Prince George Airport

Master Plan Update

Final Report | April 13, 2023

Acknowledgment

The Prince George Airport Authority respectfully acknowledges the unceded ancestral lands of the Lheidli T'enneh, on whose land we live, work, and play.

Executive Summary

Purpose and Stakeholder Engagement

The intent of the Master Plan Update is to act as a comprehensive planning guide from 2023 until 2043, with the goal of providing pragmatic, evidence-based, and attainable guidance to position the Airport to meet aviation demand, create employment, and generate greater economic benefits for the region. Prince George Airport is a National Airport System (NAS) facility owned by Transport Canada and leased to the Prince George Airport Authority (PGAA). The Airport property consists of a total of approximately 734 hectares including 280 hectares of Provincial Reserve Lands. Under the terms of the lease agreement, the PGAA is obligated to update the Master Plan at regular intervals. Prior to this document, the Master Plan for Prince George Airport was last updated in 2014.

The Master Plan Update focuses on a twenty-year period across three planning horizons: short-term (1-5 years), medium-term (6-10 years), and long-term (11-20 years).

The Master Planning process was advertised by the PGAA through social media, website content, and by word of mouth beginning in early January 2023, and extending through mid February 2023. Stakeholder input for the Prince George Airport Master Plan Update was facilitated through two primary means: Outreach surveys with residents and businesses; and direct face-to-face and virtual interviews with Airport stakeholders and key regional representatives. HM Aero developed and hosted an online survey using SurveyMonkey to gather the perspectives of Airport users, including residents and businesses. A total of 1,929 responses were submitted with 1,333 being complete responses received during the one-month online survey period, including 1,312 resident surveys (98% of all responses) and 21 surveys representing businesses or organizations (2%). Of the businesses, 14 of the 21 respondents identified as being located off-Airport (67%), with the remaining 7 respondents being businesses based at the Airport. Cumulatively, the 21 business respondents represent a total of 1,013 employees, or an average of 48 employees per respondent business.

Additionally, HM Aero and the PGAA collaboratively developed a list of project stakeholders and meetings were convened with interested parties in-person, virtually, or through the receipt of written comments. Direct consultations were completed with 68 individuals representing 43 different stakeholder groups. A response rate of more than 85% was achieved when considering direct stakeholder outreach attempts to the 50 organizations contacted and resulting successes.

Airport Profile

Prince George Airport's certificate was issued in 2011 and is held by the PGAA. The current obligations imposed through the CARs on the certificate holder are numerous, and the Airport is subject to the regulatory oversight of Transport Canada. The origin of the current operational and governance structure emerged in 1994 with the release of the federal National Airports Policy that called for the integration of Prince George Airport into the NAS. The PGAA was incorporated in 2000 and became responsible for the oversight of the Airport in 2003 – the last facility to be transferred under the National Airports Policy. In the years following 2003, the PGAA advanced numerous initiatives including:

- Master Plans in 2007 and 2014;
- An internationally recognized award-winning terminal building expansion and redevelopment project, completed in 2005;
- The $33M extension of Runway 15-33 from 7,400 ft. to 11,400 ft. to facilitate larger cargo and passenger airliners, completed in 2009; and
- The construction of a 25,000 ft^2 cargo warehouse in 2015.

The role of Prince George Airport encompasses the primary activities that are currently enabled by its operations. The availability of the Airport itself does not define its role – this is characterized by the degree to which the facility enables the services of its end users, and includes passenger, cargo, and emergency services; aerial work and flight training; business and corporate aviation; and recreational aviation. The Airport currently supports the operations of 6 scheduled or recurring charter passenger air carriers, 2 dedicated scheduled air cargo carriers, 9 fixed and rotary-wing aircraft operators providing aerial work, air taxi, and / or charter services, and 13 organizations that provide supporting services that enable the core aeronautical activities of the facility.

The annual activity of the Airport can be explored through three primary metrics:

1. The number of enplaned / deplaned passengers travelling on air carriers;
2. The tonnage of air cargo processed; and
3. The number of aircraft movements that occur.

Passenger levels increased from 376,000 enplaned / deplaned passengers in 2009 to a high of between 497,000 and 506,000 passengers between 2017 and 2019. Passenger levels increased by a total of 32% from 2009 to 2019, or an average of 3.2% per year. The passenger activity impacts of the public health measures and decreased travel stemming from the onset of the COVID-19 pandemic in Canada in 2020 were pronounced. In 2020, passenger activity decreased by 64% from 2019, reaching 177,00 passengers – a level not seen since before 1989. Passenger activity exhibited a modest 14% growth rate in 2021 versus 2020, recovering to 41% of 2019 levels. Performance was stronger in 2022, with a 66% increase from the previous year and passenger activity recovering to 74% of 2019 levels.

Between 2008 and 2015, cargo throughput (the tonnage of cargo loaded and unloaded) ranged between 800 and 1,500 metric tons annually and averaged 1,100 metric tons per year. From 2012 to 2015, cargo throughput decreased from a maximum of 1,500 metric tons to 800 metric tons per year. Throughput decreased further to a low of approximately 600 metric tons in 2019 and 2020, before increasing modestly in 2021. Based on the most recent historical data from 2018 to 2021, an average of 1.7 metric tons is handled at the Airport daily.

An average of 41,000 aircraft movements occurred at the Airport annually between 2008 and 2019, ranging between lows of 38,000 movements in 2012 and 2017 and highs of between 42,000 and 44,000 movements in 2010, 2014, and 2018. Overall activity fluctuated on a cyclical basis, with significant increases in 2009-2010, 2012-2013, and 2017-2018 followed by multi-year decreases. As a result of these repeated cycles of growth and decline, the general trend in total aircraft movements between 2008 and 2019 was that of dynamic stability, with an overall flat trend. Total movements decreased by 16% in 2020 with the onset of the COVID-19 pandemic and a decrease in itinerant movements; however, movements increased by 13% the following year.

Development and Growth Opportunities

In addition to the current role the Airport identified above, development and growth opportunities have been identified to increase revenues, while also improving its contribution to the regional economy.

Scheduled Passenger Air Services

The online survey included a series of questions to gauge the priorities of catchment area residents and businesses with respect to passenger air services. Among the 1,312 resident respondents that self-reported data on their air service habits, approximately 7,300 individual trips by air are typically generated on an annual basis, or an average of 5.6 trips by air per household per year. The 21 business respondents identified that they cumulatively generate approximately 700 trips by air in a typical year, or an average of 32.8 trips by air per business per year.

New routes to additional destinations not currently served from Prince George and decreased ticket prices were the highest prioritized options among resident survey respondents. In contrast, service by additional airlines and increased frequencies on existing routes were identified as being of a lower priority. Similar priorities were expressed by respondents to the business survey; respondents in this category assigned additional direct destinations and decreased ticket prices a higher priority, while service by new airlines and additional frequencies were prioritized lower. Respondent priorities regarding more direct destinations were further explored through an analysis of routes of highest interest by residents. Based on a keyword analysis, Mexico, Las Vegas, Toronto, Hawaii, and Seattle were identified as being of the highest priority from Prince George.

Additionally, opportunities related to current and likely future service offerings by incumbent carriers, regional connectivity, summer and winter services, and the impacts of aviation industry shortages and network adjustments were reviewed to identify potential opportunities as well as related threats. Based on the review, the following opportunities and objectives have been established with respect to passenger air service development by the PGAA:

1. Increased Hub Connectivity
2. Increased Regional Connectivity
3. Winter Seasonal Vacation Service Offerings
4. Summer Seasonal Tourism Service Offerings
5. Energy Resource Scheduled Charter Traffic.

Air Cargo and Logistics

Currently, the Airport functions well in its ability to support the time efficient inbound and outbound demand for air cargo, which is primarily limited to low daily throughputs of high value of time goods. Most regional cargo movement demands continue to be met primarily by road and rail. Prince George is understood to be a point of aggregation for domestic raw materials (e.g., lumber or pulp), with exported forest products being consolidated into containers in the city. This is consistent with the cargo activity served by the terminals of the Port of Prince Rupert, with the facility having dedicated facilities for dry bulk goods (e.g., coal, coke); grain products (e.g., wheat, canola); liquid bulk propane, biofuel wood pellets, and intermodal import and export containers. Air cargo serves a negligible role in the movement of high volume / weight, lower value of time dry and liquid bulk goods (e.g., coal, grain, propane, and biofuels), with the transportation of such goods ideally suited to intermodal sea and rail operations. As such, these products are unlikely to have a direct relationship to the Airport or air cargo demand – this consideration is reflective in the fact that as of 2020, over 95% of cargo moving through the Port of Prince Rupert is transported by rail, benefiting from CN Rail's extensive continental connectivity.

The primary opportunity that may arise for the Airport from an air cargo demand perspective is the development of an inland freight distribution hub for high value of time e-commerce products. In this conceptual model, an e-commerce distributor would benefit from opportune sea and rail access from production centres in Asia and develop a distribution hub in Prince George. Products would then be shipped by air on an as-required, time efficient basis from Prince George. Therefore, this would primarily be focussed on inbound cargo flows and onward distribution, as opposed to the reverse process.

Other Aviation Opportunities

Four additional aviation opportunities have been identified and evaluated in the Master Plan Update.

1. **Aviation Commercial:** The Airport currently has a strong and diversified base of aviation commercial tenants, ongoing collaborative relationships with these parties will be essential to ensuring their continued success and economic productivity at Prince George. Prospective aviation commercial business opportunities that may be explored by the PGAA, including Maintenance Repair, and Overhaul organizations, air taxi/charters, Fixed Base Operators, Flight Training Units, and additional commercial operators.
2. **Emergency Services:** The continued support and expansion of the Airport's emergency services role is recommended throughout the planning horizons of the Master Plan Update, with the following opportunities potentially being applicable for the facility: continued support of the British Columbia Wildfire Service, construction of new air carrier hangar facilities depending on the results of the British Columbia Emergency Health Services fixed and rotary-wing air ambulance contracts, and the potential relocation of Prince George Search and Rescue's facilities to the Airport.
3. **General Aviation:** The primary opportunity anticipated is the opening of lands for the construction of new small and larger general aviation hangars through multi-year land lease agreements, creating a consistent source of revenue in addition to activity-based aeronautical fees.
4. **Trans-Pacific Technical Stop:** The requisite airfield and supporting infrastructure is in place and the Airport continues to be geographically competitive along great circle routes between Asia and North America. Although this opportunity is not viewed as being a significant driver of activity or economic stimulation within the 20-year horizon of the Master Plan Update, the support of such services will yield modest revenues to PGAA when they occur.
5. **Flight Training:** The post-pandemic resurgence of air travel demand coupled with the accelerated retirement or exit of skilled professionals from the industry between 2020 and 2022 has brought the supply of qualified pilots to the forefront. Regional air carriers have experienced challenges with attracting and retaining pilots, as hiring by larger airlines places a drain on talent. Guardian Aerospace has indicated that their base locations allow them to leverage competitive training pricing and a lower cost of living compared to other urban centres in B.C. in attracting international students. Consultations also indicate local interest in developing a high-volume professional flight training facility, potentially catering to international students.

Non-Aviation Opportunities

The core aeronautical activities at Prince George Airport are complementary to a range of associated non-aeronautical uses, including light industrial activity, transportation and logistics, warehousing, and service commercial uses.

The core development area near the terminal building offers a unique opportunity through the business exposure provided to arriving and departing passengers (over 500,000 passengers historically and forecast to increase significantly to approximately 1M passengers) as well as the significant number of employees working throughout the Airport campus. Pending market interest, the core area could be developed as a service commercial and entertainment hub anchored by of businesses that are synergistic with the activities in this area, including gasoline and vehicle service stations, restaurants, overnight accommodations, and retail and entertainment uses. The potential development of light industrial uses that are complementary to the air cargo role may represent one of the highest potential opportunities in the on-Airport light industrial category. However, this is tied to a significant growth in cargo activity at the Airport, the timing or likelihood for which cannot reliably be predicted.

Activity Forecast

Based on the passenger air carrier service market assessment, historical trends in passenger activity, and the forecast continued growth of the catchment area population, a passenger activity forecast has been prepared for the Airport. Passenger activity is forecast to increase from a baseline of 365,000 passengers in 2022 to:

- Over 600,000 passengers in 2029 (612,000);
- Over 700,000 passengers in 2033 (703,000);
- Over 800,000 passengers in 2037 (807,000); and
- Over 900,000 passengers in 2041 (927,000).

The passenger activity forecast assumes that, given the strong rebound in demand exhibited in both 2021 and 2022, the return to pre-pandemic 2019 activity levels occurs in 2023. Past 2023, a constant annual growth rate of 3.53% is assumed across all planning horizons, based on the historical annual rate of change between 2008 and 2022. This is comparable to the 2014 Master Plan Update's assumed annual growth rate of 3.41% and is consistent with historical and projected increases in the catchment area's population, further driving local demand.

Unlike the passenger activity forecast, the degree to which air cargo volumes can be reliably projected is impacted by the gap in data availability between 2015 and 2018 and the decline in cargo throughput despite the increase in potential explanatory variables. As was the case with the 2014 Master Plan Update, a specific air cargo forecast has not been prepared. For financial modelling purposes, it is assumed that air cargo flights and throughput will continue at an average of approximately 800 annual flights and 700 annual tonnes of throughput.

The aircraft movement forecast guides planning requirements for the airfield, including the Airport's runways, taxiways, aprons, and supporting infrastructure. Itinerant movements are forecast to increase from a baseline of approximately 27,000 movements in 2021 to 34,000 movements in 2033 and 42,000 movements in 2043 at the end of the medium and long-term planning horizons, respectively. The Master Plan Update assumes that local movements stay consistent at approximately 13,000 movements per year based on the annual average between 2008 and 2021. Taking local and itinerant movements together, the total number of aircraft movements anticipated at the Airport is estimated to increase from a baseline of 38,000 movements in 2021 to approximately 47,000 movements in 2033 and 54,000 movements in 2043.

Infrastructure Rehabilitation

A thorough assessment of airside system and groundside infrastructure was conducted while on-site, supported by high-resolution aerial photos as well as previously completed studies and reports. The assessment included runways, taxiways, aprons, access roads, terminal building, the Administration and Operations Centre, groundside parking, roads, and utilities, and recommended a year for replacement and estimated the respective project costs. The assessment found that the costs of the rehabilitation of existing infrastructure (e.g., pavement overlays) to be estimated at approximately $24 M in the short-term, $15 M in the medium-term, and $29 M in the long-term for a total of approximately $68 M in rehabilitation projects within the Master Plan Update time horizon. An additional $17 M is assigned to mobile asset replacement within the 20-year planning period.

Airport Development Plan

Beyond rehabilitation projects, the Master Plan Update recommends strategic infrastructure development over the 20-year horizon. The asset recommendations provided within the Master Plan Update are based on their assessed conditions as of 2022. Recommendations are made for access, servicing improvements and the establishment of 3 distinct development areas: the West Development Area, East Development Area, and North Development Area.

A series of developments and reserves are recommended to improve access to the Airport, provide higher capacity servicing, and ensure the safe and efficient operation including a new arrival road accessing the core are from Boundary Road, constructing a fuel truck access between Apron I and Apron V, connecting municipal services and utilities to Boundary Road, identifying reserves for future parallel taxiways, and the establishment of Runway End Safety Areas (RESAs). It is recommended that lower-cost options, such as reducing the declared distances of Runway 15-33, be explored to reduce the short-term financial implications of RESAs.

The East Development Area consists of Aprons I and II; Taxiway D; Terminal Building, the Administration and Operations Centre, Hill Aviation hangar, the main parking lot, and Beacon, Altimeter, and Satellite roads. Recommended development includes:

- Terminal building expansion (short-term);
- Parking lot expansion (medium-term);
- Construction of a dedicated Cargo facility east of Apron II (short-term);
- Designation of a Non-Passenger Screening of Vehicle Checkpoint adjacent the dedicated cargo facility (medium term);
- Construction of a partial parallel AGN V taxiway west of Runway 15-33 and south of Taxiway D (long-term);
- Preparation of airside development lots (long-term);
- Identification of a Jet A fuel facility reserve; and
- Preparation and servicing of the Service Commercial and Entertainment Hub (medium-term)

The West Development Area consists of Aprons III, IV; and the Air Tanker Apron, Air Tanker Road, and Aviator Road. Recommended development includes:

- Preparation of GA development lots (short-term);
- Identification of an Avgas fuel facility reserve;
- Construction of an AGN II taxiway (medium-term);
- Construction of a partial parallel AGN IIIB taxiway south of Runway 06-24 (medium-term);
- Preparation of Aviation Commercial lots (medium-term); and
- Identification of Groundside Commercial lots (as demand dictates).

The North Development Area is comprised of Apron V, Taxiway A, and lands south and southwest of the apron. Recommended development includes the preparation of a 250 m x 135 m commercial lot immediately west of the apron for a future aviation user in the short-term. Additionally, a groundside commercial lot is proposed immediately south of the aviation use lot. The Airport Development Plan proposes that a new access road connecting these lots to Boundary Road be constructed. Additionally, the closure of Boeing Road is recommended in the short-term.

The capabilities of the terminal building were evaluated against two scenarios: 1) Current Peak Hour, accommodating 1 Boeing 737 MAX 8, 2 Dehavilland DHC 8-400s, and 2 Beech 1900D; and 2) Potential Future Peak Hour, whereby an additional DHC 8-400 flight is added and one B1900D flight is upgauged to a DHC 8-100 (50 seats). Both scenarios evaluated the terminal building's functional areas assuming a 90% passenger load factor on all flights. Recommended improvements to the terminal building to support the current peak hour include expansion of the pre-board security queuing area, pre-board security screening area, secure departure holdroom, arrivals area, and installation of additional screening equipment. The expansion of the terminal from 4,436 m^2 to 4,913 m^2 is recommended in the short-term. The expansion to 5,356 m^2 to accommodate the potential future peak hour is anticipated to be event triggered.

Growth Strategies

Informed by the opportunities identified and in support of infrastructure development and rehabilitation, business development and growth strategies have been identified. Unique differences exist in how each of the opportunities identified herein are best pursued, and the potential time horizon for the attainment of each prospect is subject to numerous external factors beyond the PGAA's control. The strategies are preliminary in nature and are intended to guide the PGAA – however, it is recognized that variations may exist in how implementation is pursued in the future. The success of the business development strategies is contingent on sufficient resources being allocated to such pursuits, both in terms of PGAA staff time and financial resources.

