2023-2043
AIRPORT MASTER PLAN

John C. Munro
Hamilton International Airport

John C. Munro
HAMILTON
INTERNATIONAL AIRPORT

Vantage
GROUP

AVIA·NG
AIRPORT CONSULTANTS

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MASTER PLAN OVERVIEW

The 2023-2043 Airport Master Plan [the Master Plan] provides a 20-year vision for the development of John C. Munro Hamilton International Airport [the Airport or Hamilton International] and updates the Airport's previous 2010 vision.

The primary purpose of an Airport Master Plan is to establish a rational development concept for an airport to support long-term operational and business objectives. It supports management in making informed and strategic decisions about the need and timing for infrastructure improvements support, while also accommodating short-term improvements and protecting land for future growth and development. An Airport Master Plan is not a regulatory document, rather a long-term vision with flexibility to respond to changes in industry trends, socio-economic conditions and regulatory requirements. Airport Master Plans are typically updated every five to 10 years.

As this is a guiding document, the Airport's operator TradePort International Corporation (TradePort) is not bound to implement any recommendations herein and will assess implementation and phasing of recommendations with respect to several criteria, including operational necessity, financial capability and cost versus benefit. Flexibility to accommodate potential unpredictability in demand for air services and commercial development is key.

This Master Plan was developed in 2022 and reflects the data and information that was available at that time.

PUBLIC AND STAKEHOLDER ENGAGEMENT

Various Airport stakeholders, including tenants, operators, government agencies and the City of Hamilton, participated in discussions regarding the future development of the Airport as part of the planning process.

A public open house was held on May 10, 2023, where the public and stakeholders had an opportunity to view a draft of the Airport Land Use Plan and Airport Development Strategy. A project website was also created to provide an overview of the planning process, present draft project materials and collect feedback and comments from the public and stakeholders.

Development Objectives

Key development objectives of the Master Plan include the following:

- Provide an Airport Land Use Plan and Airport Development Plan that guides Airport management in the long-term development of the Airport.
- Identify opportunities to accommodate the development of serviced airside commercial lots.
- Enhance operational redundancy and efficiency through improvements and expansion of airside infrastructure.
- Address forecasted activity demand through the improvement to or expansion of existing infrastructure and/or the provision of new infrastructure.
- Protect the Airport's long-term operational and commercial viability through various safeguarding measures, including airport zoning regulations and the establishment of updated noise exposure contours.

HAMILTON
INTERNATIONAL AIRPORT

Hamilton International serves as a global gateway for facilitating the movement of people and goods across the country and around the world. It is the largest domestic overnight express cargo airport, the third largest cargo freight airport in Canada by payload and a key economic driver and vital transportation and trade hub for the City of Hamilton and surrounding region.

Hamilton International's most recent 2021 Economic Impact Study demonstrated that the Airport and its business partners contribute $536.7 million in gross domestic product (GDP), produce an economic output of $1.5 billion and create over 4,720 jobs for Hamilton and the surrounding region. Since 1996, TradePort and its business partners have invested $422.2 million, which has generated $31.5 million in additional property tax revenue for the City of Hamilton.

Hamilton International is a regional gateway for affordable passenger travel, offering many unique benefits for travellers in Southern Ontario. Hamilton International is known for being an easy and convenient airport to navigate from arrival to departure with the proximity from curb to boarding gates being approximately 200 steps. As a single-level facility, all key checkpoints including check-in, security screening, retail shopping, food vendors and the departures lounge are just steps away from one another.

The Airport experienced a strong recovery in the latter half of 2022 in passenger volume, along with steady growth in cargo activity. Hamilton International is poised to continue that growth as outlined in this Master Plan, particularly as key challenges, such as access to serviced land, are considered and addressed.

HAMILTON INTERNATIONAL AT A GLANCE

Achievements from Hamilton International's 2022 fiscal year are highlighted below:

645,789
passengers flying to and from Hamilton International

~90%
of passengers reported a positive Airport experience[1]

877m kg
in total landed cargo aircraft billable weight

$100k+
of in-kind resources and financial support to various community partners and initiatives

Airport Ambassador Program
celebrated **15 years** of smiles and contributed over **3,300 hours** of service

$1.5m
Payments to the City of Hamilton

$11.1m
Total investment in infrastructure made by TradePort and its partners in 2022

Health and safety measures recognized with
global health accreditation[3]

$5.0m
Investment in infrastructure made by Tradeport in 2022

Certificate of accreditation[2]
earned for carbon management processes

$68.4m
Capital committed through government funding initiatives over the next 5 years

[1]Source: 2022 Customer Satisfaction Survey results (from a total sample of ~11,000 respondents)
[2]Certificate of Accreditation earned under the Airports Council International Airport Carbon Accreditation Program
[3]Achieved accreditation under the Airports Council International Airport Health Accreditation Program

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GOVERNANCE

Hamilton International is owned by the City of Hamilton and managed under an agreement with TradePort International Corporation, a wholly owned subsidiary of Vantage Group (Vantage) – a global leader in airport and transportation investment, development, management and advisory services. For more than 25 years, Vantage has invested in, developed and managed airports around the world – making them more efficient, profitable, sustainable and connected to the communities they serve. Vantage's current network includes airports in locations ranging from large capital cities and tourist destinations to smaller destinations across the United States, Canada, the Caribbean and Europe.

MISSION

As an international gateway in Southern Ontario facilitating the efficient movement of people and goods, we are an economic engine and a responsible community partner focused on environmental, social and governance leadership across all our business and management practices.

VISION

Recognized by the world as the best global gateway in Canada for affordable travel and goods movement.

VALUES

Safety & Security

Taking immediate action to ensure we achieve the highest standards.

Quality & Operational Excellence

Constantly striving to exceed expectations by providing high quality airport services and infrastructure while minimizing our impact on the environment.

Respect & Integrity

Embracing a diverse, inclusive culture of integrity and accountability for our actions.

Improvement & Innovation

Committing to grow our business through continuous learning to achieve cost leadership, implement innovative solutions and to deliver winning results.

Teamwork & Recognition

Creating a positive experience everyday by being friendly, having fun and recognizing achievements.

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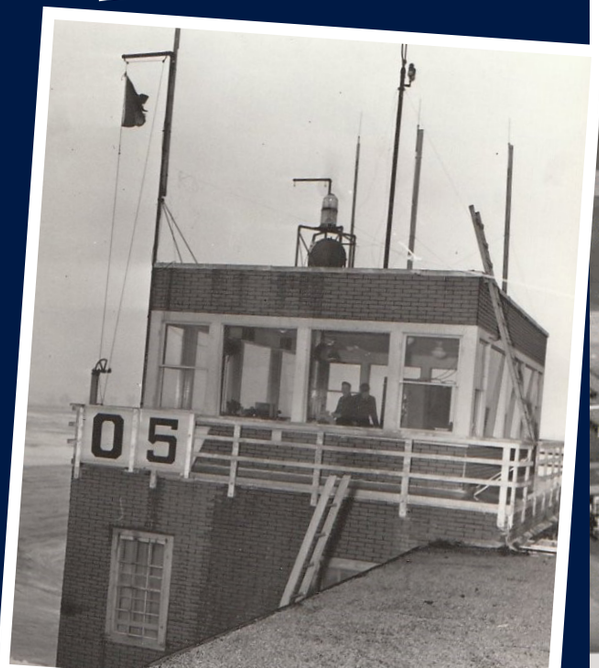
HISTORY

Hamilton International was initially constructed between 1940 and 1943 as part of the British Commonwealth Air Training Plan (BCATP) to support the Allied war effort. The airfield was originally configured with a triangular runway layout, each having a length of approximately 3,100 feet (945 m), as was typical of airfields at the time. Runways 06-24 and 12-30 were extended to 6,000 feet (1,828 m) and 5,000 feet (1,524 m) respectively in the late 1950's, following the introduction of jet aircraft into the Royal Canadian Air Force. Military activities continued at the Airport until 1963, when the Department of National Defence declared the Airport surplus to its needs and the ownership was then transferred to the federal Department of Transport, now Transport Canada. Transport Canada continued to manage operation of the Airport until 1967, at which time an agreement was reached with the City of Hamilton whereby the City assumed responsibility for the operation and maintenance of the Airport, and Transport Canada retained ownership.

In July 1994, Transport Canada announced the National Airports Policy (NAP), under which Transport Canada proceeded to divest itself from the ownership of local and regional airports throughout Canada. On December 20, 1996, ownership of Hamilton International was transferred to the Regional Municipality of Hamilton-Wentworth, now the City of Hamilton. In the same year, TradePort was selected through a competitive process to undertake management, operation and financing of the Airport. TradePort continues to operate the Airport today through a wholly owned subsidiary company named Hamilton International Airport Limited.



HAMILTON
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+158%
INCREASE
IN TRAFFIC
YEAR-OVER-YEAR

CURRENT ACTIVITY

Cargo Operations

Hamilton International serves as a global gateway for facilitating the movement of goods across the country and around the world. It is the largest domestic overnight express cargo airport, the third largest cargo freight airport in Canada by payload and a key economic driver and vital transportation hub.

In 2022, the Airport facilitated 877 million kilograms in total cargo aircraft billable weight. This represented a 14% increase compared to the previous year and a notable 65% increase compared to pre-pandemic cargo activity in 2019.

Passenger Activity

Hamilton International provides the travelling public within Southern Ontario with a regional airport that is both affordable and convenient. Scheduled air service is provided to several domestic and international destinations on both a seasonal and year-round basis.

Demand for air travel surged in 2022 as the pandemic restrictions eased and passenger operations at Hamilton International grew significantly with 645,789 total passengers travelling through the Airport. This reflected a year-over-year increase of 158% and nearly 68% of the pre-pandemic levels in 2019. In 2019, the Airport saw a record-breaking nearly one million passengers travel through its terminal, highlighting the growth potential that remains.

Aircraft Maintenance And Overhaul

KF Aerospace, located at the Airport, is a significant Canadian Maintenance, Repair and Overhaul (MRO) operator providing engineering, maintenance and modification solutions to the airline industry. Adjacent to the KF Aerospace facility is Mohawk College's Centre for Aviation Technology that offers programs in aircraft and avionics maintenance. Cargojet also maintains an MRO facility, along with pilot training to ensure its fleet of over 30 aircraft, and growing, can meet current and future demand.

BY THE NUMBERS 2022

645,789
PASSENGERS
158%

38,085
AIRCRAFT MOVEMENTS
+2%

877,000
METRIC TONNES OF CARGO
+65%

+65%
GROWTH IN CARGO TRAFFIC COMPARED TO 2019

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VANTAGE GROUP GLOBAL NETWORK

Vantage GROUP

Hamilton International has been a member of the Vantage network since 1996, when it transitioned from local municipal to private operation. Today, Vantage Group is a 100% shareholder in TradePort International, which manages the Airport through a long-term lease with the City of Hamilton.

LEGEND

- Active
- Corporate Offices
- Completed

AIRPORT FACILITIES AND INFRASTRUCTURE

The long-term success of an airport is closely tied to the facilities and infrastructure it provides. Hamilton International has facilities that support operations in all-weather conditions, 24/7/365, with an ability to accommodate aircraft of all sizes. Figure 1 illustrates the existing conditions of the Airport.

Airside

The Airport's primary runway, Runway 12-30, is equipped with infrastructure that supports low and reduced visibility operations. Runway 12 provides the greatest capability with approaches permitted in inclement weather conditions with ceiling and visibility as low as 101 feet (31 metres) and 1,200 feet (366 metres) respectively. Runway 06-24 at 6,010 feet (1,832 metres) in length provides a secondary runway for use by lighter business aviation and ad-hoc passenger and cargo aircraft, including corporate jets, medevac aircraft and smaller aircraft used by various freight forwarding operators.

The runway system and apron areas are currently supported by eight (8) taxiways. These taxiways provide connections at strategic locations to facilitate the flow of traffic between runways and apron areas.

Hamilton International currently has 13 designated apron areas, each serving a different purpose and segment of aviation activity on the Airport. These aprons provide a mix of common-use and dedicated ramp areas for the parking and servicing of passenger, cargo and general aviation aircraft.

