume*</i>		15		15	
<i>Infrastructure Requirements</i>	None	None		None	
<i>Revenue Impacts</i>	None	Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking	

*Passenger peak design volumes include both arriving and departing passengers.

5.2.4 Charter Passenger Air Service Opportunities

A description of potential new charter passenger air service opportunities anticipated within the next 15 years at Peterborough Airport are presented herein. The growth of existing boutique charter passenger air services as well as the new opportunities identified are based on HM Aero's research, analysis, input received from stakeholder consultations, and our understanding of the air service markets and trends in Canada.

Boutique Charter Passenger Air Services – BST Vacations

The operation and growth of boutique charter passenger air services is expected to continue at Peterborough Airport. Discussions with BST Vacations indicate a desire to continue providing high value vacation packages to select destinations within the time horizons of the Master Plan Update utilizing Boeing 737-700 and similar aircraft. Seven boutique charter flight operations are assumed for 2022 as per discussions with BST Vacations, with an assumed load factor of 90%.

Table 5.4 provides a summary of the anticipated activity levels, passenger volume assumptions, infrastructure requirements, and revenue impacts related to the boutique charter passenger air service market at Peterborough Airport.

Table 5.4 – Boutique Passenger Charter Air Service Growth (Select Destinations)

	Short-Term (1-5 Years)	Year	Medium-Term (6-10 Years)	Year	Long-Term (11-15 Years)	Year
<i>Potential Aircraft Type and # of Seats</i>	Boeing 737-700 134 Seats	2023	Boeing 737-700 134 Seats	2028	Boeing 737-700 134 Seats	2028
<i>Flight Frequency</i>	11 Return Trips Per Year		16 Return Trips Per Year		16 Return Trips Per Year	
<i>Load Factor</i>	90%		90%		90%	
<i>Annual Aircraft Movements</i>	22		32		32	
<i>Annual Pax (E/D)</i>	2,653		3,859		3,859	
<i>Passenger Peak Design Volume*</i>	241		241		241	
<i>Infrastructure Requirements</i>	Passenger Processing Facility		Passenger Processing Facility		Passenger Processing Facility	
<i>Revenue Impacts</i>	Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking	

*Passenger peak design volumes include both arriving and departing passengers.

Sun Destination Charter Passenger Air Services – Mexico and Caribbean

Research, analysis, consultations, a review of the Master Plan Update resident survey responses, and an understanding of the charter passenger air service market in eastern Canada has indicated a high potential opportunity to provide charter passenger air services from Peterborough to destinations in Mexico and the Caribbean. Mexico and the Caribbean were identified as the top preferred destinations for residents that completed the survey, and consultations with charter passenger air service providers indicated a desire to future explore operations from Peterborough to serve the eastern GTA, Durham, Peterborough, Northumberland County and beyond as an alternative to Toronto Pearson Airport. These types of services have been successful at regional airports such as Sudbury and North Bay and have high potential for Peterborough within the time horizons of the Master Plan Update.

A summary of the anticipated activity levels associated with the introduction of new sun destination charter passenger air services are shown in Table 5.5. Similar to air service opportunities identified previously, assumptions employed to generate activity levels and inform the activity forecasts are identified for the short, medium, and long-term planning horizons. It has been assumed that sun destination passenger charter air services will commence in 2026 following the development of a low-cost passenger processing facility.

Table 5.5 – Sun Destination Charter Air Service Opportunities – Mexico and Caribbean

	Short-Term (1-5 Years)	Year	Medium-Term (6-10 Years)	Year	Long-Term (11-15 Years)	Year
<i>Potential Aircraft Type and # of Seats</i>	Boeing 737-800 189 Seats	2026	Boeing 737-800 189 Seats	2031	Boeing 737-800 189 Seats	2036
<i>Flight Frequency</i>	16 Seasonal Rotations (Winter Months)		16 Seasonal Rotations (Winter Months)		32 Seasonal Rotations (Winter Months)	
<i>Load Factor</i>	90%		90%		90%	
<i>Annual Aircraft Movements</i>	32		32		64	
<i>Annual Pax (E/D)</i>	5,443		5,443		10,886	
<i>Passenger Peak Design Volume*</i>	340		340		340	
<i>Infrastructure Requirements</i>	Passenger Processing Facility, Vehicle Parking Areas		Passenger Processing Facility, Vehicle Parking Areas		Passenger Processing Facility, Vehicle Parking Areas	
<i>Revenue Impacts</i>	Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking	

*Passenger peak design volumes include both arriving and departing passengers.

Sun Destination Charter Passenger Air Services – Southern U.S.

Additional sun destination charter passenger air services to southern U.S. destinations such as Florida have been identified as medium to high potential opportunities for Peterborough Airport within the time horizons of the Master Plan Update. Residents who completed the air service survey indicated a strong desire to travel from Peterborough to Florida in the winter months. Although these types of services are currently offered from Toronto Pearson, HM Aero believes that the congestion and longer travel times associated with Pearson make this type of service attractive for Peterborough Airport and its associated catchment area, beginning in the medium term.

Table 5.6 describes the assumptions, activity projections, infrastructure requirement and revenue impacts associated with the operation of this type of charter passenger air service, anticipated to commence in 2029 within the medium-term horizon of the Master Plan Update.

Table 5.6 – Sun Destination Charter Air Service Opportunities – Southern U.S.

	Short-Term (1-5 Years)	Medium-Term (6-10 Years)	Year	Long-Term (11-15 Years)
<i>Potential Aircraft Type and # of Seats</i>		Boeing 737 MAX 8 189 Seats	2029	Continuation of service introduced in Medium-Term (2029)
<i>Flight Frequency</i>		16 Seasonal Rotations (Winter Months)		
<i>Load Factor</i>		90%		
<i>Annual Aircraft Movements</i>		32		
<i>Annual Pax (E/D)</i>		5,443		
<i>Passenger Peak Design Volume*</i>		340		
<i>Infrastructure Requirements</i>	None	Passenger Processing Facility, Vehicle Parking Areas		None
<i>Revenue Impacts</i>	None	Terminal Fees, Fuel Sales, Vehicle Parking		Terminal Fees, Fuel Sales, Vehicle Parking

*Passenger peak design volumes include both arriving and departing passengers.

5.3 Air Cargo

In recent years there has been a limited volume of air cargo transferred through Peterborough Airport. Statistics on cargo tonnages are not recorded by the Airport; however, stakeholder discussions indicate that most shipments to/from Peterborough and the surrounding region are transported via truck, unless there is an immediate or critical need for parts or component shipments to support larger-scale manufacturing operations.

Considering the historical lack of demand for air cargo at Peterborough Airport and local connections to provincial highway networks, resulting in efficient access to air cargo integrators at Toronto Pearson and Hamilton Airport, trucking is expected to continue to be the preferred option for major shippers within Peterborough Airport's catchment area within the time horizons of the Master Plan Update.

Introduction of air cargo at the Airport is more likely to occur on a smaller scale to service niche markets. Air Cargo has been identified as a low potential opportunity.

Consideration was also given to the potential for the support of Unmanned Aerial Vehicles (UAVs) activities, specifically in relation to the delivery of goods. Consultations revealed that most parcels destined for Peterborough travel by road. While the use of UAVs for the delivery of parcels may begin within the planning horizon of the Master Plan Update, such activities may be better located off-airport to avoid potential interference with piloted aircraft operations. Additionally, consultation with an aircraft manufacturing organization suggested that firms in the research and development phase of their development program, manned or unmanned, may avoid airports such as Peterborough because of its high traffic volumes including training flights.

5.4 Corporate General Aviation

Private entities consulted during the stakeholder engagement process indicated a desire to develop a larger-scale FBO at the Airport within the planning horizons of the Master Plan Update to better support existing clients, provide additional hangar space, and allow capacity for future growth of the sector in Peterborough. Corporate general aviation growth was a previous business development opportunity identified for Peterborough Airport and activity levels in this sector are expected to increase as the economic base of Peterborough and the surrounding catchment area continue to grow, and additional executive and high value transportation demand is realized. Corporate General Aviation growth has been identified as a medium potential opportunity.

Furthermore, a need for ad-hoc air charter services for hire was indicated as a short-term requirement at Peterborough Airport; however, short-term opportunities related to the development of a base for fractional ownership or a larger scale private jet charter organization were not identified during the time horizons of the Master Plan Update.

5.5 MRO and Aerospace Manufacturing

Aviation industry growth opportunities at Peterborough Airport have historically been related to larger-scale developments, such as the recent construction of Flying Colours' 100,000 ft² paint facility and aircraft completions hangar adjacent to Apron IV. This type of activity is categorized within the Master Plan Update as MRO and Aerospace Manufacturing activity. Research and consultations did not identify any short-term MRO and aerospace manufacturing development opportunities for Peterborough Airport; however, it is recommended that the City continue to monitor developments in the sector with PKED. To identify new opportunities. Once water and sewer capacities at Peterborough Airport are improved and the MRO and aerospace industry emerges from the pandemic in the short-term, additional MRO and Aerospace Manufacturing opportunities could be realized.

5.6 Recreational General Aviation

Recreational general aviation activities at Peterborough Airport have continued to increase since the publication of the 2009 Airport Master Plan. This is evident from the number of new hangar developments within the general aviation area adjacent to Apron III. The closure of Buttonville Airport, residents moving from the GTA, and higher levels of disposable income post-pandemic are all factors that are expected to continue to drive development for recreational aviation at Peterborough Airport.

A review of airports serving the same catchment area as Peterborough identified a potential opportunity for the City to construct general aviation hangars and generate revenue through their rental or lease. It is the understanding of the project team that Kawartha Lakes Municipal Airport (Lindsay) has operated at a profit by employing this strategy. It is recommended that an analysis of methods of revenue generation by comparable airports be completed to determine what sources of revenue have proven to be successful at airport facilities similar to Peterborough.

5.7 Flight Training

Demand for flight training at Peterborough Airport in the future is likely to continue to increase due to the significant global requirement for professional pilots stemming from the resurgent demand for air travel post-pandemic and long-term forecasts projecting continued growth in air travel. At the time of consultation, Seneca College was not able to confirm that their program would be expanding beyond current capacity. Additionally, the operational capacity of the Airport may limit the size of additional flight training organizations and it is recommended that this factor as well as resident noise sensitivities be considered by the City as new leases are established at the Airport.



Seneca College School of Aviation

5.8 Emerging Technologies

New technologies that are being introduced or contemplated within the aviation industry form an important part of the Peterborough Airport Master Plan Update. In the context of Peterborough, two specific emerging technologies have been identified that are considered to have high potential applicability within the planning horizons of the Master Plan Update: 1) the introduction of unleaded aviation gasoline; and 2) the future development and certification of hybrid electric and electric aircraft. These discussions are supported by research and consultations with the National Research Council Canada.

5.8.1 Alternative Aviation Fuels

Aviation gasoline (Avgas) is primarily used in piston-engine aircraft and is the only mass-produced transportation fuel in Canada that contains lead. Smaller piston-engine aircraft that require avgas comprise the majority of annual movement activity at Peterborough Airport. Avgas contains tetraethyllead – an additive used to boost octane levels and prevent engine damage in higher performing engines.

Research and development are underway to solve the problem of leaded fuels in piston-powered aircraft with the goal of eliminating its use entirely. However, removing lead from aviation gasoline comes with inherent challenges – since higher performance piston engine aircraft rely on lead to prevent detonation and serious internal engine damage. The industry has recognized that there may be an opportunity to eliminate the use of lead in aviation fuels for smaller piston engine aircraft, such as the Cessna 172 used by Seneca College and other operators at the Airport, and there are suppliers emerging in the market that can provide unleaded aviation gasoline. Nonetheless, until an alternative lead-free fuel can be provided for the high-performance piston aircraft fleet operating in Canada, leaded aviation gasoline will still need to be provided at airports to support all types of piston engine aircraft.

The trial distribution and use of unleaded avgas at Peterborough Airport is currently being contemplated by Seneca College who operates a large fleet of piston-engine aircraft to support their Bachelor of Aviation Technology program. If Seneca's trial is successful, the City could consider retailing unleaded aviation gasoline at the Airport. The introduction of unleaded avgas at Peterborough Airport could also bring additional aviation commercial business opportunities, such as engine and component manufacturing and testing within the time horizons of the Master Plan Update and alignment with City environmental initiatives.

5.8.2 Hybrid Electric and Electric Aircraft

New aircraft propulsion technologies are emerging within the industry, such as hybrid-electric and electric aircraft. Recognizing that aviation activities result in greenhouse gas emissions and there is a desire within the industry to reduce the use of hydrocarbons to power aircraft, the use of hybrid electric and electric aircraft is becoming more prevalent.

Hybrid Electric Aircraft

The aviation industry is evolving and research and development efforts related to the use of hybrid electric aircraft are widespread among existing and new aircraft manufacturers. The use of hybrid electric aircraft is expected to follow the same path as the use of electric cars – starting with hybrids because of limited aircraft range available with current battery technologies. Battery technologies continue to improve and energy storage applications have become more light weight – this, combined with the desire to reduce levels of greenhouse gas emissions and aircraft operating costs, has provided a significant opportunity for hybrid electric aircraft to be developed, tested, certified, and introduced into the general marketplace.

The National Research Council has converted a Cessna 337 to hybrid electric power at their research facility in Ottawa, Ontario. This aircraft has flown successfully and is providing valuable data to be used by Transport Canada in certifying future hybrid electric aircraft. Additionally, Horizon Aircraft, based in Lindsay, Ontario, is currently partnering with Peterborough's Fleming College and Oshawa's Ontario Tech University to complete a three-year research project on an electric vertical take-off and landing (eVTOL) aircraft. Horizon aircraft is continuing to develop its prototype Cavorite X5 – a hybrid electric five passenger aircraft. As of June 2022, Horizon was commencing flight testing on a 50% scale version of the aircraft, with full scale flight testing for the aircraft anticipated to commence within 24 months. As these programs advance, Peterborough may have an opportunity to support research and development opportunities.

Electric Aircraft

The development of electric aircraft is being explored by numerous aerospace organizations. Electric propulsion motors eliminate direct carbon emissions, have the potential to reduce fuel costs and noise emissions. Due to the current limitations on energy storage and battery weights, fixed wing piloted electric aircraft applications are beginning to emerge in the light aircraft market – specifically for use in short range flights and flight training.

As of June 2022, most of the current electric aircraft in production and testing are intended for recreational use, flight training, and short-haul commuter missions. For example, Harbour Air who operates a fleet of seaplanes on Canada's west coast is striving to reduce their dependence on fossil fuels by converting their fleet to all-electric aircraft. The company has successfully operated an electric propulsion DHC-2 Beaver in a test environment and was successful in completing a 29-minute flight on battery power alone. The company hopes to achieve certification through Transport Canada by 2023.



Pipistrel Alpha Electro Electric Trainer Aircraft

In the context of Peterborough Airport, the introduction of electric aircraft for recreational and flight training activities is a unique opportunity. Scientific American reported in May of 2022 that there are more than 170 electric aircraft development projects underway worldwide. The Pipistrel Alpha Electro was the first aircraft to be certified in the advanced ultralight category by Transport Canada and certification of this aircraft marks a significant change in light aircraft technologies. Textron's recent purchase of Pipistrel, combined with their announcement to 'accelerate' their development of an electric fleet indicates that electric aircraft will soon be produced in greater volumes and made available for widespread use, beginning in recreational and flight training markets.

Certification and future development of electric aircraft at Peterborough Airport aligns with the City's commitment to reduce greenhouse gas emissions and the City's brand as the 'Electric City.' The introduction of electric flight training aircraft could also result in significant aircraft noise reductions, assisting the City in mitigating noise exposure issues with surrounding residents.

5.9 Activity Forecasts

In this Master Plan Update, aircraft movement and passenger activity levels for Peterborough Airport are forecast based on the introduction of air service and business development opportunities within the 15-year planning horizon of the study. Airport activity is measured using two primary metrics: annual aircraft movements and Enplaned/Deplaned (ED) passenger volumes.

5.9.1 Aircraft Movement Forecast

To determine future airport infrastructure requirements within the study's planning horizons, both local and itinerant aircraft movements are forecast.

Local Movements

The forecast methodology for local movements considers private and flight training movements. Local movements are forecast to increase by 1% per annum beginning with 2021 baseline volumes. Examination of historical movement activity records for Peterborough Airport indicate that local movements have been declining since 2017 and pre-pandemic; however, a modest 1% annual growth rate has been assumed for the Master Plan Update forecast period due to anticipated growth of flight training and recreational aviation activities.

Itinerant Movements

Itinerant movement forecasts have been prepared based on the following assumptions:

- **Air Carrier:** Air carrier activity is forecast as per the passenger air service opportunities and related growth assumptions identified in Section 5.2.
- **Other Itinerant:** Considering the absence of granular data related to historical activity, aircraft movements within these categories have been forecast at an annual rate of 1% through to the end of the long-term planning horizon of the Master Plan Update. This category includes Other Commercial, Private, Government Civil, and Government Military movements as per Statistics Canada definitions.

Total Movements

Total movements are the sum of local and itinerant traffic and are forecast to increase to nearly 54,000 annual movements by the end of the long-term planning horizon. The growth in movements can be attributed to the introduction of scheduled charter air services, beginning towards the end of the short term. The forecast total annual aircraft movements are presented in Table 5.7 and Figure 5.2. It is important to note that the performance of an airport cannot be tied to the number of recorded aircraft movements alone. For example, one airport may experience greater movements than a competitor because of significant flight training and recreational activities, while the competitor with fewer movements may support significant air passenger and industrial activities.

