



AIRPORT MASTER PLAN 2012

BILLY BISHOP TORONTO CITY AIRPORT

Project No.10517
June 2012 – Updated July 2014

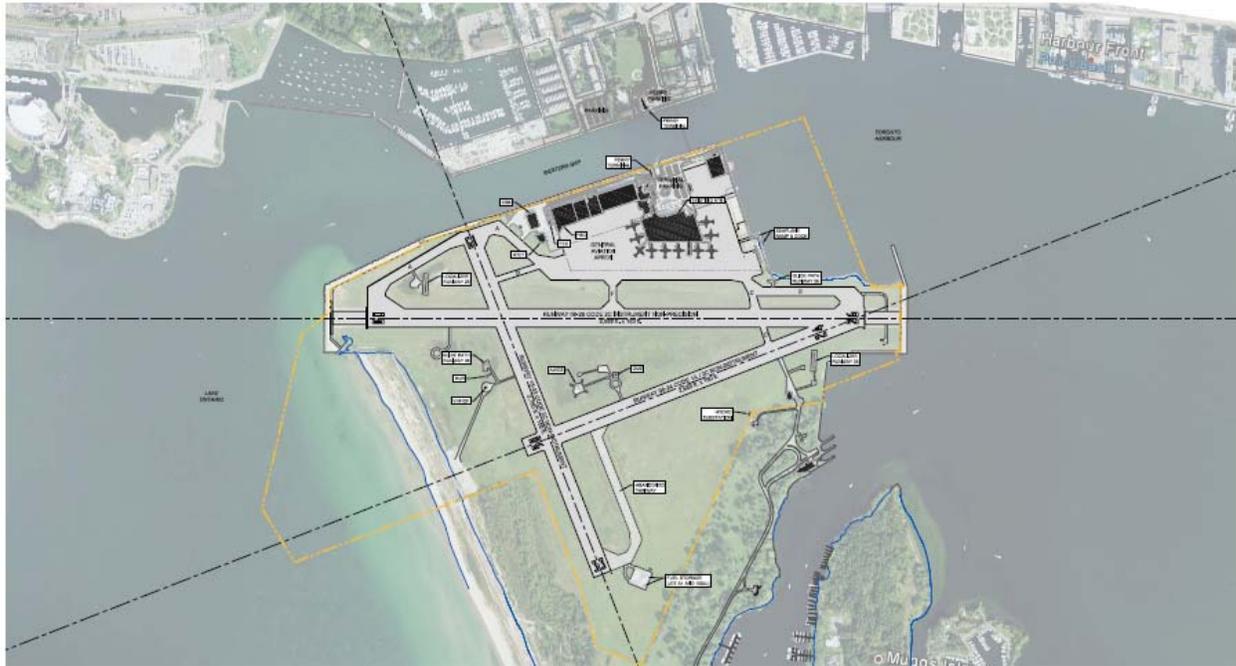


1300 Yonge St.
Suite 801
Toronto, ON M4T 1X3
Tel: 647 789-3550
Fax: 647 789-3560
www.wspgroup.com



EXECUTIVE SUMMARY

Billy Bishop Toronto City Airport (BBTCA) is a Transport Canada certified aerodrome which is operated by the Toronto Port Authority (TPA) on lands owned by the TPA, as well as lands leased to TPA from the Federal Government and the City of Toronto. In operation since 1939, the Airport has served a variety of roles including a training base for the Norwegian Air Force during the Second World War. Today, the Airport is used for scheduled air carrier operations as well as general aviation activities, including corporate aviation, flight training and recreational flying. In 2011, BBTCA handled over 1.5 million passengers.



In June 1983 a Tripartite Agreement was signed between the Federal Government, City of Toronto and the Toronto Port Authority. The Agreement requires the TPA to operate BBTCA, as a permanent public airport, for a period of 50 years (until June 2033). As required under the Agreement, a number of special conditions must be adhered to, which have a very significant bearing on the future development of the Airport and the nature and extent of aviation activity. These conditions include the following:

- The construction of additional runways or extensions to existing runways is not permitted.
- Expansion of lands comprising the Airport beyond the present land area is not permitted.
- Jet-powered aircraft are not permitted to operate from the Airport, with the exception of medical evacuations and other emergency uses.
- To regulate the potential noise impacts of aviation activity, the actual 28 NEF Contour associated with aviation activity must remain within the boundary of the official 25 NEF Contour for 1990.

This Airport Master Plan fully respects the intent of the Tripartite Agreement and the conditions contained within it.

The theoretical capacity of BBTCA, which does not breach the official 1990 25 NEF contour, is approximately 140,700 annual movements, subject to the mix of noise-qualified aircraft. To remain within the official 25 NEF contour, The Toronto Port Authority has implemented a slot allocation process that limits air carrier operations to 202 movements (takeoffs and landings) per day. Given the permitted air carrier movements, along with general aviation activity, it is likely that BBTCA is close to reaching its theoretical capacity. Therefore, possible activity management practices need to be considered. They

could include the application of slot controls on general aviation/corporate movements and/or placing caps on certain segments of activity, such as local movements.

Under the current slot allocation, Porter Airlines and Air Canada Express typically operate approximately 65,416 flights a year with load factors which range between 50% and 60%. Assuming an average load factor of 79%, there is the potential for approximately 3,600,000 annual passengers. Of this, based on current passenger distributions, approximately 2,988,000 would be Originating/Terminating passengers and 612,000 would be connecting passengers. With the current slot allocation, and restrictions on aircraft size, this likely represents a mature level of passenger activity for the Airport. Activity increases beyond this figure could likely only be achieved if additional movement slots during peak periods were allocated to the airlines.

In order to support and enhance the operational and business objectives of the Airport, while having due regard for the Tripartite Agreement, the Airport Master Plan identifies a number of recommendations, together with a recommended Land Use Plan. These recommendations include the following:

Airside

- Runway 15-33 should be decommissioned and Taxiway Alpha realigned to permit the western expansion of commercial development along the existing hangar line. This development will need to occur in a number of phases as it will require the relocation of airport facilities such as the combined services building and the localizer for Runway 26.
- In terms of the decommissioning of Runway 15-33, the portion between the threshold of Runway 06 and Runway 08-26 should be converted into a taxiway, while the portion south of Runway 06-24, including Taxiway Echo should be decommissioned. An airside road is required to maintain access to the fuel farm located south of the intersection of Runway 33 and Taxiway Echo.
- It is our understanding that Runway 08-26 requires a full reconstruction. At that time, Runway 08-26 should be reduced from 45m (150 ft) to 30m (100 ft) and the runway centerline shifted 7.5m south. This will increase the separation between the runway centerline and airport developments to the north, such as parallel taxiways, passenger terminal and the hangars.
- Following the southern shift of centerline for Runway 08-26, the apron / taxilane directly south of the terminal building should be expanded to permit dual taxilanes. This will require an expansion of the apron and the re-alignment of the existing infrastructure.
- All taxiways forming part of the normal traffic flow for the Q400 should be upgraded to meet Transport Canada recommendations for main gear clearance.
- It is anticipated that Runway End Safety Areas (RESAs) will become a mandatory regulatory requirement over the next five (5) years. Therefore, the TPA, in cooperation with Transport Canada and the City of Toronto (i.e. signatories to the Tripartite Agreement), should assume that these regulatory requirements will require amendments to the Tripartite Agreement.
- Runway 06-24 should be upgraded with a lighting system to enable night-time operations up to the 11:00pm curfew.
- Due to limited space off the ends of the runways, the electronic navigational aids are located off-centerline, which is impacting the instrument approach minima and aircraft manoeuvrability. The localizer for Runway 26 should be relocated in order to permit the final re-alignment of Taxiway Alpha to the threshold of Runway 08. This will enable increased commercial development along the north side of Taxiway Alpha.
- Runway 08 glidepath and the Marine Radar should be relocated such that it will permit a northern shift of Taxiway Delta between Taxiway Charlie and the threshold of Runway 26. This will also require the construction of a permanent headwall along the northern shoreline adjacent to Taxiway Delta, as permitted under the Tripartite Agreement (provided no land mass is added). This will complete a full-length parallel taxiway along Runway 08-26, substantially increasing operational efficiency.

Landside

- Reconfigure the Stadium Road parking lot layout to increase the manoeuvrability, access and wayfinding to the ferry terminus.
- Reconfigure the immediate ferry terminus curbside that has been implemented during the construction the pedestrian tunnel. This analysis should consider passenger flows; particularly that of shuttle passengers, passenger drop-off and taxi pick up area.
- Reconfigure the short-term ferry terminus curbside following the construction of the pedestrian tunnel. This analysis should consider passenger flows; particularly that of shuttle passengers, passenger drop-off and taxi pick up area.
- Reconfigure lower Bathurst Street, with emphasis on taxi corral area, ferry traffic, general public traffic and construction traffic related to the construction of the pedestrian tunnel.
- The TPA, in co-operation with the City of Toronto, should examine opportunities to increase the use of public transportation to and from BBTCA.
- The TPA, in co-operation with the City of Toronto, should examine a pedestrian separation over lower Bathurst Street immediately south of the intersection of Bathurst Street and Queens Quay West. This will increase the safety of school children and other pedestrians during peak periods.
- The TPA, in co-operation with the City of Toronto, should examine opportunities to utilized City lands in order to maximize landside system functions. This should include potential transfers / swaps of TPA and City lands. The purpose of this being to reduce the impact of airport-related traffic on surrounding residents, while increasing the operational efficiency of the landside system.
- The TPA should assess the feasibility of providing structured (above or below grade) parking either on the mainland or on the island. The ideal location for this parking would be either on the existing Canada Malting Site or on lands immediately west of the ferry terminus.

Airport Support

- A new combined services building (CSB), including airport maintenance and ARFF functions should be constructed. This new CSB should have a minimum of eight (8) bays for maintenance functions and an additional five (5) bays for ARFF, for a total of eleven (11) bays. An additional two (2) bays should be considered for future expansion requirements, totalling fifteen (15) bays.
- Ideally, the new CSB should be located on the north side of the Airport, such that both airside and landside access is available.
- The TPA should consider the Trans Capital Air lease area as a possible site for a new CSB building. This site would provide an opportunity to include ferry maintenance functions as part of the building program. Under such a scenario, Trans Capital Air could relocate to new hangar facilities located north of Runway 15-33.
- An alternative location for the CSB is adjacent to the existing site, north of the ATC.

Commercial Development

- Runway 15-33 should be decommissioned and Taxiway Alpha relocated, permitting expansion of commercial development west along the hangar line.
- The extent of this commercial development depends on what other airport infrastructure/facilities are relocated as part of this activity. The following summarizes two (2) possible alternatives:
- Alternative 1:
 - i. Construct a new CSB at the site of the existing Trans Capital Air hangar, which would be relocated in the vicinity of the threshold for Runway 15.

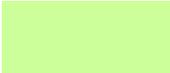
- ii. Adjacent to the new Trans Capital Air hangar, provide a lease area large enough to support light maintenance of Dash 8 Q400, such that Porter's existing maintenance facilities can be relocated.
 - iii. Porter's current maintenance facility would be converted for use by private recreational aircraft storage including the re-configuration of the existing FBO to act as a dedicated FBO for itinerant and corporate aircraft.
- Alternative 2:
- i. Construct a new CSB in the vicinity of the existing CSB.
 - ii. Provide a lease area for a new dedicated FBO for itinerant and corporate aircraft.
 - iii. Provide a lease area to support the construction of new hangars for the storage of private recreational aircraft.
- Commercial development on the south side of Runway 08-26 is not recommended except for aircraft tie-downs for recreational aircraft which do not require vehicular access to their aircraft. Pedestrian access to these tie-downs would be provided by the Hanlan's Point ferry service and through a gate in the airport perimeter fence. The number of tie-downs should be limited to current BBTCA-based aircraft only.
- It is not recommended that commercial development occur on the south side if vehicle traffic is required to cross the runway complex at grade.

Aviation Activity Management

- Local movements (i.e. flight training circuit activity) should be restricted, capped or possibly eliminated.
- The number of based private recreational aircraft should be capped at existing levels.
- Air carrier slots should be capped at 202 per day and the number of night-flights (2200 & 0700) continue to be restricted to a maximum of seven (7) per day in accordance with the slot capacity study.
- Itinerant corporate activity should be permitted to grow by a maximum of 2%-3% per year.

Recommended Land Use Plan

The following is a description of the land use descriptions used the recommended land use plan:

Airside Pavements	Airside pavements that are currently used or required in the future for the safe movement and operation of aircraft.	
Landside Reserve	Lands required for or required in the future for groundside access and parking.	
Airport Terminal	Lands currently used or required in the future for airport terminal operations.	
Airport Support	Lands currently used or required to support the operations of the Airport including airport maintenance facilities, fire hall, fuel farm, and storage facilities.	
Airside Commercial	Lands currently used or required to support commercial activities which require direct access to the airside infrastructure. Activities could include aircraft maintenance/storage, air cargo, airline maintenance, FBO.	

**BILLY BISHOP TORONTO CITY AIRPORT
AIRPORT MASTER PLAN**

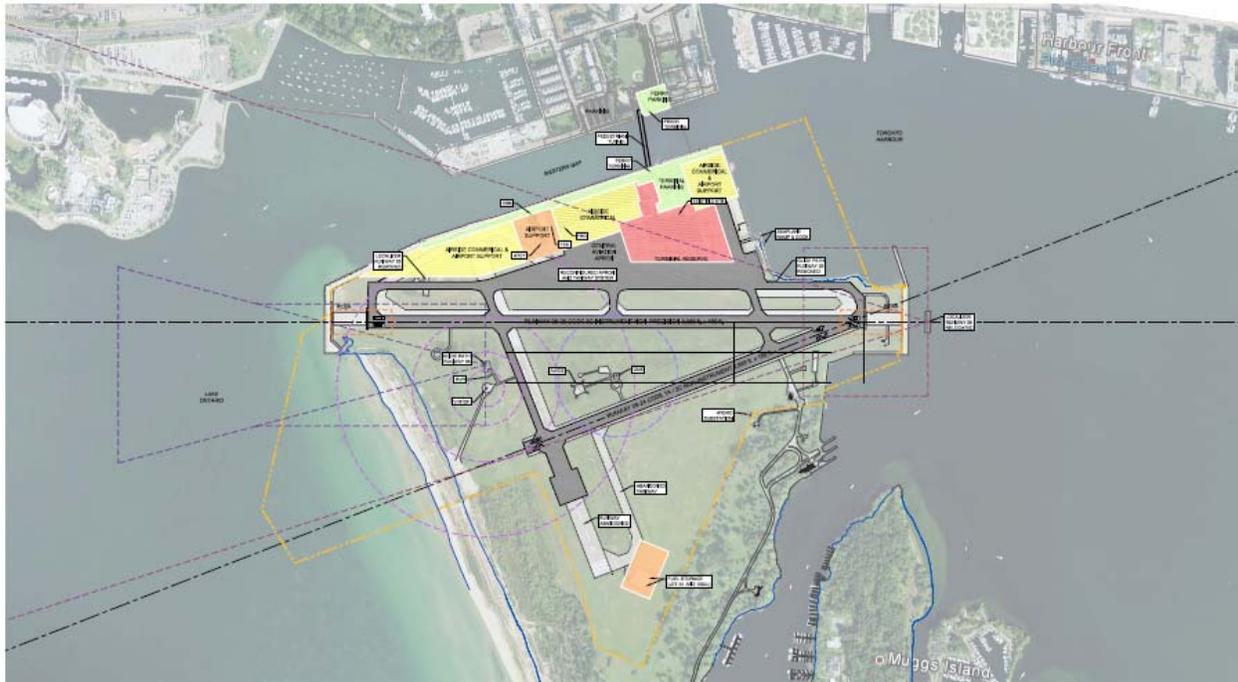


TABLE OF CONTENTS



Transmittal Letter
Executive Summary
Table of Contents

1. INTRODUCTION	1
1.1 Background	1
1.2 Tripartite Agreement	1
1.3 Goals and Objectives	1
2. AIRPORT SETTING	3
2.1 Physical Setting	3
2.2 Airport History	4
2.3 Airport Vision	5
2.4 Airport Role	6
2.5 Economic Impact	6
2.6 Airport Stakeholders	6
2.7 Socio-Economic Profile	7
3. EXISTING INFRASTRUCTURE	8
3.1 Airside	8
3.1.1 Runways	8
3.1.2 Taxiways	10
3.1.3 Apron	11
3.1.4 Seaplane Ramp	11
3.1.5 Navigational Aids	11
3.2 Landside	12
3.2.1 Mainland Site	12
3.2.2 Airport Site	13
3.3 Airport Terminal Building	14
3.4 Airport Support facilities	15
3.4.1 ARFF Fire Hall	15
3.4.2 Airport Maintenance Garage	16
3.4.3 Materials Storage	16
3.4.4 Field Electrical Centre	16
3.4.5 Air Traffic Control Tower	16
3.4.6 Fuel Farm	16
3.4.7 Aircraft De-icing	17
3.5 Commercial Development	17
3.6 Utilities and Services	17
4. AVIATION FORECASTS	18
4.1 Passenger Activity Analysis	18
4.1.1 Historic Passenger Activity	18
4.1.2 Current Air Services	18
4.2 Air Cargo Activity Analysis	19

4.3	Aircraft Movement Activity Analysis.....	19
4.3.1	Definitions	19
4.3.2	Historical Activity.....	19
4.4	Aircraft Movement Capacity.....	22
4.5	Aircraft Movement Forecast.....	24
4.5.1	Aviation Sectors.....	25
4.5.2	Activity Scenarios.....	26
4.6	Passenger Activity Forecasts	29
4.7	Peak hour Activity Forecasts	30
4.7.1	Existing Peak Hour Activity.....	30
5.	INFRASTRUCTURE REQUIREMENTS.....	32
5.1	Airside	32
5.1.1	Runways	32
5.1.2	Taxiways.....	33
5.1.3	Aprons.....	33
5.2	Landside	34
5.2.1	Landside – Mainland.....	34
5.2.2	Landside - Airport.....	36
5.3	Airport Terminal Building	36
5.4	Airport Support Facilities.....	37
5.4.1	Airport Maintenance Garage.....	37
5.4.2	ARFF Fire Hall	37
5.5	Commercial Development	37
5.5.1	North Airport Lands.....	37
5.5.2	South Airport Lands	38
6.	RECOMMENDATIONS.....	39
6.1	Project Implementation and Phasing	39
6.2	Airside	39
6.2.1	Short-Term.....	39
6.2.2	Medium-Term.....	40
6.3	Landside	40
6.3.1	Short- Medium Term.....	40
6.4	Airport Terminal Building	41
6.5	Airport Support Facilities.....	41
6.6	Commercial Development	41
6.7	Aviation Activity Management.....	42
6.8	Off-Site Land Use Planning	42
7.	CAPITAL INFRASTRUCTURE PLAN.....	44
7.1	Current Airport Funding	44
8.	RECOMMENDED LAND USE PLAN.....	45
9.	ENVIRONMENTAL / COMMUNITY IMPACTS.....	47
9.1	Environment.....	47
9.2	Noise.....	47
9.3	Airport Zoning	48

LIST OF TABLES

Table 2-1	Airport Operators/Tenants	6
Table 3-1	Runway 08-26 Characteristics	8

Table 3-2	Runway 06-24 Characteristics	9
Table 3-3	Runway 15-33 Characteristics	10
Table 3-4	Taxiway Characteristics	10
Table 3-5	Navigational Aid Characteristics	12
Table 4-1	Annual Passenger Activity	18
Table 4-2	Scheduled Flights by Destination.....	18
Table 4-3	Historical Aircraft Movements	19
Table 4-4	Itinerant Movements by Operator	20
Table 4-5	Itinerant Movements by Type of Power Plant	21
Table 4-6	Local Movements	22
Table 7-1	Audited Financial Statements	44

LIST OF FIGURES

Figure 2-1	Existing Site Plan	4
Figure 4-1	Historical Annual Aircraft Movements	20
Figure 4-2	Historical Annual Aircraft Movements by Operator.....	21
Figure 4-3	Historical Annual Aircraft Movements by Type of Power Plant	22
Figure 4-4	Historical Annual Aircraft Movements by Type of Power Plant	23
Figure 4-5	Aircraft Movement Capacity	24
Figure 4-6	Forecast Movements by Operator	27
Figure 4-7	Activity Scenario 1.....	27
Figure 4-8	Activity Scenario 2.....	28
Figure 4-9	Activity Scenario 3.....	29
Figure 4-10	Activity Scenario 4.....	29
Figure 4-11	Passenger Activity Forecast	30
Figure 4-12	Departure Seats by Time of Day.....	31
Figure 4-13	Arrival Seats by Time of Day	31
Figure 8-1	Recommended Land Use Plan	46

APPENDICES

Appendix A	Existing Site Plan
Appendix B	Recommended Land Use Plan

1. INTRODUCTION

1.1 BACKGROUND

Billy Bishop Toronto City Airport (BBTCA) is a Transport Canada certified aerodrome which is operated by the Toronto Port Authority (TPA) on lands owned by the TPA, as well as lands leased to TPA from the Federal Government and the City of Toronto. The total land area is approximately 85 ha, of which 66.8 ha (78.6%) are owned by the TPA, 17 ha (20%) by the City of Toronto, and 1.2 ha (1.4%) by the Federal government.