Air Service Development and Retention Strategy

An airline considering whether to expand service at Prince George Airport or introduce a new service will only do so based on the identification of sufficient market potential and a viable business case. Service decisions may be further affected by numerous factors, including fleet availability and alternative prospective markets with better potential performance. Consultations with mainline air carriers indicated that frequency increases to existing hubs in Vancouver and Calgary are more likely as airlines are currently consolidating operations to cope with industry labour shortages. Although additional direct services are preferred by those surveyed, increased frequencies to hubs will provide access to additional indirect destination offerings. Elements of an air service development strategy that could be implemented include:

- Market Research and Data Collection;
- Air Carrier Incentives; and
- Marketing and Advertising Support

Many of these tools have been implemented by the PGAA to promote Flair Airlines service to Tucson. Valuable support can also be offered by aligned economic organizations in the region, including Prince George Economic Development, the RDFFG, and the Prince George Chamber of Commerce.

Commercial Aviation Strategy

Considering the factors within the PGAA's control, the continued growth of commercial aviation can be facilitated by:

- Modifying the current fuel arrangement by allowing multiple into-wing fuelling providers to attract new aviation commercial business. Extensive consultation with comparator airports and commercial fuel providers confirmed that the PGAA's current arrangement is unique and could be limiting competition and thereby hindering commercial development;
- Prepare additional serviced lease lots to accommodate commercial aviation growth; and
- Consider select cost-related incentives like those discussed in Section 8.1.2 to attract new business to the Airport and support start-up businesses in their initial operations.

Energy Resource Strategy

The PGAA should explore the opportunity to increase aviation activity and revenue generating potential associated with the energy resource industry through:

- Engagement with energy resource companies through direct outreach and attendance at energy resource conferences and trade shows to identify potential and planned resource projects in central and northern B.C. and gauge interest from resource companies;
- Prepare commercial lots strategically located on the Airport and of sufficient size to accommodate an Energy Resource passenger terminal; and
- Consider cost-related incentives for the development such a facility.

General Aviation Development Strategy

Within the PGAA purview as the operator of Prince George Airport, the continued accommodation (i.e., retention and growth) of general aviation activity can be accomplished by:

- Facilitating opportunities for based aircraft through leasehold hangar lots as part of the West Development Area, as well as long-term outdoor parking at the General Aviation Tie-Down Area;
- Providing a financial environment (i.e., rates and fees) that balances the generation of revenue with the price elasticity of general aviation stakeholders, including the consideration of land lease rates, landing fees / access fees, and parking fees; and
- Supporting current and prospective general aviation-oriented commercial tenants, including Flight Training Units, AMOs, FBOs, etc.

Air Cargo Strategy

Air cargo development differs from other opportunities in that the requisite infrastructure including adequate runway length and dedicated cargo apron space are currently available. Therefore, the Master Plan Update does not anticipate notable investments in capital projects to support air cargo growth within the 20-year planning period. It is recommended that more detailed analysis and outreach with the Port of Prince Rupert, Prince George Economic Development, and industry stakeholders be completed to ascertain the potential of this opportunity, including the consideration of Canada's role in the distribution networks of e-commerce providers and competition with established centres in areas such as the Lower Mainland.

Financial Outlook and Implementation

The projected Pro Forma Financial Statement anticipates a consistent increase in operating revenues over the Master Plan Update horizon, while operating expenditures remain relatively constant. The operating deficit of the Airport in 2023 is forecast to be approximately $208,000 and $82,000 in 2024 but returning to a surplus in 2025 which will continually improve in subsequent years to $4.6 million in 2043. The operating surpluses realized are primarily a result of the forecast growth of passenger movements and the absorption (lease) of commercial, recreational, and groundside lots.

The 20-Year Capital Plan identifies significant capital expenses in the short-term relative to the medium and long terms of the Master Plan Update. Of these recommended expenses, approximately $37M (58%) is assigned to the rehabilitation of existing infrastructure and the replacement of aging mobile equipment. In the medium-term this decreases to close to $16M (45%) and increases to around $32M (74%) in the long-term planning horizon.

Accounting for capital project costs and assuming that no grant support can be secured, the annual funding support requirement ranges $1.6M and $14.2M in the short-term planning horizon ($2.1M and $15M respectively when the cost of borrowing is included) in the short-term planning horizon. The majority of surpluses realized in the medium and long-terms are anticipated to be assigned to debt repayment.

The capital costs associated with the Airport emphasize the need for the PGAA to proactively identify funding opportunities. While the PGAA has experienced success in obtaining grant funding, such funding is not guaranteed as evaluation processes are competitive in nature. Further, the number and purpose of available grant programs can vary over time. However, the continued proactive identification and pursuit of grant opportunities by the PGAA will be a key process during the implementation of the Master Plan Update.

20-Year Financial Outlook Summary

	Short Term (2024 2028)	Medium Term (2029 2033)	Long Term (2034 2043)
Operating Revenue	$ 50,350,200	$ 66,018,700	$ 202,690,600
Operating Expenses	$ 47,563,600	$ 57,815,100	$ 169,467,600
Operating Surplus / Loss	$ 2,786,600	$ 8,203,600	$ 33,223,000
Other Surplus / Loss	$ 1,739,300	$ 2,047,800	$ 4,811,300
Airport Improvement Fee	$ 30,087,900	$ 35,782,600	$ 93,164,100
Total Before Capital Expenses	$ 34,613,800	$ 43,471,100	$ 121,689,600
Infrastructure Rehabilitation	$ 24,478,000	$ 15,369,000	$ 28,723,000
Infrastructure Development	$ 27,328,000	$ 20,488,000	$ 11,330,000
Mobile Assets	$ 12,873,000	$ 1,201,000	$ 3,193,000
Studies and Plans	$ 168,000	$ 102,000	$ -
Total Capital Expenses	-$ 64,847,000	-$ 37,160,000	-$ 68,375,200
Operating and Capital Surplus / Deficit	**-$ 30,233,200**	**$ 6,311,100**	**$ 53,314,400**
Interest and Financing	$ 2,566,100	$ 6,035,700	$ 6,083,000
Net Surplus / Deficit	**-$ 32,799,300**	**$ 275,400**	**$ 47,231,400**

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List of Acronyms

Acronym	Definition	Acronym	Definition
ACAP	Airports Capital Assistance Program	LPV	Localizer Performance With Vertical Guidance
AGL	Above Ground Level	LNAV	Lateral Navigation
AGN	Aircraft Group Number	LUP	Land Use Plan
AIF	Airport Improvement Fee	MRO	Maintenance, Repair, and Overhaul
AMO	Aircraft Maintenance Organization	MST	Mountain Standard Time
ARCAL	Aircraft Radio Control of Aerodrome Lighting	NIFAC	Northern Initial Fire Attack Crew
ARFF	Aircraft Rescue and Fire Fighting	NAS	National Airports System
ASL	Above Sea Level	PSV	Non-Passenger Screening-Vehicle
ATB	Air Terminal Building	OCP	Official Community Plan
ATCT	Air Traffic Control Tower	ODALS	Omni-Directional Approach Lighting System
ATS	Air Traffic Services	OLS	Obstacle Limitation Surface
AWOS	Automated Weather Observing System	OMGWS	Outer Main Gear Wheel Span
AZR	Airport Zoning Regulations	OPS	Obstacle Protection Surface
CAR	Canadian Aviation Regulation	PAPI	Precision Approach Path Indicator
CASM	Cost per Available Seat Mile	PGAA	Prince George Airport Authority
CATSA	Canadian Air Transport Security Authority	PHPA	Peak Hour Passenger - Arriving
CBSA	Canada Border Services Agency	PHPD	Peak Hour Passenger - Departing
CN	Canadian National Railway	PST	Pacific Standard Time
CPA	Capacity Purchase Agreement	PVC	Polyvinyl Chloride
CSB	Combined Services Building	RASM	Revenue per Available Seat Mile
DHC	De Havilland Canada	RCMP	Royal Canadian Mounted Police
DME	Distance Measuring Equipment	RDFFG	Regional District of Fraser-Fort George
ECCC	Environment and Climate Change Canada	RESA	Runway End Safety Area
eVTOL	Electric Vertical Take-off and Landing	RON	Remain Over Night
FBO	Fixed Base Operator	RPAS	Remotely Piloted Aircraft System
FEC	Field Electrical Centre	RTIL	Runway Threshold Identification Light
FTZ	Foreign Trade Zone	SDR	Standard Dimensional Ratio
GPS	Global Positioning System	SSALR	Simplified Short Approach Lighting System with Runway Alignment Indicator Lights
IATA	International Air Transport Association	UAV	Unmanned Aerial Vehicle
ICAO	International Civil Aviation Organization	ULCC	Ultra Low-Cost Carrier
IFP	Instrument Flight Procedure	VASIS	Visual Approach Slope Indicator System
ILS	Instrument Landing System	VHF	Very High Frequency
LCC	Low-Cost Carrier	VNAV	Vertical Navigation
LED	Light-Emitting Diode	VOR	VHF Omnidirectional Radio Range

1 INTRODUCTION

HM Aero Aviation Consulting ("HM Aero") was retained by the Prince George Airport Authority (the "PGAA") to prepare a Master Plan Update for Prince George Airport (the "Airport"). L&M Engineering Limited aided through the provision of previous planning and engineering documents prepared on behalf of the PGAA. The intent of the Master Plan Update is to act as a comprehensive planning guide from 2023 until 2043, with the goal of providing pragmatic, evidence-based, and attainable guidance to position the Airport to meet aviation demand, create employment, and generate greater economic benefits for the region. The Master Plan Update focuses on a twenty-year period across three planning horizons: short-term (1-5 years), medium-term (6-10 years), and long-term (11-20 years).

1.1 Background

Prince George Airport is a National Airport System (NAS) facility owned by Transport Canada and leased to the PGAA. The Airport property consists of a total of approximately 734 hectares including 280 hectares of Provincial Reserve Lands. Under the terms of the lease agreement, the PGAA is obligated to update the Master Plan at regular intervals. The most recent Master Plan for Prince George Airport was updated in 2014 and identified key recommendations including: the closure of Runway 01-19, protection for parallel taxiways supporting Runway 15-33 and Runway 06-24, expansion of the Air Terminal Building's secure holdroom, improvements to the baggage handling system, and site servicing and access improvements. Review of available documentation and consultation with Airport staff indicate that the key recommendations of the 2014 Master Plan Update have yet to be actioned.

In addition to the obligation of the PGAA to maintain a current Master Plan for the airport, several events have occurred since the publishing of the 2014 Master Plan Update, justifying a comprehensive study update. Such events include:

- **COVID-19 Pandemic** – The pandemic resulted in an immediate and significant reduction in passenger air travel from which the industry continues to recover. The popularization of virtual meeting applications has allowed businesses to rethink their air travel requirements. Additionally, Canadian air carriers have sought to diversify their services to safeguard against potential future passenger service interruptions, including the expansion of their air cargo operations. Passenger traffic at Prince George Airport decreased from 474,500 in 2019 to 161,500 in 2020 with a modest rebound to 185,400 experienced in 2021. Civil commercial itinerant aircraft movements from January to September 2022 increased 10% over the same period in 2021 and are within 4.7% of 2019 levels for the same period and movement type.
- **Entrance of Low Cost Carriers** – Since the completion of the previous Master Plan, the Canadian air travel market has witnessed the multiplying of Low-Cost Carriers (LCCs) and Ultra Low-Cost Carriers (ULCCs). These airlines focus on reducing operating costs and offering lower ticket fares. Other characteristics include an emphasis on serving secondary airports with lower fees, maintaining a single aircraft fleet type, and offering a higher density onboard product. LCCs and ULCCs currently operating in Canada include Flair Airlines, Swoop, Lynx Air, and Canada Jetlines. Flair Airlines currently serves Prince George with a seasonal weekly service to Tucson, Arizona.

- **E-Commerce and Air Cargo** – In recent years, the rapid growth of e-commerce has resulted in significant changes in logistics and supply chain management to ensure speed, visibility, and reliability. IATA estimated that 15% of air cargo volumes were attributed to e-commerce and that this percentage has continued grow as the impacts of COVID-19 have been realized. Consultation with airport staff indicate that e-commerce has not yet influenced a noticeable increase in air cargo activity at the Airport, however, as e-commerce continues to increase in popularity, opportunities for Prince George Airport to support this industry may be realized.
- **UAV and VTOL Advancement** – The introduction of more advanced Unmanned Aerial Vehicle (UAV) platforms and applications as well as the anticipated entry of Electric Vertical Take-off and Landing (eVTOL) aircraft into the passenger air travel market requires airports to consider how these technologies can be accommodated while maintaining safety, regulatory obligations, and levels of service. While this may not be an immediate opportunity for Prince George Airport, future planning should ensure that this type of activity could be supported.
- **Green Aviation Technologies** – The global focus to reduce carbon emissions has resulted in advancements in both electric aircraft and sustainable aviation fuel. Also, unleaded aviation gasoline options are being introduced to reduce the environmental impact of general aviation. Commercial operators are also introducing electric aircraft into their fleets, potentially increasing the need for on-site electrical power supply capacity.

1.2 Master Plan Objectives

The PGAA's high level goals and objectives are to operate a financially viable entity, be accountable to the public, pursue marketing initiatives and economic growth, and cultivate the airport's role and image within the community. Accordingly, the objectives of the Master Plan Update are to:

- Provide a rational and comprehensive framework to guide future development at the airport;
- Update the profile and role of the airport for the next 20 years;
- Reaffirm and identify new business development opportunities to continue positioning the airport as an economic driver within the region;
- Prepare activity forecasts to quantify future demand in terms of aircraft movements and passenger and cargo volumes;
- Assess current infrastructure and provide recommendations for rehabilitation and/or expansion to meet forecast demand;
- Identify development constraints to be considers when planning facility expansion and improvements;
- Assess current facilities and determine deficiencies and requirements;
- Engage with stakeholders to identify perceived opportunities, deficiencies, and requirements at the airport within the next 20 years;
- Document a business strategy for short (5 year), medium (6-10 year), and long term (11-20 year) development initiatives;
- Guide future aeronautical and non-aeronautical development in a safe, cost-effective manner while complying with relevant Transport Canada regulations;
- Assemble a 20-year Capital Plan identifying all required infrastructure investments; and
- Identify new revenue streams, potential funding sources and confirm strategic goals and objectives.

2 STAKEHOLDER ENGAGEMENT PROGRAM

A comprehensive stakeholder outreach and consultation program was completed by HM Aero and Parcel Economics in cooperation with the PGAA. The stakeholder consultation program was designed to accomplish two interrelated objectives: 1) providing information to residents, businesses, and stakeholders on the purpose of the Master Plan and the planning process ("Informing"); and 2) receiving the views of interested parties as they relate to the future of the Airport ("Engaging").

2.1 Informing

With the objective of sharing information about the Master Plan Update and ensure that residents, businesses, and other stakeholders had access to resources regarding the project, a communication campaign led by the PGAA's Manager of Marketing and Air Service Development was conducted within the community to promote the study and its value. The Master Planning process was advertised by the PGAA through social media, website content, and by word of mouth beginning in early January 2023, and extending through mid February 2023:

- The YXS – Prince George Airport Facebook page was used by the PGAA to introduce residents and businesses to the Master Plan Update project, describe the purpose of the study, identify the consultant team, and to direct airport users to an online survey to solicit input on current and future services provided at the Airport. A context entitled 'Share and go Anywhere' was held to encourage participation in the resident and passenger survey as part of the PGAA's advertising campaign.
- The Master Plan was also advertised on the PGAA's landing webpage using similar content as posted on the Airport's Facebook page.
- The Airport CEO and staff communicated the importance of the Master Plan Update process through interviews with local radio stations, and through communications with politicians such as the Mayor of Prince George.

2.2 Engaging

Stakeholder engagement forms an integral part of a Master Plan, as local residents, businesses, and Airport users can provide high value perspectives on the current and future operation of an Airport. Stakeholder input for the Prince George Airport Master Plan Update was facilitated through two primary means:

1) Outreach surveys with residents and businesses; and
2) Direct face-to-face and virtual interviews with Airport stakeholders and key regional representatives, some combined with the concurrent Airport Economic Impact Study being led by Parcel Economics.

Findings from the stakeholder engagement program are documented through the Master Plan where applicable, and all views received were reviewed by HM Aero as part of the planning process.

2.2.1 Resident and Business Engagement Survey

HM Aero developed and hosted an online survey using SurveyMonkey to gather the perspectives of Airport users, including residents and businesses. The survey was launched on January 11, 2023 and was available until February 10, 2023, with separate categories of questions for residents and business representatives. All survey data received through this process has been analyzed by the project team, with applicable insights integrated throughout the relevant sections of the Master Plan Update.

This data may also be used to support future air service and business development efforts by the PGAA. A total of 1,333 complete responses were received during the one-month online survey period, including 1,312 resident surveys (98% of all responses) and 21 surveys representing businesses or organizations (2%). Among the 1,312 resident survey respondents, the majority (74%) were located in the City of Prince George, with 10% located in the Regional District of Fraser - Fort George (RDFFG), and 9% in the Regional District of Bulkley – Nechako. The remaining 7% of respondents were primarily located elsewhere in British Columbia and Alberta.

Among the 21 business survey respondents, 81% were located in the City of Prince George, 5% in the Regional District of Bulkley – Nechako, and 5% in the Cariboo Regional District. The remaining 9% were located elsewhere in British Columbia. 14 of the 21 respondents are located off-Airport (67%), with the remaining 7 respondents being businesses based at the Airport. Cumulatively, the 21 business respondents represent a total of 1,013 employees, or an average of 48 employees per respondent business.

2.2.2 Stakeholder Interviews

HM Aero and the PGAA collaboratively developed a list of project stakeholders with a vested interest in, or knowledge of, the Airport within the 20-year planning horizon of the Master Plan Update. Meetings were convened with interested parties in-person, virtually, or through the receipt of written comments. Direct consultations were completed with 72 individuals representing 43 different stakeholder groups, as documented in Table 2.1

A response rate of more than 85% was achieved when considering direct stakeholder outreach attempts to the 50 organizations contacted and resulting successes – a value considered appropriate to inform the Master Plan Update.