Figure 5.2 – Forecast Annual Aircraft Movement Growth

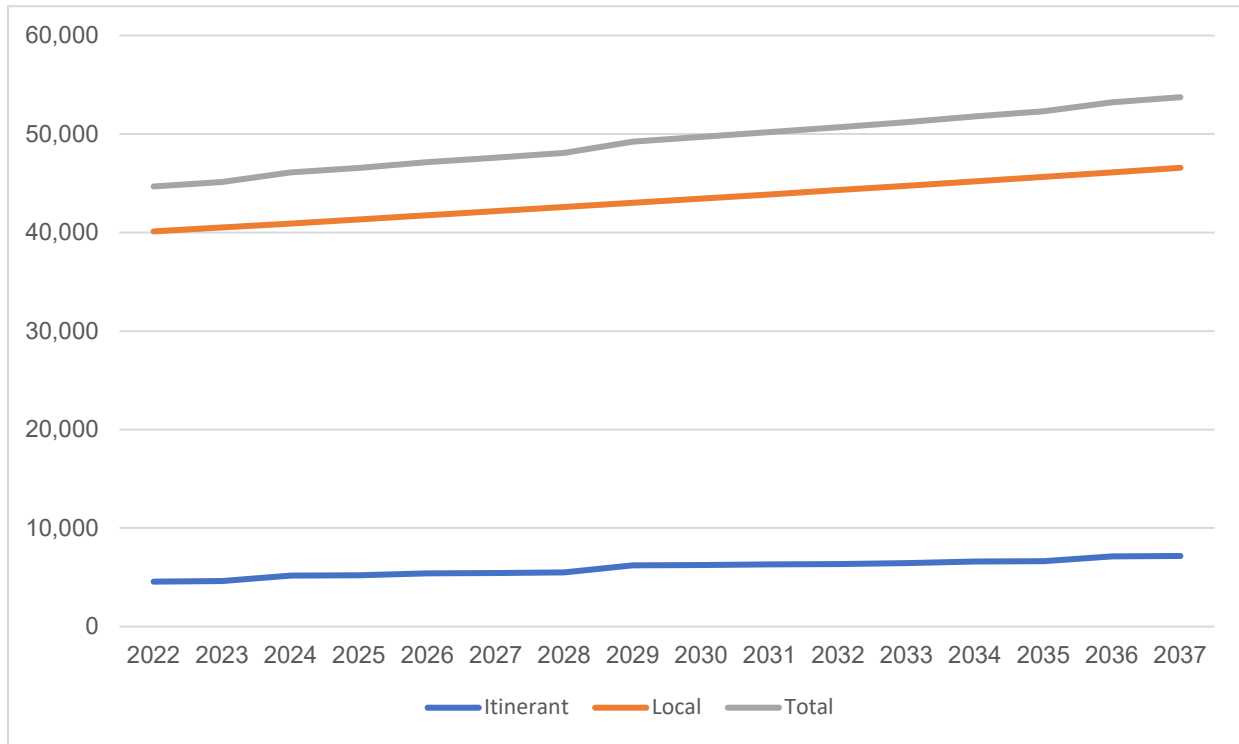


Table 5.7 – Forecast Annual Aircraft Movement Growth

Year	Local Movements	Air Carrier Itinerant	Other Itinerant	Total Movements
2022	40,116	14	4,540	44,670
2023	40,517	22	4,585	45,125
2024	40,923	22	4,631	45,576
2025	41,332	22	4,678	46,031
2026	41,745	158	4,724	46,627
2027	42,163	158	4,772	47,092
2028	42,584	168	4,819	47,571
2029	43,010	1,344	4,867	49,221
2030	43,440	1,344	4,916	49,700
2031	43,874	1,344	4,965	50,184
2032	44,313	1,344	5,015	50,762
2033	44,756	1,344	5,065	51,165
2034	45,204	1,448	5,116	51,768
2035	45,656	1,448	5,167	52,271
2036	46,113	2,520	5,219	53,851
2037	46,574	2,520	5,271	54,364

5.9.2 Passenger Activity Forecast

Annual Enplaned/Deplaned Passengers

Enplaned/Deplaned passenger traffic projections have been prepared as part of the Master Plan Update, supported by the scheduled and charter passenger opportunities and related assumptions identified in previous sections. The continued growth of the boutique charter air service market at Peterborough Airport is also included within the passenger activity forecast.

As shown in Figure 5.3 and Table 5.8, forecast passenger activity growth at Peterborough is anticipated to occur in steps, whereby a new service is introduced, such as a ULCC or sun destination charter service, and passenger volumes increase accordingly.

Figure 5.3 – Forecast Annual Enplaned/Deplaned Passenger Growth

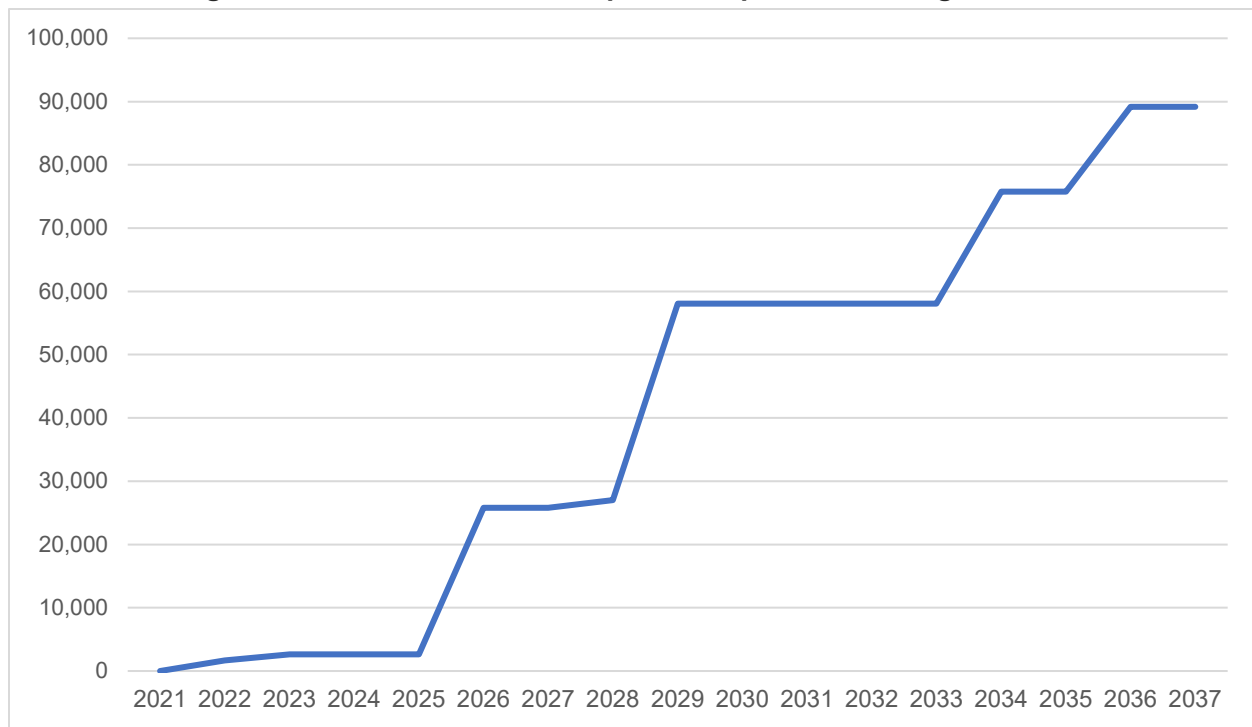


Table 5.8 – Forecast Annual Enplaned/Deplaned Passenger Growth

Year	E/D Passengers	Passenger Air Services
2022	1,688	Boutique Charters
2023	2,653	
2024	2,653	
2025	2,653	
2026	25,787	Boutique Charters
2027	25,787	ULCC to YYC
2028	26,993	Sun Destination Charters
2029	58,082	Boutique Charters ULCC to YYC Sun Destination Charters Southern U.S. Charters Scheduled Regional Service
2030	58,082	
2031	58,082	
2032	58,082	
2033	58,082	
2034	75,773	
2035	75,773	
2036	89,172	
2037	89,172	

Peak Hour Passengers

Passenger traffic at airports varies by time of day with the arrival and departure of flights. To ensure passenger facilities are evaluated and planned appropriately, the metric of Peak Hour Passengers (PHP) is used. In addition, passenger facilities are further evaluated and planned using Peak Arriving Passenger (PAP), and Peak Departing Passenger (PDP) metrics to determine space requirements for terminal functional areas.

Considering the business opportunities identified previously and the resulting passenger forecasts presented in previous sections, baseline PHP, PDP, and PAP values have established for the existing air terminal facility and the new passenger processing facility being recommended for future development to support sun destination charters, ULCCs, and boutique charters. Table 5.9 identifies each of the two passenger processing facilities, as well as the current and future PHP, PDP, and PAP values within the time horizons of the Master Plan Update. These values are based on the operation of a representative regional commuter aircraft for the existing air terminal building, and a representative ULCC airliner (e.g., 189-seat Boeing 737 MAX 8) for the recommended low-cost passenger processing facility.

Table 5.9 – Passenger Processing Facility Planning Metrics

Planning Horizon	Metric	Existing Air Terminal Building	New Low Cost Passenger Processing Facility
Short-Term (1-5 Years)	Peak Hour Passengers (PHP)	38	340
	Peak Departing Passengers (PDP)	19	160
	Peak Arriving Passengers (PAP)	19	160
Medium-Term (6-10 Years)	Peak Hour Passengers (PHP)	38	340
	Peak Departing Passengers (PDP)	19	160
	Peak Arriving Passengers (PAP)	19	160
Long-Term (11-15 Years)	Peak Hour Passengers (PHP)	38	340
	Peak Departing Passengers (PDP)	19	160
	Peak Arriving Passengers (PAP)	19	160

5.10 Non-Aeronautical Opportunities

Select non-aeronautical opportunities for the Airport may be considered to diversify the revenues of the facility. Opportunities identified for further consideration have been reviewed based on whether they are complementary with the core aviation functions of the Airport, are realistic given the regional economic context, and will offer revenue benefits without requiring a significant commitment of capital funding.

5.10.1 Groundside Land Development

Based on planned airside development east of Apron III, there is an opportunity for the preparation of groundside commercial lots for aviation-complimentary development west of Skyway Drive. While consultations with the City, airport operator, and airport businesses did not identify immediate demand, the future growth of passenger services as well as the growth of existing on-airport education programs could benefit from the availability of these lands.

5.10.2 Passenger Facility Advertising

The provision of advertising spaces on the interior and exterior of a future Passenger Processing Facility has been identified as an opportunity for the generation of modest revenues.

5.10.3 Vehicle Charging Stations

The installation of electric vehicle charging stations in existing and future public parking lots to may be an opportunity to encourage the use of electric vehicles, while also increasing operational revenue through the attraction of transient vehicular traffic to the Airport.

5.10.4 Land Lease for Farming

As is common at many airports, portions of the airport property that are not required for aviation operations or land development could be leased to local farmers for haying or cropping activities.

6 CORPORATE STRATEGY

The evolving role of Peterborough Airport has previously been studied through the 2009 Airport Master Plan and 2017 Strategic Development Plan. The 2009 Airport Master Plan identified the role of Peterborough Airport as being a base or point of service for:

- National and international aerospace manufacturing, aircraft overhaul, and maintenance;
- Charter aircraft operations;
- Local and regional commuter air services;
- Flight training;
- Aviation and aerospace trades education;
- Tourism;
- Corporate and private aircraft owners and operators; and
- General aviation activities and support

The 2017 Strategic Development Plan further refined this direction and identified a revised role for Peterborough Airport, that being to support:

- General Aviation;
- Maintenance Repair and Overhaul;
- Aerospace Manufacturing;
- Leisure and Executive Charter Markets; and
- Research and Development.

As conditions have continued to change since 2017, new opportunities have arisen, and the strategic positioning of Peterborough Airport in the provincial and national contexts evolves, a revised five-part role statement has been prepared for the Airport, that being to support:

1. **Industrial Aerospace:** Peterborough's aerospace cluster will be advanced through a focus on MRO; manufacturing; and next-generation research and development activity.
2. **Aviation and Aerospace Education:** Peterborough will be a base for recreational and professional flight training, education in the aviation and aerospace trades, and aligned sectors such as emergency management.
3. **Intercommunity Connectivity:** Peterborough will facilitate time-effective intercommunity travel for businesses and individuals by supporting private and corporate aircraft activity, leisure and charter air services, and commuter air services.
4. **Essential Public Services:** Peterborough will serve as an essential emergency management asset and support regional public health and safety needs as required, including air ambulance operations, law enforcement, search and rescue, and military operations.
5. **General Aviation:** Peterborough will support complimentary based and itinerant private general aviation activity.

Peterborough Airport's mission statement describes the role of the facility in 2022:

Peterborough Airport effectively meets the needs of the aviation and aerospace sectors and in doing so serves as an economic and social driver for Peterborough and the surrounding region.

The vision statement for Peterborough Airport describes the desired future for the facility over the planning horizons of the Master Plan Update – in essence, what Peterborough Airport seeks to become in the future:

Peterborough Airport will serve as an economic, social, and transportation asset that yields positive benefits to residents, businesses, and visitors of Peterborough and the surrounding region. By focussing on collaborative relationships and creating conditions that foster growth and entrepreneurship, Peterborough Airport will serve as a future-oriented hub for aviation and aerospace activity that is closely integrated within these national sectors.



7 AIRPORT INFRASTRUCTURE ASSESSMENT

7.1 Design Aircraft Selection

The design aircraft for an airport is the aircraft identified as having the most demanding operational requirements with respect to the determination of movement area dimensions and other aerodrome physical characteristics.

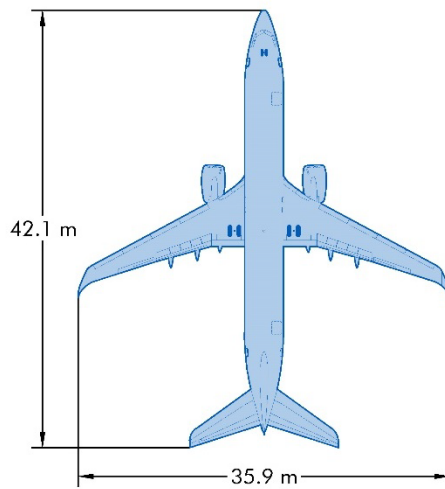
Through TP312 5th Edition, Transport Canada assigns aircraft an Aircraft Group Number (AGN) based on their technical specifications and performance characteristics for the runway and taxiway environments. The AGN assigned for the runway environment is informed by an aircraft's wingspan and reference approach speed and in the taxiway environment, the AGN considers wingspan and tail height. The AGN of the selected design aircraft determines minimum separation distances, pavement slope requirements, dimensions of safety areas, and obstacle limitations, among other design criteria. An airport's movement surfaces can be intended for use by differing aircraft and can therefore be assigned different AGNs. The minimum pavement width of runways and taxiways is independent of AGN and is defined by the design aircraft's Outer Main Gear Wheel Span (OMGWS) – the distance between the outside edges of the main landing gear.

7.1.1 Primary Runway and Associated Facilities

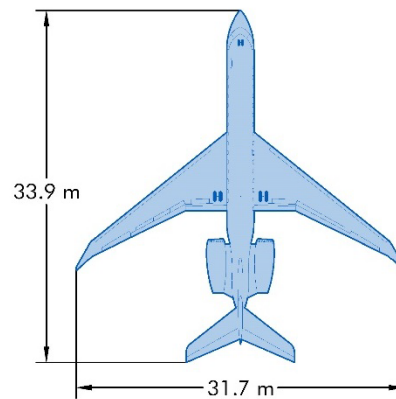
The design aircraft for the primary Runway 09-27 at Peterborough Airport as identified in the Airport Operations Manual (AOM) is the Boeing 737-900. The Boeing 737-900 can be configured to have 178 to 220 seats. The AGN IIIB Boeing 737-900 is selected as the design aircraft at the Airport.

Runway 09-27; Taxiways A, B, D, E, H, and I; and Aprons I, II, and IV are commonly used by aircraft sized up to narrow-body commercial airliners (e.g., Boeing 737 and Airbus 320 series) and long-range corporate jets (e.g., Bombardier Global 7500 and Gulfstream G600). As such, this Master Plan Update uses AGN IIIB standards for Runway 09-27 and above-noted associated facilities. This AGN accommodates the largest aircraft anticipated to provide scheduled passenger service to Peterborough within the 15-year planning horizon – the Boeing 737 series of airliners – as well as the high-performance corporate aircraft currently using the Airport. For planning purposes, the following parameters are recommended for these facilities:

- Aircraft Group Number: AGN IIIB
- Current Runway Level of Service: Non-Instrument
- Planned Runway Level of Service: Non-Precision
- Runway Width: 30.0 m



Boeing 737-900



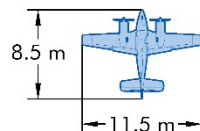
Bombardier Global 7500

7.1.2 Secondary Runway and Associated Facilities

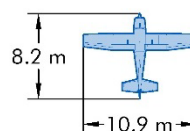
For the secondary Runway 13-31, the AOM identifies the AGN I Beechcraft B55 Baron as the critical aircraft, a light twin-engine general aviation aircraft with a capacity of 4 to 6 seats.

Runway 13-31; Taxiways C, F, and G; Apron III; and the Tie-Down Area are frequented by single and twin-engine general aviation aircraft, such as the Beechcraft B55 Baron, Cessna 152 / 172 / 182, Piper PA-28, Piper PA-34, and other comparable aircraft. For planning purposes, the following parameters are recommended for these facilities:

- Aircraft Group Number: AGN I
- Runway Level of Service: Non-Instrument
- Runway Width: 15.0 m



**Beechcraft
Baron 55**



**Cessna
172R Skyhawk**

7.2 Airside System

The Airside System includes the physical infrastructure used in support of aircraft operations, including the maneuvering areas, visual navigation aids, and airfield lighting systems. A description of the condition rating used in assessing airport infrastructure is presented in Table 7.1. The Site Plan of the Airport is presented as Figure 7.1.

Table 7.1 - Infrastructure Condition Ratings

Condition Rating	Definition
Very Good	<ul style="list-style-type: none">• Asset is in a sound condition• Operational and well-maintained• Asset is likely to perform adequately with routine maintenance for 10 years or more.
Good	<ul style="list-style-type: none">• Asset is in acceptable condition but is starting to show signs of minor wear• Minimal short-term failure risk is present but potential for deterioration or reduced performance over the next 5-10 years exists• Asset is likely to require minor remedial works
Fair	<ul style="list-style-type: none">• Asset has evidence of deterioration• Minor components or isolated sections of the asset require replacement or repair, but the asset still functions safely at an adequate level of service• Failure is unlikely within 2 years, but further deterioration is likely and major rehabilitation is expected to be required within 5 years• Remedial work is required but the asset is still serviceable.
Poor	<ul style="list-style-type: none">• Asset and its components function but require a high level of maintenance to remain operational• Significant renewal/upgrades are required
Very Poor	<ul style="list-style-type: none">• Asset has failed or failure is imminent• A high risk of asset breakdown is present with a serious impact on performance• Reconstruction or replacement is required urgently



7.2.1 Runway System

Two runways are available at Peterborough Airport: Runway 09-27 and Runway 13-31. The primary characteristics and reported condition of each runway facility are shown in Table 7.2.