Figure 1 Existing Conditions Plan

1 PASSENGER TERMINAL BUILDING (PTB)
2 HANGAR 5
3 ONWARD AVIATION
4 CARGO CENTRE
5 AIC (PRIVATE)
6 APRON I (RESTRICTED)
7 APRON II
8 JETPORT FBO
9 TRANSPORT CANADA
10 PUROLATOR / CANADA POST
11 MOHAWK COLLEGE
12 KF AEROSPACE
13 PUROLATOR / CANADA POST APRON
14 CANADIAN WARPLANE HERITAGE MUSEUM
15 APRON III
16 DHL
17 UPS APRON
18 UPS
19 CARGOJET
20 CARGOJET
21 FIRE HALL
22 NAV CANADA AIR TRAFFIC CONTROL TOWER
23 FIELD ELECTRIC CENTRE
24 GLIDE PATH 12
25 LOCALIZER 30
26 LOCALIZER 12
27 NAV CANADA RADAR
28 GLYCOL BUILDING
29 UPS STORMWATER POND
30 PUMPHOUSE
31 HAMILTON AIRPORT FUEL FACILITY CORPORATION (FUEL FARM)
32 PRIMARY PARKING LOT
33 CANADA BORDER SERVICES AGENCY
34 CARGOJET GROUND SERVICES EQUIPMENT MAINTENANCE
35 CARGOJET GROUND SERVICES EQUIPMENT MAINTENANCE
36 AUTOMATED WEATHER OBSERVATION SYSTEM

AIRPORT FACILITIES AND INFRASTRUCTURE

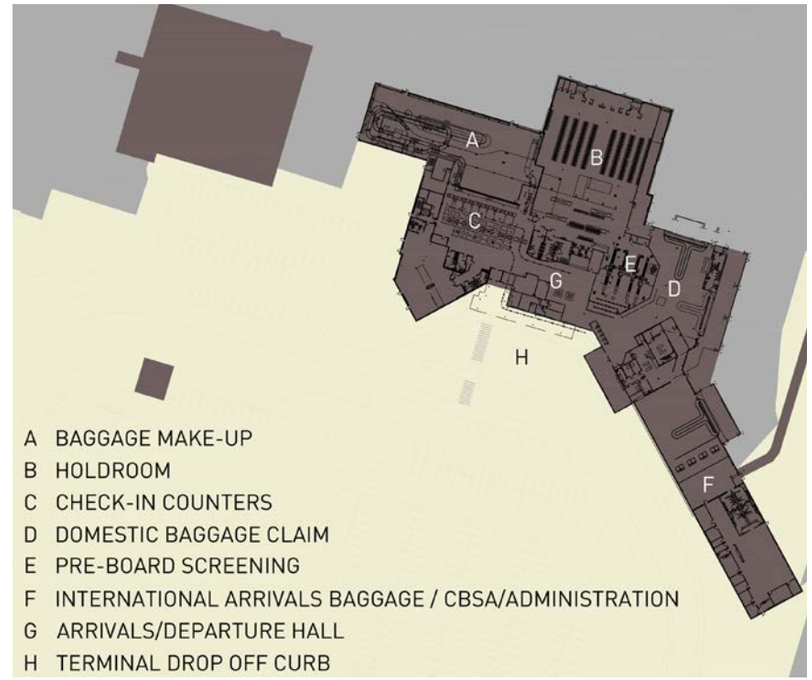
Passenger Terminal Building

The Passenger Terminal Building was originally constructed in 1985 by Transport Canada and has been expanded over the years, with the latest expansion occurring in 2008 to increase size of the holdroom to approximately 8,500 m^2.

Elements of the existing Passenger Terminal Building, as illustrated in Figure 2, include:

- Check-in area with 19 check-in positions.
- Pre-board passenger screening function with four screening lanes.
- Departures lounge with the capacity to accommodate over 600 passengers.
- An outbound baggage make-up area with a hold bag screening system and common use make-up carousel.
- Domestic baggage reclaim area with two flat plate reclaim devices.
- International arrivals area with Canada Border Services Agency functions.
- An international baggage reclaim area with a single flat plate reclaim device.

Figure 2 Existing Passenger Terminal Building



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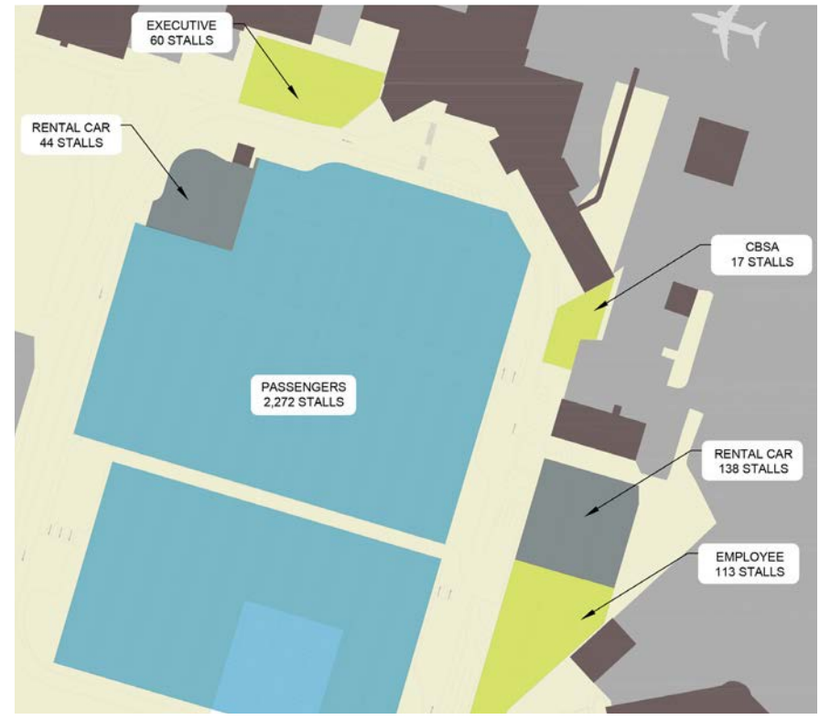
AIRPORT FACILITIES AND INFRASTRUCTURE

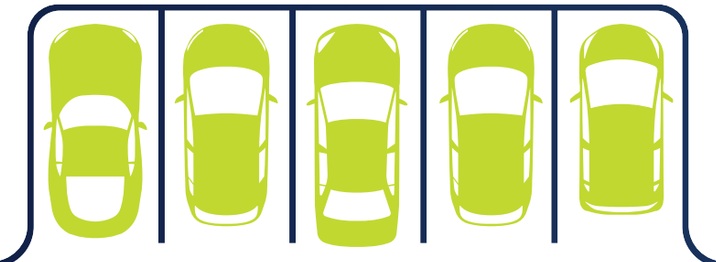
Landside

The capacity of the existing public parking lot is 2,272 stalls, with 369 stalls that can be used for truck staging, as needed, thereby reducing the capacity of the public lot to 1,903 stalls.

One rental car park area is located in the northwest corner of the public parking lot with a capacity of 44 stalls. A second larger car park is located north of the employee lot and south of the glycol management facility with a capacity of 138 stalls (see Figure 3).

Figure 3 Existing Parking Lot



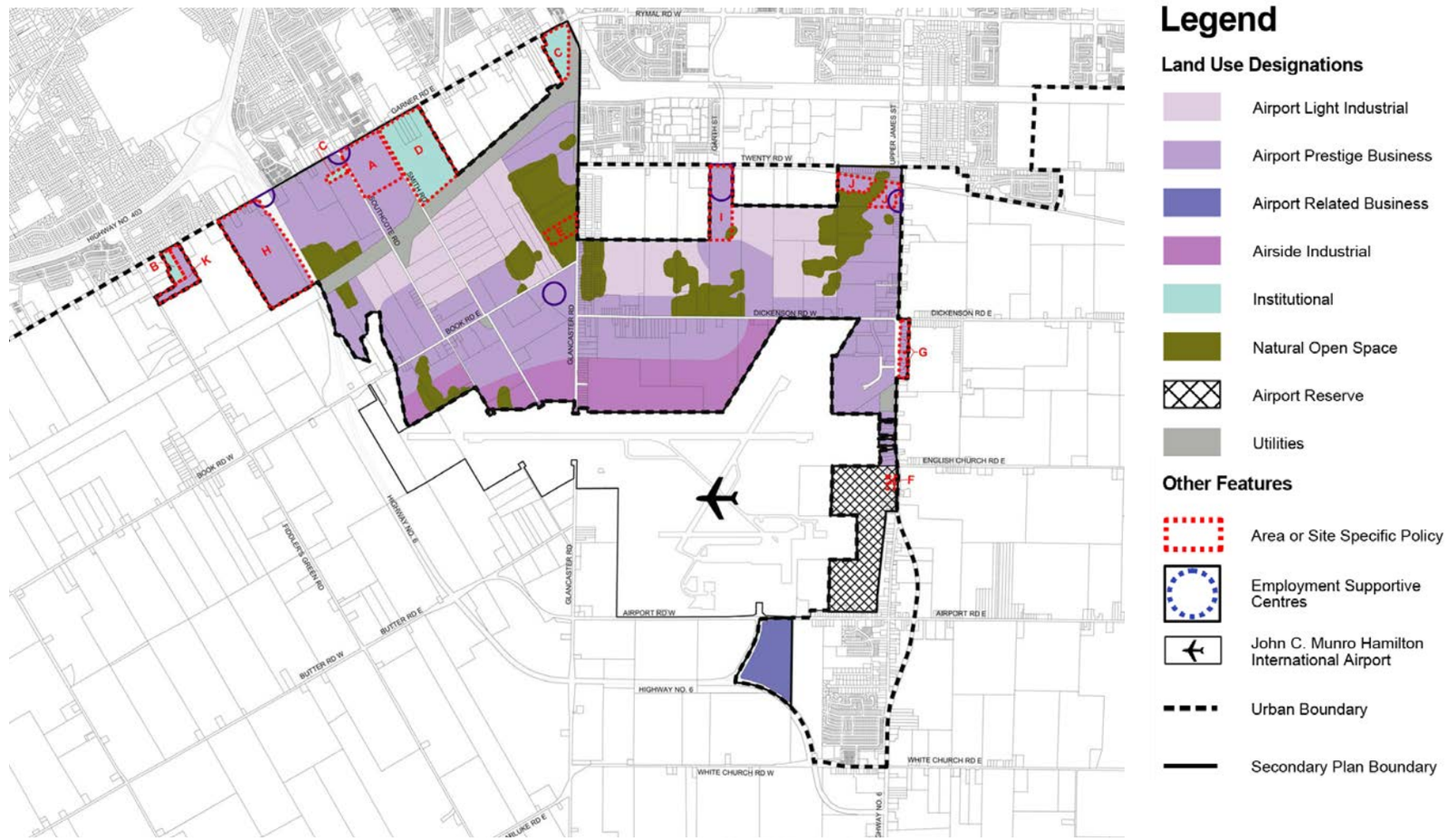


2,272
PUBLIC PARKING STALLS

URBAN CONTEXT

Hamilton International is located in Mount Hope within the City of Hamilton, approximately 10.5 kilometres southwest of the City's downtown and surrounded in part by the Airport Employment Growth District (AEGD). Figure 4 illustrates the extent of the AEGD Secondary Plan, as found in the Urban Hamilton Official Plan. This Plan allows for landowners located adjacent to the Airport property to potentially have direct access to airport infrastructure via a "through-the-fence" agreement and provides opportunities for airport-related commercial development, such as air cargo facilities or hangars, to be located off airport property while being able to access taxiways and runways.

Figure 4 Airport Employment Growth District



FORECASTS

Aviation activity forecasts are an integral component of the master planning process. Activity forecasts provide a prediction of future demand based on various socio-economic and industry trends and assist Airport management in making rational and timely decisions regarding infrastructure improvements and appropriate sizing of future capacity.

A series of activity forecasts were prepared for Hamilton International for the years 2023 through 2043 to estimate potential demand on airport infrastructure and identify potential capacity constraints, considering the following segments of activity:

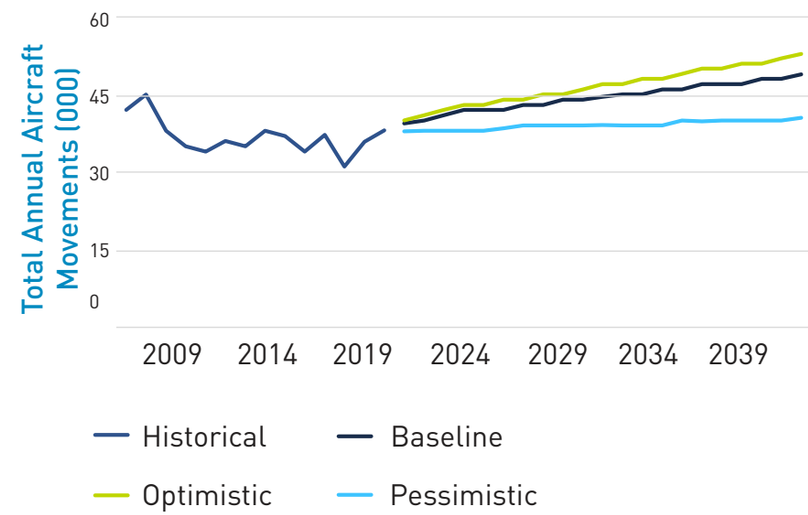
1. Total enplaned and deplaned (E/D) passengers.
2. Scheduled cargo activity based on maximum take-off weight.
3. Total movements by itinerant commercial aircraft movements, itinerant cargo aircraft movements and itinerant and local general aviation (GA) aircraft movements.
4. Peak hour passenger activity for the Passenger Terminal Building peak hour scheduled aircraft movements through the development of nominal gating schedules and the review of historical peaks in cargo and general aviation activity.

The forecasts presented were developed during the second half of 2022 and updated in early 2023 to reflect changes in demand for international travel. The prepared forecasts are also considered unconstrained, meaning the capacity of current airport facilities and infrastructure has not been allowed to influence the characteristics of demand. The activity forecasts were prepared using baseline, optimistic and pessimistic scenarios.

Aircraft Movements

Future growth in aircraft movements will be directly related to growth in both passenger and cargo activity. Remaining activity will be related to more general socio-economic conditions. Figure 5 describes forecasted aircraft movement growth under baseline, optimistic and pessimistic scenarios.

