



## **Halifax International Airport**

### **Master Plan**

Prepared for:

**Halifax International Airport Authority  
Halifax, Nova Scotia**

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Submitted by:

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## Foreword

The Master Plan is intended to serve primarily as a framework within which future airport projects will be reviewed and assessed on a project-by-project basis. This Master Plan is not a commitment on the part of Halifax International Airport Authority (HIAA) to a multi-year program to undertake all of the developments proposed herein. Individual projects will be drawn from the overall Plan when required to meet actual growth supported by a firm business case. Only then will the scope of an individual project be fully defined and its implementation schedule programmed.

All future projects will be assessed in accordance with HIAA's stated mission, vision and values and its overall strategic priorities. Implementation of all projects will take into account the availability of adequate funding and the role each plays in optimizing the financial performance of Halifax International Airport.

The Halifax International Airport Master Plan has been prepared by LPS Aviation Inc. in association with Dillon Consulting Limited with support from Ralph Smith Engineering Inc. and APA Airport Planning Associates Inc. The Plan has been prepared under the direction and supervision of HIAA officials using information provided by HIAA and Transport Canada.

Maximum use has been made of all relevant existing studies and reports in preparing the Plan. However where existing reports are out-of-date, circumstances have changed or insufficient information is available, new analysis may have been undertaken or identified as a requirement.

## Executive Summary

The Halifax International Airport (HIA) 2003 Master Plan presents an overview and planning guideline for airport development over the next 20 years. The Master Plan has been designed to meet the strategic and marketing objectives of Halifax International Airport Authority (HIAA).

The HIA Master Plan is based on the principle of maximizing the efficient use of existing facilities prior to building new facilities and using, to the extent possible, existing infrastructure and capacities as part of any planned expansion program. The Master Plan:

- interprets the vision, strategic and marketing plans of the airport for the future
- integrates a large number of existing plans, studies and ongoing development projects
- provides an overall planning template to guide airport development for the next 20 years

As a basis for analysis, the Master Plan team utilized official Transport Canada traffic forecasts prepared for Halifax International Airport in 2002.

Airport activity and growth depends, to a large extent, on the size and nature of the catchment area. HIA's domestic air travel catchment area includes PEI, New Brunswick, and Nova Scotia. The international air travel catchment area also includes Newfoundland. According to the 2001 Census, the Halifax Census Metropolitan Area has 359,183 residents or nearly 40 per cent of the population of Nova Scotia. From 1996 to 2001 the Halifax area increased its population by 4.7 per cent. A recent study by the Conference Board of Canada suggests that the population of Halifax will increase by over 60,000 in the next 20 years under its base case. With successful natural gas development, the estimated population increase could be as high as 110,000.

International economic conditions in 2003 are challenging with the North American economy being soft since the months leading up to September 2001. Notwithstanding economic challenges in North America, current economic conditions in the HIA catchment area are good. The fishery has stabilized, small and medium-sized enterprises and resource industries are making notable contributions, and tourism has risen in importance throughout the region. With a strong public sector base, Halifax has generally exhibited economic indicators in line with national levels. In recent years, development in Halifax has been brisk. In 2001 the Atlantic Provinces Economic Council described Halifax as "the engine of the Nova Scotia economy".

Halifax International Airport acts as a transportation hub integrating aerospace industries with terrestrial transportation systems operating throughout Atlantic Canada. The facility links the region with airports around the world. The airport plays a key role in supporting all economic sectors in Nova Scotia and Atlantic Canada including critical growth sectors in the economy. According to an Economic Impact Study conducted in 2002, the total economic impact on the Halifax Regional Municipality and the Province of Nova Scotia exceeds \$1 billion. The airport is one of the major employers in the greater Halifax Region. The study also estimated total employment directly related to the airport and air transportation services at 5,145 full-time equivalents.