Table 7.2 – Runway Specifications

	Runway 09-27	Runway 13-31
Length	7,000 ft. (2,133.6 m)	2,000 ft. (609.6 m)
Width	100 ft. (30.5 m)	49.2 ft. (15 m)
Surface Type	Asphalt	Asphalt
Pavement Load Rating	9.5	8.3
Planning AGN / Level of Service	AGN IIIB – Non-Precision	AGN I – Non-Instrument
Condition (May 2022)	Fair/Good	Fair / Good

Runway 09-27

Runway 09-27 is the primary runway and is designated as an AGN IIIB facility in the AOM, supporting regular operations for aircraft sizes up to and including the design aircraft (Boeing 737-900). The pavement surface is in fair condition with longitudinal and transverse sealant repairs found at sparse intervals. The runway markings also were observed to be in good condition and are well-defined. Pavement rehabilitation may be foreseen in the 2027-2029 timeframe, assuming the continued maintenance and upkeep of the surface.

Runway 09-27 Level of Service

The current Non-Instrument level of service designation of Runway 09-27 impacts the criteria that must be satisfied by aircraft on an Instrument Approach Procedure. The Non-Instrument level of service allows for a Minimum Descent Altitude (MDA) of 500 ft., meaning that aircraft must have the airfield in view when they are 500 ft. above the ground before they continue to land. Consequently, when weather conditions limit visibility and this MDA cannot be achieved, the airport is considered unavailable.

Generally, the availability of an airport can be improved by increasing the level of service, in this instance from Non-Instrument to Non-Precision. A Non-Precision facility can achieve an MDA as low as 250 ft. above ground level allowing a pilot to be closer to the ground when required to have the airfield in view. Theoretically, this will increase the availability of the airport and reduce missed approaches and subsequent inconvenience to airport users. Additionally, an improvement in level of service to Non-Precision may allow Peterborough Airport to serve as an alternate for both Toronto Pearson and Hamilton Airports, which is not currently feasible with the Non-Instrument level of service.

In support of the Master Plan Update, a high-level cost-benefit analysis was conducted to determine the feasibility of an improvement in level of service to Non-Precision.

Benefits

To quantify the potential benefit of achieving Non-Precision level of service, the project team completed an analysis of historical ceilings and visibility at the Airport. The analysis was conducted for hourly observations recorded from January 1, 2012 through December 31, 2021 and compared the frequency of Non-Instrument and Non-Precision conditions. The hours of 0600-2200 (Local Standard Time) were selected to represent typical flight operations. The data was collected from the US National Climate Information Center with frequencies calculated by month of the year, hour of the day, and season. The impacts of crosswinds were also assessed. As is presented in Table 7.3, February had the lowest frequency of good weather and June the highest. There was a historical difference of 1.62% in the frequency of Non-Instrument and Non-Precision conditions for the year, and a difference between Non-Precision and Precision conditions of 0.74%.

Table 7.3 – Percent Frequency of Ceiling and Visibility Categories (By Month)

Month	Visual Flight Rules*	Instrument Flight Rules		
		Non-Instrument	Non-Precision	Precision
January	87.09%	95.09%	98.47%	99.40%
February	86.71%	94.51%	97.38%	99.23%
March	92.30%	97.17%	98.88%	99.53%
April	93.17%	98.27%	99.43%	99.67%
May	94.76%	98.89%	99.51%	99.73%
June	95.52%	99.42%	99.84%	99.90%
July	97.97%	99.36%	99.64%	99.82%
August	95.15%	97.76%	98.55%	98.98%
September	92.74%	96.03%	96.85%	97.92%
October	90.75%	96.27%	98.00%	98.66%
November	90.04%	95.59%	97.42%	98.24%
December	84.57%	93.57%	97.35%	99.19%
Year	91.74%	96.83%	98.45%	99.19%
* Regulations under which a pilot operates an aircraft in weather conditions that permit the pilot to see where the aircraft is going without the need for instrumentation.				

When analyzed by season, winter operations (December, January, and February) would benefit most from a Non-Precision level of service, with average seasonal availability increasing from 94.39% to 97.74% (+3.35%) (Table 7.4). Availability during the summer season (June, July, and August) would improve modestly from 98.84% to 99.34% (+0.50%). However, the actual benefit realized would be dependent on the nature of the operations of current and future airport users (i.e., time of day, time of year, flight frequencies, etc.). The analysis also indicated the lowest frequency of suitable ceilings and visibility was typically in the morning between 6 a.m. and 7 a.m. and the highest frequency typically between 11 a.m. and 6 p.m. depending on season.

Table 7.4 – Percent Frequencies of Ceiling and Visibility Categories (By Season)

Season	Visual Flight Rules	Instrument Flight Rules		
		Non-Instrument	Non-Precision	Precision
Winter (Dec-Feb)	86.10%	94.39%	97.74%	99.27%
Spring (Mar-May)	93.42%	98.11%	99.27%	99.64%
Summer (Jun-Aug)	96.21%	98.84%	99.34%	99.56%
Fall (Sep-Nov)	91.17%	95.97%	97.43%	98.28%

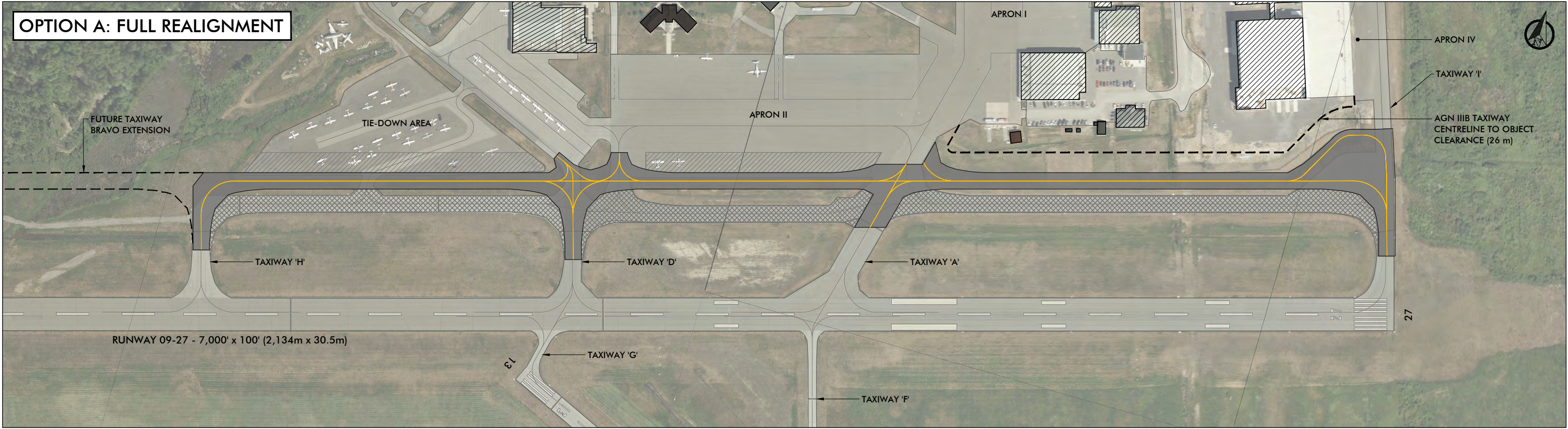
Cost

The improvement in level of service to Non-Precision would trigger the recertification of Runway 09-27 and Taxiway B to TP312 5th Edition standards. Assessment of existing infrastructure indicates that the centreline of Taxiway B is offset between 90 m and 100 m from the centreline of Runway 09-27. To achieve TP312 5th Edition standards for an AGN IIIB Non-Precision facility, Taxiway B would have to be realigned so that its centreline would be no less than 122 m from the runway centreline. The costs of this realignment are anticipated to comprise the majority of total costs required to achieve Non-Precision designation; however, it is recommended that a complete TP312 5th Edition gap analysis be completed in the short-term to determine all costs associated with recertification.

The project team evaluated and estimated the cost of two options for the realignment of Taxiway B, which are presented in Figure 7.2:

1. **Complete Realignment** – The removal and reconstruction of all three segments of Taxiway B (Taxiway I to Taxiway A, Taxiway A to Taxiway D, and Taxiway D to Taxiway H). This option would render portions of Apron II and the Tie-Down Area unusable and has an estimated cost of \$7.6M.
2. **Partial Realignment** – The removal of all three segments of Taxiway B and reconstruction of the segment between Taxiway I and Taxiway A as well as the segment between Taxiway D and Taxiway H. This option assumes that aircraft could be diverted onto Apron II without causing increased congestion and would not reduce the usable area of Apron II. This option has an estimated cost of \$6.6M.

Consultations with prospective airport users including passenger air carriers indicated that the provision of a Non-Precision level of service is preferred but is not a prerequisite for future operations. It is therefore recommended that all development planning account for the future realignment of existing Taxiway B. It is also recommended that the requirement for Non-Precision level of service be re-evaluated with the introduction of additional passenger air services forecast in 2026.



Runway 09-27 Width Considerations

To ensure that future development opportunities at Peterborough Airport would not be limited by the width of the primary runway, the project team undertook an analysis of the runway width informed by the design aircraft and consultations with current and prospective users. Runway 09-27 is currently 30 m (98.4 ft.) in width and was designed to satisfy the performance requirements of the Boeing 737-900 adhering to TP312 4th Edition standards. Under TP312 5th Edition standards, aircraft with an OMGWS up to but not including 9.0 m, including the Boeing 737-900 (7.0m), require a minimum runway width of 30 m.

Widening the runway to 45m (147.6') would allow for aircraft with OMGWS of 9.0 m up to 14.9 m to regularly use the runway; however, consultations with current and prospective airport users did not identify an urgent requirement for the runway to be widened beyond 30 m. Additionally, Transport Canada makes an exception for aircraft approved for operation on runways narrower than what is stipulated in TP312. For example, the DHC 8-400 has an OMGWS of 9.54 m but is used regularly by passenger air carriers on 30 m runways in Canada. Because Runway 09-27 satisfies Transport Canada's minimum width standards for the design aircraft, a cost to widen the runway was not included in the Capital Plan. However, it is recommended that the City engage in regular dialogue with current and prospective airport users to identify operational and aircraft performance limitations for year-round scheduled operations on a 30m (100 ft.) wide runway (e.g., bare and wet, slush, snow covered, % of ice coverage permitted, minimum cleared runway width, permitted windrows, and crosswind limitations).

A preliminary engineering analysis determined the cost of widening Runway 09-27 to 45 m from 30 m to be approximately \$9.3M. Additionally, widening the runway would trigger certification to TP312 5th Edition standards and additionally require the realignment of Taxiway B. Based on the cost of these improvements weighed against limited current demand, the widening of Runway 09-27 is not recommended within the 15-year planning horizon of the Master Plan Update, however, regular assessments should be conducted to ensure the runway width is sufficient to support current and prospective airport users.



Runway 27 Threshold

Runway 13-31

Runway 13-31 is designated as an AGN I – Non-Instrument facility and is primarily used for operations by general aviation aircraft. The orientation also provides the Airport with capabilities for crosswind takeoffs and landings. The pavement was observed to be in fair to good condition, with a notable longitudinal crack along the centreline. Sealant repairs are expected to repair this longitudinal crack as part of regular maintenance and upkeep. The runway paint markings were also observed to be in good condition and are well-defined. It is recommended that the longitudinal crack along the centreline of the runway be sealed in 2022 and that Runway 13-31 be budgeted for rehabilitation in 2031.



Runway 13 Threshold

Recommendations	Year	ROM Cost Estimate
Re-evaluation of Non-Precision Operations Study	2026	\$55,000
Rehabilitation of Runway 09-27	2030	\$6,872,000
Rehabilitation of Runway 13-31	2031	\$1,028,000

7.2.2 Taxiway System

The taxiway system facilitates the movement of aircraft and airport vehicles between the aprons and runways. Nine taxiways are currently in operation at the Airport. While the pavement condition of each taxiway varies between good and very good, a significant amount of existing sealant repairs were noted at each intersection. Continued pavement inspections and maintenance is recommended, with special attention at pavement intersections. The specifications of each taxiway are provided in Table 7.5.

Table 7.5 – Taxiway Specifications

Taxiway	Width	Surface Type	Planning AGN	Condition (May 2022)
A	85' (26 m)	Asphalt	AGN IIIB	Fair
B	50' (15 m)		AGN IIIB	Good / Very Good
C	25' (7.5 m)		AGN I	Good
D	54' (16.5 m)		AGN IIIB	Good
E	59.1' (18 m)		AGN IIIB	Good
F	24.6' (7.5 m)		AGN I	Very Good
G	24.6' (7.5 m)		AGN I	Good
H	50' (15 m)		AGN IIIB	Good
I	50' (15 m)		AGN IIIB	Very Good

Taxiway A

Taxiway A is the primary taxiway and connects Runway 09-27 to the east side of Apron I. The taxiway was rehabilitated following the 2009 Master Plan and is in fair condition. Taxiway A leads to Taxiway F beyond the intersection with Runway 09-27. Minor longitudinal and transverse cracking and existing sealant repairs were noted near intersections with Taxiway B, Runway 09-27, and Aprons I and II. Taxiway A is adequate to support the design aircraft and no deficiencies have been reported. It is recommended that Taxiway A be budgeted for rehabilitation in 2030, coinciding with the rehabilitation of Runway 09-27.



Intersection of Apron II and Taxiway A

Taxiway B

Taxiway B is a partial parallel taxiway that extends from Taxiway I to the mid-point of Runway 09-27 and Taxiway H. Based on consultation with City staff and the airport operator, the extension of Taxiway B is required in the short-term planning horizon to address traffic congestion and runway capacity concerns. It is recommended that Taxiway B be extended from Taxiway H to the threshold of Runway 09 in 2026. It is also recommended that the existing segments of Taxiway B be budgeted for rehabilitation in 2034.



Taxiway B Eastern Segment

Taxiway C

Taxiway C connects the main terminal area of Apron II with the western general aviation development area on Apron III. Taxiway C is currently designated for AGN I operations with most activity limited to general aviation aircraft. This designation is deemed adequate as no use case by larger aircraft is expected in the medium to long term. The pavement is deemed to be in good condition, with minor transverse and longitudinal cracks. Notably, a new asphalt patch appears on the section directly above the culvert between the Tie-Down Area and Apron III. This section would require continued monitoring, with the difference in soil and base course composition underlying the regular pavement structure. It is recommended that Taxiway C be budgeted for rehabilitation in 2032.

Taxiway D

Taxiway D serves as an intermediary from Taxiway C, extending from Taxiway B and intersecting with Runway 09-27. Taxiway D is a primary route for general aviation aircraft, particularly from Seneca College, acting as a direct connection to Taxiway G and Runway 13-31. The pavement is in good condition, with select transverse and longitudinal cracks sealed at the intersections with Taxiway B and Runway 09-27. It is recommended that Taxiway D be budgeted for rehabilitation in 2034, concurrent with the rehabilitation of Taxiway B.

Taxiway E

Taxiway E connects the west side of the Apron II terminal area to Taxiway B. The pavement is in good condition, with sealant repairs noted at the joints with Apron II. It is recommended that Taxiway E be budgeted for rehabilitation in 2034, concurrent with the rehabilitation of Taxiways B and D.

Taxiway F

Taxiway F is an AGN I taxiway that extends from Taxiway A past the intersection with Runway 09-27, connecting to the threshold of Runway 31. Accordingly, Taxiway F is used by general aviation aircraft. The pavement structure is noted as being in very good condition for the majority of its length. Continued inspection and maintenance are recommended near the Runway 31 threshold, with a larger presence of longitudinal and transverse cracking. It is recommended that Taxiway F be budgeted for rehabilitation in 2037.



Taxiway F at Runway 31 Threshold

Taxiway G

Taxiway G is an AGN I taxiway that extends from Taxiway D past the intersection with Runway 09-27, connecting at the Runway 13 threshold. Taxiway G is used by general aviation aircraft, particularly from Seneca College. The pavement condition is noted as very good, with a single transverse crack which has been sealed. It is recommended that Taxiway G be budgeted for rehabilitation in 2032, concurrent with the rehabilitation of Taxiway C.

Taxiway H

Taxiway H is the westernmost connection to Runway 09-27, extending from the parallel Taxiway B and intersecting at the midpoint of Runway 09-27. The pavement surface is in good condition, with evidence of minor longitudinal and transverse cracking. It is recommended that Taxiway H be budgeted for rehabilitation in 2034, concurrent with the rehabilitation of Taxiway B.

Taxiway I

Taxiway I was constructed in 2018 and leads from existing eastern development lots on Apron IV, intersecting with Taxiway B, and connecting with the Runway 27 threshold. Its pavement is in very good condition given its recent construction, while the intersection with Taxiway B is noted to have undergone sealant repairs. Pavement rehabilitation will be required beyond the planning horizon of the Master Plan Update.



Taxiway I and Taxiway B Intersection

Recommendations	Year	ROM Cost Estimate
Extension of Taxiway B	2026	\$5,519,000
Rehabilitation of Taxiway A	2030	\$390,000
Rehabilitation of Taxiway G	2032	\$52,000
Rehabilitation of Taxiway C	2032	\$354,000
Rehabilitation of Taxiway B	2034	\$2,569,000
Rehabilitation of Taxiway D	2034	\$161,000
Rehabilitation of Taxiway H	2034	\$215,000
Rehabilitation of Taxiway E	2034	\$54,000
Rehabilitation of Taxiway F	2037	\$365,000

7.2.3 Aprons

Aircraft parking, passenger loading and unloading, refuelling, servicing, and other similar activities are accommodated through the commercial Aprons I and IV, terminal building Apron II, general aviation Apron III, and Tie-Down Area (Table 7.6).

Table 7.6 – Apron Specifications

Apron	Area	Surface Type	Condition (May 2022)
I	29,900 m ²	Asphalt	Good
II	32,800 m ²	Asphalt	Good
III	4,500 m ²	Asphalt	Good
IV	10,300 m ²	Concrete	Good
Tie-Down	18,300 m ²	Gravel	Good

Apron I

Apron I is the main apron serving commercial users and aviation businesses. Apron I is adjoined by Apron II to the west, where connections to Taxiway A and B are available for direct access to Runway 09-27. Apron I was found to be in good condition and pavement rehabilitation is recommended in 2036.