Table 2.1 - Stakeholder Interviews

Stakeholder Group	Number of Interviewees
Government Stakeholders	
British Columbia Emergency Health Services	1
British Columbia Wildfire Services	2
Canada Border Services Agency	2
City of Prince George	2
Aviation Stakeholders	
Air Canada	1
Allied Universal	1
Bailey Helicopters	2
Bidco	1
Carrier Lumber	1
Central BC Flying Club	4
Custom Helicopter	1
Executive Aviation	1
Executive Flight Centre	1
Guardian Aerospace	1
Helijet	1

Stakeholder Group	Number of Interviewees
Hill Aircraft Services	1
Lomak	1
Nav Canada	2
North Cariboo	1
Northern Thunderbird Air	2
Pacific Coastal Airlines	1
Paladin Security	1
Pep Air	2
PGAA Board of Directors	9
PGAA Senior Staff	6
Prince George Search and Rescue (PGSAR)	1
Private General Aviation Tenants	5
Royal Canadian Mounted Police (RCMP)	1
WestJet	1
Yellowhead Helicopters	2
Private Businesses and Organizations	
Aeroterm	1
College of New Caledonia	1
Far Orbit	1
Farmhouse Catering	1
First Tracks Consulting	1
Fritolay/Pepsico	1
IDL	1
L&M Engineering	1
Majestic Management	1
National Car Rental	1
Northern BC Tourism	1
Roseneau Transport	1
Tourism Prince George	1
University of Northern British Columbia	1

3 CONTEXT REVIEW

3.1 Plans and Previous Reports

3.1.1 2007 Prince George Airport Master Plan

The 2007 Master Plan was completed by Pryde Schropp McComb Inc. and covered a 25-year planning period from 2005 to 2030. The Plan's medium passenger traffic forecast anticipated approximately 800,000 annual passengers, between 550 and 650 peak hour passengers, and approximately 60,000 aircraft movements by 2030. The Plan made the following primary recommendations:

- Closure of Runway 01-19;
- Construction of full parallel taxiway systems supporting Runway 15-33 and Runway 06-24;
- Protection of the extension of Runway 15-33 to the north and south;
- Improvement of the Air Terminal Building (ATB) processing capacity by either greenfield or brownfield expansion options; and
- Development of technical stop fuelling/servicing apron on the north end of Runway 15-33 to support air cargo operations.

Following the completion of the 2007 Master Plan Runway 15-33 was extended from 7,400 ft. to 11,450 ft., an expansion and renovation of the existing ATB was completed, and a dedicated air cargo apron (Apron V) was constructed on the north end of Runway 15-33.

3.1.2 2014 Prince George Airport Master Plan

In 2014, an update to the Master Plan was completed by WSP that covered the period from 2013 to 2030. The Update made minor adjustments to the passenger and aircraft movement forecasts completed in the 2007 Plan. The Update carried forward many recommendations from the 2007 Plan that had not been actioned at the time the Update was completed including:

- Closure of Runway 01-19;
- Protection for parallel taxiways supporting Runway 15-33 and Runway 06-24;
- Improvements of the baggage handling system; and
- Site servicing and access improvements.

Additionally, the 2014 Update recommended the expansion of the secure passenger holdroom to accommodate a higher peak hour demand and incorporate improved passenger amenities. Review of available documentation and consultation with airport staff indicate that most recommendations made in the 2014 Master Plan Update have not been actioned.

3.1.3 2021 Prince George Airport Land Use Plan

In 2021, PGAA submitted to Transport Canada the 2020 Land Use Plan (LUP) to account for changes at the Airport since the publication of the previous LUP in 1998. The new LUP allows for the staged development of land based on compatible use, considers operational requirements, and is intended to assist the PGAA in developing land with the highest and best use while factoring in revenue generation. Major differences between the 1998 and 2021 LUPs include:

- Airport property boundaries;
- New facilities including an extended Runway 15-33;
- Current and anticipated land uses;
- Development of adjacent lands; and
- Provision for airport expansion.

The project team took into consideration the recency and planning rationale of the 2021 LUP in completing the Airport Development Plan within the 2023 Master Plan Update. Changes to the current LUP are recommended to better align with the Master Plan Update.

3.1.4 Regional District of Fraser-Fort George Official Community Plans

The Prince George Airport straddles the boundary of the City of Prince George and the RDFFG with a portion of the airport property being subject to the Official Community Plan (OCP) for Area D – Pineview (Bylaw No. 2302). The designated land uses immediately south of the City limits include Light Industrial (L/IND) and Public Development/Institutional (PD/I). Other designated land uses in the vicinity of the Airport include Highway Commercial (HC), Rural Residential (RR), and Agricultural/Resource (AG/RES).

Table 3.1 - Select RDFFG OCP Designated Land Uses

Designated Land Use	Approved Land Use	
Light Industrial (L/IND)	Rural and Service Industrial uses Manufacturing Warehousing/Storage	
Public Development/Institutional (PD/I)	Community Recreation Domestic Waste Disposal/Treatment Government Offices Church, Camp, School Residential	Fire Hall Public Open Space Utilities Agriculture
Highway Commercial (HC)	Retail and Service Outlets (e.g., convenience store, service station) Commercial and Public Uses (e.g., campground, recreational lodge, golf course, ski hill) Other Commercial Uses (e.g., restaurant, overnight tourist accommodation)	
Rural Residential (RR)	Residential Home Business Forestry and Other Resource Extraction	Agriculture Intensive Agriculture
Agricultural/Resource (AG/RES)	Agriculture Intensive Agriculture Forestry and Other Resource Extraction	Public Open Space Residential Home Business

Airport and group homes, corrections, and rehabilitation land sues are not designated in the OCP for Public Development/Institutional (PD/I), which states that an amendment to the OCP and rezoning would be required before these land uses would be permitted. As a portion of the existing Airport property is designated as PD/I, it is assumed that the necessary approvals have been granted.

The land uses designated in the vicinity of the airport are considered mostly complementary to aviation activities, with the exception of domestic waste disposal/ treatment approved under the Public Development/Institutional designation. The development of such a facility should be evaluated against the Prince George Airport Zoning Regulations (AZR) and TP1247 – Land Use in the Vicinity of Aerodromes prior to approval.

3.1.5 City of Prince George Official Community Plan

The airport property within the City boundary is zoned primarily as Site Specific (Z1-Airport) with portions zoned as Rural (AF). Lands east of Old Cariboo Highway are also zoned Rural (AF) and two parcels west of the airport property both north and south of Boundary Road and zoned Business & Industrial (M2).

Table 3.2 – Select City of Prince George OCP Designated Land Uses

Designated Land Use	**Principal** and Secondary Uses	
Site Specific (Z1 – Airport)	**Airport**	Retail
	Aircraft Sales & Rental	Service Station
	Fleet Service	Transportation Depot
	Liquor Primary Establishment	Truck or Rail Terminal
	Residential Security/Operator	Utility
	Restaurant	Vehicle Rental
Business & Industrial (M2 – General)	**Animal Shelter**	**Railway**
	Auction	**Recycling**
	Brewery & Distillery	**Restaurant**
	Building and Garden Supply	**Retail**
	Consulting	**Service Station**
	Contractor Service	**Transportation Depot**
	Education	**Truck or Rail Terminal**
	Emergency Service	**Utility**
	Equipment	**Vehicle Repair/Rental/Wash**
	Fleet Service	**Veterinary Service**
	Industry, Light	**Warehousing**
	Manufacturing	**Wholesale**
	Storage	**Wrecking Yard**
	Medical Marijuana	Residential Security/Operator
	Parking	
Rural (AF – Agriculture & Forestry)	**Agriculture**	Agri-tourist Accommodation
	Aquaculture	Animal Breeding & Boarding
	Community Care Facility	Animal Shelter
	Equestrian Centre	Auction
	Fish Hatchery	Bed & Breakfast
	Forestry	Home Business
	Greenhouse & Nursery	Secondary Dwelling
	Housing	Temporary Sawmill
	Veterinary Service	Winery & Cidery

The land uses designated on the Airport and in its vicinity by the OCP are considered generally complementary to current aviation activities and future airport development. While recycling is considered an appropriate principal use in the Business & Industrial land use, because of the proximity of these lands to the Airport, the establishment of large scale recycling operations should be evaluated against TP1247 guidelines prior to the approval of such a development.

3.2 Regulatory Context

Airports in Canada are typically classified as either registered aerodromes or certified airports. Certified airports are aerodromes for which a certificate has been issued by Transport Canada; per Canadian Aviation Regulation (CAR) 302.01(1). There are three triggers for certification:

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

Prince George Airport's certificate was issued in 2011 and is held by the Prince George Airport Authority. The current obligations imposed through the CARs on the certificate holder are numerous, and the Airport is subject to the regulatory oversight of Transport Canada. Among the obligations imposed on the Airport are the requirement for regular quality assurance audits; conducting operations in accordance with the Airport Operations Manual, Safety Management System, Emergency Response Plan, Wildlife Management Plan, Winter Maintenance Plan; and ensuring that the physical infrastructure and obstacle environment are compliant with TP312 – Aerodrome Standards and Recommended Practices. All recommendations and designs of the Master Plan will be compliant with TP312 4th and 5th Edition, as applicable.

3.3 Geographic Context

3.3.1 Local Context

Prince George Airport straddles the boundary of the City of Prince George and the RDFFG, approximately 4.5 km east of the main urban area and 5.5 km southeast of the downtown core. The Airport is accessible by road from Prince George via Cariboo Highway, Sintich Road, and Ellis Road from the south or Yellowhead Highway, Old Cariboo Highway, and Johnson Road from the north. The Airport is well-located and can be reached by road from most popular places of interest in the City of Prince George with an average driving time of 15 to 25 minutes, including the University of Northern British Columbia, College of New Caledonia, University Hospital of Northern British Columbia, business parks, the downtown area, and all major residential areas.

The Airport is primarily accessed by personal automobiles, taxis, and commercial vehicle services. The Prince George Transit System does not offer a regular service to the Airport as routes do not currently cross to the east side of the Fraser River. In March 2020, the City of Prince George published a Transit Future Action Plan which serves as an update to the Transit Future Plan completed in 2014. The Plan proposes future transit service to the Airport by offering an introductory level of service which could be improved if ridership were to grow. Introductory service would include four round trips per day, Monday to Friday. Optional further investment could introduce weekend service and add additional trips throughout the day. The service provides a transportation option for employees of the Airport and airport businesses as well as nearby industrial areas and therefore would be aligned with typical shift start and end times. The proposal suggests that the route would originate at the Pine Centre Mall and terminate at Prince George Airport.

The convenience of the Airport's location and accessibility are positive factors that influence traveller decision-making, by enabling timely access to trip origins and destinations.

3.3.2 Regional Context

Prince George is located on the western bank of the Fraser River and is enveloped by the central portion of the RDFFG, bordered by Area A – Salmon River & Lakes, Area C – Chilako River-Nechako, Area D – Tabor Lake-Stone Creek, and Area F – Willow River-Upper Fraser. Within the provincial context, the location of Prince George in central British Columbia results in significant travel distances to urban centres such as Kamloops, Kelowna, and Vancouver (Table 3.3). Residents and visitors have a variety of reasons to travel between Prince George and these destinations, as well as others in the province, including for business, governmental travel, and accessing healthcare, and tourism. It is understood that the distance between Prince George and other urban centres in British Columbia and Alberta is a challenge that affects business travel, movement of goods, and workforce recruitment.

Table 3.3 - Driving Distances and Times to Key Destinations (From Prince George)

Community / Destination	Driving Distance	Driving Time*
Williams Lake, BC	240 km	2h45m
Jasper, AB	375 km	3h45m
Dawson Creek, BC	400 km	4h20m
Fort St. John, BC	440 km	4h50m
Kamloops, BC	**520 km**	**5h50m**
Peace River, AB	640 km	6h50m
Kelowna, BC	**680 km**	**7h40m**
Prince Rupert, BC	720 km	8h00m
Vancouver, BC	**780 km**	**9h00m**
* All driving time estimates are based on typical traffic conditions		

3.4 Demographic Context

Population data for the City of Prince George and the RDFFG was reviewed for the period of 2006 to 2021 to understand the changing demographics of the catchment area. As shown in Table 3.4, the population of Prince George was approximately 77,000 in 2021 and has remained relatively stable with modest growth realized throughout the four reviewed census periods, ranging between a minimum of 70,981 in 2006 and a maximum of 76,700 in 2021. RDFFG's population in 2021 reached 97,000 – similar to Prince George, the population of RDFFG was relatively stable across the four census periods. The growth rates experienced in both Prince George and the RDFFG lag the levels experienced in British Columbia as a whole; while the provincial population increased by 7.59% with the 2021 census, the populations of Prince George and the Regional District increased by 3.66% and 2.62%, respectively.

Table 3.4 – Statistics Canada Census Population Data (2006-2021)

Year	City of Prince George		RD of Fraser Fort George		British Columbia	
	Population	Change	Population	Change	Population	Change
2021	76,708	3.66%	96,979	2.62%	5,000,879	7.59%
2016	74,003	2.82%	94,506	2.86%	4,648,055	5.64%
2011	71,974	1.40%	91,879	-0.42%	4,400,057	6.97%
2006	70,981		92,264		4,113,487	

3.5 Economic Context

The economic composition of Prince George influences the demand for passenger and cargo air services, as well as other Airport-oriented activities. Major industries and employers that have significant transportation needs as part of their business operations may drive demand for services at the Airport, depending on the unique factors of their operation. Based on data sourced from the City of Prince George, economic activity is dominated by the following sectors:

1. **Construction:** The construction industry in Prince George is involved in projects planned or ongoing in northern British Columbia. The City states that construction GDP was expected to grow to $426 million in 2020 and that the industry grew an average of 4.8% annually from 2013 to 2018. Construction in Prince George benefits from almost 40,000 College of New Caledonia students graduating from trades programs annually as well as access to key building materials. Demand for construction is attributed to natural resource, business, and tourism developments.
2. **Manufacturing:** Prince George's manufacturing industry is bolstered by the mining, energy, and bioenergy industries which demand a variety of products and equipment. An established skilled work force and access to post secondary institutions that offer Red Seal trades training and complementary manufacturing programs provides Prince George with a competitive advantage in manufacturing.
3. **Forestry:** Prince George is home to lumber mills, pulp mills, one paper mill, and secondary manufacturing facilities. Clusters associated with forestry include engineered wood products, packaged building solutions, remanufactured lumber, millwork products, and Cross Laminated Timber (CLT).
4. **Professional Services:** Prince George provides professional services to a variety of industries. For example, environmental science professionals support the forestry industry which has experienced growth in recent years to meet local demand.
5. **Transportation and Warehousing:** Prince George's strategic location as the hub of the road and rail networks as well as access to air transportation allows it to support commerce in northern British Columbia. Designated as a Foreign Trade Zone in 2018, Prince George is home to a CN Distribution Centre as well as numerous industrial parks.

Based on the National Occupational Classification data provided in the Statistics Canada 2016 Census Profile, the composition of the economy can be further explored as shown in Table 3.5. The City of Prince George census dataset has been benchmarked against values for the Province of British Columbia. Trades, Transportation, and Equipment Operators exceeds the proportional levels seen provincially. The proportional compositions of the workforce engaged in Business, Health, Sales and Services, Education, Natural Resources, and Manufacturing classifications is comparable to the provincial level. Prince George's role as a regional hub for construction, manufacturing, forestry, and transportation is also signalled by the relative proportions of the population engaged in such sectors.

Table 3.5 - National Occupational Classifications (2016)

National Occupational Classification	Prince George	British Columbia
Management	9.0%	11.1%
Business, Finance, and Administration	13.6%	14.9%
Natural and Applied Sciences	5.2%	6.5%
Health	6.8%	6.6%
Education, Law, Social, Community, and Government Services	11.4%	10.9%
Art, Culture, Recreation, and Sport	1.5%	3.8%
Sales and Service	23.5%	24.1%
Trades, Transportation, and Equipment Operators	19.8%	14.6%
Natural Resources and Agriculture	3.3%	2.6%
Manufacturing and Utilities	3.9%	3.1%
Not Applicable	2.0%	1.8%

3.6 Intercommunity Transportation

Demand for passenger, cargo, and other forms of air services at the Airport is influenced by the availability of competing intercommunity transportation options. In Prince George, such options include the movement of people and goods by road, rail, and air.

3.6.1 Road Network

Intercommunity travel by road is primarily facilitated through the Cariboo Highway, connecting Prince George to Dawson Creek and additional communities to the northeast as well as Quesnel and other destinations to the south. The Yellowhead Highway, which commences in Winnipeg and terminates on Graham Island, BC, and connects Prince George to several urban centres and destinations including Jasper to the east and Prince Rupert to the west. Intercommunity travel by road primarily occurs by car, with the driving distances and times between Prince George and key destinations noted in Table 3.1.

Intercity bus service in northern British Columbia is currently provided by BC Bus North through Diversified Transportation Ltd., which began service in June 2018. The 1-2 times weekly service consists of 4 primary routes, three of which originate or terminate in Prince George:

1. Prince George – Fort St. John;
2. Prince George – Prince Rupert; and
3. Prince George – Valemount.

The routes serving Prince George do not include a stop at Prince George Airport. The fourth route serves the corridor between Dawson Creek and Fort Nelson. Ebus also provides 3 weekly trips from Prince George to Kamloops where passengers can connect on to Edmonton, Kelowna, and Vancouver. The movement of goods and cargo by truck and other commercial vehicles (e.g., courier services) is a significant transportation category. Through consultations with local economic representatives and businesses, it is understood that high value of time shipments (e.g., just in time deliveries) are commonly flown to or from Prince George Airport. The movement of freight by road, which is typically a slower but less expensive option versus air cargo, is viewed as a competing force that influences demand for air cargo services at the Airport.

3.6.2 Rail Network

VIA Rail provides passenger rail services to Prince George as a midpoint overnight stop between Jasper and Prince Rupert. As of January 2023, service is provided three times weekly in each direction: Train 5 departs from Jasper for Prince George at 12:45 PM (MST) and arrives at 7:08 PM (PST), then departs from Prince George at 8:00 AM (PST) the following day and arrives in Prince Rupert at 8:25 PM (PST). Train 6 departs from Prince Rupert for Prince George at 8:00 AM (PST) and arrives at 8:30 PM (PST). Train 6 then departs from Prince George at 8:15 AM (PST) the next day and arrives in Jasper at 5:00 PM (MST).

