

# 7.0 Air Cargo





## 7.1 Air Cargo Overview

The City of Edmonton is the supply and services hub for Alberta's energy industry. While oil has remained the driving force of the province's economic expansion, other supporting industries have also benefited from the growth. Edmonton's catchment market represents almost \$180 billion in infrastructure and related industry projects.

With the 2008-2009 global economic downturn, cargo traffic has dropped 20 per cent with the largest impact on the international sector in 2008 through 2009.

Presently, the airport handles approximately 34 million kilograms of cargo, of which 80 per cent is domestic and 20 per cent is transborder and international. Cargo carried in the hold of passenger aircraft accounts for 95 per cent of the total volume. The remaining five per cent is carried by dedicated freighter aircraft.



## 7.2 Air Cargo Stakeholders

The Edmonton International Airport is strategically located in the middle of several transportation corridors. It serves as an entry point to Northern Alberta's natural resources and energy sectors. The significant growth in these sectors has resulted in increased air cargo activity and the presence of new stakeholders. Air carriers, cargo handlers, integrated couriers, customs brokers and the Canadian Border Services Agency are key stakeholders.

### Air Carriers

Currently, 11 scheduled and charter airlines, four integrated couriers/freighter carriers and one dedicated Canadian freighter operate cargo out of EIA. However, aircraft carrying passenger traffic handle a majority share of air cargo in their belly compartments. Other airlines and cargo carriers carry five per cent of EIA's air cargo traffic.

Domestic operations, constituting 80 per cent of the total air cargo volumes, are handled predominantly by Air Canada and WestJet, and a dedicated freighter, Cargojet Airways. The transborder sector (five per cent) is served mainly by Air Canada, along with US carriers such as Continental, Delta and US Airways.

In the international sector, Air Canada is the only air carrier involved in air cargo operations in EIA. In addition, integrated couriers such as, FedEx, DHL, Purolator and UPS operate aircraft and provide ground delivery and pick up services to shippers and their customers ([Exhibit 7.1](#)).

### Cargo Handlers

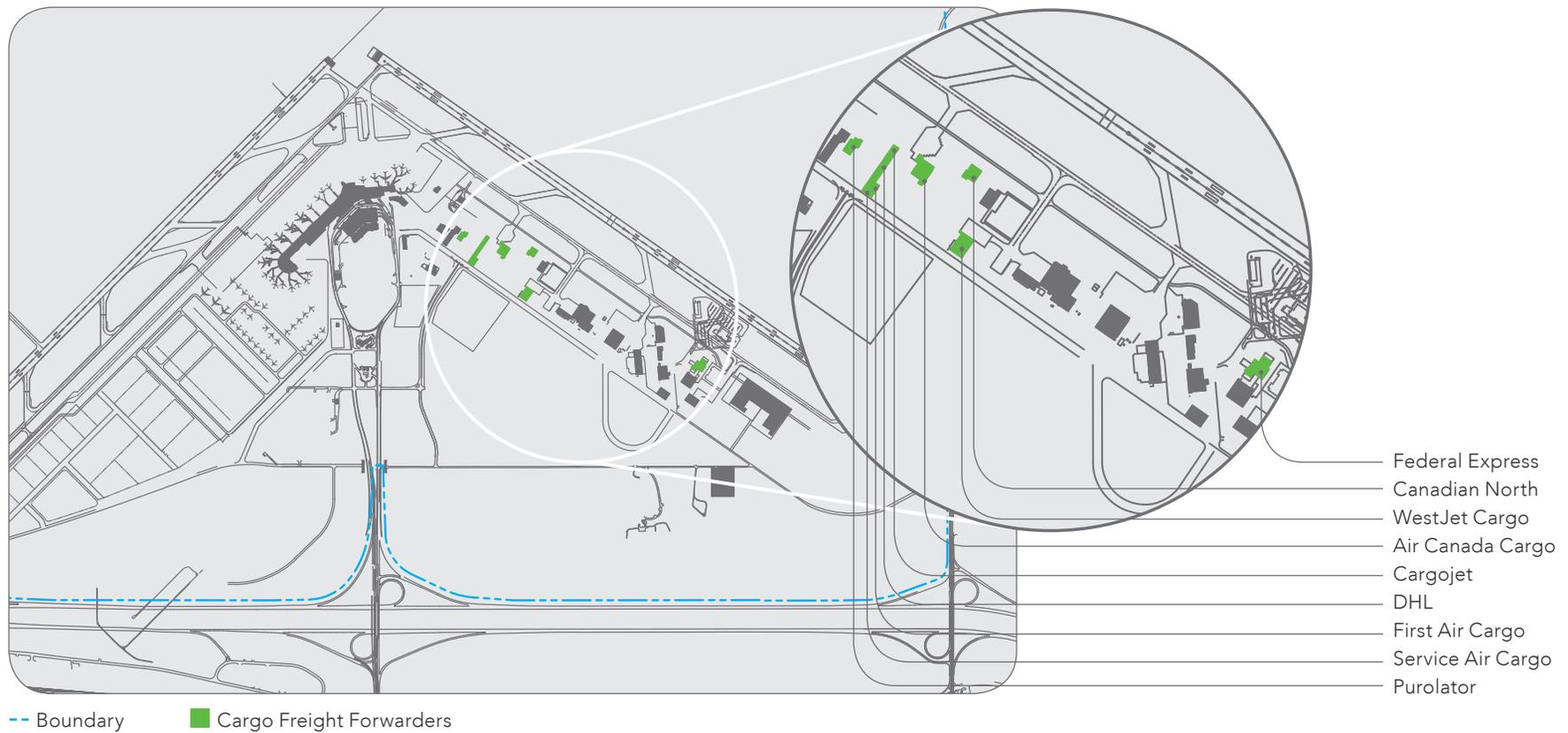
The two independent cargo handlers at EIA are Braden-Burry Expediting (BBE) and YEG Warehouse and Distributing ([Exhibit 7.3](#)). A number of freight and customs brokers operate out of EIA.

### Canadian Border Services

The Canadian Border Services Agency (CBSA) regulates the shipment of goods into Canada, and offers a number of services to cargo operators and freight forwarders at EIA. These services include:

- Courier Low Volume Shipments Program
- Designated Export Office
- Electronic Data Interchange

**Exhibit 7.1 | Cargo and Freight Forwarders**



### 7.3 Current Cargo Facilities

The area east of Runway 02-20, dedicated to airside development, is currently occupied by a number of hangars, maintenance buildings, cargo handling facilities and FBOs. On the groundside, this area is accessed by Airport Service Road via trucks, and airside via aircraft using Aprons III and IV. Cargo handling facilities include Air Canada Cargo, First Air Cargo, Purolator, Cargojet, DHL and FedEx. Cargo facilities and development are currently

comprised of approximately 22, 500 square metres distributed among multiple facilities along the service road, north of the existing passenger terminal. These facilities are a mix of common-use and single-tenant operations. The bulk of cargo and logistics users are operating out of air terminal facilities and do not have direct apron access.

There are two main aprons servicing air cargo carriers at EIA. Apron III, at approximately 15,000 square metres, is adjacent to FedEx and is the most northerly development area currently at EIA. Apron IV (16,000 square metres) was completed in 2008 and along with Apron III serves as a common-use apron for all cargo operations ([Exhibit 7.2](#)).

Exhibit 7.2



## 7.4 EIA Business Park

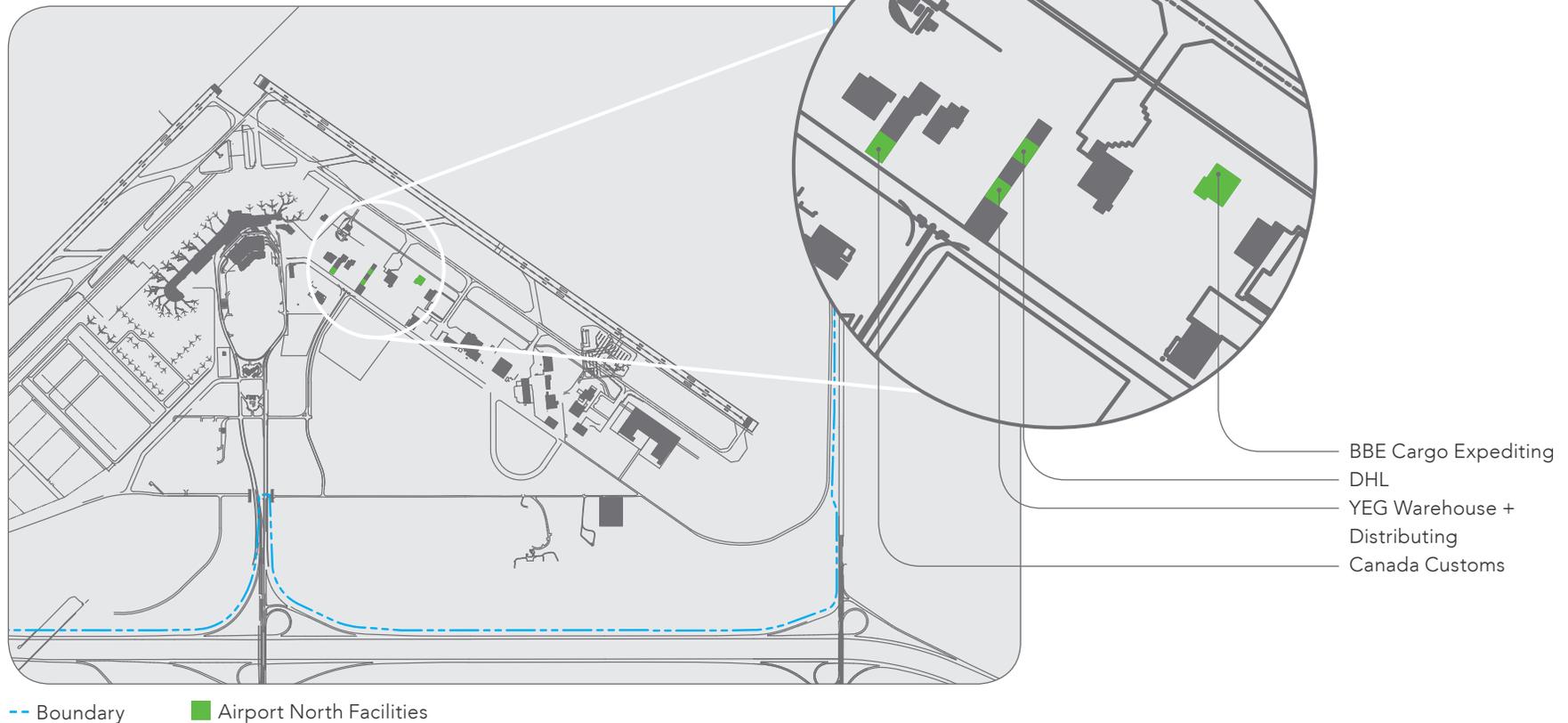
Considerations for the site location of Apron IV included the need for airside access and relative proximity to existing operators in the aforementioned air terminal facilities (Exhibit 7.3).

EIA Business Park (i.e. cargo/business aviation) at Edmonton International Airport, located in the Airport North area, east of Runway 02-20, is a prime location for air cargo or related businesses. This cargo business park is located within minutes of Nisku Industrial Park, Alberta's principal highways, and two intermodal rail yards that provide inland and marine container service. It offers full support services, equipment and facilities to ensure

efficient movement of shipments, aircraft and crew. Rapid customs services and bonded warehousing for international cargo are also provided.

Upon completion in 2011, this area will encompass 15.4 hectares, with up to seven development lots (including FedEx) surrounding the apron for cargo terminal facilities and freighter aircraft parking.

Exhibit 7.3 | Airport North Facilities



## 7.5 Air Cargo Development Plan<sup>\*</sup>

FedEx was the first carrier to locate at this business park, which was designed to accommodate additional cargo terminal facilities. It was developed to meet the growing needs of numerous domestic and international all-cargo airlines. This dedicated cargo centre enables FedEx and other cargo carriers to better serve their customers in this growing region and demonstrates EIA's commitment to developing cargo opportunities. FedEx is currently operating two daily Boeing 757s with service to Memphis and multiple Canadian destinations. The FedEx facility is located directly beside those aircraft gates able to handle all aircraft types including code F aircraft, greatly reducing the time required to transport freight to/from the aircraft. In addition, a newly expanded apron in the Airport South has two parking positions to handle all cargo freighters including code F aircraft.

The Edmonton Region faces some transportation challenges with the tremendous growth in the local, regional and provincial economies. At the same time, the Edmonton Region offers a unique opportunity to develop a multi-modal transportation facility involving air, rail and road. Northern oilsands and other resource developments, liberalized trade policies in the Pacific Gateway, Edmonton's strategic geographical location, availability of large tracts of land and its proximity to the expanded Port of Prince Rupert, could all be potential key contributors to a multi-modal facility in the region.

Aviation is a critical component of a modern, integrated supply chain system. As economic markets become increasingly globalized and time/service sensitive, a viable multi-modal facility involving air, rail and roadway modes would provide a competitive transportation hub. Edmonton International Airport would offer the aeronautical infrastructure necessary to support a multi-modal system of transportation in this region. Building on the core airport infrastructure and available land mass, an extensive logistics park development termed 'Port Alberta' is planned to provide access to aviation, road and supporting/complementary services. This cargo development would meet the needs of the potential future growth with the provision of high-level logistics and transportation services.

The three main objectives of Port Alberta are:

- **Industry** – close the gap that exists between the local market requirements and the available facilities at EIA
- **Facilities** – improve the facilities and infrastructure currently available to accommodate the demand requirements for modern air cargo handling as well as the quantity of facilities available for growth of existing operators and potential new operators at EIA
- **Carriers** – improve the efficiency of operations, facilitate the ease by which carriers can establish services, and improve the profitability for new and existing routes through increased traffic volumes

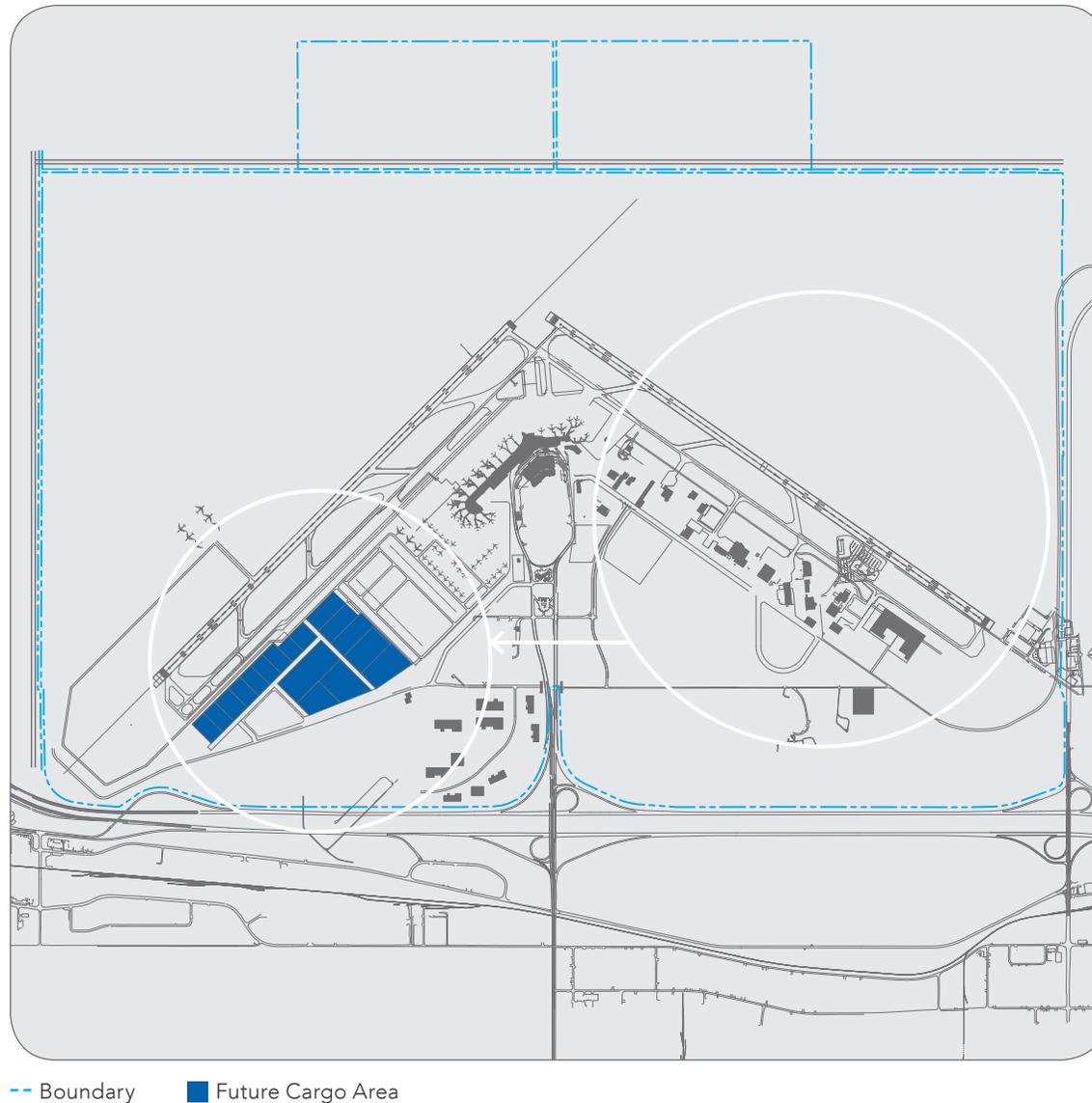
A two-phase development plan for air cargo, including Port Alberta developments, is presented in the following sections.



Apron III, September 2010.

<sup>\*</sup> Air Cargo Development Plan (EIA Internal Report)

## Exhibit 7.4 | Airport North and South – Cargo Facilities



### 7.5.1 Short-Term Plan – Development of Airport South

Currently, cargo operations at the airport are generally located east of Runway 02-20 in the Cargo Business Park. As cargo areas were developed over the years, cargo operations facilities were constructed non-strategically. The medium-term plan is to create a certain order among cargo development facilities by designating Air Cargo South, an area to the southeast of the main apron (Apron I, II, and III) and north of Runway 12-30. This will allow for future development of cargo facilities in a more efficient manner.

Due to the expected increase in business aviation at Airport Northeast, moving cargo activity to Airport Southeast will better accommodate the anticipated increase of business aviation at Airport Northeast (Exhibit 7.4).

In the longer term, as described in 7.5.2, the Port Alberta development would see the gradual transition of current cargo and logistics services from the existing locations in favour of new developments in the Airport Southeast area.

The existing cargo areas already developed at Airport Northeast will remain where they are; however, new cargo developments will be encouraged to operate out of Airport Southeast. Airport Southeast provides convenient highway connectivity via Airport Road. The cargo developments in this area would provide convenient access to de-icing and taxiways on the airside. The new facilities at Airport Southeast will enable development of new freighter routes to the US, South America and Europe.

## 7.5.2 Port Alberta Developments

Long-term plans include the creation of the Port Alberta initiative, which will be developed at the west side of Runway 12-30 (Airport Southwest) and bounded by the airport's southern boundary at 65th Avenue. Although the Port Alberta initiative is conceptual, the opportunities which exist are monumental.

The lands west and south of Runway 12-30, designated as Port Alberta Lands, provide an opportunity for both aeronautical and non-aeronautical freight handling logistics development by a multi-agencies body. These lands are designated in [Exhibit 7.5](#).

Given the area's large, undeveloped nature, it would be highly suitable for uses such as warehouses, distribution centres, and cross-dock facilities. Further, this location is ideal due to its proximity to 65th Avenue and Range Road 254, which lead directly to Highways 19 and QE II.

Exhibit 7.5 | Proposed Port Alberta Development Plan





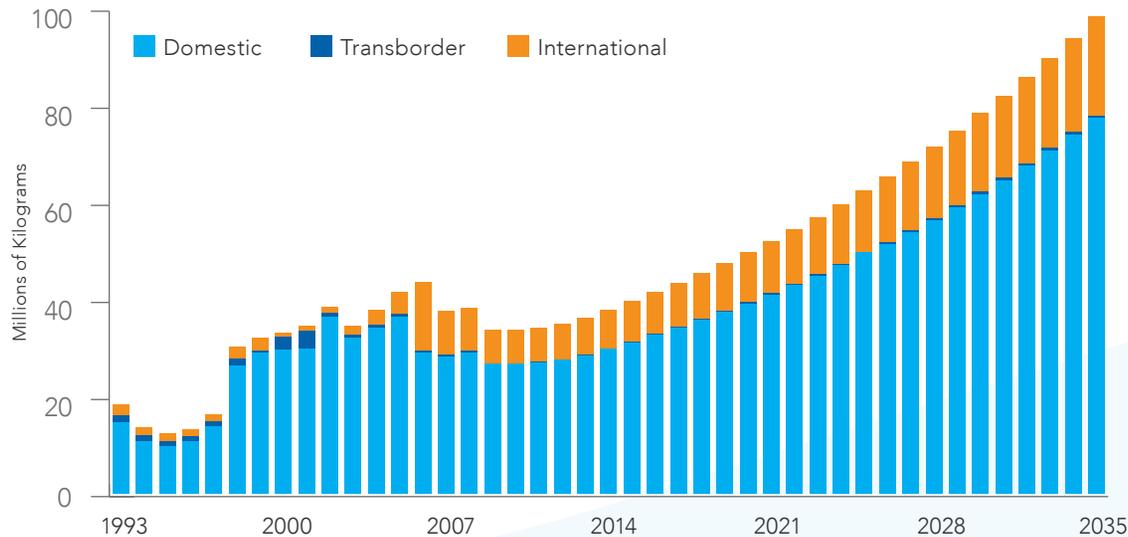
The Port Alberta project is specifically engineered to funnel cargo to and from the airport area. It consists of an inland port which connects goods shipped in by rail or road, to be distributed to its destination as required. This concept gives the potential to divert one to two per cent of road and rail destined cargo to air mode cargo transport, thus optimizing control of air traffic movements. Based on an assumption of only modest diversion of traffic from other modes, air cargo volumes at EIA are expected to grow from 34 million kilograms to 50 million kilograms in 2020 and approximately 100 million kilograms by 2035 as shown in [Exhibit 7.6](#).

This proposed cargo development with 24 hour year-round access with on-site convenient customs clearance facilities and no operational or noise restrictions offers an attractive alternative for efficient and economic transport of air cargo.

Port Alberta would facilitate and promote an integrated transportation and distribution system and enable the Edmonton region to compete as a significant component of the global supply chain. The Logistic Support Centre would allow the processing of goods in a single environment creating better security, regulatory clearance, and data management. Port Alberta would be the first multi-modal Canadian facility of this type.

At approximately 600 hectares, it is anticipated that the volume of goods and services utilizing the area will require multiple access points to allow for the flow of goods. These key access points are the means of connecting cargo development at EIA with the external highway network and the ports at Vancouver and Prince Rupert. The primary connection between the internal circulation and the external network is via an intersection with Township Road 500 (65th Avenue) and onwards to an interchange at 65th Avenue and the QEII highway; or alternatively via internal roads to Airport Service Road and the QEII highway ([Exhibit 7.5](#)).

**Exhibit 7.6 | Air Cargo Volumes Forecasts**









# 8.0 Business Aviation

Exhibit 8.1 | Northern Canadian Resource Destinations



## 8.1 Introduction

Business aviation (BA) refers to both scheduled and non-scheduled flights, arriving or departing the airport, which do not utilize the main terminal building. At Edmonton International Airport business aviation refers to a very diverse mix of activities. It includes corporate flights, small aircraft charter flights, flight training, air ambulances, pipeline inspection flights, non-scheduled services to remote camps and crop spraying aircraft. Civil and military government activities occurring away from the terminal building are excluded from this definition. Business aviation movements commence and terminate in the dedicated BA area of the airport.