The airport is designated as an International Airport by Transport Canada and by the International Civil Aviation Organization (ICAO). The airport's strategic location and infrastructure has enabled HIA to attract an ever-increasing share of both passenger and freight traffic to the region. Recent changes in the Canadian airline industry continue to have a direct impact on operations at HIA. In 1999, Air Canada purchased Canadian Airlines to form one

national scheduled carrier. At the same time, there was a 'rationalization' of the various regional carriers as they either merged or went out of business. In 1999, HIA was ranked seventh among the busiest airports in Canada with respect to total enplanements and deplanements (E/D) including major air carriers, charters, and regional/local carriers.

Air carrier movements dropped by approximately 25% between 1999 and 2002 as traffic was consolidated mainly into a single carrier. However, the low-fare airline revolution has recently come to Atlantic Canada. Locally-based CanJet has successfully re-started operations with Halifax as its hub and Jetsgo is also providing service to HIA. Canada's second largest airline, discount carrier WestJet, inaugurated service to Halifax in 2003.

International traffic at HIA is also growing, with increased charter activity to Europe in the summer and southern charter flights in the winter. Carriers Skyservice, Air Transat, MyTravel, and Air Plus Comet are recent arrivals operating for a number of tour operators. New additions in the summer of 2003 included German charter carrier Condor. International passenger traffic increased from 67,000 to 214,000 passengers between 1991 and 2001. International passenger growth exceeded all others during the decade 1991-2001 with 12.2% average annual increases. New international and domestic arrivals areas were recently completed at HIA, forming an integral part of the Master Plan.

Trans-border passenger traffic has also increased over the last decade growing by 77% between 1995 and 2001 to stand at 222,000 passengers in 2001. The major contributor to this growth was the signing of the 1995 Canada/US Open Skies Agreement, which liberalized air travel between the two countries. This growth was aided by the arrival at HIA of carriers such as Atlantic Coast-The Delta Connection, Continental Express, and Air Canada's new direct flights. Space for a U.S. preclearance facility was recently reserved as part of the new arrivals area.

Economic outlook figures recently released by HIAA predict that passenger traffic will have recovered to post-1999 levels by the end of 2003. Since the new low-cost carriers favour point-to-point routings and carry fewer connecting passengers, the percentage of passengers making flight connections at HIA has declined from 41% in 1999 to 33% in 2001. This change reflects a global trend to low cost operations. The stimulating effect on demand by low-fare carriers may be expected to more than compensate for any decline in the numbers of passengers making connections at the airport.

Transport Canada passenger forecasts reflect a positive 2.4% average annual growth trend over the next two decades from the 2.7 million passengers experienced in 2001. The baseline forecast predicts 3.1 million total passengers by 2006, 3.5 million passengers by 2011 and 4.3 million passengers by 2021.

Halifax International Airport's role, and consequent gate use pattern, has been centred on a hub-and-spoke airline operating concept with regional aircraft feeding medium-range jets bound for Central Canada. The existence of two simultaneous independent hub operations and the need for each carrier to consolidate the passenger transfer process in as little space as possible dictated the current configuration of gates and apron space. While HIA will continue as a regional hub, the focus on hubbing has begun to shift as new entrant carriers initiate direct services to other Atlantic Canada communities. As an example of this shift in focus, WestJet has initiated service to Moncton from which it operates online services to other communities.

As discount carriers enter the market and build frequency, the demands on HIA's infrastructure are already proving to be a major challenge. Recent new entrants rely on point-to-point

operations, use of full-size jet aircraft, and scheduling patterns which differ from hub-and-spoke carriers. The existing HIA terminal configuration, with large clusters of regional aircraft gates at each end and jet bridges in the middle, is proving ineffective in the face of this shifting role. As discount carriers expand their point-to-point frequency, the ratio of required commuter gates to mainline bridges will reduce. There is a pressing need for additional jet bridges at the expense of regional aircraft parking stands, the latter currently preventing new development.

The need for additional jet gates is divided amongst both narrow-body and wide-body aircraft. This will address both the growth in the discount airline sector, which relies on narrow-body medium-sized jet aircraft, and the international charter market, which uses narrow-body as well as wide-body aircraft.