Prince George is located at the terminus if the Canadian National (CN) Railway's Prince George Subdivision and is the site of 1 of CN's 17 North American transload facilities for forest products. The Prince George Distribution Centre transfers forest products between container, railcar, and truck and offers storage and warehousing for pulp, paper, and lumber. The CN Nechako subdivision also runs from Prince George west to Endako, BC where it connects to subsequent subdivisions to access Prince Rupert. Additionally, the CN Fraser Subdivision runs east from Prince George to McBride and the Chetwynd Subdivision north to Chetwynd. The types of goods moved by rail typically differ from those moved by air in weight, size, and time-sensitivity, therefore, the availability of freight rail services in Prince George is not viewed a competing factor for air cargo services.

4 AIRPORT PROFILE

The Airport Profile establishes the baseline planning position of the facility through an exploration of its history, the vision of its governing body, its current role, businesses and tenants, and activity levels.

4.1 History

Prince George Airport's history spans over 80 years and has been documented in detail by the PGAA, with key events identified herein.

The current Airport's history began in 1940 with the selection of the facility's site by Prince George City Council and the subsequent construction of its three runways between 1941 and 1945. The new facility would replace two existing airports elsewhere in Prince George, with construction of the current Airport spurred by efforts to develop the infrastructure required for the defense-oriented Northwest Staging Route. The initial users of the Airport included four primary civilian and military operators: Canadian Pacific Air Lines, Pan American Airways, the Royal Canadian Air Force, and the United States Army Air Force (later the United States Air Force). During World War II, the Airport was operated by the Royal Canadian Air Force before the facility was transitioned to the Department of Transport in 1946.

The 1950s were marked by continued civilian use, infrastructure improvements and rehabilitation projects, as well as the establishment of the Prince George Flying Club in 1959. Driven by economic growth in Prince George, the 1960s included the extension of Runway 14-32 (now Runway 15-33) to 6,400 ft., the construction of the current Combined Services Building, and new refuelling facilities. Major developments in the 1970s included a new 20,340 ft^2 terminal building and control tower in 1973, the extension of Runway 14-32 to 7,400 ft., and access road improvements.

The economic value of the Airport was quantified in 1987, with an economic impact study estimating that the facility contributed over $32M in Gross Domestic Product to the provincial economy. The Prince George Airport Advisory Committee was formed in 1988 to champion initiatives for the facility, and in 1991 the Airport marked 50 years of operations.

The origin of the current operational and governance structure emerged in 1994 with the release of the federal National Airports Policy that called for the integration of Prince George Airport into the National Airports System. As described below, the PGAA was incorporated in 2000 and became responsible for the oversight of the Airport in 2003 – the last facility to be transferred under the National Airports Policy. In the years following 2003, the PGAA advanced numerous initiatives including:

- Master Plans in 2007 and 2014;
- An internationally recognized award-winning terminal building expansion and redevelopment project, completed in 2005;
- The $33M extension of Runway 15-33 from 7,400 ft. to 11,400 ft. to facilitate larger cargo and passenger airliners, completed in 2009; and
- The construction of a 25,000 ft^2 cargo warehouse in 2015.

The onset of the COVID-19 pandemic early in 2020 caused significant impacts to the domestic and international aviation industry, including Prince George Airport. With the assistance of effective cost management, provincial and federal financial support, and continued essential air service demand, the PGAA continues to spearhead the Airport's recovery as of 2023 and position the facility for post-pandemic growth.

4.2 Prince George Airport Authority Overview

The PGAA is a not-for-profit organization that has been responsible for the oversight of the Airport since March 31, 2003 after its incorporation on July 27, 2000. The PGAA is governed by a Board of Directors, consisting of twelve members that are nominated based on the following structure:

- Government of Canada: 2 representatives;
- Province of British Columbia: 1 representative;
- City of Prince George: 3 representatives;
- Regional District of Fraser-Fort George: 2 representatives;
- Prince George Chamber of Commerce: 1 representative; and
- Prince George Airport Authority: 3 representatives.

Together, the Board of Directors utilize their individual strengths and skillsets in a collective manager to pursue the Vision Statement and Mission Statement of the PGAA. The Vision Statement established by the PGAA is:

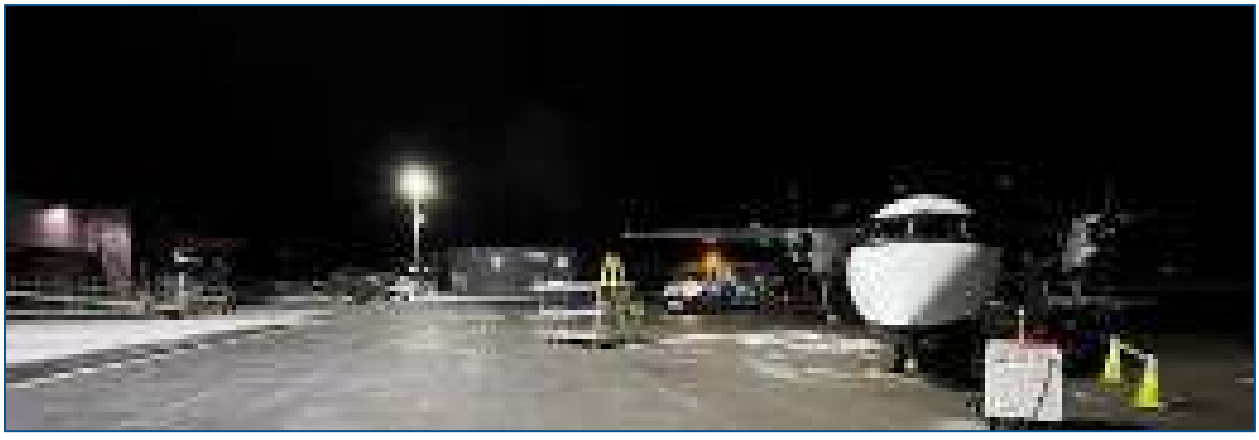
"Connecting the World to our Region"

The PGAA's Mission Statement is to be:

> *"An outstanding airport team dedicated to enhancing our community by providing an excellent airport experience for all and driving economic growth in the region."*

The Airport Master Plan has been prepared in a manner that is consistent with the Vision and Mission Statements established for Prince George Airport by the PGAA, and these Statements guide its underlying planning philosophy and objectives. The Airport Master Plan Update supports the Mission Statement by:

- Assisting PGAA staff in administrative excellence through the establishment of comprehensive and orderly long-term planning;
- Identifying opportunities for the Airport to contribute to the economic and social betterment of the surrounding community; and
- Creating a systematic approach to improving the Airport experience for passengers, aircraft operators, tenants, and other parties.



4.3 Airport Role

The role of Prince George Airport encompasses the primary activities that are currently enabled by its operations. The availability of the Airport itself does not define its role – this is characterized by the degree to which the facility enables the services of its end users, and includes the following main dimensions:

1. **Passenger Services:** Prince George Airport supports the operations of numerous scheduled and charter passenger air carriers that provide intercommunity connectivity for residents and visitors.
2. **Cargo Services:** The Airport facilitates the movement of goods and cargo in a timely manner by air by scheduled cargo carriers, passenger air carriers, and charter operators. The facility is equipped to support Trans-Pacific air cargo operations, by leveraging the 11,450 ft. runway and Prince George's strategic location.
3. **Emergency Services:** Essential patient transportation, search and rescue, wildfire suppression, emergency management, and law enforcement missions requiring aerial resources are enabled by the Airport.
4. **Aerial Work and Flight Training:** Specialized fixed and rotary-wing operators utilize the Airport while serving the needs of a diverse range of sectors, such as the oil and gas, forestry, resource extraction, and tourism industries, improving the degree to which these sectors of regional importance can function. Recreational, professional, and recurrent pilot training is also facilitated at the Airport.
5. **Business and Corporate Aviation:** The productivity and efficiency of business operations is supported by the use of owned and chartered aircraft for the movement of staff and supplies.
6. **Recreational Aviation:** Individuals flying for discretionary or enjoyment-related reasons are facilitated at the Airport.

4.4 Airport Businesses and Tenants

A diverse range of businesses and tenants serve or are based at Prince George Airport that contribute to its overall role and operations. The Airport is currently served by six scheduled or recurring charter passenger air carriers:

1. **Air Canada** operates multiple daily flights between Prince George and Vancouver under its Air Canada Express regional brand, with flights operated by Jazz Aviation via a Capacity Purchase Agreement, using the 78-seat De Havilland Canada Dash 8-400.
2. **Central Mountain Air** operates multiple flights per week between Prince George and Terrace, Fort Nelson, Kelowna, and Edmonton using the 18-seat Beechcraft 1900.
3. **Flair Airlines** commenced seasonal service in 2022 between Prince George and Tucson. In the 2022-2023 winter season, flights are operating between December and March with one roundtrip flight per week using the 189-seat Boeing 737 MAX 8.
4. **KF Aeroflyer** operates a scheduled / recurring charter service between Kelowna, Prince George, and Terrace-Kitimat in support of the resource sector. Multiple flights are operated per week using the 119-seat Boeing 737-600.
5. **Pacific Coastal Airlines** operates multiple flights per week between Prince George and Victoria using the 18-seat Beechcraft 1900.
6. **WestJet** provides multiple daily flights to its hubs in Vancouver and Calgary. Flights are operated by the carrier's WestJet Encore subsidiary using the 78-seat Dash 8-400.

Two air carriers currently provide dedicated scheduled air cargo services:

1. **KF Cargo** provides service four days per week between Vancouver and Prince George via Kamloops. Cargo services are operated using the carrier's Convair 580 freighter.
2. **SkyLink Express** operates multiple flights per week between Vancouver and Prince George, with services operated using the Beechcraft 1900 freighter.

The following fixed and rotary-wing aircraft operators are based at the Airport and provide aerial work, air taxi, and / or charter services:

- **Aberdeen Helicopters** is based at Prince George and operates a fleet of Bell 206 and Airbus AS350 helicopters. The company serves the oil and gas, forestry, mining, wildlife, media, and tourism sectors.
- **Bailey Helicopters** is a commercial rotary-wing provider that provides services to a diverse range of customers, such as aerial construction, avalanche and wildfire control, remote access, forestry, tourism, resource extraction, and oil and gas services.
- The **British Columbia Wildfire Service** maintains a fixed and rotary-wing wildfire suppression base at the Airport that is used by contracted air operators.
- **Custom Helicopters** operates a fleet of over 30 helicopters and maintains a base at Prince George. Custom Helicopters provides aerial support to sectors such as mineral exploration, infrastructure, oil and gas, tourism, and wildfire suppression.
- **Guardian Aerospace** is a fixed-wing Flight Training Unit, charter operator, and Aircraft Maintenance Organization that operates a fleet of six single-engine Cessna aircraft.
- **Northern Thunderbird Air** is the sister airline to Central Mountain Air and is based at Prince George Airport. Northern Thunderbird Air provides charter and air ambulance services using its fleet of Beechcraft King Air 350 aircraft.
- The **Royal Canadian Mounted Police**'s Air Services Branch bases one fixed-wing and one rotary-wing aircraft at the Airport that are used to support the agency's various law enforcement mandates, such as a personnel transportation and investigation support.
- **Ootsa Air Services** provides air taxi services to remote First Nations communities using the twin-engine Piper PA-31 Navajo.
- **Yellowhead Helicopters** maintains a base and operations centre at the Airport in support of its wide range of helicopter-based commercial services, including aerial photography, avalanche control, emergency services, wildlife activity, support to the forestry, resource, and utility sectors, and tourism.

Finally, the third primary category of businesses and tenants at the Airport are those organizations that provide supporting services that enable the core aeronautical activities of the facility. These entities include:

- **Allied Universal Security** is contracted by the Canadian Air Transport Security Authority to provide pre-board passenger and baggage screening services for air carrier flights.
- The **Canada Border Services Agency** provides border control, customs, and immigration enforcement services for international aircraft arrivals.
- The **Central BC Flying Club** operates a small clubhouse and provides parking for member and transient general aviation aircraft.
- **Executive Aviation** provides above-the-wing and below-the-wing air carrier ground handling services.

- **Farmhouse Catering** provides food and beverage services in the terminal building.
- **Flight Fuels, Petro Value, World Fuels, and Executive Flight Centre** store fuel for dispensing and further sale within the PGAA's Jet-A fuel farm adjacent to Apron V.
- **Hill Aircraft Service** provides aircraft maintenance for fixed and rotary wing aircraft both and off-airport.
- **Majestic Management** manages a multi-tenant hangar owned by Custom Helicopters, with space rented to Northern Thunderbird Air, Purolator, and Allied Aviation.
- **NAV CANADA** maintains an Air Traffic Control Tower and provides airspace management and weather observation services.
- **Paladin Security** is contracted by the PGAA to provide general security and parking services.
- **Ron's Aviation Services** operates a Fixed Base Operator (FBO) businesses within the Hill Aviation Hangar.
- **World Fuels** owns and operates a 100LL (Avgas) fuel farm adjacent to the main apron. Into-plane fueling is contracted to Executive Aviation, the sole provider of into-plane avgas fuelling services.

4.5 Activity Levels

The annual activity of the Airport can be explored through three primary metrics:

1. The number of enplaned / deplaned passengers travelling on air carriers;
2. The tonnage of air cargo processed; and
3. The number of aircraft movements that occur.

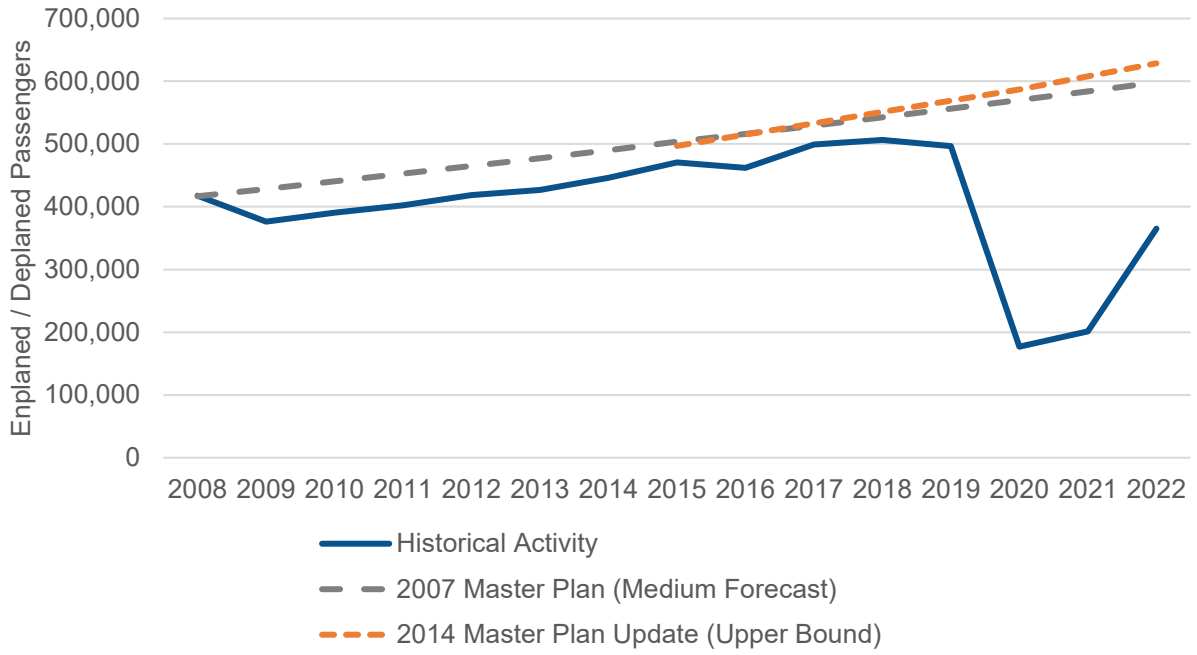
4.5.1 Passenger Activity Levels

Passenger activity levels from scheduled and charter air carriers are assembled by the PGAA and were reviewed for the period of 2008 to 2022, commencing with the forecast period of the 2007 Airport Master Plan.

Passenger activity levels between 2009 and 2019 exhibited an overall trend of year-over-year increases, as shown in Figure 4.1. Passenger levels increased from 376,000 enplaned / deplaned passengers in 2009, to a high of between 497,000 and 506,000 passengers between 2017 and 2019. Passenger levels increased by a total of 32% from 2009 to 2019, or an average of 3.2% per year. The Medium Forecast from the 2007 Airport Master Plan, shown in Figure 4.1, assumed an average growth rate of 3.3% in the same period and compares favourably to actual passenger activity with the divergence largely limited to the non-forecast decrease in actual levels in 2009. The 2014 Airport Master Plan Update passenger forecast (Upper Bound) also compares favourably to historical activity.

The passenger activity impacts of the public health measures and decreased travel stemming from the onset of the COVID-19 pandemic in Canada in 2020 were pronounced. In 2020, passenger activity decreased by 64% from 2019, reaching 177,00 passengers – a level not seen since before 1989. Passenger activity exhibited a modest 14% growth rate in 2021 versus 2020, recovering to 41% of 2019 levels. Performance was stronger in 2022, with a 66% increase from the previous year and passenger activity recovering to 74% of 2019 levels.