In operation since 1939, the Airport has served a variety of roles including a training base for the Norwegian Air Force during the Second World War. In the late 1940's the Airport was turned over to civilian use and utilized for general aviation activities including corporate aviation, flight training and recreational flying. In the mid 70's scheduled passenger service was initiated using regional turboprop aircraft. Today, the Airport serves a wide variety of activities which include scheduled passenger service, charter/business aviation, flight training, air ambulance operations and recreational flying.

In recent years, BBTCA has become Canada's fastest growing airport with respect to passenger activity. Between 2006 and 2011 annual passenger activity increased from 22,321 to 1,584,652 passengers, which in turn has led to a significant investment in terminal facilities and the construction of a pedestrian tunnel.

1.2 TRIPARTITE AGREEMENT

In June 1983 a Tripartite Agreement was signed between the Federal Government, City of Toronto and the Toronto Port Authority. The Agreement requires the TPA to operate BBTCA, as a permanent public airport, for a period of 50 years (until June 2033). The TPA is obligated to administer and operate BBTCA in an efficient and businesslike manner to ensure an effective operation. All parties to the Agreement are committed to not undertaking anything that would interfere with the operation or safe use of the Airport.

As required under the Agreement, a number of special conditions must be adhered to which have a very significant bearing on the future development of the Airport and the nature and extent of aviation activity. These conditions include the following:

- The construction of additional runways or extensions to existing runways is not permitted.
- Expansion of lands comprising the Airport beyond the present land area is not permitted.
- Jet-powered aircraft are not permitted to operate from the Airport, with the exception of medical evacuations and other emergency uses.
- To regulate the potential noise impacts of aviation activity, the actual 28 NEF Contour associated with aviation activity must remain within the boundary of the official 25 NEF Contour for 1990.

1.3 GOALS AND OBJECTIVES

The primary purpose of the Airport Master Plan is to establish a rational development concept for the Airport which protects and preserves the long term operational and business objectives of the Airport while accommodating short term improvements. The Airport Master Plan serves as a planning framework to ensure that short-term developments do not impede longer term objectives. As a management tool, the Airport Master Plan document assists airport management in making informed decisions about the timing and estimated costs of future improvements, action plans and preferred development solutions.

The goals and objectives of the Airport Master Plan adhere to the principles and requirements of the Tripartite Agreement. In addition, the Airport Master Plan reflects the overall objectives of the TPA, which include protecting the local environment, sustainability and social responsibility.

2. AIRPORT SETTING

2.1 PHYSICAL SETTING

Billy Bishop Toronto City Airport (BBTCA) is located within the City of Toronto on the Toronto Islands. The Airport is separated from the mainland by the Western Gap, a 121 m wide channel of water that provides boat access between Toronto's Inner Harbour and Lake Ontario. Access to the Airport is provided via a dedicated passenger/vehicle ferry operated by the TPA. Construction of a pedestrian tunnel linking the Airport to the mainland was initiated in 2012, and is scheduled to be operational in 2014.

The Airport's reference point and elevation per the current Canada Flight Supplement is:

N43°37'39" W79°23'46"

Elevation: 252' (76.8m) above sea level (ASL)

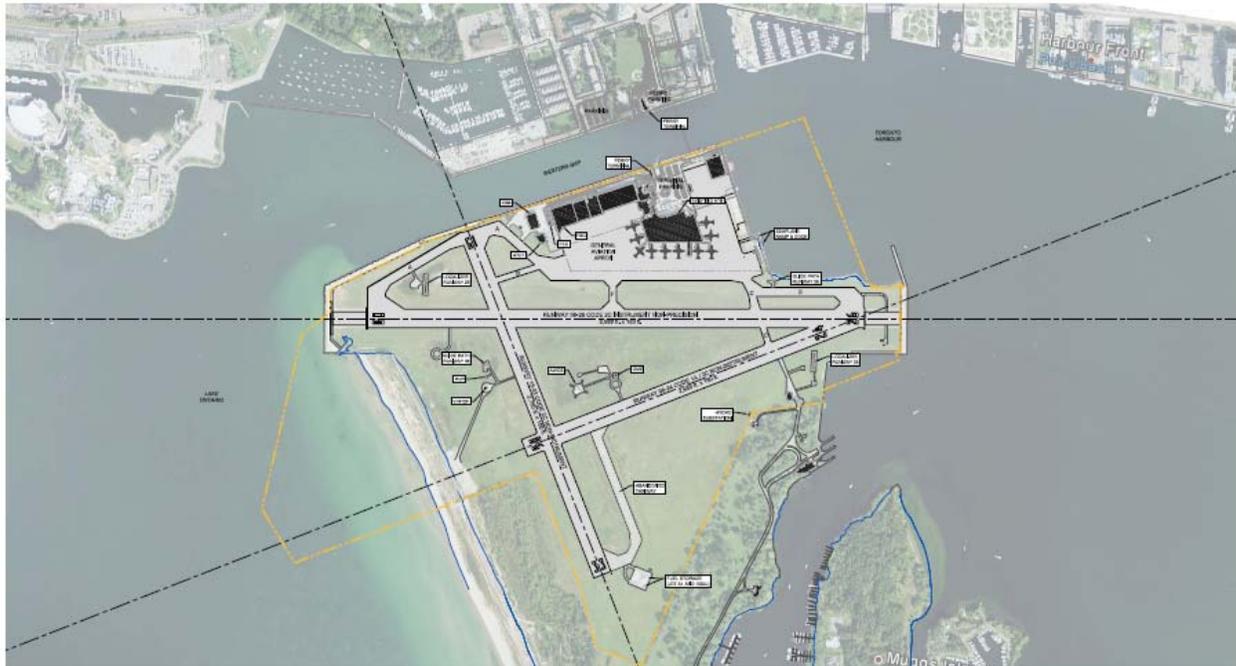
BBTCA is bounded on three sides by water and on the fourth side by parkland associated with the Toronto Islands park system. The Airport's topography is flat and void of any natural vegetation except for grassed areas. Beyond the Airport property to the south are wooded and grassed areas included as part of the park.

Due to its location in close proximity to Toronto's downtown waterfront area, the Airport is operationally constrained by off-site developments such as condominium towers, Canada Malting silos and the Hearn emissions stack.

Figure 2-1 illustrates the existing Airport. A larger scale drawing, with legend, is provided in Appendix A.



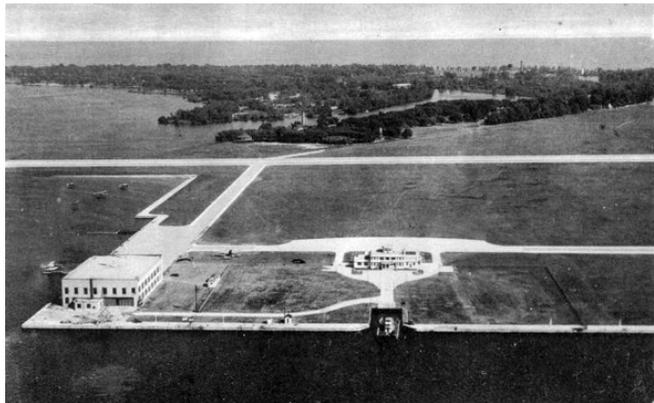
Figure 2-1 Existing Site Plan



2.2 AIRPORT HISTORY

Construction of an airport on the Toronto Islands began as early as the 1937 when the Island Airport was conceived as city's primary airport. Large portions of the Airport property were constructed on new earth works that were brought in to fill an existing lagoon and to provide extensions at the east and west ends of the Airport in order to accommodate the construction of a runway.

The Airport initiated operations in 1939 under the name Port George VI Island Airport to commemorate an upcoming visit by King George VI. Infrastructure included runways, taxiways, a wood-frame terminal building, as well as facilities to accommodate seaplanes. At the same time, a second airport, located to the northwest of Toronto in Malton, was also constructed. Although originally conceived as a reliever airport and training facility, Malton Airport was ultimately selected as the primary airport for Toronto because its longer runway lengths were better suited to Trans Canada Airlines operations.



Construction was initially started on a vehicle tunnel linking the Airport to the mainland. However, due to cost and other factors this was abandoned in favour of a ferry service that would convey passengers and vehicles to and from the Airport. The first ferry to operate was a cable ferry, which remained in operation until 1963.

With the outbreak of the Second World War, the Airport became a training facility initially for the Royal Norwegian Air Force and then later for the Royal Canadian Air Force. At the end of the war, the Airport reverted back to civilian use and became base to a number of flight schools, flying clubs and small general aviation operators.

During the 1950's and 60's a number of improvements were made to the Airport. These included extension of the runway to 4,000 ft. and replacement of the cable ferry with a larger self-propelled ferry. In 1961, the Island Airport was the busiest in Canada with nearly 213,000 movements, much of this being flight training. In 1962 the Toronto Harbour Commission (now TPA) assumed responsibility for the management and operation of the Airport.



In 1975 scheduled commercial flights were initiated by Otonabee Airways. Operating 19 seat aircraft, the airline provided scheduled flights to Montreal via Peterborough. In the early 1980's the airline was reorganized as City Express and expanded its operations, providing direct flights to Ottawa and Montreal utilizing DHC Dash-7 and Dash-8 aircraft.



In 1983 the City of Toronto, the Government of Canada and the Toronto Harbour Commission signed the Tripartite Agreement that established the parameters by which the Airport would operate until the year 2033. Key to the agreement was the restrictions on the use of the Airport. These restrictions included the prohibition of jet movements (with the exception of medivac flights and other emergency use) and limitations on the level of aircraft movement activity, based on prescribed noise exposure levels as defined by Transport Canada's Noise Exposure Forecast (NEF) model.

In 1990 Air Ontario (later becoming Air Canada Jazz) introduced scheduled service at the Airport providing service to Ottawa and Montreal utilizing Dash-8 aircraft. Faced with intense competition from Air Canada, City Express ceased its operations in 1991. Air Canada Jazz continued its operations until 2006 when it lost access to the terminal building, which had been acquired by REGCO Holdings, the parent company of Porter Airlines. Porter Airlines later began operations in 2006 operating 70-seat Bombardier Dash-8 Q400 (Q400) series aircraft. At the same time, Porter Airlines announced plans to construct and operate a new 10-gate airport terminal building. The new terminal facility, which opened in 2011, has the capacity to accommodate upwards of three (3) million annual passengers.

In May of 2011, Air Canada resumed scheduled passenger activity at BBTCA as Air Canada Express with daily flights to Montreal utilizing Q400 aircraft.

2.3 AIRPORT VISION

The TPA's strategic vision for the Airport includes the following:

Billy Bishop Toronto City Airport will be North America's premier urban airport, providing high-quality customer service and an unmatched travel experience. Through effective leadership of well trained and motivated staff and efficient and vigorous management of resources, the Toronto Port Authority strives to uphold high standards in safety and security and foster a culture of innovation and exceed customer expectations.

The mandate is to provide excellent service to customers and to be a good neighbor to the community in which we work and serve. Billy Bishop Toronto City Airport is guided by a Tripartite Agreement that upholds our standards of safety, security and operational logistics. The Toronto Port Authority plays an important city-building role in Toronto's economic growth and sustainable future.

2.4 AIRPORT ROLE

BBTCA serves a number of important roles. As a gateway to Toronto, the Airport offers the travelling public direct access to / from the city's downtown core, providing non-stop scheduled flights to a number of Canadian and US destinations including Ottawa, Montreal, Thunder Bay, Sudbury, Timmins, New York, Chicago, and Boston. The Airport is home to Porter Airlines which has approximately eighty-six (86) daily departures, and is served by Air Canada Express with approximately fifteen (15) daily departures.

In addition to scheduled air service, the Airport accommodates a number of non-scheduled general aviation activities. They include:

- A number of smaller air charter and corporate aviation firms are based at the Airport or use the Airport on a regular basis.
- Air ambulance operators use the Airport to transfer patients to / from downtown hospitals and treatment facilities. ORNGE has a base of operations at the Airport providing fixed-wing (airplane) and rotary-wing (helicopter) air ambulance service to south and central Ontario. The Airport is also used regularly for the transport of donor organs.
- BBTCA is home to a flight training school.
- Trans Capital Air, which operates flight operations around the world for the United Nations, has a base of operations and aircraft overhaul facility located at the Airport.
- The Airport is home to a number of privately operated aircraft, which are operated for both business and recreation, and is used by visiting itinerant aircraft. With direct access to Toronto Harbour, this includes floatplanes.

2.5 ECONOMIC IMPACT

In early 2012, the Toronto Port Authority commissioned InterVISTAS to complete an Economic Impact Study, which is currently in progress. Results of this study indicate that Billy Bishop Toronto City Airport is a major economic engine for the Greater Toronto Area (GTA), contributing \$1.9 billion in economic output annually and 5,700 direct and indirect jobs.

The economic impact of BBTCA extends well beyond the Airport as other economic sectors, including commerce, hospitality and tourism, are stimulated by the Airport's activities.

2.6 AIRPORT STAKEHOLDERS

Table 2-1 describes operators and government agencies that are currently active at the Airport.

Table 2-1 Airport Operators/Tenants

Operator	Activity
Porter Airlines	Scheduled air carrier
Sky Regional	Scheduled air carrier operating as Air Canada Express
Trans Capital Air	Charter airline providing services to the United Nations,
Island Air	Flight training, air charter
Cameron Air	Air charter, floatplane operations
Canadian Helicopters	Air Ambulance services
ORNGE	Air Ambulance services
The Helicopter company	Sightseeing, air charters
Airborne Sensing Corp.	Aerial photography
Porter FBO	Fixed base operator, fuel sales, hangarage, leasing of tenant space

Table 2-1 Airport Operators/Tenants

Operator	Activity
Eagle Aircraft	Aircraft maintenance
Stolport Corp.	Airport parking/ferry access management
NAV CANADA	Operation of air traffic control tower
CATSA / GARDA	Provision of passenger and baggage screening services
Canadian Border Services Agency	Provision of Canada customs and immigration services
G4S	Security services

2.7 SOCIO-ECONOMIC PROFILE

With 2.7 million residents, the City of Toronto is the largest city in Canada and the fifth largest in North America. Within the Greater Toronto Area (GTA), which includes The City of Toronto, as well as the Regional Municipalities of Durham, Halton, Peel and York, the population is over 6 million.

One reason why regional air service from BBTCA is such a lucrative concept is the population density of the communities the Airport serves. One-quarter of Canada's population is located within 100 miles of BBTCA, and over 60% of the US population is within a 90 minute flight from the Airport; an ideal flight length for the Q400 aircraft.

The City of Toronto's GDP is approximately \$144 billion, with the GTA being the third largest financial centre in North America and generating about a fifth (5th) of Canada's GDP at \$325 billion. Toronto's major economic sectors include financial services, life sciences, business services, and creative services such as film and television, fashion, performing arts, media, and publishing. Toronto is also home to Bombardier's manufacturing facility for the Q400, the aircraft solely used by scheduled passenger services from BBTCA.

In 2012 The Economist magazine ranked Toronto 12th out of 120 global cities for competitiveness, and in 2011, Toronto was ranked in the top ten for liveability and financial importance.

BBTCA is located only a couple kilometres away from Toronto's financial and entertainment core, which accommodates the highest density of commercial development anywhere in Canada. Similarly, with the recent flood of condominium development in the downtown, BBTCA is also located in very close proximity to an area having the one of Canada's highest residential densities. Between 2006 and 2011, portions of Toronto's downtown saw a 434% increase in residential population, with densities that now exceed 14,000 persons per square kilometre.

3. EXISTING INFRASTRUCTURE

Existing infrastructure at BBTCA consists of a number of elements that support the safe and efficient operation of the Airport.

3.1 AIRSIDE

Airside infrastructure is comprised of components required for the safe arrival and departure of aircraft plus manoeuvring on the ground. Elements include runways, taxiways, aprons and areas reserved for navigational and visual aids. Specific elements are described in the following sections.

3.1.1 Runways

Runway 08-26

Runway 08-26 is the Airport's primary runway and the longest runway at 3,988 ft. (1,215.5 m). The runway is certified as Code 2C Instrument Non-Precision. This classification is a deviation under TP312 4th Edition. Due to its length, under TP312 4th Edition the runway is classified as Code 3C. Runway 08-26 is the only runway equipped for night time operations and is the only runway available for scheduled air carrier operations.

The runway is in fair condition with some lateral and longitudinal cracking and will require resurfacing within the next five (5) years. As short-term mitigation to a full re-construction, the centre portion of the runway was resurfaced in 2011 to increase the runway friction index.

The characteristics of Runway 08-26 are described in Table 3-1.

Table 3-1 Runway 08-26 Characteristics

Characteristic	Runway 08	Runway 26
Reference Code	2C Instrument Non-Precision	
Runway Dimensions	3,988 ft. x 150 ft. (1215.6m x 45m)	
Surface	Asphalt	
Pavement Strength	PLR 6	PLR 6
Clearway	350 ft. x 150 ft. (106.5m x 45m)	
Edge Lighting	High Intensity	High Intensity
Approach Lighting	No	No
Approach Slope Indicator	PAPI	APAPI
Runway End Lights	Yes	Yes
Runway Identification Lights	Yes	Yes
Runway Touchdown Lights	Yes	Yes
Declared Distances		
TORA	3,988 ft.	3,988 ft.
TODA	4,338 ft.	4,338 ft.
ASDA	3,988 ft.	3,988 ft.
LDA	3,988 ft.	3,988 ft.
Approach Minima		
ILS/DME	309 ft. / 1 Mile	350/ 1 Mile*
LOC/DME	369 ft. / 1 ¼ Miles	

Table 3-1 Runway 08-26 Characteristics

Characteristic	Runway 08	Runway 26
----------------	-----------	-----------

* Restricted approach procedures

Runway 06-24

Runway 06-24 is the Airport’s secondary runway. With a length of 2,933 ft. (893.9 m), the runway is used primarily for flight training and by lighter general aviation aircraft. The runway is certified as Code 2C Non-Instrument and is for daylight use only. The current runway is wider than is required based on the aircraft mix. Under the current TP312 4th Edition the runway would be classified as Code 2B, and as such, there is the potential to reduce the runway width to 75.5 ft. (23 m). The runway is in poor to fair condition with extensive cracking and is only suitable for light aircraft.

The characteristics of Runway 06-24 are described in Table 3-2.

Table 3-2 Runway 06-24 Characteristics

Characteristic	Runway 08	Runway 26
Reference Code	2C Non-Instrument Daylight Only	
Runway Dimensions	2,933 ft. x 150 ft. (893.8m x 45m)	
Surface	Asphalt	
Pavement Strength	PLR 6	PLR 6
Clearway	300 ft. x 98 ft. (91.5m x 30m)	450 ft. x 98 ft. (137m x 30m)
Edge Lighting	No	No
Approach Lighting	No	No
Approach Slope Indicator	No	No
Runway End Lights	No	No
Runway Identification Lights	No	No
Runway Touchdown Lights	No	No
Declared Distances		
TORA	2,933 ft.	2,933 ft.
TODA	3,233 ft.	3,383 ft.
ASDA	2,933 ft.	2,933 ft.
LDA	2,933 ft.	2,933 ft.

Runway 15-33

Runway 15-33 is the Airport’s crosswind runway and has a length of 2,780 ft. (847.3 m). The runway is classified as Code 2C Non-Instrument. The runway is restricted to day-time operations with ‘departures only’ on Runway 15 and ‘arrivals only’ on Runway 33. The runway is used less than 5% of the time, primarily by light aircraft in weather conditions where there is a significant crosswind component on the other two (2) runways. Given the low utilization of the runway, the parallel taxiway has been closed to aircraft and is currently being used to accommodate a fabric structure to store airport maintenance equipment.