The HIA Master Plan responds to recent trends in both traffic growth and traffic mix. It proposes expansion of the air terminal building (ATB) to meet both the growth and the changing characteristics of passenger traffic. Since the rate of change is difficult to assess, a target gate requirement was established by HIAA that corresponds to long-term baseline passenger growth. A high growth scenario was also established corresponding to the long-term (20-year) horizon.

The Master Plan rationalizes development of a linear ATB concept by adding, at the north end, a new trans-border finger and enhanced gate flexibility for international arrivals and departures activities. The Plan presents a south end expansion which increases the number of narrow-body aircraft gates served by loading bridges, as well as introducing a new regional/commuter aircraft finger capable of significant ultimate growth should demand materialize. Significant expansion potential is introduced for out-bound baggage handling including consideration of new hold baggage screening requirements. The Plan allows for introduction of a U.S. preclearance facility within designated space in the ATB, new commercial developments currently under way, and improvements in passenger circulation.

Traffic peaked at nearly 104,700 itinerant movements in 1998 and stood at 81,004 in 2001. Transport Canada aircraft movement forecasts reflect a positive growth trend of 2.0% per year over the next two decades. Under the baseline scenario traffic will grow to about 92,000 movements in 2006, to 104,000 movements in 2011 and to 120,000 movements by 2021.

Current and forecasted traffic levels are anticipated to be adequately met by the existing runway and taxiway system for the next 20 years. Minor improvements may be undertaken triggered by specific demands from air carriers. These might include runway extensions to serve new and unforeseen airline or aircraft requirements. Allowances have been included in the Master Plan for these developments. The new super-jumbo A-380 (550 passenger) aircraft might be accommodated on an exceptional basis but Halifax has not been identified as a potential market by the manufacturer of this aircraft.

Apron expansion in concert with ATB expansion has been carefully planned to minimize disruption to existing operations. Potential impacts on existing commercial tenants have been deferred as long as possible. Staged growth of the apron, including consideration of the ultimate capacity of the site, is demonstrated.

The existing ATB site is capable of development in excess of the most optimistic long-term high growth projections. An "ultimate" development plan is included in the Master Plan for ATB, apron and groundside development planning.

HIA's air cargo is predominantly outbound with the majority currently destined for domestic points. Of the 23,100 tonnes of freight processed at HIA in 2000, 83.5% were domestic shipments. Transport Canada has forecast a 3.3% average annual growth rate for air cargo, projecting 39,900 tonnes will be processed at HIA by 2020. This projection does not consider the new air cargo marketing emphasis by HIAA that is anticipated to have a favourable impact on the projections.

The Master Plan includes consideration of strong air cargo growth served by the newly developed air cargo commercial area at the south-west end of Taxiway A.