Apron II

Apron II serves the existing terminal building, FBO, and select aviation businesses. Apron II is connected to Taxiways A, B, and E for access to Runway 09-27 and is flanked on the east side by Apron I. Apron II was found to be in very good condition, and pavement rehabilitation is recommended in 2036.

Apron III

Apron III is a long, narrow pavement strip at the northwest portion of the Airport, encompassing the general aviation development area and associated private hangars. Access is provided by Taxiway C at its southern end, leading to Taxiway B, and subsequent routes connecting to both runways. Apron III is in good condition, with some transverse cracking evident. It is recommended that Apron III be budgeted for rehabilitation in 2035.

Apron IV

Apron IV is a private concrete apron serving two Flying Colours hangar facilities accessed by Taxiway I. Taxiway I extends for the entire length of Apron IV and connects to Taxiway B and the Runway 27 threshold. Because of its recent construction, the concrete pavement structure is in good condition and rehabilitation by the tenant is not anticipated within the 15-year planning horizon.



Apron IV Concrete Surface (Private)

Tie-Down Area

The Tie-Down Area is located south of Taxiway C and north of the western section of Taxiway B. The Tie-Down Area is overlayed with gravel pavement, while the access lanes are constructed with asphalt. Some minor vegetation encroachment was found at the southern extent. It was observed that users utilize metal plates where aircraft wheels are parked, given the uneven surface of the gravel. Developing transverse cracks are also evident at the southern joint to Taxiway B. The pavement surface is in good condition and rehabilitation will be required outside the 15-year planning horizon of this Master Plan Update.

Recommendations	Year	ROM Cost Estimate
Rehabilitation of Apron III	2035	\$482,000
Rehabilitation of Apron I	2036	\$3,349,000
Rehabilitation of Apron II	2036	\$4,197,000

7.2.4 Lighting Systems

All airfield lighting infrastructure is supported by a Field Electrical Centre (FEC) located to the southeast of Apron I, adjacent to the public fueling facility and Flying Colours parking lot. The FEC is nearing its capacity for future additions and installations as of 2017. Capacity is recommended to be evaluated with planned airfield lighting improvements in the short term.

Runways

Medium intensity edge lights support night operations on Runway 09-27, along with flashing strobe lights identifying approaches at each runway threshold. Precision Approach Path Indicators (PAPIs) support approaches to Runway 09 and 27. The upgrade to LED edge lighting is planned for 2023.



Runway 27 Threshold Lighting

There is no lighting system installed on Runway 13-31, and no installation is anticipated to be required over the planning horizons of the Master Plan Update.

Taxiways

All taxiways except for Taxiways F and G are supported by medium intensity edge lighting. No deficiencies were found in consultations and the taxiway lighting infrastructure is in good condition. There are no lighting installations south of Runway 09-27, as the requirement for the lighting of Taxiways F and G has not been identified and is not anticipated within the 15-year horizon of the Master Plan Update.

Recommendations	Year	ROM Cost Estimate
LED Edge Lighting Upgrade	2023	\$340,000

7.2.5 Instrument Flight Procedures

Instrument Flight Procedures (IFPs) for Runway 09-27 are as follows.

- **Runway 27:**
 - RNAV approach to a Minimum Descent Altitude (MDA) of 512 ft. AGL; minimum visibility limits of 1 ½ mile.
- **Runway 09:**
 - LPV approach to an MDA of 500 ft. AGL; minimum visibility limit of 1 ¾ mile; and
 - NDB approach to an MDA of 694 ft. AGL; minimum visibility limit of 2 miles.

As indicated in Section 7.1.2, it is recommended that the requirement to improve the IFPs serving Runway 09-27 be re-evaluated concurrent with the forecast inception of ULCC service in 2026.

7.3 Airport Support Services

7.3.1 Aviation Fuel

A public fueling facility is located on the southern end of Apron I and provides both Jet A1 and 100 Low-Lead (Avgas) aviation fuel types. The facility is equipped with two underground fuel tanks with 45,000 L in capacity. Fuel is currently distributed using mobile fueling vehicles (bowzers). Consultations with the fuel service provider identified that the existing system is nearing the end of its life cycle and have requested the identification of appropriate locations for the construction of new fuelling infrastructure including increased storage capacity. It has been assumed that costs associated with these improvements will be the responsibility of the service provider.



Aviation Fuel Facility

7.3.2 Ground Handling Services

Stewart Aviation provides ground handling services to commercial passenger and corporate aircraft at the terminal building apron, including the sale and distribution of jet fuel, ground power, aircraft de-icing, baggage handling, and passenger processing. Stewart Flight Services provides ground support services to aircraft ranging from passenger and regional jets to itinerant general aviation aircraft. Stewart Aviation also reserves a dedicated ramp location for medevac arrivals and processing. Additional amenities provided by Stewart Aviation includes a pilot and visitor's lounge, marshalling, vehicle escorts, aircraft parking, and other similar services.

The ground handling service provided by Stewart Aviation meets the needs of the airport and provides a specialized to aircraft ranging from single engine to large narrow-body jets. Future improvements to the services offered would be at the discretion of the service provider.

7.3.3 Air Traffic Services

NAV CANADA maintains a Frequency Peripheral Station (PAL) that enables communication with Toronto Centre on 134.25 MHz and a Remote Communications Outlet (RCO) that enables pre-flight and flight information services en-route through the London Flight Information Centre on 126.7 MHz. Aircraft and vehicles operating on or intending to operate on Peterborough Airport's manoeuvring areas maintain communications on a Mandatory Frequency (MF) of 123.0 MHz. Based on forecasted aviation activity, a Flight Service Station or Air Traffic Control Tower may be required in the short to medium term, subject to a level of service study by NAV CANADA. The Airport Development Plan reserves an area for a potential NAV CANADA facility, subject to further NAV CANADA analysis and approval.

7.3.4 Weather Observation and Forecasting

An Automated Weather Observation System (AWOS) facility is operational on site, located off the southern segment of Airport Road. The AWOS broadcasts on a frequency of 126.925 MHz for pilots and NAV CANADA. The AWOS is fully functional and no deficiencies were identified. To accommodate development south of Runway 09-27, it is recommended that the relocation of the AWOS to a site west of Runway 13-31 be budgeted for 2027 in coordination with the preparation of the South Development Area.

7.3.5 Canada Border Services Agency (CBSA) Operations

Peterborough is designated by the Canada Border Services Agency (CBSA) as an Airport of Entry (AOE) / 15 facility, indicating the Airport is an entry point for aircraft carrying up to 15 passengers. The CBSA does not permanently station personnel at the Airport, with the nearest CBSA detachment located in Trenton, ON.

Ad-hoc passenger charters and transborder/international flights are provided on a cost recovery basis and must be pre-arranged with the agency, otherwise a typical 2-hour wait time may be expected without pre-arrangement. CBSA's hours of operation are from 8:30 am to 3:30 pm, Monday to Friday, excluding holidays.

It is recommended that Peterborough Airport continue to maintain discussions with CBSA to provide on-site customs services. With the potential future growth in international and transborder charter services, permanent on-site CBSA staff may be required within the short term.

7.3.6 Airport Maintenance Facilities and Equipment

Airport staff are responsible for daily airport operations and maintenance with call-out procedures established for services outside of normal working hours. Maintenance activities include, but are not limited to, snow removal, ice control, grass cutting, pavement sweeping, and line painting. The City of Peterborough owns and operates one Airport Rescue Fire Fighting Truck on site. All other airport equipment is owned and maintained by Loomex Group, the contracted operator.

The Airport Operations Centre is steel framed structure located on Skyway Drive, adjacent to Seneca College and the public parking lot. The building is used for the storage and maintenance of the Airport's maintenance equipment fleet and was reported to be in good condition. Consultation with airport staff indicated the requirement for the expansion of the Operations Centre by two bays of sufficient depth to allow for the parking of coupled maintenance equipment. It is recommended that the Operations Centre be expanded in 2036.

Additionally, City and airport staff indicated the requirement for additional materials storage capacity in proximity to the Operations Centre. The Master Plan Update recommends the budgeting for the construction of the sand storage shed in 2025.

7.3.7 Emergency Response Services

Emergency response services are provided by the City of Peterborough. The response time from the closest Peterborough Fire Department station to Peterborough Airport is approximately 6 minutes. One Airport Rescue Fire Fighting Truck is available on Skyway Drive for use by the Peterborough Fire Department only. The current Emergency Response Services system is considered sufficient for foreseeable aeronautical operations described in the Master Plan Update. Peterborough Airport does not require on-site aircraft rescue and firefighting services per Canadian Aviation Regulation 303.02(1), as its current and forecast activity levels are both less than the 180,000 passenger per year trigger. It is important to note that individual airline operator policies may require emergency response services. Historically, these services have been provided for occasional flights and charters on a cost recovery basis.

Recommendations	Year	ROM Cost Estimate
Construction of Sand Storage Shed	2025	\$431,000
Relocation of AWOS	2027	\$113,000
Expansion of Operations Centre	2036	\$664,000

7.4 Terminal Building and Passenger Facilities

7.4.1 Background and Capabilities

The Air Terminal Building (ATB) is centered in the Peterborough Airport layout, connected to the main vehicle parking area to the north, with Apron II adjacent to the south. Newly built in 2010, the building services general aviation and corporate aircraft, along with passenger aircraft up to 19 seats in capacity. Amenities consists of a public waiting area, restaurant, meeting rooms, and administrative offices. No deficiencies were found in the building structure or accessibility.



Existing Terminal Building

7.4.2 Passenger Processing Facility

Based on the forecast growth of passenger activity, the existing terminal building is space and function constrained for the processing of high numbers of passengers associated with anticipated new services. The proposed function, size, and location of a dedicated Passenger Processing Facility is detailed in Section 8.2.4.

7.5 Groundside System

7.5.1 Groundside Roadways

Vehicles accessing Peterborough Airport proceed southward on Airport Road from the interchange with Highway 7. The Terminal Building, Seneca College, Loomex Group, and private hangars served by Apron III are accessed via Mervin Line and Skyway Drive. The eastern commercial and industrial development lots are accessed from Airport Road south of Mervin Line. At the time of the preparation of the Master Plan Update, rehabilitation works are planned for the segment of Airport Road north of Mervin Line and south of Highway 7.

7.5.2 Vehicle Parking Areas

The public parking area immediately north of the Air Terminal Building can accommodate up to 100 vehicles and was approaching capacity prior to the COVID-19 pandemic. Surrounding private parking lots, while not open for public use, are also experiencing shortages. Particularly, the Seneca College student parking lot was noted to have insufficient capacity. As such, it is recommended that lands immediately adjacent to both the public parking lot and the Seneca College student parking lot be reserved for future expansion of parking lots and associated groundside access roads as demand at the Airport grows. This reserve will also accommodate additional parking for and access to the Passenger Processing Facility.

7.6 Utilities and Servicing

7.6.1 Potable Water

Potable water for the Airport is provided by a 75 mm diameter underground HDPE (high density polyethylene) watermain installed in 2002 that services the main terminal area and eastern development area from Skyway Drive and Airport Road, respectively. General aviation facilities located along Apron III are not provided with water servicing. Capacity is expected to be sufficient for approximately 100 additional onsite employees. A 2016 servicing study recommended improvements and expansion with the addition of the eastern development area.

7.6.2 Sanitary Sewer

Sanitary servicing is provided by a network of 200 mm diameter PVC (polyvinyl chloride) gravity sewers along Skyway Drive, Mel O'Brien Way, Airport Road, and select service roads, altogether collecting at a pump station northwest of the intersection between Airport Road and Mel O'Brien Way. Sewage is then sent northward on Airport Road via a 75 mm diameter HDPE forcemain, connecting to the broader municipal network on Fisher Drive. The 2017 Development Plan identified a need for capacity expansion, as the sanitary sewer forcemain is undersized to accommodate future demands. The Master Plan Update reinforces these previous recommendations for sanitary capacity to be expanded in conjunction with potable water service.

It is recommended that the Airport water and sewer upgrades be designed in 2023 and completed in 2024.



Airport Pumphouse

7.6.3 Stormwater Management and Drainage

Stormwater runoff is conveyed by a network of above ground drainage channels and underground storm sewers underneath each airside pavement surface. The site is flat, with each storm sewer directing flows to overland drainage channels that are graded towards the north on Mervin Line and the Otonabee River in the southeast.

An overall stormwater management plan for the Airport should be considered to validate potential alterations to existing drainage routes with the proposed extension of Taxiway B, and altogether explore solutions in maintaining safe airport operations amid the variance of the surrounding floodplains and associated ecological effects.

7.6.4 Electrical Servicing

Hydro One supplies electricity to the Airport with a 4,800 Volt overhead line located on the west side of Airport Road. Tenants are responsible for the infrastructure costs associated with providing power to any potential new development at the Airport. Hydro One assumes all ownership and maintenance of the service equipment. It is anticipated that this arrangement will continue throughout the duration of the 15-year planning horizon.

7.6.5 Natural Gas

Natural gas is supplied by Enbridge Gas Distribution with an existing gas main located on the west side of Airport Road. No deficiencies were identified during consultations. Additional infrastructure or upgrades may be required to support future natural gas demand from new developments in the core and eastern lots. However, it is anticipated that any connection fees would be the responsibility of prospective tenants.

7.6.6 Telecommunications and Internet

Telecommunications are provided by Bell Canada (Fiber Optic) and Nexicom. No deficiencies were identified; as these services are supplied directly to individual tenants and businesses at the Airport upon request, additions and alterations would be at the expense of tenants.

Recommendations	Year	ROM Cost Estimate
Airport Water and Sewer Upgrade Design	2023	\$800,000
Airport Water and Sewer Upgrade	2024	\$15,250,000

8 AIRPORT DEVELOPMENT AND LAND USE PLAN

8.1 Constraints Analysis

8.1.1 Aeronautical Constraints

Obstacle Limitation Surfaces

Obstacle Limitation Surfaces (OLS) are three-dimensional planes that protect the airspace surrounding the Airport's two runways to assist in ensuring safe aircraft operations. OLS are currently designated for Runway 09-27 (Code 4C – Non-Instrument) and Runway 13-31 (Code 1A – Non-Instrument) per TP312 4th Edition standards.

As described in Section 7.2, provisions should be made to protect for the future redesignation of Runway 09-27 to a Non-Precision level of service adhering to TP312 5th Editions standards. Until the time that this improvement is made, it is necessary for the Airport Development Plan to consider and satisfy both Code 4C – Non-Instrument and AGN IIIB – Non-Precision OLS. Because of the location, alignment, dimensions, and intended use of Runway 13-31, the improvement of its level of service or need to certify to TP 312 5th Edition standards in the future is not anticipated. The specifications of the respective OLS are presented in Table 8.1 and Table 8.2.

Table 8.1 – Obstacle Limitation Surface Specifications – Runway 09-27

Time Horizon	Designation	Surface	Characteristic	Specification
Current	Code 4C – Non-Instrument (TP312 4 th Edition)	Take-off/Approach	Length of Inner Edge	150 m
			Distance from Threshold	60 m
			Divergence	10%
			Length	2,500 m
			Slope	2.5%
		Transitional	Slope	14.3%
Ultimate	AGN IIIB – Non-Precision (TP312 5 th Edition)	Approach	Length of Inner Edge	244 m
			Distance from Threshold	61 m
			Divergence	15%
			First Section - Length	720 m
			First Section - Slope	2.5%
			Second Section - Length	4,280 m
			Second Section - Slope	2.9%
		Takeoff	Length of Inner Edge	150 m
			Distance from End of TORA*	0 m
			Divergence	15%
			Length	4,000 m
			Slope	2.5%
		Transitional	First Segment - Slope	25%
			Second Segment - Slope	14.3%
		Inner Transitional	Distance from Centreline	61
			Slope	vertical

* TORA = Take-off Run Available

Table 8.2 – Obstacle Limitation Surface Specifications – Runway 13-31

Time Horizon	Designation	Surface	Characteristic	Specification
Current / Ultimate	Code 1A – Non-Instrument (TP312 4 th Edition)	Take-off/Approach	Length of Inner Edge	60 m
			Distance from Threshold	30 m
			Divergence	10%
			Length	2,500 m
			Slope	5%
		Transitional	Slope	20%

Off-airport development is currently controlled by the federally enacted Peterborough Airport Zoning Regulations (SOR 94-123). However, these regulations were not updated following the extension of Runway 09-27 and do not sufficiently protect current infrastructure. It is recommended that the City budget \$500,000 over 2023-2025 to complete the Federal Zoning Process.

Meteorological Observation Facilities

Meteorological observation facilities are maintained by NAV CANADA between Taxiway F and the remaining southern segment of Airport Road. To facilitate development south of Runway 09-27, the Airport Development Plan recommends the relocation of the existing meteorological observation facilities. To ensure that proposed land uses do not interfere with the functioning of the various instruments and systems, a 45 m clearance area is provided surrounding the recommended location, and the Airport Development Plan does not recommend new growth in proximity to this site.

Fuel Facilities

Aviation fuelling infrastructure is located at the intersection of Aprons I and II but is anticipated to be decommissioned within the planning horizon of the Master Plan Update. New development is not planned within 15 m of all proposed fuelling infrastructure.

8.1.2 Environmental and Land Use Constraints

Of primary concern to the future development of the Peterborough Airport are wetlands deemed to be significant by the province or local authorities (Figure 8.1). The review of publicly available data identified three types of wetlands on the Airport site:

1. Provincially Significant Wetlands – Provincially Significant Wetlands (PSWs) are those areas identified by the province as being the most valuable based on a science-based ranking system known as the Ontario Wetland Evaluation System. Based on the Provincial Policy Statement, development or site alteration on these lands may be precluded.
2. Locally-Significant Wetlands – Municipalities may determine that some of these ‘other’ wetlands are significant on a local scale and may decide to protect them. These wetlands can include:
 - a. Evaluated wetlands that have been identified as not provincially significant; or
 - b. Partially evaluated and unevaluated wetlands that have been confirmed as wetland habitat and mapped. Similar to PSWs, local authorities may prohibit development on or alteration of these lands.
3. Non-Evaluated Wetlands – Lands determined to be wetlands that have not undergone the provincial evaluation process and are not declared as ‘significant.’