Similar to Runway 06-24, the width of this runway could be reduced to 75 ft. (23 m). Alternatively, given the low utilization and restricted operations of this runway, consideration should be given to the closure of this runway. The runway’s closure would have little operational impact on existing flying activities and would present potential opportunities to make use of additional airport lands for commercial development.

The characteristics of Runway 15-33 are described in Table 3-3.

Table 3-3 Runway 15-33 Characteristics

Characteristic	Runway 08	Runway 26
Reference Code	2C Non-Instrument Daylight Only	2C Non-Instrument Daylight Only
Runway Dimensions	2,780 ft. x 150 ft. (847.3m x 45m)	
Surface	Asphalt	
Pavement Strength	PLR 6	PLR 6
Clearway	450 ft. x 98 ft. (137m x 30m)	200 ft. x 98 ft. (61m x 30m)
Edge Lighting	No	No
Approach Lighting	No	No
Approach Slope Indicator	No	No
Runway End Lights	No	No
Runway Identification Lights	No	No
Runway Touchdown Lights	No	No
Declared Distances		
TORA	2,780 ft.	2,780 ft.
TODA	3,230 ft.	2,980 ft.
ASDA	2,780 ft.	2,780 ft.
LDA	2,780 ft.	2,780 ft.

3.1.2 Taxiways

BBTCA is provided with a number of taxiways to support aircraft manoeuvring. The most important of these are Taxiways Alpha and Delta, which provide access to the thresholds of Runway 08-26 and are used extensively. Taxiway Delta, with a runway centreline to taxiway centreline of 65 m, does not meet the minimum separation distances as recommended under TP312 4th Edition. Aircraft located on Taxiway Delta also block the glidepath signal for the approach to Runway 26. As a result, during Instrument Flight Rules (IFR) operating conditions, NAV CANADA holds aircraft on the terminal apron when aircraft are on the approach to Runway 26. This in turn creates departure delays and congestion on the apron.

A further constraint with the existing taxiways is that a number of the taxiway pavement fillets located at intersections are not properly sized to accommodate Q400 operations. At selected intersections, Q400 pilots must over-steer their aircraft in order to keep the main gear on the pavement.

Table 3-4 describes the characteristics of the various taxiways. As noted earlier, taxiway Echo is now closed to aircraft operations.

Table 3-4 Taxiway Characteristics

Characteristic	Alpha	Bravo	Charlie	Delta	Foxtrot
Surface	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt
Pavement Strength	PLR 6				
Taxiway Code	C	C	C	C	C
Width	75 ft. (23m)	49 ft. (15m)	49 ft. (15m)	75 ft. (23m)	49 ft. (15m)
Edge Lighting	Med. Intensity				
Runway Guard Lights	Yes	No	Yes	No	Yes

Note: Taxiway Echo is closed

3.1.3 Apron

BBTCA is served by a single large apron, which upon the construction of the new Airport Terminal Building (ATB), has been divided into three distinct areas. The western portion of the apron, located west of the ATB, is utilized by the Porter FBO and its tenants, private aircraft, and by ORNGE. Two (2) gate positions (1&2) of the ATB are also accessed from this apron. A number of aircraft tie-down positions are located in this area. However, parking is limited due to manoeuvring areas required to access hangars and gate positions. Owners of light aircraft, which use this apron, have raised concerns that the tie-downs are located too close to the operational areas associated with the ATB and ORNGE.

The central portion of the apron runs along the south side of the ATB and is dedicated to terminal operations. Gates 3-8 are accessed from this portion of the apron. The narrow depth of this apron is a constraint, as aircraft pushed back from the gate block the single taxiway.

The eastern portion of the apron is located east of the ATB. The apron includes two (2) gate positions (9&10) plus an apron area leased to Trans Capital Air as part of their operations. The leased portion of the apron includes a limited number aircraft tie-down positions associated with the Trans Capital Air FBO. East of Taxiway Charlie is an aircraft run-up area which was constructed in 2011. The pavement associated with the run-up area is limited to larger Code B aircraft, such as the Beechcraft King Air 200 and Pilatus PL-12.

3.1.4 Seaplane Ramp

Unique to BBTCA is a seaplane ramp which is located east of Taxiway Charlie and north of the engine run-up pad. The ramp serves floatplane operations that use the inner harbour for landings and takeoffs. The ramp is in poor condition and there are limited facilities to dock aircraft. Rehabilitation of the ramp and dock is being proposed by the TPA.

The towing of beached aircraft to / from the ramp creates potential constraints for the ATB operations. Ideally, the seaplane ramp should be located where it is less disruptive to terminal operations, such as on the south side of the Airport. However, relocation of the seaplane ramp to the south side of the runway complex would likely require the towing of aircraft across the runway complex, which in turn would impact runway operations.

3.1.5 Navigational Aids

BBTCA has a number of navigational and approach aids that include an off-site NDB and a DME located on airport. ILS systems, including a localizer and glidepath, are provided for Runway 08 and Runway 26. The approach to Runway 08 is public, whereas the approach to Runway 26 is restricted for use by Porter Airlines and Air Canada Express. The localizers for both runways are offset by three (3) degrees, which increases the approach minima. Ideally, localizers should be in line with the runway centreline. However, this is not possible due to limited land available beyond the runway thresholds and the Tripartite Agreement, which restricts increasing the land mass of the Airport.

In addition to the electronic navigational aids, visual aids including PAPA / APAPI and missed approach lights are provided for both approaches. Table 3-5 describes the characteristics of the navigational aids.

Table 3-5 Navigational Aid Characteristics

Nav / Visual Aid	Identification	Location
NDB	TZ Gibraltar Point	1 nm from Airport
DME	ITZ	On Airport
ILS	Localizer Runway 08	On Airport
ILS	Glidepath Runway 08	On Airport
ILS	Localizer Runway 26	On Airport
ILS	Glidepath Runway 26	On Airport
PAPI	Runway 08	On Airport
APAPI	Runway 26	On Airport
Touchdown Lights	Runway 08/26	On Airport

3.2 LANDSIDE

3.2.1 Mainland Site

Landside facilities located on the mainland are severely constrained due to a lack of real estate available to the TPA and the built-up nature of the surrounding land use, which includes high density residential buildings, a park a community school, and the former Canada Malting site, which is owned by the City of Toronto.

These constraints have been further aggravated due to construction of the new pedestrian tunnel that will link the mainland with the airport terminal building. Mainland landside facilities are accessed from Bathurst Street and Eireann Quay.

Principal land side facilities located on the mainland include the following:

Airport Ferry

The TPA operates two (2) ferries which provide service between the mainland and the Airport. The primary vessel is the *Marilyn Bell I* which can accommodate 200 persons on an upper deck and 15 vehicles on the lower deck. A typical capacity for the ferry is 180 persons on the upper deck and 15 vehicles on the lower deck. The second vessel is the *David Hornell VC*, which is used as backup. This ferry can accommodate 150 passengers on the upper deck and 15 vehicles on the lower deck. Only one ferry is in use at any one time. The Ferry operates between the mainland and Airport every 15 minutes. The first ferry leaves the mainland at 05:15 and the last ferry leaves the Airport at 00:07.

A major constraint of the ferry system is that it disrupts the natural flow of passengers to / from the airport terminal building and curb. Rather than passengers arriving at the terminal or curb on a randomly occurring basis, passengers arrive as large groups in 15 minute increments. During peak periods, these groups can be as large as 200 passengers and staff. This places increased demands on processing functions and creates congestion and delays, which in turn reduces level of service. For arriving passengers, the ferry service creates periods of congestion at the curb followed by periods of inactivity. This reduces the efficiency of the curb and complicates the provision of ground transportation, including taxis and shuttle buses.

A second constraint of the ferry service is the associated wait times for both passengers and vehicles. Passengers can wait up to 15 minutes to board the next ferry and during peak periods vehicles may have to wait for a second sailing before boarding.

Ferry Terminus

The ferry terminus was constructed in 2006 and is designed to accommodate the handling of both passengers and vehicles. Passengers arriving by taxi, private vehicle or shuttle bus are dropped off at the terminus curb and circulate to the upper level of the building via escalators, stairs and elevators. On the upper level, passengers are placed into a queue to wait for the ferry service. In addition to the queuing area, the two (2) airlines occupy a number of check-in positions on the upper floor. During peak periods the terminus becomes congested with passengers waiting to cross on the ferry, requiring staff to manage the queues.

The queuing area for vehicles waiting to board the ferry is accommodated with a drive isle located adjacent to the taxi corral located along Eireann Quay. The queuing lane has accommodation for approximately twenty (20) vehicles.

Arrivals/Departures Curb

The ferry terminus curb is utilized by taxis, private vehicles and the shuttle bus for the pickup and drop off of passengers. Given the current passenger volumes, this curb is significantly undersized. Prior to the construction of the passenger tunnel, there was approximately 60m of curb length available for passenger drop-off and pick-up. This compares to curb lengths of approximately 150 to 200m at other Canadian airports with comparable passenger volumes.

Parking

Parking is very limited due to a lack of available land. Originally, twenty-six (26) parking stalls were provided at the foot of Bathurst Street (Eireann Quay) at the Arrivals / Departures Curb. However, these were recently removed in order to accommodate the construction of the pedestrian tunnel. A surface lot, identified as short-term parking, is located off of Stadium Rd and accommodates approximately 190 stalls. This lot has been designed to maximize capacity making manoeuvring difficult when the lot is at or near capacity, which is often.

Taxi Corral

A taxi corral runs parallel to Eireann Quay (within the 'finger lot') providing accommodation for approximately thirty-four (34) taxis in two (2) staging lanes. The TPA is moving forward with a plan to relocate the taxi corral to a location on the Canada Malting site.

Given the Airport's proximity to the downtown core and the lack of parking and public transportation, taxis are an important component of ground transportation serving the Airport. The provision of adequate taxi staging and good access to pedestrian curbs is critical to an efficient groundside operation for the Airport.

Pedestrian Tunnel

The TPA has embarked on the construction of a pedestrian tunnel which links the mainland with the airport terminal building. The tunnel entrance on the mainland is located immediately east of the ferry terminal. Passengers will descend to the tunnel via six (6) elevators. Moving walkways are provided along the length of the tunnel. On the island, passengers will use escalators and two (2) elevators to ascend to a lobby which has a direct connection to the ATB.

A major benefit of the tunnel is that it reduces passenger demand on the ferry, permits a more constant flow of passengers to both the ATB check-in and the groundside curb, and reduces the passenger travel time between the mainland and the ATB. This in turn improves efficiency and provides a higher level of service and convenience to passengers.

3.2.2 Airport Site

The land area available for landside infrastructure on the island is very constrained and is limited to a narrow strip of property located between the south wall of the Western Gap and the hangar line. Main

elements of landside infrastructure located on the Airport include the airport ferry terminus, a main service road, which runs along the south wall of the Western Gap, a number of areas designated for vehicle parking and a terminal loop road, which is used as a terminal curb and as a queuing area for the ferry.

Ferry Terminus

The ferry terminus on the Airport is connected directly to the airport terminal building via an overhead walkway. There is very little capacity to accommodate passenger queues waiting for the ferry so during peak periods passengers are often lined up along the corridor leading to the terminal building.

Service Road

The main service road runs parallel to the Western Gap from the airport maintenance garage in the west to the Trans Capital Air hangar in the east and serves as the main access to the various airport tenants. At the ferry terminus the road diverts to accommodate the ferry slip. Vehicles disembarking from the ferry must use the loop road in order to access the service road heading west.

Terminal Loop Road

A terminal loop road is provided in front of the terminal building. The loop road is used primarily as a queuing area for the ferry but also provides direct access to the airport terminal building. The terminal curb is used primarily for service vehicles as the public groundside curb is located on the mainland.

Parking

Vehicle parking is provided along the length of the service road and in a designated parking lot located east of the terminal loop road. Approximately 150 parking stalls are provided on the island, the majority of which is long term revenue parking. The provision of additional vehicle parking on the island is limited and could only be efficiently accomplished with the construction of structured parking.

3.3 AIRPORT TERMINAL BUILDING

The airport terminal building is owned and operated by City Centre Terminal Corp. (CCTC) a subsidiary of Porter Aviation Holdings Inc. Completed in 2010, the two (2) level, ten (10) gate facility is approximately 14,000m² in area and accommodates both domestic and transborder operations. The terminal was designed to support a planning peak hour passenger (PPHP) capacity of 336 in either the domestic or transborder sector.

The upper level of the terminal is comprised of the following elements:

Check-in Hall Provision for 14 check-in positions, of which 12 are dedicated to Porter Airlines and 2 to Air Canada Express. In addition to check-in positions there are ten (10) self-serve kiosks.

Pre-Board Passenger Screening Two pre-board passenger screening positions are provided which serve the domestic and transborder sectors. Each position has three (3) screening lanes which have the capacity to process approximately 360 passengers per hour.

US Pre-Clearance Facility Although not currently in place, the terminal design does provide for a future US Pre-Clearance facility which would be operated by US Customs and Border Protection. If a pre-clearance operation is approved in the future it would allow US destined passengers to clear US customs in Canada and provide greater flexibility for air carriers to operate from domestic terminals at US airports.

The provision of a US pre-clearance facility at BBTCA has yet to be approved and there is no time frame as to when or if this will occur

in the future.

At present, this space is used for administration and support purposes.

Administration Area

The Toronto Port Authority's airport administration offices are located on this level.

The lower level of the terminal is comprised of the following elements:

Holdrooms

Two (2) separate holdrooms are provided on the ground level. The holdroom, used for domestic operations, is approximately 800 m² including a food and beverage area. This space becomes congested during peak periods and CCTC is considering an expansion to the holdroom which would be constructed north of Gate 1.

The transborder holdroom is approximately 1,025 m². To date the holdroom has accommodated peak hour passenger demands.

Passengers transfer from the holdroom to the gates via a secure airside corridor.

Canadian Border Services Agency (CBSA)

CBSA facilities include both primary and secondary inspection facilities, together with administrative and support spaces. Primary inspection is comprised of six (6) PIL counters as well as a bypass lane for NEXUS card holders.

Baggage Claim

Two (2) baggage claim areas are provided. The domestic baggage claim area includes a single flat-bed carousel. The transborder baggage claim area is located within the CBSA area and includes a single inclined plate carousel.

Baggage Make-Up

A common baggage make-up area is located in the centre of the building and is accessed from the apron via a below-grade tunnel that goes underneath the passenger corridor that leads from the holdrooms to the gates. The make-up area is provided with two make-up devices plus a run-out belt for oversize baggage. Induction belts are also provided for off-loading of inbound baggage. All outbound baggage is processed through a hold bag screening process operated by the Canadian Air Transport Security Authority (CATSA)

The terminal was specifically designed for Q400 operations with ten (10) ground-loaded gates. Each gate position is provided with a fixed, ground loaded enclosure that includes a retracting canopy to protect passengers during inclement weather.

3.4 AIRPORT SUPPORT FACILITIES

3.4.1 ARFF Fire Hall

Provided as part of the combined services building, the Aircraft Rescue and Fire Fighting (ARFF) facility is comprised of a dual apparatus bay plus storage and staff support facilities. Under the Canadian Aviation Regulations, Part 303, Subpart 3, the Airport is required to provide on-site ARFF services to a Category 6 level of service. Airport meets this requirement with the provision two (2) ARFF vehicles, which can be accommodated within two (2) bays of the existing structure. The provision of a third (3rd) bay would be desirable for the storage of a reserve vehicle or medical response unit.

Given that the Airport is located on an island, the TPA also provides first response to structural fires located on the Airport. To accommodate the additional structural response equipment, two (2) additional apparatus bays are required for a total of five (5) apparatus bays.

In addition to the lack of apparatus bays, the current ARFF facilities require additional space for the provision of proper storage and workshop facilities, as well as staff support functions and amenities.

3.4.2 Airport Maintenance Garage

The area of the combined services building allocated for airport maintenance is comprised of four (4) equipment bays and support areas. This facility is not sufficient to accommodate the full needs of the Airport, and because of this, a fabric structure has been erected on the former taxiway Echo at the south side of the Airport to provide additional covered space for heavy mobile equipment, including snow plows, sweepers and loaders.

In order to meet the ongoing needs of the Airport, a new maintenance garage is required. A minimum of eight (8) equipment bays are required to accommodate the storage of vehicles and equipment.

3.4.3 Materials Storage

A materials storage shed is provided on the east side of the Airport, south of Runway 06-24. This 'quonset hut' is used for the storage of sand and other airside de-icing chemicals. The location of this building is not ideal, as access is only possible by crossing an active runway. An alternative new facility should be considered as part of the new combined services building.

3.4.4 Field Electrical Centre

The field electrical centre (FEC) is located immediately east of the combined services building, in an area used for outdoor equipment storage. This structure, including the availability for future expansion, was not assessed in detail as part of this analysis. As this building is located in an open area, should expansion be required in the future, it would likely be feasible without impacting other adjacent structures.

3.4.5 Air Traffic Control Tower

The air traffic control tower is located immediately south of the combined services building. The modern facility is owned and operated by NAV CANADA. The control cab has an unobstructed view of the runways, taxiways and approaches. It is not anticipated a new facility will be required within the timeframe of the master plan.

3.4.6 Fuel Farm

The Airport's aviation fuel farm is located on the south side of the Airport at the end of Taxiway Echo. Fuel is dispensed at this location into bowsers and delivered to aircraft on the north side of the Airport. The fuel installation is owned and operated by City Centre Fuel Corp., a subsidiary of Porter Aviation Holdings Inc. and includes storage for 200,000 litres of Jet A1 and 50,000 litres of LL100 avgas. The delivery of fuel to the fuel farm occurs almost on a daily basis. The site has ample opportunity for expansion if required in the future.

3.4.7 Aircraft De-icing

The de-icing of air carrier aircraft takes place on the terminal apron. As part of the de-icing procedure, aircraft are pushed back from their gate position and are de-icing using mobile equipment. The runoff of effluent from the de-icing operation is captured at catch basins located strategically on the apron and directed to below-grade storage facilities. From there, the runoff is released to the municipal sanitary system. During periods of non-de-icing, runoff is directed to storm water drainage.

Given the tight physical constraints of the Airport, particularly in the vicinity of the terminal building, there is no opportunity to provide a centralized de-icing facility.

3.5 COMMERCIAL DEVELOPMENT

At present, all commercial development is located on the north side of the Airport along the Western Gap break wall. To the east of the terminal building is a lease area operated by Trans Capital Air and used primarily for the repair and overhaul of aircraft. A limited number of aircraft tie-downs are located on the site, as well as public vehicle parking which is operated by Stolport, a sister company to Trans Capital Air. A large hangar located on the leased site is owned by Trans Capital Air.

West of the terminal is a continuous line of hangar development. Subsidiaries of Porter Aviation Holdings Inc. own and operate the majority of the structures on land leased from the TPA. These facilities are used to support Porter's commercial airlines and FBO operations, as well as accommodate a number of sub-tenants. The exception is a middle hangar which is owned by the Ontario Ministry of Health and Long-Term Care and used by ORNGE to support its air ambulance operations.

At present, there is no physical opportunity in which to accommodate additional commercial development on the north side of the Airport.

Although there is vacant land located south of the runway system, landside access is a major constraint. Currently, the only means of vehicular access is by crossing the active runway system. As previously discussed, this can take up to thirty (30) minutes during busy periods and would be nearly impossible to manage for public traffic. Operators of vehicles that cross the runway must hold an AVOP licence, have security clearance, and be in radio contact with the control tower. Vehicles crossing the active runway system pose potential safety risks and should be minimized. For pedestrian traffic, access may be possible by using the City of Toronto ferry service to Hanlan's Point and then accessing the Airport through a controlled security gate in the south perimeter fence.

In order to support any significant commercial development, particularly where users are without a RAIC or AVOP, is through the construction of a groundside access road. Due to the Tripartite Agreement's restrictions on expanding the Airport's footprint, it is not possible to construct a road around the threshold of Runway 08-26 unless expansion into the Lake Ontario is permitted, as the height of vehicles would impact the approach surfaces. Therefore, the only method of accessing the south side under the Agreement, without amendment of the Tripartite Agreement, is by means of a tunnel under the runway system. This would be costly, would require considerable land area in which to accommodate the access ramps and would result in the closure of Runway 08-26 during the construction period. This is therefore not a feasible recommendation.