The BA area of EIA is located at Airport Northeast, off the east side of the end of Runway 02. The BA facilities are typically dedicated to corporate users and small charter operators, and include aircraft fueling facilities, maintenance, repair and hangar areas.

A significant portion of EIA's business aviation is related to resource development north of the City of Edmonton. Future growth is anticipated due to robust opportunities in the oilsands areas of Peace River, Bonnyville and Fort McMurray. Northeast of Fort McMurray is Uranium City, Saskatchewan, one of the few uranium production locations in the world. Directly north is the trunk route to Yellowknife and diamond mines. There is great potential for charter and corporate aircraft to/from these resource rich areas using EIA as the base airport ([Exhibit 8.1](#)).



## 8.2 Historical Overview of ERAA

### Edmonton Area Airports

The Edmonton Regional Airports Authority (ERAA), has annually handled about 50,000 to 70,000 business aviation movements including government movements over the last ten years throughout the airports in its system. Villeneuve Airport to the west of Edmonton is mostly used for flight training and general aviation. Cooking Lake Airport, east of the city and the smallest of the four airports, is used for general aviation and includes a seaplane base.

The BA traffic at EIA is somewhat unique as there are large jet flights carrying employees to northern resource project sites. This activity, called resource crew changes, supports northern resource development by allowing firms to employ workers from across Canada by ferrying them to/from their home base. Historical passenger volumes at EIA in the BA area are not available. Still, it has been estimated that approximately 270,000 passengers were processed in 2008 through the large Fixed Based Operations (FBO).

In the mid 1990s, Edmonton International Airport processed approximately 20,000-22,000 business aviation movements. The majority of these were in the corporate operations category. Since 2005, business aviation activity has increased, with 2006 being the first full year of activity related to northern resource crew changes. Despite the fluctuations in level of operations at EIA in the intermediate period, the latest data for 2009 shows EIA had 25,000 business aviation movements. Of these, 28 per cent were jet operations and the remaining 72 per cent were in the propeller category. EIA handles the highest number of Instrument Flight Rules (IFR) training operations among the ERAA airports.

### 8.3 Profile of BA Operators at EIA

Most natural resource extraction contractors operate on a cyclical basis (typically two weeks on/ one week off). This practice results in a steady flow of passengers utilizing the FBOs.

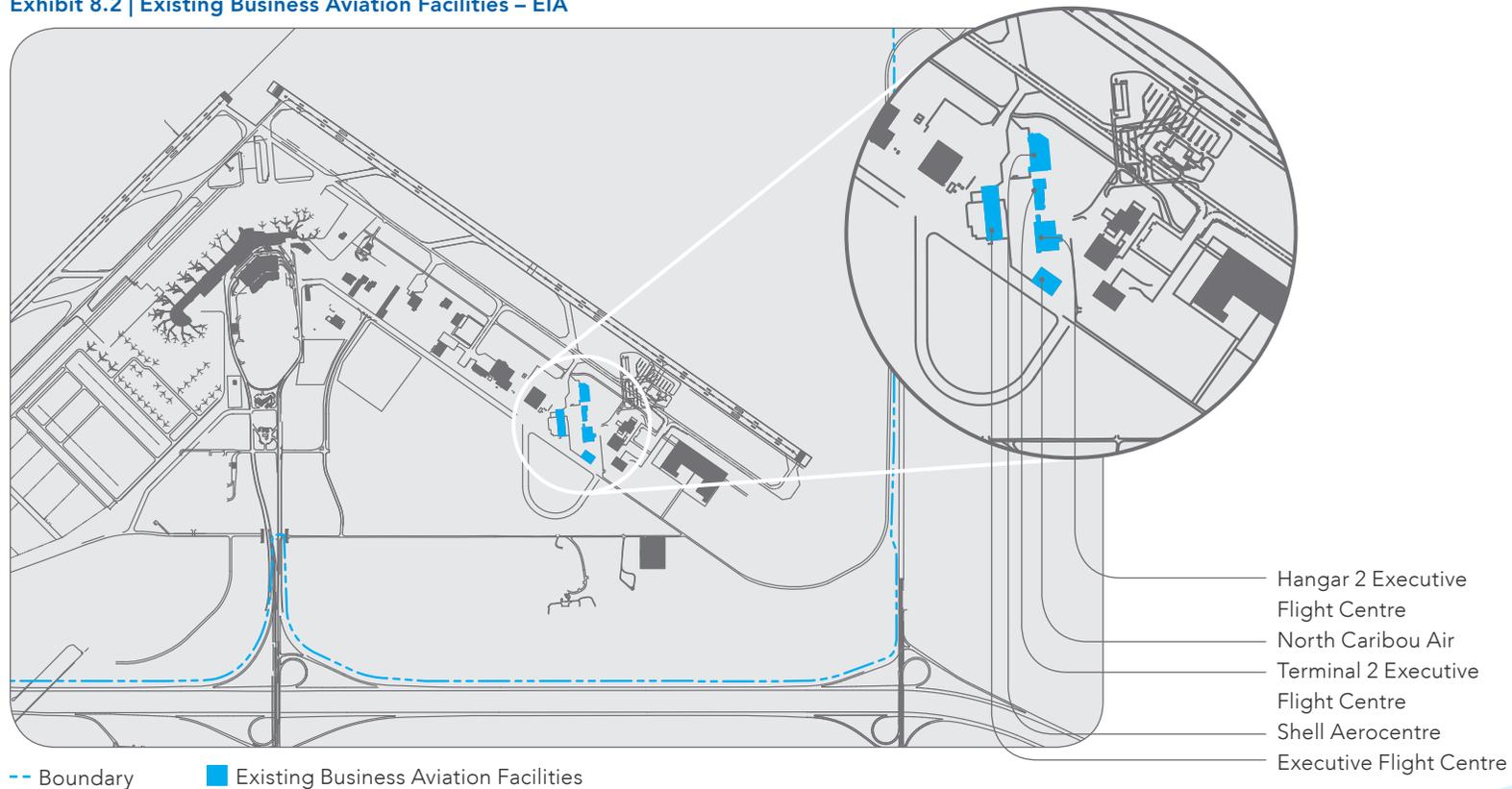
The resource charter operations consist of high-volume flights serving the oil and gas industries, mines, natural gas wells, construction projects and exploration sites in Northern Alberta,

Saskatchewan, B.C. and the territories. More than one half of transient workers are from Alberta, and of those, 56 per cent originate in Edmonton.

Large FBOs and private operators use the BA facilities for high-volume charters and corporate operations. Typical aircraft types that use these facilities include the DHC-8, Beech-1900, ATR and Boeing 737 families. Some of the large charter

operators have their own screening facilities, including metal detectors and sniffing dogs. These operators use such facilities to screen their clients' employees before they fly north for work. Existing business aviation facilities are shown in [Exhibit 8.2](#)

Exhibit 8.2 | Existing Business Aviation Facilities – EIA



### **Executive Flight Centre**

The Executive Flight Center (EFC) operates a large hangar and administration building of 13,495 square metres in size, including apron space of approximately 4,850 square metres. Located on the south side of Taxiway Sierra, EFC supports North Cariboo, Suncor, Sunwest, Nolinor and Enerjet operations.

### **Northgate Aviation**

Across from the EFC, on the north side of Taxiway Sierra is Northgate Aviation. This FBO has about 4,000 square metres of apron space and provides service for Canadian North, CNRL and First Air. The First Air hangar is located next door and to the east of Northgate Aviation.

### **Shell Aerocentre**

The Shell Aerocentre is used for charters, mainly by natural resource extraction companies. Regular users include Alta Flight Charters, Flair Air, and Shell Aviation. Shell Aerocentre is approximately 16,440 square metres in size with approximately 5,300 square metres of apron. This facility is suitable for handling Code B aircraft.

### **Executive Flight Centre II (EFC II)**

Between the Shell Aerocentre and Northgate, EFC II is located on the north side of Taxiway Sierra. The total size of EFC II is about 9,800 square metres, plus an apron space of 4,200 square metres.

### **Small FBO Operators**

Small operators can be defined by a relatively casual approach to chartering, and operate on an as-required basis, using aircraft with less than 50 seats. Generally, an apron capable of parking two or three aircraft the size of a DHC-8 or a Beech 1900 is required for small operations facilities, supported by vehicle parking for approximately 40 employees.

### **Cathton Aviation**

Cathton Aviation owns a private hangar at EIA. The company also owns and operates aircraft such as the Falcon 50 and Hawker 800. This site is approximately 5,300 square metres plus 900 square metres of apron space.

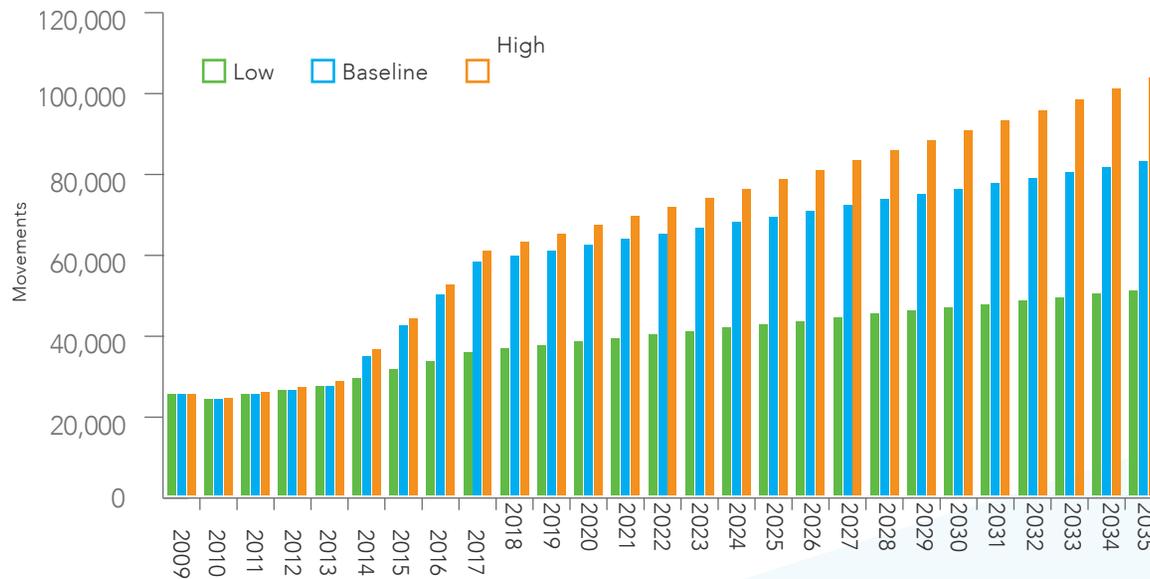
## 8.4 Business Aviation Demand Forecast

Business aviation activity is expected to grow at a modest rate of approximately two per cent per year. However, with the anticipated closure of ECCA in the longer term, it is estimated that approximately 22,000 to 50,000 movements will be added to EIA during the 2014 – 2018 period. The BA movement forecasts for the low, base case and high scenarios are shown in Exhibits 8.3 and 8.4

Exhibit 8.3 | Annual BA Movements – Low/Most Likely/High

	Low	Baseline	High
2009	24,957	24,957	24,957
2010	23,634	23,634	23,883
2011	24,974	24,974	25,477
2012	25,987	25,987	26,766
2013	26,996	26,996	28,074
2014	28,983	34,333	35,946
2015	31,025	41,870	43,788
2016	33,123	49,614	51,922
2017	35,279	57,570	60,360
2018	36,243	59,143	62,614
2019	37,064	60,483	64,659
2020	37,904	61,853	66,771
2021	38,764	63,254	68,952
2022	39,643	64,688	71,204
2023	40,542	66,154	73,530
2024	41,358	67,485	75,745
2025	42,190	68,843	78,027
2026	43,039	70,228	80,377
2027	43,905	71,641	82,799
2028	44,789	73,083	85,294
2029	45,577	74,368	87,648
2030	46,378	75,676	90,066
2031	47,194	77,007	92,551
2032	48,024	78,362	95,105
2033	48,869	79,741	97,730
2034	49,730	81,145	100,428
2035	50,606	82,574	103,200

Exhibit 8.4 | Annual Business Aviation Movements



\*EIA Strategic and Economic Analysis (2010).

## 8.5 Business Plan

### Current Developments

Plans defined in October 2010 call for a new world-class business aviation facility to be developed at EIA. Edmonton-based Airside Properties Ltd. will build a custom-designed aviation complex, which will be approximately 27,900 square metres when complete. The massive new facility, which will incorporate hangar and office pods connected to an upscale FBO, will deliver a new standard in corporate aviation and air carrier facilities ([Exhibits 8.5](#) and [8.6](#)).

Innovative construction methods will allow the custom sizing of hangar pods to connect the storage facilities to more than 20,200 square metres of secure ramp. Corporate office space with abundant parking will provide continuity from groundside to the hangar pods. The complex will cater to the growing need for aircraft storage and maintenance facilities at EIA, for aircraft ranging from corporate jets to Boeing 737s. The first three pods will be approximately 2,400 – 3,000 square metres in size.

Exhibit 8.5 | Hangar Development And Office Space (Airside)



Exhibit 8.6 | Hangar Development And Office Space (Groundside)



### Long-Term BA Development Concept <sup>5</sup>

After extensive consultative studies, it was determined that the area to the west of the existing BA area, north of the existing Runway 02-20 location, was the most suitable for the expansion of business aviation (Exhibit 8.7). The BA development consists of three general areas – one core BA location and two smaller satellite locations. This site provides adequate land area for commercial development and phased expansion without hindering existing operations. The BA operations at this site will also integrate with the planned three-runway-airside infrastructure (Exhibit 8.8).

The business aviation park is conceptually planned in one core area west of Runway 02 with the intent of segregating business aviation from other traffic at EIA. BA activities would utilize Runway 02-20, allowing regularly scheduled traffic to use the main active runways, in a three-runway configuration.

The BA park development area is located northeast of future Runway 11-29. Airside access would be available via a parallel taxiway (Exhibit 8.8).

A large apron is proposed within the development area designed for frequent users and other itinerant aircraft. The apron would include a power-in/out manoeuvring area, increasing the efficiency of operations.

A variety of aircraft types including Code D aircraft such as the Boeing 767 would be capable of using the facility. Facility users which could use the business aviation park, would include:

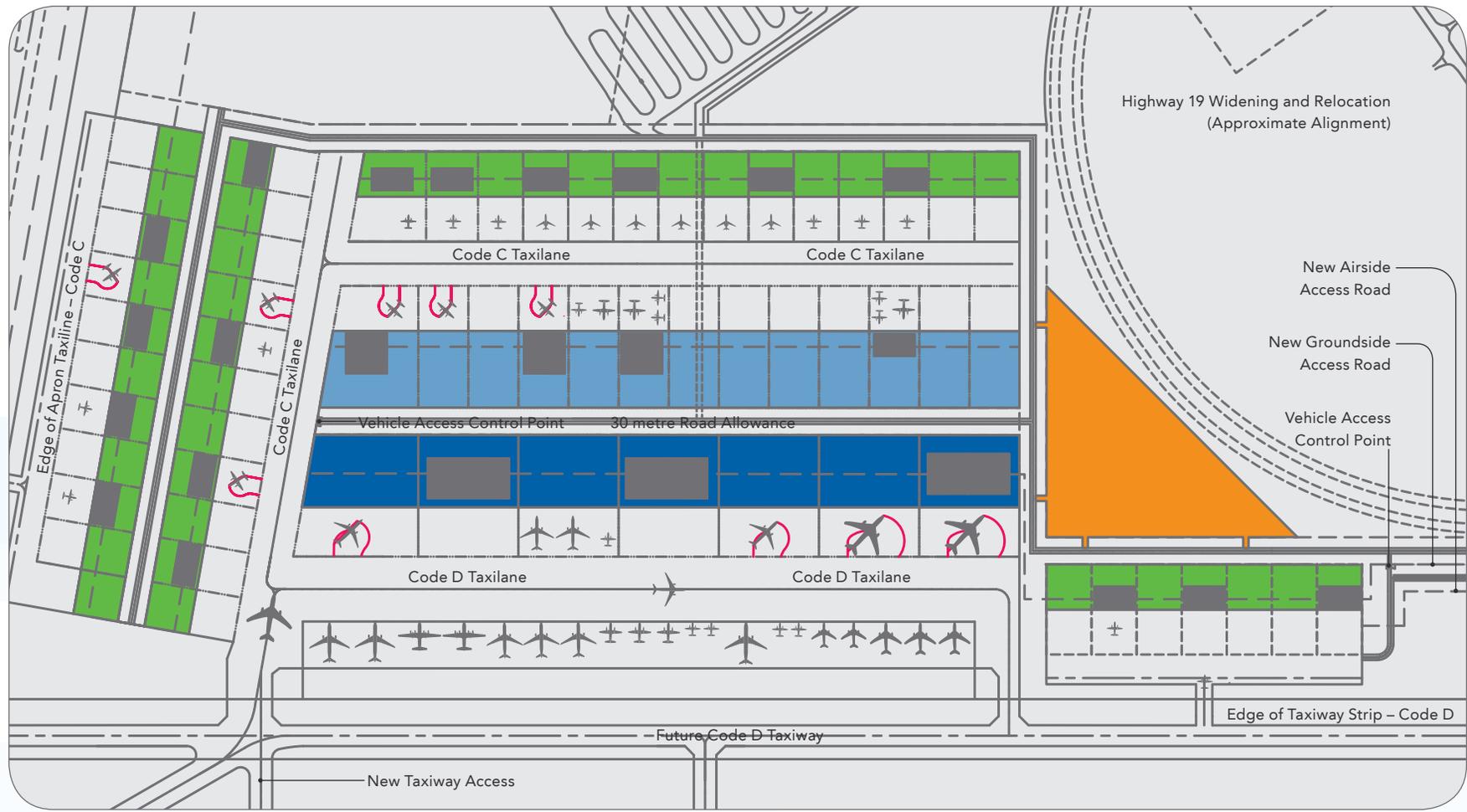
- Large FBOs – scheduled charters or corporate charter services
- Small BA operations – small scheduled charters and casual charters
- Small FBOs – Corporate and private operations providing itinerant aircraft support

Exhibit 8.7 | Future Business Aviation Park



-- Boundary      ■ Future Business Aviation Park

Exhibit 8.8 | Conceptual Layout of the New Business Aviation Area



- Corporate/Private Aviation Hangers
- Large Business Aviation Operations
- Small Business Aviation Operations
- Development Area After Highway Relocation (Car Park)
- Power-in/out Manoeuvring Path

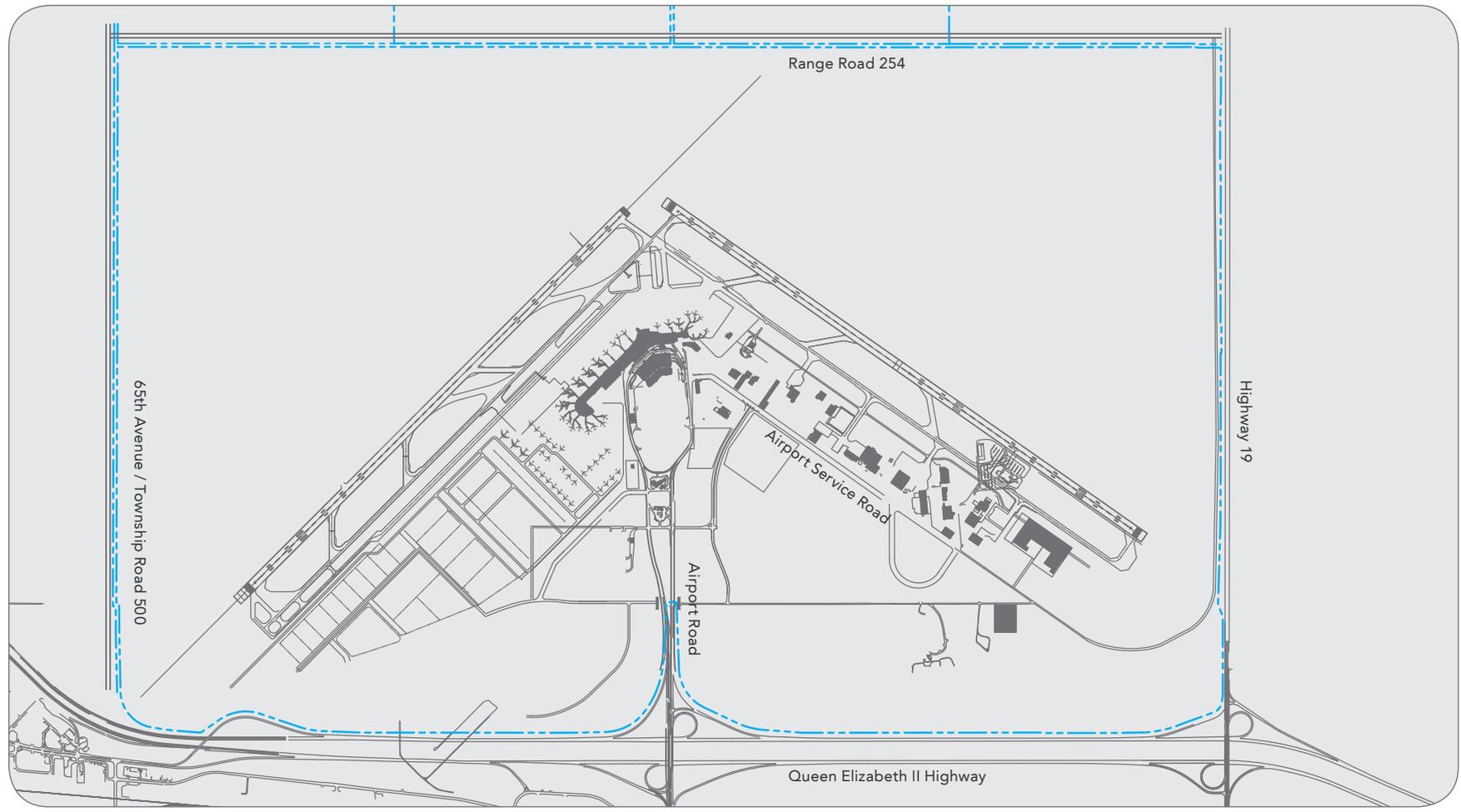




9.0

Parking and Ground  
Transportation

Exhibit 9.1 | EIA 2010 Highway Network



-- Boundary

## 9.1 Groundside Overview

Ground access is a vital component of an airport's sub-system as it must offer good service to the airport user and foster competitive advantage. Planning for effective airport access must consider the airport site, highway and regional road networks, as well as public transportation modes, to address increasing congestion, environmental and other issues. All of these considerations must be incorporated and consequently present a challenge in the long-term development plans for both the groundside system and the airport as a whole.

This section will focus on EIA's transportation requirements to 2035. Transportation systems include the airport access roads, the interchanges connecting the airport with provincial highways, Light Rapid Transit, High Speed Rail and other public transit systems.

Airport employees, greeters and well wishers are the predominant users of the airport roadway network. The majority of passengers to EIA originate or terminate in the City of Edmonton. With the expected growth in the municipalities surrounding the airport, spatial distribution of airport roadway users is likely to be more dispersed over the next few years. At present, the private vehicle is the prime mode of road travel for air passengers and employees.