Figure 5 Aircraft Movement Forecast



FORECASTS

Passenger Activity

The consensus among most aviation economists is that leisure travel will surge in the short-term following the presumed end of the pandemic, due to two to three years of pent-up demand, before growth rates begin to stabilize. Business travel, however, may have been permanently affected by some of the longer-term effects of the pandemic, including a decrease in the requirement to work physically from an office and an associated increase in virtual meetings. Figure 6 describes forecasted passenger growth under baseline, optimistic and pessimistic scenarios.

Cargo Activity

Cargo traffic increased sharply by 44% between 2019 and 2021. Future growth in cargo activity will most likely depend on the extent to which these trends continue. Major cargo carriers in Canada continue to grow their fleets; however, cargo airlines in the United States are somewhat less optimistic, suggesting a decrease in activity in the short-term as business-to-business volume and consumer e-commerce spending stabilizes from the surge in demand resulting from the pandemic. Figure 7 describes forecasted cargo growth under baseline, optimistic and pessimistic scenarios.

Figure 6 Passenger Activity Forecast

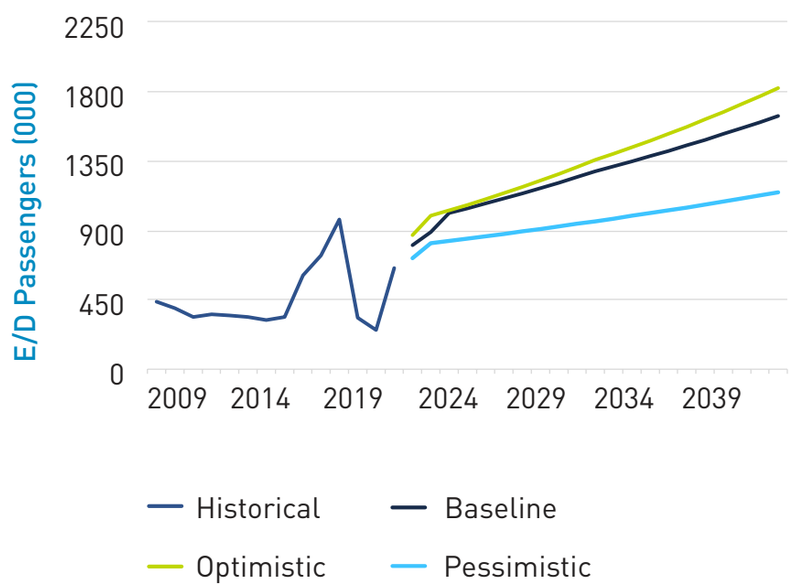
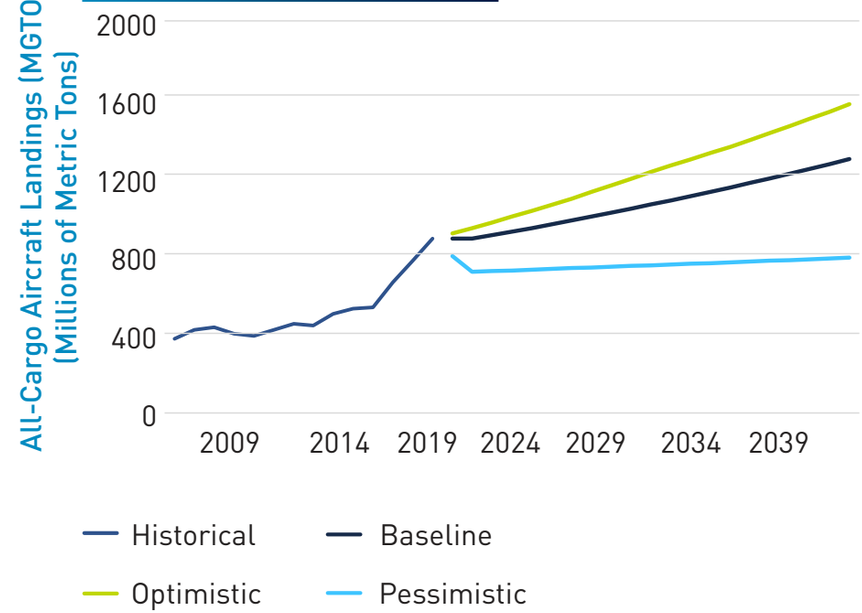
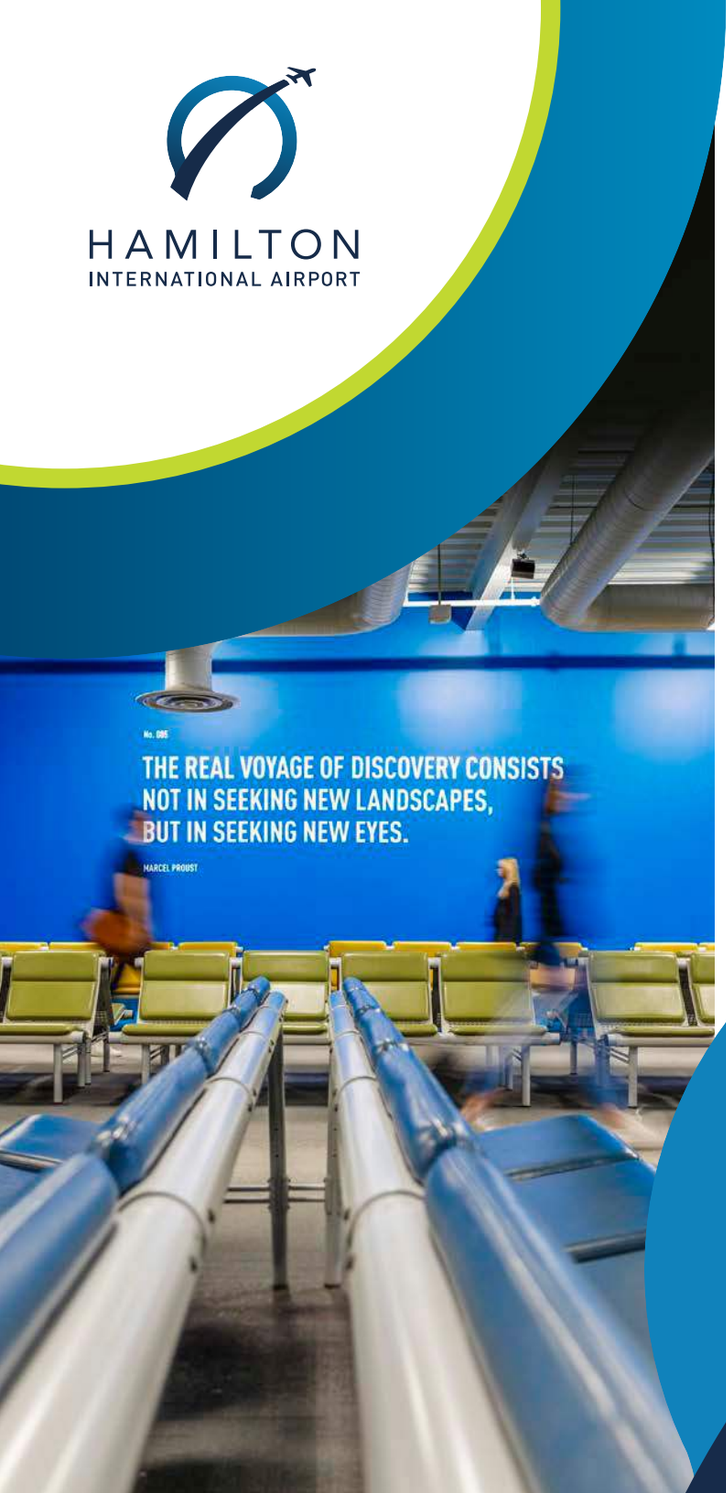


Figure 7 Cargo Activity Forecast



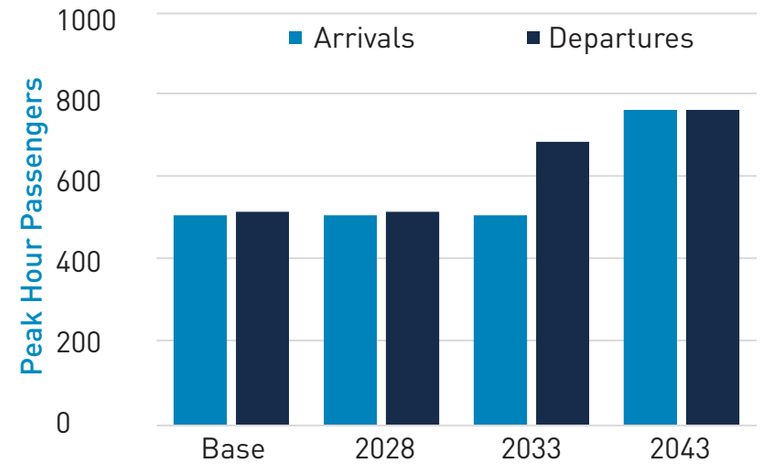


FORECASTS

Peak Hour Passenger Activity

Peak hour passenger demand has been derived through the development of nominal schedules that reflect peak planning days for the years 2028, 2033 and 2043. Typically, the winter schedule experiences greater peak hour demand for departures while the summer schedule experiences the greater peak for arrivals. Figure 8 describes the peak hour passengers activity for base year (2019), 2028, 2033 and 2043.

Figure 8 Peak Hour Passenger Activity



CONSTRAINTS AND OPPORTUNITIES

An important part of the Master Plan process is examining the airfield for constraints to development and operations and identifying opportunities to enhance operations and support continued development. Figure 9 illustrates the constraints and opportunities identified during the Master Planning process.

Key constraints that potentially impede the long-term growth and development of the Airport include the following:

Airside

- The growth of both scheduled passenger and air cargo service is increasing demand for apron stands. The demand for aircraft parking stands in the medium- to long-term will likely exceed available capacity. The demand for remain-overnight (RON) parking stands for passenger aircraft could create a requirement for five additional remote apron stands bringing the overall passenger terminal aircraft stands to 13.
- Increased peak hour and planning day aircraft movements could benefit from the provision of additional taxiways to provide enhanced efficiencies, increase capacity and reduce the potential for ground delay.

Landside

- Car parking has exceeded capacity during peak periods in the past, and this is managed through third party contracts (i.e. curbside congestions, valet services). Improvements either through additional technology or facility upgrades can be considered to accommodate projected parking demand.
- There is currently a lack of available land for truck staging and increases in cargo growth will require additional staging areas.

Commercial Development

- There is a lack of serviced airside accessible land available for commercial development to meet the projected growth.
- The existing NAV CANADA radar site sterilizes a large tract of land that could be developed for commercial uses.
- Airport Road restricts the lands located south of the road to be developed for airside commercial use.

Operations Support Facilities & Services

- The maintenance component of Combined Services Building (CSB) may require expansion, depending on other airport developments, impacting maintenance of airport vehicles.
- The provision of services and utilities to the entire Airport, including the Passenger Terminal Building, presents challenges as commercial facilities pursue growth to continue
meeting demand.

CONSTRAINTS AND OPPORTUNITIES

Passenger Terminal

- There is a potential that peak hour passenger demand may exceed current terminal capacity if passenger carriers continue to build flight schedules at peak times of the day and/or under-utilize shoulder periods of the day when the terminal has available capacity.
- The existing international arrivals facility does not currently have digital passenger processing technologies and currently has fixed processing capabilities. Facility improvements should be considered dependent on international travel increases and CBSA requirements under federal regulation.
- Terminal curbs are occasionally managed with third party contracts to reduce congestion during peak periods. There may be a requirement to create additional parking, improve parking technology, create cell phone lots and/or staging areas as passenger volume grows to ensure the supporting network for that growth is sufficient.