3.6 UTILITIES AND SERVICES

Utilities and services to the Airport, including hydro, gas, and sewer, are provided from the mainland and will adequately accommodate airport requirements for the foreseeable future. Water is currently supplied from the City's Island Filtration Plant. As part of the passenger tunnel construction project, a new water main is being constructed to the island.

4. AVIATION FORECASTS

4.1 PASSENGER ACTIVITY ANALYSIS

4.1.1 Historic Passenger Activity

Regularly scheduled commercial passenger service at BBTCA began in earnest in 1975 with the inauguration of Otonabee Airways' service to Montreal via Peterborough utilizing 19-seat aircraft. In the mid 1980's the airline was reorganized as City Express and aircraft were upgraded to the 50-seat Dash-7 and 37 seat Dash-8-100. During its peak in 1987, the airline handled approximately 400,000 passengers per year. City Express ceased operations in 1991. In 1990 Air Canada Jazz initiated operations at BBTCA which continued until 2006. However, passenger activity never reached the previous peak and continued to decline over the years. With the introduction of Porter Airlines in 2006, passenger activity increased substantially, to the point where the Airport in 2011 handled over 1.5 million passengers. Table 4-1 describes the annual passenger activity since 2001.

Table 4-1 Annual Passenger Activity

Year	Total	Year	Total	Year	Total
1984	120,000	1993	166,584	2003	44,781
1985	165,000	1994	148,695	2004	30,351
1986	270,000	1995	137,354	2005	28,519
1987	331,791	1996	136,985	2006	22,321
1988	322,487	1997	87,577	2007	262,254
1989	276,765	1998	128,449	2008	508,574
1990	154,497	1999	126,117	2009	770,680
1991	147,722	2000	115,842	2010	1,130,600
1992	166,506	2001	88,572	2011	1,584,652

4.1.2 Current Air Services

Currently Porter Airlines serves a number of domestic and transborder destinations, while Air Canada Express services Montreal. Table 4-2 describes the destinations served by the two air carriers.

Table 4-2 Scheduled Flights by Destination

Carrier	Direct Destinations	Same Plane Destinations	Seasonal Destinations
Porter	Montreal	Moncton	Mont Tremblant
	Ottawa	Halifax	Myrtle Beach
	Sudbury	St John's	
	Thunder Bay		
	Sault Ste Marie		
	Quebec City		
	Windsor		
	Timmins		
	Newark		
	Burlington VT		
	Boston		
	Chicago		
	Washington		
	Air Canada Express	Montreal	

4.2 AIR CARGO ACTIVITY ANALYSIS

At present, there are no dedicated air cargo flights operating into the Airport. Both Porter Airlines and Air Canada Express accommodate limited air freight as belly cargo on its scheduled passenger flights. The amount of cargo handled at the Airport is not recorded. Due to limited airport facilities and lack of real estate, there is no capacity available for future dedicated cargo facilities.

4.3 AIRCRAFT MOVEMENT ACTIVITY ANALYSIS

4.3.1 Definitions

An aircraft movement is a take-off, a landing or a simulated approach by an aircraft. Two (2) classes of operations are considered: local and itinerant movements. Itinerant movements are those for which aircraft proceed to or arrive from another location or exit the control zone. Local movements are those in which the aircraft remains in the control zone.

Aircraft activity statistics also include numerous categories of aircraft movements, including commercial, private, government or military activity. NAV CANADA also collects data on maximum take-off weight of aircraft and on type of power plant. This data is collected by NAV CANADA and published by Statistics Canada and Transport Canada.

4.3.2 Historical Activity

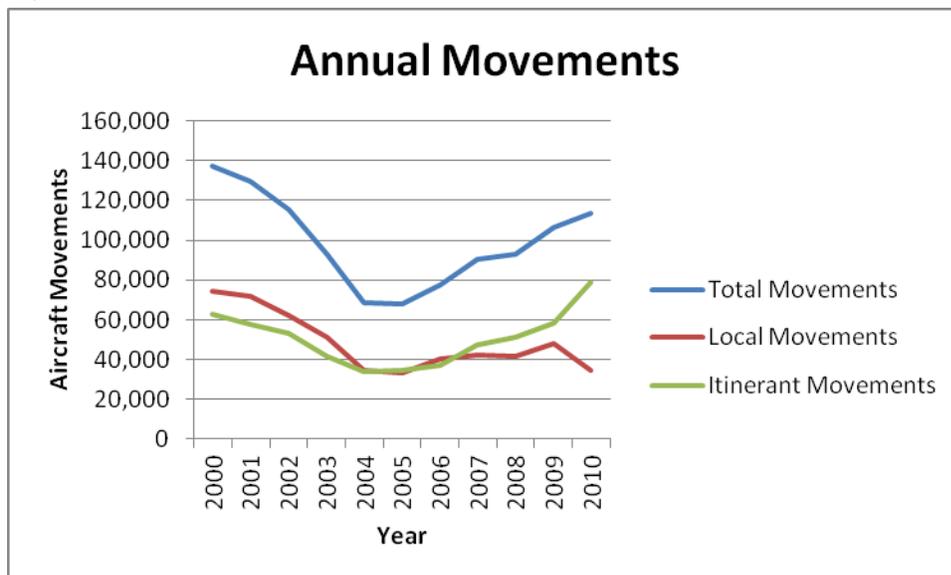
Over the previous ten (10) years total annual aircraft movements have decreased slightly from 129,505 to 113,715. Table 4-3 and Figure 4-1 describe historic aircraft movements. Although there has been a significant increase in itinerant movements, mainly due to the increase in scheduled air carrier activity, this has been offset by decreases in local movements, which generally represent flight training activity.

Table 4-3 Historical Aircraft Movements

Year	Itinerant	Local	Total	Annual Variation
2001	57,643	71,862	129,505	
2002	53,439	62,035	115,474	-10.8%
2003	41,739	51,104	92,843	-19.6%
2004	34,070	34,359	68,427	-26.3%
2005	34,781	33,135	67,916	-0.7%
2006	37,167	40,414	77,581	14.2%
2007	47,678	42,521	90,199	16.3%
2008	51,416	41,837	93,253	3.4%
2009	58,445	47,871	106,316	14.0%
2010	78,822	34,863	113,685	6.9%
2011	78,913	34,802	113,715	0.02%

Source : Transport Canada TP577

Figure 4-1 Historical Annual Aircraft Movements



Itinerant Movements by Type of Operator

Table 4-4 and Figure 4-2 describe itinerant aircraft movements by type of operator. Level I-III air carrier movements (represented by Air Canada and Porter) steadily declined in the early part of the decade as Air Canada Jazz reduced its operations at BBTCA. This trend changed significantly in 2007 when Porter began operations. Since then, the annual increase in the number of movements has increased substantially.

Level IV-VI air carrier movements, represented by smaller air charter operators, have remained relatively steady over the past ten (10) years with only a significant increase in traffic occurring in 2010.

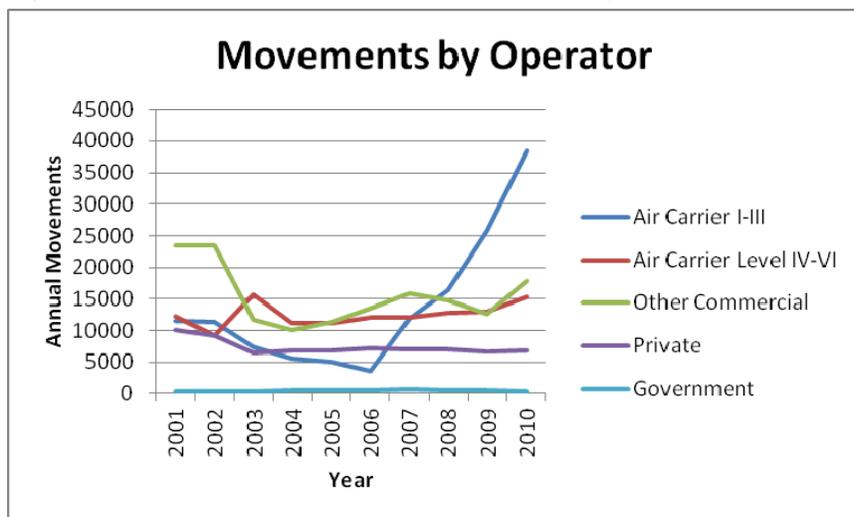
'Other Commercial' which represents flight training operations and commercial flights that exclude the transport of persons or cargo (aerial photography, banner towing, geological surveying) has seen a 24% decline in activity. This is largely a result of reduced flight training activities. Similarly, private aircraft movements declined approximately 68% over the past ten (10) years. This is due to a number of factors including: a reduction in the number of private aircraft based at the Airport; an aging private pilot population; and more recently, the downturn in the economy and high cost of fuel, which has had a negative impact on recreational and personal business flying activities.

Table 4-4 Itinerant Movements by Operator

Year	Air Carriers				Other Commercial	Private	Government
	Level I-III	Annual Variation	Level IV-VI	Annual Variation			
2001	11,538		12,232		23,437	10,101	335
2002	11,272	-2.3%	9,237	-24.4%	23,410	9,115	405
2003	7,371	-34.6%	15,761	70.6%	11,671	6,520	416
2004	5,530	-25.0%	11,132	-29.4%	10,160	6,809	439
2005	5,069	-8.3%	11,126	-0.05%	11,328	6,780	478
2006	3,655	-27.9%	12,123	8.9%	13,586	7,244	559
2007	11,855	324.4%	12,137	0.01%	15,854	7,083	749
2008	16,430	38.6%	12,847	5.8%	14,688	6,980	471
2009	25,786	56.9%	12,970	0.1%	12,624	6,573	492
2010	38,255	48.3%	15,451	19.1%	17,862	6,877	377
2011	51,456	34.5%	9,974	-35.5%	10,768	6,155	312

Source: Transport Canada TP577

Figure 4-2 Historical Annual Aircraft Movements by Operator



Aircraft Movements by Type of Power Plant

Table 4-5 and Figure 4-3 describe itinerant aircraft movements by type of power plant. Jet aircraft movements, which are restricted to medivac flights, have low numbers and fluctuate significantly from one year to the next. Turboprop movements have increased by over 300%, a result of the introduction and expansion of air carrier flight operations.

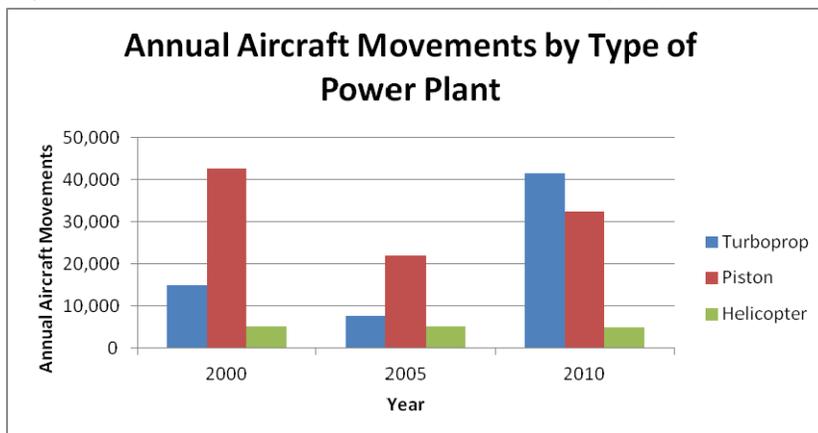
Piston aircraft, which are largely represented by flight training and private aircraft, have seen a reduction in activity of approximately 18% since 2001. Helicopter activity, which is comprised primarily of air ambulance operations, has remained relatively constant over the past decade.

Table 4-5 Itinerant Movements by Type of Power Plant

Year	Jet	Annual Variation	Turboprop	Annual Variation	Piston	Annual Variation	Helicopters	Annual Variation
2001	16		13,396		39,557		4,664	
2002	53	331.2%	14,112	5.3%	34,122	-13.7%	5,139	10.2%
2003	94	77.4%	10,135	-28.2%	26,685	-21.8%	4,814	-6.3%
2004	36	-61.7%	8,357	-17.5%	20,692	-2.5%	4,971	3.3%
2005	31	-13.9%	7,663	-8.3%	21,850	5.5%	5,218	5.0%
2006	30	-0.3%	6,282	-18.0%	24,703	13.1%	6,136	17.6%
2007	34	13.3%	14,548	231.6%	27,450	11.1%	5,621	-8.4%
2008	21	-38.2%	20,269	39.3%	25,980	-5.4%	5,141	-8.5%
2009	55	261.9%	29,911	47.6%	23,763	-8.5%	4,711	-8.4%
2010	20	-63.6%	41,505	38.8%	32,447	36.5%	4,845	2.8%
2011	70	350%	54,367	30.9%	20,031	-38.3%	4,191	13.5%

Source : Transport Canada TP577

Figure 4-3 Historical Annual Aircraft Movements by Type of Power Plant



Local Movements

Table 4-6 describes annual local movements. Local movements are flights that remain within an airport's control zone and are generally attributed to flight training activity. Since 2004, this activity has fluctuated between 32,615 and 47,000 annual movements, but has declined by over 50% since 2001.

Table 4-6 Local Movements

Year	Number	Annual Variation
2001	71,184	
2002	62,035	-12.8%
2003	51,104	-17.6%
2004	34,359	-32.8%
2005	33,135	-3.6%
2006	40,414	22.0%
2007	42,521	5.2%
2008	41,837	-1.6%
2009	47,871	14.4%
2010	35,128	-26.7%
2011	32,615	-7.2%

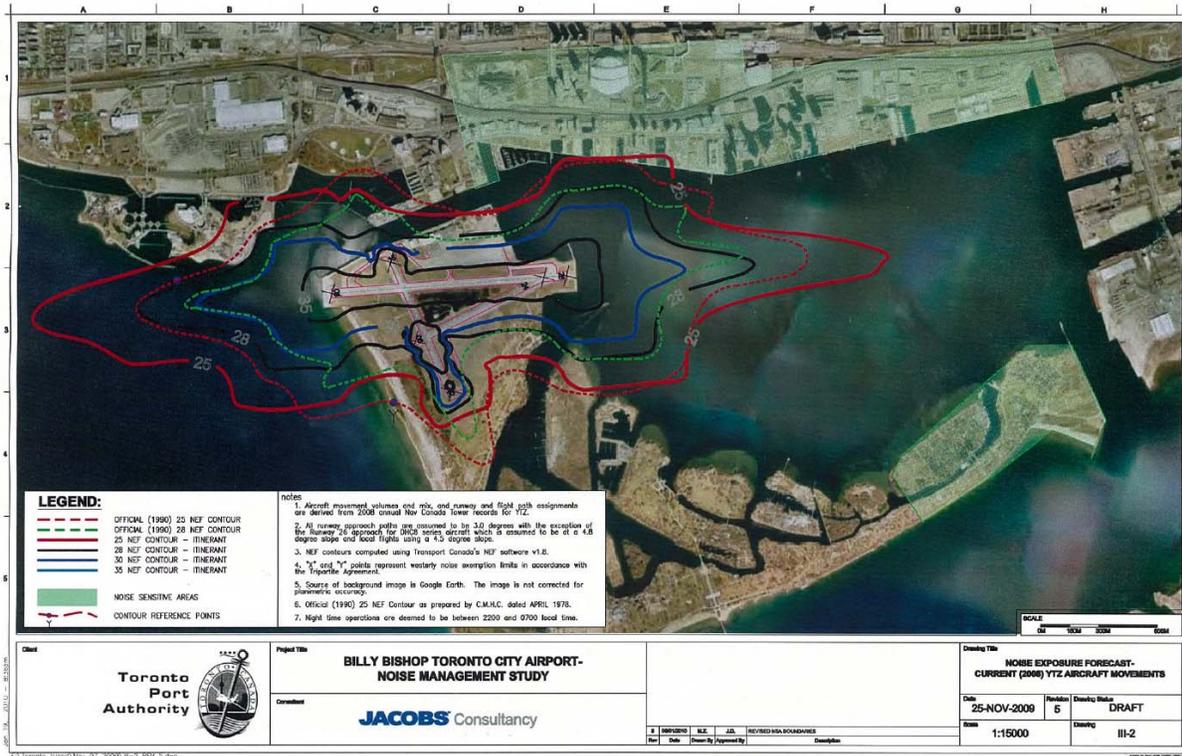
Source : Transport Canada TP577

4.4 AIRCRAFT MOVEMENT CAPACITY

Under the terms of the Tripartite Agreement, aircraft movements at BBTCA are to be managed by the TPA, such that the current year 28 NEF contour is contained within the 1990 25 NEF of Annex A of the Agreement.

In 2010 the TPA commissioned a study to review aviation activity at BBTCA and the associated noise impacts. As part of the study, new NEF contours were generated based on the 2008 actual movements obtained from NCAMS (NAV CANADA Aircraft Movement Statistics) database. These contours, as compared against the 1990 official NEF contours, are illustrated in Figure 4-4.

Figure 4-4 Historical Annual Aircraft Movements by Type of Power Plant



The study concluded that the 28 NEF contour based on the 2008 annual movements was within the 1990 25 NEF contour and that there was some opportunity to increase aviation activity beyond the 2008 levels.

As part of the analysis, the peak planning day activity was determined. This planning day, representing the 95th percentile of annual daily movements, included 244 itinerant movements (of which approximately 72 were Porter Airlines), and 118 local movements, for a total of 362 movements. Through the development of a number of NEF modeling scenarios, the study determined that air carrier movements could be increased by 130 daily movements, for a total of 202 daily movements, and the resulting 28 NEF noise contour would still be contained within the official 1990 25 NEF noise contour, as required under the Tripartite Agreement. However, this increase in the number of air carrier movements assumes that the remaining itinerant and local movements will not increase beyond the 2008 levels.

Based on the 2008 activity levels plus additional air carrier movements, the current limiting capacity of the Airport with respect to annual aircraft movements can be described as follows:

2008 Itinerant Movements	51,416
Additional Air Carrier	47,450 (130 movements/day x 365 days)
2008 Local Movements	41,837
TOTAL Movements	140,703

Therefore, the theoretical capacity of BBTCA, which does not breach the official 1990 25 NEF contour, is approximately 140,700 movements, subject to the mix of noise-qualified aircraft. Beyond this, the management of aviation activity will be required to “regulate the overall frequency of aircraft movements in order to contain the actual 28 NEF Contour within the boundary of the official 25 NEF Contour for 1990” as mandated under the Tripartite Agreement.

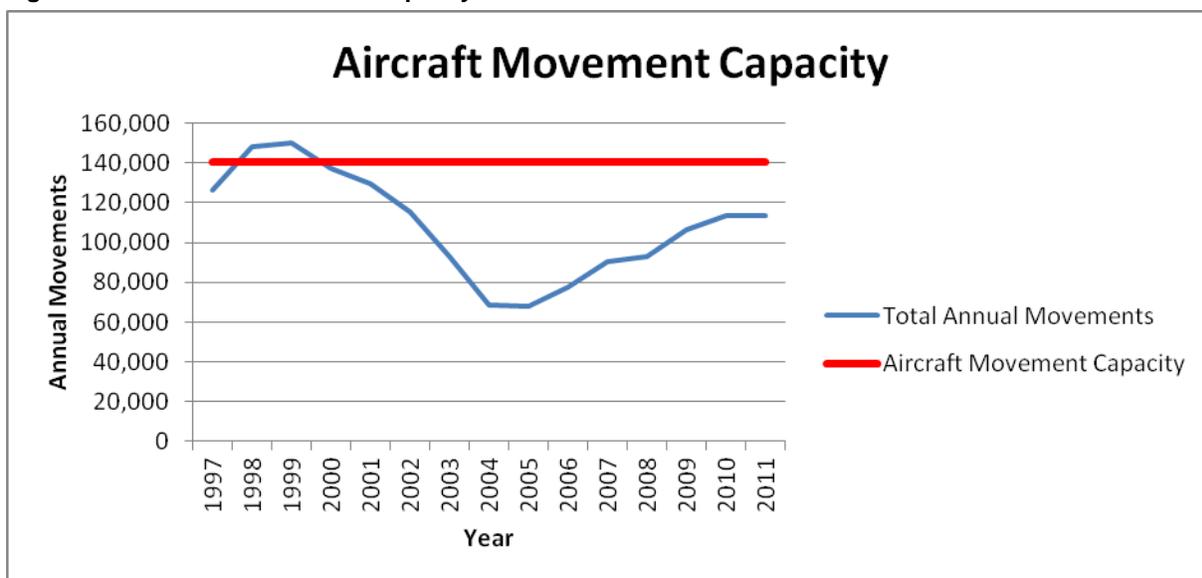
It should be noted that the actual noise environment is based on a number of factors that vary from year to year. The two (2) primary factors are night operations (between 22:00h and 07:00h) and aircraft mix. Changes in these factors will impact the size and characteristics of the NEF contours, and in turn, the

level of aviation activity available associated with 28 NEF. For this reason, Transport Canada regularly commissions a study to validate the current NEF contours against those found in the Tripartite Agreement.