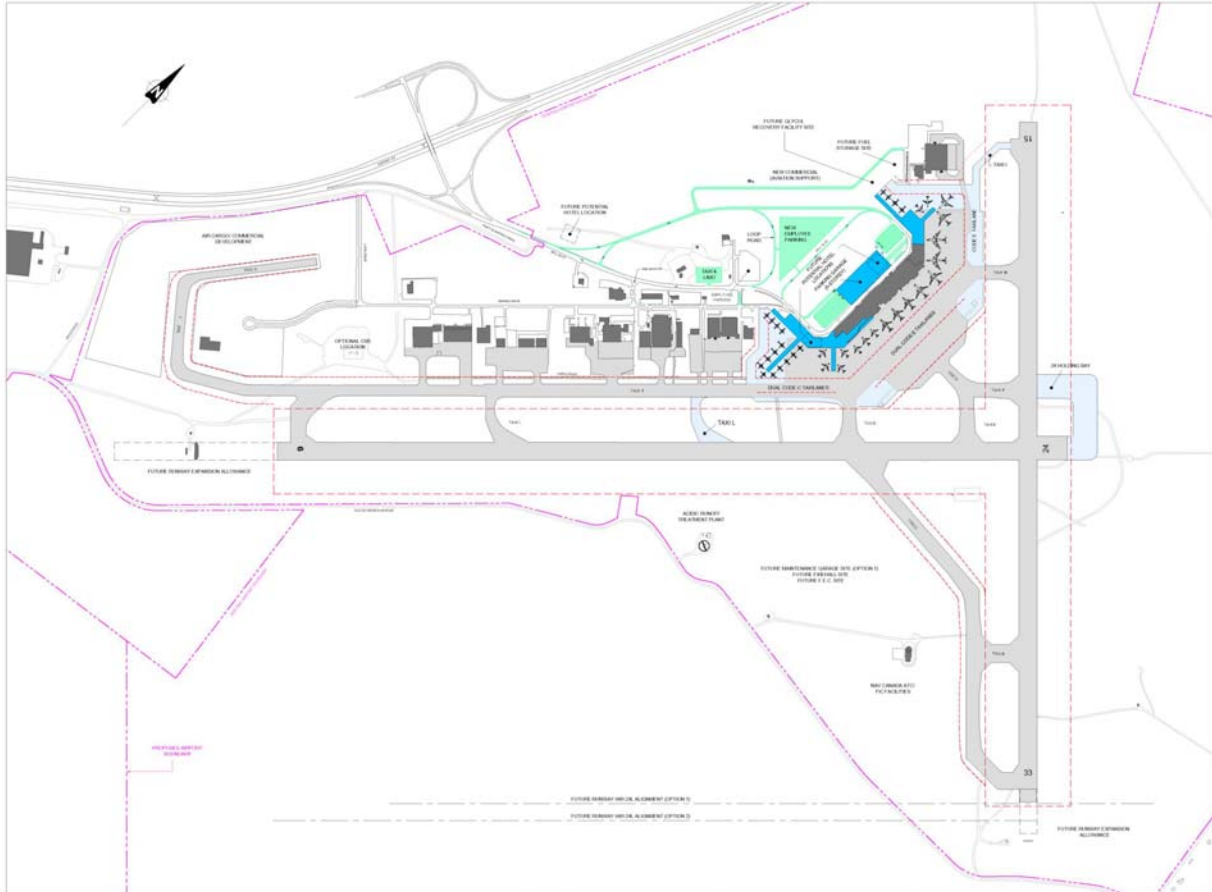
The existing airport property currently encompasses approximately 960 hectares. The need for additional land is included in the Plan, notably to accommodate a potential additional runway at some date well beyond the 20-year planning horizon. The topography and geology of the airport site pose unique challenges to the full development of the lands. While most land areas required for airport expansion within the next 20 years are relatively easily developed, certain more remote areas involve significant grade changes. In addition, the existence of underlying pyritic slate bedrock throughout most of the airport property necessitates environmental awareness and remediation techniques whenever slate is encountered.

The Master Plan assesses the various airport zoning requirements for compliance with international and national physical and electronic standards. Existing and currently anticipated airport zoning restrictions will not preclude the proposed developments identified in the Master Plan. The nature of the surrounding land use is currently compatible with airport operations, and aircraft noise is not a significant operational constraint. Since aircraft noise is not currently a major issue, a Noise Abatement Plan for arriving and departing aircraft is not currently required. A comprehensive Noise Exposure Forecast study will be required before development of a third runway is undertaken.

The Master Plan reviews the adequacy of a broad range of facilities and services necessary for airport operations. Staged access and service road capacity enhancements and circulation improvements are identified. Parking lot developments are presented and construction of a new four-storey parking garage is planned. Three alternative sites for an airport hotel are identified.

Water supply, storm and sanitary sewage collection, electrical utilities and related services are reviewed and a variety of investigative studies and incremental improvements are identified. Much of the airport's underground infrastructure is reaching the end of its service life and progressive replacements and upgrade programs have been under way, or are contemplated by HIAA. Key new facilities required within the long-term planning horizon are a new airport Maintenance Garage, a new Fire Hall and a new Field Electrical Centre.