Figure 4.1 - Enplaned / Deplaned Passenger Levels (2008-2022)



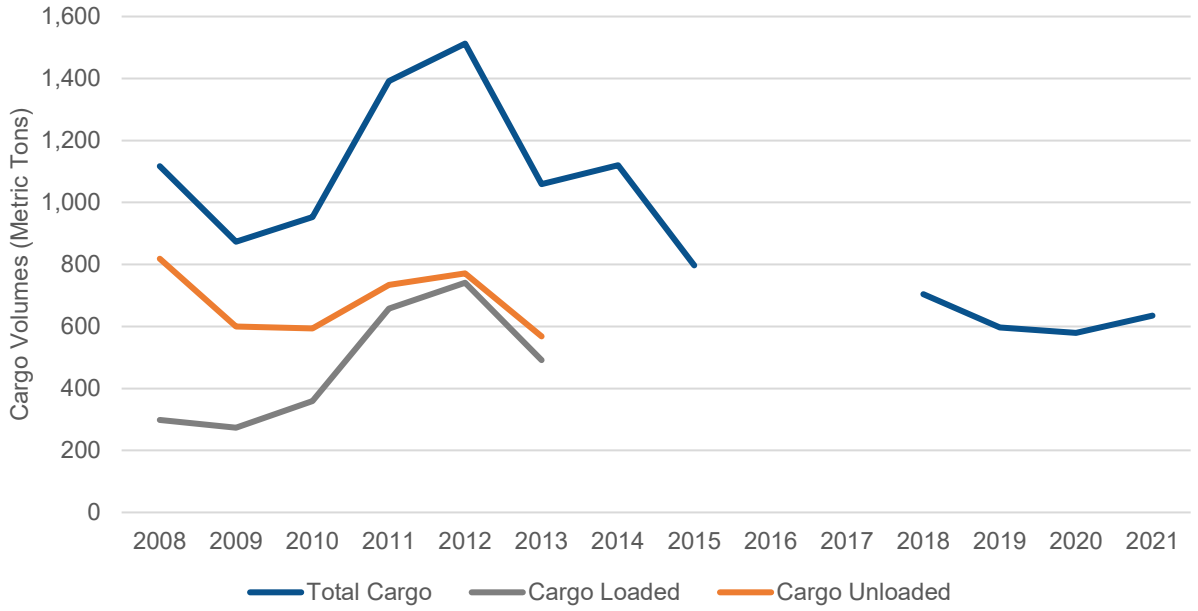
4.5.2 Cargo Activity Levels

Air cargo activity at Prince George Airport occurs through three primary modes:

1. Scheduled services provided by dedicated air cargo carriers. Currently, such services are provided by KF Cargo and SkyLink Express;
2. Scheduled services provided by air carriers offering in-house cargo solutions through the baggage holds of passenger aircraft, such as Air Canada and WestJet; and
3. Ad hoc cargo charters meeting the needs of customers in the region.

Cargo throughput and flights are reported by Statistics Canada, with this data reviewed for the period of 2008 to 2021 (2016 and 2017 was not reported by the agency). Between 2008 and 2015, cargo throughput (the tonnage of cargo loaded and unloaded) ranged between 800 and 1,500 metric tons annually and averaged 1,100 metric tons per year, as shown in Figure 4.2. The growth in cargo throughput experienced between 2009 and 2012 was primarily driven by increased outbound cargo volumes. From 2012 to 2015, cargo throughput decreased from a maximum of 1,500 metric tons to 800 metric tons. Following the gap in data availability in 2016 and 2017, cargo throughput decreased further to a low of approximately 600 metric tons in 2019 and 2020, before increasing modestly in 2021. Based on the most recent historical data from 2018 to 2021, an average of 1.7 metric tons is handled at the Airport daily.

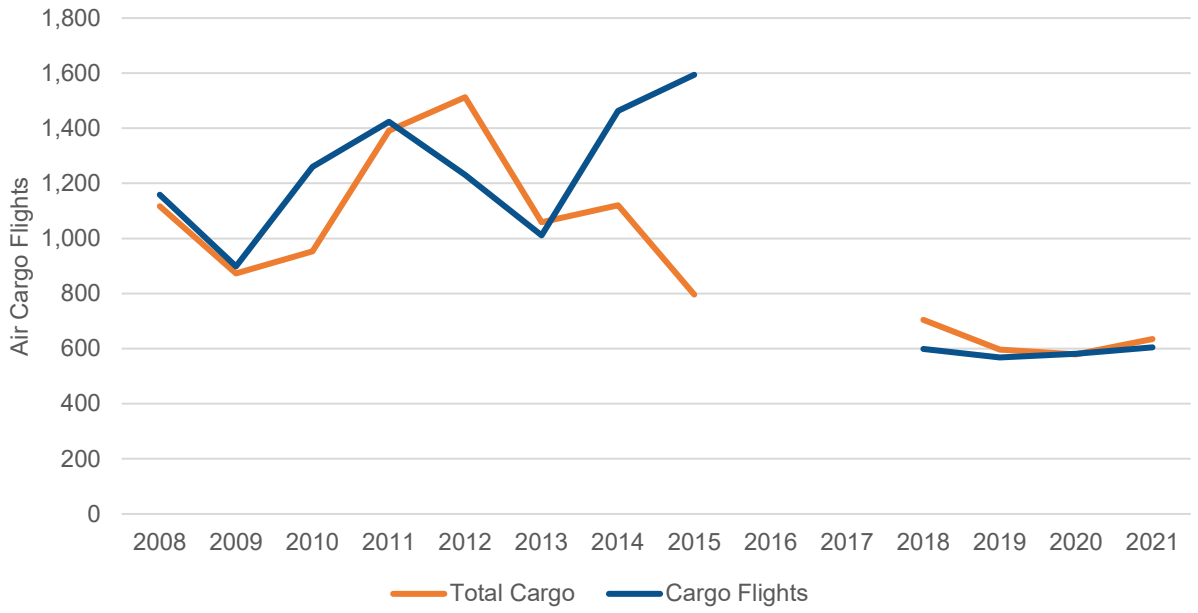
Figure 4.2 - Air Cargo Tonnage (2008-2021)



Note: Statistics Canada omission of air cargo data for 2016 and 2017. This is a common practice when publishing of such information could be harmful to a commercial entity.

Figure 4.3 compares the number of cargo flights operated at the Airport to total cargo tonnage. Based on the Statistics Canada dataset, an average of 1 metric ton of loaded / unloaded cargo is handled per cargo flight. This aligns with the size of the aircraft deployed to meet the air cargo needs of the market, with such flights predominantly operated by the Beechcraft 1900 (cargo capacity of 2.5 metric tons) and Convair 580 (cargo capacity of 7.3 metric tons). This also aligns with the route structure operated by KF Cargo and SkyLink Express, with both carriers integrating their Prince George operations as part of multi-stop routings (e.g., Vancouver-Kamloops-Prince George).

Figure 4.3 - Air Cargo Flights (2008-2021)



Taken together, the historical cargo tonnage and flight datasets are indicative of the current state of the air cargo market at Prince George. An average of 1.7 metric tons of cargo is handled daily between 2018 and 2021, including both inbound and outbound cargo, suggesting that local air cargo demands are likely limited to the movement of smaller volumes of time sensitive shipments, with the majority of total regional tonnage handled by road and rail. This is reflected in the modest size of the regional turboprop aircraft deployed by KF Cargo and SkyLink Express in the Prince George market. This dedicated cargo capacity is supplemented by the hold capacities of passenger air carriers, and charter operations are accommodated on a customer-driven / as-needed basis.

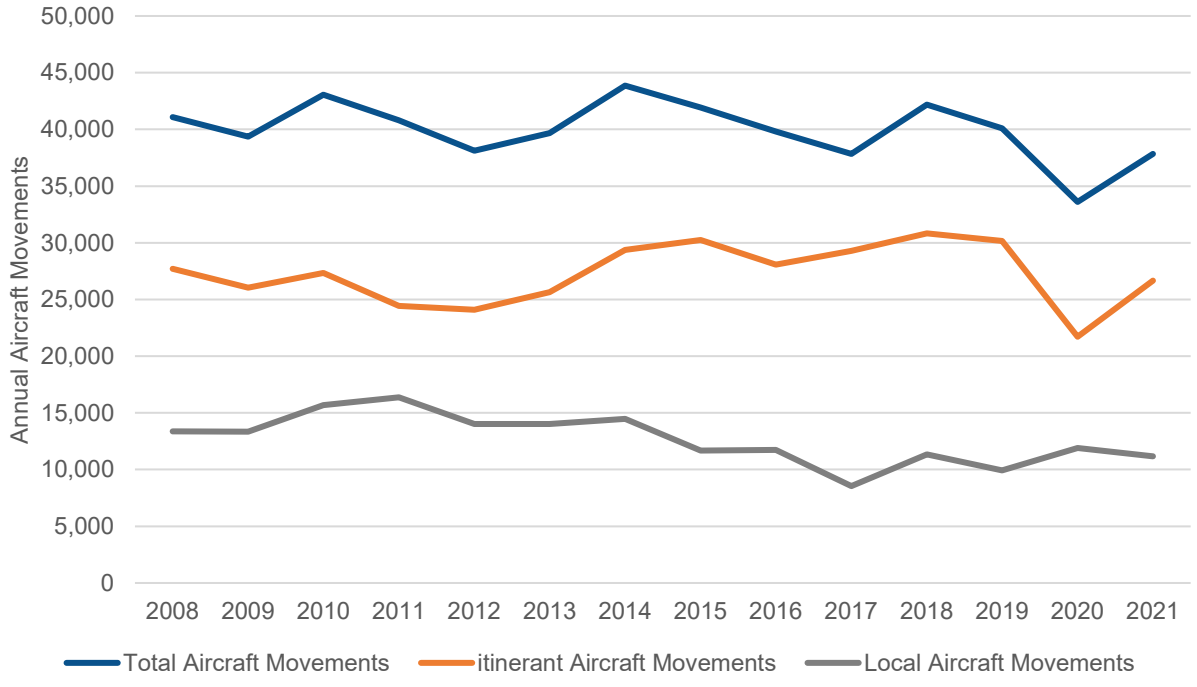
4.5.3 Aircraft Movements

Aircraft movement data is recorded by NAV CANADA and reported by Statistics Canada. An aircraft movement is defined as a single landing, take-off, or simulated approach. This dataset was reviewed for the period of 2008 to 2021 for the purpose of the Master Plan Update.

As shown in Figure 4.4, an average of 41,000 aircraft movements occurred at the Airport annually between 2008 and 2019, ranging between lows of 38,000 movements in 2012 and 2017, and highs of between 42,000 and 44,000 movements in 2010, 2014, and 2018. Overall activity fluctuated on a cyclical basis, with significant increases in 2009-2010, 2012-2013, and 2017-2018 followed by multi-year decreases. As a result of these repeated cycles of growth and decline, the general trend in total aircraft movements between 2008 and 2019 was that of dynamic stability, with an overall flat trend. Total movements decreased by 16% in 2020 with the onset of the COVID-19 pandemic and a decrease in itinerant movements; however, movements increased by 13% the following year.

Local movements are movements where the aircraft remains in the circuit, such as during training flights and equipment tests. Local movements represent approximately one third of the Airport's annual aircraft activity. Activity in this category has decreased over time from 2008 to 2021, with an average decrease of 0.1% per year. Over the last five years (2017-2021), between 9,000 and 12,000 local movements have occurred annually at the Airport, down from the range of between 12,000 and 16,000 annual movements between 2008 and 2016.

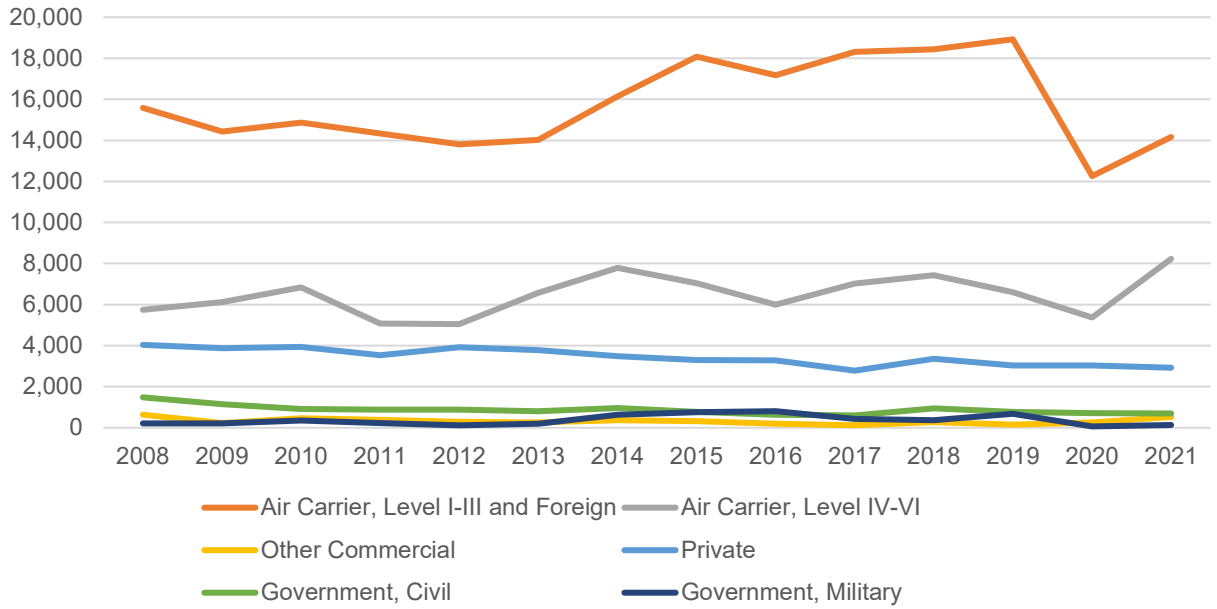
Figure 4.4 - Total Aircraft Movements (2008-2021)



Itinerant movements are cases where an aircraft proceeds to, or arrives, from another location; or where an aircraft leaves the circuit and returns without landing at another airport. Itinerant aircraft movements represent the largest source of activity at the Airport, comprising an annual average of 68% of the total. Prior to the COVID-19 pandemic, itinerant movements were increasing by an annual average of 1% per year. Although itinerant movements decreased by 28% in 2020, this category of activity grew by 23% in 2021. Itinerant movements can be further classified into six categories, as shown in Figure 4.5 and explained below:

1. **Air Carrier, Level I-III and Foreign:** This category encompasses the operations of air carriers with gross revenues of $2M that transport significant quantities of passengers and / or cargo. Itinerant movements in this category increased from between 14,000 and 15,000 between 2009 and 203 to between 17,000 and 19,000 in the period of 2015 to 2019. Air carrier activities were significantly impacted by the COVID-19 pandemic and decreased to 12,000 movements in 2020, before partially recovering to 14,000 movements in 2021.
2. **Air Carrier, Level IV-VI:** Operations by smaller air carriers with gross revenues of less than $2M were the second largest source of itinerant movements. An average of 6,000 itinerant movements in this category were recorded annually between 2008 and 2021.
3. **Private:** This category includes aircraft used solely for private purposes, not for hire and compensation, and is the third largest source of itinerant traffic. Private movements exhibited a gradual negative trend from 2008 to 2021, decreasing by an average of 2.1% per year.
4. **Other Commercial:** Includes flights performed by aircraft operators such as Flight Training Units, aerial photography, and survey, etc. Fewer than 1,000 itinerant movements per year are recorded in this category, with an average of 300 such movements annually between 2008 and 2021.
5. **Government, Civil:** Aircraft owned by federal, provincial, and municipal bodies. Operations in this category represented an annual average of 900 itinerant movements annually.
6. **Government, Military:** Aircraft of any branch of the armed forces of any nation. An average of 400 itinerant movements per year are attributed to military operations.

Figure 4.5 - Itinerant Aircraft Movements (2008-2021)



5 GROWTH OPPORTUNITIES AND DEMAND ASSESSMENT

5.1 SWOT Analysis

5.1.1 Strengths

Facilities and Infrastructure – Prince George Airport is a highly capable airport offering the third-longest runway in western Canada (11,450 ft.) after Calgary and Vancouver (14,000 ft. and 11,500 ft. respectively), and fifth-longest in Canada. The Airport is equipped with ILS and GPS approaches, approach lighting, a modern ATB, and dedicated maintenance and emergency services. The existing infrastructure allows the Airport to support virtually all types of aviation activity from General Aviation and flight training to scheduled passenger and air cargo operations.

Transportation and Service Hub – Prince George serves as a hub for transportation in inland British Columbia and a service centre for much of northern B.C. Located at the intersection of the Yellowhead Highway and Cariboo Highway, Prince George is also a strategic rail stop for both passenger and freight. The City's construction and manufacturing industries are involved in numerous developments in northern British Columbia. Considerable driving times and distances to airports offering comparable services is considered a competitive advantage. Prince George Airport's location makes it well suited to support energy resource and mining projects through the transportation of workers and tradespeople.

Availability of Funding – Historically, the PGAA has been successful at sourcing funding for major infrastructure improvements. Since the 2007 Master Plan, the PGAA has extended Runway 15-33 to 11,450 ft., made improvements to the ATB, and constructed a dedicated cargo apron. In 2007, the PGAA was successful in securing an $11 M loan from Northern Development and additional funding from the Province or British Columbia and Government of Canada. The airport was granted $3.6 M of the annual total $9.28 M allotted in 2021 by the British Columbia Air Access Program. In 2022 the Airport received $1.7 M from Transport Canada's Airport Relief Fund towards airport operations and $1.4 M from the Airports Capital Assistance Program (ACAP) for the purchase of mobile equipment, separate from the $1.4 M in ACAP funding secured in 2021.

5.1.2 Weaknesses

Driving Distance from Prince George – Common to many airports and consistent with complementary land uses in the vicinity of the Airport, the distance between the City of Prince George's downtown and Prince George Airport (approximately 15 km drive via Cariboo Highway). This distance, while limiting the impact of aircraft noise on City residents, among other benefits, results in a competitive disadvantage for the Airport's groundside lands (those without access to the runway and taxiway networks) relative to competing commercial and industrial lands closer to the City's core.

Public Access – Public transit is not currently provided by the City to areas east of the Fraser River, including the Airport. The Transit Future Action Plan published by the City in 2020 does propose a limited and exploratory transit service to the Airport in the Plan's 'long term', tentatively consisting of 4 daily round-trips on weekdays from the City centre to the Airport. For the foreseeable future, transportation to and from the Airport by the travellers and those employed at the Airport is likely to be limited to personal vehicles.

5.1.3 Opportunities

Population Growth – Population data for the City of Prince George and the RDFFG was reviewed for the period of 2006 to 2021 to understand the changing demographics of the catchment area. As shown in Table 3.2, the population of Prince George was approximately 77,000 in 2021 and has remained relatively stable with modest growth realized throughout the four reviewed census periods, ranging between a minimum of 71,000 in 2006 and a maximum of 77,000 in 2021.

RDFFG's population in 2021 reached 97,000 – similar to Prince George, the population of RDFFG was relatively stable across the four census periods. The growth rates experienced in both Prince George and RDFFG lag the levels experienced in British Columbia as a whole; while the provincial population increased by 7.59% with the 2021 census, the populations of Prince George and the Regional District increased by 3.66% and 2.62%, respectively.