As a means of controlling aviation activity, and not breach official 1990 25 NEF contour, the TPA has, as a best practice, implemented a full slot allocation protocol, whereby all commercial aircraft movements are regulated by specific slots that dictate the total number of flights, as well as the number of movements over a given hour and the number of night movements. The current allocation is 202 daily slots, all of which have been assigned to Porter Airlines (172 slots) and Air Canada (30 slots). In addition to the daily restriction of 202 slots, there is also a restriction of 8 slots within a thirty minute period (4 arrival slots and 4 departure slots). Of the 202 daily slots, only 7 are allocated to 'nighttime movements'. These slot restrictions in turn place limits on the overall capacity of the Airport.

Figure 4-5 illustrates the historic total annual movements as compared to the limiting capacity as established under the Jacobs study.

Figure 4-5 Aircraft Movement Capacity



Between 1998 and 1999, the annual aircraft movements exceeded the theoretical limits discussed above. However, during this period the aircraft mix was primarily light aircraft which emit less noise than the Dash-8 Q400. As a result, it is not likely that the NEF contour for those years would have breached the official 1990 Tripartite NEF contour.

With the introduction of advanced engine technologies and new aircraft, such as the Q400, which have reduced noise footprints, there is likely the potential to increase the number of movements relative to the associated noise impacts.

4.5 AIRCRAFT MOVEMENT FORECAST

As discussed, unlike most airports, BBTCA has a finite capacity with respect to aircraft movements. Therefore, the traditional approach of forecasting aircraft movements for a 15-20 year horizon does not have much relevance because the Airport is very close to reaching the maximum number of movements permissible under the terms of the Tripartite Agreement. Instead, the direction which needs to be taken is to identify viable alternatives to managing aviation activity and selecting a preferred alternative that ensures the highest and best use of limited airport capacity.

4.5.1 Aviation Sectors

The various aviation sectors that contribute to the overall aircraft movement numbers are briefly described below.

Air Carrier Commercial

From the findings of the 2010 study, BBTCA implemented a slot allocation program which currently limits air carrier movements to 202 movements per day or 73,730 annual movements. In 2010, there were approximately 35,610 movements by scheduled air carriers. This represents 48% of the permitted air carrier activity.

Currently, Porter Airlines and Air Canada Express utilize the full 202 slots during the weekdays. During Saturdays and Sundays, airlines generally reduce the number of movements due to reduced passenger demand. Currently Porter Airlines has approximately 78 movements on Saturdays, and 134 movements on Sunday. Air Canada Express has 14 movements on Saturday and 22 movements on Sunday. As a result, the current air carrier movements equates to approximately 65,146 annual movements.

As airlines are utilizing the full slot allocation during the weekdays, the only growth available is during weekends, where not all of the assigned slots are utilized. Assuming a 20% annual growth in weekend movements, the airlines could reach their full allocation of 73,730 annual movements within approximately three (3) years.

Scheduled air carrier activity is considered the highest and best use of available aviation activity and therefore potential growth in this sector, as permitted under the Tripartite Agreement, should be protected. At present, the TPA has no operational requirement to increase the number of daily slots. However, in the future, to satisfy a changing operational environment, there may be a need to revisit the number of daily slots allocated to air carriers within the capacity constraints as per the current NEF contours detailed in the Tripartite Agreement.

In addition to the scheduled air carrier movements, there is substantial air charter and corporate activity movements at BBTCA. In 2010 this activity accounted for 15,334 annual movements. On an annualized basis this activity has grown by approximately 2% per year over the past ten (10) years.

With the pending closure of Buttonville Airport, BBTCA could see a spike in this type of activity as smaller air charter and corporate operators relocate their operations to other airports within the GTA. At present, this type of activity at Buttonville generates approximately 34,000 annual movements out of a total of 136,575 movements. Accommodating additional air charter/corporate activity at BBTCA is constrained due to the prohibition on jet traffic and the lack of support facilities such as hangar space or apron parking, which are required to accommodate expanded airport-based operations. With the closure of Buttonville Airport there may be a short-term increase in the number of air charter/corporate movements. In the longer term it is anticipated that the growth in air charter/corporate aircraft movements could be 2%-3% per year if unrestrained.

Other Commercial

'Other Commercial' activity at BBTCA is largely associated with the flight training activities located on the airfield. In 2012, there were two (2) flight schools operating at the Airport. However, the long-term future of flight training activity at BBTCA is uncertain. As various airport tenants/operators compete for limited facilities, the cost of leasing private facilities on the Airport has increased. Faced with higher operating expenses, flight schools are currently reviewing their position at the Airport, with one (1) facility already having ceased operations in 2012. Given the facility constraints at BBTCA, flight training activity may not increase significantly at the Airport and is anticipated to decrease given that one flight school has relocated.

The development of future hangar facilities could be undertaken by the private sector or through the TPA. However, a major constraint to development is the lack of available land on which to construct new facilities.

Helicopters

Helicopter movements at BBTCA are comprised primarily of air ambulance movements associated with the operations of ORNGE. Helicopter activity over the past ten (10) years has remained relatively stable and will likely remain so in the future. Helicopter movements account for approximately 4,000 to 6,000 movements per year, which is not significant.

Under the Tripartite Agreement, helicopter movements can be omitted from the NEF contours provided annual movements do not exceed 4,000. However, this limit is constantly exceeded and is anticipated to remain as such as long as ORNGE operates from BBTCA.

In 2010, ORNGE announced that it would be closing its base at BBTCA and relocating fixed and rotary operations to the Hamilton International Airport. This relocation was anticipated to occur in 2011. In 2012, ORNGE announced that it was reviewing the decision to relocate operations from BBTCA. As a result, helicopter operations, for the purpose of determining aviation activity forecasts, are assumed to continue.

Given the critical nature of ORNGE's operation and the fact that their operations cannot be restricted, consideration should be given to removing their operations from the NEF analysis, such that future expansion of ORNGE's activity does not curtail other sectors of aviation activity.

Private

Historically, private aircraft activity has generally declined since 2001. There are a number of factors for this decline. Firstly, there has been a general decline in recreational and private flying in Canada as a result of the rising cost of fuel and other economic factors. At BBTCA there are constraints for both tie-down space and hangarage available to private light aircraft.

It has been previously announced that Buttonville Airport may close sometime between 2013 and 2015. The closure of this airport may see the relocation of a number of aircraft to BBTCA. Given the limited ability to accommodate additional private aircraft, it is not likely these numbers will be significant. With the potential relocation of a limited number of aircraft to the Airport there may be a short-term increase in the number of private aircraft movements. However, in the longer term it is anticipated that the annual growth in private aircraft movements will be approximately 1% unless additional facilities such as tie-downs and hangars are provided to accommodate this sector of general aviation.

Government

Government activity, which includes both civil and military movements, has remained relatively constant over the years and is not anticipated to change in the future. Government activity generally accounts for less than 500 movements per year, activity that is primarily associated with the Canadian International Air Show.

4.5.2 Activity Scenarios

With the rapid increase in air carrier activity over the past two (2) years and the allocation of all of the 202 slots available for scheduled air carriers, it is very likely that BBTCA has reached its theoretical capacity of 140,703 movements. Even with modest (1-2%) growth in the other general aviation sectors, the TPA may have to implement measures next year to manage aviation activities. This could include the application of slot protocols for other aviation sectors.

The following are possible scenarios with respect to the potential management of aviation activity.

Activity Scenario 1

Figures 4-6 and 4-7 illustrate a base scenario where air carrier activity grows to the maximum permitted 73,730 annual movements while other segments of general aviation grow at a very modest rate. Under this scenario, air charter/corporate activity would grow at 2% while private movements would grow at 1%.

A 1% growth in private movements equates to approximately 2-3 additional aircraft based at the Airport. Under this scenario, flight training local movements, would be capped at the 2010 activity levels.

As is illustrated in Figure 4-7, even with very limited to flat growth in non-air carrier sectors and a cap on local movements, the capacity limit for the Airport will likely be breached this year or in 2013, mandating the TPA to implement measures to manage aviation activity.

The Airport does not have the ability to accommodate any additional growth in activity resulting from the pending closure of Buttonville Airport, nor can it accommodate any increase in the number of BBTCA based air charter/corporate aircraft.

Even with only modest growth in general aviation this scenario is not reasonable even in the short term. Therefore, alternative scenarios must be considered that manage aviation activity.

Figure 4-6 Forecast Movements by Operator

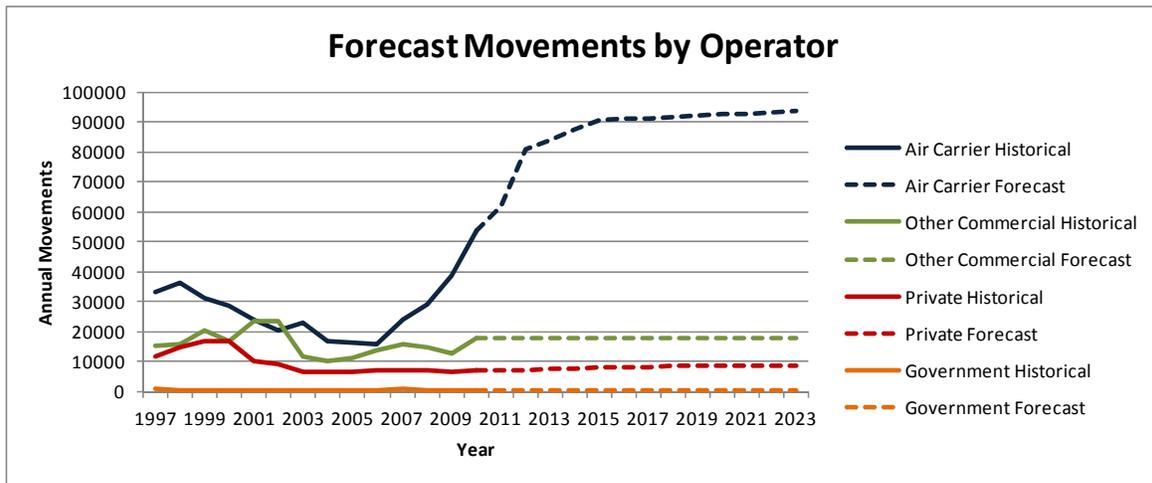
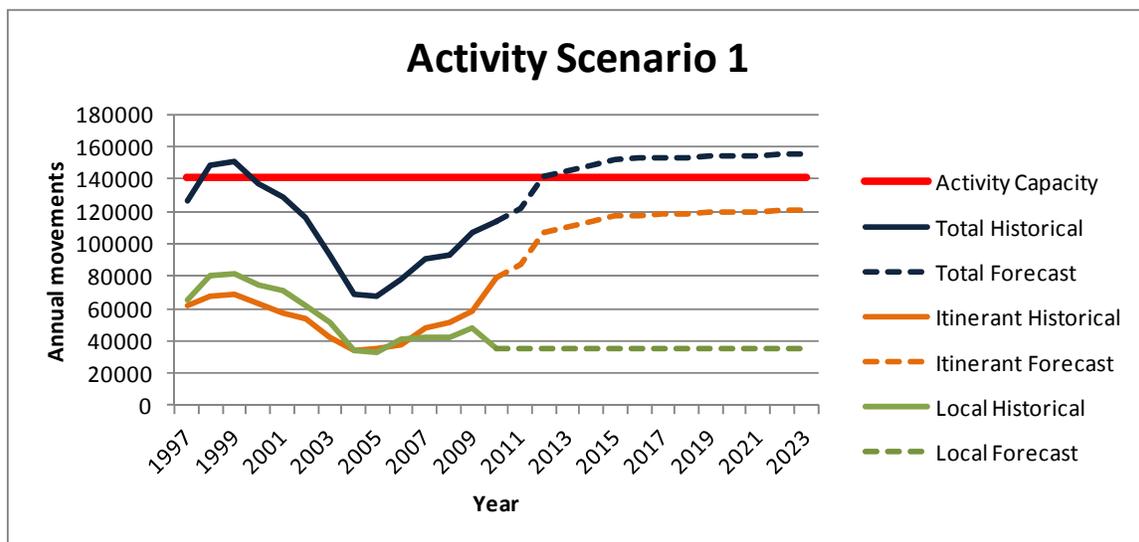


Figure 4-7 Activity Scenario 1



Activity Scenario 2

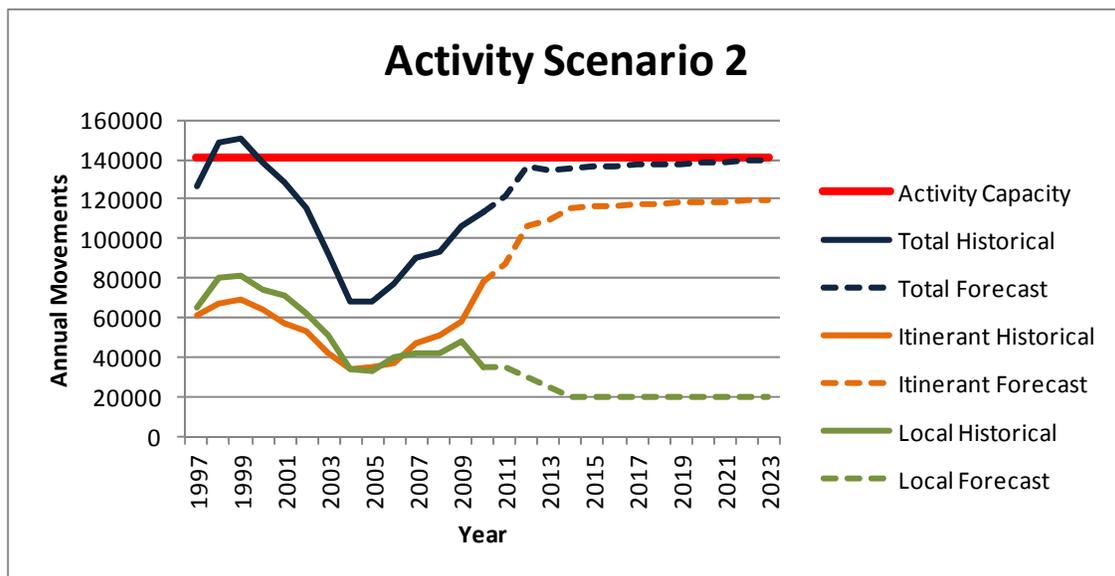
To compensate for anticipated growth in air carrier activity and meet the requirements of the Tripartite Agreement there will have to be a reduction in overall aviation activity. One means of doing this would be

to reduce flight training activity, specifically the local movement component. Under Scenario 2, local movements would be capped at 20,000 annual movements. This would accommodate Porter Airlines and Air Canada Express movements plus allow for a modest (2%) annual growth in air charter/corporate activity and limited growth (1%) in private movements. Flight training could continue to reside at BBTCA, however, circuit training and other local movements would be restricted.

Figure 4-8 illustrates the impact of capping annual local movements at 20,000.

In order to cap local movements, the TPA would likely have to enter into an agreement with local flight schools, and/or implement monetary disincentives that would severely penalize operators once they reached the activity cap. Another means of potentially managing local movements would be to have flight schools undertake their circuit training activity at other airports.

Figure 4-8 Activity Scenario 2

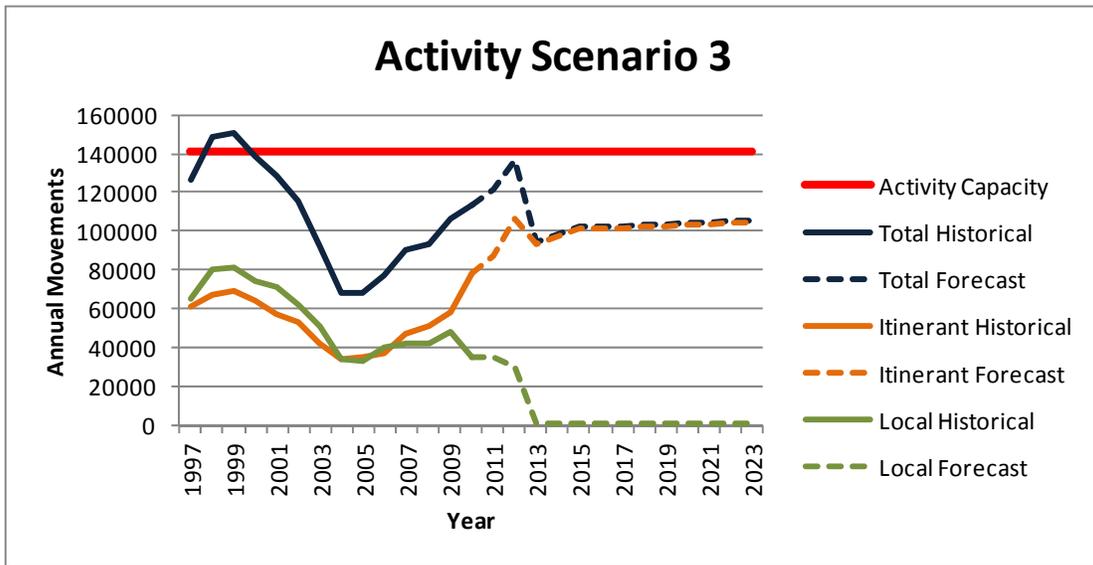


Activity Scenario 3

To accommodate growth in the air charter/corporate aviation sectors and provide opportunities to increase the number of BBTCA-based aircraft, one alternative would be to eliminate flight training activity from the Airport. This would significantly reduce the number of 'Other Commercial' itinerant movements and would eliminate almost all local movements. Scenario 3 outlines the effect of eliminating flight training activities from the Airport. By eliminating flight training activity, BBTCA would then have capacity to attract approximately 20,000 - 40,000 (dependent on the mix of noise-qualified aircraft) additional annual movements in the charter/corporate and private sectors.

Figure 4-9 describes the effect that the elimination of flight training would have on overall aircraft movements.

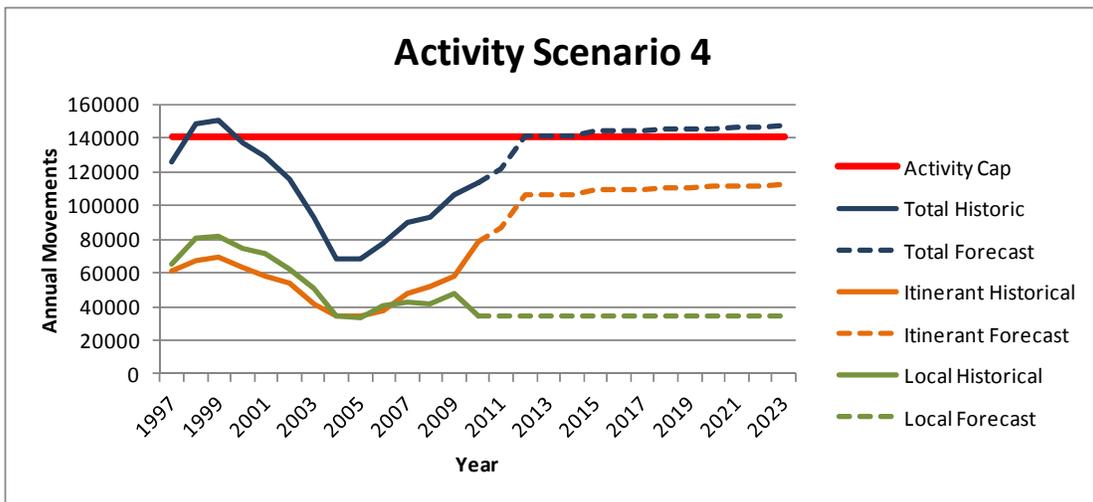
Figure 4-9 Activity Scenario 3



Activity Scenario 4

Activity Scenario 4 outlines the impact that the elimination of private activity at BBTCA would have on overall movements. This is illustrated in Figure 4-10.