Lastly, a Land Use Plan is presented which rationalizes land use in accordance with the new HIAA strategic objectives and priorities. The Land Use Plan prioritizes land use according to function starting with the runway and taxiway system as the highest priority. A significant feature is the identification of land and a potential alignment for a parallel runway reserve. The eventual development of a land parcel reserved for airport operations facilities such as the Fire Hall, Maintenance Garage and Field Electrical Centre in the infield between the future parallel runways is also contemplated.



**Planning Objectives**

- Establishes a vision for the airport beyond the long term (20 year) planning horizon.
- Demonstrates the overall capability of the airport site.
- Intensifies development in existing developed areas.
- Identifies the need for additional airport land where necessary to accommodate growth beyond the long term.

**Key Features**

- Existing air terminal location can accommodate major sustained growth well beyond the long term forecasts.
- Acquisition of additional land is required for ultimate airport development, including staged runway development at progressively longer lengths, with associated taxiway systems.
- If and when another runway is required, the preferable alignment will be parallel to Runway 06-24 and the preferable location will be south of the ATIS Control Tower.
- Allowance for extension of Runway 06-24 to potentially serve very large, or heavy intercontinental aircraft, should this market develop.
- Allowance for a minor extension of Runway 15-33 to enhance capability to serve continental markets, if required by air carriers.
- Major developments to the ground transportation system are considered. (i.e. new loop road and parking garage)

		<p style="font-size: small;">DRAWING TITLE</p> <p><b>ULTIMATE DEVELOPMENT CONCEPT</b></p>	<p style="font-size: small;">PROJECT TITLE</p> <p><b>HALIFAX INTERNATIONAL AIRPORT MASTER PLAN</b></p>
		<p style="font-size: small;">SCALE: 1:5000</p>	<p style="font-size: small;">JANUARY 2004</p>



1. EXISTING



2. BASELINE GROWTH



4. ULTIMATE GROWTH



3. HIGH GROWTH

**Planning Objectives**

- Maximize the capability of the existing site and facilities.
- Modernize existing gate management plan.
- Maintain the existing domestic, international and transborder traffic sectors.
- Introduce flexibility for new airline operations.
- Minimise encroachment on airport commercial properties.
- Improve airside circulation and minimise delays.

**Key Features**

- Baseline Growth**
- Regional / commuter flights consolidated at south end
  - Mainline and low cost carrier gates expanded
  - Flexible expansion of international gates at north end
  - New trans-border gates adjoining pre-clearance area
- High Growth**
- Additional regional / commuter gate capacity
  - Additional mainline / low cost carrier gate capacity
  - Additional trans-border gate capacity
- Ultimate Growth**
- Demonstrate practical capacity of existing site
  - Large gauge aircraft in all sectors
  - Dual apron facilities
  - Expanded regional / commuter gate capacity
  - Expanded mainline / low cost gate capacity
  - Expanded international gate capacity
  - Expanded trans-border gate capacity