In addition to the environmental constraints described above and presented in Figure 8.1, other factors that influence the Airport Development Plan include:

- Privately owned properties located to the north of Runway 09-27;

- The Airport Road realignment, Mervin Line, Moncrief Line, and Highway 115 which constrain development to the north, east, south, and west; and
- Cavan Creek, which limits development to the west and isolates an area of City-owned land separate from the remainder of the Airport property.

8.2 Airport Development Plan

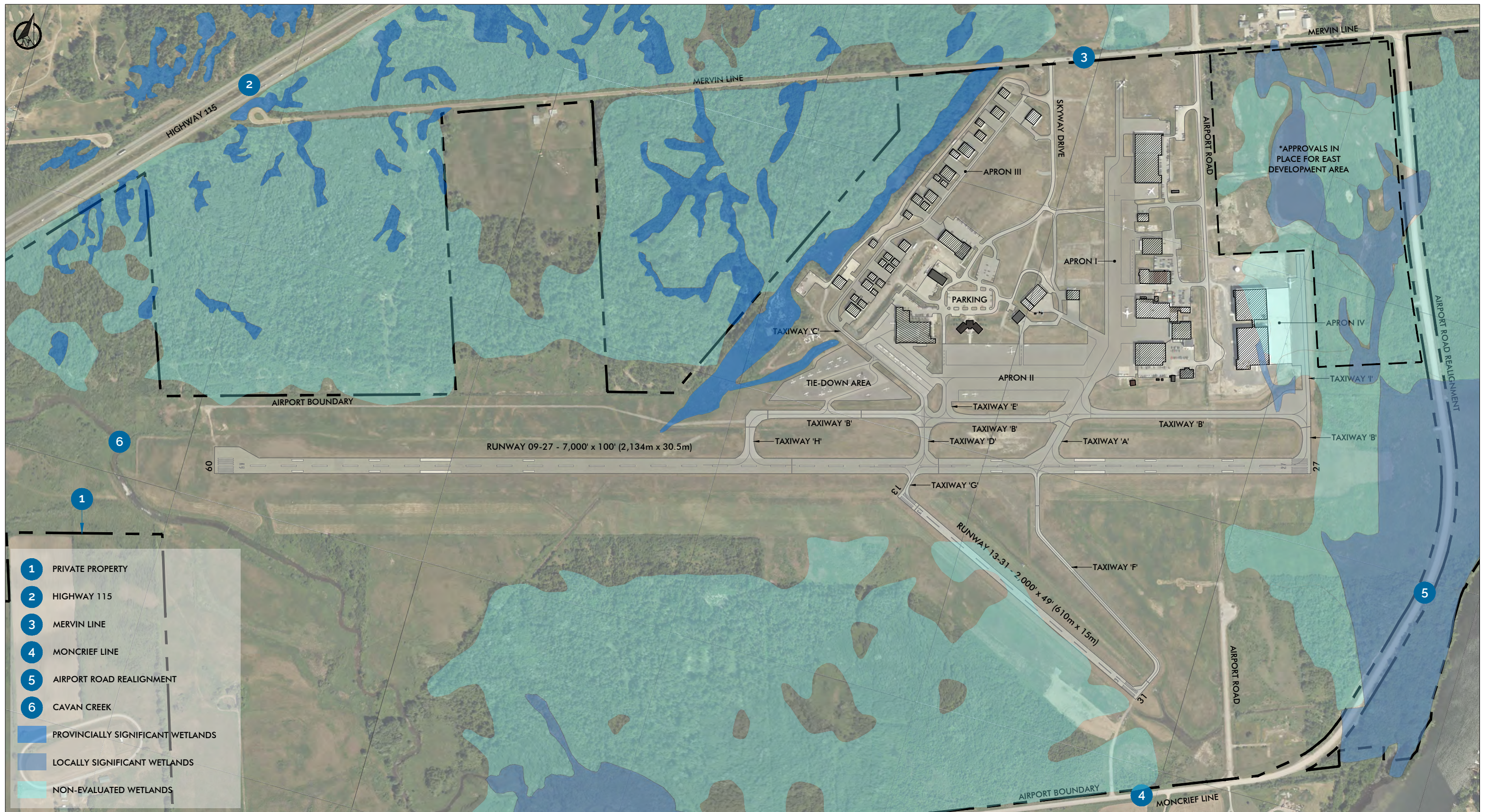
The Airport Development Plan, shown in Figure 8.2, integrates the capital projects recommended for Peterborough Airport over the Master Plan Update horizon, including changes to existing airside or groundside infrastructure. The Airport Development Plan has been prepared to meet the current and future needs of the Airport throughout the 15-year planning horizon of the Master Plan Update and protects sufficient land to accommodate growth beyond the long-term planning horizon. The Airport Development Plan contains three distinct development areas: the Core Development Area, East Development Area, and South Development Area. Sections 8.2.1, 8.2.2, and 8.2.3 identify and discuss significant capital projects to be undertaken in each of the development areas. A comprehensive Implementation Plan including the anticipated year of completion for all recommended projects is presented in Section 11. Capital costs for all projects are summarized in Section 10 with a detailed cost breakdown provided as Appendix A.

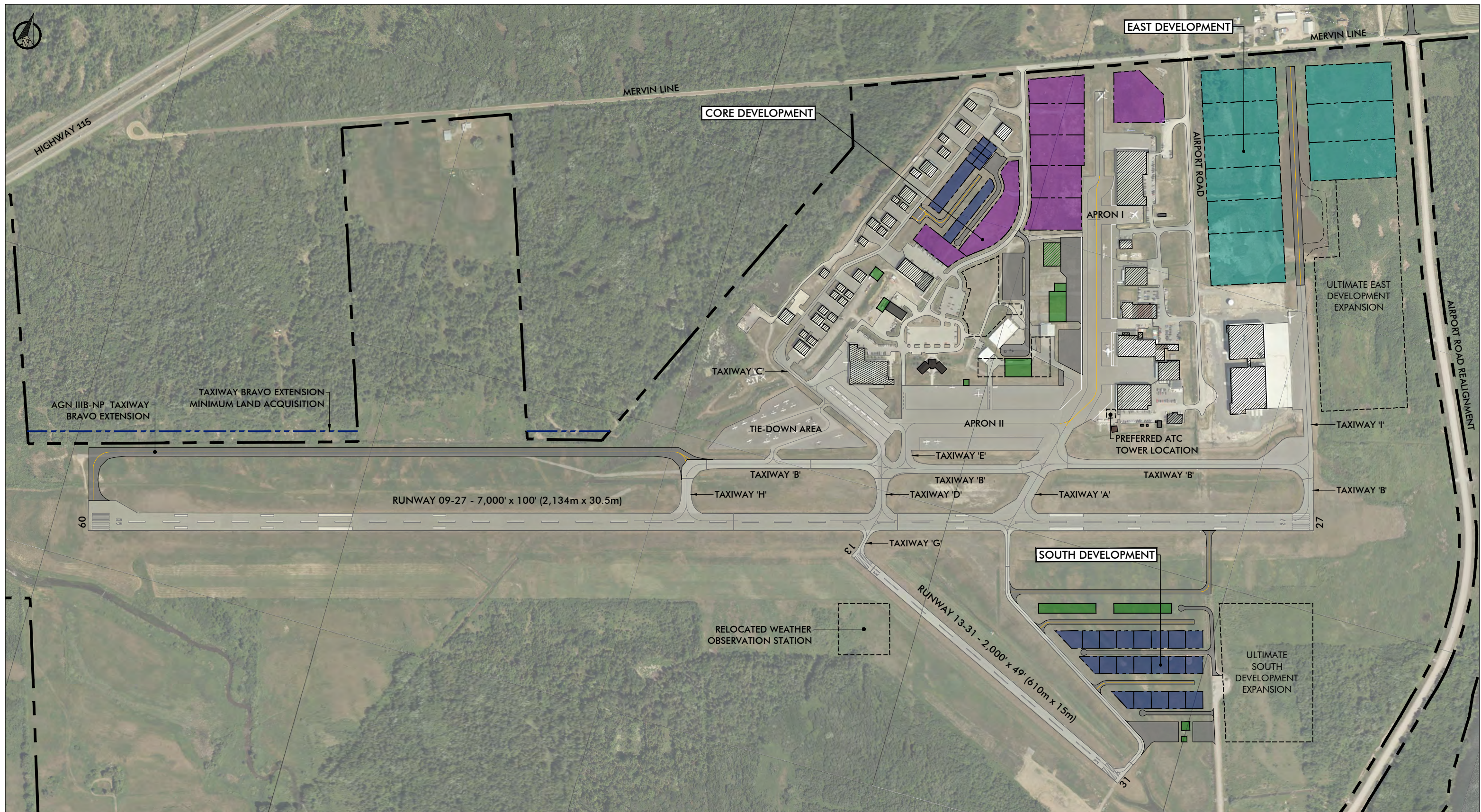
8.2.1 Core Development Area

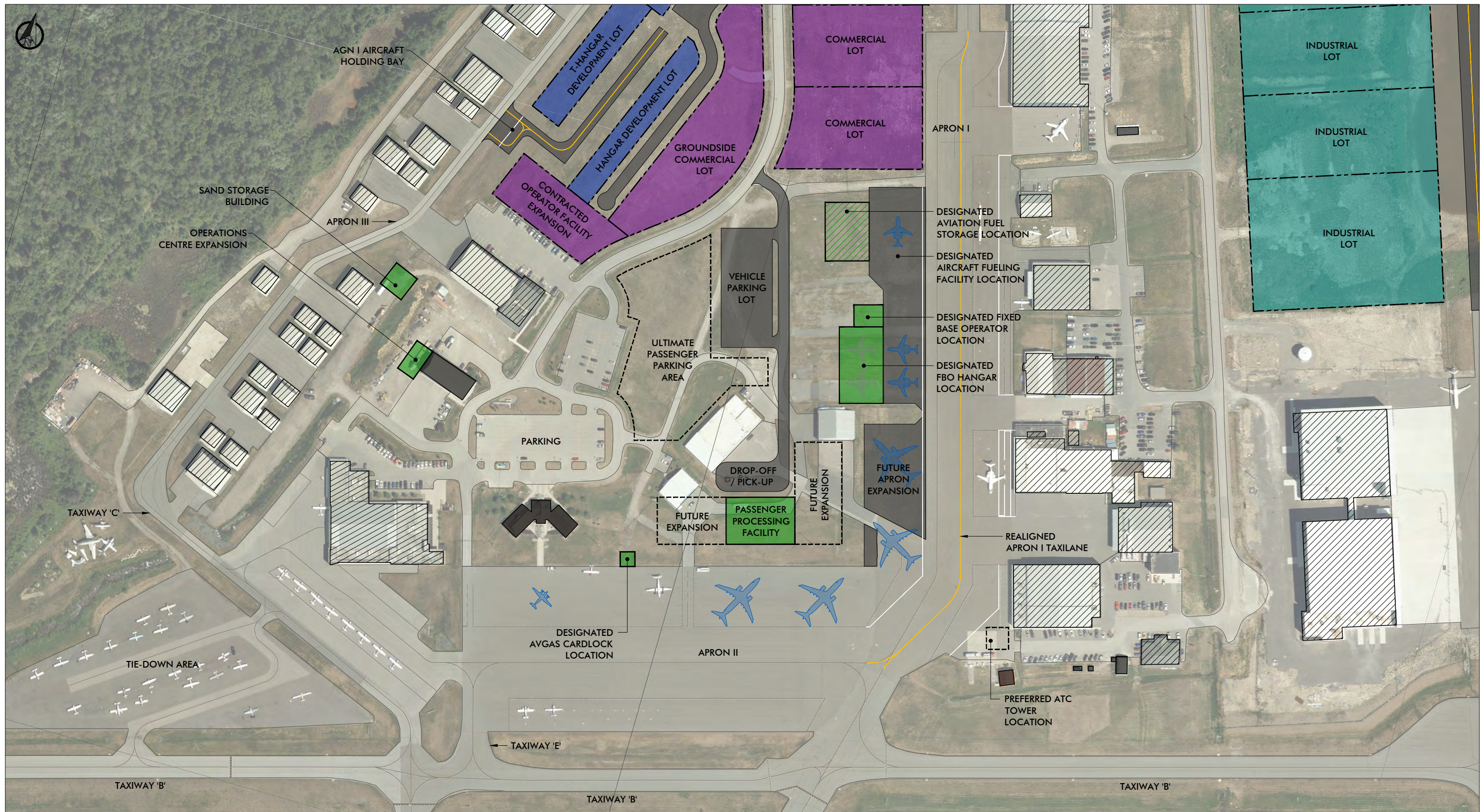
The Core Development Area consists of Aprons I, II, and III; Taxiway C; existing Terminal Building, Seneca College facility, the Operations Centre, commercial facilities, and Skyway Drive. The Core Development Plan represents a suitable concept option to achieve the identified business development opportunities and is shown in Figure 8.3. Actual building and supporting infrastructure configurations may vary, depending on future detailed design efforts.

Apron I

- Apron I Taxilane – The development of the Core Area includes the realignment of the north-south apron taxilane on Apron I to the east to increase developable land west of Apron I.
- Aviation Fuel Storage and Distribution Facilities – Because of the age and condition of the existing aviation fuel infrastructure, the Airport Development Plan provides a recommended location for the establishment of an aviation fuel storage facility as well apron area for the fuelling of business aircraft. It is assumed that the cost of these facilities is to be borne by the service provider.
- Fixed Base Operator – An area has been dedicated for the development of a Fixed Base Operator (FBO) that could initially consist of offices, meeting rooms, and a pilot's lounge. An allowance has also been included for the ultimate development of an attached FBO hangar for the overnight parking of aircraft. As with the fuel facility, it is assumed the cost of the FBO facilities would be the responsibility of the service provider.
- Commercial Development Lots – Six commercial lots will be prepared – 5 west of Apron I and 1 east of Apron 1 ranging in size from 4,900 square metres to 7,000 square metres.
- ATCT Location Identification – A preferred location for a Flight Services Station or Air Traffic Control Tower would be available following the decommissioning of the existing fuel facility. The location identified would allow for the erection of an up-to 15-metre (50-foot) structure while respecting TP312 4th and 5th Edition OLS. This location would allow for sight lines of Apron I and Apron II as well as the entire runway and taxiway system. Detailed analysis of the OLS and other constraints will be conducted prior to site selection and construction.
- Electric vehicle charging stations will be installed in existing and proposed public parking lots to encourage the use of electric vehicles. This could attract transient vehicular traffic to the Airport from Highway 115.







Apron II

- Passenger Processing Facility – A 1,500 square metre passenger processing facility is sited on the north edge of Apron II capable of two simultaneous Boeing 737 arrivals and departures.
- Passenger Parking and Frontage Road – A dedicated passenger processing facility access road is provided including passenger parking and a small drop-off/pick-up loop. Similar to the Passenger Processing Facility, the access road and parking configuration attempts to limit disruptions of existing tenants.
- Avgas Cardlock Fuel System – The Airport Development Plan provides an allowance for the fuel service provider to install an Avgas cardlock system west of the proposed Passenger Processing Facility and east of the existing Terminal Building to facilitate the fueling of general aviation aircraft outside of regular operating hours and without the requirement for fuel trucks.

Apron III

- GA Development Lots – Six General Aviation (GA) lots are proposed east of Apron III – 1 t-hangar lot, 1 multi-bay hangar lot, and 4 private hangar lots ranging in size from 360 square metres to 2,300 square metres. The costs of constructing new taxiways to access these lots will be the responsibility of the developer(s).
- AGN I Aircraft Holding Bay – The full build-out of Apron III will generate higher aircraft traffic and congestion. Because Apron III is a cul-de-sac, the Master Plan Update recommends the construction of an AGN I aircraft holding bay to facilitate the safe and efficient movement of aircraft.
- Groundside Commercial Lot – Limited groundside commercial lot demand is anticipated within the Master Plan Update horizon. However, should an existing or prospective tenant require additional lands without airside access, this lot would be preferred for an aerospace complementary land use.
- GA Access Road – The construction of a road off Skyway Drive is recommended to access the proposed Apron III GA lots.
- Sand Storage Shed – City staff and the contracted operator identified an operational need for a standalone sand storage shed. A location east of Apron III and north of the Operations Centre was identified as the preferred location.
- Operations Centre Expansion - Consultation with the contracted airport operator identified the requirement for the expansion of the Operations Centre to increase the equipment storage capacity of the building. It is recommended that the two-bay expansion be sufficiently long to allow for the parking of coupled equipment. Discussion with City staff identified the recently acquired Freeburn Property north of Runway 09-27 as the potential ultimate location of the Operations Centre should further expansion be required, or a higher or better land use identified for the site of the existing Centre beyond the time horizon of the Master Plan Update.
- Contracted Operator Facility Expansion – Consultation with the contracted airport operator revealed the organization's intent to construct a second building northeast of their existing building. Sufficient lands have been reserved for this use.

8.2.2 East Development Area

- Extension of Taxiway I – The extension of the AGN IIIB taxiway is required to provide airside access to additional industrial lots. While this area contains locally-significant wetlands, the City has received approval for development. Documents received from the City indicate significant quantities of material will be required to match the grade with the existing segment of Taxiway I.
- Industrial Development Lots - Nine industrial lots are proposed: 6 west of Taxiway I and 3 east of Taxiway I ranging in size from 7,400 square metres to 11,700 square metres. The six lots located west of Apron IV and east of airport road will require approximately 200,000 m³ of fill to permit extension of Apron IV to Mervin Line. If sufficient demand is identified, the remaining three lots located East of Apron IV will require up to 150,000 m³ of fill. Cost savings could be achieved beyond the values presented in the Pro Formal Financial Statements, provided Airport can accept appropriate fill material from alternate projects within the City of Peterborough. Development of the nine lots has been assumed to be completed within the short-term planning horizon to continue work under previous environmental approvals. Should the current approvals expire, the opportunity to develop these lands may be delayed significantly and additional costs could be incurred.