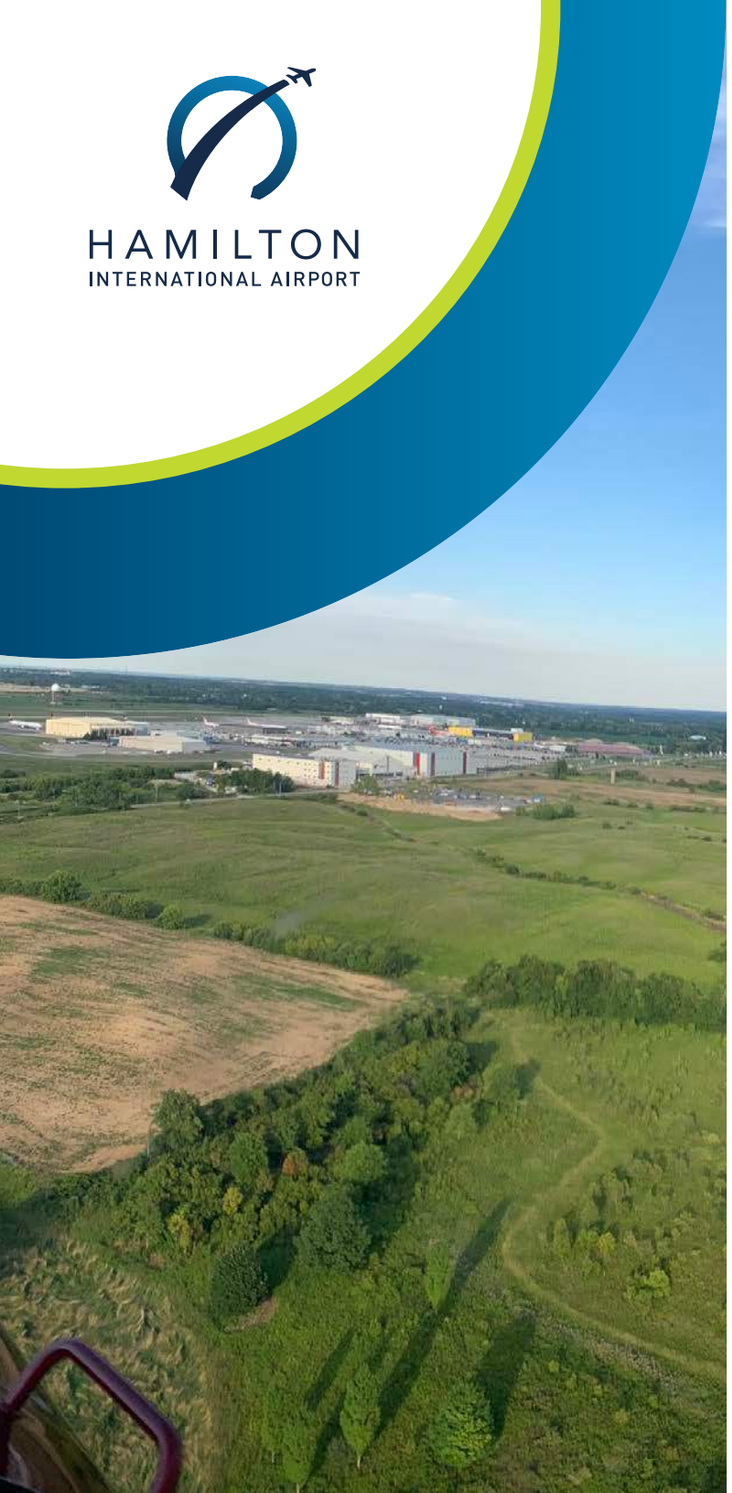
Key opportunities include the following:

Airside

- Phased improvements to the taxiway system and expansion of aprons will facilitate improved efficiencies, capacity increases and optimal traffic management.
- Additional glidepath/localizer installations would increase the Airport's level of service and usability.
- Potential extension of Runway 06-24, on lands previously identified for such purposes, if required to increase redundancy and efficiency, though impacted by noise abatements.

Passenger Terminal

- Ability to work with carriers to adjust schedules to non-peak times of the day to optimize terminal use daily and address peak hour demand.
- Terminal improvements or facility expansion can be accomplished in the current footprint or in adjacent areas to meet forecasted peak hour passenger demand within the planning horizon.
- The terminal curb can have reduced congestion by providing additional lanes and creating a cell phone waiting area.



CONSTRAINTS AND OPPORTUNITIES

Landside

- Public parking capacity can be increased through land development and the provision of remote lots as passenger volumes/parking demand increases.
- Expansion of Highway 6 to a four-lane controlled access road would improve access to the 400 series highways, a critical requirement for cargo stakeholders.
- Reconfiguration of Airport Road would provide the opportunity to extend airside commercial development to the south side of Airport Road and allow for the potential extension of Runway 06-24.

Commercial Development

- Land purchased by the City of Hamilton for Airport commercial use is held on the west and south side of the Airport.
- The potential relocation of the NAV CANADA radar would provide a significant area of land for commercial development.

Operations Support Facilities And Services

- There is ample land on which to expand the Canada Border Services Agency.

Figure 9 Constraints and Opportunities

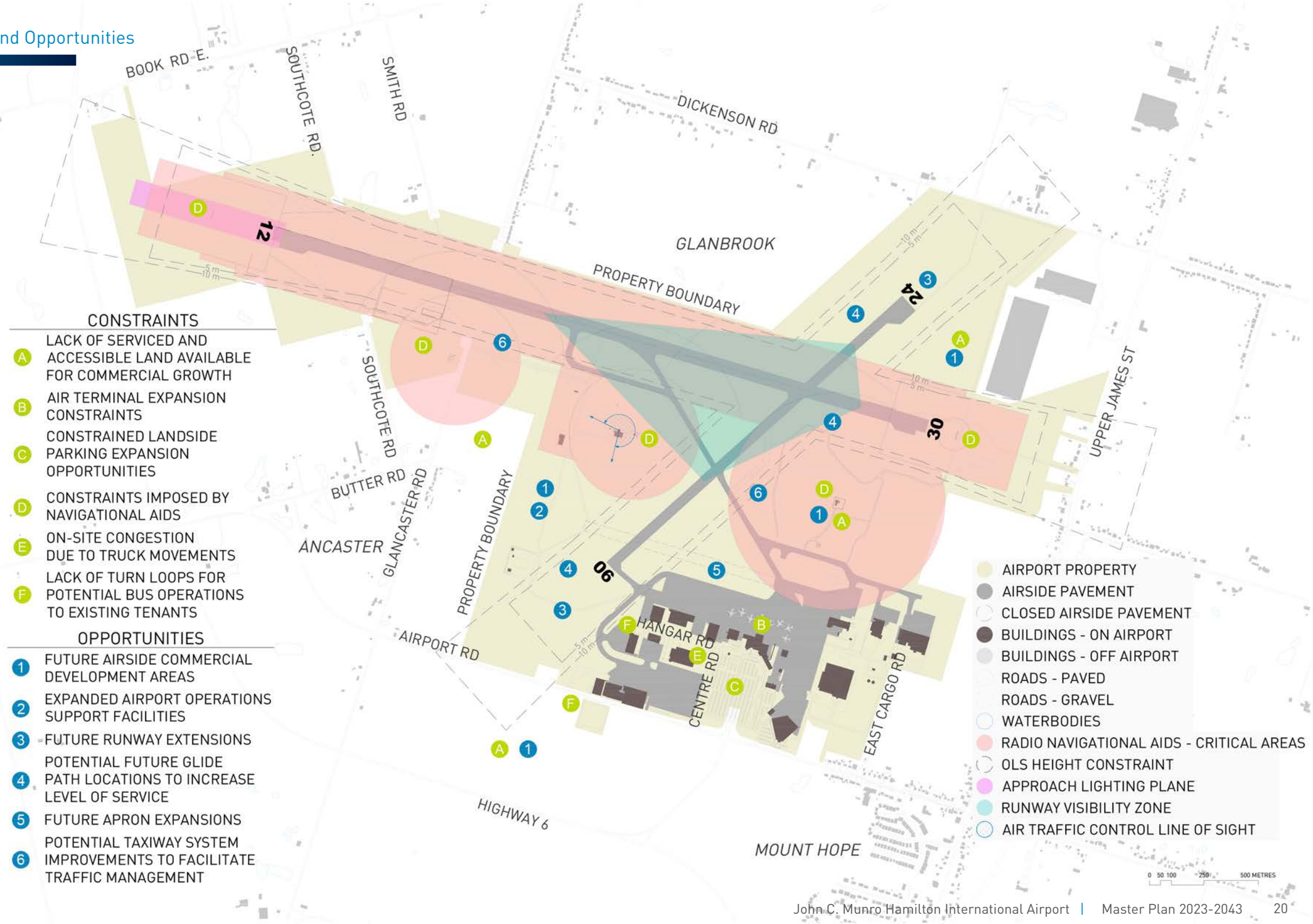


Figure 10 Recommended Land Use Plan

RECOMMENDED LAND USE PLAN

The purpose of an Land Use Plan is to identify the land areas by use and location within and beyond the current Master Plan planning horizon. The Land Use Plan is designed to ensure continued operation, effective use of land and cost-effective development. The Land Use Plan balances the needs of the Airport over the short, medium and long-term, while also taking a longer-term outlook to preserve the flexibility to adapt to the growing needs of the Airport beyond what can be anticipated by 2043. Capturing the culmination of these land uses is the Recommended Land Use Plan illustrated in Figure 10.

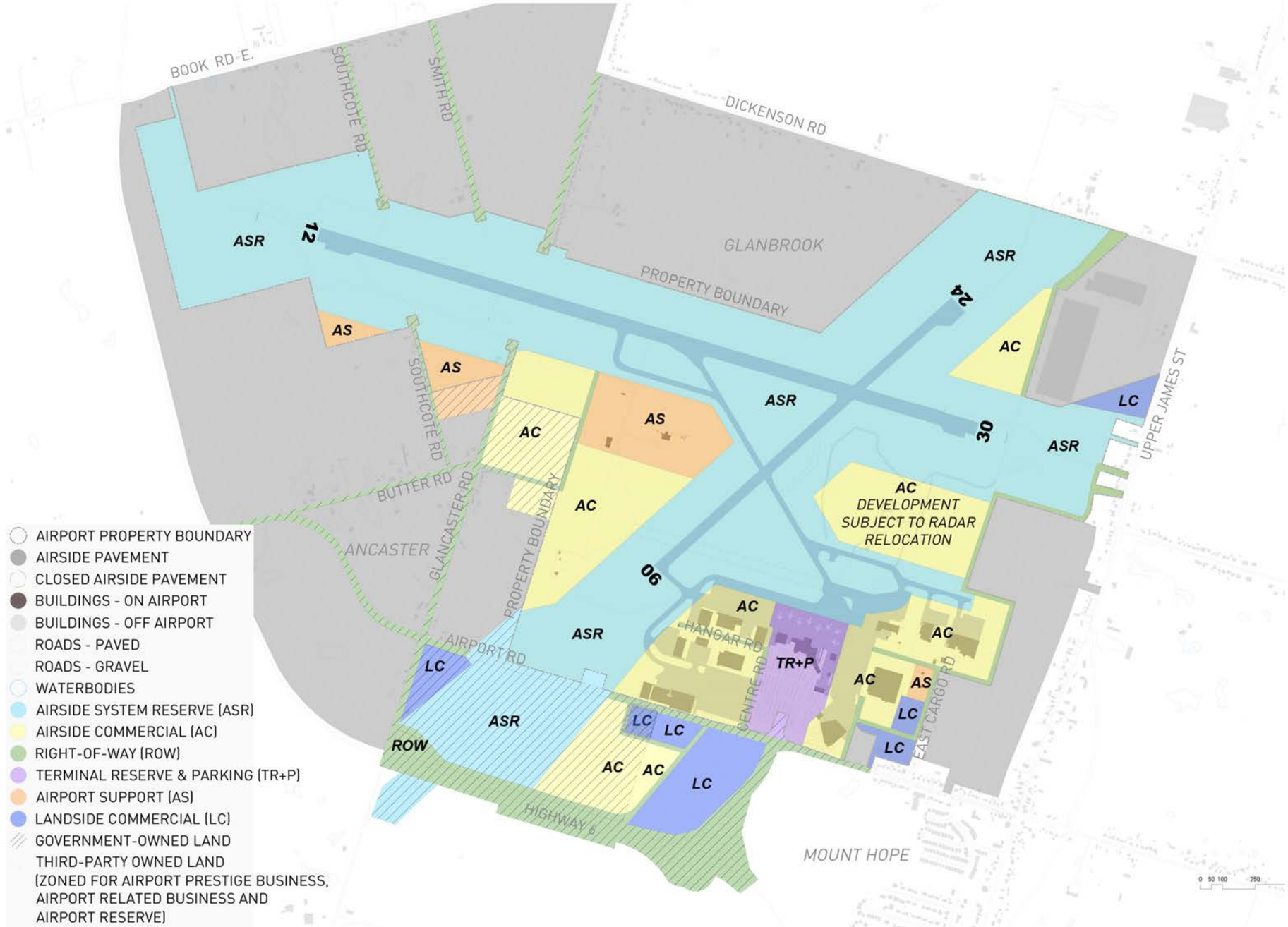


Figure 10A

AIRPORT SYSTEM RESERVE

Airport System Reserve land is land that needs to be protected from encroaching development and ensure the safe operation of aircraft. The land includes the existing and future runway and taxiway systems, aprons, navigational aids and approach lighting plane based on the existing and forecasted demand within the planning horizon. The land use also includes protection areas for navigational aids and the obstacle limitation surface clearance of up to approximately 10 metres above the threshold elevation.