DRAWING TITLE

PROJECT TITLE



**APRON AND TERMINAL DEVELOPMENT CONCEPTS**

**HALIFAX INTERNATIONAL AIRPORT  
MASTER PLAN**

SCALE: 1:3500

JANUARY 2004

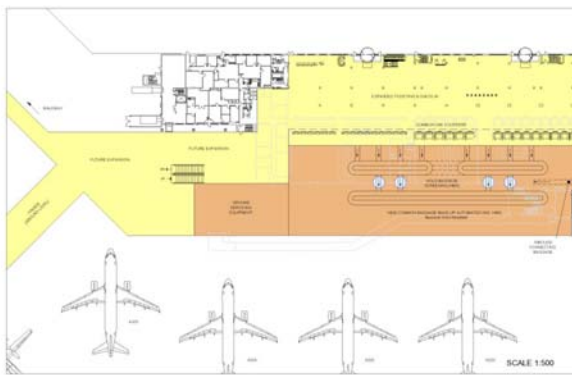




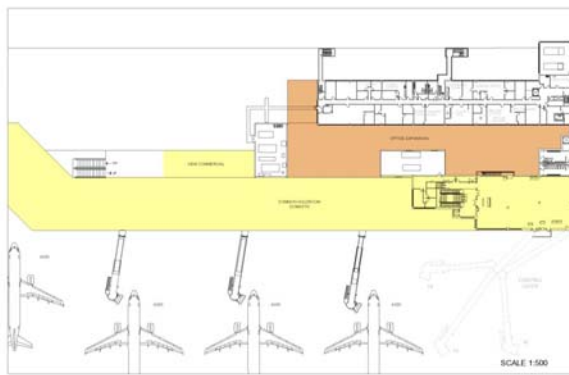
NORTH END - PROPOSED GROUND FLOOR



NORTH END - PROPOSED SECOND FLOOR



SOUTH END - PROPOSED GROUND FLOOR



SOUTH END - PROPOSED SECOND FLOOR

**Planning Objectives**

- Accommodate changing airline operations.*
- Introduce U.S. pre-clearance facilities.*
- Segregate and accommodate growth in domestic, international and trans-border sectors.*
- Improve circulation and levels of service.*
- Reduce congestion and walking distances.*
- Streamline baggage operations.*

**Key Features**

- North End - Ground Floor**
  - New trans-border finger
  - New transborder outboard baggage facility
  - New ground service equipment garage
- North End - Second Floor**
  - Implementation of U.S. pre-clearance facilities
  - Segregation of international arrivals flows
  - Flexible domestic international departure holdrooms
  - In-transit lounge
  - Enhanced retail opportunities
- South End - Ground Floor**
  - Potential passenger access to regional commuter gates
  - Enlarged check-in area (departure hall)
  - Enlarged and common baggage make-up facility
  - Capability to automate baggage screening systems and processes
- South End - Second Floor**
  - Progressive expansion of mainline / low cost airline gates
  - Open concept holdrooms and circulation areas
  - Office expansion/replacement space opportunities (multi)
  - Enhanced retail/commercial opportunities

DRAWING TITLE

AIR TERMINAL BUILDING DEVELOPMENT CONCEPTS

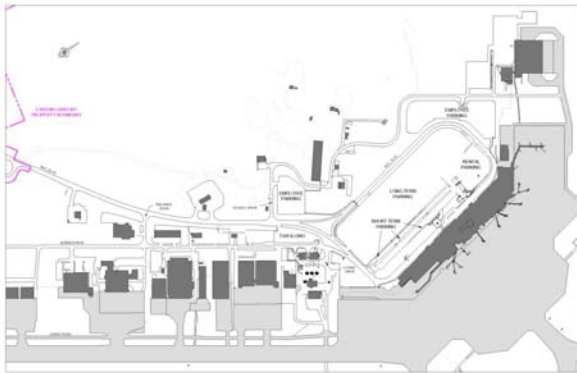
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HALIFAX INTERNATIONAL AIRPORT  
MASTER PLAN

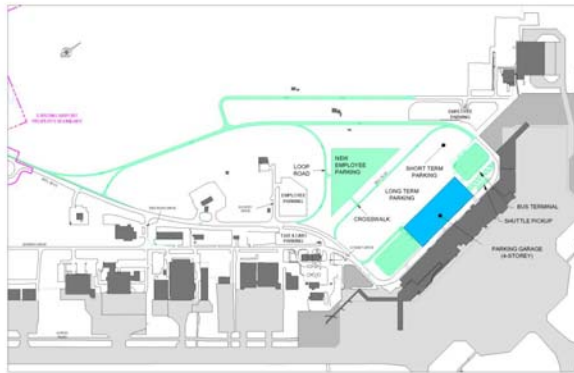
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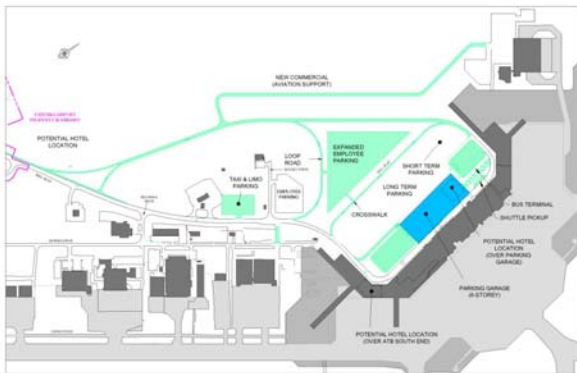