8.2.3 South Development Area

- GA Taxiways – Additional taxiways are proposed to provide access to the lands south of Runway 09-27 and east of Taxiway F. The northernmost taxiway would be a 7.5 m wide AGN II partial parallel connecting Taxiway F to Runway 09-27 utilizing the legacy base structure of the former Airport Road. This taxiway is sufficiently offset from the primary runway to protect for a future Non-Precision level of service designation. An additional two 7.5 m AGN I stub taxiways would extend from Taxiway F to access GA lots.
- T-Hangar and Private Hangar Lots – 20 private hangar and 2 t-hangar lots are proposed east of Taxiway F. The private hangar lots will be 900 square metres and the t-hangar lots will be 1,700 square metres, each capable of accommodating a 14 aircraft structure. The costs of constructing t-hangars and private hangars are to be the responsibility of private developers.
- Tenant Services Building and Apron – Municipal servicing from the City to the South Development Area is not anticipated within the planning horizon of the Master Plan Update. To ensure the tenants and users of this area have access to potable water and rest rooms, the Airport Development Plan includes a Tenant Services Building to house these functions that would be serviced by a well and septic system.
- Groundside Access Roads and Parking – Access to the private hangar and t-hangar lots would be extended from the terminus of the southern segment of Airport Road. A parking area would also be included adjacent the Tenant Services Building.
- Avgas Cardlock Fuel System – The South Development Area includes an Avgas cardlock system on the proposed apron adjacent the tenant services building. This fuel system, to be installed by the City, is intended to reduce the requirement for aircraft to cross the primary runway and thereby maintain the capacity of the runway during busy periods and reduce the risk of incursions.

8.2.4 Passenger Processing Facility Requirements

To satisfy the forecast increase in passenger demand at Peterborough Airport through the planning horizon of the Master Plan Update, the construction of a dedicated Passenger Processing Facility is recommended in the short-term. The existing terminal was designed with a capacity of 38 Peak Hour Passengers (19 arriving and 19 departing simultaneously). Historical and current boutique charter flights are operated using short-term solutions to the existing shortfall in passenger processing capacity, including the use of the temporarily vacant restaurant area.

The Passenger Processing Facility is recommended to be relatively basic and of sufficient size to allow for the efficient processing of 340 Peak Hour Passengers (simultaneous arrival and departure of a Boeing 737-type aircraft). To facilitate the movement of passengers to transborder and international destinations, the following minimum functions would be recommended for inclusion: passenger check-in, passenger and baggage screening (CATSA), government inspection (CBSA), passenger holdroom, and baggage claim. Completion of a preliminary functional area sizing exercise and a review of other comparable limited-service facilities with similar roles in Canada and the United States indicate an area requirement of approximately 1,500 square metres.

In addition, consultations revealed demand for the provision of rentable office space within the Passenger Processing Facility on a mezzanine level. Preliminary discussions identified that approximately 560 square metres (6,000 square feet) may be sufficient for this use. Depending on the initial weekly throughput of the facility, the structure may also be able to accommodate other activities and functions unrelated to passenger processing such as conferences and private events.

With competing airports, including Lake Simcoe Regional, vying to serve Peterborough Airport's catchment area, consideration for the construction of a Passenger Processing Facility and attraction of additional passenger air services should not be delayed.

The Master Plan Update recommends that additional analysis be undertaken through a Passenger Processing Facility Feasibility Study to better understand the potential role, size, timing, cost, and funding of this facility as well as additional market analysis to quantify demand for scheduled passenger air service to and from Peterborough.

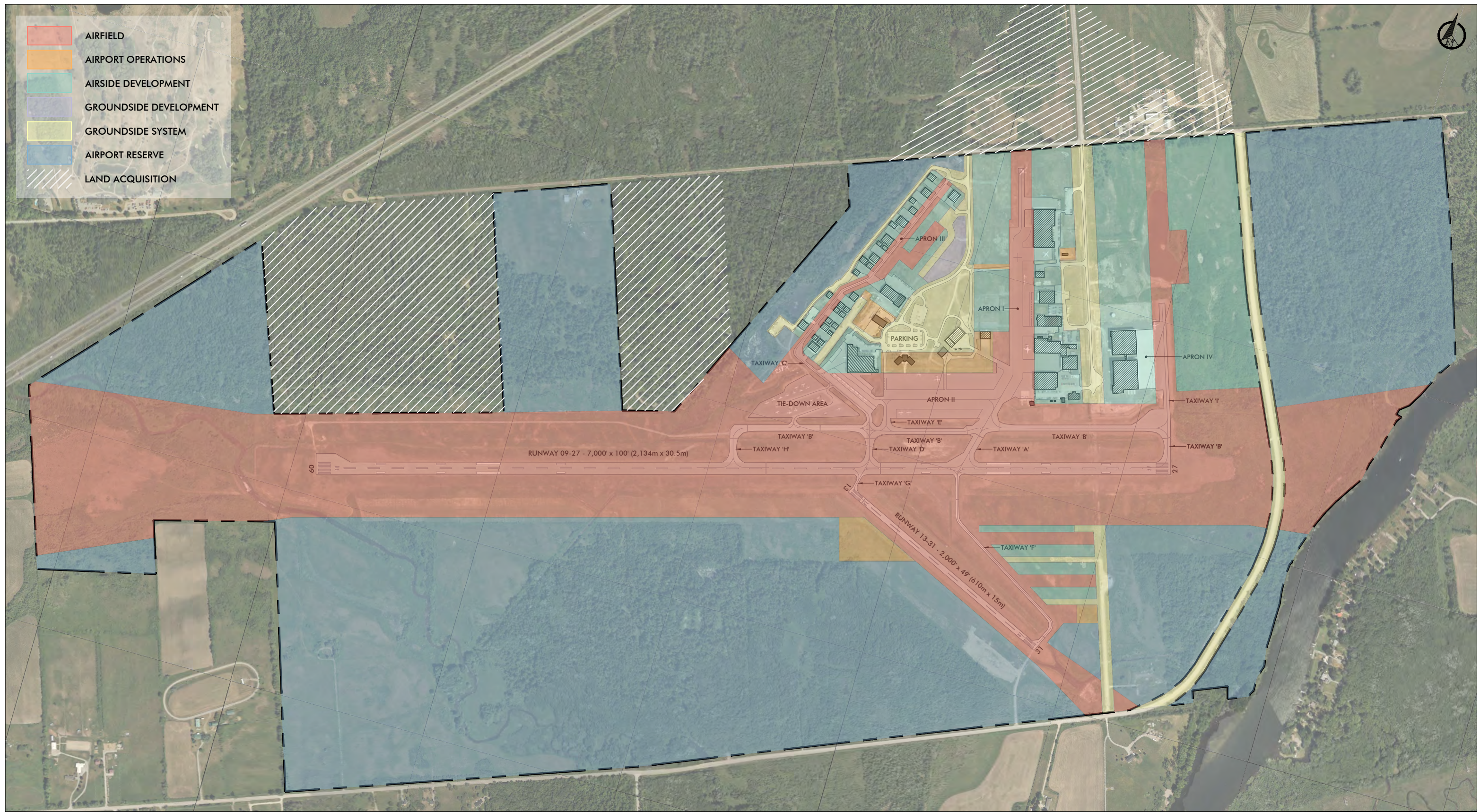
8.2.5 Airport Land Use Plan

Seven land use designations have been prepared through the Airport Land Use Plan to protect for the full range of current and future activities that are expected at the Airport. The Airport Land Use Plan is consistent with the Airport Development Plan in its systematic distribution of uses throughout the property according to the applicable regulatory standards, environmental constraints, and planning best practices. The seven land use categories and associated recommendations are as follows, with the Airport Land Use Plan shown in Figure 8.4.

1. **Airfield:** The lands protected for the Airport's runways, taxiways, aprons, approach lighting system, and associated protected areas.
2. **Airport Operations:** Land reserved for the facilities that support Peterborough Airport's operation and maintenance. Lands designated as Airport Operations are currently or proposed to be used for the terminal building, maintenance building, sand storage shed, meteorological observation site, field electric centre, pump house, and tenant services building.
3. **Airside Development:** Areas protected for current and future leasehold development lots with access to the Airfield. The preferred uses for Airside Development lots include aircraft hangars, Fixed-Base Operators, aviation fuel storage and distribution, aircraft maintenance and completions, and other similar activities.
4. **Groundside Development:** The parcel immediately west of Skyway Drive is recommended for development for groundside commercial activities complementary to the Airport's current and proposed service offerings.

5. **Groundside System:** Lands that are used for groundside access roads, utilities, vehicle parking areas, and areas to protect for the potential future expansion of these facilities beyond the Master Plan Update horizon.
6. **Airport Reserve:** Lands that are not anticipated to be required for development or capital projects within the Master Plan Update horizon, but that should be held by the City in an undeveloped / reserved state to provide the land use flexibility required for potential future requirements.
7. **Land Acquisition:** Lands to be acquired for development during or beyond the 15-year planning horizon.

The acquisition of all or portions of the properties north of Runway 09-27 and south of Mervin Line is anticipated prior to the design and construction of the Taxiway B extension. A requirement for the acquisition of the properties north of Mervin Line east and west of Airport Road have not been identified in the 15-year planning horizon of the Master Plan Update, however, the highest and best use of these lands would be determined in subsequent master plans, depending on future activity levels, airport roles, etc.



9 BUSINESS DEVELOPMENT AND GROWTH STRATEGIES

Following the identification of business opportunities that have medium and high potential for success at Peterborough Airport within the 15-year timeframe of the Master Plan Update, strategies to pursue activity growth and decrease annual cost revenue gaps have been prepared.

Presented herein are recommended strategies to stimulate and grow passenger air services at Peterborough Airport, in addition to recommended steps to achieve further growth within Peterborough's general aviation and aerospace sectors. The results of extensive research, analysis, and stakeholder consultations identified these two opportunities as best suited for Peterborough Airport – aimed at further positioning the facility as an economic engine and point of departure for passenger air services in central Ontario. Commentary on the designation of Runway 09-27 as a Non-Instrument facility and recommendations for future analysis to improve airport availability are also discussed herein.

9.1 Airport Availability and Level of Service

It has been noted that the costs currently outweigh the benefits of upgrading the level of service associated with Runway 09-27 to Non-Precision from Non-Instrument. However, it is recommended that the City continue to monitor demand for an improved level of service as well as advancements in technologies and other changes within the short-term planning horizon of the Master Plan Update. If, for example, new Instrument Flight Procedure (IFP) design criteria are introduced and Transport Canada standards are revised, or if an Air Traffic Control Tower is commissioned, there may be opportunities to provide a Non-Precision level of service for Runway 09-27 at a lower cost than indicated in Section 7.2. The provision of an Air Traffic Control Tower or Flight Service Station at Peterborough Airport is at the discretion of the air navigation services provider, NAV CANADA, who would make such a decision based on internal business direction and results of further aeronautical studies.

Considering the above, it is recommended that an update be prepared to the airport availability and level of service analysis and studies be prepared in 2026 to identify any industry changes and resulting opportunities since this Master Plan Update was prepared.

9.2 Passenger Air Services

The pursuit of additional passenger air services at Peterborough Airport is one of the most important objectives identified within the short-term planning horizon of the Master Plan Update, especially within the passenger charter segment. Although in some cases, where carriers may decide to initiate a service on their own by approaching an airport, air service attraction efforts by the operator are commonly a crucial step. It is important to note that the strategies presented herein are unique to Peterborough Airport and consider the current state of the aviation industry, air carrier fleets and operational models, the defined catchment area, input from resident surveys, and other factors.

9.2.1 Air Service Development Methodology

A high-level air service development methodology has been prepared for implementation by the City and their aligned partners, with the Master Plan Update fulfilling most of the requirements of Step 1 – Identify. The methodology also assumes that airport infrastructure and operational requirements to support the passenger air service have been determined and confirmed.

1. **Identify** potential opportunities through industry research. This step is typically completed during the preparation of a Master Plan or Air Service Study that defines catchment areas, carrier opportunities, and leakage to other airports, as well as providing a high-level overview of the physical and operational requirements and steps to secure a new air service opportunity. Initial contact with senior personnel within the air carrier organizations also forms part of this step.
2. If a high potential opportunity is identified, **determine** the number of potential passengers between city pairs or types of markets (i.e., sun destination traffic, specific business travel segments) by obtaining detailed data on passenger demand and ticket purchase patterns within the Airport's catchment area. Data such as where tickets are purchased, how frequently, passenger points of origin, destinations, connection points, and layover locations are examples of the types of information that can be used to define a potential market and develop a business case to be presented to prospective air carriers. Contact with prospective carriers informing them of the process and future intentions is also recommended during this step.
3. Once potential markets and passenger volumes are determined, **develop** a Business Case for presentation to prospective carriers. The Business Case identifies the prospective destination, frequency, aircraft types, and passenger volume assumptions, and pro-forma financials are created. From this Business Case, rates and charges that would be applicable to the prospective operation are examined, and financial statements are created that account for revenues and expenses and function as a tool to evaluate the impact of potential incentives that can be given to carriers upon commencement of service.
4. Step four involves a formal presentation to the prospective air carrier(s) that outlines the process and findings of the Business Case. This step allows the Airport to present the benefits of the potential service, the Airport's capabilities, and to **engage** with the carrier to discuss technical infrastructure and operational requirements related to the prospective operation. At this stage, the carrier(s) will typically acknowledge the presentation and take away the Business Case for review and international evaluation.
5. If the presentation of the Business Case was well received, prospective air carriers may wish to **negotiate** on the terms of service with the Airport. Negotiation topics will vary, but typically include discussion on rates and fees (e.g., landing fees, ramp fees, fuel pricing, terminal lease rates), ground handling arrangements, provision of CBSA inspection services, and passenger parking rates. Timelines for service commencement and details are usually confirmed at this stage and air service marketing plans are initiated.
6. Following successful negotiations with prospective carrier(s), **announce** commencement of service in partnership with the carrier to promote the use of the new service. Available flight destinations, frequencies, and connection availabilities should be communicated to the target market within the catchment area.
7. **Commence** new air service, monitor progress, and adjust marketing efforts to best sustain market.

9.2.2 Passenger Charter Air Services

In addition to the boutique passenger charter air services currently provided at Peterborough Airport by BST Vacations, two significant charter passenger air service opportunities have been identified as part of the Master Plan Update – seasonal sun destination charters to Mexico and the Caribbean, and passenger charter services to Florida. It is recommended that the City retain a consultant in the immediate-term to further advance through the seven-step process identified in the previous subsection. Following the publication of the Master Plan Update, air service development efforts can continue with Step 2 – by identifying passenger volumes and markets through data collection. Cost estimates for air service marketing have been included within the pro-forma financials provided in Chapter 10.

9.2.3 Scheduled Passenger Air Services

The establishment of scheduled passenger air services at Peterborough Airport has also been identified as a high potential opportunity in the short-term planning horizon of the Master Plan Update, primarily within the ULCC market. Similar to the passenger charter air services strategy, following publication of the Master Plan Update and the substantial completion of Step 1 of the air service development process, it is recommended that air service development efforts be initiated as a separate assignment by the City through the use of an external consultant.

Additionally, the expansion of air passenger services through the attraction of ULCCs and regional carriers will allow for regional tourism organizations, including Peterborough & the Kawarthas Tourism, to engage in attracting visitors to Peterborough and the Kawarthas and create reciprocal travel experiences with other destinations.

9.3 General Aviation and Aerospace

Peterborough Airport supports a robust and healthy cluster of general aviation and aerospace organizations that provide important services within the domestic and international aviation industry. Flying Colors and Seneca College are examples of two major industry players that are situated in Peterborough, providing significant employment opportunities in the region. It is expected that as the aviation industry and Canadian economy emerge from the pandemic, organic business growth will continue at Peterborough Airport.

Significant research and marketing efforts have been completed by the City of Peterborough in recent years to define target business development opportunities appropriate for Peterborough, and how they should be pursued. Other opportunities were identified, including the potential attraction of larger-scale aerospace manufacturing organizations; however, other airport locations were selected, or corporations revised their strategies because of the pandemic. Furthermore, current challenges with water and sewer capacities necessary to support large-scale aviation commercial and industrial developments will hinder the ability to attract these types of employers to Peterborough Airport until water and sewer services are upgraded.

Notwithstanding the above, Peterborough Airport continues to have strong potential to support a wide range of general aviation and aerospace opportunities to continue building the Peterborough aerospace cluster within the 15-year time horizon of the Master Plan Update, including:

1. **Unleaded Aviation Fuel Support and Distribution:** Considering the high volume of flight training and leaded avgas consumed by aircraft at Peterborough Airport and current actions by the City to become more environmentally sustainable, the introduction and/or distribution of unleaded aviation gasoline at Peterborough Airport has been identified as a suitable opportunity in the short term. Although direct revenues may not be generated as a result of this opportunity, it demonstrates a commitment to the reduction of lead emissions at, and surrounding the Airport, and demonstrates forward-thinking in terms of environmental stewardship. Additional business opportunities may be attracted to the facility in the research, development, and aircraft engine manufacturing and testing sectors at Peterborough Airport because of future widespread use at the Airport. Collaboration with local tenants and service providers is recommended to determine storage and distribution requirements. As of the publication date of this Master Plan Update, unleaded aviation gasoline is not available for use in Ontario.