Low-Cost and Ultra Low-Cost Carriers – The Canadian air travel market has witnessed the growth of Low-Cost Carriers (LCCs) and Ultra Low-Cost Carriers (ULCCs) in recent years. These airlines focus on reducing operating costs, offering lower fares, operating at secondary airports with lower fees, maintaining a single aircraft fleet type, and offering a higher density onboard product. Flair Airlines currently serves Prince George with weekly service to Tucson. The expansion of services by Flair or the introduction of new ULCC services is probable within the planning horizon.

Availability of Developable Land – There is significant areas of land available for aeronautical and non-aeronautical development both on airport property and the surrounding lands. While the Master Plan Update underscores the use of strategic airport lands for aeronautical development, sufficient surplus lands are available for non-aeronautical uses. It is emphasized that priority be given to non-aeronautical land uses that complement current and proposed aviation activities.

The Prince George Foreign Trade Zone was established by the City to leverage the rail, road, and air transportation networks to help businesses connect with provincial, national, and global markets. The FTZ envelops the Airport lands and the Prince George Global Logistics Park east and west of Boundary Road and has identified 283 hectares of leasable airport land and over 1,200 hectares of privately-owned light industrial land.

Energy Resource Air Logistics Support – Natural gas and mining projects require air logistics to support the efficient transportation of worker through both the construction and operations phases. Prince George's position as the gateway to northern B.C. makes it an ideal candidate to support charter passenger transportation through private FBOs or 'no frills' passenger processing facilities. Corporate aircraft support facilities, such as FBOs and aircraft hangars, can also support the energy resource sector and were noted to be in demand at Prince George Airport during the consultation process.

E-Commerce and Air Cargo – E-commerce has grown significantly in recent years, leading to significant changes in logistics with IATA estimating that 15% of air cargo volumes were attributed to e-commerce. As e-commerce's continued growth is anticipated, there may be opportunities for Prince George Airport to support this industry through air cargo operations and complementary non-aeronautical services.

Innovation – UAV platforms as well as eVTOL aircraft entering the passenger air travel market is compelling airports to consider how these technologies can be accommodated while maintaining safety, regulatory obligations, and levels of service. Also, a focus on reduced carbon emissions has resulted in innovation in both electric aircraft design and manufacturing as well as sustainable fuels. As UAV/RPAS technologies advance beyond Type I drones (12 kg-25 kg), there may be greater opportunity for complementary UAV activity at certified airports.

5.1.4 Threats

Aviation Industry Workforce Shortages – Prior to the COVID-19 pandemic, the acute need for new professional pilots to enter the aviation sector was identified as being essential to replacing individuals leaving the workforce through retirement or pursuing new careers and to accommodate forecast growth in air travel demand. In 2018, the Canadian Council for Aviation & Aerospace estimated that 7,300 new professional pilots would be needed in Canada by 2025. Although the short-term changes to workforce needs during the pandemic air travel downturn temporarily decreased the need for new pilots, the post-pandemic resurgence of air travel demand coupled with the accelerated retirement or exit of skilled professionals from the industry between 2020 and 2022 has once again brought this issue to the forefront.

Regional air carriers have experienced challenges with attracting and retaining qualified pilots, as hiring by larger airlines places a drain on talent – increasingly, staffing issues are affecting the degree to which regional air carriers can maintain and grow their schedules. As Prince George is highly exposed to, and dependent on, the operations of regional air carriers (e.g., WestJet Encore, Air Canada Express, Central Mountain Air, Pacific Coastal Airlines), workforce shortages represent a significant threat that may influence how quickly carriers can add capacity and frequency to the local market.

Passenger Service Disruptions – The COVID-19 pandemic resulted in an immediate and significant reduction in passenger air travel from which the industry continues to recover. Passenger traffic at Prince George Airport decreased from 474,500 in 2019 to 161,500 in 2020 with a modest rebound to 185,400 experienced in 2021. The rate at which passenger movements grow and when they return to or exceed 2019 values is influenced by a variety of economic and aviation-specific factors and can only be estimated.

Passenger Aircraft Fleet Changes – Many major Canadian airlines have retired much of their 19-30 seat regional turboprop aircraft fleets including the Beechcraft B1900 and the De Havilland DHC 8-100 and -300 variants. While these aircraft currently remain prevalent in western Canada, new aircraft models are not anticipated to enter the market to fill the impending capacity gap in the near term. The exit of many of these aircraft types is a threat to how northern and remote communities in Canada are accessed and served. As these aircraft types continue to age, the timing of the entrance of new replacement types will be critical.

Long-Range Freighter Aircraft – In 2012, Prince George Airport's goal was to be a North American cargo gateway to and from Asia with an expected 15,000 fuel stop landings per year. The introduction of newer long-haul freighter aircraft – including the Boeing 777F, 777-8F, and 747-8F and Airbus A350F– offer greater payloads and in some cases longer ranges. Depending on the mission, these aircraft may be less reliant on technical stops enroute between Asia and North America.

NAV CANADA Level of Service – In 2020, NAV CANADA conducted a review of the air service requirements at Prince George Airport including Air Traffic Services (ATS) and aviation weather requirements. Aircraft movements maintained a consistent average of approximately 41,600 per year from 2016 to 2019, falling below the established guidelines for the provision of Airport Control Services (ACS) tower based on NAV CANADA policy. It was announced in April 2021 that Prince George Airport would retain its ACS tower with NAV CANADA concluding that a 'balanced approach' was needed as it continued to address the challenges brought on by the pandemic. However, as the industry recovers, NAV CANADA may elect to revisit this approach. In January 2022, NAV CANADA announced their commitment to modernize and digitize Air Traffic Services at Canadian airports. The Digital Aerodrome Air Traffic Services (DAATS) program will combine their existing air traffic management systems with advanced optical sensors to provide an equivalent level of service as on-site staff.

Changes in Regional Economy – In recent years, the regional forestry industry has taken a downturn including the planned closure of Canfor's Prince George pulp and paper mill after 55 years of operation. Additionally, the mechanical completion of the Coastal Gaslink pipeline is anticipated to be complete by the end of 2023. Both of these factors could impact demand for air travel using Prince George Airport as the transportation of workers and contractors may decrease while local disposable income available for leisure travel may decline.

5.2 Passenger Air Carrier Service Market Assessment

5.2.1 Historical Passenger Air Carrier Services

As described previously, as of February 2023 the Airport is served by six scheduled and recurring charter air service providers: Air Canada (Air Canada Express), Central Mountain Air, Flair Airlines, KF Aeroflyer, Pacific Coastal Airlines, and WestJet (WestJet Encore). Together, these carriers provide service to eight destinations in British Columbia, Alberta, and Arizona. Future air service development objectives and planning are partially informed by an understanding of historical service offerings at the Airport.

Passenger air service patterns have changed following the COVID-19 pandemic, including the termination of select destinations, the addition of new routes, and changes in route frequencies and equipment. As shown in Table 5.1, the Airport supported service to 11 destinations in January 2020. Central Mountain Air's services to Dawson Creek, Fort St. John, Kamloops, and Smithers were terminated during the COVID-19 pandemic with Fort St. John and Kamloops services restarted post-pandemic but ultimately terminated again in the summer of 2022This decrease of four destinations is partially offset by the inauguration of services to Tucson, AZ by Flair Airlines in the winter 2022-23 season.

The total number of weekly departures from the Airport has also decreased because of post-pandemic air service offering changes. In January 2020, a total of 132 departures were recorded in a typical week to the Airport's 11 destinations, including a combined total of 77 weekly flights by Air Canada and WestJet to their hubs in Vancouver and Calgary providing onward connectivity. A total of 80 departures are recorded in a typical week in January 2023, representing a 39% overall decrease in weekly frequencies.

Table 5.1 - Passenger Service Destinations and Frequencies (2020 vs. 2023)

Destination	Carriers	Weekly Departing Flights		% Change
		January 2020	January 2023	
Calgary, AB	WestJet	7	5	-29%
Dawson Creek, BC	Central Mountain Air	1	0	-100%
Edmonton, AB		6	5	-17%
Fort Nelson, BC		6	3	-50%
Fort St. John, BC		5	0	-100%
Kamloops, BC		6	0	-100%
Kelowna, BC	Central Mountain Air KF Aeroflyer (2023)	6	6	-
Smithers, BC	Central Mountain Air	6	0	-100%
Terrace, BC	Central Mountain Air KF Aeroflyer (2023)	6	6	-
Tucson, AZ	Flair Airlines	0	1	New Service
Vancouver, BC	Air Canada Central Mountain Air (2020) WestJet	70	48	-31%
Victoria, BC	Pacific Coastal Airlines	13	6	-54%
Total Weekly Departing Flights		**132**	**80**	**-39%**

The air service changes between 2020 and 2023 can also be analyzed in terms of the overall capacity being deployed at the Airport by air carriers, measured in weekly departing seats (Table 5.2). A total of 6,440 weekly departing seats were offered in a typical week in January 2020, with capacity concentrated to Vancouver (79% of total departing seats), Victoria (5%), and Calgary (4%). Total weekly capacity has decreased to 4,993 seats, or a 22% reduction versus 2020. Capacity continues to be concentrated with Air Canada and WestJet's services to Vancouver (75% of total departing seats) and Calgary (8%). Capacity was most significantly impacted with regional services operated by Central Mountain Air and Pacific Coastal Airlines. Despite these reductions, capacity gains were realized in the Kelowna, Terrace, and Calgary markets, with the latter the result of WestJet increasing its capacity by 64% through the replacement of the 34-seat Saab 340 with the 78-seat Dash 8-400.

Table 5.2 - Passenger Service Capacity (2020 vs. 2023)

Destination	Carriers	Weekly Departing Seats		% Change
		January 2020	January 2023	
Calgary, AB	WestJet	238	390	64%
Dawson Creek, BC	Central Mountain Air	18	0	-100%
Edmonton, AB		108	90	-17%
Fort Nelson, BC		108	54	-50%
Fort St. John, BC		90	0	-100%
Kamloops, BC		108	0	-100%
Kelowna, BC	Central Mountain Air KF Aeroflyer (2023)	108	209	94%
Smithers, BC	Central Mountain Air	108	0	-100%
Terrace, BC	Central Mountain Air KF Aeroflyer (2023)	108	209	94%
Tucson, AZ	Flair Airlines	0	189	New Service
Vancouver, BC	Air Canada Central Mountain Air (2020) WestJet	5,100	3,744	-27%
Victoria, BC	Pacific Coastal Airlines	346	108	-69%
Total Weekly Departing Seats		**6,440**	**4,993**	**-22%**

Taken together, the review of historical passenger air services indicates that over the last three years, the primary impacts to the Airport have been:

- The decrease of regional connectivity within British Columbia by Central Mountain Air and Pacific Coastal Airlines, including the cessation of service to four intra-provincial destinations; and
- Decreased frequencies and weekly capacity to Vancouver International Airport, the primary point of connection for Prince George through the service offerings of Air Canada and WestJet.

These negative impacts have been partially offset by increased capacity (but decreased frequency) by WestJet to its Calgary International Airport primary hub, additional resource-related charter activity, and new transborder service to Arizona by Flair Airlines. These changes will partially inform future air service development objectives.

5.2.2 Catchment Area Service Priorities

The online survey included a series of questions to gauge the priorities of catchment area residents and businesses with respect to passenger air services. Among the 1,312 resident respondents that self-reported data on their air service habits, approximately 7,300 individual trips by air are typically generated on an annual basis, or an average of 5.6 trips by air per household per year. The 21 business respondents identified that they cumulatively generate approximately 700 trips by air in a typical year, or an average of 32.8 trips by air per business per year.

Respondents were surveyed to identify their priorities across four categories:

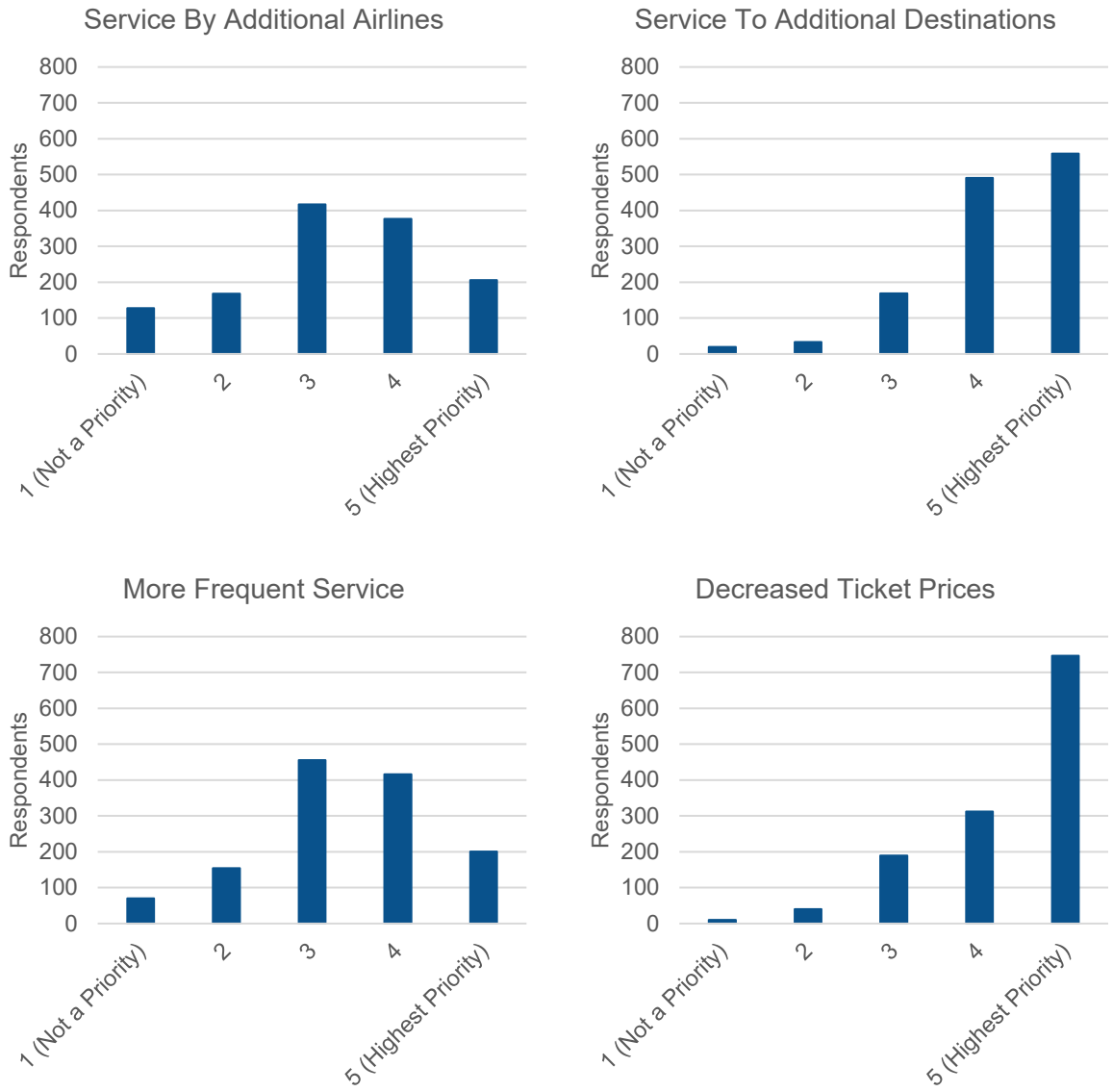
1. The provision of service by additional / new airlines;
2. Service to new destinations not currently served from Prince George;
3. More frequent services on current routes; and
4. Decreased ticket prices.

As shown in Figure 5.1, new routes to additional destinations not currently served from Prince George and decreased ticket prices were the highest prioritized options among resident survey respondents, with weighted prioritization levels of 4.2 and 4.3, respectively. In contrast, service by additional airlines and increased frequencies on existing routes were identified as being of a lower priority, with weighted average ratings of 3.3 and 3.4, respectively. Similar priorities were expressed by respondents to the business survey; respondents in this category assigned additional direct destinations and decreased ticket prices prioritization ratings of 4.0, while service by new airlines and additional frequencies were prioritized lower at 3.4 and 3.6, respectively.

Respondent priorities regarding more direct destinations were further explored through an analysis of routes of highest interest by residents. Based on a keyword analysis, the following destinations / markets were identified as being of the highest priority from Prince George:

1. Mexico (e.g., Cancun, Puerto Vallarta);
2. Las Vegas, Nevada;
3. Toronto, Ontario;
4. Hawaii (e.g., Honolulu, Maui); and
5. Seattle, Washington.

Figure 5.1 - Resident Survey Respondent Air Service Priorities



5.2.3 Air Service Market Review and Opportunity Identification

To assist with the passenger air service market assessment, a review has been completed of the developments and strategies of the carriers currently serving Prince George, as well as other observed trends that may be of future importance for the Airport.

Air Canada

Air Canada, as of February 2023, continues to occupy the position of Canada's largest airline and provides multiple flights between Prince George and its Vancouver hub. Air Canada's service offerings to Prince George have been stable over the past two decades: at the time of the 2007 Master Plan's preparation, six flights per weekday were operated to Vancouver using the 50-seat CRJ-100/200; at the time of the 2014 Master Plan Update, five daily flights were operated using the 78-seat Dash 8-400. Insights and assumptions with respect to Air Canada's service offerings at Prince George are as follows:

- Aircraft Type: With the retirement of sub-50 seat turboprop aircraft (Beechcraft 1900, Dash 8-100, and Dash 8-300) from its Capacity Purchase Agreement and the concentration of its 50-seat CRJ-200 aircraft to eastern Canada, regional services in British Columbia are predominantly operated by the 78-seat Dash 8-400. Air Canada's most recent Capacity Purchase Agreement with Jazz Aviation, the sole operator of Express flights, includes a minimum fleet guarantee of 105 aircraft in the 70-80 seat category until 2025 and 80 aircraft from 2026 to 2035. The deployment of aircraft in the 120+ seat category is currently limited to larger markets (i.e., Kelowna, Vancouver, and Victoria), with no services currently provided by Air Canada to regional destinations comparable to Prince George with these higher capacity aircraft.

  Assumption: Air Canada will continue to deploy the 78-seat Dash 8-400 (or an equivalent capacity aircraft, such as the CRJ-900) to Prince George throughout the short and medium-term planning horizons, consistent with its current British Columbia regional service strategy.