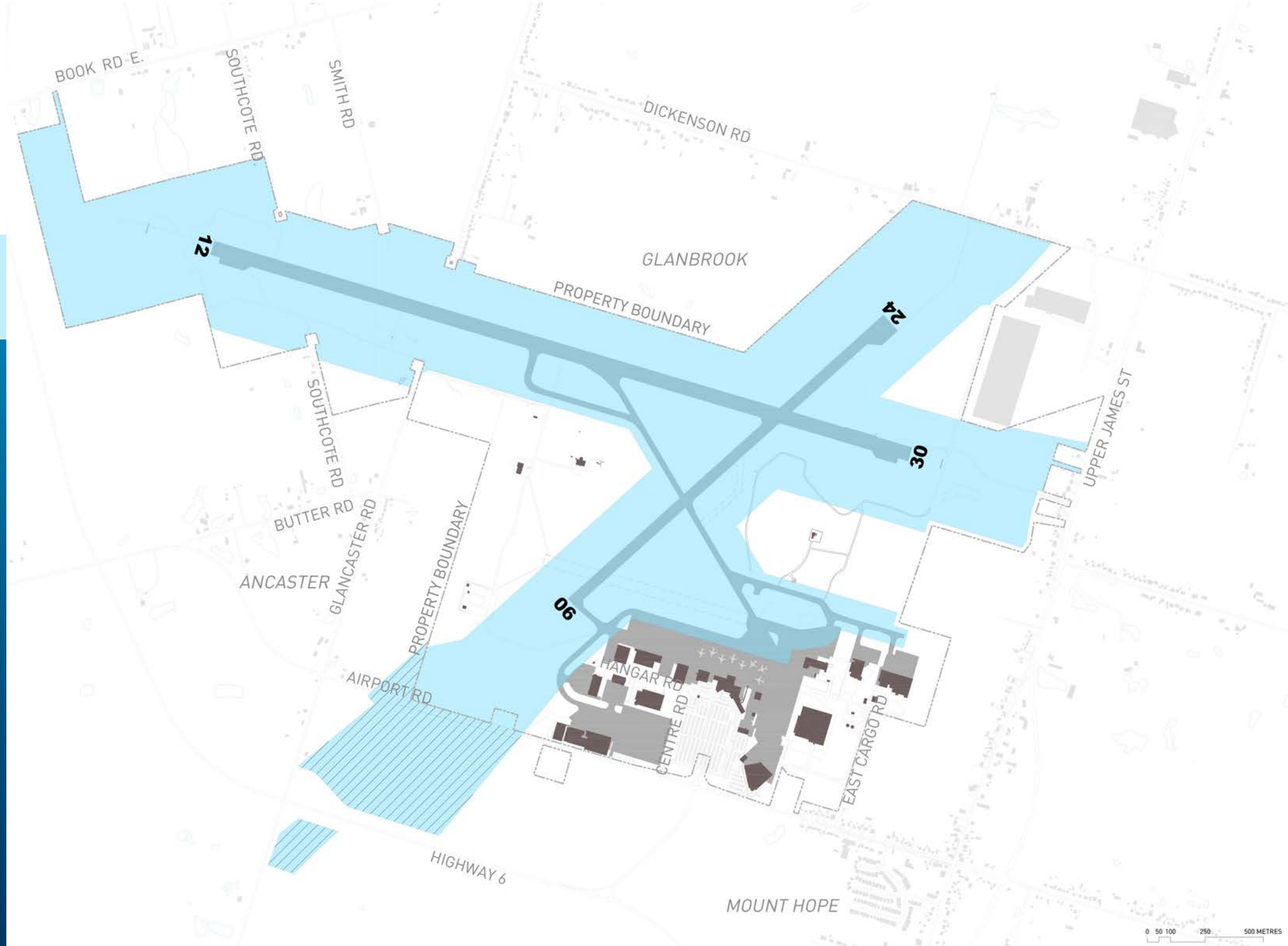


Figure 10B

AIRPORT SUPPORT

Airport Support land are areas that need to be protected for facilities related to airport operational support facilities and services, including the existing air traffic control tower, some radio navigational antennas, an Automated Weather Observation System and the existing and proposed expanded Combined Services Building (maintenance garage and fire hall).

Figure 10C

TERMINAL RESERVE AND PARKING

Terminal Reserve and Parking land are areas that are designated for existing, expanded or a new Passenger Terminal Building, apron and parking lots. Main parking lots, portions of terminal access roads and terminal curb are also included within the Terminal Reserve and Parking.

Figure 10D

AIRSIDE COMMERCIAL

Airside Commercial land is dedicated to commercial development such as air cargo, aircraft servicing and storage that requires access to the airside system, including aviation related uses, such as hangars, aircraft maintenance facilities, fixed-base operators, commercial aprons and aircraft tie-down areas.

Figure 10E

LANDSIDE COMMERCIAL

Landside Commercial land is reserved for commercial uses that do not require direct access to the runway or taxiway system and do not pose a risk to the continued operation of the Airport or aviation safety, including warehousing and storage, light industrial, ground transportation, car rental facilities/ parking and office facilities.

Figure 10F

RIGHT-OF-WAY

The Right-of-Way land use is reserved for the ground transportation system, including access roads not included as part of the Terminal Reserve and Parking. This land focuses on various airport access roads or roads accessing lands adjacent to the Airport, including land reserved for the Highway 6 expansion and connector.

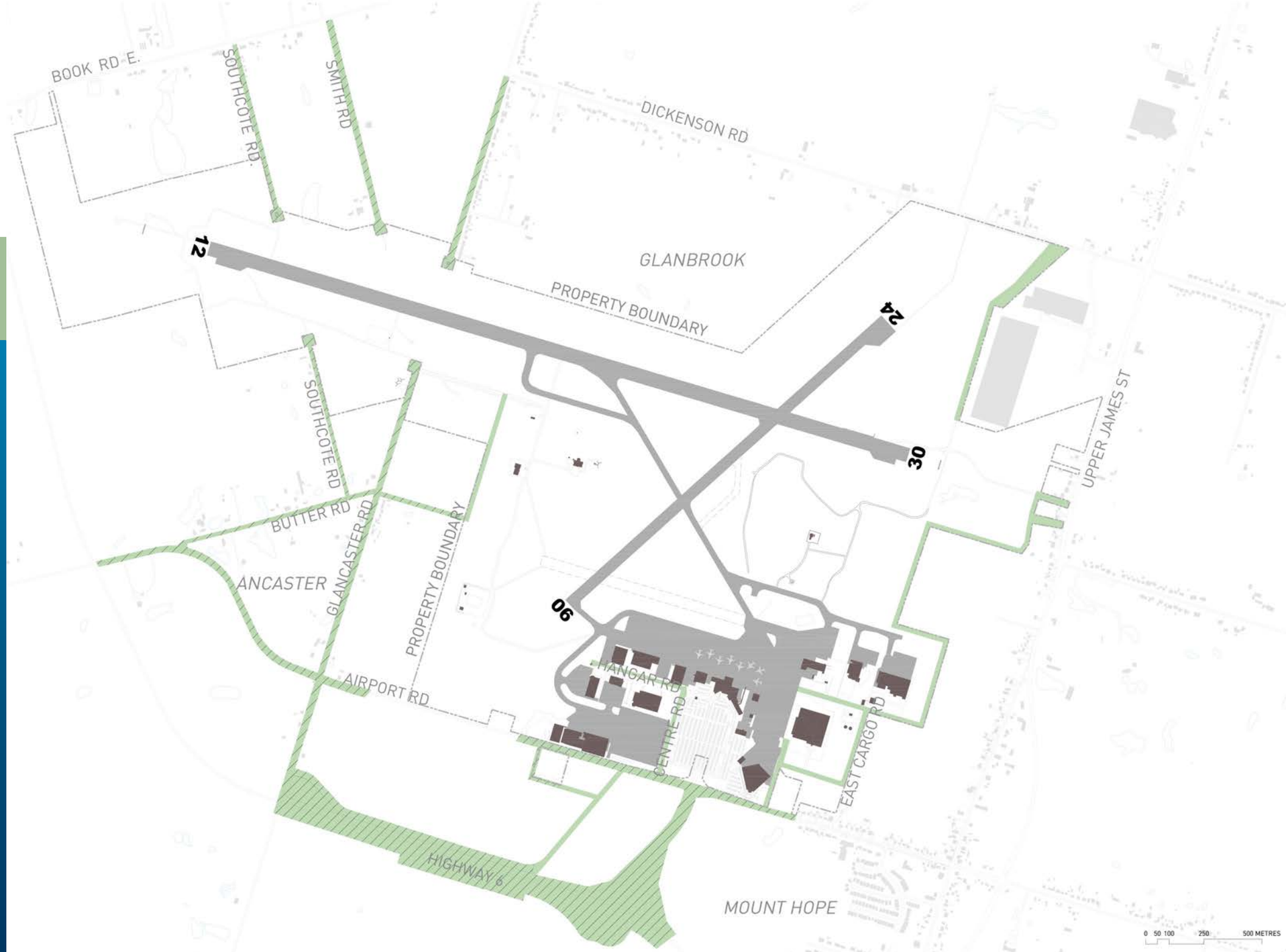


Figure 10G

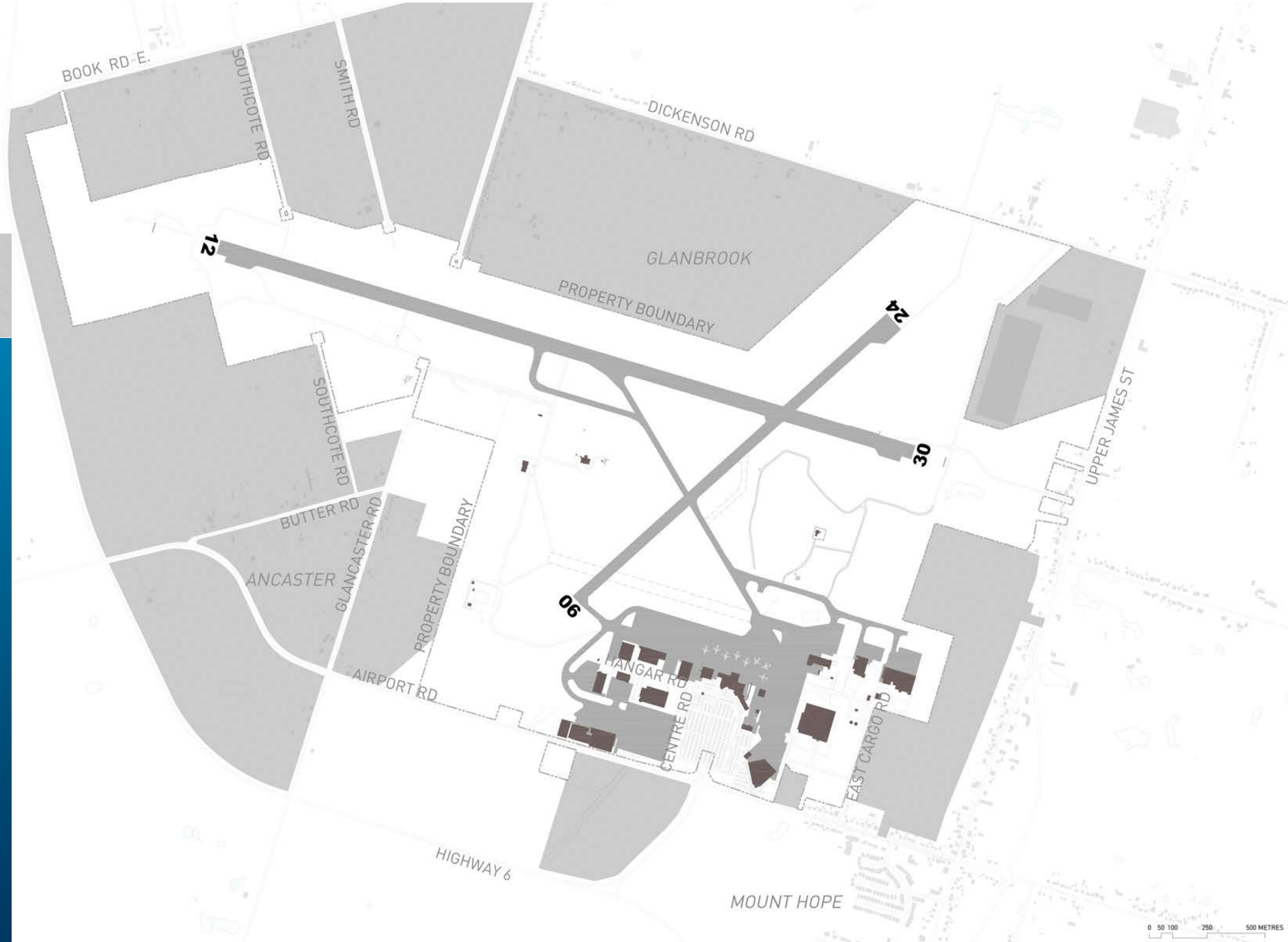
GOVERNMENT OWNED LAND

Government owned lands are located outside the Airport's property boundary and leased area. Some land is owned by the Government of Ontario for Highway 6 and future expansion. The remaining land is owned by the City of Hamilton and has been designated for future airport use. Although the land is currently not within the existing Airport's lease boundary, it is important to designate these lands to ensure lands are or will be protected for future airport-related purposes.

Figure 10H

THIRD-PARTY OWNED LAND

Third-Party Owned land includes lands that have been designated by the City of Hamilton as Airport Prestige Business, Airport-Related Business, Airport Reserve and Rural with Exceptions within the AEGD.



RECOMMENDED DEVELOPMENT STRATEGY

The Airport Development Strategy provides a long-term, 20-year vision for Hamilton International. It informs planning decisions aligned to forecasted activity demand through the phased development of new and expanded infrastructure that provide operational efficiencies, increase in capacity and support of expanded airside commercial development. The proposed improvements are illustrated in the Recommended Airport Development Plan (Figure 11), the recommended phasing is illustrated in the Capital Phasing Plan (Figure 12).

Key elements of the recommended Development Strategy for expansion address growth risks and include ensuring land is available and serviced for commercial development and competing airside improvements with flexibility for long-term Passenger Terminal Building expansions.