## 9.2 Current Facilities

Edmonton International Airport is easily accessible from the city of Edmonton and other major urban centres in the region. The airport site has direct access to two provincial highways:

1. Queen Elizabeth II
2. Highway 19 which provides access to the airport from the north, west and east

The Airport Road interchange on the QE II highway is the main point of access to the passenger terminal building and parking facilities. The Highway 19 interchange provides a more direct access to the Business Aviation and north end air cargo facilities via Airport Service Road. ([Exhibit 9.1](#)).

Airport Road is a roadway for inbound and outbound traffic to/from the passenger terminal building. The inbound roads widen to three lanes near the parking garage to provide separation of traffic between the parkade, arrival and departure levels. Access to airport cargo, business aviation and operations facilities is provided via the airport service road network ([Exhibit 9.1](#)).

The passenger terminal building parkade is conveniently accessible from the inbound roadway and provides covered parking for passengers, greeters, well wishers and rental cars in a four-level structure with a capacity for 1,800 vehicles. The parkade structure is accessible from the terminal building via two covered pedways at parking level 3 which connects to the departing level and also from the arrival and departure curbs.

Exhibit 9.2 | EIA – Current Parking Locations



-- Boundary    ■ Current Parking

In addition, the surface parking facilities are available for reduced rate short- and long-term parking and for oversized vehicles at the Value Park lot and the recently completed jetSet parking lot. These two lots are located north of the parkade structure. The employee parking lot is currently located northeast of the passenger terminal building ([Exhibit 9.2](#)).



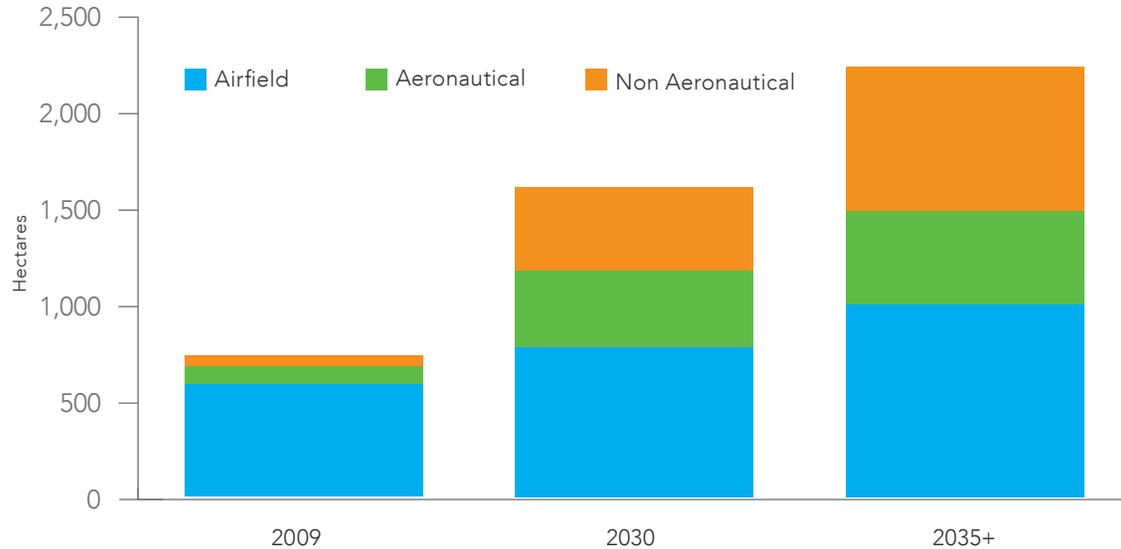
### 9.3 Traffic Planning and Parking Requirements<sup>6</sup>

Air traffic demand, land development and ground transportation demand are interdependent. EIA's future plan includes an expanded airside and passenger terminal along with phased commercial and industrial developments by 2035. The plan will provide guidance on future developments and establish logical, sustainable and cost-effective structures and support systems. Exhibits 9.3 through 9.4 show the land developments in 2020, 2035 and beyond.

Exhibit 9.3 | Land-Use Development by Category (in hectares)

Year	Airfield	Aeronautical	Non-Aeronautical	Total	Index
2009	597	95	52	<b>744</b>	100
2030	789	394	434	<b>1,616</b>	217
2035+	1,008	489	746	<b>2,323</b>	312

Exhibit 9.4 | Land-Use Allocation to 2035+



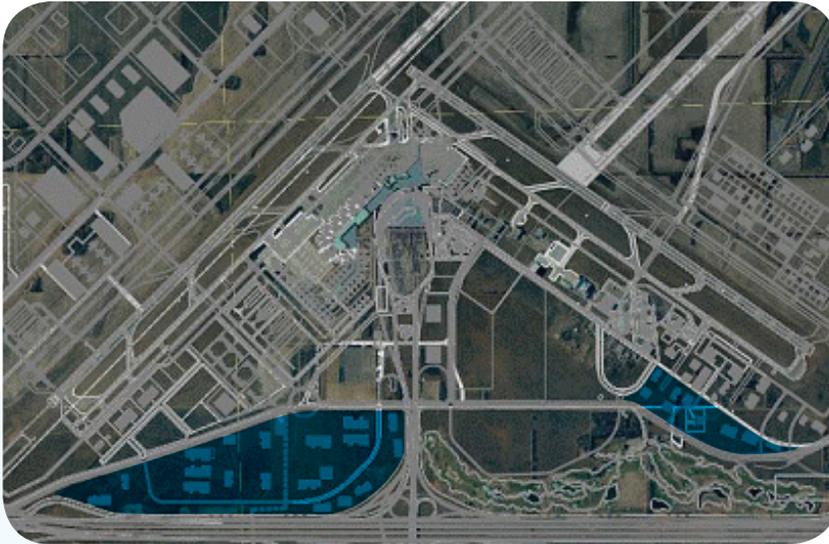
**Exhibit 9.5 | Non-Aeronautical Development at 9 MAP (2020)**



Air traffic demand and the land-use plan are both used to estimate the future vehicular traffic.

The airport developments are expected to be consistent with the future aeronautical and non-aeronautical demand for facilities. As shown in Exhibits 9.5 and 9.6, the total developed area will increase more than 212 per cent from 744 hectares in 2009 to 3,232 hectares in 2035 and beyond, when traffic is forecast to reach 16 million annual passengers. The airfield will then occupy 1,008 hectares with two parallel runways and one cross-wind runway. The aeronautical surfaces will grow from 95 to 489 hectares (more than 414 per cent) to accommodate aircraft parking, aprons, airside operations, an expanded core passenger terminal complex, and other facilities are required.

**Exhibit 9.6 | Non-Aeronautical Development at 16 MAP (2035+)**



The proposed airside, terminal, air cargo and business aviation developments as outlined in the master plan, along with the commercial developments, are expected to generate significant vehicular traffic to/from the airport, and additional demand for passenger, employee and commercial business parking.

The anticipated peak-hour traffic volumes associated with growth in passenger traffic from six to 13 million passengers in 2035 is shown in [Exhibit 9.7](#).

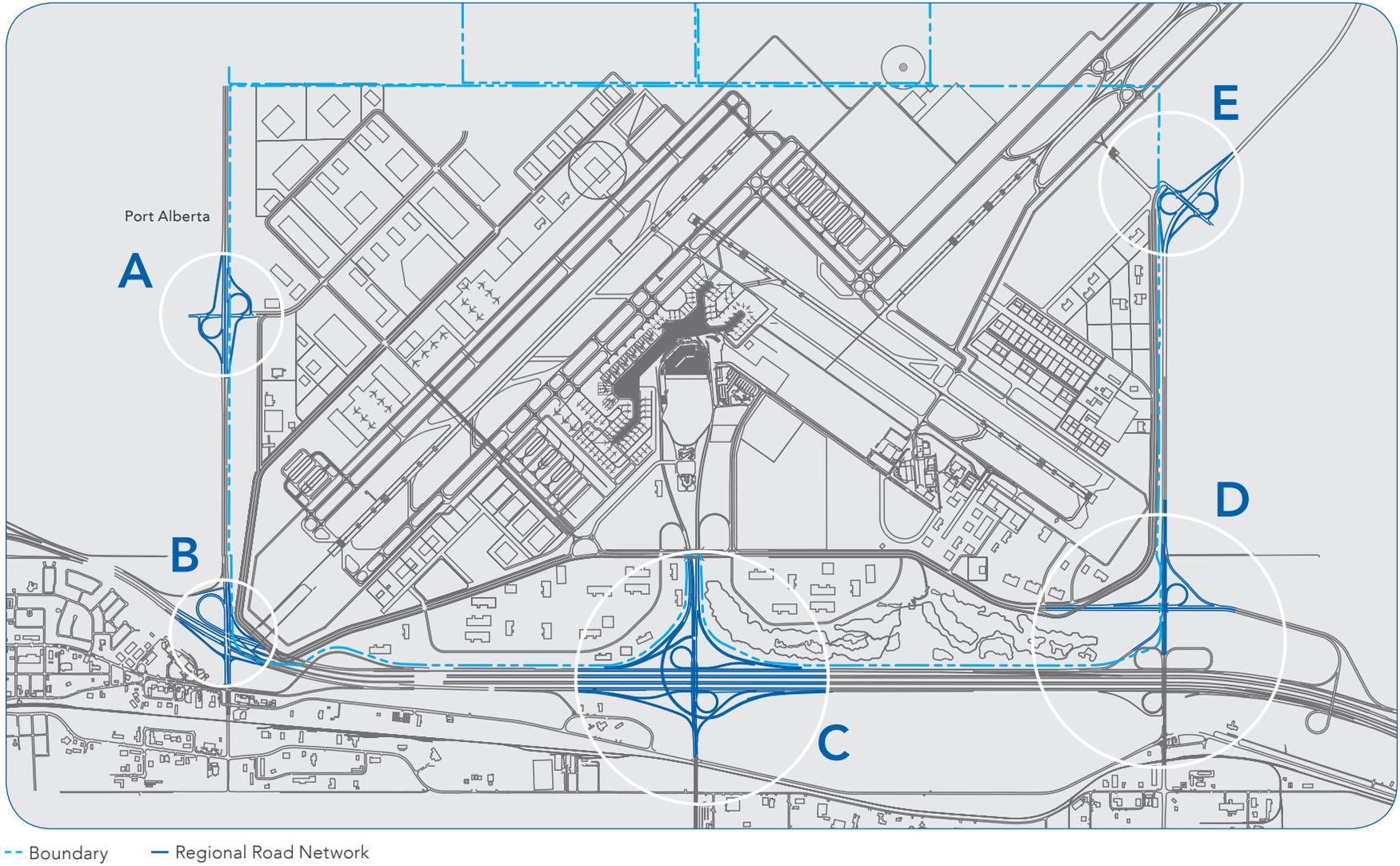
### Exhibit 9.7 | EIA – AM and PM Peak Hour Vehicular Traffic Volumes

AM Peak Hours				
Airport Road	Entry – AM	Peak Hour	Volumes	
Year	Total Volume	Aeronautical Traffic	Non-Aeronautical Traffic	
2009	1,344	93.0	7.0	
2020 – 9 MAP	3,500	64.0	36.0	
2030 – 12 MAP	5,900	52.0	48.0	
2035+ (16 MAP)	9,000	40.0	60.0	
PM Peak Hours				
2009	1,405	93.0	7.0	
2020 – 9 MAP	5,350	44.0	56.0	
2030 – 12 MAP	7,700	42.0	58.0	
2035+ (16 MAP)	10,500	36.0	64.0	

Source: AECOM Study March 2010 – EIA Transportation Requirements  
 Note: (MAP) Million Annual Passengers



Exhibit 9.8A | Projected Vehicular Traffic Impact on the Regional Road Network



The aeronautical activity centered on passenger terminal building, air cargo and business aviation facilities currently constitutes more than 90 per cent of the demand both in the AM and PM hours. With the expected commercial and light industrial developments over the master plan horizon, the traffic will grow 400 per cent in the next ten years and an additional 80 per cent between 2020 and 2035. [Exhibit 9.8](#) depicts the impact of projected traffic growth on the surrounding area highway and regional road interchanges.

To accommodate parking demand associated with the growth in passenger traffic at EIA, a substantial amount of additional passenger parking spaces will be required. This additional demand will be met by provision of enhanced parkade capacity along with surface parking lots on the airport site. The additional facilities will be consistent with EIA’s strategic objectives and vision.

## 9.4 Groundside Plan

### 9.4.1 Highway Network Upgrades

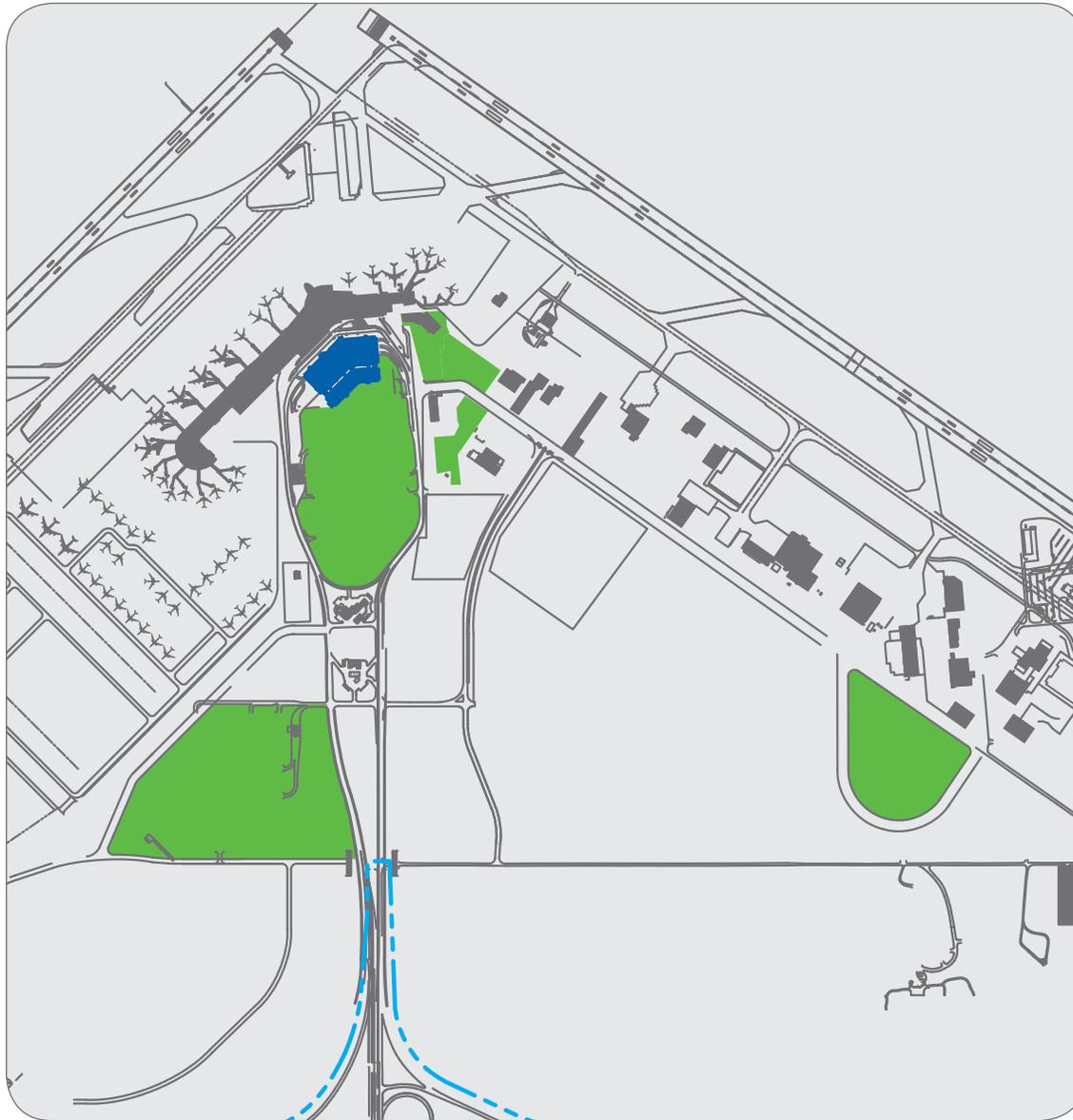
Over the longer term the five interchanges on Highway QE II, Highway 19 and the 65th Avenue roadway surrounding EIA will need to be upgraded to provide access to the airport at an acceptable level of service. Upgrades to two interchanges are likely required to accommodate the growth in passenger traffic from 6 MAP to 12 MAP, and by the commercial developments north of the passenger terminal area. In addition, two interchange upgrades south of the airport are expected as a result of the planned Port Alberta developments to foster multi-modal cargo developments. The fifth interchange on Highway 19 would likely be required with the development of a Business Aviation Park on the lands north of the new runway 11-29 ([Exhibit 9.8](#)).



**Exhibit 9.8B | Projected Vehicular Traffic Impact on the Regional Road Network**

	A		B		C		D		E	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
6.6 MAP	0	0	0	0	980	1,133	364	272	0	0
9.0 MAP	0	0	0	0	2,967	3,752	534	1,602	0	0
12 MAP	1,321	1,137	1,321	1,137	3,711	4,595	875	1,966	0	0
16 MAP	3,297	2,733	3,297	2,733	4,164	5,149	714	1,803	787	760

Exhibit 9.9 | EIA Parking Plan 2020 (9 MAP)



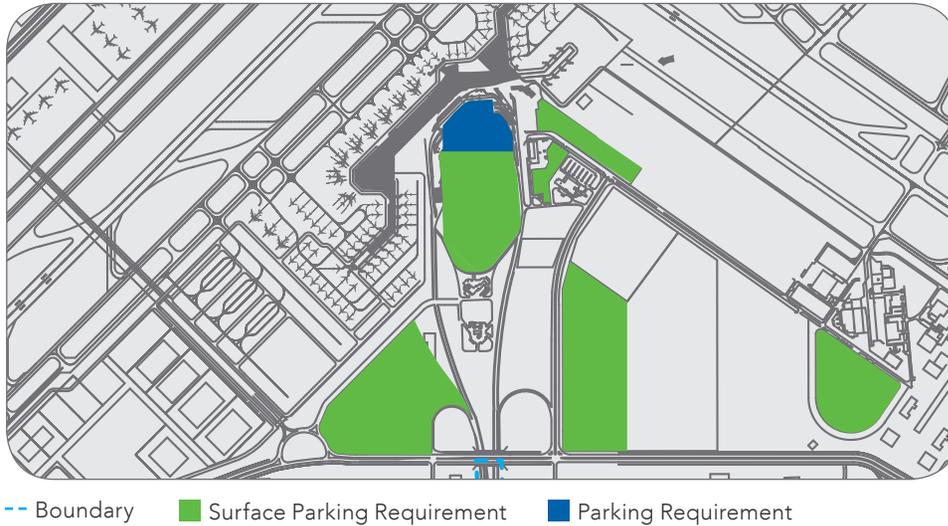
-- Boundary    ■ Surface Parking Requirement    ■ Parking Requirement

## 9.4.2 Parking Facilities

EIA's strategy is to provide sufficient parking in stages as passenger traffic grows to 9, 12 and 16 MAP, respectively. Exhibits 9.9 to 9.11 summarize the public and employee parking requirements plan to 2035.

The existing parkade was expanded in 2008. To remain cost-effective, the next incremental expansions would be planned to meet the expected parking demand associated with 12 MAP in 2030 and 16 MAP annual passengers in 2035 and beyond.

Exhibit 9.10 | EIA Parking Plan 2030 (12 MAP)



### 9.4.3 Terminal Frontage Road/Curb

The current passenger terminal building features a typical two-level terminal design allowing segregation of departing and arriving passenger vehicular traffic and maximizing available curb space.

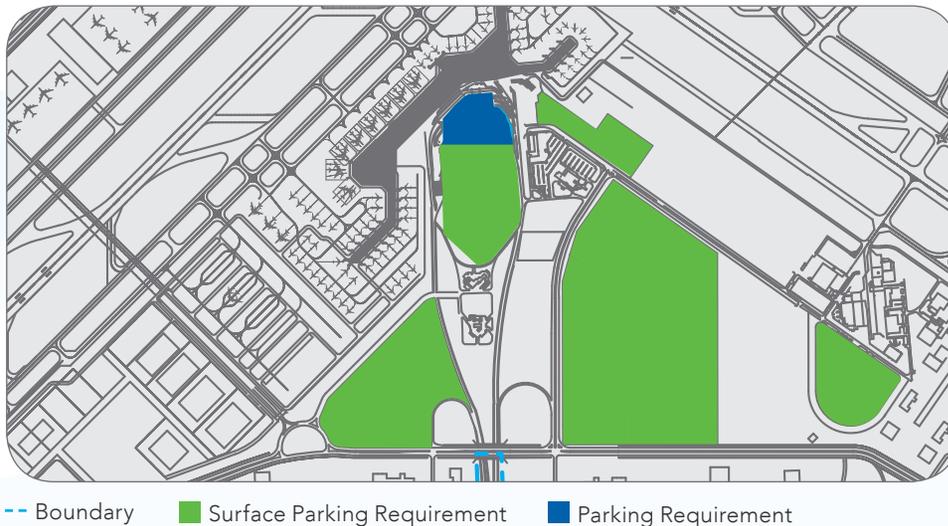
The curb is a critical interface between the passenger terminal and the road network, where vehicle flows become pedestrian flows and vice-versa. Currently at EIA, the terminal frontage roads include loading/unloading lane(s), manoeuvring lane(s) and through-traffic lane(s). The curb system consists of sidewalk(s) with adjacent traffic lanes to permit the loading/unloading of pedestrians from private cars, taxis, limousines, hotel shuttles and buses. There is an area where a few taxis and limousines queue for passengers, and a dedicated area on the outer curb for hotel shuttles and buses.

The curb in front of the terminal building is operated as a multiple-channel queuing system with a capacity which can be estimated based on the number of cars that can be accommodated, and the processing time to load/unload, rather than a capacity based on lane throughput typical for roadways.

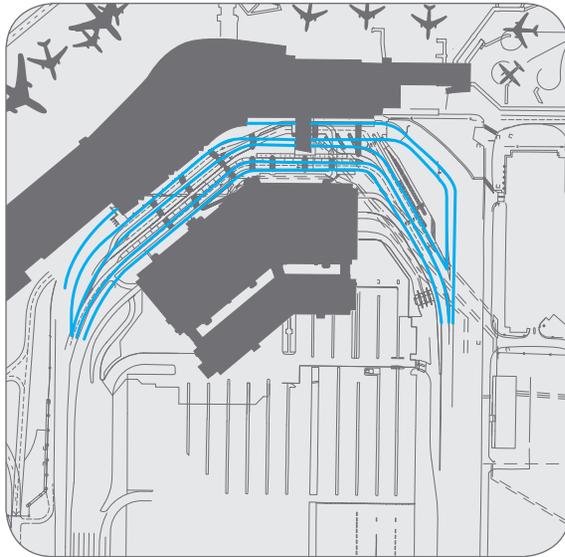
The departures level has a single curb for both commercial and private passenger drop-off. The arrivals level (lower level) has an inner curb reserved for commercial traffic such as taxis, limousines and buses, while the outer curb is designated for private cars, buses and hotel shuttles.

The forecast of curb length required to meet projected passengers demand is 950 metres in 2020 (9 MAP), 1,260 metres in 2030 (12 MAP) and 2,650 metres in 2035 and beyond (16 MAP).