2. **Electric Aircraft Support:** Aligning with the City of Peterborough's proactive approach to implementing projects that will reduce greenhouse gas emissions, there are opportunities to support electric aircraft that are currently being certified for use in Canada. Battery technologies currently limit the size of aircraft that can be powered by an electric motor; however, smaller single engine aircraft used for flight training and recreational purposes are expected to be the first categories of aircraft to be widely operated. It is recommended that the City of Peterborough initiate discussions with Seneca College to determine the feasibility of a pilot program whereby electric aircraft can be used for flight training at Peterborough Airport. Although not all flight training missions could be operated with an electric aircraft at the outset of the technological roll-out, they could be suitable for use in circuit training activities and reduce noise exposure to residents within the surrounding townships. The pilot program could include the purchase of one or more electric training aircraft by Seneca College, and the provision of charging infrastructure by the City.
3. **Aerospace Research and Development:** Consultations with educational institutions and aerospace manufacturers identified a potential need for additional space at Peterborough Airport to support research and development activities, both within the aviation and fringe aviation sectors (those that do not require facilities on-airport but are within aerospace-related industries). This provides the City with an opportunity to provide space for research and development activities, potentially within a shared-use office/warehouse space environment, or within a hangar that could be used for future aircraft storage. Aerospace manufacturers developing hybrid, electric, and vertical take-off and landing (VTOL) aircraft should be engaged to determine support options for full-scale prototype flight testing. Further discussion with Fleming College, Trent University, and based organizations such as Ultra and Horizon Aircraft is recommended to continue or be initiated as part of the City's ongoing marketing efforts. Marketing and business development activities through PKED could also assist in identifying and attracting aerospace and aerospace fringe research and development activities to Peterborough Airport.
4. **Aerospace Education:** Beyond the educational services provided by Seneca College through their Bachelor of Aviation Technology program, Loomex Group's Professional Learning offerings, and the partnership between Flying Colours and Fleming College for aviation interior installations, it is recommended that the City continue to support educational programs and partnerships at Peterborough Airport. The City and PKED should continue to market the Airport and the presence of valued and respected educational institutions and aviation industry leaders present at the Airport as a centre for aerospace education. Partnerships like those recently announced between Horizon Aircraft, Fleming College, and Toronto's Ontario Tech University for a three-year research project on Horizon's Electric VTOL aircraft should be fostered at Peterborough, whenever possible.
5. **Recreational General Aviation:** Recreational general aviation activities at Peterborough Airport are anticipated to continue to grow organically, similar to historic trends. Direct marketing is not recommended to attract recreational general aviation growth – marketing efforts are recommended to be focussed on other opportunities throughout the 15-year time horizon of the Master Plan Update.
6. **Small Air Charters:** Stakeholder consultations have identified the requirement for small air charter services for hire by the general public at Peterborough Airport. This service was once provided by President Air Charter; however, the aircraft that was being used to support this service was sold and is no longer available for hire. To attract a small air charter operator to Peterborough Airport in the short term, the City could consider advertising an opportunity for a charter service to serve Peterborough Airport, with potential financial incentives in the short-term such as lease rate reductions and fuel discounts. In addition, the development of a future FBO may assist in creating new opportunities for small air charters.

7. **Aircraft Maintenance:** As recreational general aviation activities increase at Peterborough Airport, demand may also increase to substantiate the growth of Aircraft Maintenance Organization (AMO) activities at Peterborough Airport. Suitable land parcels have been included within the Airport Development Plan to support the development and operation of an AMO, within the current general aviation development area supported by Apron III, and within the development lots adjacent to Apron I. The City is encouraged to support the development of additional AMO facilities at the Airport throughout the 15-year timeframe of the Master Plan Update.
8. **Aerospace Manufacturing and MRO Facilities:** Like recommendations made within the 2017 Strategic Plan, and within the 2010 and 2015 Marketing Plans and Studies, Peterborough Airport should continue to provide accommodations for future MRO and aerospace manufacturing facilities within the 15-year time horizon of the Master Plan Update. These types of facilities support many skilled jobs and generate significant economic benefits; however, upgrades to water and sewer servicing at the Airport as well as the requirement for upwards of 350,000 m³ of fill currently limit the potential of this opportunity, especially in the short-term, and should be addressed before significant investment is made in marketing development lands at the Airport to support this type of activity.
9. **Fixed Base Operator:** The establishment of a larger-scale Fixed Base Operator (FBO) facility at Peterborough Airport has been contemplated for many years. Stewart Aviation currently provides FBO services at Peterborough Airport; however, stakeholder consultations identified a demand for short and long-term hangar space for rent at the Airport to serve corporate aircraft. The development by private investors of a new FBO facility with an accompanying hangar to store corporate aircraft such as the CL-600 Challenger is an opportunity identified by the project team, and a potential development site and layout has been presented within the Core Area Development Plan shown in Figure 8.3. Although it is assumed that this type of development will be funded by private investment, it is recommended that the City support this type of development by providing required infrastructure connections such as water, sewer, and roads.
10. **Flight Training Growth:** The demand for pilots continues to rise as the desire to travel increases, especially post-pandemic. The introduction of a third Flight Training Unit at Peterborough Airport has potential in the short to medium term, especially as the City of Oshawa continues their efforts to further restrict flight training activities at the nearby Oshawa Executive Airport to mitigate community aircraft noise concerns. However, the introduction of another large-scale flight training organization like the size of Seneca College could present runway capacity challenges and will likely result in increased volumes of noise complaints from nearby residents of Peterborough Airport. A small to medium-scale flight training organization would be better suited for Peterborough Airport within the timelines of the Master Plan Update to mitigate the potential of runway capacity and noise exposure issues.

It is important to note that PKED has actively marketed the Peterborough Airport and their continued involvement is recommended in terms of attracting additional business to the Airport within the MRO and aerospace manufacturing, research and development, and aerospace education sectors throughout the 15-year time horizon of the Master Plan Update.

9.4 Summary

A summary of the business development opportunities identified within the Master Plan Update is provided in Table 9.1. Passenger air service development strategies and related assumptions are shown for the short, medium, and long-term planning horizons. General aviation and aerospace-related opportunities are listed based on potential opportunities identified during research and consultations and should be considered until the next Master Plan is developed for Peterborough, with the ranked opportunities recommended for advancement in the short-term.

Table 9.1 – Business Development Opportunity Summary

	Short-Term (1-5 Years)	Medium-Term (6-10 Years)	Long-Term (11-15 Years)
Passenger Air Services			
<i>ULCC B737 MAX 8/B737-800</i>	1 Per Week Service to Calgary - YYC (2026)	2 Per Week Service to YYC (2029)	3 Per Week Service, Two Destinations (2034)
<i>Boutique Charters B737-700</i>	11 Per Year to Select Destinations (2023)	16 Per Year to Select Destinations (2028)	
<i>Caribbean/Mexico B737-800</i>	1 Per Week Service - 16 Weeks Charters to Caribbean and Mexico (2026)		2 Per Week Service (32 Week Charters (2036)
<i>Southern U.S. Charters (Florida) B737 MAX 8/B737-800</i>		1 Per Week Service – 16 Week Charters to Florida (2029)	
<i>Scheduled Regional Services King Air 100</i>		1x Daily (Mon-Fri) 9 Seats (2029)	2x Daily (Mon-Fri) 9 Seats (2036)
General Aviation and Aerospace			
<ul style="list-style-type: none"> - Unleaded Aviation Gasoline Support and Distribution <ul style="list-style-type: none"> - Electric Aircraft Support - Aerospace Research and Development <ul style="list-style-type: none"> - Aerospace Education - Recreational General Aviation - Small Air Charters/Corporate Aviation <ul style="list-style-type: none"> - Aircraft Maintenance - Aerospace Manufacturing and MRO Facilities <ul style="list-style-type: none"> - Fixed Base Operator - Flight Training Growth - Organic Growth – Existing Businesses 			



Flying Colours Corporation Aircraft Completion Operations

9.5 Business Development Supporting Initiatives

In addition to the specific strategies identified in previous sections, the project team has identified five business development supporting initiatives for the continued marketing of business development and passenger travel opportunities at Peterborough Airport:

1. **Website:** The continued use of the Peterborough Airport website is recommended to convey information related to the Airport on an ongoing basis throughout the time horizons of the Master Plan Update. The website currently contains information such as airport services, hours of operation, rates and fees, development opportunities, and other pertinent items for prospective tenants and operators. Integration of website content into a marketing strategy is recommended in addition to regular and review and update of the website.
2. **Social Media:** Peterborough Airport hosts social media pages, including Twitter and Facebook, which provide general information about the Airport, contact information, photos, videos, and advertisements for the airshows and other events. Although social media is considered a lower priority business development initiative, it is recommended that the Airport social media pages be updated by the City on a frequent basis, and more frequent posts be created. Content should be generated on a frequent basis (at least monthly), sharing information about recent studies, future opportunities, community partnerships, events, and other information to generate higher levels of community awareness. If charter passenger air services are secured with a carrier as anticipated within the Master Plan Update, social media platforms could prove to be useful in generating demand for ticket purchases.
3. **Cross Promotion:** Continued promotion of the Airport within the City's economic development materials and through marketing efforts in collaboration with PKED is recommended throughout the time horizons of the Master Plan Update. Marketing materials can be prepared as part of air service and marketing budgets identified within the pro-forma financial statements as part of air service development efforts once the feasibility of a new passenger processing facility is determined, and for MRO, aviation education, and research and development opportunities once required servicing capacity upgrades are made at the Airport.
4. **Events:** Peterborough Airport has historically hosted a wide range of industry and community events, including hosting the 2013 Airport Management Council of Ontario annual general meeting, the 2019 Airshow and 100th Anniversary Celebration, and 6 Peterborough Aerospace Summits. These events create awareness of the Airport within the community and within the industry and the City is encouraged to host these events as a promotional tool within the time horizons of the Master Plan Update. Announcements regarding external funding support from higher levels of government and the securing of passenger air services are also opportunities to host events and it is recommended that the City continue to engage with the media during these occasions.
5. **Leadership:** Considering the opportunities identified for the support and distribution of unleaded aviation gasoline supporting testing and operation of hybrid electric and electric aircraft at Peterborough Airport in the short term, the City has an opportunity to be seen as an industry leader in terms of making positive efforts to reduce greenhouse gas and lead emission levels as part of their Corporate Climate Change Action Plan. Leadership in these areas presents a positive image within the community and within the aviation industry and has to potential to attract additional ancillary business to the Airport, especially if a cluster of activity can be generated around these two initiatives.

The five strategies identified herein could be initiated separately or incorporated within a strategic marketing and community awareness campaign. Passenger travel opportunities should be advertised to the defined catchment area, and business development opportunities within the broader aviation and community economic development forums by both the City and PKED.

9.6 Environmental Management Strategy

Management of the environmental impacts related to ongoing airport operations and capital infrastructure improvement comes in several forms, and Peterborough Airport has several policies, procedures, and lines of communication with local, provincial, and federal authorities concerning environmental management, planning, and impact mitigation.

9.6.1 Ongoing Airport Operations

Airport operational activities have environmental impacts, from chemicals used as runway and aircraft anti-icing and de-icing agents, to greenhouse gas and lead emissions generated by aircraft operations. Strategies to mitigate impacts related to runway and aircraft de-icing activities are discussed herein, and the unleaded aviation gasoline and hybrid and electric aircraft support business can also be considered as environmental management strategies contained within the Master Plan Update.

Runway De-icing and Anti-icing Products

Runway de-icing agents are typically applied when snow, ice and other freezing contaminants are present on the runway surface. Anti-icing agents are used to prevent the accumulation of frozen contaminants on runway surfaces.

Sodium formate and urea are both used on occasion for pavement surface de-icing and anti-icing at Peterborough Airport. Sodium formate is popular de-icer used at airports that comes in granular form. Urea is a similar product used for anti-icing and de-icing applications; however, this product contains high levels of nitrogen, and its use is slowly being phased out as it is known to be harmful to nearby watercourses and associated plant life. Other products such as potassium formate are becoming more widely used at airports, especially in the U.S. as it breaks down more readily after use, reducing overall environmental impacts.

The City of Peterborough, through a contractor, monitors water qualities within the drainage courses and streams leading to the Otonabee River and Cavan Creek on a regular basis to determine if levels are high enough to initiate mitigation or changes in processes and procedures. Test results to-date have indicated that impacts to water levels because of ongoing airport operations are minimal.

It is recommended that the City of Peterborough continue to monitor water quality levels for impacts related to pavement de-icing and anti-icing activities. If significant impacts on the environment are identified, such as high nitrogen levels, the City should revisit their options for chemical use at Peterborough Airport.

Aircraft De-Icing and Anti-Icing

Aircraft de-icing and anti-icing services are provided by Stewart Aviation and other private operators at Peterborough Airport. Although a glycol storage tank and supporting sluice gate were installed at the intersection of Aprons I and II during the 2010 Airport Expansion Program, the amount of Type I and Type IV fluids dispensed at the Airport did not warrant the use of this system. Instead, aircraft de-icing and anti-icing activities are performed on Apron II on an as required basis. Similar to testing for environmental impacts related to pavement anti-icing and de-icing, water quality tests performed by the City and the contracted operator indicated impacts from aircraft de-icing and anti-icing activities were negligible.

It is recommended that aircraft de-icing and anti-icing activities continue as per status-quo operations, until such a time when scheduled or charter passenger air services become operational during the winter months, or if the number of de-icing events increases significantly. At this time, the City could consider consolidating major de-icing operations to Apron II and using the shut-off valve and the glycol collection tank system to collect the expended fluids.

Tree Clearing and Obstacle Mitigation

Tree clearing and trimming related to the preservation of the integrity of the OLS is necessary to maintain levels of safety and is an ongoing activity performed at the Airport. It is recommended that future tree clearing efforts continue outside of the migratory bird nesting period established by the Government of Canada's Environment and Climate Change department.

Airport Noise Management

The management of aircraft noise associated with operations at Peterborough Airport is a complex issue, as the City is faced with the challenge of balancing the needs of the local community with operating an airport that benefits its catchment area economically and socially.

Peterborough Airport introduced noise abatement procedures within the Canada Flight Supplement (CFS) requiring that aircraft operating under Visual Flight Rules do not turn on departure until reaching 1,000 ft. Above Aerodrome Elevation (AAE) and requesting that aircraft avoid overflights of identified noise sensitive areas. The City and Airport Management are in the process of reviewing the effectiveness of the noise abatement procedure (NAP) and exploring alternative options. The City of Peterborough has also prepared Noise Exposure Forecasts, most recently in 2017 to aid in land use planning activities surrounding the Airport and has extensive information regarding airport noise management on the Airport's website – including online compliant forms, frequently asked questions, and other information. The noise Exposure Forecasts are considered relevant to current traffic levels at the airport.

It is recommended that the City of Peterborough continue with their current approach to noise management at the Airport throughout the time horizons of the Master Plan Update. The flight frequencies and timing related to the passenger air service development opportunities are not anticipated to have a significant impact on aircraft noise complaints, as most residents are concerned with continuous circuit traffic related to flight training activities.

9.6.2 Capital Infrastructure and Rehabilitation Projects

The proper execution of capital infrastructure and rehabilitation projects requires detailed assessment of the environmental impacts associated with the undertaking, including the identification of species at risk, sensitive ecological features, and the development of mitigation strategies if it is determined that the project will result in negative environmental impacts. Peterborough Airport has historically identified environmentally sensitive flora and fauna that impact capital infrastructure expansion projects and developed and executed mitigation strategies. The relocation of thousands of frogs and the realignment of Cavan Creek to support the runway extension are two examples of strategies that have been used to mitigate project-related environmental impacts at the site.

Project approvals related to environmental impact assessments and impact mitigation strategies are currently planned for the Taxiway Bravo extension, and for infill activities required to support airside industrial lot preparations in the East Development Area. Approval requirements and jurisdictions vary depending on the project; however, the presence of provincially significant wetlands, locally significant wetlands, and potential areas of interest as shown within Figure 8.1 requires careful planning and consideration.

Project approval authorities applicable to Peterborough Airport include but are not limited to: the Department of Fisheries and Oceans, the Ministry of Mines, Ministry of Northern Development, and Ministry of Natural Resources and Forestry, Environment and Climate Change Canada, and collaboration with Otonabee Region Conservation Authority.

A portion of the Airport is located on a previous a waste disposal site that was established prior to 1970. The extents of all contaminants on the Airport property are unknown; however, the City has established ground and surface water monitoring programs. Mitigation and remediation efforts are ongoing, planned, and included within the City's long-term budget planning, while garbage removal will be the requirement of specific projects, if encountered. It is recommended that the City continue to exercise environmental stewardship and responsibility when planning and executing future rehabilitation projects. If a capital expansion project is expected to have negative environmental impacts that require compensation, such as the extension of Taxiway Bravo through a designated provincially significant wetland, the City could consider compensation strategies such as shoreline rehabilitation on the properties recently purchased on the east side of the Otonabee River.

10 FINANCIAL OUTLOOK AND STRATEGY

The intent of the financial outlook and strategy is to provide a financial planning tool for Peterborough Airport to appropriately budget for costs and revenues within the Master Plan Update time horizons.

10.1 15-Year Capital Plan

The 15-year Capital Plan, summarized in Table 10.1 and provided in detail within the pro-forma financial analysis shown in Appendix A, has been prepared to assist the City in its annual and long-term budgeting processes. The Capital Plan establishes costs associated with six types of projects:

1. Rehabilitation, preservation, and reconstruction of existing infrastructure;
2. Servicing costs;
3. Land acquisition costs;
4. Passenger processing facility and related access road and parking costs;
5. Infrastructure expansion costs for the enablement of land development; and
6. Plans and studies to support effective business growth and administration

Class 'C' capital cost estimates have been prepared for each project using local construction unit rates, information from historical capital projects within the City, and the experience of the project team in delivering similar projects at comparable airports.

Given the 15-year horizon of the Capital Plan and the numerous factors that can influence project costs (e.g., construction costs, labour availability, inflation rates), cost estimates should be confirmed prior to capital budget requests submitted to the City. Improved cost estimates will be informed through preliminary and detailed engineering design processes initiated for each project, if required. The estimates prepared for each project are subject to the following assumptions:

- Projects are costed in 2022 Canadian Dollars, with inflation of 2% annually estimated for projects not already approved, or those within the approval process within the City;
- All cost estimates assume that competitive procurement processes will be initiated to maximize the value to the City; and
- Implementation years may shift depending on asset degradation over time and/or emerging higher priorities.

The Capital Plan identifies \$80M in investments within the 15-year timeframe of the Master Plan Update; however, it also demonstrates that minimal investment is required in the short-term to support higher volume passenger air services – an opportunity that has the highest revenue generation potential at Peterborough Airport within the 15-year horizon of the Master Plan Update. Approximately \$50M in capital spending has been identified for the short term, with \$22M required for water and sewer improvements. \$21M in capital expenditures is also identified within the first five years of the Master Plan Update, with \$12M related to lot preparations in the east development area.

Over the three planning terms of the Master Plan Update \$21.9M (27.0%) is allocated to infrastructure rehabilitation and reconstruction, \$22.0M (27.2%) is allocated to servicing improvements, \$4.8M (5.9%) is allocated to land acquisitions, \$2.8M (3.5%) is allocated to passenger processing facility development, \$28.4M (35.1%) is allocated to infrastructure expansion, and \$965,000 (1.2%) is allocated to airport plans and studies.

It is important to note that the implementation year of each project identified within the Capital Plan can be adjusted at the discretion of the City to maximize business development opportunities.