Figure 4-10 Activity Scenario 4



Private activity at BBTCA accounts for approximately 7,000 movements per year, which is not significant. Likely one third to one half of this activity can be attributed to aircraft based at the Airport. The remainder would be visiting itinerant aircraft. As illustrated in Figure 4-10, elimination of private aircraft movements on its own is not an effective means of managing overall aviation activity as its contribution is relatively minor. Although it would be difficult to restrict private activity through any legislative means, higher user fees could be introduced that would dissuade private aircraft owners.

4.6 PASSENGER ACTIVITY FORECASTS

Limits to the growth of passenger activity at BBTCA is somewhat dictated by the number of movement slots allocated to the air carriers. Given that during the weekdays, both Porter Airlines and Air Canada

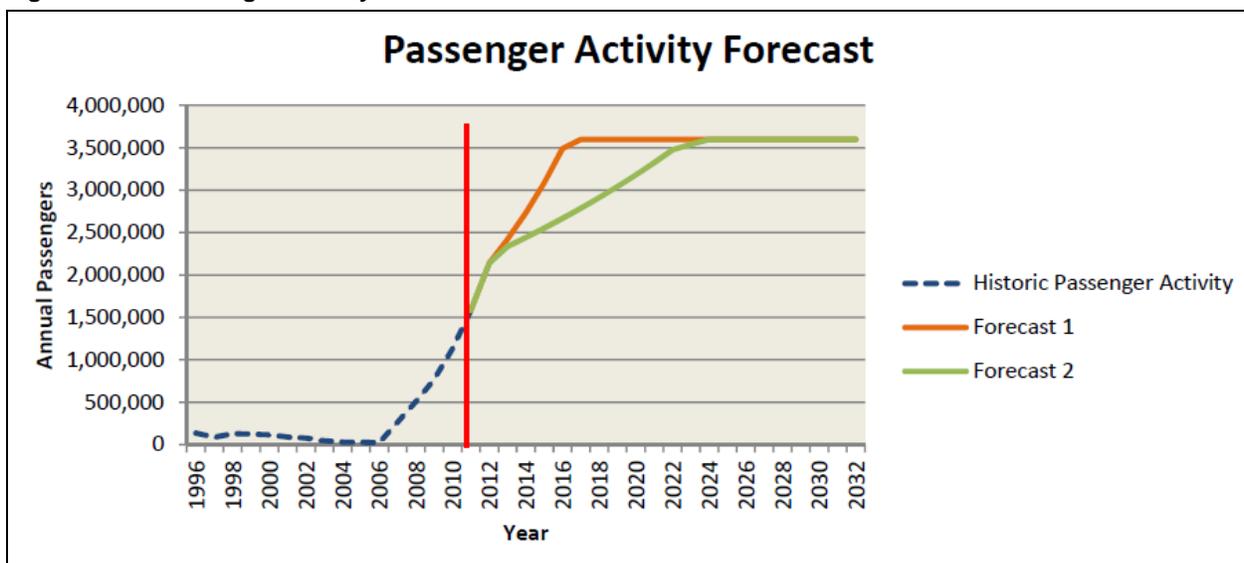
Express operate nearly the full allocation of available slots, the only growth will be through increases in aircraft load factors. Porter Airlines, in a May 2012 press release indicated it had achieved an average load factor of 61.7% in 2011, as compared to 54.2 in 2010 and 47.9 in 2009. In a typical mature market, average airline load factors usually range between 78% and 82%. As an example, in 2011 Air Canada achieved a system wide load factor of 81.6% while WestJet achieved a load factor of 79.7%.

Under the current flight schedules, Porter Airlines and Air Canada Express operate approximately 65,416 flights a year. With an average load factor of 79% there would be approximate 3,600,000 annual passengers. Of this, based on current passenger distributions, approximately 2,988,000 would be originating/Terminating passengers and 612,000 would be connecting passengers. With the current slot allocation, and restrictions on aircraft size, this likely represents a mature level of passenger activity for the Airport. Activity increases beyond this figure could likely only be achieved if additional movement slots were allocated to the airlines.

Figure 4-10 illustrates possible passenger growth scenarios. Forecast Scenario 1 assumes that passenger activity will grow at approximately 13% annually, which is equivalent to recent year-over-year increases in Porter Airline’s annual load factor. Forecast Scenario 2 assumes that passenger growth will grow at approximately 4.5% annually, which is more reflective of the growth of the regional air transportation market and reflects the typical annual growth rates experienced at Toronto Pearson International Airport.

As illustrated in the Figure 11, there is a spread of approximately eight (8) years between the two scenarios as to when passenger activity would mature.

Figure 4-11 Passenger Activity Forecast



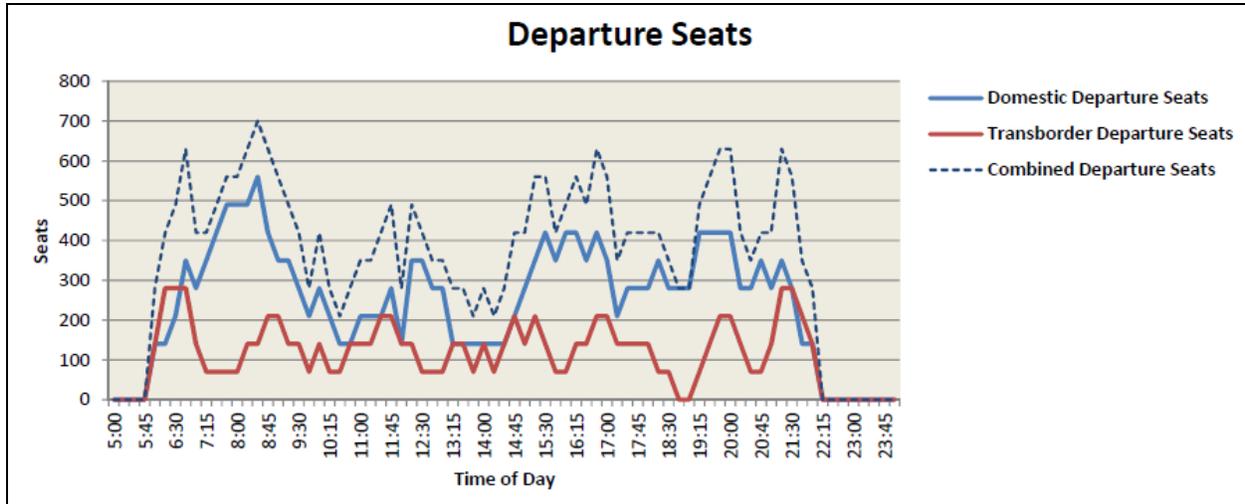
4.7 PEAK HOUR ACTIVITY FORECASTS

4.7.1 Existing Peak Hour Activity

Current peak hour passenger activity generally occurs in the morning. The peak hour domestic departure period is from 08:30 to 09:30 with approximately 560 available seats, while the peak hour transborder departure period is from 06:30 to 07:30 with approximately 280 seats. The combined peak hour departure period is 08:30 to 09:30 with 700 seats. Activity generally falls off by mid-morning then picks up in mid-afternoon and again in the evening. Figure 4-12 illustrates hourly activity based on rolling 15 minute intervals.

Assuming a peak period load factor of 85%, the domestic departure planning peak hour passenger (PPHP) demand would be 476 passengers, while the transborder departure PPHP demand would be 238 passengers. The combined departure PPHP would be 595 passengers.

Figure 4-12 Departure Seats by Time of Day

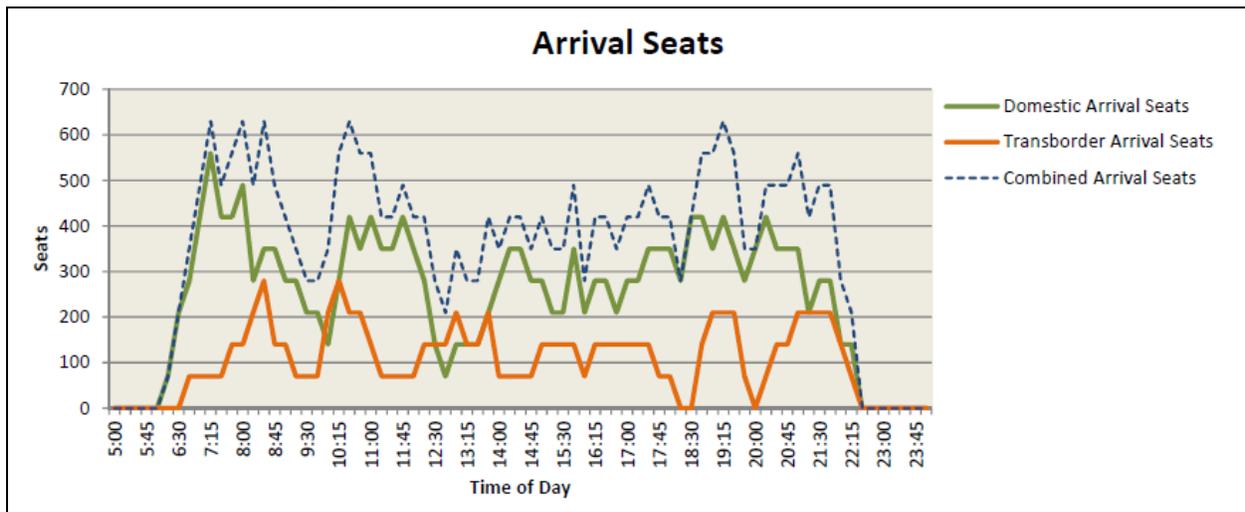


The peak hour domestic arrivals period is from 07:15 to 08:15 with approximately 560 available seats, while the peak hour transborder arrival period is from 08:30 to 09:30 and again between 10:30 and 11:30 with approximately 280 seats for each period. The combined peak hour arrivals period occurs between 08:00 to 09:30 and again at 21:15 and 22:15 with 630 seats. Activity generally falls off by mid-morning then picks up in mid-afternoon and again in the evening. Figure 4-13 illustrates hourly activity based on rolling 15 minute intervals.

Again, assuming a peak period load factor of 85%, the domestic arrivals planning peak hour passenger (PPHP) demand would be 476 passengers, while the transborder arrivals PPHP demand would be 238 passengers. The combined arrivals PPHP would be 536 passengers.

It should be noted that the theoretical arrivals/departure peak hour, based on 16 Q400 movements in an hour, is approximately 1,065.

Figure 4-13 Arrival Seats by Time of Day



5. INFRASTRUCTURE REQUIREMENTS

5.1 AIRSIDE

5.1.1 Runways

Under the terms of the Tripartite Agreement, the runways at BBTCA cannot be extended. Given that the critical aircraft is currently the Bombardier Q400, the existing runway length of 3,988 for Runway 08-26 does not fully meet the aircraft's takeoff requirements at MTOW. Ideally, the required runway length to accommodate the Q400, under maximum takeoff weight, is approximately 4,600 ft. Therefore, Q400 aircraft may be required to operate with weight restrictions, especially during hot weather. This in turn can limit the range and/or payload of the aircraft.

For the majority of general aviation (Code A/B) aircraft based at the Airport, the current runway lengths meet their operational requirements.

The current runway configuration has a capacity of approximately 200,000 to 265,000 annual movements depending on the mix of aircraft and the percentage of VFR versus IFR traffic. Given that the Tripartite Agreement essentially limits the number of annual movements at approximately 140,000 annual movements, the existing runway configuration has the capacity to meet foreseeable demands.

Runway 08-26

As previously identified, all of the existing runways can be reduced in width and still meet TP312 4th Edition recommendations. Reducing the width of Runway 08-26 to 100 ft. (30m) and shifting the centreline of the runway to the south by 7.5 m could provide tangible benefits to the Airport. Such a shift would provide sufficient clearance such that a dual taxiway plus a tail stand road could be created south of the ATB. This would have enormous operational benefit, in that it would significantly reduce the potential for congestion and delay, and provide a safer operating environment for both aircraft and ground service equipment.

Similarly, a shift in the runway centreline and a realignment of Taxiway Delta would create sufficient separation between the runway and taxiway that would permit aircraft to taxi directly to the threshold of Runway 26 without being impacted by aircraft on the approach. Such a realignment of Taxiway Delta would require some reconstruction of the headwall and the relocation of the marine radar.

Runway 06-24

Runway 06-24 is suitable for light general aviation aircraft, such as private/recreational aircraft and flight training activity. In this capacity, Runway 06-24 helps to reduce demand on Runway 08-26 during peak periods and provides some separation between light aircraft and air carrier aircraft. However, Runway 06-24 is limited to day-time only, and thus forces the use of Runway 08-26 during dusk and night flight training activities. Installation of a runway lighting system would help reduce demand on Runway 08-26 during all VFR weather conditions. Also, similar to Runway 08-26, Runway 06-24 could be reduced in width to mitigate O&M costs without impacting operations.

Runway 15-33

Given that this runway is utilized less than 5% of the time, and is restricted in its operation, there would be benefit in closing the runway without incurring significant operational impacts. The closure of Runway 15-33 would allow for the development of lands on the north side for commercial activities and / or airport support uses. The closure of the runway would also reduce ongoing O&M costs.

Runway End Safety Areas

In 2010, Transport Canada tabled Notice of Proposed Amendment (NPA) 2010-012 that would mandate the implementation of Runway End Safety Areas (RESAs) at qualifying certified airports. A RESA is a level graded area that extends beyond the runway threshold to provide an additional measure of safety in the event of an aircraft undershooting or overrunning the runway. As proposed, RESAs would be required where the runway length exceeds 3,937 ft. (1,200 m) or where an instrument runway is utilized by scheduled passenger operations utilizing aircraft with more than nine (9) seats. With respect to BBTCA, Runway 08-26 would require the installation of a RESA at both ends.

Under the NPA, the RESA would have a length of 150 m and a width twice that of the runway. The RESA would be co-located with the declared distances: TORA (runway end) and/or ASDA (stopway) for departures and the LDA for arrivals. As an alternative, airports could also install an Engineered Materials Arrestor System (EMAS), which is very expensive.

Should RESA's be mandated by Transport Canada, the Tripartite Agreement would require an amendment allowing for an expansion of airport lands to accommodate the RESA requirements.

5.1.2 Taxiways

Although not operationally ideal, the existing taxiway system generally meets the current and long-term requirements of BBTCA. There are however, locations where the existing fillet design (i.e. intersection of two (2) surfaces) does not meet Transport Canada recommendations for the Q400. In these locations upgrades to the taxiway fillets are recommended.

The following are additional recommended improvements that will increase the operational efficiency of the airside system:

Taxiway Alpha

Under the scenario where Runway 15-33 is closed, consideration should be given to realigning Taxiway Alpha parallel to Runway 08-26. This would allow the land located to the north of the taxiway to be redeveloped for commercial uses. Realignment of the taxiway would require relocation of the existing Runway 26 localizer. One possible solution would be to locate the localizer on an independent structure located in the water off the end of the runway; the other would be to locate it beyond the end of the approved RESA mitigating solution. Either solution should be to ensure that the localizer is aligned with the extended runway centerline in order to mitigate impacts to the instrument approach procedure minima.

Taxiway Delta

Operations are constrained on Taxiway Delta because of its close proximity to Runway 08-26. Shifting the centreline of the runway to the south and realigning Taxiway Delta would create sufficient separation such that aircraft would be capable of using the taxiway and holding at the threshold. With modifications to the navigation systems there is the potential to hold aircraft at the threshold even with aircraft on IFR approach to Runway 26. Realignment of Taxiway Delta would not require additional land mass, but would likely require the construction of a seawall along the existing shoreline in order to accommodate the taxiway shoulder.

5.1.3 Aprons

At present, there is an inadequate provision of apron tie-down space for both itinerant aircraft and those aircraft based at BBTCA. Given the tight constraints of the hangar line, much of the apron in front of the hangars is required for aircraft manoeuvring and cannot be used as permanent tie-down. Owners of private aircraft have expressed concerns that much of the tie down area available to private aircraft is too close to the terminal building and ORNGE rotary-wing operations. Ideally, the private aircraft owner group would prefer aircraft tie-downs to be provided where they would not interfere with air carrier

operations. Two (2) locations suggested by the group during stakeholder consultations include an area west of the CSB facility or on the south side of the runway complex.

Another concern regarding the existing main apron is the narrow depth along the portion immediately south of the terminal building. In this location, aircraft push-backs from gates 3 to 8 block the taxilane creating congestion and delays. Under the development scenario where the centerline for Runway 08-26 is shifted south, there would be sufficient setback to accommodate a dual taxilane in front of gates 3-8.

An engine run-up apron has been identified as a requirement by the air carriers. The facility should be located where associated noise impacts can be mitigated through the use of noise berms or barriers.

5.2 LANDSIDE

5.2.1 Landside – Mainland

The mainland landside elements of BBTCA are extremely constrained. This is due to a number of process functions being located within a small footprint. These functions including approach roads, (passenger vehicles taxi/shuttles and ferry queuing/loading), parking, curb-side drop-off/pick-up and the ferry terminal. These functions operate within an extremely confined area, often resulting in significant congestion, even during non-peak periods. The TPA is in the process of implementing further improvements, and to reduce traffic demand, continues to promote the increased use of the free shuttle.

There is a need to develop a long-term solution to the landside constraints. For this reason, it is imperative that a complete review and comprehensive study be undertaken to specifically address the landside system. Participants of this study must include the TPA, City of Toronto, airport tenants and surrounding residential groups. The success of this study will be dependent on finding efficient and effective solutions for connecting and integrating the landside system with the City of Toronto roadway and public transportation system.

Roadway System

The roadway system in the vicinity of BBTCA, particularly lower Bathurst Street, is a major congestion and safety concern for the TPA, the City of Toronto and surrounding residents. The primary cause of the congestion and subsequent safety impact is the lack of space for the re-configuration and expansion of the existing roadway system. As a result, any infrastructure improvements will require consultation with the City of Toronto and will likely require land transfers/swaps to obtain any tangible benefit.

The following is list of possible mitigation options that should be considered to improve the roadway system at BBTCA:

- Improved traffic signalization and street parking controls, including provision of dedicated right turn signals from Bathurst Street to Queens Quay.
- Separation of pedestrian and vehicular traffic at the intersection of Bathurst Street and Queens Quay W., particularly for pedestrians travelling east/west on the south side (i.e. school children). The most practical solution is a pedestrian ramp over the south portion of the intersection.
- Increase the number of lanes along lower Bathurst Street through the use of an elevated or depressed roadway structure / parking structure.
- Relocate the Stadium Road parking lot, which will eliminate all Airport traffic from Stadium Road, Queens Quay W. and Little Norway Crescent. A land transfer agreement with the City of Toronto would enable the existing parking stalls at the Stadium Road parking lot to be replaced either at the Canada Malting Site or the existing play area between the parking lot and the ferry terminus. The existing Stadium Road parking lot could be turned into a park/play area.

Ferry Terminal Curb-Side

At a length of approximately 60m, the drop-off/pick-up curb at the ferry terminus is significantly undersized as compared to airports with comparable passenger activity. As comparison, the following is a list of similar Canadian Airports, including the number of annual passengers and the length of their terminal curb-side:

- Kelowna Airport: 1.3 million annual passengers, curb length of 122m,
- Saskatoon Airport: 1.3 million annual passengers, curb length of 150m, and
- Victoria Airport: 1.4 million annual passengers, curb length of 200m.

Expansion of the curb is only possible following the complete re-development of the ferry terminus area and possible expansion to additional lands. The Canada Malting site is currently being used on a temporary basis for curb functions while the pedestrian tunnel is being constructed. Although this has provided some additional curb length, the use of these lands is only temporary and therefore is not an acceptable long-term solution. Furthermore, although additional curb length is provided through the use of these temporary lands, the pedestrian walkways are too narrow, which leads to conflicting passenger flows. Any opportunity to utilize these lands for long-term purposes would be beneficial, but would require negotiations with the City of Toronto.

Other constraints of the curb include restricted manoeuvring areas and the cross flows of vehicle traffic which occurs between the drop-off and pick-up sections of the curb. Ideally the traffic should flow in a single direction, with no cross-flows. Also, public parking should be eliminated from the curb area in order that the limited land area can be dedicated for passenger drop-off and pick-up functions.

Parking

The provision of public parking is significantly undersized given the level of passenger activity. Industry planning guidelines suggest a provision of approximately 1,000 – 3,000 parking stalls per 1 million enplaned passengers. With approximately 1.5 million passengers, the unrestrained demand for parking at BBTCA would be approximately 750 – 2,000 parking stalls. Given the Airport's proximity to the downtown core, this demand for parking is somewhat offset by effective taxi service, public transit and shuttle buses which provide free transportation to the subway and GO train. Although the provision of additional parking would benefit the Airport, the TPA continues to promote the use of the free shuttle as a means of further reducing traffic.