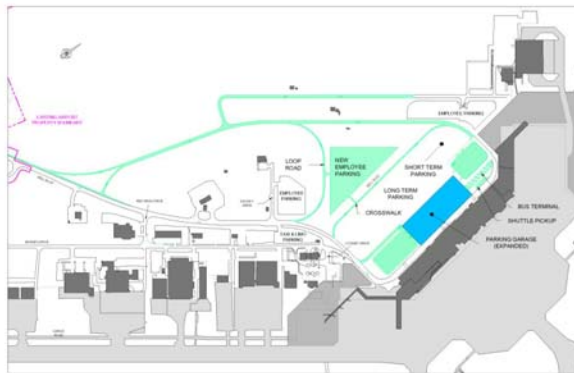
1. EXISTING



2. BASELINE GROWTH



4. ULTIMATE GROWTH



3. HIGH GROWTH

**Planning Objectives**

- Expand public parking capability.
- Improve circulation and levels of service.
- Reduce congestion during peak periods.
- Improve access to commercial areas.

**Key Features**

**Baseline Growth**

- New parking garage (4-storey)
- New bus terminal
- Expanded public parking capacity
- Additional (new) employee parking area
- Loop road circulation system
- New commercial service road

**High Growth**

- Addition to parking garage (6-storey)
- Selected intersection enhancements

**Ultimate Growth**

- Expanded parking garage complex
- Expanded employee parking area
- New access to north hangar site
- Relocated taxi and limousine parking area
- Selected intersection enhancements