Exhibit 9.11 | EIA Parking Plan 2035 and beyond (16 MAP)



**Exhibit 9.12 | Existing Terminal Curb**



— Existing Terminal Curb

**Exhibit 9.12A | TUC Alignment**

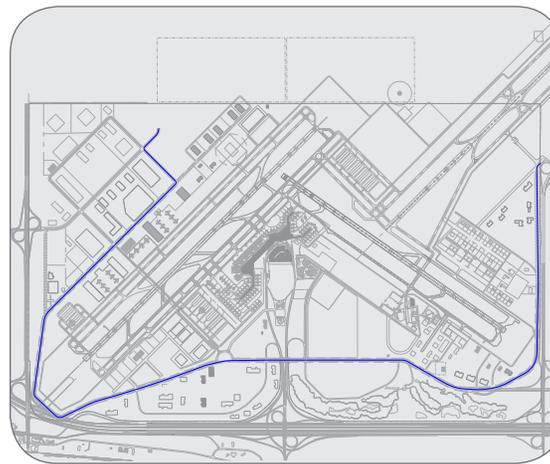


Exhibit 9.12 shows the existing curb for the terminal building. Expansion 2012 future terminal expansions to 2035 will be designed to provide additional curb to meet the expected vehicular traffic. Additional studies will evaluate appropriate curb requirements based on meeting EIA's strategic and commercial objectives.

## 9.4.4 Transportation Utility Corridor

EIA has planned a Transportation Utility Corridor (TUC). In the long term, the TUC (Exhibit 9.13) will accommodate a divided arterial roadway and all underground utilities, including power, gas, water, telecomm and stormwater. However, it will only be partially completed at the end of the Master Plan horizon.

The TUC functions as a miniature ring road around the airport allowing passengers, visitors and workers to have efficient access to EIA facilities.

The TUC will also have several interface points with the regional transportation network as shown in Exhibit 9.8A.

**Exhibit 9.13 | TUC Cross Section**



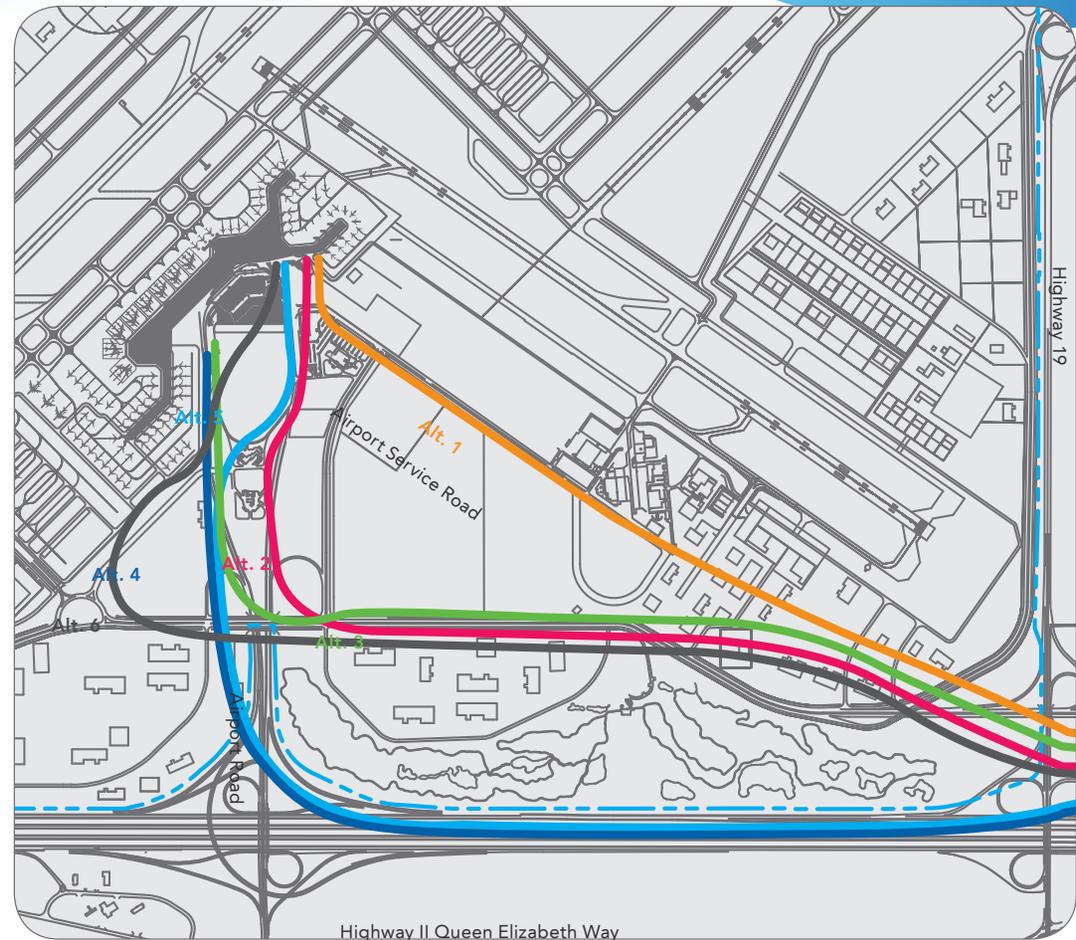
## 9.5 Transit<sup>7</sup>

Currently, the automobile is the preferred mode of travel by employees, passengers and visitors to get to the airport. However, public transportation options are likely to increase over the next several years as the greater Edmonton Area grows with suburban areas closer to the airport, and the regional transit systems are expanded. The alignments for transit will be protected, and will be sufficient to allow for a variety of technologies. However, provisions have been made in the master plan to protect an alignment within the airport property for public transit which will likely follow the progression of Scheduled Bus Service, Bus Rapid Transit (BRT), and then Light Rail Transit (LRT):

- Scheduled Bus services, which will likely use Highway 11 and Airport Road as the main roadways to access the airport from surrounding areas
- BRT, which will use the TUC for travel around the airport and likely use Highway 19's interchange and Highway 11's interchange to connect to neighbouring communities
- Light Rail Transit which will provide a viable option to allow an extension of the South LRT line in the City of Edmonton network to the EIA lands, with provisions to extend on into the City of Leduc
- If a High Speed Rail (HSR) link between Edmonton and Calgary proceeds, this alignment protects the opportunity to connect to EIA

The proposed LRT alignments also allows for the opportunity to generate ridership from the proposed commercial and industrial developments on EIA lands. The selection of the proposed alignment was based on a study of six different route alternatives within the airport property ([Exhibit 9.14](#)). Based on various evaluation criteria such as service quality, ridership, integration with airport facilities and road networks, and cost effectiveness, Alternative 2 was selected as the preferred option for corridor protection in the master plan.

Exhibit 9.14 | LRT Alignment Options



-- Boundary

### Exhibit 9.15 | Preferred Light Rapid Transit Corridor



— LRT Corridor      — LRT Station

The preferred route ([Exhibit 9.15](#)) along with station locations maximizes ridership potential and minimizes travelling delays. The station location on the north portion of the airport will facilitate a good level of service for users from the planned commercial and business developments as well as for the users of overflow parking. The main station serving the airport will be located at the north end of the terminal building and will be integrated with the new hotel development planned for 2012.

There are currently no details on the requirements or technology for rail. A corridor has been identified on EIA lands such that the riders from HSR could transfer to LRT at a common station to access the terminal building and other airport facilities. The HSR routing has been shown notionally in [Exhibit 9.16](#).

Exhibit 9.16 | Preferred High Speed Rail Corridor



— LRT Alignment — HSR Alignment





# 10.0 Airline Support Facilities



## 10.1 Introduction

This chapter presents the regulatory, facility sizing and positioning requirements for EIA. It includes airline support facilities such as catering, fuel and de-icing, as well as airport support services such as rescue and fire fighting, snow removal, waste removal and maintenance facilities. The recommendations are intended to be included in the land-use plan when finalized.



## 10.2 Fuel<sup>8</sup>

Airport fuel systems provide the necessary infrastructure to receive, store and distribute jet fuel and other petroleum products to commercial aircraft and ground handling equipment. Historically, fuel costs accounted for approximately 15 per cent of a North American airline's operating costs. However, recently that percentage has soared to 30 per cent. An airline's ability to secure reasonably priced fuel is tied directly to its profitability. Therefore, a fuel system's ability to provide such services to the airlines and other customers contributes to an airline's viability.

### 10.2.1 Current Fuel Farm

Located north of the terminal, the fuel farm consists of four large cylinders containing Jet A-1 fuel. In response to the tremendous growth at EIA, storage has recently expanded by nearly 200 per cent. The facility currently handles approximately 235 million litres of fuel annually. The airport is also expanding its underground fuel distribution system in response to the terminal expansion. The current lease area is 23,033 square metres.

### 10.2.2 Aircraft and Fuel Forecasts

Forecasting fuel requirements is generally based on an airport's anticipated destinations. Facility planning should account for peak daily fuel requirements to ensure storage and pump capacity is sized accordingly to preclude any capacity shortfall. During seasonal peaks in traffic, typically in July and August, peak demand lasts for about 60 days.

### 10.2.3 Fuel Facility Relocation

Fuelling, maintenance and general operations require hundreds of vehicle movements. The most important criteria for the position of the fuel facility is the proximity to the main terminal areas. The continuous delivery of fuel from outside sources, and the 24-hour operations at EIA make delivering fuel a challenge.

New location requirements include:

- 2.5 to three hectares in size, and close to the terminal
- Located near the airside/groundside boundary
- Groundside access for heavy tanker vehicles
- Available airside access to terminal and remote fueling areas
- An underground pipeline connection to the terminal hydrant system
- An underground electrical connection to the emergency shut-down system at the terminal
- Level and stable ground, with a low water table

Other considerations for evaluating a position for fuelling facilities are:

- Proximity to neighbouring tenants
- Proximity to the Rescue and Fire Fighting services
- Existing utility infrastructure

Based on long-term fuel demand forecasts, it was concluded that the long-term consumption during peak season is 3.9 million litres a day based on throughput of 25 million annual passengers.





## 10.3 Catering<sup>9</sup>

### 10.3.1 Current

Flight kitchens prepare and package meals and beverages for in-flight service on flights. The total average daily volume of on-board meals sold to airlines by both CARA Air Solutions and YK Catering is presently estimated at some 3,200 meals per day, for an annual turnover of approximately 1.2 million meals per year. In addition, in-flight services for WestJet flights are provided by WestJet Air Supply.

#### CARA Air Solutions

CARA operates from a 2,200 square metre building, located on a lot of approximately 3,700 square metre at Airport Northeast, on the east side of the service road. CARA currently supplies between 75 and 110 aircraft daily, equivalent to 28,000 to 30,000 operations per year.

Meal production is estimated to account for approximately 2,500 meals daily or 900,000 annually. Most domestic services are provided by CARA, which is responsible for the majority of domestic, all transborder and international catering.

#### YK Flight Kitchen

YK Flight Kitchen serves exclusively domestic meals for airlines flying to Canada's northern regions, approximately ten aircraft per day. Meal production is estimated at 700 meals per day which translates to approximately 250,000 meals per year. However, the YK facility has the capacity to produce up to 2,500 meals per day. YK Flight Kitchen provides catering service to northern destinations hosted by Canadian North, First Air, and North Caribou Air.

### 10.3.2 Future Catering

Estimating the future demand for on-board meals can be based on the following:

- Existing and future airline policies regarding on-board meals
- Airline competition regarding on-board services and ticket prices
- Type of passenger traffic (domestic, transborder or international)
- Flight times

Two demand scenarios were developed for the on-board meals in order to take into consideration the expected growth of international flights over the period.

1. The base case scenario will consider a constant ratio regarding meal(s) per departing passenger over the planning horizon.
2. The second scenario will consider a higher ratio for international passengers (e.g. sun destinations and intercontinental flights) and a lower ratio for domestic and transborder departing passengers.

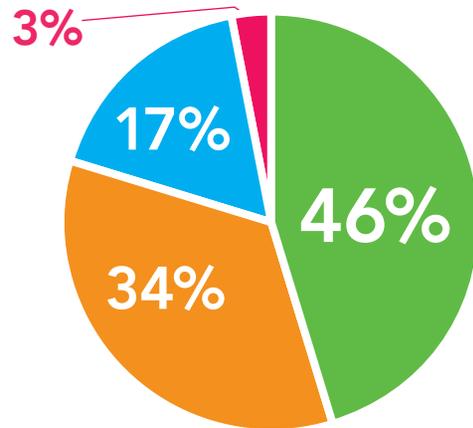
International flights are more likely to require at least one full meal, and in the case of long haul flights, a second meal. EIA is planning to expand their international service as discussed in Chapter 3.

## 10.4 De-icing<sup>10</sup>

Weather conditions may cause ice to build on the surfaces of aircraft before takeoff. As a result, aircraft de-icing is a vital component of an airport system. Glycol is sprayed on aircraft as a de-icing agent to remove ice accumulation and as a preventative measure to stop further formation of ice. De-icing is performed by the airlines or by a private contractor. Due to the negative effect of glycol on aquatic life, it is imperative that de-icing activities are managed effectively.

Aircraft de-icing is mandatory for safe operations at airports which experience frost, freezing rain, and snow conditions. A de-icing facility is designed to minimize taxi distances to the departing runway.

Exhibit 10.1 | Morning Fleet Mix AECOM 2007



The typical morning fleet mix at EIA is shown in [Exhibit 10.1](#).

### 10.4.1 Current Infrastructure

Currently, there are multiple de-icing service providers at EIA. To realize operational efficiencies, plans are underway to establish one de-icing service provider.

Typically, the number of de-icing stands is determined by the peak period demand. Currently there are three de-icing pads on Apron I.

### 10.4.2 Long-Term Requirements

It is recommended that one central de-icing pad be constructed which will serve all departing aircraft at the west end of the airfield at the base of Runway 02.

This central location will be adequate for aircraft departing Runway 02 and in the event that a third runway is constructed, its location will be proximal to that of departures Runway 29.

The centralized de-icing facility (CDF) is identified in Airport North and Airport South. Provision of a new CDF is determined based on the future growth of passenger and aircraft movements and subsequent timing for construction of a third runway.

The MARS de-icing pad layout is consistent with the fleet mix at EIA, with the flexibility to accommodate larger aircraft. The MARS layout is ideal for both large and small aircraft.



## 10.5 Snow Removal<sup>11</sup>

As part of the site servicing plan, a snow storage site is proposed that will accommodate EIA's ultimate development. It has been recommended that two snow storage sites be constructed to service EIA. One will be located on the airside and another on the groundside to avoid any truck movement between the airside and the groundside. This will also allow for efficiency in treatment and reduced haul lengths.

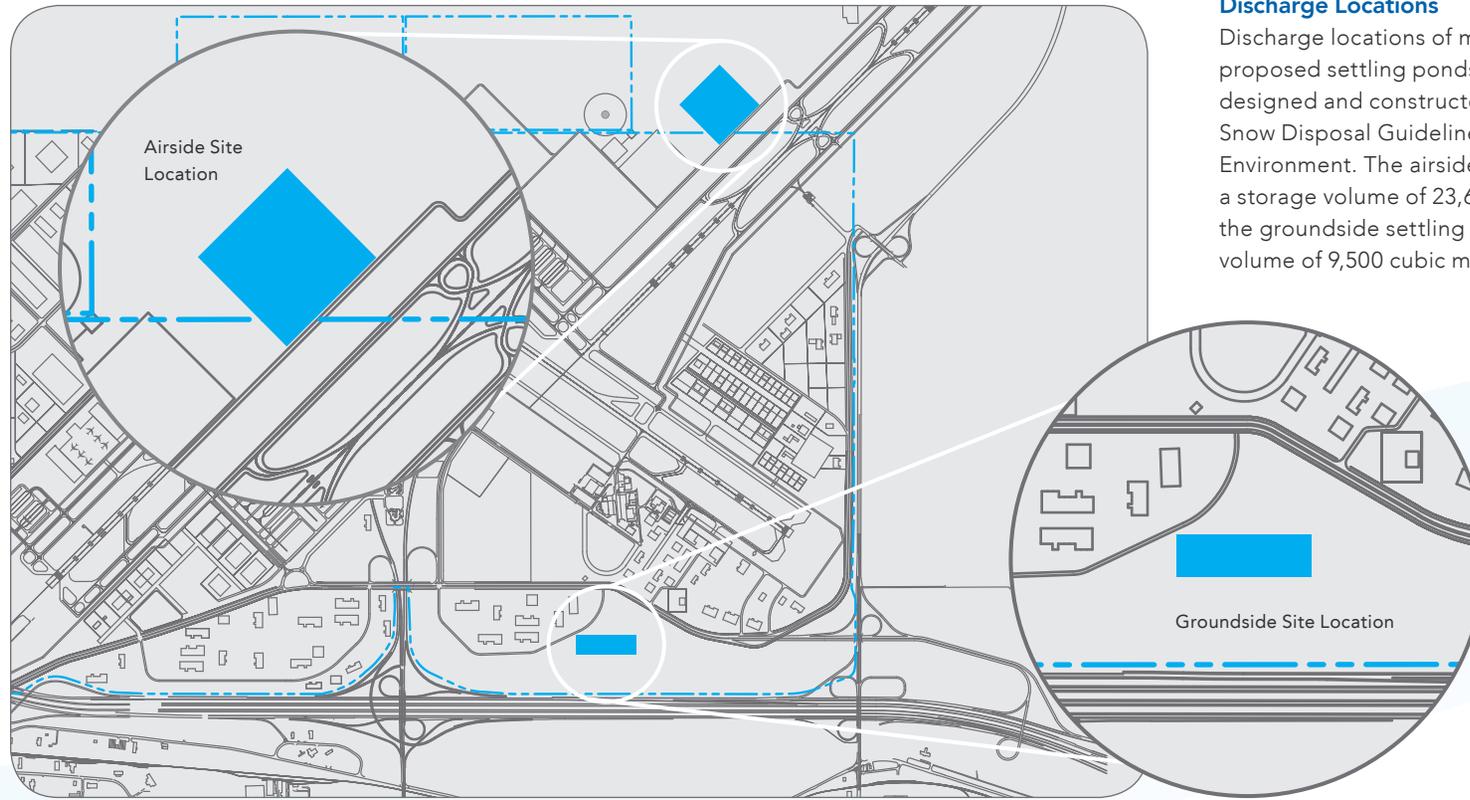
### Airside

The airside snow storage site is located on the west side of the airport, towards the north end of the site. It is southwest of future Runway 11-29 and northwest of the main apron. A tributary to Whitemud Creek runs west of the proposed snow storage site. This snow storage site will be dedicated to the disposal of the snow removed from the service areas only, including the main apron, de-icing pad(s), and fuelling stations (Exhibit 10.2).

### Groundside

The groundside snow storage site is located at Airport Northeast, approximately 1.1 kilometres north of Airport Service Road/QE II highway interchange. Blackmud Creek is located east of this proposed snow storage site. The groundside snow storage site will be dedicated to the disposal of snow removed from all parking surfaces located in the vicinity of the terminal building. Snow accumulated on all the circulation roadways will not be disposed of, as it will be pushed away (Exhibit 10.2).

Exhibit 10.2 | Groundside and Airside Snow Storage Sites



### Discharge Locations

Discharge locations of melt-water for the proposed settling ponds will be evaluated, designed and constructed in accordance with the Snow Disposal Guidelines provided by Alberta Environment. The airside settling pond requires a storage volume of 23,600 cubic metres and the groundside settling pond requires a storage volume of 9,500 cubic metres.

## 10.6 Rescue and Fire Fighting<sup>12</sup>

The principal objective of a rescue and fire fighting service is to save lives in the event of an aircraft incident or accident. This contingency must assume at all times the possibility of, and need for, extinguishing a fire which may exist at the time the aircraft is landing, taking off, taxiing, parked, etc. or occurs immediately following an aircraft accident, incident or occurrence at any time during rescue operations.

### 10.6.1 Response Time Regulation

Rescue and fire fighting at EIA is based on meeting Transport Canada and International Civil Aviation Organization (ICAO) Standards. Transport Canada uses the Aircraft Rescue and Fire Fighting at Airports National Standards. As EIA standards are more restrictive, the airport will meet ICAO standards.

The time it takes to attend an airside accident must not exceed:

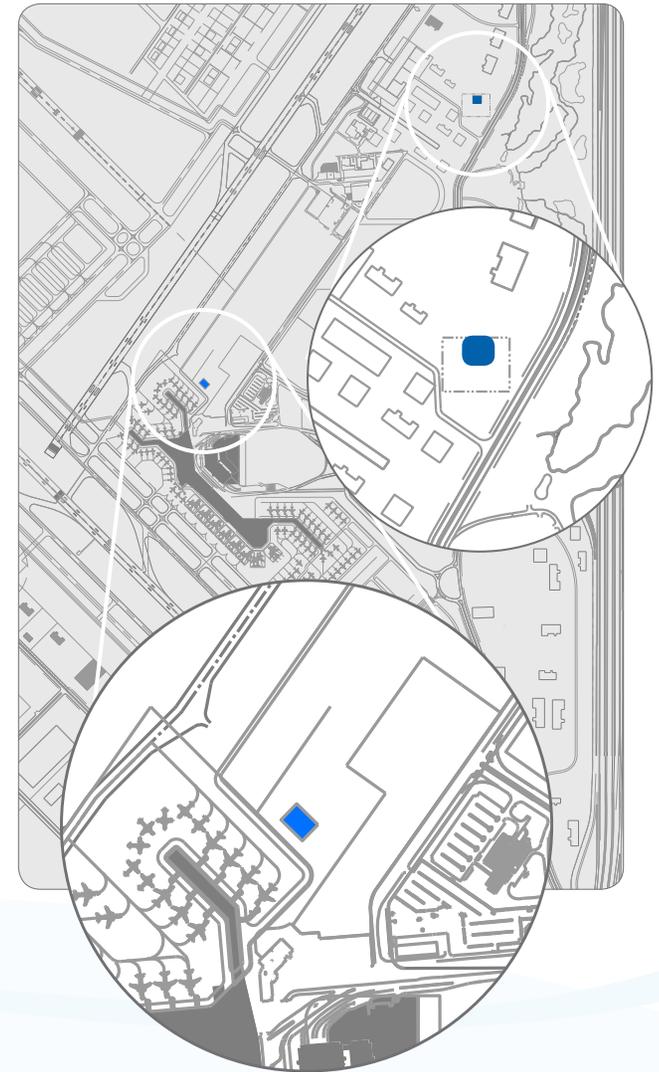
- 10 to 15 seconds: from accident occurrence to raising of an alarm
- 40 to 45 seconds (minimum): from alarm to the moment when the vehicle(s) leaves the station
- 10 to 15 seconds (minimum): to positioning near the aircraft
- 120 seconds: for travel time

Subject to weather conditions and off-road patterns, a travel time average speed of 60 kilometres per hour can be considered. Based on these conditions, EIA can expect that the rescue vehicles can achieve the response time within a 2,000 metre radius of the occurrence.

An additional fire station will be required when future Runway 11-29 is commissioned. In order to comply with ICAO standards, the existing Rescue and Fire Fighting (RFF) facility should be relocated to the southwest of Runway 12-30 at the midpoint of the runway. The new RFF should be located northeast of future Runway 11-29, about one third down Runway 12 to complete the necessary access to all three runways.



Exhibit 10.3 | Planned Location of Additional Fire Station



## 10.6.2 Mobile Aircraft Fire Trainer (MAFT)

The fully self-contained system provides training in the control and extinguishing of aviation fuel spill fires and aircraft incident fire emergencies, in and around an aircraft. Going forward, EIA's emergency response services team will use its expertise with the unit to provide emergency response training.

At 25,000 square metres, the permanent facilities include provision for multiple training activities and for environmental mitigation measures.



## 10.7 Solid Waste Removal<sup>13</sup>

### Current Waste Management

When dealing with waste at the airport, there are two categories to consider:

1. Airline waste
2. Airport waste

Within the airline waste parameter, waste management is dependent on the origin of the waste, as to whether it is domestic or international.