Figure 11 Recommended Airport Development Plan

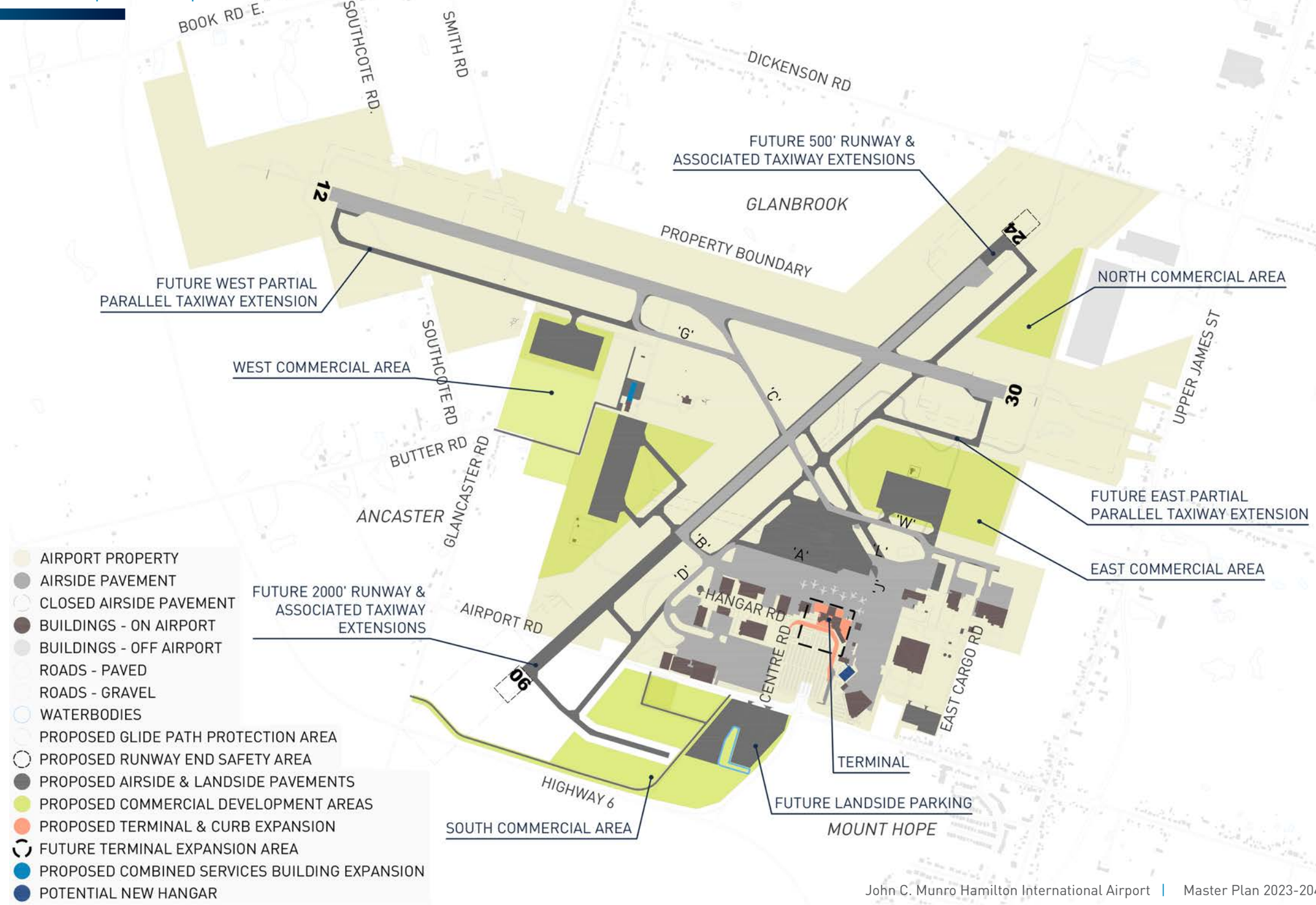
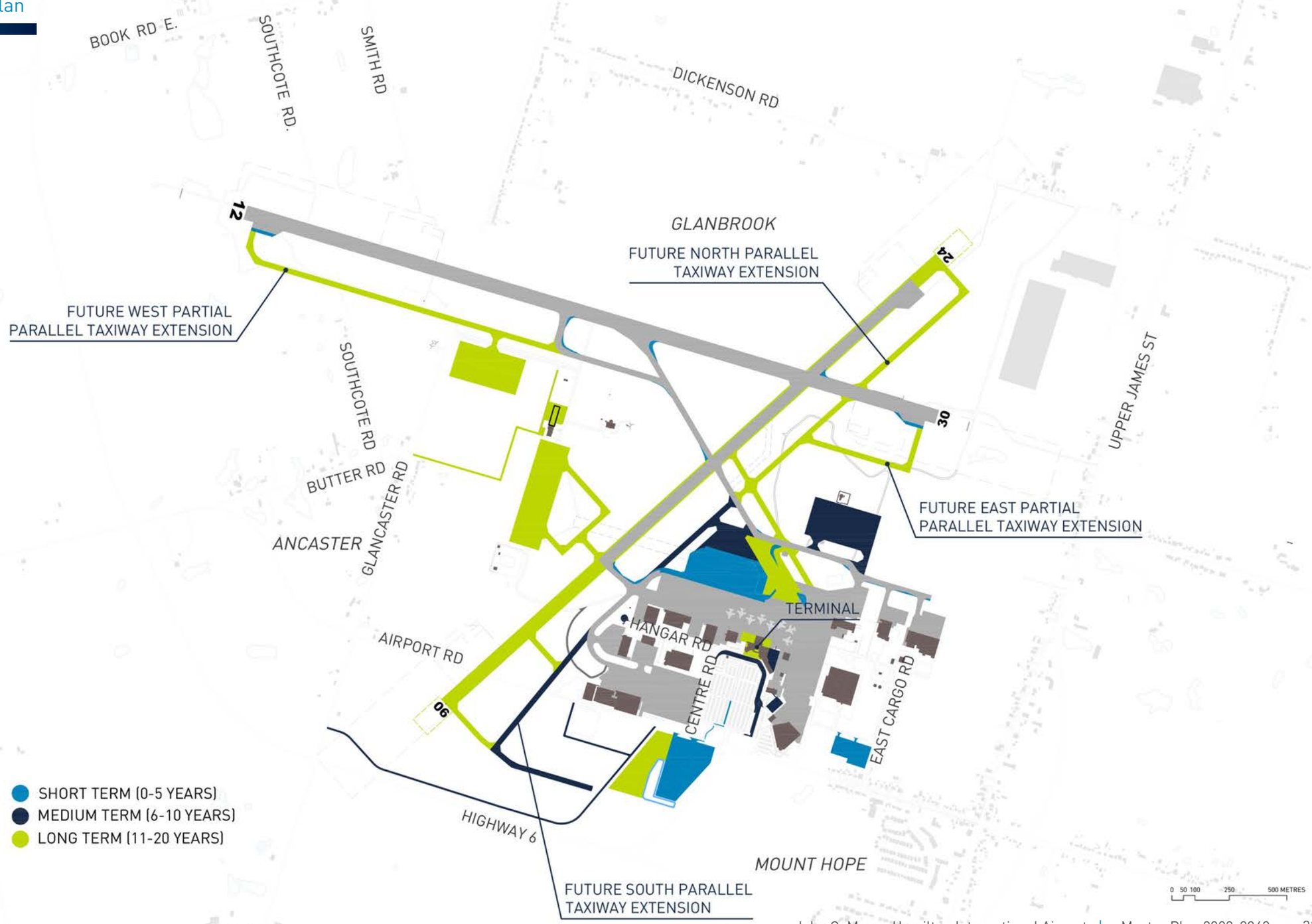


Figure 12 Capital Phasing Plan



RECOMMENDED DEVELOPMENT STRATEGY

Details of the proposed improvements include:

Airside

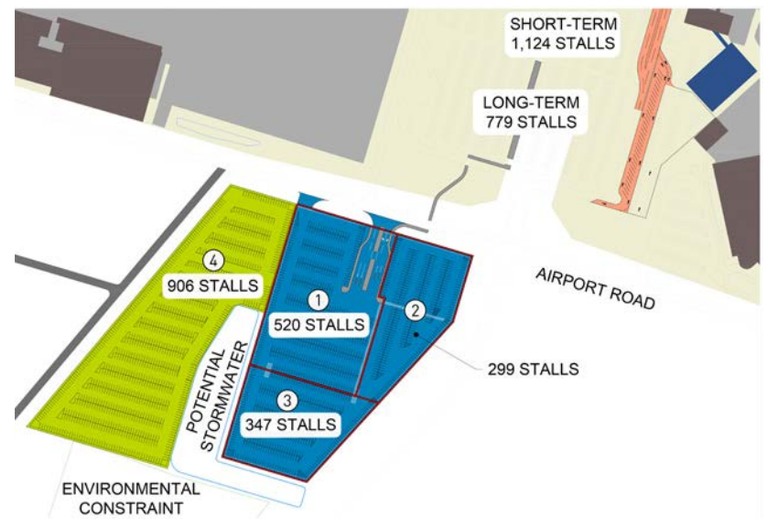
- Enhance taxiway system to improve runway capacity and traffic management with growth.
- Expand apron areas to support growth of both cargo and commercial passenger aircraft parking.
- Improve the Radio Navigational Aids and Electronic Communications, including provision for future glidepath and localizer installations.
- Protect for potential future Runway 06-24 to a maximum of 9,500 feet (2,895.6 metres).

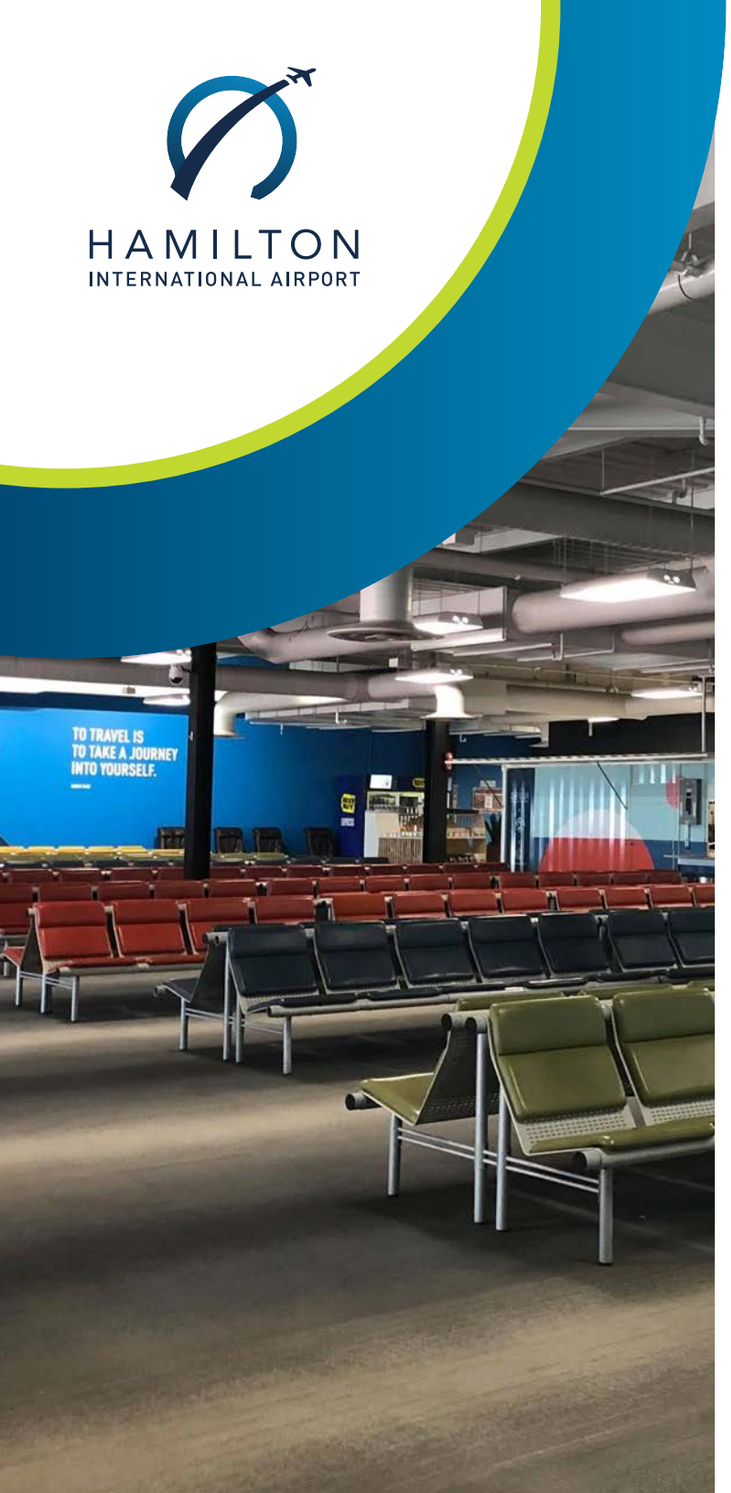
Landside

- Improve Ring Road to address terminal curb congestion and public transit services (Figure 13).
- Accommodate proposed twining of Provincial Highway 6 and new airport interchange.
- Expand the parking lot to support anticipated growth over the planning horizon (Figure 14).
- Re-align Airport Road to facilitate commercial development.
- Extend utilities to serve future commercial development areas.