DRAWING TITLE

PROJECT TITLE

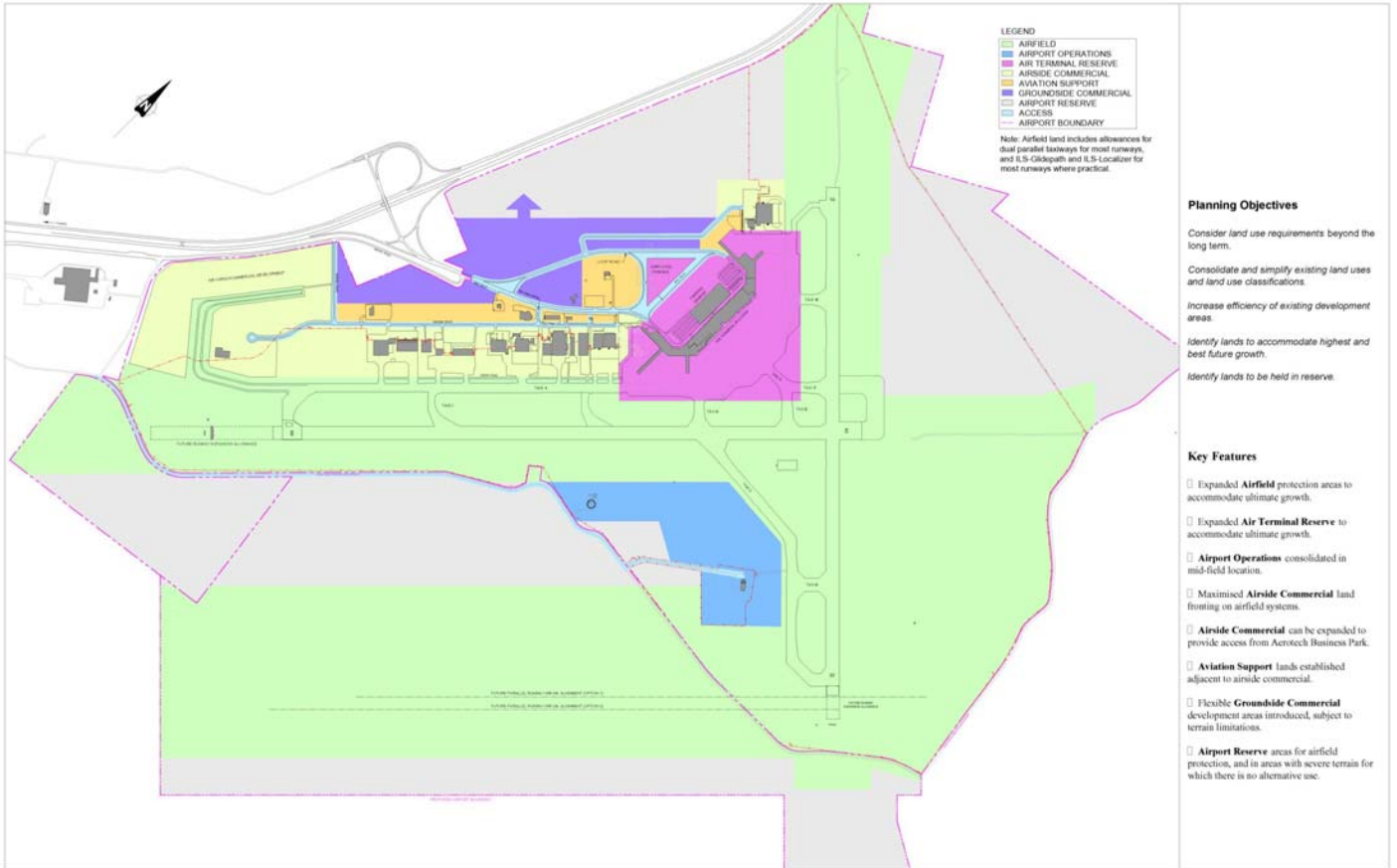


**ROAD AND PARKING DEVELOPMENT CONCEPTS**

HALIFAX INTERNATIONAL AIRPORT  
MASTER PLAN

SCALE: 1:4500

JANUARY 2004



- LEGEND**
- AIRFIELD
  - AIRFIELD OPERATIONS
  - AIR TERMINAL RESERVE
  - AIRSIDE COMMERCIAL
  - AVIATION SUPPORT
  - GROUNDSIDE COMMERCIAL
  - AIRPORT RESERVE
  - ACCESS
  - AIRPORT BOUNDARY

Note: Airfield land includes allowances for dual parallel taxiways for most runways, and ILS-Catpath and ILS-Localizer for most runways where practical.

- Planning Objectives**
- Consider land use requirements beyond the long term.
  - Consolidate and simplify existing land uses and land use classifications.
  - Increase efficiency of existing development areas.
  - Identify lands to accommodate highest and best future growth.
  - Identify lands to be held in reserve.

- Key Features**
- Expanded Airfield protection areas to accommodate ultimate growth.
  - Expanded Air Terminal Reserve to accommodate ultimate growth.
  - Airport Operations consolidated in mid-field location.
  - Maximised Airside Commercial land fronting on airfield systems.
  - Airside Commercial can be expanded to provide access from Aerotech Business Park.
  - Aviation Support lands established adjacent to airside commercial.
  - Flexible Groundside Commercial development areas introduced, subject to terrain limitations.
  - Airport Reserve areas for airfield protection, and in areas with severe terrain for which there is no alternative use.

 	<p>DRAWING TITLE</p> <p><b>LAND USE PLAN</b></p>	<p>PROJECT TITLE</p> <p><b>HALIFAX INTERNATIONAL AIRPORT MASTER PLAN</b></p> <p>SCALE: 1:6500      JANUARY 2004</p>
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