### 10.7.1 Airline Waste

#### Domestic

Waste from Canada and the United States is considered 'domestic' and is managed independently by the corresponding airline. Domestic airline waste is not deemed the responsibility of the airport authority.

#### International

Canadian regulations dictate that waste from international flights cannot be opened, sorted or recycled. The waste is brought by carts from the airplane directly to a special compactor to be immediately removed and buried in a landfill. The capacity of the existing compacter is 22.9 cubic metres.

### Future

To reduce the risk of introducing foreign diseases into Canada from foreign lands, international waste disposal should be treated with priority. Currently no legislation exists forcing the sterilization of waste; however, by planning for the installation of sterilizers, EIA will be able to respond to any future regulatory requirements.

Options for using an incinerator to handle international waste may also be considered.

### 10.7.2 Airport Waste

Airport waste is managed according to the facility based on whether it comes from the terminal or other locations.

#### 10.7.2.1 From the Terminal Building

Waste from the terminal comes from a variety of sources, with most from food services at the terminal. Recycling services are available for terminal tenants.

### Current

Terminal waste collection facilities consist of:

- Cardboard compactor, accessible from the loading dock covered area (20.6 cubic metres)
- Separate dumpsters for recyclable glass and plastic, located under the loading dock (2.3 cubic metres)
- Main garbage compactor (19.1 cubic metres)
- Bin for used cooking oil
- Underground recycling room for special recycling such as computer monitors, scrap metal, used batteries, empty ink cartridges

### Future

Placing waste and recycling facilities in a safe and centralized location will reduce the time and effort associated with waste management. Organic collection for composting shall be implemented at EIA under accordance with provincial and federal government guidelines.

Space required for the waste collection facility is estimated at 280 square metres, using:

- 40 large mobile waste containers for recyclables
- 40 large mobile waste containers for other waste
- A space for four used oil containers and other bio-hazards

### 10.7.2.2 From Non-Terminal Buildings

Several buildings outside the terminal area each contain one dumpster, collected once a week. These buildings include:

- Environment Canada weather office
- Taxi drivers lounge
- Airport terminal redevelopment trailers
- Airside Operations Maintenance Centre (AOMC)

The AOMC has facilities for recycling scrap paper. The fire hall has undertaken an independent initiative to collect recycled and shredded paper, glass, plastic, bottles and cans.

#### Future Waste From Non-Terminal Buildings

We have allocated space for a new eco-centre which is planned to collect all the recyclables generated by non-terminal buildings. The design of the eco-centre will include safe pedestrian access and be easily accessible for vehicles to unload collected waste. It will also include roll-off containers for metal, wood, organic waste and inerts.

The space required for the eco-centre is estimated at about 6,000 square metres.

Suggestions for improvement include:

- Bottle return revenue to be given to respective department
- Implementation of recycle/pick-up programs
- Recycle bins in designated smoking areas
- Prevention of anonymous dumping
- Centralized recycling and garbage drop-off points
- Orientation and workplace culture seminars
- Reward programs

### 10.7.2.3 Summary of EIA Waste Management Practices

Airport maintenance includes the inspection and cleaning of runways, taxiways and aprons as well as snow removal. Inspection and maintenance of the runway lighting system, the airfield lawn, the ditches, fences and other grounds areas, are also included among the critical airside activities.

### 10.7.2.4 Future

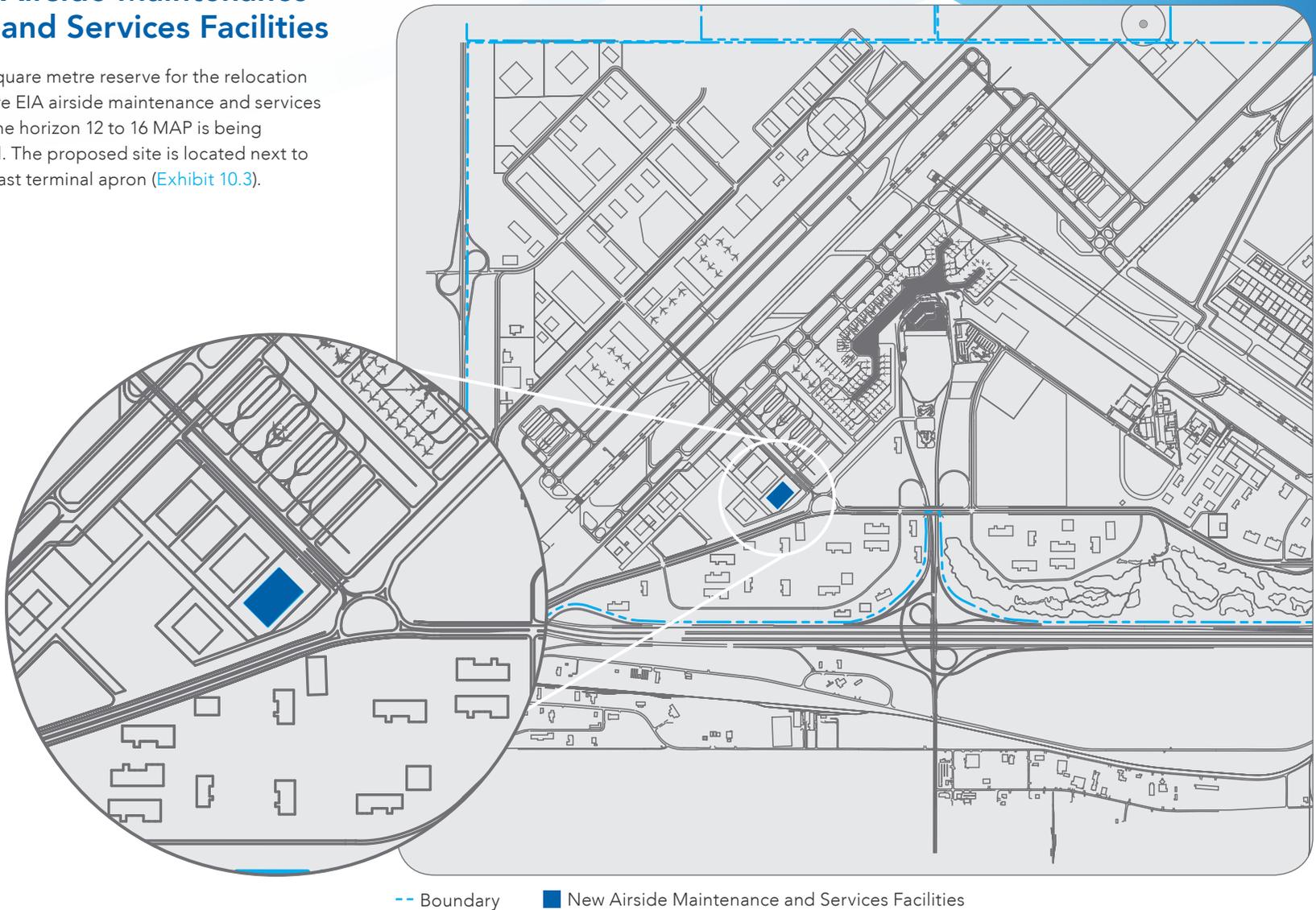
The future location of the airport maintenance facility will consider operational effectiveness and close access to the airfield facilities. Although it is not required for the airport maintenance facilities to have direct access to the airside, it is a distinct benefit as this reduces the response time and optimizes resource utilization.

The proposed layout allows for a main building of 6,000 square metres with car parking, and provision for ground service equipment parking and airside storage. Note that the airport maintenance and services facility can be totally or partially landside or airside.

## 10.8 Airside Maintenance and Services Facilities

A 40,300 square metre reserve for the relocation of the future EIA airside maintenance and services facility at the horizon 12 to 16 MAP is being considered. The proposed site is located next to the southeast terminal apron ([Exhibit 10.3](#)).

Exhibit 10.3 | New Airside Maintenance and Services Facilities







# 11.0

## Utilities



## 11.1 Introduction

EIA's current and anticipated growth increases its demand for utilities such as power, gas, water and telecommunications. A Site Servicing Study conducted in 2009 examined the future utility requirements of EIA. A fully developed EIA would exceed 3,000 hectares, including aviation and non-aviation commercial developments, and would serve 25 million passengers annually. EIA is expected to serve between 10 million passengers annually (low estimate) and 15 million passengers annually (high estimate) (Exhibit 3.11) by year 2035.

The number of passengers being moved affects utilities requirements to some degree; however, the development of EIA lands has a much greater impact. This section is focused on utility requirements over the next 20 years while considering longer term needs.

Key to ensuring EIA can meet its future utility needs is the development of a Transportation Utilities Corridor (TUC). This corridor would provide the main routing for utilities to the EIA site. This TUC concept is bound to and informed by the layout of the road network. Roads and utilities are to be planned in a co-ordinated manner, similar to the TUC concepts used in Edmonton and other municipalities. Utilities provided for in the next 20 years should follow the TUC alignment whenever possible.

## 11.2 Power<sup>14</sup>

Power is delivered to EIA via two 25-kilovolt (kV) distribution lines (lines 362L and 363L). Fortis Alberta is the wire services provider who owns and maintains these lines. These lines are capable of providing up to 26 megawatts (MW) of power (13 kVA each). However, a significant portion of the capacity is used prior to the lines entering EIA property, as these lines service upstream customers in Nisku as well as EIA.

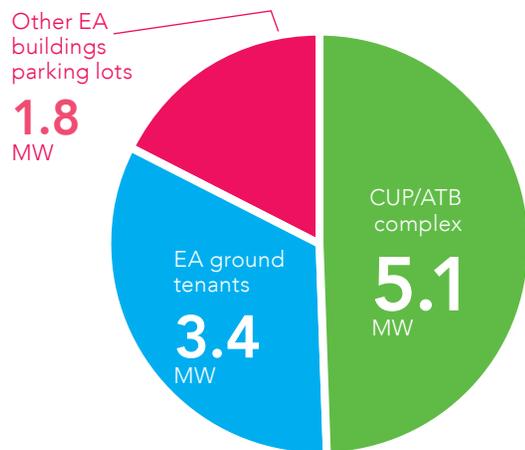
### Current Loads

The peak power load for EIA estimated in the 9.5-11 MW range. Edmonton Airports is the largest user at EIA with 26 metered sites and facilities with an estimated peak power demand of 6.5 MW. EIA tenants have a peak demand estimated in the 3.0 to 4.5 MW range.

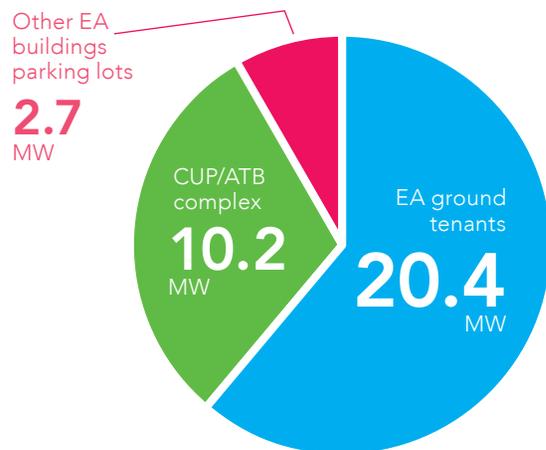
## Future Loads

### Immediate

The additional power loads to support Expansion 2012 will be met by the existing two 25-kV lines from Fortis. EIA has invested in the new 25-kV Southeast Substation that will supply Expansion 2012 projects as well as being capable of expanding to provide power to EIA in the future. The new substation is currently fed from both Fortis lines. Fortis has planned to bring a third line to EIA (129L), which would provide additional redundancy.



The "ground tenants" total indicates 3.4 megawatt, as an estimate only



The power chart indicates a large increase in groundside tenant power over the next 25 years

**2015**

With a substantial amount of development planned for the next five years, peak loads are expected to increase to 15 to 20 MW. This amount of power will require at least three distribution lines to have full redundancy to EIA in case of a utility line failure.

EA's 20-year vision includes development of anywhere from 400 to 1,200 hectares of land to support aviation, commercial and light industrial businesses. Total peak power requirements on the EIA site could range from 25 to 50 MVA by 2035. Planning is underway with key stakeholders to ensure that EIA has the power service and distribution to grow during the next five years and beyond.

Power on the site is to be buried whenever possible and shall follow the TUC layout and guidelines.



## Co-Generation

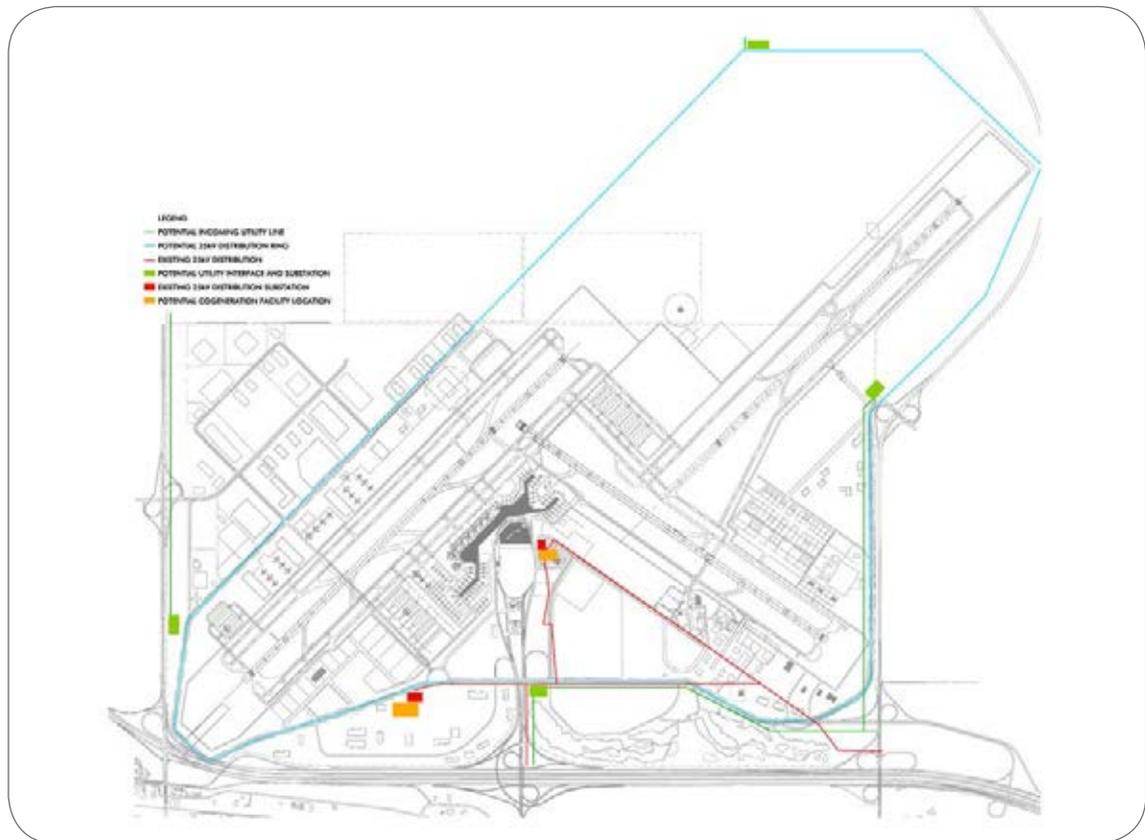
EIA continues to explore co-generation options for power. A co-generation facility would most likely be a natural gas fired engine (reciprocating or turbine) that drives a generator to provide power to the site, and the waste heat would be used to heat EIA facilities.

The key to a co-generation plant is producing economic advantage of the waste heat from the power plant, usually to supply building heating demands. Co-generation works best when electrical and heating loads are balanced and concentrated in one area such as the existing terminal building. Using waste heat results in a lower overall cost than buying conventional power and heat. If done correctly, a co-generation system can reduce overall utilities costs and significantly reduce green-house gases.

Two areas have been set aside in the Master Plan to accommodate a co-generation plant. One location would be at the existing Central Utilities Plant, and the other at the 25-kV Southeast Substation, as shown on [Exhibit 11.3](#).

EIA will continue to explore co-generation facilities and implement them after further business analysis.

Exhibit 11.3 | Electrical Site Plan 2010 – 2035



## 11.3 Natural Gas

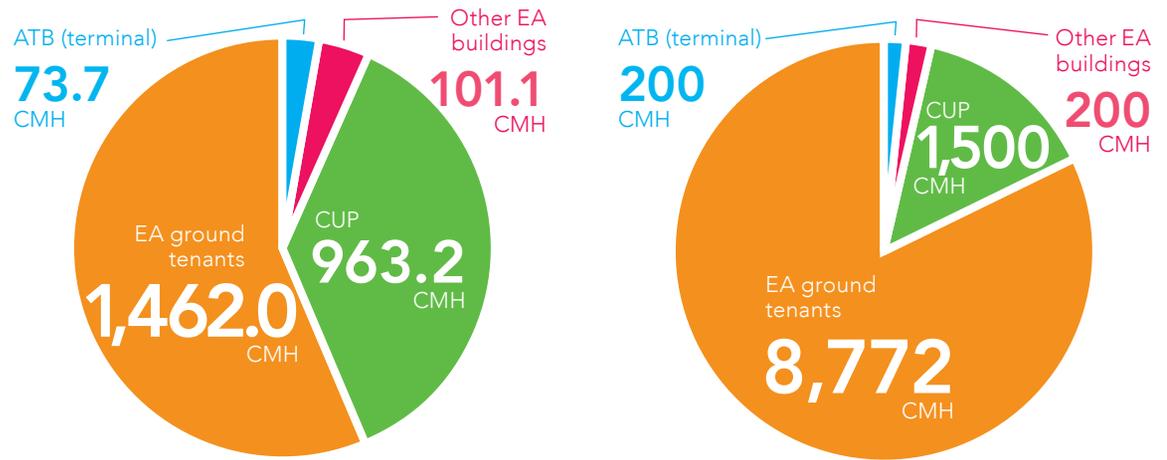
Currently, EIA is supplied with natural gas by ATCO. EIA tenants can choose the gas retailer of their choice.

A single 600 psi line supplies gas to EIA, entering at the north end of the airport lands. This gas main supplies all 12 Edmonton Airports-owned buildings and sites as well as approximately 30 other businesses.

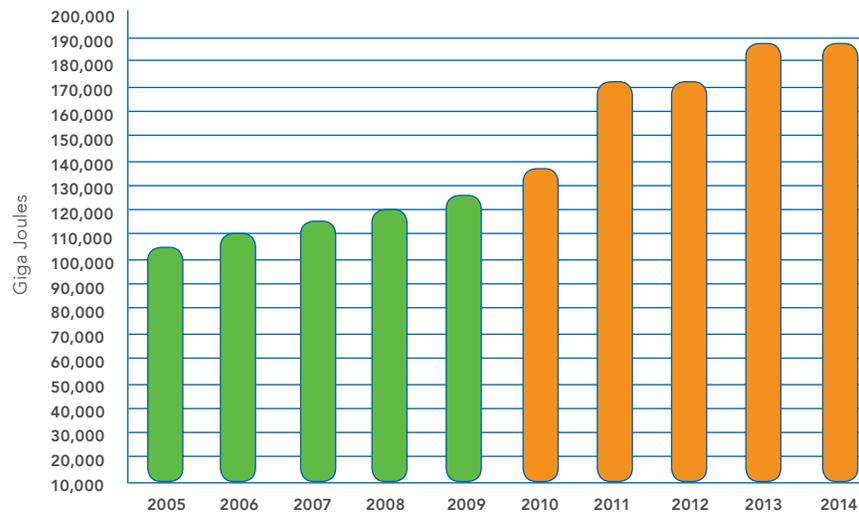
Most of the natural gas at EIA is used for space heating of buildings. As such, the peak load occurs in the winter on a very cold day (-40 C).

ATCO has estimated that peak flow to EIA is approximately 2,600 cubic metres per hour (CMH). ATCO has advised that this main line can support up to 5,000 CMH.

The Central Utilities Plant (CUP) is the largest ATCO customer on site, consuming a peak load of nearly 1,000 cubic metres per hour, or about 40% of all gas at the site. The CUP uses this gas to heat the Air Terminal Building and the NAVCANADA Air Operations Center.



CMH: Cubic metres per hour



\*Forecast is for Edmonton Airports-owned facilities only.

## Future Loads

### Short Term

The growth in gas usage at EIA over the next five years is expected to be wholly accommodated by the existing ATCO gas main. The existing CUP will provide the heat to the Air Terminal expansion and Combined Office Tower (COT) projects.

### Long Term

EIA has worked with ATCO on long-term gas usage projections and have arrived at a predicted peak load for the EIA site of 10,672 CMH by 2035.

Most of this increased load will go to support the commercial, aviation and light industrial developments as outlined in the Master Plan. This projected peak load of 10,672 CMH would exceed the capacity of the existing ATCO gas main. ATCO has advised EA of plans to make changes to the regional gas distribution system and will take EA projected loads into consideration when developing their long-term plans. EIA will continue to collaborate with ATCO in the gas distribution to EIA.

Future gas mains will be routed in the TUC right of way as appropriate.

### Co-Generation

Like with electricity, EA may consider developing co-generation facilities. Co-generation facilities would most likely be gas fired. A smaller co-generation plant can be accommodated with the existing gas supply infrastructure. A large plant (25 MW or larger) could dramatically affect peak gas requirements at EIA. EIA will coordinate any change in gas usage with ATCO gas to ensure adequate supply to the EIA site.

Exhibit 11.6A



— Low / Medium Pressure — —G— 600 PSI High Pressure Gas Main

## 11.4 Telecommunications Services<sup>14</sup>

Telecommunication services at EIA are required by the airport authority, air carriers, business aviation, NAV CANADA, government agencies such as CBSA, USCBP, concessionaires, air cargo and other tenants.

The business strategy for EIA is to build a state-of-the-art telecommunication campus-wide network, cabling and pathway infrastructure to provide network services to all users and create a new revenue generation stream for the authority.

At present, the telecommunication needs of the airport are being provided through two main data centres and several server rooms.

### Service Entrances and Data Centres

To attract business subscribers, two new data centres were constructed as part of Expansion 2012. These two new data centres will be at the heart of the telecommunication network, which will enable EIA to offer a secure and fully protected server hosting environment for all of its present and future customers. The telecommunication infrastructure proposed will be flexible enough to accommodate future technological changes and user needs.

### Pathways

The campus-wide telecommunications infrastructure proposed is for the long-term development of the airport; however, the development would be staged as warranted by demand.



In order to make the campus site easier to access, two site service entrance points on the property are proposed. The overall campus backbone cabling pathway would consist of conduits, encased in concrete for protection, and routed around the entire airport property. This will allow campus tenants and users, regardless of the location on airport property, to have pathway access to the data centers.

## 11.5 Storm Water, Sanitary and Potable Water<sup>14</sup>

### Background

The airport site requires both potable (drinkable) water and water for fire protection. Fire protection requirements include water for building sprinkler systems, site fire hydrants and water for the Emergency Responses Services (aviation roles).