There are limited opportunities to accommodate additional vehicle parking on the mainland given the lack of available land. Potential opportunities do exist, however they will require substantial investment and cooperation between the TPA and the City of Toronto. These include:

- Relocation of the Stadium Road parking lot with City of Toronto lands
- Structured parking (above or below grade) parking at any of the existing or proposed parking lots

The development of structured parking on any of the mainland sites would require negotiations with the City of Toronto.

Taxi Corral

BBTCA is used heavily for business travel. Given the Airport's close proximity to downtown Toronto and the lack of car rental facilities, the use of taxis as ground transportation is higher than at Canadian airports of similar size. This, combined with the overall lack of real estate on the mainland, results in significant congestion.

The current capacity of the two (2) taxi queuing lanes is approximately thirty-four (34) vehicles, which during peak periods is at over-capacity. As a result, taxis often stand on the northbound curb lane of Eireann Quay, which presents a significant congestion and safety concern.

Under the current layout, there is no available real estate to increase the taxi corral area. Other Canadian airports with similar issues would use a taxi permit system to control the number of taxis and as a secondary measure discourage unsafe behaviours. However, the TPA is limited in how it can control and restrict taxi operations on lower Bathurst Street.

As a result, the TPA is left with an overall taxi system that has far more demand than capacity, and is without any realistic short-term and cost effective mitigating solutions. The only real opportunity for improvements rests in the complete review of the mainland landside area and through the use of structured roadways/parking to increase capacity.

5.2.2 Landside - Airport

Landside elements located on the Airport proper are also constrained due to the limited land available in which to accommodate access roads and parking. Furthermore, due to the limited availability of airside lands south of Runway 08-26, any future expansion of the landside should be limited in order to maximize airside opportunities.

Roadway System

Vehicular access on the island is primarily comprised of the main turning circle directly in-front of the ferry terminus and the parking lots to the east and west. Due to the configuration of the parking lot entry points, the turning circle is necessary for normal traffic flows, particularly for traffic heading west along the hangar line. As a result, there is limited opportunity to improve vehicular traffic flow on the island.

Parking

Of the existing land areas, the island represents the best opportunity for parking improvements through the use of structured parking. This is primarily because these lands are already owned by the TPA and discussions and / or approvals with the City of Toronto would be limited.

However, cost and constructability of structured parking on the island presents a significant constraint. Also, the provision of additional parking on the islands must take into consideration the impact of increased vehicle demand on the ferry and the ferry terminus queuing area.

5.3 AIRPORT TERMINAL BUILDING

The airport terminal building is owned and operated by City Center Terminal Corp. (CCTC), which in turn is wholly responsible for accommodating passenger demand at appropriate levels of service. Given that the existing terminal is designed to accommodate a peak hour demand of approximately 336 passengers, it is likely that areas of the terminal building already exceed demand during peak periods.

It is our understanding that CCTC is considering an expansion of the domestic holdroom, in the areas of Gates 1 and 2. As traffic increases from 2.0 million towards the airport system (i.e. slot) capacity of approximately 3.5 million, it is anticipated that other elements of the terminal building will require expansion and/or modification to meet future demands.

Following the completion of the tunnel, demand for front-line passenger processing systems such as check-in and security will likely diminish. Under the current system, these front-line systems can experience peaking demand every fifteen (15) minutes, which results in a cycle that strains capacity. Once the pedestrian tunnel is complete demand for these systems will be more consistent during peak periods, alleviating the peaks that result from passengers disembarking the ferry.

5.4 AIRPORT SUPPORT FACILITIES

5.4.1 Airport Maintenance Garage

A new airport maintenance garage is required in order to accommodate the current and foreseeable complement of maintenance equipment. With the closure of Runway 15-33 there is a potential opportunity to site the garage on the north side of the runway system in a location that has both direct airside and landside access.

There is also the potential to relocate the facility on the south side of the runway system. Relocating the facility to the south side of the Airport would permit expanded use of the north side for commercial development. However, there would be no convenient means of providing landside access. This would be a constraint, particularly for personal vehicles, which would not be permitted airside.

Another potential location is east of the terminal building. This location would require the relocation of an existing tenant, but would create opportunity for a combined airside/ferry maintenance/storage facility and would also create opportunity for additional parking and a single airport administration area.

Ideally, the maintenance garage should have the capacity for a minimum of eight (8) bays which is roughly twice the size of the existing facility. Given that maintenance personnel are cross-trained for ARFF functions consideration should be given to the development of a new combined services building that would accommodate both airport maintenance and ARFF functions.

5.4.2 ARFF Fire Hall

Under the Canadian Aviation Regulations Part III, Subpart 3, the Airport is required to provide a Category 6 level of service. This includes the provision of 2 aircraft fire fighting vehicles, which are currently provided. However, the existing ARFF fire hall is currently undersized.

At present, two (2) bays within the combined services building are used to accommodate the two (2) existing ARFF vehicles with no room to accommodate additional vehicles or equipment. Staff support facilities and storage/workshop areas are also generally not adequate to meet industry norms with respect to a modern ARFF facility.

To meet the long term needs of the Airport three (3) apparatus bays should be provided, the third bay to accommodate a reserve ARFF vehicle and/or a command vehicle. To provide structural fire and medical response services, two (2) additional apparatus bays would likely be required, for a total of five (5) apparatus bays.

5.5 COMMERCIAL DEVELOPMENT

5.5.1 North Airport Lands

At present there is no opportunity at the north end of the Airport to accommodate additional commercial lots or provide additional airside apron areas. Relocation of the ARFF fire hall and maintenance facility could permit some opportunity. However, this would be limited to a hangar suitable only for small private and corporate aircraft.

Closing Runway 15-33 would create a large area west of the ARFF fire hall and maintenance facility for commercial development. This area could support large commercial operations, such as those required for the Dash 8 Q400, or accommodate a mix of smaller developments associated with corporate/private aircraft. Combined with other airport development alternatives, there is potential on these lands for general aviation/corporate and air carrier hangar expansion. However, a number of factors, including

cost and operational disruption, should be considered when developing these lands, such that development occurs in the most efficient manner utilizing the newly created vacant lands.

This area represents approximately 2.6 ha and likely has the potential to accommodate nearly all the additional commercial aircraft activity permitted within the aircraft movement restrictions of the Tripartite Agreement NEF contours.

5.5.2 South Airport Lands

Presently, the only vacant land located on the island portion of the Airport is south of Runway 08-26, and has a land area of approximately 6.9 ha. Due to its current vacant state, there exist a number of opportunities for future development.

A major constraint of this site is landside access. Currently, the only means of vehicular access is by crossing the active runway complex. As previously discussed, this can take up to thirty (30) minutes during busy periods and would be nearly impossible to manage for public traffic. Vehicles crossing the active runway system also pose potential safety risks and should be minimized.

For pedestrian traffic, access may be possible by using the City of Toronto ferry service to Hanlan's Point and then accessing the Airport through a security gate in the perimeter fence. This alternative may be suitable for access to private aircraft tie-downs, but would not likely be feasible for any level of commercial development. Vehicle access on the Hanlan's Point ferry destined to the Airport would require an agreement from the City of Toronto.

To support any significant commercial development, particularly where users are without airside security clearances or operator licences (RAIC and AVOP), would require the construction of a groundside access road. Due to the Tripartite Agreement, it is not possible to construct a road around the threshold of Runway 08-26, as the heights of vehicles would impact the approach surfaces unless airport expansion into the Lake Ontario is permitted. Therefore, the only method of accessing the south side under the Agreement is by means of a tunnel under the runway system. This would require considerable land area in which to accommodate the access ramps and the associated cost and disruption to runway operations would likely be prohibitive given the potential financial returns that would be derived from such an endeavour.

For these reasons, commercial development on the south side of the runway complex is not considered a viable alternative. The provision of private aircraft tie-downs on the south side of the Airport should only be considered where access is limited to pedestrians only and that a suitable means of providing through-the-fence access to the site from the adjacent park lands is provided which fully meets the Airport's security requirements and cost recovery obligations.

6. RECOMMENDATIONS

6.1 PROJECT IMPLEMENTATION AND PHASING

Due to the constraints of the Tripartite Agreement and the fact that aircraft activity is near capacity, the implementation and phases of the following recommendations are based less on time or aviation activity milestones and more on funding and agreements with external agencies such as tenants, the City of Toronto, NAV CANADA and Transport Canada.

This is perhaps more critical for the airside system, where capacity has been reached and there is an immediate demand for increased development. For the landside system, although there is an immediate need to significant expansion and rehabilitation, there is also a need to identify medium-term solutions as passenger activity has the potential to reach 3.5 million over the next five (5) to ten (10) years. This additional passenger activity will result in increased demand on the landside system, including the roadway system, curbside, taxi corral and parking.

Since it is forecasted that BBTCA will reach its ultimate capacity over the next five (5) to ten (10) years, there are no long-term recommendations. As a result, there are a number of short and medium term recommendations that will require substantial financial investment. Therefore, it is anticipated some of the financially substantial recommendations, or those requiring cooperative agreements with external agencies, particularly the City of Toronto, are likely to be executed in the long-term (10+ years).

6.2 AIRSIDE

6.2.1 Short-Term

The following details the recommended short-term (0-5 years) improvements to the airside system:

- Runway 15-33 should be decommissioned and Taxiway Alpha realigned to permit the western expansion of commercial development along the existing hangar line. This development will need to occur in a number of phases as it will require the relocation of airport facilities such as the combined services building and the localizer for Runway 26.
- In terms of the decommissioning of Runway 15-33, the portion between the threshold of Runway 06 and Runway 08-26 should be converted into a taxiway, while the portion south of Runway 06-24, including Taxiway Echo should be decommissioned. An airside road is required to maintain access to the fuel farm located south of the intersection of Runway 33 and Taxiway Echo.
- It is our understanding that Runway 08-26 requires a full reconstruction. At that time, Runway 08-26 should be reduced from 45m (150 ft) to 30m (100 ft) and the runway centerline shifted 7.5m south. This will increase the separation between the runway centerline and airport developments to the north such as parallel taxiways, passenger terminal and the hangars.
- Following the southern shift of centerline for Runway 08-26, the apron / taxilane directly south of the terminal building should be expanded to permit dual taxilanes. This will require an expansion of the apron and the re-alignment of the existing infrastructure.
- All taxiways forming part of the normal traffic flow for the Q400 should be upgraded to meet Transport Canada recommendations for main gear clearance.
- It is anticipated that Runway End Safety Areas (RESAs) will become a mandatory regulatory requirement over the next five (5) years. Therefore, the TPA, in cooperation with Transport Canada and the City of Toronto (i.e. signatories to the Tripartite Agreement), should assume that regulatory requirements will require amendments to the Tripartite Agreement.

6.2.2 Medium-Term

The following details the recommended medium term (5-10 years) improvements to the airside system:

- Runway 06-24 should be upgraded with a lighting system to enable night-time operations up to the 11:00pm curfew.
- Due to the limited space off the ends of the runways, the electronic navigational aids are located off-centerline, which is impacting the instrument approach minima and aircraft manoeuvrability. The localizer for Runway 26 should be relocated in order to permit the final re-alignment of Taxiway Alpha to the threshold of Runway 08. This will enable increased commercial development along the north side of Taxiway Alpha.
- Runway 08 glidepath and the Marine Radar should be relocated such that it will permit a northern shift of Taxiway Delta between Taxiway Charlie and the threshold of Runway 26. This will also require the construction of a permanent headwall along the northern shoreline adjacent to Taxiway Delta, as permitted under the Tripartite Agreement (provided no land mass is added). This will complete a full-length parallel taxiway along Runway 08-26, substantially increasing operational efficiency.

6.3 LANDSIDE

6.3.1 Short- Medium Term

The following details the recommended short-term (0-10 years) improvements to the landside system:

- A strategy needs to be developed to undertake a comprehensive review of the existing landside infrastructure to determine what improvements can be implemented to infrastructure owned by the TPA. These include:
 - Re-configuration of the Stadium Road parking lot layout to increase the manoeuvrability, access and wayfinding to the ferry terminus.
 - Re-configuration of the immediate ferry terminus curbside which has been implemented during the construction the pedestrian tunnel. This analysis should consider passenger flows; particularly that of shuttle passengers, passenger drop-off and taxi pick up area.
 - Re-configuration of the short-term ferry terminus curbside following the construction of the pedestrian tunnel. This analysis should consider passenger flows; particularly that of shuttle passengers, passenger drop-off and taxi pick up area.
 - Re-configuration of lower Bathurst Street, with emphasis on taxi corral area, ferry traffic, general public traffic and construction traffic related to the construction of the pedestrian tunnel.
- The TPA, in co-operation with the City of Toronto, should examine opportunities to increase the use of public transportation to and from BBTCA.
- The TPA, in co-operation with the City of Toronto, should examine a pedestrian separation over lower Bathurst Street immediately south of the intersection of Bathurst Street and Queens Quay West. This will increase the safety of school children and other pedestrians during peak periods.
- The TPA, in co-operation with the City of Toronto, should examine opportunities to utilized City lands in order to maximize landside system functions. This should include potential transfers/swaps of TPA and City lands. The purpose of this being to reduce the impact of airport-related traffic on surrounding residents, while increasing the operational efficiency of the landside system.

- The TPA should assess the feasibility of providing structured (above or below grade) parking either on the mainland or on the island. The ideal location for this parking would be either on the existing Canada Malting Site or on lands immediately west of the ferry terminus.

6.4 AIRPORT TERMINAL BUILDING

The terminal building is owned and operated by CCTC, a subsidiary of Porter Airlines, where expansion of the terminal building is the responsibility of CCTC. Therefore, the TPA is restricted from undertaking any improvement projects related to the terminal.

However CCTC has indicated that planning for the expansion of the terminal building, particularly those related to the domestic holdroom, is underway. The scope of these expansion plans have not been shared with the TPA. However, as part of the operating agreement between the TPA and CCTC, it is recommended that the TPA participate as a stakeholder and review the proposed expansion plans of the terminal building. This is necessary to ensure that a minimum level of standard is maintained for all BBTCA customers.

6.5 AIRPORT SUPPORT FACILITIES

The following details the recommendations related to the airport support facilities:

- A new combined services building (CSB), uniting airport maintenance and ARFF functions, should be constructed. This new CSB should have a minimum of eight (8) bays for maintenance functions and an additional five (5) bays for ARFF, for a total of eleven (11) bays. An additional two (2) bays should be considered for future expansion requirements, totalling fifteen (15) bays.
- Ideally, the new CSB should be located on the north side of the Airport, such that both airside and landside access is available.
- The TPA should consider the Trans Capital Air lease area as a possible site for a new CSB building. This site would provide an opportunity to include ferry maintenance functions as part of the building program. Under such a scenario, Trans Capital Air could relocate to new hangar facilities located north of Runway 15-33.
- An alternative location for the CSB is adjacent to the existing site, north of the ATC.

6.6 COMMERCIAL DEVELOPMENT

The following details the recommendations related to commercial development at BBTCA:

- Runway 15-33 should be decommissioned and Taxiway Alpha relocated, permitting expansion of commercial development west along the hangar line.
- The extent of this commercial development depends on what other airport infrastructure/facilities are relocated as part of this activity. The following summarizes two (2) possible alternatives:
- Alternative 1:
 - i. Construct a new CSB at the site of the existing Trans Capital Air hangar, which would be relocated in the vicinity of the threshold for Runway 15.
 - ii. Adjacent to the new Trans Capital Air hangar, provide a lease area large enough to support light maintenance of Dash 8 Q400, such that Porter's existing maintenance facilities can be relocated.

- iii. Porter's current maintenance facility would be converted for use by private recreational aircraft storage including the re-configuration of the existing FBO to act as a dedicated FBO for itinerant and corporate aircraft.
- Alternative 2:
 - i. Construct a new CSB in the vicinity of the existing CSB.
 - ii. Provide a lease area for a new dedicated FBO for itinerant and corporate aircraft.
 - iii. Provide a lease area to support the construction of new hangars for the storage of private recreational aircraft.
- Commercial development on the south side of Runway 08-26 is not recommended except for aircraft tie-downs for recreational aircraft which do not require vehicular access to their aircraft. Pedestrian access to these tie-downs would be provided by the Hanlan's Point ferry service and through a controlled access gate in the airport perimeter fence. The number of tie-downs should be limited to current BBTCA-based aircraft only.
- It is not recommended that commercial development occur on the south side if vehicle traffic is required to cross the runway complex at grade.

6.7 AVIATION ACTIVITY MANAGEMENT

In order to manage aviation activity such that BBTCA does not breach the NEF contours per the Tripartite Agreement, the following is recommended:

- Local movements (i.e. flight training circuit activity) should be restricted, capped or possibly eliminated.
- The number of based private recreational aircraft should be capped at existing levels.
- Air carrier slots should be capped at 202 per day and the number of night-flights (2200 & 0700) continue to be restricted to a maximum of seven (7) per day in accordance with the slot capacity study.
- Itinerant corporate activity should be permitted to grow by a maximum of 2%-3% per year.

6.8 OFF-SITE LAND USE PLANNING

Being that the Airport is located in a downtown environment, BBTCA is exposed to high-rise condominium developments that impact airport operations. These impacts are primarily to the Airport's instrument approach procedures, which must be modified to ensure compliance with Transport Canada regulatory requirements. The resulting operational impacts to BBTCA flight operations are in the form of approach minima that are higher than ideal. Increases to an Airport's instrument approach minima have a direct impact on the airport's utilization; meaning when weather is moderate to poor (i.e. low cloud and fog) the airport is effectively closed.

Understanding the economic value of airports, the Province of Ontario through the Provincial Policy Statement has established guidelines for the protection of airports. According to s.1.6.7 of the Provincial Policy Statement:

- 1.6.7.1 *Planning for land uses in the vicinity of airports shall be undertaken so that:*
 - a) *The long-term operational and economic role of airports is protected; and*

- b) *Airports and sensitive land uses are appropriately designed, buffered and/or separated from each other to prevent adverse effects from odour, noise and other contaminants.*

1.6.7.2 *Airports shall be protected from incompatible land uses and development by:*

- a) *Prohibiting new residential development and other sensitive land uses in areas near airports above 30 NEF/NEP, as set out on maps (as revised from time to time) that have been reviewed by Transport Canada;*
- b) *Considering redevelopment of existing residential uses and other sensitive land uses or infilling of residential and other sensitive land uses in areas above 30 NEF/NEP only if it has been demonstrated that there will be no negative impacts on the long-term function of the airport; and*
- c) *Discouraging land uses which may cause a potential aviation safety hazard.”*

As the airport operator, the Toronto Port Authority has demonstrated good stewardship in working with developers to maintain its operational capabilities, while mitigating impacts on development south of the Gardiner Expressway. Also, through the implementation of airport capacity restrictions, the Airport has effectively managed its growth such that it does not encroach on surrounding developments; as demonstrated by the 2010 actual NEF contours remaining within prescribed limits established per the Tripartite Agreement.

Given the rapid growth of condominium development in the immediate vicinity of BBTCA over the past five (5) years, it is vital that the City of Toronto work cooperatively with the Toronto Port Authority to ensure that new developments do not impact the long-term operational and economic viability of BBTCA.

7. CAPITAL INFRASTRUCTURE PLAN

7.1 CURRENT AIRPORT FUNDING

Capital infrastructure, operational expenditures and real estate expenditures at BBTCA are solely funded through aeronautical and non-aeronautical revenues from airport operations. BBTCA does not receive financial subsidies or public tax dollars (municipally, provincially and federally) to fund airport operations or capital expenditures.

The primary source of aeronautical revenues comes from airline fees (i.e. landing fees and concessions) and from the Airport Improvement Fee (AIF), a \$20 fee for each departing passenger. The AIF is a restricted fund that can only be applied towards Airport Capital improvements.