- Hub Connectivity: With the reduction of Air Canada Express flying from its Calgary focus city, Air Canada appears to be concentrating its regional capacity and service offerings in western Canada to its Vancouver hub. Air Canada's service offerings to Prince George are consistent with its strategy of connecting similar markets throughout British Columbia to its domestic and international network through its Vancouver hub, with the exception of larger markets such as Kelowna and Victoria that are also connected to its Toronto and Montreal hubs.

  Assumption: Based on the carrier's current Vancouver hub-and-spoke operations, Air Canada's connectivity between Prince George and its domestic and international route network will continue to be provided through Vancouver. New Air Canada Express services to destinations such as Calgary or Edmonton are not anticipated, barring a significant increase in Origin and Destination traffic between these points and Prince George.

Summarized, Air Canada's operations at Prince George are anticipated to be stable in terms of destination served and aircraft type deployed. Future capacity increases are anticipated to occur as a result of additional daily / weekly frequencies connecting to their hub in Vancouver.

WestJet

As a dominant carrier in western Canada and the country's second largest airline, WestJet provides connectivity between Prince George and its domestic and international hubs in Vancouver and Calgary. WestJet's service offerings in Prince George have evolved over time, primarily through the introduction of its WestJet Encore regional services:

- At the time of the 2007 Master Plan's preparation, WestJet operated services to Vancouver three times daily using its 136-seat Boeing 737-700. Limited weekly seasonal charter flights were also operated to Puerto Vallarta using the Boeing 737;
- Operations by WestJet Encore in western Canada commenced in 2013. At the time of the 2014 Master Plan Update's preparation, WestJet operated four daily flights to Vancouver using the Boeing 737-700 and smaller 78-seat Dash 8-400 operated by WestJet Encore. Seasonal charters to Puerto Vallarta continued; and
- Since 2013, all flights to Vancouver have transitioned to WestJet Encore Dash 8-400 service. The inauguration of flights to Calgary in 2018 saw service by WestJet Link (Pacific Coastal Airlines) using the 34-seat Saab 340 – however, these flights have since transitioned to WestJet Encore.

Based on a review of WestJet's current route network, publicly available elements of its strategy, and direct consultations with airline representatives, the following insights and assumptions are offered:

- Aircraft Type: The 78-seat Dash 8-400 operated by WestJet Encore is now the sole aircraft deployed by WestJet to Prince George, replacing the larger Boeing 737-700 and smaller Saab 340 aircraft previously deployed to Vancouver and Calgary, respectively. Between 2022 and 2023 as a result of a strategic direction change by the company, Dash 8-400s previously operated in eastern Canada were redeployed to western Canada. As of 2023, WestJet has not committed to ordering any aircraft with capacities filling the gap between the Dash 8-400 and the 136-seat Boeing 737-700.

  Assumption: The 78-seat Dash 8-400 will continue to be the predominant aircraft deployed by WestJet to serve Prince George, consistent with its service offerings at comparable regional destinations within its British Columbia network.

- Hub Connectivity: In 2022, WestJet announced a revision to its strategic direction through a planned build-up in capacity in western Canada, including its designation of Calgary as its exclusive global connecting hub. WestJet currently connects Prince George with Calgary and Vancouver, with the latter also serving as a significant base of operations for the carrier.

  Assumption: Continued service by WestJet between Prince George and Vancouver is anticipated throughout the short, medium, and long-term planning horizons. With the planned growth of Calgary as the carrier's global hub, the potential may exist for additional services from Prince George.

Porter Airlines

Porter Airlines has entered the western Canada market through the acquisition of longer-range turbofan aircraft and by establishing new routes spanning the country. In 2021, Porter ordered 30 132-seat Embraer E195-E2 aircraft with an option for an additional 50 aircraft and in 2022 made a firm order of 20 aircraft. The airline took delivery of the first two aircraft in December 2022. Having exclusively operated the 78-seat Dehavilland DHC 8-400 (Bombardier Q400) turboprop aircraft since their inception in 2006, the addition of turbofan aircraft marks a significant shift in their domestic, transborder, and international strategy.

The operating range offered by the E195-E2 has allowed Porter to introduce direct service from Toronto Pearson International Airport to destinations in western Canada including Vancouver, Calgary, and Edmonton. As the fleet grows, it is possible that additional direct routes will be added between Toronto and western Canada.

British Columbia and Alberta Regional Connectivity

Given Prince George's unique role as the gateway to northern British Columbia, the Airport has historically served as a connecting hub for Central Mountain Air Services, linking majority metropolitan areas (Edmonton and Vancouver) with regional destinations that included Dawson Creek, Fort Nelson, Fort St. John, Kamloops, Kelowna, Smithers, and Terrace as shown in Figure 5.2. Central Mountain Air's services between Prince George and Dawson Creek, Fort St. John, Kamloops, and Smithers were suspended during the COVID-19 pandemic and have not resumed as of February 2023. Of these destinations:

- Dawson Creek lost all Central Mountain Air service but gained service to Calgary in 2022 by WestJet Link. However, WestJet Link services are to be suspended in February 2023;
- Fort St. John continues to be served by Air Canada and WestJet from Calgary and Vancouver;
- Kamloops continues to be served by Air Canada and WestJet from Calgary and Vancouver; and
- Smithers continues to be served by Air Canada from Vancouver, and Central Mountain Air restructured its route network by connecting the city with Vancouver.

Therefore, Prince George continues to serve as a connecting hub for services between Edmonton, Fort Nelson, Kelowna, and Terrace. However, the potential return of services to Dawson Creek, Fort St. John, Kamloops, and Smithers is unclear. As Fort St. John, Kamloops, and Smithers continue to be integrated in the broader route networks of Air Canada, WestJet, and Central Mountain (where applicable), the role of Prince George as a connecting hub for these destinations may potentially be decreased within the planning horizons of the Master Plan Update. However, planning efforts should continue to allocate sufficient facilities for the restoration of the Airport's role as a regional connecting hub in the future.

Figure 5.2 - Central Mountain Air Route Network (May 2019 vs. February 2023)

May 2019 **February 2023**

Pacific Coastal Airlines has provided connectivity between Prince George and Victoria since 2015 except for a brief suspension in 2020 during the onset of the COVID-19 pandemic. This route provides access for individuals travelling for recreational, business, and governmental purpose and links northern British Columbia with the provincial capital and is of unique importance in this respect. As weekly frequencies have been reduced from 13 to 6, the restoration of the pre-pandemic route schedule will provide improved choice and flexibility for travellers and is a goal for the future.

Winter Seasonal Vacation Service Offerings

Flights to "sun destinations" in the southern United States, Mexico, and Caribbean are commonplace across Canada to capture winter seasonal demand for Canadians heading abroad for vacation. Prince George has historically supported weekly flights by WestJet to Puerto Vallarta and Las Vegas, operated by the Boeing 737 (these services have since ceased). In December 2022, Flair Airlines commenced weekly service between Prince George and Tucson, with flights operating during the peak winter season from December to March. The success of this new route and its potential return in subsequent years is anticipated to be evaluated at the end of the season.

As noted previously, resident survey data completed in 2023 identified a strong desire to the commencement of direct services from Prince George to winter seasonal destinations, with Mexico, Las Vegas, and Hawaii being the three most frequently identified destinations from survey respondents. It is anticipated that local demand for winter seasonal sun destination flights will continue to prevail throughout the Master Plan horizons and potentially increase with the growth of the catchment area population. Markets identified to be of potential interest in the Prince George catchment area include:

- The restoration of service to Puerto Vallarta or other destinations in Mexico; and
- Service to sun destinations in the United States, such as Las Vegas, Tucson, or Phoenix.

Summer Seasonal Tourism Service Offerings

An air service offering that historically has not occurred at Prince George but that exists at other key tourism destinations are direct summer seasonal connections to eastern Canada (e.g., Toronto, Montreal). In this model, inbound and outbound tourism demand (i.e., from Prince George to eastern Canada, and from eastern Canada to Prince George) is leveraged to support service during the peak summer season. From an outbound tourism perspective, online resident survey data identified direct service to Toronto as being a priority for residents and one of the most popular final connecting destinations currently.

As both Air Canada and WestJet provide high levels of connecting service through their hub flights to Vancouver and Calgary, these carriers may not represent high likelihood operators for a direct service model. Instead, Ultra Low-Cost Carriers such as Flair Airlines, Lynx Air, or Swoop may represent more appropriate targets. It is important to note that the success of future inbound tourism-oriented air services is closely interdependent on the degree to which Prince George and the surrounding region can further develop its tourism offerings and market them in a way that stimulates external visitor demand. While the Airport, through its support of air service connectivity, can enable improved access for tourists to Prince George, it cannot create the attractions or destinations that are the root cause of external demand. Close coordination with Tourism Prince George will be required.

Aviation Industry Workforce Shortages and Network Adjustments

As described in the SWOT analysis, aviation industry workforce challenges are a current and growing concern that have a high likelihood of influencing air carrier network planning in the Master Plan horizons. While efforts are underway to increase the flow of professional pilots into the industry, it generally takes multiple years for a pilot to move through all required training and experience building processes to be employable to major regional air carriers such as those currently serving Prince George. This protracted training timeline coupled with upward flow to major air carriers (e.g., Air Canada, WestJet), the decreased issuance of commercial pilot licenses in recent years, and pandemic-era workforce retirements, resignations, and dismissals is reasonably expected to have noteworthy industry impacts.

The potential impacts of aviation industry workforce shortages to Prince George specifically cannot reliably be modelled given the national scale and complexity of this issue. However, potentially foreseeable impacts may include a continued focus on hub and spoke route network strategy by Air Canada and WestJet to maximize passenger feed into higher capacity mainline airliners on major routes. Difficulties with securing additional route frequencies and the potential reallocation of aircraft and crews from Prince George to other markets with more attractive business cases if personnel shortages are a network limiting factor may also be experienced.

5.2.4 Air Service Objectives Identification

Based on the foregoing review, the following opportunities and objectives have been established with respect to passenger air service development by the PGAA. The order presented herein does not imply a mutually exclusive approach in which only one objective is advanced at a time. Instead, it is anticipated that air service development efforts will be of prime importance by the PGAA throughout the various planning horizons and advanced accordingly, with objectives re-evaluated as service offerings change over time.

1. **Increased Hub Connectivity:** Services provided by Air Canada and WestJet to their hubs in Vancouver and Calgary are a crucial source of domestic, transborder, and international connectivity for residents and visitors. The ongoing service provided by the incumbent carriers is essential in meeting the travel needs of Prince George and the surrounding region, and the priority focus identified through the Master Plan Update is preserving existing services while also pursuing additional frequencies to provide additional options for travellers.

2. **Increased Regional Connectivity:** The services currently and historically offered by Central Mountain Air and Pacific Coastal Airline provide unique intra-provincial connectivity and strengthen the Airport's role as part of British Columbia's broader transportation network. Priorities in this category including pursuing increased service frequency to Victoria and supporting Central Mountain Air in the potential future restoration of connectivity to destinations in northern British Columbia. Consultations conducted in support of the Master Plan Update revealed the intentions of a helicopter operator to establish scheduled passenger service between Prince George and Vanderhoof within the next 1-3 years.
3. **Winter Seasonal Vacation Service Offerings:** Building on the Airport's historical WestJet services to Puerto Vallarta and current service to Tucson, opportunities for winter seasonal services to sun destinations in the United States, Caribbean, and / or Mexico should be explored with prospective operators. Limited frequency (e.g., weekly) winter seasonal flights to sun destinations are noted to be a priority of catchment area residents (outbound tourism), and potential services may be explored with prospective carriers such as Flair Airlines, Sunwing Airlines, and WestJet.
4. **Summer Seasonal Tourism Service Offerings:** An unexplored prospective market for the Airport is the pursuit of summer seasonal domestic tourism services between Prince George and a destination in eastern Canada, such as Toronto. This would provide both outbound tourism opportunities for catchment area residents and inbound tourism flow for residents of the connected destination. If successful, it is anticipated that these services would be operated on a multiple day per week basis (e.g., three trips per week) during the peak summer tourism season using aircraft in the Boeing 737 / Airbus A319/320 category. Examples of prospective carriers include Flair Airlines, Swoop, and Air Canada Rouge. The pursuit of such services with an inbound visitor element will require a significant focus on appropriately marketing the region's tourism offerings with entities such as Tourism Prince George.
5. **Energy Resource Scheduled Charter Traffic:** Consultations with charter air service providers indicate potential interest in offering scheduled charter passenger services from Prince George to support the energy resource and mining sectors. These types of services could be operated utilizing a multi-purpose FBO (similar to those operated in Calgary and Edmonton).

The primary objectives identified above do not preclude the PGAA from continually re-evaluating its air service position and seizing emergent opportunities, and it is anticipated that this strategy will be reviewed and validated regularly based on the evolution of passenger markets. Future opportunities and air service changes will also be informed by external forces beyond the control of the PGAA, including major developments in the regional economy, the maturation and promotion of the area's tourism sector, and the shifting of route network strategies by incumbent and upstart airlines.

5.3 Air Cargo and Logistics Market Assessment

5.3.1 Regional Air Cargo Demand

As explored in Section 4.5.2, air cargo services to and from the region are provided on a scheduled basis by dedicated air cargo carriers (KF Cargo and SkyLink Express), passenger air carriers offering in-house cargo solutions using surplus baggage hold capacity (e.g., Air Canada and WestJet), and ad hoc cargo charters meeting the needs of commercial and industrial customers in the region. Between 2008 and 2015, cargo throughput ranged between 800 and 1,500 metric tons annually and averaged 1,100 metric tons per year – however, cargo throughput has decreased to an average of approximately 600 metric tons annually between 2018 and 2021. The number of dedicated cargo flights has experienced a similar decrease.

Currently, the Airport functions well in its ability to support the time efficient inbound and outbound demand for air cargo, which is primarily limited to low daily throughputs of high value of time goods. The majority of regional cargo movement demands continue to be met primarily by road and rail. By connecting Prince George to major processing facilities in Vancouver, the Airport integrates the region into broader supply chains and provides customers with a time efficient option to move goods.

The Airport itself does not create or stimulate this regional demand for air cargo – instead, it facilitates the activities of businesses that meet identified customer needs. Future growth of inbound and outbound air cargo is dependent on customers identifying the movement of their goods and products by air in a time efficient manner as being worth the premium paid versus ground transportation. The Airport is appropriately equipped in its airfield and supporting cargo processing infrastructure to handle the operations of dedicated air cargo carriers and ad hoc charters moving oversized or specialized cargo to and from the region and is anticipated to be able to meet regional demand for these services throughout the 20-year planning horizon. Consideration is given to the construction of a dedicated cargo building for passenger air carriers (i.e., Air Canada and WestJet) through the Airport Development Plan in Section 7.2.2.

From a regional inbound and outbound air cargo perspective, the priority identified for the PGAA is to work with air cargo operators and regional businesses to clearly communicate the existing capabilities and services at the Airport. The degree to which cargo origins and destinations in the region make use of these services is dependent on their identification of an appropriate business case, with this factor being external to the control of the Airport Authority.

5.3.2 Intermodal Cargo Connectivity and Logistics

Through a series of a private and public investments, Prince George has positioned and promoted itself in recent years as an intermodal logistics hub. The following transportation infrastructure contributes to this role:

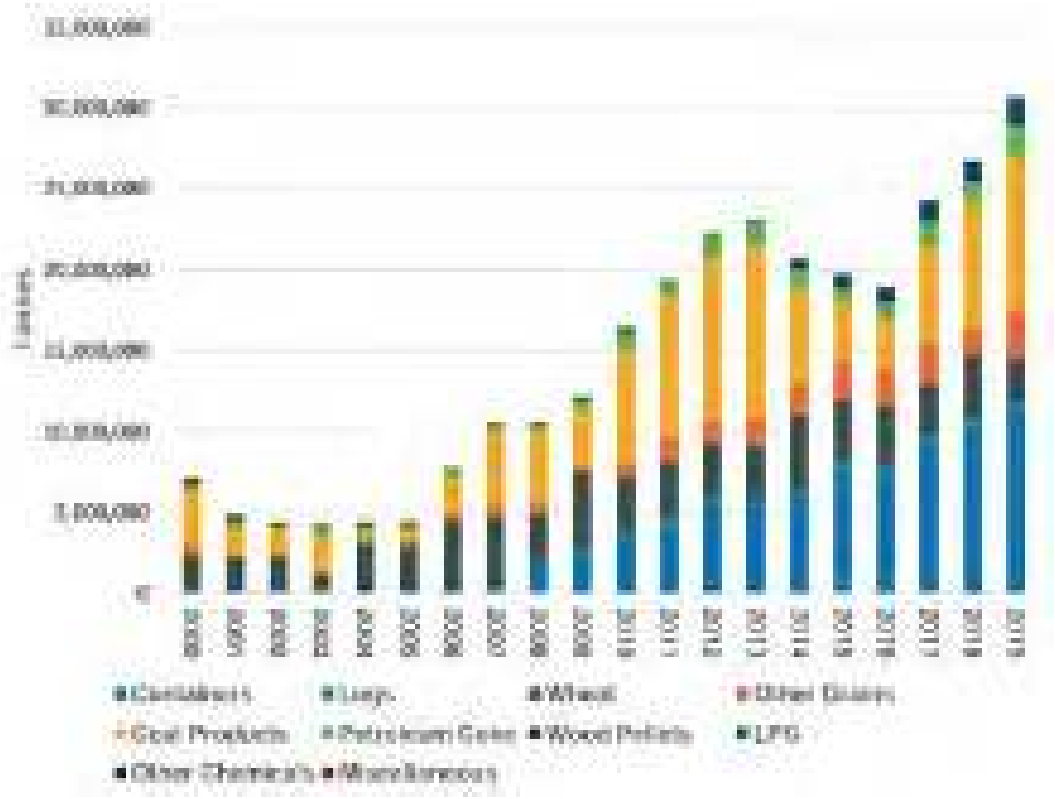
- The city is located at the intersections of Highway 16, connecting Prince George to Prince Rupert in the west and Edmonton in the east; and Highway 97, linking Prince George with northern British Columbia, Kelowna, and Kamloops;
- CN Rail maintains freight rail services to Prince Rupert, Vancouver, Edmonton, the Prairies, eastern Canada, and the US Midwest. CN Rail's Intermodal Terminal, opened in 2007, is a key freight forwarding asset, with services provided including product transfer, inspection, consolidation and deconsolidation, inventory control, and transportation; and
- The Port of Prince Rupert, located 720 km by road west of Prince George, is Canada's newest Pacific gateway for seaborne goods and cargo. Through the above-mentioned road and rail connections, Prince George supports the operations of the Port of Prince Rupert through the consolidation and deconsolidation of cargo destined to and originating from the facility. Prince Rupert benefits from the shortest sailing time to Asia among North American ports.