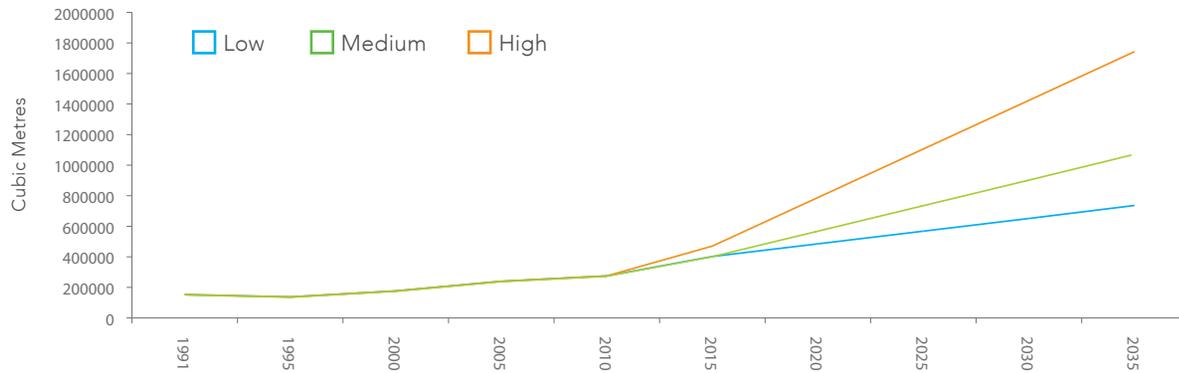
EIA operates the water storage and distribution systems on the EIA site. EA is the water utility on the site. EIA supplies water to all site customers from a 4,200 m<sup>3</sup> water reservoir through a distribution system. EIA gets its water for the reservoir from the Capital Region Southwest Water Commission (CRSWWC). The water is supplied to the EIA reservoir via twin 200-mm supply lines from the CRSWWC regional line. The water we receive

from the CRSWWC is produced either at the City of Edmonton-owned E.L Smith or Rosedale water treatment plants.

### Current and immediate needs

Water use at EIA has increased by 55% in the past 10 years due to increases in number of annual passengers using the airport and land development. Total water use in 2010 was 273,000 cubic metres. Water use at EIA is fairly constant through the year as very little water is used for irrigation.

While the existing system has adequate capacity to service the site for about five more years, it is prudent to expand the system in the near future to keep pace with planned expansion.



### Short and longer term

EIA's water demand projections indicate the reservoir storage volume must be increased within the next five years to deal with growth. As such EA is planning for a second water reservoir, slated for construction in 2012. The new reservoir will work in tandem with the existing water reservoir and together they will be able to service the EIA site needs over the next 20 years.

By adding a second water reservoir, this will also allow EIA to increase fire flow standard from a design flow rate of 140 l/s up to 230 l/s. This greater flow rate (and thus greater required storage volume) will position EIA well for any future developments.



## TUC

New water lines installed will follow the TUC routing and TUC guidelines.

### Sanitary Sewage system

The wastewater produced by all buildings on EIA lands is sent to the regional sanitary sewer system.

The regional sewer line is currently managed by the Alberta Capital Region Wastewater Commission (ACRWC). The regional line is located on the east side of Highway # 2 . This regional line also services the City of Leduc and County of Leduc, including Nisku.

The regional line eventually terminates at the Gold Bar wastewater treatment plant in Edmonton.

Edmonton Airports owns and operates the sanitary sewer systems on the EIA property. The system consists of gravity sewer mains and a system of four lifts stations. The last lift station in the EIA system (lift station # 2) provides the final lift required to ensure sewage flows adequately to the regional system.

Currently, the EIA sewage system is adequately sized to handle sewage flow capacities and

will handle the additional loads placed by the Expansion 2012 projects.

Expansion to the sanitary sewer system will, however, be required to service new developments and expansions contemplated in the 25-year horizon of the Master Plan.

Sanitary sewer lines will follow with TUC whenever practical. A second connection to the regional line from EIA lands may be required for either capacity or system redundancy reasons.

### Stormwater Management System

The stormwater management facilities at the airport treat and control the discharges from the drainage systems into the external watercourses. The existing airport land has two primary drainage watercourses – Whitemud Creek and Blackmud Creek. The majority of the airport land drains naturally towards the northwest into Whitemud Creek. A system of storm sewers, ditches and culverts conveys most of the run-off from developed areas into two stormwater management facilities (SWMF) and an engineered wetland located along the western boundary. The remaining undeveloped areas (west of the runway system) drain naturally into Whitemud Creek. The areas along the eastern boundary of the airport drain across the QEII highway into Blackmud Creek. This area is mostly undeveloped except for the Redtail Landing Golf Course.

The two stormwater facilities consist of the main Stormwater Management Facility, constructed in 1999, and the old gun club lagoon with a total storage capacity of 420,000 cubic metres. The original stormwater management concept was to:

- Utilize the lagoon for storing contaminated snowmelt from use of ethylene glycol as a de-icing agent and discharging at a controlled rate into the engineered wetlands for treatment prior to releasing into Whitemud Creek
- Utilize the main stormwater facility for storage of non-contaminated surface run-off prior to controlled discharge into Whitemud Creek

The rate of discharge from the lagoon into the creek is lower than required during the accumulation of high volume of contaminated snowmelt. As a result, the excess volume of

contaminated snowmelt is stored in the main SWMF causing the occasional bottleneck in the airport's stormwater management system.

The future SWMF is designed based on the following design criteria:

- Allowable discharge rate for Whitemud and Blackmud Creeks is five litres per second per hectare
- SWMF is to be designed for 1:100 year rainfall event
- Storage facility for contaminated surface run-off shall be designed for 1:2 year rainfall event

### Future Stormwater System

The recommended stormwater management for this master plan is to provide for on-site management for all groundside aviation and commercial developments. While runoff from the runway system and other airside developments is to be stored in a SWMF. This SWMF could then provide non-potable water for the site. The size of this facility would be determined based on the requirement to use stormwater only, or grey water and stormwater for non-potable uses. A special consideration for bird control would be required while designing on-site stormwater management for groundside developments.







# 12.0

## Environment and Sustainability





## 12.1 Introduction

Airport operations and developments are resource intensive, requiring the use of facilities, fuels, chemicals, and other natural resources. As the authority moves towards sustainability at Edmonton International Airport, ERAA recognizes the importance of balancing the airport's environmental footprint with future growth.

The purpose of this chapter is to provide a general description of the environmental management system at EIA. Information presented includes environmental aspects of the airport, its operations, regulatory influences and a discussion of the preliminary assessment of environmental impacts of master plan developments. As well, future influences of an environmental nature on the master plan will be described, and EIA's view of sustainability will be explained in the context of the master plan.

## 12.2 Airport Environmental Setting

Edmonton International Airport is located within Leduc County, a rural, northern prairie locale. Major highways border the northern (Highway 19) and eastern (Highway 2) property boundaries. Located to the east is Nisku Industrial Business Park that accommodates 400 diverse businesses. Immediately southeast is the thriving City of Leduc with more than 17,000 residents.

A tributary of Whitemud Creek, which traverses the west side of the airport property, is one of the most sensitive environmental features at EIA. Much of the collected airport storm water is discharged into the tributary, and portions of the tributary have rare, undisturbed riparian areas. Any development along the western side of the property must consider and accommodate the water body, which will include involvement of regulator and licensing authorities.

Regarding off-airport property, water bodies such as Telford Lake and Saunders Lake are located two kilometres southeast and five kilometres east respectively, and can influence bird activity in the region. Also, the Leduc and District Regional Sanitary Landfill has been in close proximity to both lakes and the airport for the past 25 years, and there are plans to expand the landfill in the future.

## 12.3 Environmental Management System

EIA has an established Environmental Management System (EMS) to ensure that operations and activities at the airport are conducted in an environmentally responsible manner, and to ensure that EIA's environmental policies are satisfied. The basic framework of the EMS is compatible with the requirements of ISO 14001 to assist in achieving continual improvement in environmental performance and to ensure EIA consistently meets environmental, regulatory, community and employee obligations. ERAA's Environmental Policy is shown in [Exhibit 12.1](#).

### **Environmental Management Plan (EMP)**<sup>15</sup>

The Environmental Management Plan is the guidance document that forms the foundation for the system. The EMP documents and articulates the factors that must be considered to adequately address environmental risks specific to Edmonton International Airport.

### Exhibit 12.1 | Environmental Policy

ERAA management of EIA shares the Canadian public's interest in protecting, preserving and enhancing the environment. ERAA is committed to operating and maintaining all airports within their purview in a safe and environmentally responsible manner, while sustaining the health and safety of employees, travellers and the public at large.

EIA will exercise due diligence in providing an environmental assessment of applicable projects and activities to mitigate environmental impacts. EIA will strive to meet or exceed all applicable federal and provincial acts, regulations, codes and guidelines, and municipal bylaws related to environmental issues.

## 12.4 Current Environmental Aspects

### Environmental Laws & Regulations

Since aviation is federally regulated and EIA is located on federal property, federal acts, regulations and guidelines are applicable. EIA will continue to comply with federal regulations as they apply to the airport. In the absence of federal regulations, provincial regulations are followed to ensure environmental due diligence. When a provincial standard is used in a program, it is explicitly stated. Through lease agreements with tenants, EIA encourages all to abide by applicable environmental acts, regulations and guidelines. Airport tenants are expected to understand their environmental responsibilities and adhere to the environmental requirements of their leases.

### Programs and Standard Operating Procedures

Environmental aspects are based on organizational activities and specific operations, and consider the current airport environment. Aspects that are deemed to have a significant impact (e.g. regulatory requirements) become the basis for the development of environmental programs.

### 12.4.1 Environmental Impact Assessment

All development projects are reviewed to ensure environmental impacts are identified and avoided or mitigated during the planning, design, construction, and operation phases as required by the current environmental policy. Environmental impacts are not limited to a change of air, soil or water quality, but also extend to impacts on personal safety, social well being, wildlife, habitat and aesthetics. Internal departments are involved in reviews from the project initiation stage to project completion, to encourage sustainable development.



### 12.4.2 Aircraft Noise

EIA strives to maintain a good working relationship with nearby communities while balancing demands for a safe, convenient, and 24-hour service airport. EIA is involved in many noise management initiatives to mitigate noise impacts in communities and to educate the airport's stakeholders on airport activities.

Noise concerns received from the public are acknowledged and investigated internally. Details of noise concerns are correlated with the flight tracking system Airport Noise Monitoring System (ANOMS) and responses are provided to complainants.

The Noise Advisory Committee functions as a forum for information exchange between the airport and the local communities, and as an education vehicle on airport operations and aircraft noise. The committee membership includes elected local municipal council members, local municipal administrative staff, resident representatives of surrounding municipalities, airport authority members, airline and NAV CANADA representatives. The committee reviews noise concerns and determines when a noise abatement procedure should be recommended. Recommended noise abatement procedures are reviewed by the Canadian Aviation Regulatory Advisory Council and is approved by Transport Canada.

Understanding that land-use planning is the most effective tool for ensuring long term land-use compatibility for airports and the regions that they

Exhibit 12.2 | Airport Vicinity Protected Area (AVPA)

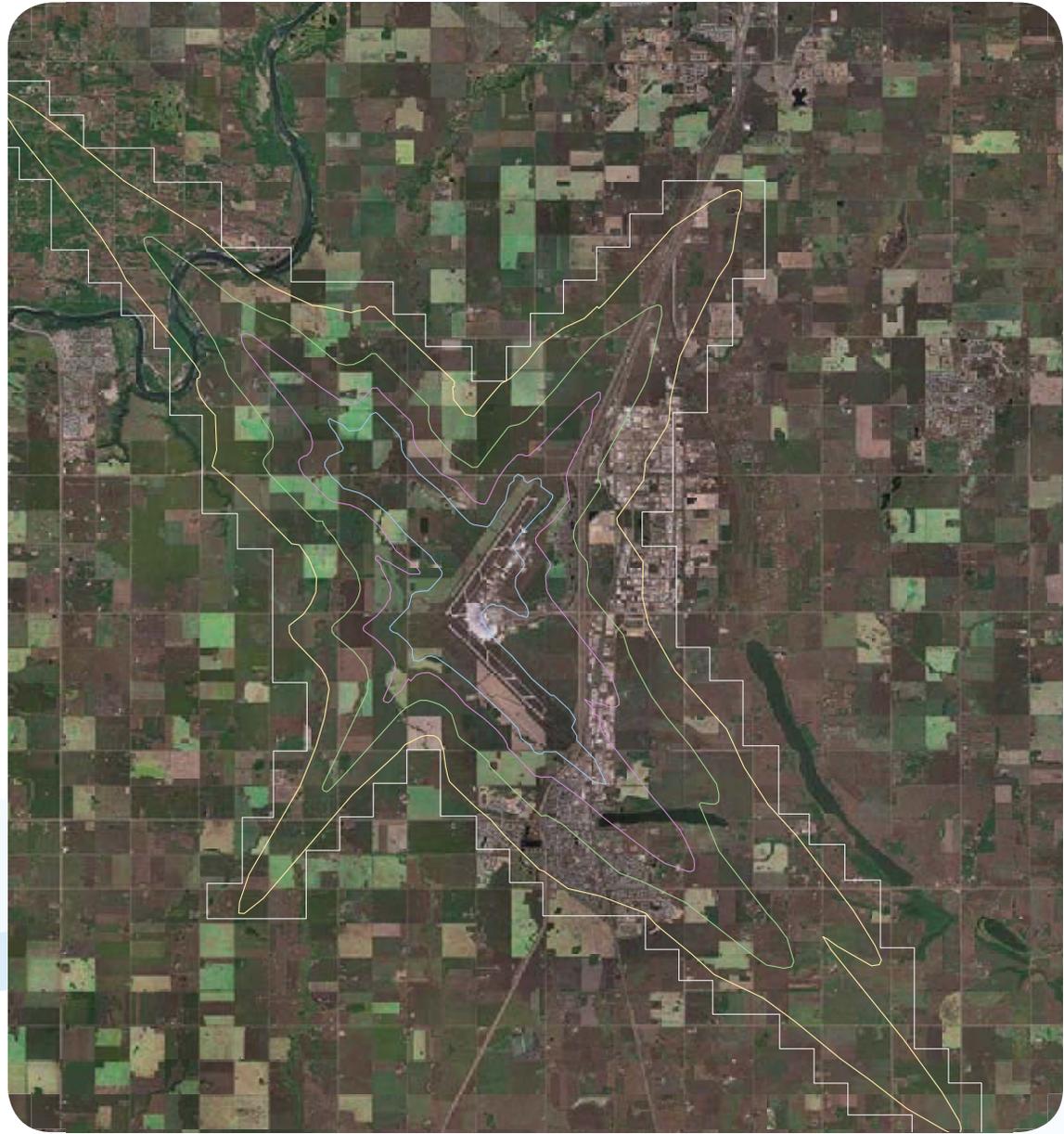
serve, the provincial Airport Vicinity Protection Area Regulation (Exhibit 12.2) (AVPA) ensures that only compatible land uses are located around the airport so that the use, enjoyment and security of the surrounding developments are not jeopardized by current and future airport operations. Compatible land uses are determined through the “Noise Exposure Forecast” (NEF) land-use planning tool created by Transport Canada, and the requirements of the AVPA are built into municipal planning processes through their statutory plans.

### 12.4.3 Water Quality

There is always a risk that substances commonly associated with airport operations can enter the stormwater system, sanitary system or groundwater as pollutants. To ensure compliance with water quality regulations, licenses and guidelines, and to provide background information on developing water quality issues, airport water systems are sampled and monitored on a regular basis.

#### Aircraft De-icing

A unique practice that is specific to airports is the activity of aircraft de-icing. As a thin layer of ice on an aircraft can be a major safety hazard, glycol is sprayed on aircraft as a de-icing agent to remove ice accumulation and as a preventative measure to stop further formation of ice. The de-icing season at EIA typically starts in October and ends in May. Glycol application is performed by the airlines or by contractors to the airlines.



□ 40 NEF □ 35 NEF □ 30 NEF □ 25 NEF □ AVPA



The introduction of glycol into natural ecosystems can negatively impact water quality. Glycol exerts a high biochemical oxygen demand on a receiving water body, which means it could deplete the water's oxygen supply. This creates toxic conditions for aquatic life. Therefore, it is imperative that de-icing activities are effectively managed, mitigated and monitored, to prevent significant environmental impacts from this important safety-related practice.

For operations at EIA, up to 20 per cent of the glycol used to de-ice aircraft is collected by vacuum trucks and deposited in the sanitary system for transfer to the regional sanitary sewer system. The stormwater flow from the main operating area is treated through EIA engineered wetlands before being discharged to a tributary of Whitemud Creek.

The wetlands are managed by EIA under a license from Alberta Environment. This license allows EIA to operate the subsurface wetland treatment facility and requires a monitoring program for both surface water and groundwater.

#### 12.4.4 Hazardous Substances

Diverse hazardous substances are present in airport building systems, and some are required for the day-to-day operations of an airport. To minimize the potential for environmental impact, regulatory compliance and proper management is necessary.

Building systems can contain ozone depleting substances, which are compounds that can destructively interact with the earth's ozone layer. EIA complies with applicable federal regulations and minimizes the potential ozone depleting effects of the regulated substances by recovering, containing and monitoring the use of materials and equipment.

Fuel is used in ground support and airfield maintenance vehicles, and aircraft. As it is a hazardous substance, the management of fuels is a critical aspect from a regulatory and environmental perspective. Contamination of soil and water resources can occur through the leakage of storage tanks, or by spillage at refueling areas. Environmentally sound storage tank management and compliance with regulatory obligations prevents the release of substances into the environment, and risk control measures have been implemented to minimize the impacts of releases.

The more often hazardous substances are handled and used, the greater the possibility for accidental release into the environment. Hazardous material spills can have severe impacts on the environment by contaminating the soil and making their way into the ground water or other water supplies. A hazardous material spill emergency plan and procedures are necessary to minimize any detrimental effects of substances released to the environment, and to human health.

### 12.4.5 Wildlife

A significant risk to the operation of an airport is the presence of wildlife, and birds in particular. A Transport Canada aviation regulatory requirement demands that wildlife risks are inventoried and managed, taking into consideration the current airport environment, to reduce the potential for wildlife/aircraft interactions.

A variety of measures for controlling wildlife are used, with emphasis on proactive activities whenever possible. These include habitat manipulation and management, food source control or elimination, agricultural practice restrictions, and the prevention of developing wildlife-friendly areas on airport property. Innovative techniques are explored to address issues with specific species, like the capturing, banding and relocation of birds of prey off airport property.

## 12.5 Regulatory Influences

As noted earlier in section 12.3, EIA complies with federal and/or provincial regulations as appropriate.

The planning, design, construction and operation of facilities at EIA must consider and abide by these regulations, where appropriate.

The operations and development of facilities at EIA are normally guided by the following federal and provincial acts:

### **The Canadian Environmental Assessment Act – CEAA**

The *Canadian Environmental Assessment Act* (CEAA) is federal legislation that applies to any federal authority, or federal lands, that is undertaking a development or other related project.

The main purpose of CEAA is to ensure that projects are considered in a careful and precautionary manner to ensure that such projects do not cause significant adverse environmental effects. It also encourages responsible authorities to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and a healthy economy, and allow participation of the public in a timely and meaningful manner.





## 12.6 Key Environmental Aspect Influences

### 12.6.1 Impact Assessments

Airport-specific revisions and additions to CEAA have been discussed for many years, and may influence the master plan over its planning horizon, depending on the nature of the changes made (responsible authority, approval abilities, project timing, assessment scope and exclusion allowances). However, two benefits are available from having a living master plan document. The first is that commenting on the assessment of proposed changes to regulation will be less complicated as impacts will be readily determined. Secondly, it will be more straightforward to plan and incorporate the actual assessment work into the delivery of projects.

Currently, the addition of a third runway would trigger an environmental impact assessment under CEAA. That assessment would address the impacts of the proposed development on Whitemud Creek, air quality, area wildlife, archeological and historical resources, aircraft noise, the surrounding area highway network, groundwater and wastewater treatment, along with handling of hazardous waste and top soil during construction.

### 12.6.2 Noise

The current provincial Airport Vicinity Protection Area Regulation (AVPA) was established in 2006, and is required to be reviewed every ten years. As it was developed with a planning horizon of 2040, it still adequately reflects the compatibility restrictions necessary to allow the airport to continue to grow well beyond the master plan horizon. The regulation is due for review in 2016, at which time EIA and the municipalities will have the opportunity to table best practices and identify future planning issues.

#### The Federal Fisheries Act

This act is a federal law intended to conserve and protect fish habitat and prevent pollution of fisheries water and is one of the most important constraints in airport projects affecting watercourses.

#### The Federal Species at Risk Act – SARA

This act protects species and migratory birds in Canada that have been assessed and determined to be at risk of extinction. The act requires that prior to development, construction, or alteration of the land, species at risk must be considered.

#### The Canadian Migratory Bird Convention Act – MBCA

This act is administered by the Canadian Wildlife Services of Environment Canada.

#### Alberta Environmental Protection and Enhancement Act

The *Alberta Environmental Protection and Enhancement Act* is the provincial equivalent to the Canadian Environmental Protection Agency (CEPA), of which some regulations apply to EIA due

to the nature of the impacts to be managed. The regulations include:

- Pesticide Regulation
- Substance Release Regulation
- Wastewater and Storm Drainage Regulation
- Release Reporting Regulation
- Dangerous Goods Transportation and Handling Regulation

#### Alberta Wildlife Act

Potential harm to wildlife and the loss of wildlife habitat requires provincial approval.

#### Alberta Historical Resources Act

This act requires a Historical Resource Impact Assessment on land that may be affected by the activity and where historical resources are discovered.

#### Alberta Water Act

The alteration of a watercourse requires approval from Alberta Environment.

For example, guidance information from Transport Canada that suggests the 30 NEF contour currently used to identify compatible areas for residential development may be changed to the 25 NEF contour, in response to the expectations of community residents. If that change was to occur, the impacts to the surrounding communities could be significant, and require detailed study and evaluation to understand the implications and possible mitigative measures.

### 12.6.3 Air Quality

While air quality doesn't have the same profile in the Edmonton Region as in some other regions with major airports, the development of provincial regulations must be monitored and considered as development proceeds under the master plan.

An air quality inventory and emissions model is being prepared in 2010-2011, to inform future efforts and to allow the prediction of future airport emissions impacts on the surrounding municipalities.

### 12.6.4 Water (Glycol and Stormwater)

As the property develops, EIA will be faced with new challenges in dealing with water quality from stormwater, and especially relating to the handling of glycol-contaminated stormwater. The environmental management plan has assisted in identifying those challenges (capacity, flow control, quality expectations, regional planning issues), and some activities are already underway to address those issues.

For example, EIA is establishing, through a provincial Water Act approval, the allowable discharge rates for stormwater off the airport property, which will be used to predict and plan for future stormwater management facility requirements. This approval will also ensure EIA is compatible with long term development in the region, from a stormwater management perspective.

### 12.6.5 Hazardous Substances

Various regulations help reduce the risks of hazardous substances from new developments having a negative impact on the environment, like those for ozone depleting substances (from HVAC systems) or for fuel tank systems (storing petroleum products). Compliance is an expectation in tenant leases, and enforcement of these regulations rests with Environment Canada.

The potential influences of hazardous substances are already being addressed through the design of new airport facilities which incorporate features intended to reduce the potential for environmental impact (oil/water interceptors for areas where fueling occurs). As the airport continues to grow, to maintain a balance of environmental impacts, innovative approaches may be required.

## 12.7 EIA's View of Sustainability

### 12.6.6 Wildlife

EIA uses a variety of strategies and tools to ensure a balance between airport operations and wildlife. As development progresses, the amount of natural land will be impacted, in turn reducing the airport's attractiveness to wildlife and bird species.

Perhaps the greater long term challenge will be the off-site wildlife impacts associated with development by the adjacent municipalities. Land-use planning guidance material from Transport Canada is available and has been used to a certain degree, and the Federal Zoning Regulation for EIA also assists in regional land-use planning. However regional stormwater management creates a significant risk that may exceed incompatible land-use development. Recent discussions with Leduc County and the City of Leduc show promise in attempting to prevent stormwater management facilities surrounding the airport property from creating aviation safety issues for EIA.