According to the 2011 audited financial statements for TPA, the following summarizes the revenue and expenses for BBTCA:

Table 7-1 Audited Financial Statements

Financial Statement	2011	2010
Operating Revenue (\$million)	17,721	13,313
Operating Expenses	13,178	11,577
Income	4,543	1,736
<i>Airport Improvement Fees</i>	<i>14,645</i>	<i>9,962</i>

Source : Toronto Port Authority Audited Financial Statements

8. RECOMMENDED LAND USE PLAN

The Recommended Land Use Plan addresses the operational and business objectives of the Airport while having due regard for the following:

- Provision of a safe operating environment;
- Protection for the long term operation and development of the Airport;
- Optimization of limited available lands
- Enhancement of the Airport's commercial viability

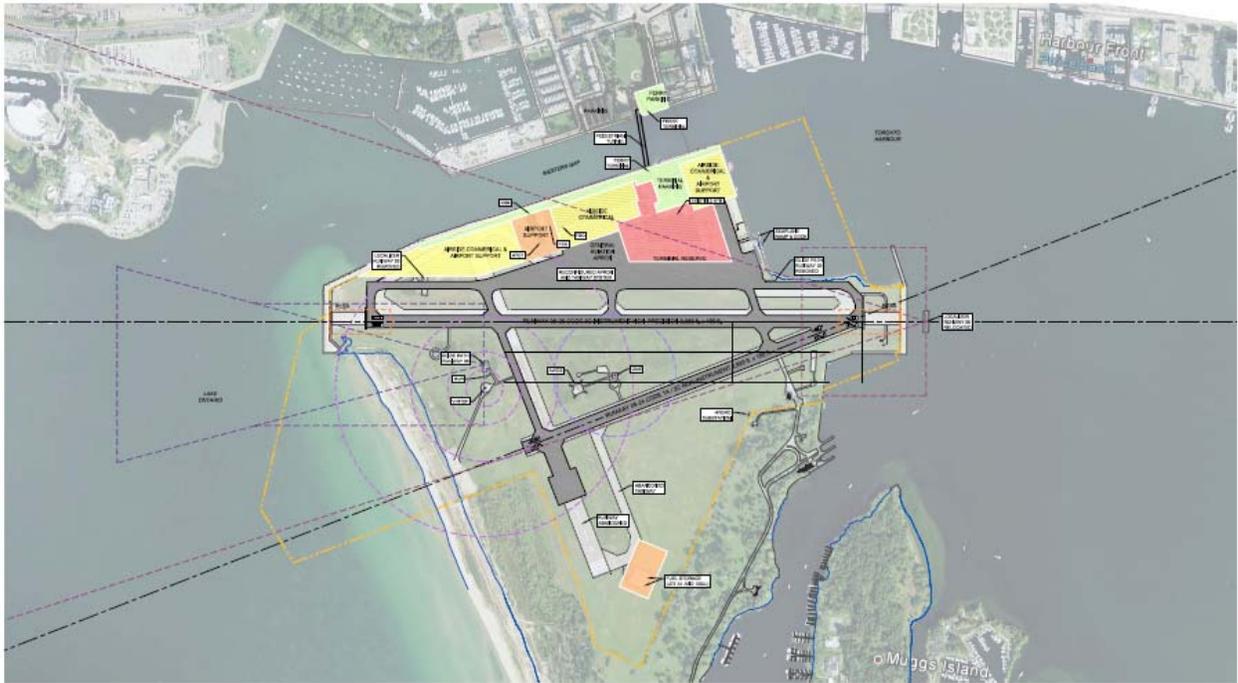
The land use plan is broken down into a number of sub-areas to ensure that the Airport is developed in an efficient and cost effective manner which addresses short-term concerns while at the same time providing flexibility for the long-term development of the Airport.

The recommended land use plan is illustrated in Figure 7-1. A larger scale drawing with legend is provided in Appendix B.

The following is a description of the land use descriptions used the recommended land use plan:

Airside Pavements	Lands that are currently used or required in the future for the safe movement and operation of aircraft.	
Landside Reserve	Lands required for or required in the future for groundside access and parking	
Airport Terminal	Lands currently used or required in the future for airport terminal operations	
Airport Support	Lands currently used or required to support the operations of the Airport including airport maintenance facilities, fire hall, fuel farm, and storage facilities.	
Airside Commercial	Lands currently used or required to support commercial activities which require direct access to the airside infrastructure. Activities could include aircraft maintenance/storage, air cargo, airline maintenance, FBO.	

Figure 8-1 Recommended Land Use Plan



9. ENVIRONMENTAL / COMMUNITY IMPACTS

9.1 ENVIRONMENT

The Toronto Port Authority as airport operator is responsible for the environmental management of airport lands and in doing so is committed to undertaking a responsible and sustainable approach to mitigating environmental impacts associated with the operation of BBTCA. The TPA has undertaken a number of initiatives to safeguard the environment. All activities at the Airport are undertaken in compliance with applicable environmental regulations and industry best practices. As an example, BBTCA is the only airport in Canada powered by 100% renewable energy.

Best practices include:

Environmental Assessments

The environmental assessment process considers the biological, physical, and social impacts of all projects, and involves the preparation of an Environmental Review Report by airport personnel before a project is authorized to proceed. The Canadian Environmental Assessment Act (CEAA) is used as a guide for all environmental assessments.

Environmental Audits

These are objective evaluations of the environmental state of the facility. TPA personnel conduct periodic tenant audits to determine the effectiveness of tenant environmental systems and to ensure compliance with environmental legislation. An external firm is engaged to perform audits of the entire airport site and airport facilities to evaluate the environmental management system, the environmental quality of the site, and the fulfilment of legal requirements.

Environmental Emergency Response Plans

Environmental Emergency Response Plans specify procedures and measures to follow in case of accidental release of hazardous substances on the site. These plans outline the responsibilities of TPA staff and the various organizations that may be involved in emergency response and documents response procedures and guidelines for different spillage events.

Given the Airport's immediate proximity to Lake Ontario, the site is particularly sensitive to potential storm water contaminates. In response, the TPA tests storm water runoff on a regular basis to ensure full compliance with regulatory requirements. Generally speaking, the containment of effluent from de-icing operations is of particular concern to airports. In that regard, the terminal aprons have been designed to collect runoff during de-icing operations and direct it to below-ground storage tanks where it is then fed into the municipal sanitary system.

An environmental assessment was not undertaken as part of the scope of this assignment. However, there does not appear to be any potential development issues that would have a significant impact on the environment. In that any future development of the Airport would take place on existing airport lands that have been previously disturbed, it is unlikely that such development would have any impact on the natural habitat and wildlife.

9.2 NOISE

The TPA has undertaken a number of initiatives to minimize the impact of airport-related noise on the surrounding community. The most important of which is the implementation of a noise management program which includes operating curfews, noise abatement procedures, and monitoring daily operations to ensure compliance utilizing the Airport Noise and Operations Monitoring System ANOMS.

To mitigate ground level noise, the TPA recently installed noise barriers along the south wall of the Western Gap. Ground level noise is also mitigated by the hangar line which provides a continuous physical noise barrier.

If in the future, hangars and / or a CSB facility are constructed on the threshold of Runway 33, this would act to further mitigate ground level noise impacts on land uses located north of the Western Gap. It is also proposed that a dedicated engine run-up facility be provided on the south side of Runway 06-24, on the decommissioned portion of Runway 15-33. This engine run-up facility would be partially enclosed on two (2) sides and would be designed to mitigate the impact of engine test noise on surrounding communities.

It is not anticipated that recommendations stemming from the Airport Master Plan will increase the noise footprint of the Airport. It is anticipated that, through the reduction of local circuit activity, the noise footprint would likely be reduced. Therefore, it is foreseen that all future aircraft activity will be within the NEF parameters established by the Tripartite Agreement.

9.3 AIRPORT ZONING

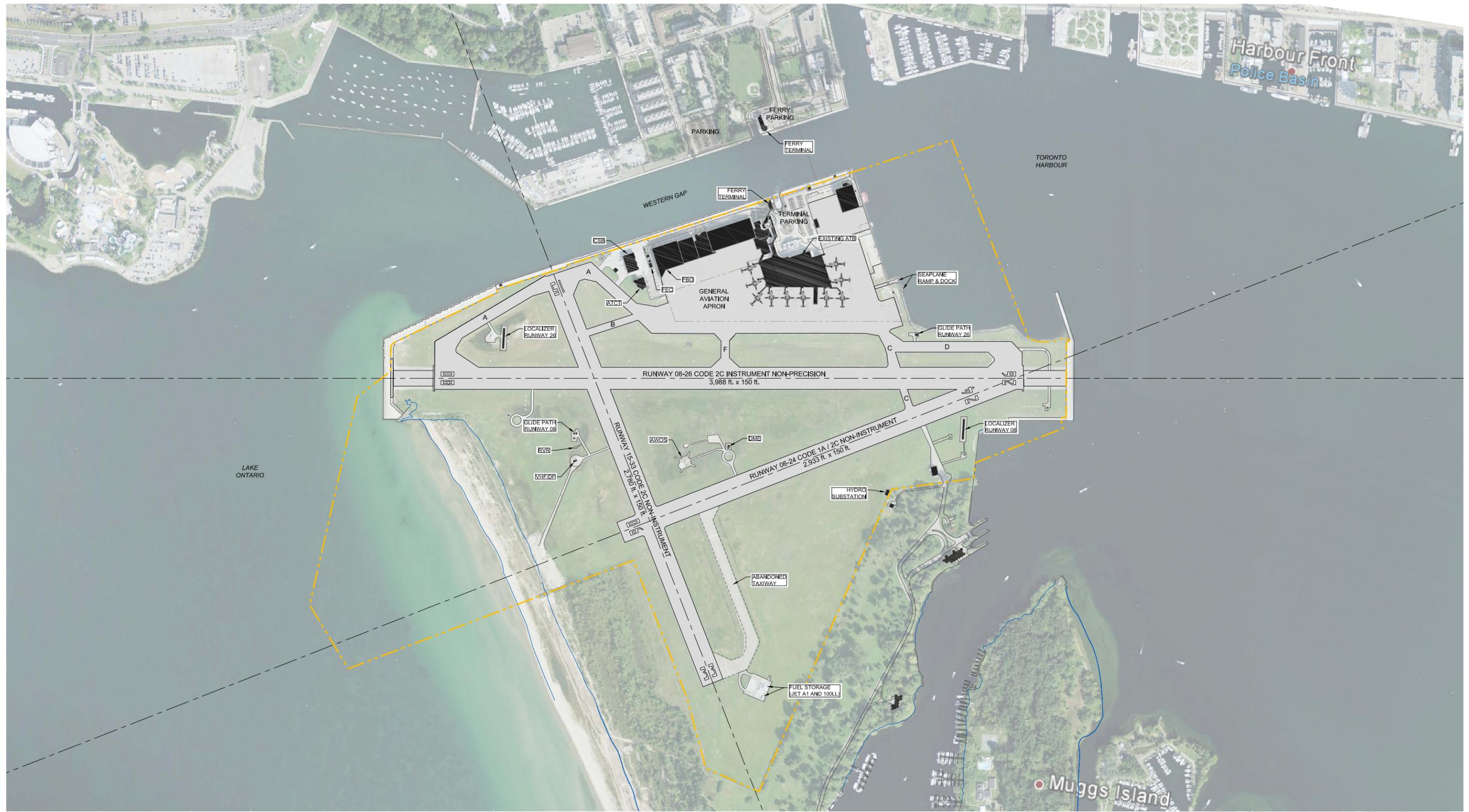
BBTCA is located within close proximity to a number of major developments along the City of Toronto waterfront. As a result, the protection surfaces associated with the Airport's certification and Instrument Approach Procedures are at risk of penetration, which could impact the Airport's certification, operational usability and economic viability.

As a result, the TPA has initiated studies to work with Transport Canada, NAV CANADA and the City of Toronto to ensure that future developments located on the shores of Lake Ontario do not impact the Airport. These studies include comprehensive analysis of aeronautical protection surfaces outside of those protected under existing Federal Airport Zoning Regulations (SOR 85-515).

Once finalized, these revised aeronautical protection surfaces will be used by the TPA, NAV CANADA, Transport Canada and the City of Toronto to identify and discourage developments that are incompatible with the current and future operation of BBTCA.

Appendix A

Existing Site Plan



T:\Airport\Toronto\BBTCA\10517 - BBTCA Airport Master Plan\DWG\C02Z\BBTCA Existing Site Conditions.mxd - Jun 29 12:49pm

Consultant



Legal

THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING - ANY ERRORS OR OMISSIONS SHOULD BE REPORTED TO GENVAR. THE COPYRIGHTS TO ALL DESIGNS AND DRAWINGS ARE THE PROPERTY OF GENVAR. REPRODUCTION OR USE FOR OTHER THAN THAT AUTHORIZED BY GENVAR IS FORBIDDEN.

Legend

- - - - - PROPERTY BOUNDARY
- - - - - PROJECTED RUNWAY CENTRELINE
- - - - - EXISTING ROAD - GRAVEL
- - - - - EXISTING SHORELINE
- - - - - EXISTING LEASE BOUNDARY
- - - - - EXISTING ABANDONED PAVEMENTS
- EXISTING RUNWAY/TAXIWAY/APRON
- BUILDING / STRUCTURE

Client

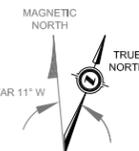


Client

Notes

1. SITE PLAN PREPARED FOR AIRPORT MASTER PLAN - REFER TO DOCUMENT FOR DETAILS.
2. FOR PLANNING PURPOSES ONLY - NOT FOR CONSTRUCTION.
3. BASE MAPPING PROVIDED BY TORONTO PORT AUTHORITY.
4. AERIAL IMAGERY PROVIDED BY DIGITAL GLOBE AND GOOGLE EARTH PRO.
5. ALL ELEVATIONS ARE APPROXIMATE ONLY AND SUBJECT TO CHANGE WITH A SITE SURVEY.

North Arrow

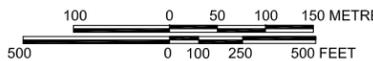


MAGNETIC NORTH
TRUE NORTH
VAR 11° W

Revision No.	Description	By	Appd.	Date
0	FIRST DRAFT	JJH	GB	JUN 29'12

Scale

SCALE 1:7500



100 0 50 100 150 METRES
500 0 100 250 500 FEET

Client/Project

TORONTO PORT AUTHORITY

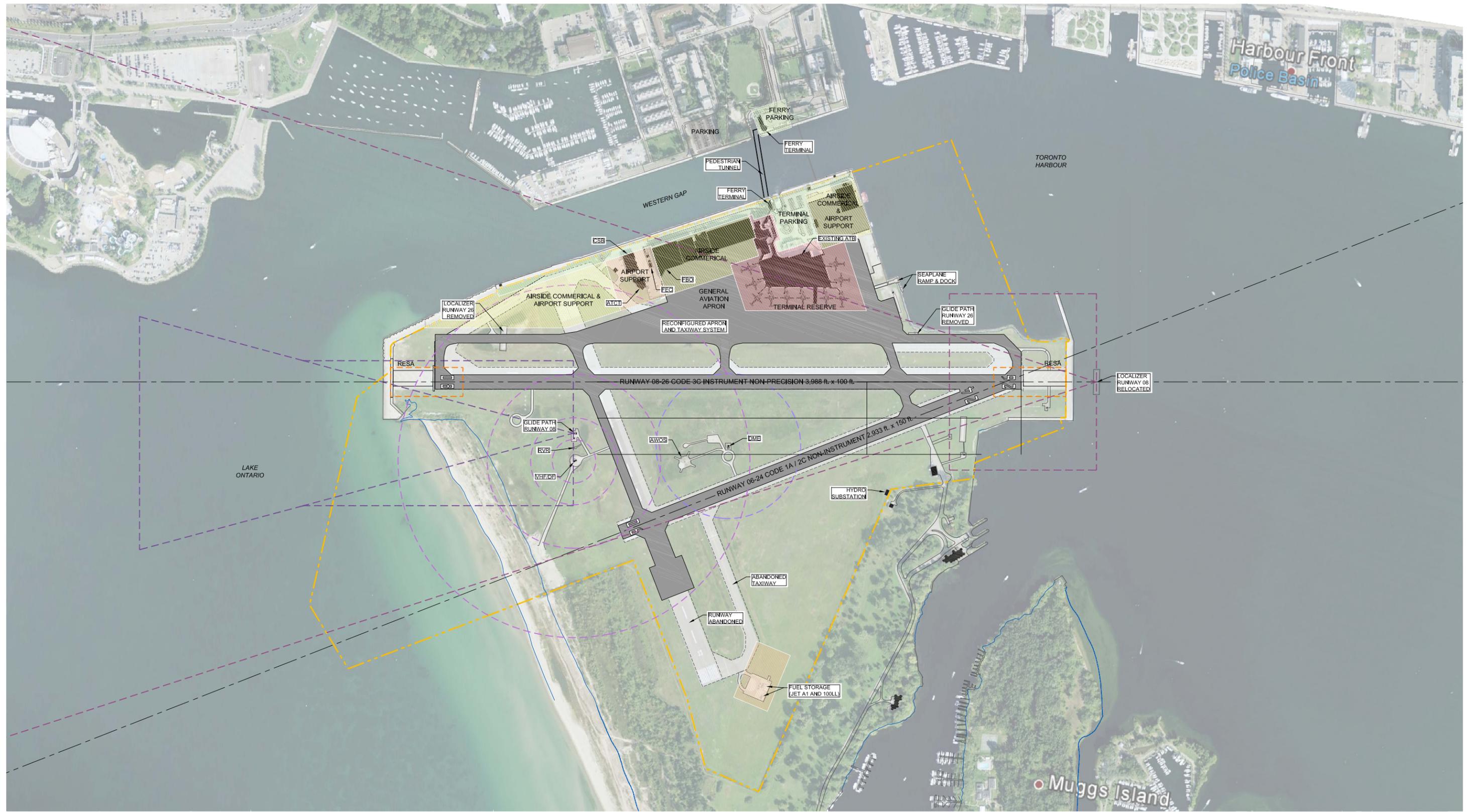
EXISTING SITE CONDITIONS

BILLY BISHOP TORONTO CITY AIRPORT (BBTCA) 2012 MASTER PLAN

Project No.	10517	Drawing No.	SK 1	Design By	JJH
-------------	-------	-------------	------	-----------	-----

Appendix B

Recommended Land Use Plan



T:\Airport\Toronto\BBTCA\10517 - BBTCA Airport Master Plan\DWG\C02Z\BBTCA Land Use & Dev Plan rev06 Jun2012.dwg

Consultant



Legal

THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING - ANY ERRORS OR OMISSIONS SHOULD BE REPORTED TO GENVAR.
THE COPYRIGHTS TO ALL DESIGNS AND DRAWINGS ARE THE PROPERTY OF GENVAR. REPRODUCTION OR USE FOR OTHER THAN THAT AUTHORIZED BY GENVAR IS FORBIDDEN.

Legend	
	PROPERTY BOUNDARY
	PROJECTED RUNWAY CENTRELINE
	EXISTING ROAD - GRAVEL
	EXISTING SHORELINE
	EXISTING LEASE BOUNDARY
	FUTURE ABANDONED PAVEMENTS
	EZ - LOCALIZER
	EZ - GLIDE PATH
	EZ - VHF/DF
	EZ - DME
	PROPOSED RUNWAY/TAXIWAY/APRON
	BUILDING / STRUCTURE
	AIRSIDE COMMERCIAL
	AIRPORT SUPPORT
	TERMINAL RESERVE
	TRANSPORTATION RESERVE

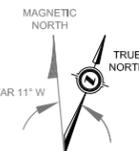
Client



Notes

1. SITE PLAN PREPARED FOR AIRPORT MASTER PLAN - REFER TO DOCUMENT FOR DETAILS.
2. FOR PLANNING PURPOSES ONLY - NOT FOR CONSTRUCTION.
3. BASE MAPPING PROVIDED BY TORONTO PORT AUTHORITY.
4. AERIAL IMAGERY PROVIDED BY DIGITAL GLOBE AND GOOGLE EARTH PRO.
5. ALL ELEVATIONS ARE APPROXIMATE ONLY AND SUBJECT TO CHANGE WITH A SITE SURVEY.

North Arrow

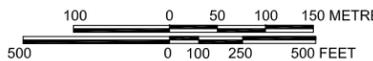


MAGNETIC NORTH
TRUE NORTH
VAR 11° W

Revision No.	Description	By	Appd.	Date
0	FIRST DRAFT	JJH	GB	JUN 29'12

Scale

SCALE 1:7500



500 0 100 250 500 FEET

Client/Project

TORONTO PORT AUTHORITY

LAND USE & DEVELOPMENT PLAN

BILLY BISHOP TORONTO CITY AIRPORT (BBTCA) 2012 MASTER PLAN

Project No.	10517	Drawing No.	SK 2	Design By	JJH
-------------	-------	-------------	------	-----------	-----