Table 10.1 – Capital Plan Summary Table

Category	Short-Term	Medium-Term	Long-Term
	2023-2027	2028-2032	2033-2037
Infrastructure Rehabilitation and Reconstruction	\$790,000	\$9,251,000	\$11,842,000
Servicing Improvements*	\$21,890,000	\$147,000	\$0
Land Acquisitions	\$3,200,000	\$1,000,000	\$600,000
Passenger Processing Facility Development**	\$2,847,333	\$0	\$0
Infrastructure Expansion	\$21,163,000	\$4,404,000	\$2,857,000
Airport Plans and Studies***	\$965,000	\$0	\$0
Total – Per Planning Horizon	\$50,805,333	\$14,802,000	\$15,299,000
Total – All Planning Horizons			\$80,956,333
Notes All costs in the summary table are in 2022 Canadian Dollars and have been adjusted for inflation in the respective implementation years, where appropriate. *Servicing improvements are identified within the current budget. **Passenger processing facility costs assume 33% investment by the City through a public-private partnership arrangement. ***A \$500,000 budget is included to complete the federal zoning process.			

10.2 Pro-Forma Financial Analysis

Pro-forma financials have been prepared for the Master Plan Update time horizons, as presented in Appendix A. Based on the forecasts prepared through this Master Plan Update, several factors could impact the financial forecasts and success of future revenue generation initiatives. These factors include, but are not limited to, the actual rate of Airport traffic growth and development lot absorption rates. Historical and immediate-term planned revenues and expenses were determined based on a review of the City of Peterborough's financial reporting system and projected forward within the 15-year timeframe of the Master Plan Update, as appropriate.

10.2.1 Model Assumptions

Several general assumptions have been made in support of the pro-forma financial analysis, in addition to those described for the Capital Plan. Each of the relevant assumptions are discussed herein:

- Historical revenues and expenses provided by the City have been grouped to provide simplicity within the pro-forma financial statements:
 - Salaries, wages, and benefits include full-time salaries and wages, contract wages, statutory holiday pay, employee benefits, and accrued payroll costs;
 - Utilities and expenses include electricity, heat, water, telephone, cellular phone, and cabling and data comms;
 - Office supplies and operations includes software maintenance, shredding costs, postage, photocopies, office supplies, operating supplies, courier services, and paper supplies;
 - Repairs and maintenance include equipment, buildings, and preventative maintenance; and

- Miscellaneous expenses are as noted in the financial information provided by the City, in addition to non-contract services, shipping, moving expenses, business travel, and memberships and subscriptions.
- Revenues and expenses for the short and medium-term have been developed on an annual basis. Revenues and expenditures for the long-term have been banded within a five-year period.
- Inflation has been estimated at 2% throughout the study planning horizons. Future revenues and expenses assume this inflation rate, except for capital projects already approved within the City's budget where actual budgeted values are included.

10.2.2 Operating Revenue Assumptions

Assumptions specific to future operating revenues projected within the Master Plan Update time horizons are as follows:

- Development review fees and property taxes have been excluded from the analysis – property taxes are paid by the City to the Township and are collected from each of the leaseholders at Peterborough Airport.
- It is assumed that the restaurant lease will become active in 2023.
- Existing lease, advertising, miscellaneous revenues, aviation fuel concessions, airport landing fees, airport tie down fees, and local improvements are assumed to remain the same, with inflation applied throughout the forecast period. New revenue streams and related values are forecast separately.
- Charter revenues and parking permits are not shown beyond 2022; however, these revenues are captured in future new revenues related to passenger activity. If desired, investments in long-term parking could be implemented earlier than identified in the Master Plan Update to introduce additional airport revenues.
- Projected fuel concession revenues assume that 50% of all air carrier departures will purchase 17,000 L of fuel (2/3 capacity for a Boeing 737-800) for all passenger charter operations. It is also assumed that 20% of regional air service movements will purchase 500 L of fuel when the service is projected to commence in 2029. The concession fee of \$0.05/L has been applied for the entire forecast period.
- Landing fees related to passenger air charter operations assume \$624 per landing for a Boeing 737-800 (79,000 kg) based on the 2022 Airport rates and fees published by the City. Landing fees levied against regional scheduled service flights assume the operation of a BE10 (5,200 kg) at a rate of \$33 per landing. Inflation of 2% is applied to both categories of landing fees per annum, throughout the forecast period.
- A \$7.35 passenger fee has been assumed for departing passengers related to boutique charter operations. When a new passenger processing facility is commissioned, passenger fees are assumed to increase to \$20 for each departing passenger, starting in 2026.
- New lease revenues have been determined based on a rate of \$3.43 per square metre, plus 2% annual inflation.
- Local improvements are defined as payments made by airport tenants as per servicing agreements.

- A vehicle parking fee of \$12/day has been assumed with revenues resulting from the continued and future operation of boutique, sun destinations and southern U.S. charters, as well as ULCC and regional scheduled services, starting in 2026. It has been assumed that 50% of departing charter passengers will incur vehicle parking charges for 6 days. 33% of regional scheduled service passengers are assumed to stay for 1.5 days.
- Transfers from the Airport's pavement reserve fund are shown, with a \$500,000 transfer assumed in 2030 to support capital rehabilitations.
- It is assumed that aircraft operating scheduled charter and regional scheduled passenger air services will not overnight at Peterborough Airport and will not be charged apron parking fees. If aircraft require an overnight stay, it is assumed that apron parking fees will be waived as an incentive to initiate passenger services.
- Historical and future additional insurance coverage is shown to support passenger services, with an assumed increase in premiums by 50% in 2026 when ULCC passenger operations are anticipated to commence.

10.2.3 Operating and Capital Expense Assumptions

Assumptions specific to future operating and capital expenses projected within the Master Plan Update time horizons are as follows:

- Previous capital expenditures being paid using debenture through airport operating revenues.
- Salaries, wages and benefits, utilities, base insurance, office supplies and operations, repairs and maintenance, miscellaneous expenses, contractual services, consulting and professional fees, advertising and marketing, airport noise monitoring, and financial institution charges are projected to remain the same as in 2022, with 2% annual inflation applied. Potential increases to operational expenses due to expanded infrastructure have not been included.
- A staff training allowance of \$2,500 has been assumed starting in 2022, growing with inflation.
- Transfers to the Airport pavement rehabilitation accounts are assumed at approximately \$50,000 per annum, growing at the assumed rate of inflation throughout the study planning horizons.
- Debt repayments for previous airport developments related to the 2010 airport expansion, airside improvements support Seneca College, and the general aviation area expansion are included and are based on the repayment schedule provided by the City.
- Costs related to CBSA inspections for the future Passenger Processing Facility have been estimated based on FTE employment position percentages, estimated salaries, and flight frequencies for passenger charter flights to the Caribbean, Mexico, and the southern U.S. (Florida). CBSA costs have been estimated at \$20,000 per annum based on a 0.15 FTE starting in 2023 until 2029 when they are expected to increase to \$40,000 based on a 0.5 FTE position.
- Future Passenger Processing Facility operating costs assume a \$5 per departing passenger rebate to a future facility operator;
- Costs associated with fire protection and aircraft emergency response services have not been included within the future operating costs, as it is assumed that a future governance study will examine options for aircraft emergency response services.
- Commercial and general aviation lot preparations are included as an assumed allowance fund capital expansion projects established at \$225,000 from 2023 to 2026, increasing to \$100,000 per annum extending to the end of the Master Plan Update time horizon.

10.2.4 Model Summary Results

- The financial forecast demonstrates that the identified business development opportunities are expected to have a positive impact on the long-term financial stability of the Airport. Although significant capital investment will be required to support identified capital expansion projects, the pro-forma financial analysis demonstrates that a modest volume of passenger activity can have a significant impact on revenues. For example, revenues are forecast to increase by more than 175% between 2025 and 2026 because of the commencement of ULCC and sun destination passenger charter air services.
- The Airport is currently experiencing an operating deficit of approximately \$3M per annum due to the cost of debt servicing for previous capital projects. This operating deficit is projected to decrease and become a surplus in 2029 because of increased revenues related to passenger activity related to ULCC and sun destination charter activities. Operating surpluses are projected to range between \$800,000 in 2029 to almost \$2M in 2037 at the end of the long-term planning horizon.
- Airport servicing costs related to the airport pumphouse generator replacement, water and sewer upgrades, fire regulation requirements and water pumping station upgrades account for a significant proportion of capital funding requirements in the short term, estimated at almost \$22M between 2023 and 2027.
- According to the pro-forma financial analysis, the Airport is projected to close the cost-revenue gap in 2032 when considering all operational and capital expenses; however, additional capital rehabilitation and expansion requirements in the long-term result in anticipated cost-revenue gap fluctuations into negative values, except for 2035 and 2037 when approximately \$1.2M is projected to be realized.
- Potential increases in operations expenditures associated with the maintenance (i.e., snow clearing, crack sealing, etc.) of new or expanded infrastructure were not included in the model. This value may vary widely depending on the contractual agreement in place with the airport operator when infrastructure expansion projects are completed.

10.3 Potential Funding Sources

It is recognized that given the significant capital costs associated with the implementation of the Master Plan Update, securing financial support from the provincial and federal levels of government will be of high importance to the City. The City has historically experienced considerable success in securing financial support from both upper levels of government, with examples including:

- 2009 - \$14.0M in provincial and federal funding was announced through the Infrastructure Stimulus Fund; and
- 2015 – \$1.0M in provincial support was leveraged through the Eastern Ontario Development Fund to support a \$4.2M industrial growth project at the Airport.

A preliminary review of grant funding programs available to support Airport-related initiatives as of 2022 has been completed. It is expected that additional temporary and permanent programs will be announced over the various planning horizons of the Master Plan Update; accordingly, continual monitoring and applications to emergent programs will be imperative to the City's success.

- **Eastern Ontario Development Fund:** Administered by the Government of Ontario to fund projects that assist in job creation, private-sector investment attraction, business growth, and innovation / cluster development. Municipally-led community economic development projects exceeding \$100,000 with direct outcomes in private-sector investment, growth, and job creation are eligible for funding under this program, with up to 50% of eligible project costs to be funded for a maximum grant of \$1.5M. Application intake periods occurred four times per year.
- **Community Economic Development and Diversification:** This program is administered by FedDev Ontario to support innovation and growth-supportive projects. Non-repayable support is provided for up to 50% of project costs to a maximum of between \$250,000 and \$5.0M per project for not-for-profit organizations. Community Economic Development and Diversification stream funding may be used to support the aviation and aerospace cluster of businesses at the Airport through the creation of business attraction, growth, and retention programs; the development of business-supportive incubators; and the establishment of an investment fund.
- **Regional Innovation Ecosystem:** FedDev Ontario administers the Regional Innovation Ecosystem program to provide support to municipalities that contribute to an entrepreneurial environment conducive to business innovation and growth. Similar to the Community Economic Development and Diversification program, funding through the Regional innovation Ecosystem program could be used to support Peterborough's aviation and aerospace cluster.
- **Canada Community Building Fund:** The Canada Community-Building Fund is a federal program that provides ongoing funding to municipalities across 19 project categories, including local and regional airports. In 2023, the City is scheduled to be allocated \$5.4M in funding.

The Airports Capital Assistance Program (ACAP) was created in 1995 and is administered by Transport Canada with the objective of funding projects at regional airports that contribute to safety, protect infrastructure assets, and reduce operating costs. Up to \$38M is allocated on an annual basis nationwide, with this total being unchanged since 2000, aside from a temporary program budget increase to \$93M in 2021-2022 and an additional \$93M in 2022-2023 to stimulate the industry as it emerged from the COVID-19 pandemic.

ACAP-eligible airports are those that:

- Are not owned or operated by the Government of Canada;
- Are certified; and
- Support year-round scheduled commercial passenger services with a minimum of 1,000 annual passengers and a maximum of 525,000 annual passengers.

The proportion of project costs that are funded through ACAP decreases with higher passenger volumes. For example, projects airports with between 1,000 and 49,999 annual enplaned / deplaned passengers are eligible for 100% funding, while facilities that serve between 500,000 and 524,999 passengers are eligible for 5% funding. Projects eligible under ACAP follow a three-part prioritization:

- Projects to rehabilitate airside facilities or buy equipment for aircraft rescue and firefighting. Examples include runway and taxiway rehabilitation projects, visual aid and lighting replacements, and the acquisition of firefighting equipment;
- Mobile equipment acquisition projects, such as snow blowers, plows, and tractors; and
- Terminal building safety improvement projects, such as sprinkler upgrades and asbestos removal.

With few exceptions, ACAP is limited to the rehabilitation or replacement of existing assets, as opposed to the development of new facilities, and is confined to infrastructure that is directly associated with air carrier operations. A review of the infrastructure projects recommended in the Master Plan Update against ACAP criteria indicate that the rehabilitation or reconstruction of Runway 09-27, Apron II, and associated taxiways would be eligible as well as airfield lighting improvements and the construction of a sand storage shed. Conversely, a taxiway serving a general aviation hangar row would be ineligible for funding through ACAP. Based on ACAP eligibility criteria and forecast passenger movements, between 15% and 20% of the total value of all recommended capital projects could be eligible for ACAP funding if scheduled passenger services are attracted.

10.3.1 Summary

Peterborough Airport is currently eligible for funding through four existing programs: the Eastern Ontario Development Fund, Community Economic Development and Diversification, Regional Innovation Ecosystem, and Canada Community Building Fund. It is recommended that the City continue to monitor the actions of government and announcements related to new funding programs or program changes to capitalize on any opportunities to financially support airport infrastructure improvements throughout the time horizon of the Master Plan Update.

11 MASTER PLAN IMPLEMENTATION

It is recognized that the Master Plan Update is being completed at a unique time in history – new air carriers are emerging in Canada’s domestic air service market, pent up travel demand post-pandemic is being experienced resulting in an increase in demand for air travel, and new technologies are emerging in the industry that, if embraced, could position Peterborough as an industry leader in greener aviation technologies.

The recommendations advanced through the Master Plan Update are based on information available as of June 2022, including materials identified through background research and the key findings of the stakeholder engagement program. All reasonable efforts have been taken to maximize the accuracy and validity of the recommendations proposed herein. However, factors both within and external to the City’s control will influence the Airport throughout the short, medium, and long-term planning horizons. The Master Plan Update should be reviewed and updated regularly on a 5 to 10-year cycle to integrate and account for changing conditions over time.

As with all municipal plans and strategies, implementation of a Master Plan becomes the priority upon completion. The Master Plan Update is available for use by City Staff, City Council, and the Airport Strategic Initiatives Committee to guide decision making pertaining to the facility and advance its priorities in a systematic manner. It is recommended that the Master Plan Update be reviewed on an annual basis to establish action plans and budget requests, which can then be implemented in the following 12-month period.

The Implementation Strategy presented in Table 11.1 outlines the key initiatives and recommendations of the Master Plan Update within specified categories – Airside, Groundside, and Air Terminal, and Other. Recommendations for each of the categories are identified within their respective short, medium, and long-term planning horizons, and the anticipated year of project execution is shown.

Table 11.1 – Recommended Implementation Strategy

	Short-Term (1-5 Years)	Medium-Term (6-10 Years)	Long-Term (11-15 Years)
Airside	<ul style="list-style-type: none"> • LED Edge Lighting and Internal Roadway Lighting Upgrades (2023) • Core Development – Apron III Aircraft Holding Bay (2023) • Taxiway B Environmental Assessment (2024) • Taxiway B Design (2025) • Taxiway B Extension (2026) • General Aviation Area Lot Preparation (Ongoing) 	<ul style="list-style-type: none"> • South Development - Construct 3 x AGN I Taxiways (2028) • General Aviation Area Lot Preparation (Ongoing) • Core Development – FBO Facility Reserve (2030) • Rehabilitate Runway 09-27 (2030) • Rehabilitate Taxiway A (2030) • Rehabilitate Runway 13-31 (2031) • Rehabilitate Taxiway G (2032) • Rehabilitate Taxiway C (2032) 	<ul style="list-style-type: none"> • East Development - Taxiway I Extension (2033) • Rehabilitate Taxiway B (2034) • Rehabilitate Taxiway D (2034) • Rehabilitate Taxiway H (2034) • Rehabilitate Taxiway E (2034) • Rehabilitate Apron III (2035) • Rehabilitate Apron I (2036) • Rehabilitate Apron II (2036) • Rehabilitate Taxiway F (2037) • General Aviation Area Lot Preparation (Ongoing)
Groundside	<ul style="list-style-type: none"> • Core Development – Apron III Access Road Construction (2023) • Emergency Access Road Development (2023) • Airport Pumphouse Generator Replacement (2023) • Water and Sewer – Design (2023) • Water and Sanitary Servicing Upgrades to Airport (2024) • Install Electric Vehicle Charging Stations (2024) • Airport Fire Regulation Requirements (2025) • Construct New Access Road and Parking Areas – Passenger Processing Facility (2025) • Procure Parking Lot Payment System (2025) • Core Development – Construct New Access Roads – Passenger Processing Facility (2025) • Core Development – Apron III Groundside Development Lot Preparation (2025) • Water Pumping Station Upgrades – Based on demand (2026) 	<ul style="list-style-type: none"> • South Development – Prepare General Aviation Lots for Hangar Development (2028) • South Development – Construct Access Road and Parking (2028) • South Development – Prepare Lots for T-Hangars (2031) 	<ul style="list-style-type: none"> • Core Development – Operations Centre Expansion (2036)

	Short-Term (1-5 Years)	Medium-Term (6-10 Years)	Long-Term (11-15 Years)
Air Terminal and Other	<ul style="list-style-type: none"> • Passenger Processing Facility Feasibility Study (2023) • Introduction of Unleaded Avgas (2023) • Airport Governance Study (2023) • Air Service Marketing (2023) • Airport Easements and Property Acquisition (2023-2025) • Core Development – Passenger Processing Facility Design or Design-Build P3 (2024) • Core Development – Sand Storage Shed (2025) • Federal Zoning Process (2023-2025) • Re-evaluation of Non-Precision Study (2026) • East Development Area Preparation (2026-2027) • South Development – Weather Observation Station Relocation (2027) • Obstacle Limitation Surface Tree Cutting (Ongoing) 	<ul style="list-style-type: none"> • Master Plan Update (2027) • South Development – Electrical Servicing (2028) • South Development – Establish Aviation Gas Cardlock System (2029) • South Development - Construct Tenant Services Building Apron Area (2029) • South Development – Provide Septic and Well Services to Tenant Services Building (2029) • Airport Fencing Replacement (2030) • Obstacle Limitation Surface Tree Cutting (Ongoing) 	<ul style="list-style-type: none"> • Obstacle Limitation Surface Tree Cutting (Ongoing)