Edmonton International Airport's commitment to sustainability is characterized in a corporate core value – "We are committed to responsibly managing all of our assets to advance our region's environmental stewardship, social well-being and economic prosperity". This statement lends comparison to the concept of three pillars of sustainability – financial, environmental and social.

From its core value, EIA recognizes that effective planning will enable and drive development to occur on the airport lands that will provide for a sustainable, environmentally-balanced airport facility, to the financial and social benefit of the Edmonton Region. Therefore, plans must consider both the sustainability impacts of an expanding airport, identify barriers and opportunities in addressing issues, and create balanced, innovative solutions to those issues. The use of sustainable development principles will ensure the success of the facility in the long term.

There are a variety of examples that were identified during the development of the EMP, which help to illustrate how sustainable development principles will help overcome future growth challenges:

- "Highest/best" land-use planning for various functions and activities
  - Airport best practices were used to designate areas for particular land uses that will deliver the most efficient use of those spaces against airport needs
  - Development opportunities can be more readily matched to designated lands
  - Appropriate landscaping approaches will be aligned with EIA's requirements and sensitivities
  - Usage compatibility with municipal neighbors can be planned in advance of new off-site development
- Development guidelines to encourage high performance buildings
  - Establish development standards for new facilities around an appropriate criteria like Leadership in Energy and Environmental Design (LEED)



- Planning for transportation and utility corridors
  - Allocate and preserve lands to support future expansion
  - Minimize conflicts in future planning and development
  - Planned phased infrastructure expansion based on requirements
  - Include public transportation considerations
- Co-generation
  - Creates power on-site, using best available and most efficient technology from fuels with low emission properties (natural gas)
  - Offers the ability to create a campus-wide heating system that could provide heat to future airport developments
  - As power availability is a regional issue, the ability to self-generate power creates a more attractive environment for business investment
  - Allows the opportunity to control costs for tenants, and/or generate revenues as a potential utility provider
- Future grey water system for the airport property
  - Naturally collected (rain-water)
  - Provides alternative water source for compatible uses
  - Reduces potable water usage and infrastructure needs
  - Reduces stormwater management infrastructure needs
- On-site waste management facilities
  - Allocates dedicated areas for waste and recycling transfer
  - Reduces waste transfer infrastructure requirements at new facilities (Terminal)
  - More efficient on-site waste handling
  - Potential for reduced costs for tenants by timely and appropriate management of wastes
- Future centralized de-icing facilities
  - Focused facility reduces infrastructure costs
  - Sited for maximum aircraft operational efficiency
  - Offers environmental benefits through enhanced spent fluid collection
  - Planned and sized for expansion as demand increases
- Future fuel farm transportation connections
  - Switches from the current system of trucking in all fuel, to use of a rail connection to a pipeline to storage on site
  - More efficient, and safer transport and delivery
  - Greater safety and security in the supply chain and reduced carbon emissions
- Airport vicinity protection area regulation
  - Creates land-use compatibility with surrounding municipalities
  - Allows for growth of both the municipalities and the airport, while being considerate of regional interests
  - Land-use planning best practices can be introduced during review cycles





Southwest

Southeast

Northeast

HIGHWAY N

# 13.0 Land-Use Planning



## 13.1 Land-Use and Protection of Lands

### Introduction

Land use in the vicinity of the airport includes commercial, industrial and residential development. Commercial and industrial land uses surrounding the airport should be compatible with airport operations. However, residential land use under and adjacent to arrival and departure paths of the airport could be subject to the impact of aircraft noise.

Airport Zoning Regulations are enacted by the federal government to prohibit land uses outside the airport property which are hazardous to aircraft operations. Prohibitive land uses under these regulations include garbage dump locations and food waste landfill, among others.

In Canada, provincial governments have the right to enact legislation and regulation for land-use planning except on lands owned by the federal government. Such legislation and regulation allow orderly development of lands by municipal levels of government through the Statutory Plan and other planning instruments.

This chapter describes the land uses and the proposed land-use plan for Edmonton International Airport. The proposed developments to 2035 presented in the earlier sections are summarized here and the rationale that has influenced the determination of land uses is highlighted.

## 13.2 Airport Setting

The land area for Edmonton International Airport has total of 2,800 hectares. At present the airport has 744 hectares of land developed which is projected to increase to 2,323 hectares by 2035 when traffic reaches 13 MAP. The commercial and industrial land development is expected to increase from 52 hectares in 2009 to 746 hectares by 2035.

The international airport is well served by a major highway and regional road network. To the east, Highway QEII provides access to the airport's developed land areas. To the north Highway 19 and to the south Highway 65, provide a link to the surrounding communities of Leduc County and the City of Leduc.

The developments planned at EIA over the next 25 years take into consideration protection of environmentally sensitive lands and surrounding residential communities.

## 13.3 Existing Airport Areas and Adjacent Land-Use

### 13.3.1 Existing Airport Areas

The development of the airport has been governed by the orientation of the two existing runways. Runways 12-30 and 02-20 have provided the boundary for development of areas included in Airport South and Airport North. The area identified in [Exhibit 13.1](#) as Airport Northeast is bounded by Runway 02 -20 and by Highway 19 is being currently used mainly for non aviation purposes. The area bounded by Runway 12 30 and Highway 65 is identified as Airport Southwest. The sizes of land areas under these four groupings are:

**Airport Northeast** contains 650 hectares of land and is defined by Runway 02- 20 and the terminal approach roads west of Highway QE II. This area includes current air cargo and business aviation facilities. In addition, Airport Northeast contains the current terminal parking area (not including the JetSet lot) and all terminal approach roads. The Golf Course and the area allocated for non-aeronautical commercial development for the 16 MAP horizon lie, within the limits of Airport Northeast.

**Airport Southeast** has 530 hectares of available land and includes the current passenger terminal building. Airport Southeast is bound to the west by Runway 12-30, to the north by the terminal approach roads, and to the east Highway QEII. Airport Southeast contains Apron Expansion 2012 and is currently under development for new air cargo development. It is also home to the new JetSet lot, airside operations building, the 25 kV substation, and the future fuel farm. Other non-aeronautical land developments are also included in Airport Southeast for the 12 MAP horizon.

**Airport Northwest** is bound by Runway 02-20 to the east, Highway 19 to the north and Range Road 254 to the west. This is best known as the area dedicated to the future business airpark and the terminal reserve area. Future Runway 11-29 would be located entirely within Airport Northwest. It is important to note that 165 hectares of the land described in Airport Northwest is currently not owned by ERAA, EIA or Transport Canada. The construction and operation of future Runway 11-29 will require 165 additional hectares of land.

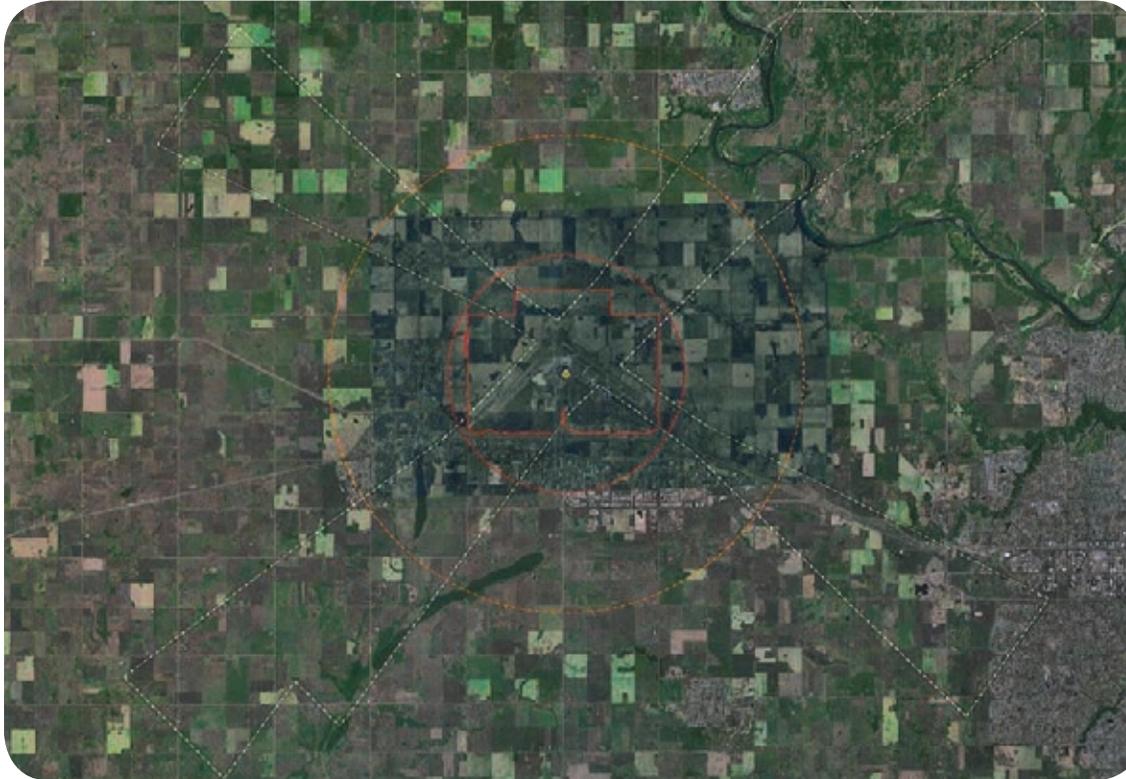
**Airport Southwest** contains 890 hectares of available land and is best known for containing reserved land for Port Alberta developments. It is bordered to the east by Runway 12-30, to the south by 65th Avenue and to the west by Range Road 254.

**Exhibit 13.1 | Airport Quadrants**



■ Northeast   ■ Northwest   ■ Southeast   ■ Southwest

## Exhibit 13.2 | Airport OLS with Third Runway



- Airport Boundary
- - - Existing Approach Path and Obstacle Limitation Requirements
- · - · - Outer Surface 4 kilometre Radius (Mandatory)
- · - · - · - Extension of Outer Surface to 8 kilometre Radius
- ⊕ Aerodrome Reference Point 712 metres per ASL  
UTM NAD 83 Ground Coordinates: 5909801.663N,  
327945.663E (Conversion Factor 0.999855)

## 13.3.2 Adjacent Land Use

The integration of a major international airport within the surrounding urbanized environment is a major consideration in the development of a long term land-use plan. The municipal statutory plans and regulations for compatible land use around airports form the basis of ensuring harmonious growth of both the airport and its neighbors. The adherence to these policies, guidelines and regulations ensures airport operations do not adversely impact adjacent land uses and the adjacent area land uses do not unduly restrict airport operations.

### 13.3.2.1 Airport Zoning Regulations

The airport and the surrounding communities are subject to airport zoning that are included in the Edmonton International Airport Zoning Regulations. The federal government is responsible for enacting federal Airport Zoning Regulations that establish height restrictions and buffer zones both on and off airport property. These regulations provide protection and clearance for aircraft flight paths, navigational and telecommunication equipment and air traffic control visibility.

Transport Canada, in cooperation with Edmonton International Airport has developed Airport Zoning Regulations for lands in the vicinity of the airport based on the three-runway layout under consideration. These regulations allow EIA to work with the Province of Alberta and the surrounding county, city and township governments to ensure protection of the airport zoning surfaces for the planned three runway operations. ([Exhibit 13.2](#))

### 13.3.2.2 Land Use in the Vicinity of Airport

In addition to these regulations, guidelines for land use in the vicinity of airports are published by Transport Canada (TP 1247E). These guidelines are only enforceable through cooperative planning between airport authorities and surrounding communities.

The Transport Canada document TP1234E “Land-Use in the Vicinity of Airport” discusses land-use planning guidelines for land surrounding airports to taking in account the impact of aircraft noise. These guidelines provide a basis for ensuring compatibility between airport operations and the surrounding area land use.

### 13.3.2.3 Noise measurement and Noise Exposure Forecasts

In airports around the world, the most effective way to minimize noise impacts on surrounding residential communities has been through proper land-use planning. Edmonton International Airport has been actively involved with the Province of Alberta and communities of Edmonton, Leduc Beaumont, Calmar, Devon and Leduc City in the development of Statutory Plans by providing information on aircraft noise impacts on the respective communities.

From the community’s perspective, aircraft noise is an element of significant concern. Transport Canada’s guidelines recommend that no residential development should be permitted inside the 30NEF (Noise Exposure Forecast) contour line. For newly developed airports, the restriction on residential development could be extended to 25 NEF. This extension is based on new research which indicates residents are gradually becoming more environmentally sensitive.

The impacts of aircraft noise on surrounding lands are captured through an instrument called Noise Exposure Forecasts (NEF) or Noise Exposure Projections (NEP) contours. These NEF and NEP contours are prepared using a computer model developed and used by Transport Canada. For EIA, a composite contour for long term operation of the airport with the three runway operation is shown in [Exhibit 13.3](#).

The zoning regulations and land-use planning guidelines together provide:

- Height restrictions for safe operations of aircraft, radar and telecommunications signals and protection of line of sight from the Air Traffic Control Tower
- Buffer zones around airport facilities to minimize aircraft noise impacts
- Restrictions for buildings and structures, to prevent interference with navigational aids
- Land-use restrictions for non-compatible land uses related to bird strike hazards

Exhibit 13.3 | Third Runway Noise and AVPA



### 13.3.2.4 Airport Vicinity Protection Area

When Edmonton International Airport opened in the early 1960s, the lands were well removed from urbanized areas and were surrounded primarily by agricultural lands. Over the last 40 years, the oil-and gas-led economic growth has resulted in the gradual urbanization of lands surrounding the airport.

As detailed in Chapter 2 the population of Edmonton and the Capital Region is anticipated to grow by approximately 30 per cent the next 20 years. In addition the municipalities closest to EIA, such as Leduc County, Beaumont, Calmar, Devon and Leduc City are expected to experience population growth in excess of 50 per cent in the same time period.

As indicated, if land uses adjacent to the airport are properly planned, constraints to airport operations and the loss of economic benefits to the region can be reduced or eliminated. For ease of implementation of the land-use guidelines, EIA has defined an Airport Vicinity Protection Area (AVPA) based on the 30 NEF line of the composite contour. The AVPA follows natural and man made boundaries to approximate the location of the 30 NEF contour line. The objective of this AVPA is to provide a static and predictable long-term protection for the benefit of air carriers, communities and developers ([Exhibit 13.3](#)).

## 13.4 Airport Land Use

### 13.4.1 Description of Airport Land Uses

The Airport land-use plan is a guide for land-use control. The land-use descriptions itemized below describe the general nature of potential uses and are not exhaustive.

#### Airport Reserve

This land use is designated to accommodate - runways, taxiways, aprons, airside access roads, air traffic navigational aids, de-icing and airside support facilities and meteorological structures. Generally this area will be restricted to movement of aircraft or compatible uses.

#### Air Terminal Building Reserve

This land-use designation is reserved for the future terminal expansion of the existing terminal facilities and related uses. Included in this land use are:

- Passenger and cargo processing
- Short and long term parking
- Retail concessions
- Car rental
- Hotel development
- Administrative Offices
- Utilities and services
- Road network and Groundside facilities

The planned passenger terminal expansions will be located in this area as warranted by future demand.

#### Airside Development

The land designated for Airside development are areas immediately adjacent to existing and future runways.

The uses generally included in this category are:

- Airline services such as aircraft fueling
- Flight kitchens
- Air cargo and related storage and support services
- Courier services
- Government inspection and regulatory facilities
- Aircraft hangars
- Emergency response services

#### Airport Reserve Protection

The area is intended to protect the location of the potential runways by restricting long-term development and uses. The uses proposed would be interim or temporary.

#### Development

The lands designated for development are for an integrated mixed use/retail/commercial/ office development and other facilities such as convention/exhibition facilities, hotel/motel and casino/entertainment facilities.

#### Low Intensity

These lands are not intended for intensive development in the short to medium term, to ensure minimal impacts on adjacent uses. The preferred uses in this category are farming and recreational uses such as golf.

#### Airport Reserve Protection/Development

This land use designation allows protection of lands for long-term development plans following the construction of the third runway, and associated taxiways and de-icing facilities.

## 13.4.2 Factors Affecting Airport Development

### Land Availability

Edmonton International Airport is the largest airport in Canada with 2,800 hectares available for airport and other supporting developments. The current developed land at the airport represents approximately 25 per cent of the available land. The development plans for EIA as presented in this master plan will result in a significant increase in developed lands.

### Land Acquisition

The developments as proposed in this plan require acquisition of approximately 165 hectares of land on the west side of Highway 19. This area is required for new runway construction and installation of associated navigational aids. However, it should be noted that the amount of land required will only be accurately determined during the project environmental assessment process.

### Operational Influences

Developments proposed must conform to Aerodrome certification standards. The constraints on facilities siting and height, and the materials to be used for building construction are governed by: runway zoning surfaces, control tower line of sight, and electronic zoning associated with navigational and telecommunication equipment. These restrictions provide an envelope for airport facility siting and development.

### Land-Use Hierarchy

The available land on EIA property has been allocated according to the following hierarchy:

- Environmentally sensitive lands – creeks and storm water retention areas
- Airfield – runways and taxiways
- Airside support – control tower, navigational aids, fire hall, de-icing facilities
- Passenger terminal, parking facilities and public transit
- Air cargo
- Business aviation
- Airport support – hangars, GSE, aircraft maintenance
- Other commercial development

### MOU with Leduc County

The ERAA entered into a Memorandum of Understanding (MOU) with Leduc County in 1992. The MOU has been subsequently amended. To incorporate the Transport Canada Land-Use Plan amendment #5 of January 2008 (Appendix A), the amendment to MOU is under discussion between Leduc County and EIA.

This MOU ensures that the developments on the airport lands are consistent with the County Statutory Plan and other planning instruments. Compliance with this MOU ensures the health, safety and welfare of the local residents and building structures.

The revisions to the land-use plan to incorporate developments proposed in this master plan will require consultation with Leduc County.

### City of Leduc

City of Leduc and Leduc County periodically undertake an Inter-municipal Development Plan (IDP) to reflect mutual and individual interests of the two municipalities. EIA is a key stakeholder in this policy planning study. The IDP focuses on the impacts of infrastructure developments including airport developments, highway improvements and public transit.

The preparation of a new IDP to deal with future land uses will require close coordination with future development plans and the resultant land-use plan at EIA.

City of Leduc is also preparing in consultation with EIA an Integrated Airport Land-Use Plan.

### Capital Region Board

In 2008 the Government of Alberta established the Capital Region Board (CRB) to develop a Capital Region Growth Plan. The Capital Region Growth Plan consists of four key areas:

- A comprehensive, integrated regional land-use plan
- A regional intermunicipal network transit plan
- A plan to coordinate geographic information services
- A plan for social and affordable housing.

## 13.5 Proposed Development Concepts

EIA is included as one of the priority growth areas in the Capital Region Growth Plan. EIA will continue to collaborate with the Capital Region Board.

### Future Proposed Land-Use by Land Use Categories

The land use for proposed 16 MAP development by 2035+ is shown with the land-use categories described above.

Exhibit 13.4 | Future Land-Use Plan



- |   |   |  |
|---|---|--|
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; border: 1px solid black; margin-right: 5px;"></span> A: Airport Reserve | <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFB6C1; border: 1px solid black; margin-right: 5px;"></span> B: Airside Redevelopment | <span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black; margin-right: 5px;"></span> C: Development                |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> D: Low Intensity   | <span style="display: inline-block; width: 15px; height: 10px; background-color: #E06699; border: 1px solid black; margin-right: 5px;"></span> E: Air Terminal Reserve  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #808000; border: 1px solid black; margin-right: 5px;"></span> F: Airport Reserve Protection |

### Development Staging:

It is anticipated that with the growth in demand, the development of passenger terminal building to meet passenger demand – 12 MAP in 2030 and 16 MAP in 2035 and beyond will take place along with construction of the third runway by 2030 to meet the projected aircraft movements. Based on the development proposed in the master plan, the following development stages are anticipated over the next 25 years period.

**Stage 1** – Development of airside infrastructure that will support air cargo, airport support buildings and business aviation facilities in the Airport Northwest and Airport Southwest areas.

**Stage 2** – Initial Port Alberta developments in Airport Southwest to support multi-modal cargo handling and distribution facilities

**Stage 3** – Commercial developments to support airport business and amenities in the area will be undertaken to generate additional non-aeronautical revenues for EIA

**Stage 4** – Business aviation developments north of Runway 02 -20 will be undertaken as BA traffic grows at EIA

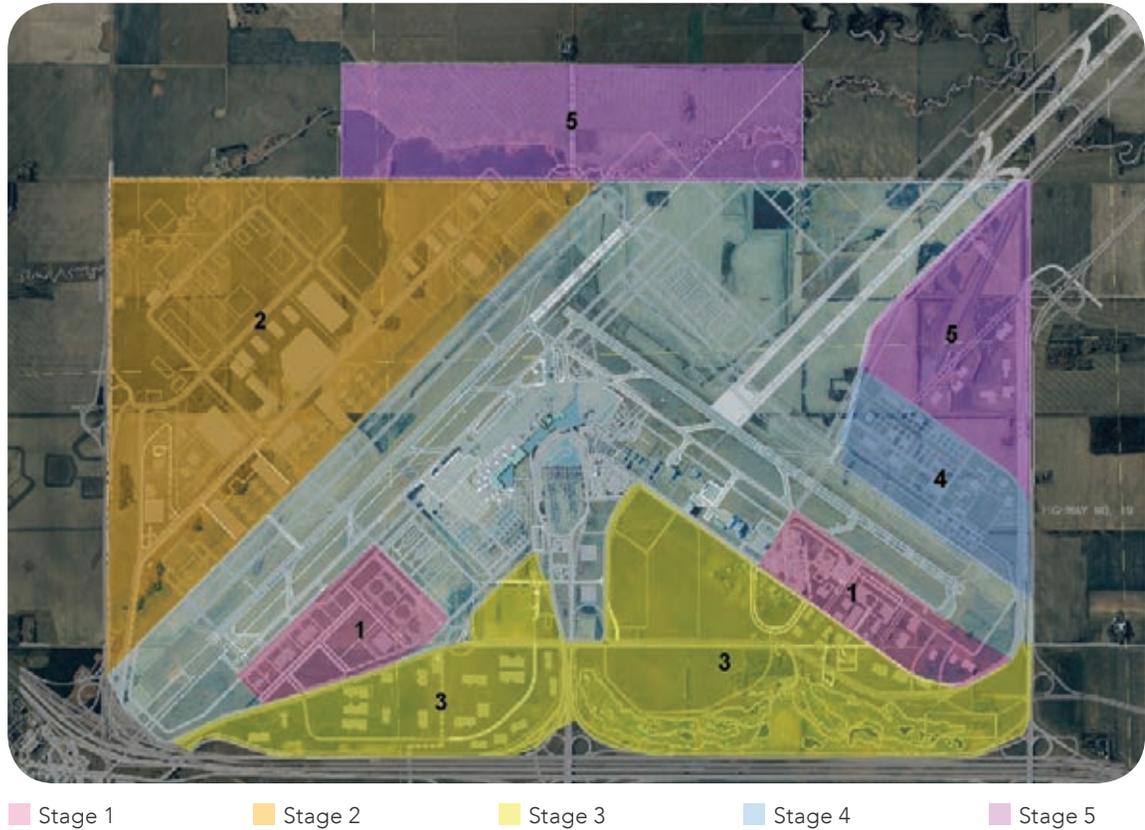
**Stage 5** – Areas identified under this stage are anticipated to be developed when the airport infrastructure is fully developed to meet its long term demand for passengers, cargo and aircraft movements ([Exhibit 13.5](#)).