Figure 13 Proposed Terminal Curb

Figure 14 Proposed Overflow Parking Lot





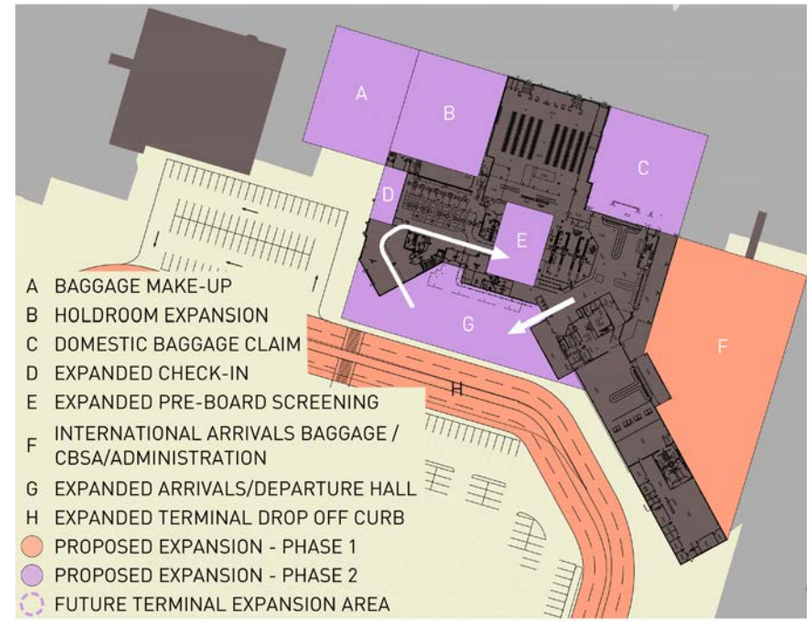
RECOMMENDED DEVELOPMENT STRATEGY

Passenger Terminal Building

Major elements of the proposed expansion illustrated in Figure 15, dependent on passenger growth, would include:

- Expanded departures/arrivals lobby with improved passenger flows to eliminate the need for passengers to backtrack and provide additional queuing space for pre-board passenger screening.
- Expanded check-in area with four to six additional check-in counters and queuing area.
- Expanded pre-board passenger screening area with two additional screening lanes and expanded queuing area.
- Relocated and expanded baggage make-up area.
- Expanded holdroom with additional retail concessions and gate podiums.
- Expanded domestic baggage reclaim area with two reclaim devices, each sized to support a 200-seat aircraft.
- Expanded international arrivals area with expanded baggage reclaim area supporting two reclaim devices each sized to support a 200-seat aircraft.
- Expanded Canada Border Services Agency passenger processing functions and administration and support space.
- Relocated and expanded airport administration area.
- Expanded terminal curbs including dedicated lay-by positions for public transit vehicles.

Figure 15 Proposed Passenger Terminal Building



Commercial Development

- Access, prepare and service additional lands for expanded commercial development including cargo facilities and hangars, including land to the west and south of the Airport.
- Dependent on assessment, remove/relocate NAV CANADA radar to support commercial development and apron area expansion.
- Expand services and utilities including water, sewer, gas and hydro.

RECOMMENDED DEVELOPMENT STRATEGY

Operations Support Facilities & Services

- Preserve the Air Traffic Control (ATC) line of sight to ensure airside surfaces can operate efficiently.
- Expand the existing combined services building to consolidate storage and maintenance operations, allowing for additional development near the restricted apron.
- Preserve land for the expansion for the fuel farm.
- Assess need for non-passenger vehicle screening facility.

Utilities & Municipal Services

- This Master Plan identified several improvements and extensions of utilities and municipal services to service the proposed Passenger Terminal Building expansion and proposed development areas. The recommendations are as follows:

Sanitary Sewer

- Provide the appropriate sanitary services to the key development areas to accommodate demands that will be imposed by future development as identified in the Master Plan. This includes the provision of new and upgraded services.

Municipal Water Services

- Conduct a study to evaluate the need to upgrade and/or extend water mains to the proposed commercial area and whether existing water mains have capacity to support the demand within the planning horizon.

Fire Protection System

- Review the existing fire protection system to ensure it could meet the demand and capacity requirements when changes in the facility occur.

Natural Gas

- Assess the existing natural gas services to determine alternatives that could support decarbonization and the potential developments.
- Conduct a capacity demand assessment to determine the demand required to support the proposed Passenger Terminal Building expansion and lowering and/or relocation of natural gas lines.

Stormwater Servicing

- Install Moving Bed Biofilm Reactor (MBBR) to treat glycol residual onsite.
- Update the 2009 Stormwater Management Study to address long-term development plans for airport lands.

Electrical Services

- Conduct a study to determine if the existing power supply will be sufficient for the future development within the planning horizon.
- Update the Passenger Terminal Building generator to accommodate existing and future Passenger Terminal Building requirements.

Communication Services

- Extend communication services, including fibre-optic cables to proposed development areas.

It is recommended a Master Servicing Plan be prepared. The study would analyze the applicable City of Hamilton drainage policy and standards and any other regulatory requirements relevant to the Airport's existing and proposed commercial development to ensure they comply with the Provincial Act and Regulation. The study would also evaluate future utilities and service requirements for Airport lands over the next 20years and provide recommendations on the timing of upgrades and expansions based on the proposed development phasing contained within this Master Plan.

AIRPORT SAFEGUARDING

The Airport Safeguarding section of the Master Plan has been established to preserve aviation safety and use for Hamilton International. This includes runway end safety area, obstacle limitation surfaces, airport zoning regulations and noise management.

Runway End Safety Areas

A Runway End Safety Area (RESA) is a surface that is intended to reduce severity of damage to the aircraft if it undershoots or overruns the runway. Transport Canada recently amended the regulations to specify which airports more clearly are required to implement RESA. Hamilton International does not meet these thresholds; however, the Airport has met the threshold in the past and implemented RESAs on Runway 12-30. The Airport is expected to exceed the threshold soon and will be required to implement RESAs on Runway 06-24.

Obstacle Limitation Surfaces

Obstacle Limitation Surfaces (OLS) are imaginary surfaces surrounding a runway that must be maintained free of objects to ensure safe aircraft operations at the Airport. The OLS for both runways are certified to meet regulations outlined in TP312 5th Edition Amendment 1. Since the OLS is already certified to the latest regulations, the Airport must maintain this protection for current and for future OLS characteristics with anticipation that Runways 30 and 06-24 could be upgraded to AGN VI Precision CAT II in the future.

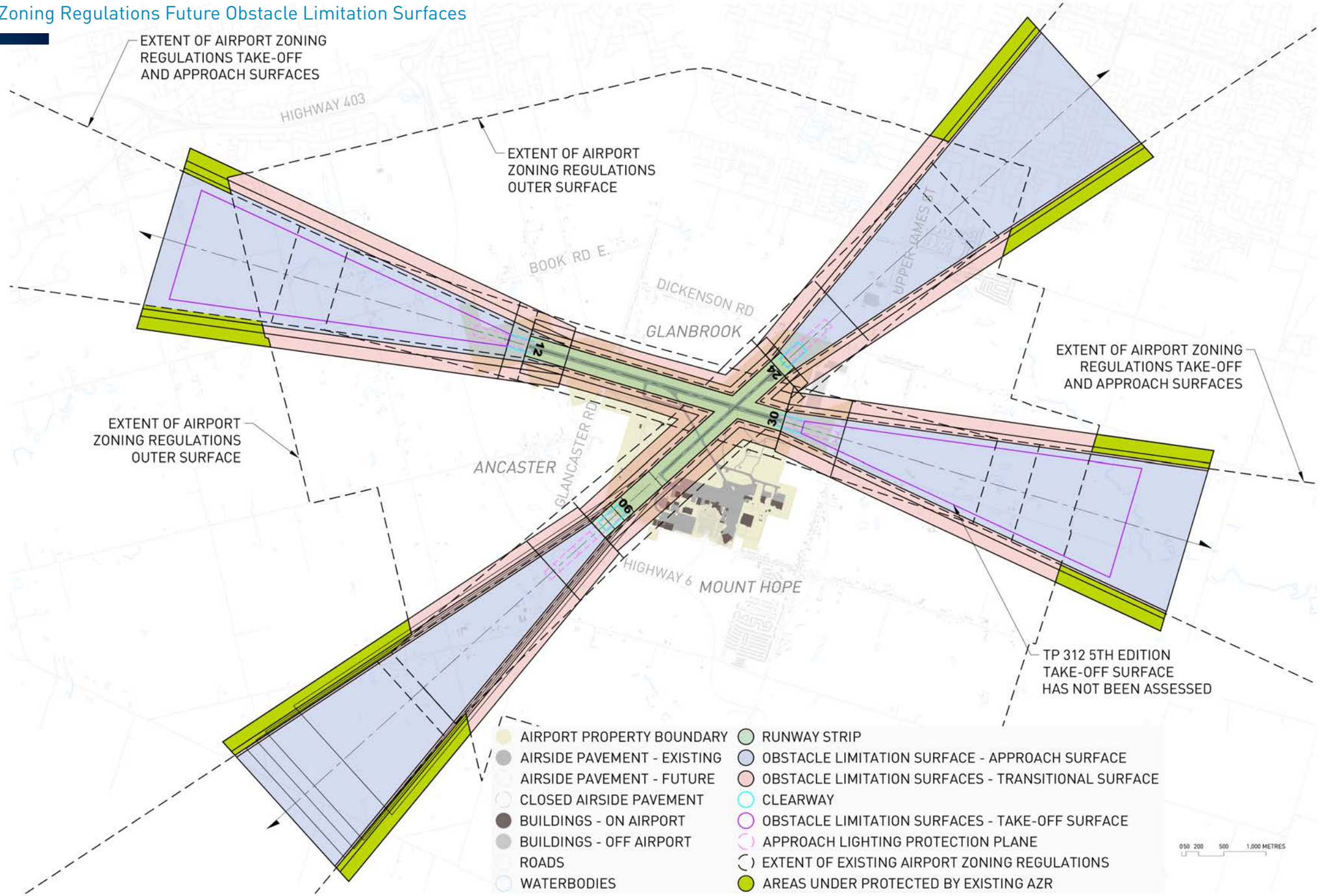
Airport Zoning Regulations

As part of government regulations, Hamilton International has published Airport Zoning Regulations (AZR) through the federal Aeronautics Act that will ensure that the existing and future OLS characteristics that correspond to future runway extensions will be protected beyond the Airport's boundaries.

A recent change in regulations has resulted in the transitional surface extending on each side of the approach surface. Therefore, the extent of the OLS extends beyond the limits of the existing AZR. Figure 16 illustrates those areas that are currently not protected by the existing AZR.

It is recommended a formal gap analysis is completed between the existing/future OLS and the existing AZRs to confirm all areas of under protection and, if it is determined there is an unacceptable risk of intrusion to the OLS and/or impact to instrument flight procedure use, the AZR's should be updated.

Figure 16 Existing Airport Zoning Regulations Future Obstacle Limitation Surfaces



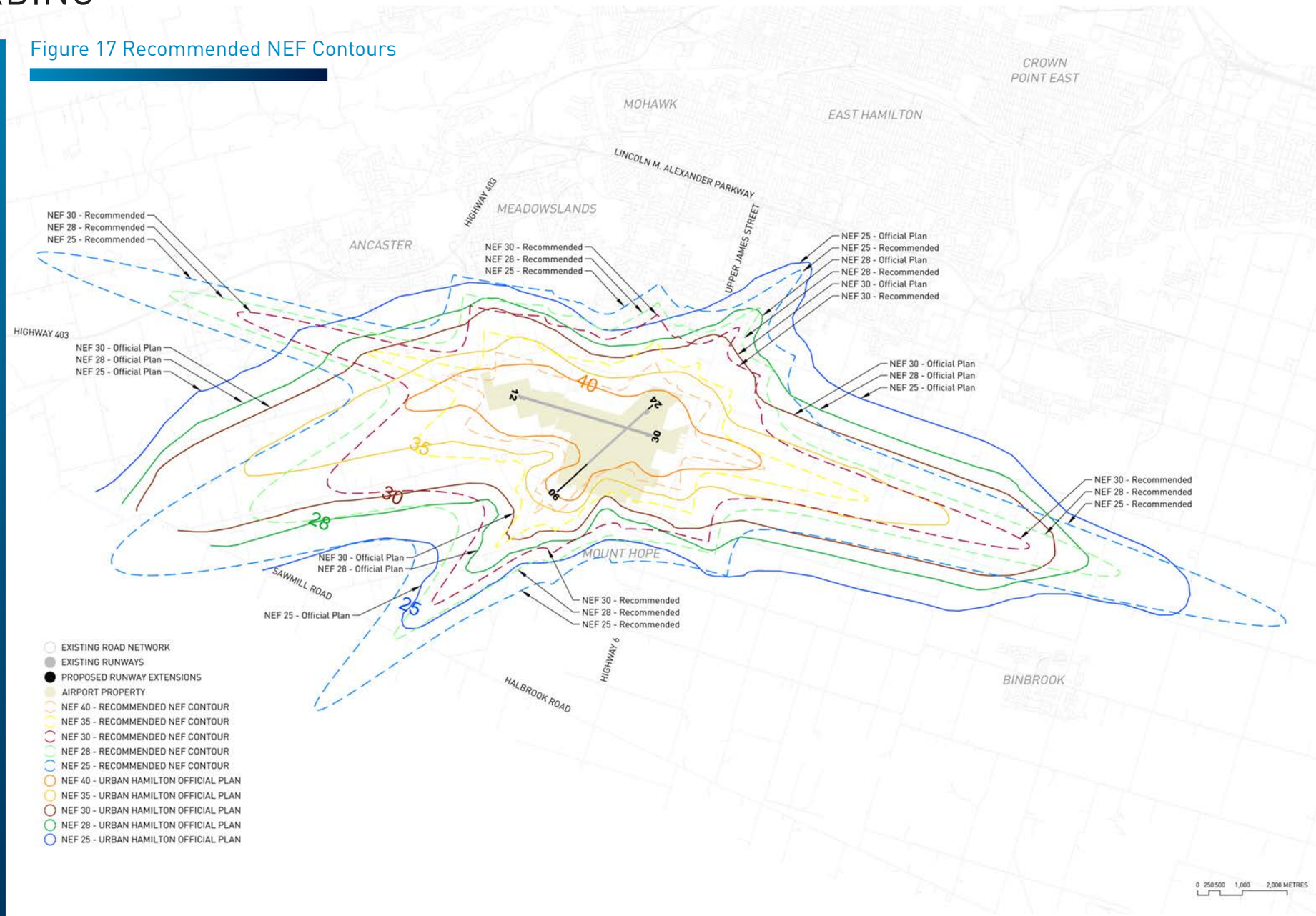
AIRPORT SAFEGUARDING

Noise Management

The only officially recognized model used for the analysis of aviation generated noise impact in Canada is the Transport Canada Noise Exposure Forecast Computer Program (NEFCALC). The latest version (2.0.6.1) was used to generate the contours presented herein. This has allowed for a comparison between those generated as part of this Master Plan and those presently adopted in the Urban Hamilton Official Plan.Several Noise Exposure Forecast (NEF) contours were prepared that envision a timeframe well beyond 10 years for the ultimate capacity of the two-runway system.