## 13.6 Land-Use Summary

The airport lands are summarized by land-use as:

- Airport Reserve (690 hectares)
- Air Terminal Building Reserve (130 hectares)
- Airside Development (370 hectares)
- Airport Reserve Protection (480 hectares)
- Development (990 hectares)
- Low Intensity (210 hectares)

Exhibit 13.5 | Development Stages







# Appendix

## Draft Master Plan 2010 – 2035



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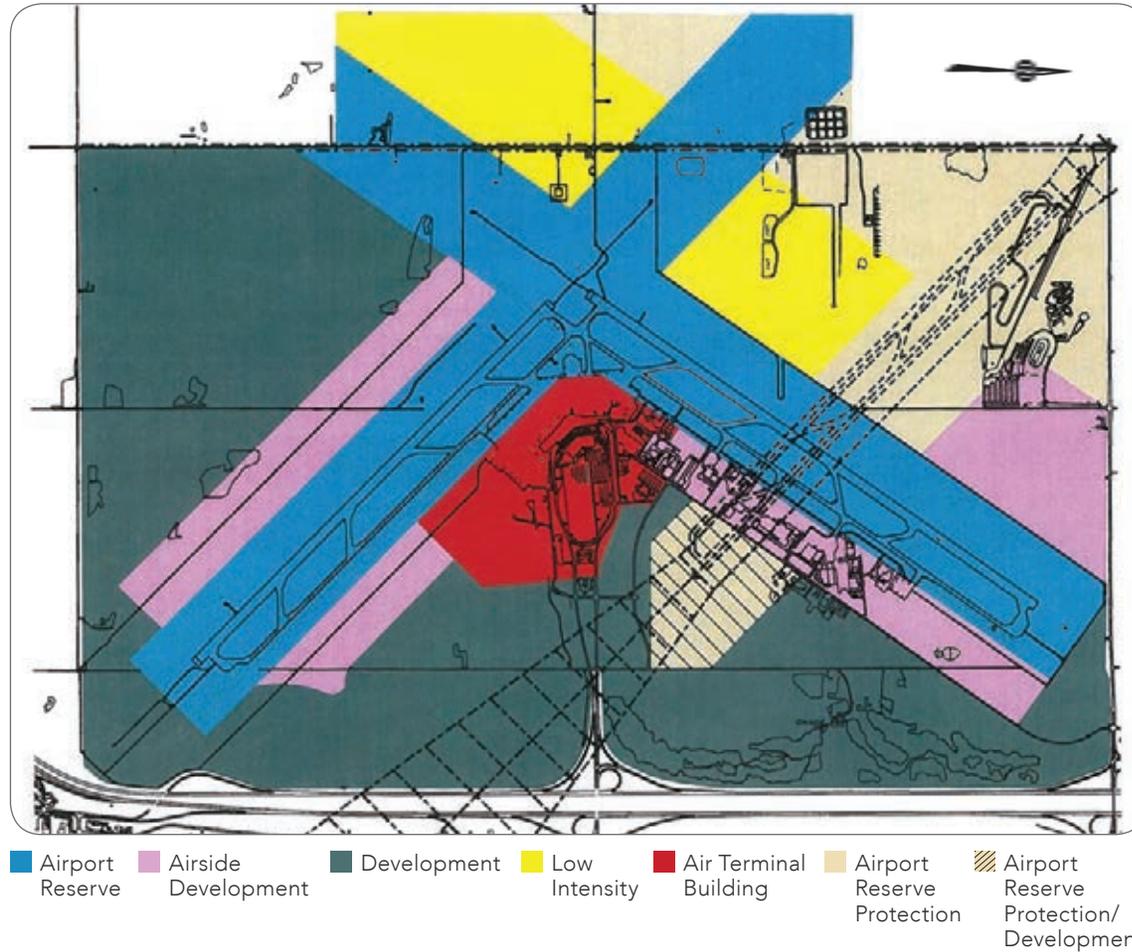
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# APPENDIX A

EIA Land Use Plan – January 2008

**Edmonton International Airport, Schedule "C", Approved Land Use Plan  
(Restatement Including Amendment #5)**



The following is intended as a general description of appropriate land uses and developments for the areas shown on the Approved Land Use Plan. The uses described and listed are to illustrate the general nature of the potential uses and should not be viewed as an exclusive or exhaustive list of uses. The boundaries shown on the Approved Land Use Plan are not fixed but should be interpreted with some flexibility based on more detailed future plans that are to be prepared.

The Approved Land Use Plan is a guide for land use control. Development for the uses described below may be subject to the approval of the County of Leduc pursuant to provisions of an agreement entered into between the County of Leduc and the Edmonton Regional Airports Authority under Section 14.02 of this Agreement.

**Area 1: Airport Reserve**

Airport reserve land will be generally restricted to uses involving the movement of aircraft or compatible uses. No structures will be allowed except those directly related to necessary aviation installations. Uses will generally be runways, taxiways, aprons, aircraft maneuvering areas, air traffic control facilities, navigational aids, airfield maintenance facilities, emergency response facilities, landing systems, meteorological systems, and associated essential utility services. Properly managed agricultural operations will be allowed.

### **Area 2: Air Terminal Building Reserve**

This area will be reserved for the terminal complex, future terminal expansion or redevelopment, and uses which require close proximity to the terminal complex. Development will be limited to uses which directly relate to supporting the movement of passengers, baggage, vehicles, cargo, aircraft, and related passenger services. Uses could include air terminal buildings, which may, among other uses, include restaurants and general retail, airport and airline administrative offices, car rental offices, parking, emergency response services, ground transportation facilities, hotels, public and employee parking, and utilities and servicing. Uses other than air terminal buildings are not to be located so as to restrict long term terminal building expansion.

### **Area 3: Airside Development**

This area will be primarily for those uses which require or benefit from a combination of groundside and airside access. These uses generally include aviation related uses such as air cargo, aircraft parking, corporate aviation operations, aircraft sales and leasing, aircraft service and repair, sale and manufacture of aircraft parts, charter operations, courier services, custom brokers, emergency response services, fixed base operations, fuel facilities, government inspection and regulation facilities, hangars, flight training, recreational flight services, warehouses and storage facilities, customs brokers, aviation related manufacturing, flight kitchens, and utilities and services.

### **Area 4: Airport Reserve Protection**

This area is intended to protect the location of the potential future third and fourth runways by restricting development and uses. No structures are permitted except those directly related to necessary aviation and meteorological installations. Other interim uses, such as farming, athletic or recreational facilities, storage, parking, and similar uses, may be allowed. All uses should be considered interim or temporary.

### **Area 5: Development**

The intent of development land is to provide sites for development which can benefit from a location in proximity to the airport or are appropriate for this area having regard to the overall land-use context of an international airport in a metropolitan setting. In addition to those uses generally allowed in Area 3, Airside Development, this area will include a broad range of commercial uses (such as equipment rental, retail, fleet services, eating and drinking establishments, automotive sales and repair, light industrial, general industrial, hotels, motels, parking, personal service shops, professional offices, warehouses, etc.); basic service uses (such as utility services, government services, protective and emergency services); and community, recreational and cultural uses (such as community indoor and outdoor recreation services, exhibition and convention facilities, private clubs, public parks, natural science exhibits, and tourist campgrounds).

### **Area 6: Low Intensity**

These lands are not intended for intensive development in the short to medium term. Until detailed plans are developed, uses will be restricted to low intensity uses which will have minimal impact on adjacent uses or the airport. Farming is a favoured use. Other low intensity recreation uses, such as golf courses may be permitted. Permanent or long-term uses are allowed provided their approval is made in the context of their potential long-term impact on future airport development and adjacent land-use plans.

### **Area 7: Airport Reserve Protection/ Development**

This Area is designated to recognize the potential third runway location and to allow for the future accommodation of building development. Development that does not impede the third runway, when required, may take place on these lands. The Airport Reserve Protection designation may only be removed upon the approval of both the Board of Directors of the Edmonton Regional Airports Authority and the Federal Minister of Transport.



# APPENDIX B

EIA Development Plan Concepts  
2010 – 2035



EIA 16 Million Annual Passengers Horizon 2035+





# APPENDIX C

List of References

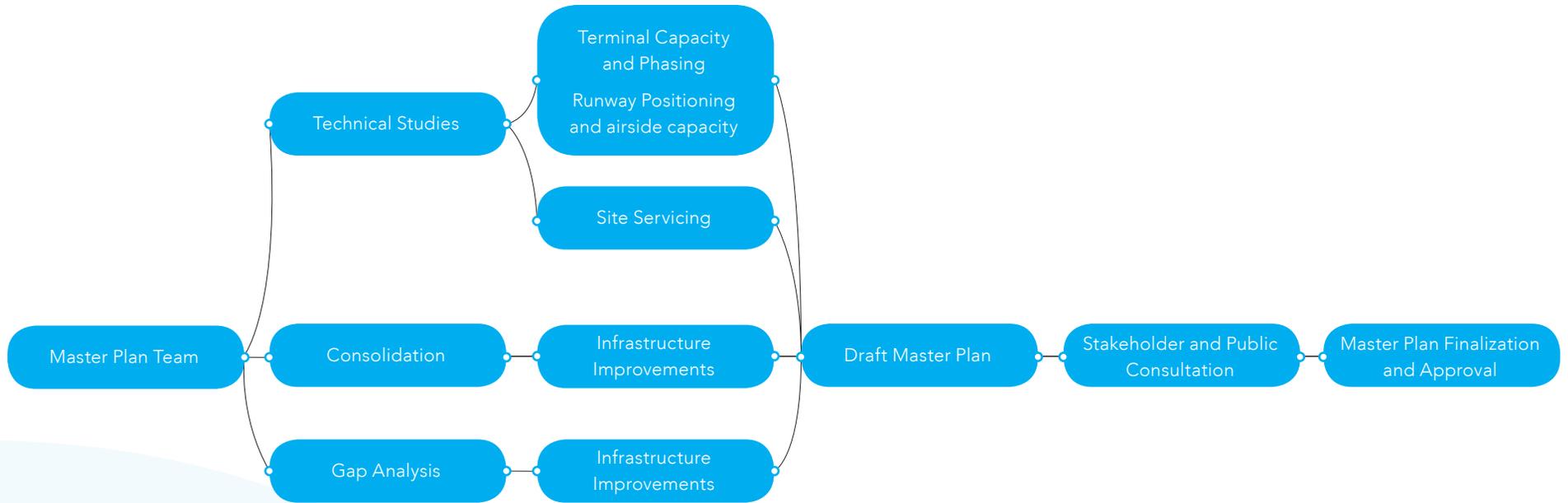
1. EIA – Economic Impact Study (Intervistas, 2009)
2. EIA – Air Terminal Building Schematic Design Submission (Stantec, 2009)
3. EIA – Terminal Capacity & Phasing Study (IATA, 2008)
4. EIA – Runway Positioning & Airside Capacity Report (IATA, 2008)
5. EIA – General Aviation Infrastructure Plan (LPS AVIA, 2009)
6. EIA – Summary of Ground Transportation Requirements for 9, 12, & 16 Million Annual Passengers (AECOM, 2010)
7. EIA – LRT Corridor Protection Study (Delcan, 2010)
8. EIA – Fuel Handling & Distribution (AECOM, 2009)
9. EIA – In flight Catering Study (AECOM, 2009)
10. EIA – Common Use De-icing Facilities Study (AECOM, 2009)
11. EIA – Snow Storage Study (AECOM, 2009)
12. EIA RFF, Bomb Compound and Services & Maintenance Facilities (AECOM 2009)
13. EIA Waste Management (AECOM, 2009)
14. EIA - Transportation and Site Servicing Study (AECOM, 2010)
15. EIA – Environmental Management Plan (AECOM, 2009)
16. Stakeholder and Public Consultation Report (JGR Communications, 2011)



# APPENDIX D

## Master Plan Development Process

## Master Plan Development Process





# APPENDIX E

## Master Plan Consultation Process

## Master Plan Consultation Process

Draft Master Plan →	Internal Consultation →	Stakeholder Consultations →	Public Consltations →	Feedback Analysis and Report
<p>Developed based on technical reports, studies, demographic information</p>	<p>Master Plan Committee</p> <p>Senior Management Team</p> <p>Executive Management Committee</p>	<p>EIA agencies (NAV CANADA, Transport Canada, RCMP, etc.)</p> <p>EIA business partners (airlines, tenants, etc.)</p> <p>Municipalities - administration and political</p>	<p>Draft Master Plan and Executive Summary posted online for public feedback</p> <p>Public Open House and Presentation</p>	<p>Review and analysis of feedback to identify any major gaps (none discovered)</p> <p>Consultation Report presentation and final report submission to Executive Management</p> <p>Consultation Report submitted to Board of Directors as part of Master Plan approval process.</p>



## What is a Master Plan?

EIA is growing because the Edmonton region is growing.

The updated Master Plan will help us map out the next 25 years of EIA's development.

The Master Plan gives us the framework to sustainably develop EIA facilities and infrastructure.

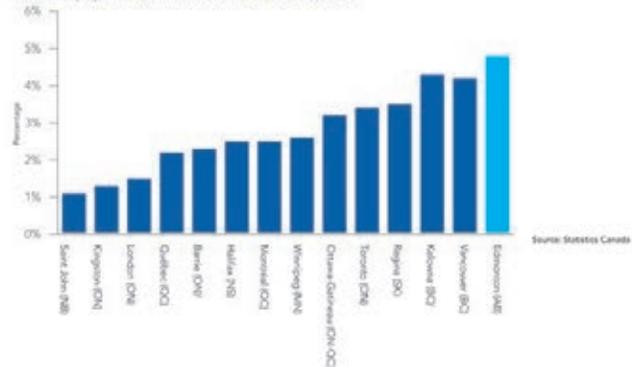
The Master Plan is a "living document" so we can adapt to changing economic, social, environmental and regulatory conditions.

EIA published its first Master Plan in 1999. We will submit the updated Master Plan to Transport Canada in 2011.



## Edmonton Capital Region is growing

Exhibit 2.2 | Population Growth Rates Statistics Canada 2001-2006



The Edmonton Capital Region is expected to attract approximately 500,000 more people by 2035.

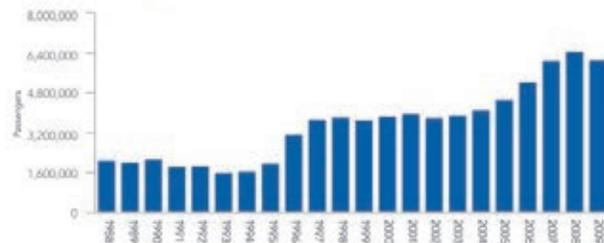
Edmonton is welcoming more immigrants every day, which stimulates demand for more international destinations.

Edmonton's GDP growth is set to rise faster than the Canadian average, posting 4 per cent growth rates over the next four years and 3.2 per cent 2015-2019.



## EIA will grow with the Edmonton Capital Region

Exhibit 3.1 | Annual Passenger Traffic: 1995 – 2009



EIA has experienced tremendous growth over the past 15 years, and now serves more than six million passengers annually.

We expect to serve nine million passengers by 2020 and 13 million by 2035.

EIA has over 50 non-stop domestic, U.S. and international destinations – the best air service in the region’s history.

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## Expansion 2012

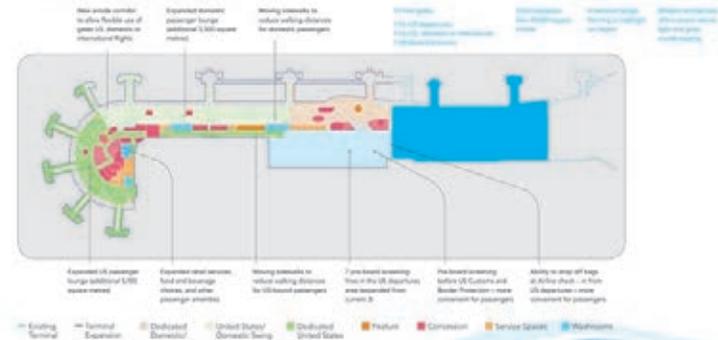
Exhibit 3.18 | New Air Traffic Control Tower and EIA Offices (COT)



Expansion 2012 is a \$1 billion investment in meeting our region’s air-service needs.

See our brochure for the complete overview.

Exhibit 4.1 | Terminal Expansion 2012 Departures Level



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## Third Runway

Exhibit 5.11 | Third Runway Location



A third runway was first considered in EIA's 1999 Master Plan.

A third runway parallel to the existing 12-30 is the most efficient option to meet the demands of EIA.

EIA will need a third runway by 2030 based on current air movement forecasts.

## Air Terminal Building Future Expansion

Exhibit 6.10 | Terminal Capacity - Number of Stands

Stands	5.0 MAP 2019	5.7 MAP 2023	9 MAP 2029	12 MAP 2031	15 MAP 2035+
Domestic Contact Gates	10	11	18	36	42
Transborder Contact Gates	6	12	11	14	20
International Contact Gates	1	3	1	1	2
Subtotal	17	26	30	51	64
Ground Loaded Stands	13	13	13	0	0
Remote Parking Stands	16	30	30	30	30
<b>Total</b>	<b>46</b>	<b>69</b>	<b>73</b>	<b>81</b>	<b>94</b>

EIA 2020-2030 - 12 Million Passengers



EIA 2030-2035 - 15 Million Passengers



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## Cargo

Exhibit 7A | Air Cargo Volume Forecasts

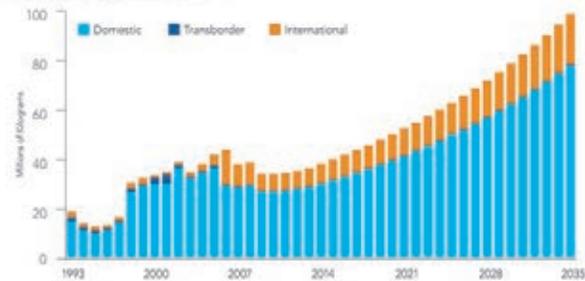


Exhibit 7A | Airport North and South - Cargo Facilities



Exhibit 7B | Proposed Port Alberta Development Plan



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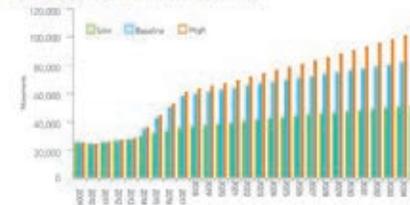
## Business Aviation

Business aviation (BA) includes corporate flights, small aircraft charter flights, flight training, air ambulances, pipeline inspection flights, non-scheduled services to remote camps and crop spraying aircraft.

Exhibit 8.2 | Existing Business Aviation Facilities - EIA



Exhibit 8.4 | Annual Business Aviation Movements



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## Parking and Ground Transportation

Exhibit 911 | EIA Parking Plan 2025 and beyond (16 MAP)



Exhibit 913 | LRT Alignment Options



Exhibit 914 | Projected Vehicular Traffic Impact on the Regional Road Network

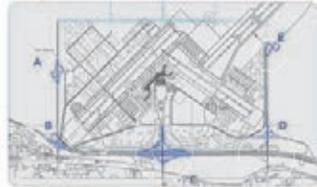


Exhibit 915 | Preferred High Speed Rail Corridor



## Airline Support Facilities



Airline support facilities include:

- Catering
- Fuel
- De-icing
- Snow removal
- Rescue and firefighting

EIA's fuel storage has recently expanded by 200%.

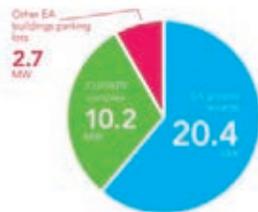
EIA's fuel storage facility currently handles 235 million litres of fuel each year.

New fuel facilities will be required as EIA grows.



## Utilities

Exhibit 11.2 | Electrical Power Demand – 2035



The power chart indicates a large increase in groundside tenant power over the next 25 years.

Exhibit 11.5 | Proportion Of Gas Used On The Site – 2035



- EIA's current and anticipated growth increased the demand for power, gas, water and telecommunications services.
- EIA has built a new 25-kilovolt substation to supply Expansion 2012 projects.
- EIA is developing a Transportation Utilities Corridor to route utilities to EIA.

Exhibit 9.13 | TUC Cross Section



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## Environment and Sustainability

Exhibit 12.2 | Airport Vicinity Protected Area (AVPA)



40 NEF 35 NEF 30 NEF 25 NEF AVPA

### EIA Core Value

"We are committed to responsibly managing all of our assets to advance our region's environmental stewardship, social well-being and economic prosperity".

The provincial Airport Vicinity Protection Area Regulation (AVPA) ensures that only compatible land uses are located around the airport.

EIA operates with a rigorous Environmental Management Plan.

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## Land-Use Planning

Exhibit 13.4 | Future Land-Use Plan



- A. Airport Reserve
- D. Low Intensity
- B. Airside Redevelopment
- E. Air Terminal Reserve
- C. Development
- F. Airport Reserve Protection

The airport lands are summarized by land-use as:

- Airport Reserve (690 hectares)
- Air Terminal Building Reserve (130 hectares)
- Airside Development (370 hectares)
- Airport Reserve Protection (480 hectares)
- Development (990 hectares)
- Low Intensity (210 hectares)

## TOPICS OF INTEREST

Highway #19	Transit	Forecasting	LEED	Community	Technology	Design
<ul style="list-style-type: none"> <li>Interested in outcome</li> <li>Impact on local communities and businesses</li> <li>Happy to see realignment and building before 2030</li> </ul>	<ul style="list-style-type: none"> <li>Forward thinking on plan of transit</li> <li>Before 2030 it would be great to see ETS scheduled transit within next 24 months</li> <li>I feel that any plans uniting the LRT with EIA would be ridiculous were it not stationed at the terminal or at the very least, at the parkade.</li> <li>Possible future development of a high speed rail system between Edmonton and Calgary</li> </ul>	<ul style="list-style-type: none"> <li>Passenger estimates seem conservative</li> </ul>	<ul style="list-style-type: none"> <li>Impressed</li> </ul>	<ul style="list-style-type: none"> <li>Proposed interchange location and discussion with adjacent land owners</li> </ul>	<ul style="list-style-type: none"> <li>Additional focus on new technologies would be beneficial</li> </ul>	<ul style="list-style-type: none"> <li>Incongruent design between EIA and proposed hotel</li> <li>Poorly aligned pedestrian overpasses from the parkade</li> </ul>

## TOPICS OF INTEREST

Third Runway	Waste Management and Sustainability	Port Alberta	Potential 4th Runway	Road Network	LRT Alignment	AVPA
<ul style="list-style-type: none"> <li>Curious on Land Acquisition Strategy for lands impacted</li> </ul>	<ul style="list-style-type: none"> <li>Long-term garbage disposal &amp; waste reduction</li> <li>Water consumption</li> <li>Waste consumption</li> <li>Use locally grown foods</li> <li>Responsible forestry</li> </ul>	<ul style="list-style-type: none"> <li>Consider rail strategy with Port Alberta</li> </ul>		<ul style="list-style-type: none"> <li>H2/65 Ave interchange</li> <li>Where is funding coming from?</li> </ul>	<ul style="list-style-type: none"> <li>LRT/HSR as a transit corridor</li> <li>Usage forecast</li> </ul>	<ul style="list-style-type: none"> <li>Will it decrease in size?</li> <li>Impact on Growth of Leduc City</li> </ul>

### Overall Observations/Feedback

Recurring theme on *collaboration*. Most stakeholder groups, such as The City of Leduc, emphasized collaborating when in the research and development phase of The Draft Master Plan.





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