The selected scenario, illustrated in Figure 17, has been generated based on the long-term extension of Runway 06-24 by up to 3,000 feet towards the southwest and 500 feet towards the northeast. The scenario has been generated based on an adjusted runway distribution, one that assumes an increased usage of Runway 06-24 following its ultimate extension and a continuation of increased use of both runways by heavier/larger aircraft, such as the Boeing 777F.

Figure 17 Recommended NEF Contours



1. https://www.hamilton.ca/build-invest-grow/planning-development/official-plan/urban-hamilton-official-plan

AIRPORT SAFEGUARDING

Noise Management (continued)

In summary, the Urban Hamilton Official Plan states that residential and other sensitive land uses are not permitted within NEF 28 contour illustrated in Figure 18 and that any sensitive land uses permitted to be developed between 25-28 NEF contours will be required to implement noise mitigative measures in accordance with the Provincial and Federal guideline standards. Assessment for noise exposure is performed in accordance with Transport Canada's standards for land use in the vicinity of airports. The NEF contours help to ensure residential development and other sensitive land uses are developed in areas outside of the NEF 28 contour.

The NEF contours prepared as part of this Master Plan differ from the contours shown in the Official Plan. Such changes are due to the potential for runway extensions associated with Runway 06-24, the update of NEF Calc software, changes in runway distribution, the establishing of a practical maximum capacity for the Airport's runway system and other considerations related to airport operations.

It is recommended that the City of Hamilton maintains its position in adhering to the current measures of using the NEF 28 contour to restrict residential development, as currently outlined in the Official Plan and that the Official Plan NEF contours be updated to reflect those put forward in this Master Plan and as illustrated in Figure 17.

The adoption of a new NEF 28 contour, as prepared for this Master Plan update, is recommended. However, this is not to suggest that the existing NEF contours, reflected in current policy and planning documentation at the City of Hamilton, be abandoned or replaced immediately with the new NEF contour, rather that consideration be given and due process followed that would allow for the potential for inclusion in a future update to the City's Official Plan. In that regard, the recommended NEF contours that have been produced as part of this Master Plan should be at minimum considered further in future planning and policy development at the City.

As part of the City's future planning and policy development, the Airport should be consulted further in examination of policy that pertains to the potential for NEF contour changes to be adopted whether in part or full.

Figure 18 Official Plan – NEF Contours

AIRPORT ENVIRONMENTAL STRATEGY

Monitoring and minimizing the environmental impact of airport operations is important to Hamilton International. The Airport's environmental mission statement is as follows:

Hamilton International Airport is committed to protecting the environment and safeguarding the health of its employees, business partners and the general public.

ENVIRONMENTAL GOALS AND OBJECTIVES

Hamilton International has defined environmental objectives with the primary goal of ensuring the Airport operates in an environmentally responsible manner, including reducing the Airport's impacts on the environment according to applicable laws and regulations, accepted management practices and with sensitivity to community and public concerns.

Those objectives are:

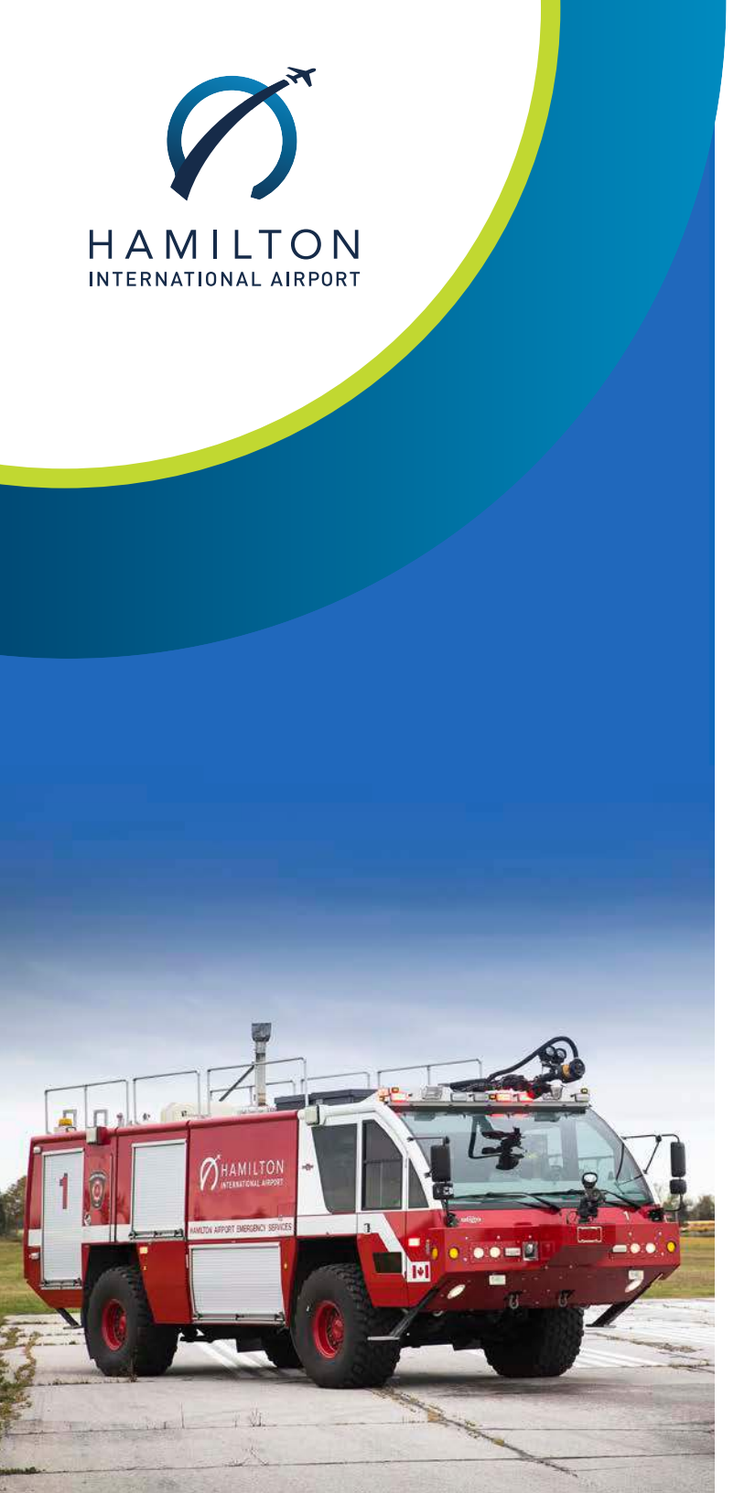
- To establish and maintain Hamilton International as an environmentally responsible and sustainable facility.
- To ensure compliance of all environmental legislation and guidelines.
- To inform all Airport tenants and employees of their environmental responsibilities to achieve the above objectives.
- To familiarize the public with the Airport's environmental policies.
- To ensure that all parties understand the concept of sustainable growth.

CLIMATE RESILIENCE

Hamilton International recognizes the value of environmental principles that are core to the corporate culture and incorporated into the investment, development and operation throughout TradePort's history as investor, developer and manager. The Airport will assess its contribution to climate change, including greenhouse gas emissions, measuring the burden of landfills and how well it is reducing that burden through waste diversion and evaluating water consumption. An Airport Environmental Strategy and Climate Resiliency Plan will be completed by 2026 that will include Federal goals and targets for the aviation industry, while being mindful of the City of Hamilton objectives.

The Airport will integrate principles, standards and measures to provide enhanced climate resilience, which may include:

- Carbon footprint reduction through a combination of upgrades to facilities, adjusting equipment usage and implementing new policies or procedures.
- Decarbonization assessment and investment grade/net-zero energy audit to help support further decarbonization project development.
- Plan to construct and maintain infrastructure in a way that is resilient to these disruptive effects of more extreme weather events. For example, the moving bed biofilm reactor that is planned to be installed in 2024 will reduce the risk of community flooding by treating glycol residual stormwater onsite.
- Construct drainage systems and stormwater ponds that can accommodate larger amounts of water.
- Reduce, where possible, non-permeable surfaces and maximize water uptake to minimize potential flooding during periods of heavy precipitation.
- Build resilient structures immune to strong winds and storms, ranging from airfield signs to the Airport's Combined Services Building and Passenger Terminal Building.



SUMMARY AND RECOMMENDATIONS

Hamilton International is well positioned to expand its role as Canada's largest overnight express cargo airport and focus on growing affordable low-cost and leisure passenger service. Challenges, such as the lack of serviced commercial land and requirements to expand Passenger Terminal Building and public parking, need to be addressed for the Airport to accommodate projected activity demand over the 20-year planning horizon.

Safeguarding the Airport through amendments to the AZRs and ensuring appropriate noise exposure forecasts is key to protecting the long-term operational and commercial viability of the Airport and its significant role as a catalyst for regional economic development.

Recommendations

The following are key opportunities identified in this Master Plan that can have an impact on future growth and which are recommended:

- Creation of Additional Serviced Land – Multiple existing tenants have communicated the need to continue to grow their respective facilities on the Airport Property. Additional serviced land is required to support the future growth of the Airport, which includes optimizing, repurposing and servicing existing Airport lands, as well as incorporating existing adjacent City-owned lands into the Airport boundary today. Inclusion of City-owned lands into the Airport Development Plan and optimization and repurposing of existing lands will enable the Airport to maximize its full potential.
- Radar Needs Assessment – The existing radar, which is under the jurisdiction of NAV CANADA, requires refurbishment or replacement through the national replacement program. An opportunity exists to potentially relocate onsite and optimize land where the radar currently resides. If the radar remains on Airport property, alternative locations will be assessed for preferred location and to reduce conflicts on other lands proposed for commercial development. The Radar Needs Assessment being performed by NAV CANADA is expected to be completed in 2024 and may provide options for alternative sites and costing for potential relocation.
- Capacity and Infrastructure Requirements – Planned growth for both cargo and passenger traffic demand provide opportunity for short-, medium- and long-term investments to ensure stakeholders can continue to expand operations.
- Runway 06-24 Expansion – Runway 06-24 Expansion is not recommended in the 20-year horizon. Expansion would not add capacity, but rather provide improved overall system usability/redundancy, and is not required based on future traffic forecasts. However, it is prudent to protect for the future beyond the term of the Master Plan and land should be held for potential expansion in the future.
- AZR Assessment – Changes to Transport Canada's regulatory requirements is resulting in a recommendation that further study of risks and mitigations be performed in the next three years along with a feasibility study and cost/benefit analysis.

SUMMARY AND RECOMMENDATIONS

- City of Hamilton Plans – The Master Plan impacts other City of Hamilton plans and, as such, it is recommended that TradePort undertake the following studies, specific only to the impacts that the Airport has on such plans and be completed by 2026 to assist the City in its long-term planning of lands at and around the Airport:
  - Master Servicing Plan to identify the site servicing requirements for the proposed commercial development areas over the next 20 years, for commercial lands included in the current lease line, or proposed to be included in the next 20 years.
  - Ground Transportation Study to evaluate ground traffic demand that could be expected on surrounding road networks based on the forecast of aviation activity.
  - Stormwater Master Drainage Study that accounts for existing and proposed commercial developments.
  - Airport Environmental Strategy and Climate Resiliency Plan that incorporates Federal goals and targets for the aviation industry, while being mindful of City of Hamilton objectives.

HAMILTON
INTERNATIONAL AIRPORT

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