Prince George is understood to be a point of aggregation for domestic raw materials (e.g., lumber or pulp), with exported forest products being consolidated into containers in the city. This is consistent with the cargo activity served by the terminals of the Port of Prince Rupert, with the facility having dedicated facilities for dry bulk goods (e.g., coal, coke); grain products (e.g., wheat, canola); liquid bulk propane, biofuel wood pellets, and intermodal import and export containers.

Air cargo serves a negligible role in the movement of high volume / weight, lower value of time dry and liquid bulk goods (e.g., coal, grain, propane, and biofuels), with the transportation of such goods ideally suited to intermodal sea and rail operations. As such, these products are unlikely to have a direct relationship to the Airport or air cargo demand – this consideration is reflective in the fact that as of 2020, over 95% of cargo moving through the Port of Prince Rupert is transported by rail, benefiting from CN Rail's extensive continental connectivity.

Therefore, the primary opportunity for Prince George Airport may be the continued diversification of the Port of Prince Rupert through future growth in intermodal container-based trade. As shown in Figure 5.3, container tonnage has been increasing at Prince Rupert, with activity forecast in 2020 to increase to over 20,000,000 tonnes by 2026. The primary opportunity that may arise for the Airport from an air cargo demand perspective is the development of an inland freight distribution hub for high value of time e-commerce products. In this conceptual model, an e-commerce distributor would benefit from opportune sea and rail access from production centres in Asia and develop a distribution hub in Prince George. Products would then be shipped by air on an as-required, time efficient basis from Prince George. Therefore, this would primarily be focussed on inbound cargo flows and onward distribution, as opposed to the reverse process. More detailed analysis and outreach will be required with the Port of Prince Rupert, Prince George Economic Development, and industry stakeholders to ascertain the potential of this opportunity, including the consideration of Canada's role in the distribution networks of e-commerce providers and competition with established centres in areas such as the Lower Mainland.

Figure 5.3 - Port of Prince Rupert Cargo Volumes (PRPA, 2020)



5.4 Trans-Pacific Technical Stop Market Assessment

Over the past 20 years, the PGAA has undertaken several market studies to examine its potential role as a technical stop ("tech stop") for Trans-Pacific long-range flights. As identified in the 2007 Airport Master Plan and the 2005 "Prince George Airport: Runway 15-33 Extension Project Definition Report", this opportunity was predicated on:

- Robust growth in the economies of Asia and North America and resulting trans-Pacific air cargo demand;
- The need for long-range freight aircraft (e.g., Boeing 747-400F and McDonnell Douglas MD-11F) to refuel between Asia and North America to maximize their payloads;
- The location of Prince George along Asian-North America flight paths; and
- The premise that Prince George can capture a proportion of this refuelling demand and supplement the diminishing capacities available at existing hubs such as Anchorage, Alaska.

This opportunity was viewed as being separate from actual connecting or inbound / outbound air cargo activity – instead, it would be limited to providing mid-route refuelling services for air cargo operators travelling elsewhere (e.g., an air cargo flight from Shanghai that stops in Prince George to refuel while enroute to Chicago). In support of the pursuit of Trans-Pacific tech stops (in addition to complementary objectives in improving the Airport's overall capabilities), a range of investments were made to extend Runway 15-33, construct Apron V, and develop new refuelling facilities. The PGAA has been proactive in marketing the Airport as a tech stop since the preparation of the requisite infrastructure.

The 2007 Master Plan estimated that by 2021, 1,860 one-way tech stops would occur on an annual basis. Despite the investments that have been made, success has not been achieved in attracting Trans-Pacific tech stops to the Airport, with the majority of this activity still facilitated through Anchorage International Airport. Potential reasons that underlie this outcome include:

- The established reputation, optimized capabilities, and continuously expanding capacities of Anchorage International Airport as the preeminent facility for Pacific tech stops;
- The cost competitiveness of jet fuel at Anchorage. Both the airport and Port of Alaska are located within a Foreign Trade Zone, with foreign status jet fuel shipments arriving at the Port of Alaska and dispensed at Anchorage International Airport being exempted from taxes and customs duties, reducing the price paid by international carriers conducting tech stops;
- Since 2004, trade rights have been in place that enables air cargo travelling to or from a foreign country on a foreign air carrier to be transferred to another airline without having broken its international journey. This reduces the customs and regulatory requirements incurred by operators;
- The established presence of Anchorage as designated hubs by numerous market dominant US-based cargo operators (e.g., FedEx, UPS, Atlas Air, and Polar Air Cargo); and
- In recent years, challenges in international relations between the People's Republic of China (PRC) and Canada, influencing decisions by cargo air carriers based in the PRC.

While success has not been achieved to-date on the Pacific tech stop opportunity, the requisite airfield and supporting infrastructure is in place and the Airport continues to be geographically competitive along great circle routes between Asia and North America. Although this opportunity is not viewed as being a significant driver of activity or economic stimulation within the 20-year horizon of the Master Plan Update, the support of such services will yield modest revenues to PGAA if and when they occur. It is anticipated that further consideration will be required to explore the cost-side disadvantages of Prince George versus its tech stop competitors and accompanying strategies to overcome them.

5.5 Aviation Commercial Market Assessment

As described in Section 4.4, Prince George Airport supports a diversified array of aviation commercial business tenants, including air carriers / aerial operators and supporting service providers. The activities of these tenant businesses confer numerous advantages to both the Airport and the surrounding region, including considerable sources of revenue from land lease agreements and aeronautical fees, skilled employment positions, and the provision of services that meet the needs of regional drivers of economic activity (e.g., rotary wing operators that serve the forestry and resource sectors, charter air carriers that provide crew transportation for local businesses, and energy resource and mining projects). Further, aviation commercial tenants diversify the overall activity base of the Airport in a manner that is complementary to its other roles.

With respect to aviation commercial tenants, the Master Plan Update considers: 1) actions by the PGAA to support its existing tenants in their current and potentially expanded operations; and 2) efforts to attract new tenants to the Airport. As the Airport currently has a strong and diversified base of aviation commercial tenants, ongoing collaborative relationships with these parties will be essential to ensuring their continued success and economic productivity at Prince George. Shown in Table 5.3 are a series of prospective aviation commercial business opportunities that may be explored by the PGAA. This includes the project team's subjective classification of their potential for attainment based on the understanding of the typical requirements of comparable regional markets, the number and size of existing businesses at the Airport, and broader aviation industry trends in business siting decisions.

Table 5.3 - Aviation Commercial Market Assessment

Aviation Commercial Business Type	Existing Tenants / Businesses	New Tenants / Businesses
Aircraft Maintenance, Repair, and Overhaul (General Aviation)	Limited	Medium Potential
Aircraft Maintenance, Repair, and Overhaul (Commercial Aircraft)	No	Low Potential
Air Taxi / Charter Air Service Providers	Yes – Support Continued Operations / Growth	Medium Potential
Fixed Base Operator (Corporate Aircraft Storage and Servicing)	Limited	Medium-High Potential
Flight Training Unit – Fixed-Wing	Yes – Support Continued Operations / Growth	Low Potential
Flight Training Unit – Rotary-Wing	No	Medium Potential
Rotary-Wing / Fixed-Wing Commercial Operators	Yes – Support Continued Operations / Growth	Medium Potential

5.6 Emergency Services Market Assessment

Given Prince George's strategic location and broader municipal role as a hub for northern British Columbia, the Airport services a unique and critical emergency services role through its support of:

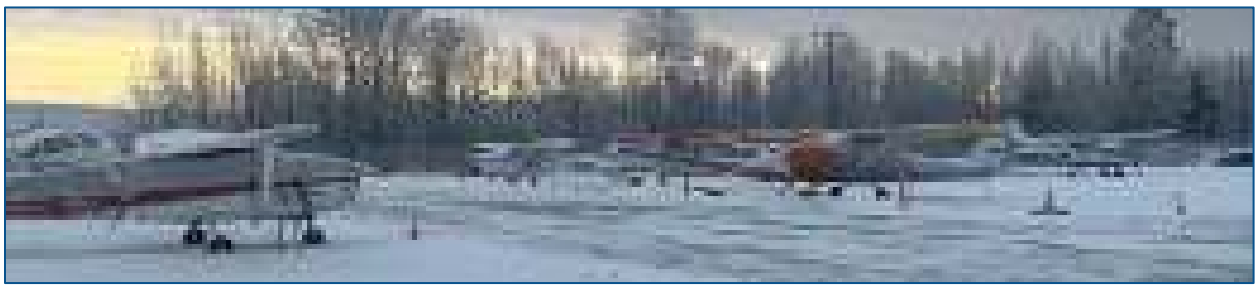
- British Columbia Emergency Health Services, with both fixed and rotary-wing air ambulance aircraft permanently based at the Airport;
- The British Columbia Wildfire Service, with the Airport serving as the primary airtanker base for the Prince George Fire Centre – the largest forest region in British Columbia;
- The Royal Canadian Mounted Police's Air Services Division;
- Based rotary and fixed-wing operators that provide search and rescue services; and
- Itinerant operations by entities such as the Royal Canadian Air Force.

Each of these emergency service entities provide critical services that directly impact the health and wellbeing of residents of Prince George and the surrounding region, and their operations at the Airport therefore directly contribute to its social role and value. The continued support and expansion of the Airport's emergency services role is recommended throughout the planning horizons of the Master Plan Update, with the following opportunities potentially being applicable for the facility:

- Continued support of the British Columbia Wildfire Service base and its potential expansion through the improvement of the Initial Attack Base and the relocation of the agency's administrative and operational facilities that are currently located in downtown Prince George to the Airport, consolidating all wildfire operations at the facility;
- The potential construction of new air carrier hangar facilities depending on the results of the British Columbia Emergency Health Services fixed and rotary-wing air ambulance contracts to be awarded in 2023. Prince George is a designated service base for both contracts, and a new operator may become based at the Airport if the contract does not go to one of the facility's current tenants; and
- The potential relocation of Prince George Search and Rescue's facilities to the Airport, enabling operational efficiencies to be realized due to the organization's partnership with rotary-wing aerial service providers based at the Airport.

5.7 General Aviation Market Assessment

In the context of the Master Plan Update, the general aviation market encompasses privately registered fixed and rotary-wing aircraft used for recreational or business-related purposes. As of 2023, approximately 90 privately registered aircraft are attributed to owners based in Prince George, ranging from smaller two and four seat single engine aircraft (e.g., Cessna 172, Piper PA-28) to larger turbine powered aircraft such as the Eurocopter EC-130, Cessna Citation 560, and Beechcraft King Air 300. These aircraft are based at the Airport at tie-down positions, in private hangars, or in group / rental hangar spaces.



General aviation serves a unique role in Prince George and in British Columbia more broadly, given the significant distances and times associated with travelling through the province and the value of aircraft in providing access to remote locations. Despite being a limited source of overall revenues for the Airport, the general aviation market is anticipated to continue to be complementary to the Airport's core role and should be accommodated where doing so is directly associated with additional revenues for the facility. The primary opportunity anticipated for the Airport within the planning horizons of the Master Plan Update is the opening of lands for the construction of new small and larger general aviation hangars through multi-year land lease agreements, creating a consistent source of revenues in addition to activity-based aeronautical fees. The Airport Development Plan allocates sufficient space for such uses in the vicinity of the existing general aviation cluster southwest of Runway 01-19.

5.8 Flight Training Market Assessment

Fixed-wing flight training at Prince George Airport is currently offered by Guardian Aerospace, which also operates a training base in Vanderhoof. As indicated in Section 5.1.4, the post-pandemic resurgence of air travel demand coupled with the accelerated retirement or exit of skilled professionals from the industry between 2020 and 2022 has brought the supply of qualified pilots to the forefront. Regional air carriers have experienced challenges with attracting and retaining pilots, as hiring by larger airlines places a drain on talent – increasingly, staffing issues are affecting the degree to which regional air carriers can maintain and grow their schedules. Guardian has indicated that their base locations allow them to leverage competitive training pricing and a lower cost of living compared to other urban centres in B.C. in attracting international students. Consultations also indicate local interest in developing a high-volume professional flight training facility, potentially catering to international students. The facility is planned to include a 50 ft. x 50 ft. bay for commercial aircraft storage and potential dormitories. While the Master Plan Update recommends that the PGAA continue to support the current Flight Training Unit (FTU) in exploring growth opportunities, it does not preclude attraction efforts of additional fixed-wing or new rotary-wing FTUs.

5.9 Non-Aeronautical Opportunities Assessment

The core aeronautical activities at Prince George Airport are complementary to a range of associated non-aeronautical uses, including light industrial activity, transportation and logistics, warehousing, and service commercial uses. For businesses that can realize synergies from the operations of the Airport (e.g., passenger throughput, employee activity, cargo throughput), locating in its vicinity can represent a prudent choice.

The proximity of the Airport to the Prince George Global Logistics Park immediately to the west influences the consideration of what non-aeronautical commercial and industrial opportunities are best suited on the Airport property. Benefits of the over 1,200-ha Global Logistics Park include full municipal and fibreoptic servicing, roadway access via Boundary Road, light industrial zoning, and the availability of land on a purchase basis, as opposed to the leasing requirements for land at the Airport. Several lots in the Phase 1 lands at the intersection of Boundary Road and Highway 97 have been acquired by light industrial and logistics related businesses, with new warehousing uses proposed as recently as late 2022.

Plans have also been announced by Troika Developments for Caribou Crossing, with potential uses anticipated to include a gas station, convenience store, and restaurants in Phase 1. Phases 2 and 3 may include additional restaurants, a hotel, professional services, and a grocery store as potential tenants. Sited at the intersection of Boundary Road and Highway 97, Caribou Crossing will be a short drive (10 minutes) from the Airport and is anticipated to introduce complementary service commercial uses that align with the Airport's requirements, with construction beginning in 2023.

Prince George Global Logistics Park and Caribou Crossing 2023 site plan (Troika Developments)

While the development and availability of the Global Logistics Park and Caribou Crossing will influence future non-aeronautical end users that have a requirement to be located in the vicinity of the Airport and can be viewed as having synergistic benefits, the opportunity also exists for the non-aeronautical development potential of the Airport to be marketed by PGAA. Key sectors of value in exploring further include a service commercial and entertainment hub, light industrial uses, and professional services.

5.9.1 Service Commercial and Entertainment Hub

The core development area near the terminal building offers a unique opportunity through the business exposure provided to arriving and departing passengers (over 500,000 passengers historically and forecast to increase significantly to approximately 1M passengers) as well as the significant number of employees working throughout the Airport campus. Pending market interest, the core area could be developed as a service commercial and entertainment hub anchored by a series of businesses that are synergistic with the activities in this area, including:

- Gasoline and vehicle service stations, capturing demand from employees and passengers (including individuals returning rental cars);
- Restaurants, including fast food, fast casual, and full-service options that meet the needs of arriving and departing travellers, as well as employees based at the Airport campus;
- Overnight accommodations, such as a hotel. While this opportunity is of less value for travellers originating in Prince George, the Airport's broader catchment area encompasses communities multiple hours away by driving. For early morning departures and late evening arrivals, a hotel may be able to capture demand from individuals not seeking to time their drive immediately before / after their flight. A hotel may also be able to capture demand from workforce transportation charter flights, overnighting flight crews, and staff temporarily being based in Prince George for wildfire suppression operations; and
- Retail and entertainment uses.

The combination of the above-noted opportunities for overnight accommodations, restaurants, retail, and entertainment uses, when developed and appropriately marketed to passengers beyond Prince George in the broader catchment area, would position the Airport as part of an individual's overall vacation or travel experience instead of being a transient stop. This concept has been successfully implemented by facilities with geographically large catchment areas such as Edmonton International Airport through its Airport City / Destination YEG concept. The Airport Development Plan reserves sufficient lands in the vicinity of the terminal building for the growth of a service commercial and entertainment hub to the southeast of Ellis Road and Beacon Road.

While preliminary consideration is given to this opportunity, it is recognized that its demand and potential attainment at the Airport will likely be influenced by the development of Caribou Crossing near the site, and the need for forecast growth in passenger and employment activity to be realized. As the core Airport area is a significant distance from Prince George and does not benefit from highway frontage and visibility, prospective businesses will likely need to justify their opportunity assessment based on there being sufficient passenger and employee activity. As a result, the attainment of a service commercial and entertainment hub is not anticipated before the medium or long-term planning horizons.

5.9.2 Light Industrial Uses

Market research completed in 2023 by Parcel Economics found that there is positive demand for serviced light industrial lots in the 2 to 5-acre range in Prince George. Prince George Airport competes with other industrial parks in the region for the attraction of non-aeronautical light industrial demand. As noted previously, the Global Logistics Park has a significant serviced land supply for such end users on a leasable or outright purchase basis and is set to bring 40 additional acres to market in the near future. A new 80-acre assembly of 2 to 5-acre lots is also set to come online in the BCR Industrial Park in the near future. Taken together, the PGAA will experience competition for the attraction of non-industrial uses that do not have a defined benefit to being located at the Airport. The requirement for land lease agreements at the Airport is a disadvantage compared to other industrial parks, negatively influencing prospective end users that seek to generate equity and secure external financing.

The potential development of light industrial uses that are complementary to the air cargo role described previously (e.g., warehousing, transportation providers, freight forwarders) may represent one of the highest potential opportunities in the on-Airport light industrial category. However, this is tied to a significant growth in cargo activity at the Airport, the timing or likelihood for which cannot reliably be predicted.

Other complementary light industrial uses that could be on attracted on the basis of the Airport's large land supplies, lack of land use sensitivities, and secured nature include outdoor and covered storage, construction staging yards, large-scale greenhouses, and marijuana and hemp cultivation, processing, and research.

5.9.3 Offices and Professional Services

Based on research completed by Parcel Economics, the office and professional services real estate market in the region is unlikely to warrant demand for new construction at the Airport. Despite there being low vacancy rates as of 2023, current and anticipated construction costs for new build projects do not align with market price points. The exception is the attraction of an office-based tenant with a defined interest in being located at the Airport – for example, administrative facilities of an air carrier or commercial operator based on-site.

5.10 Activity Forecasts

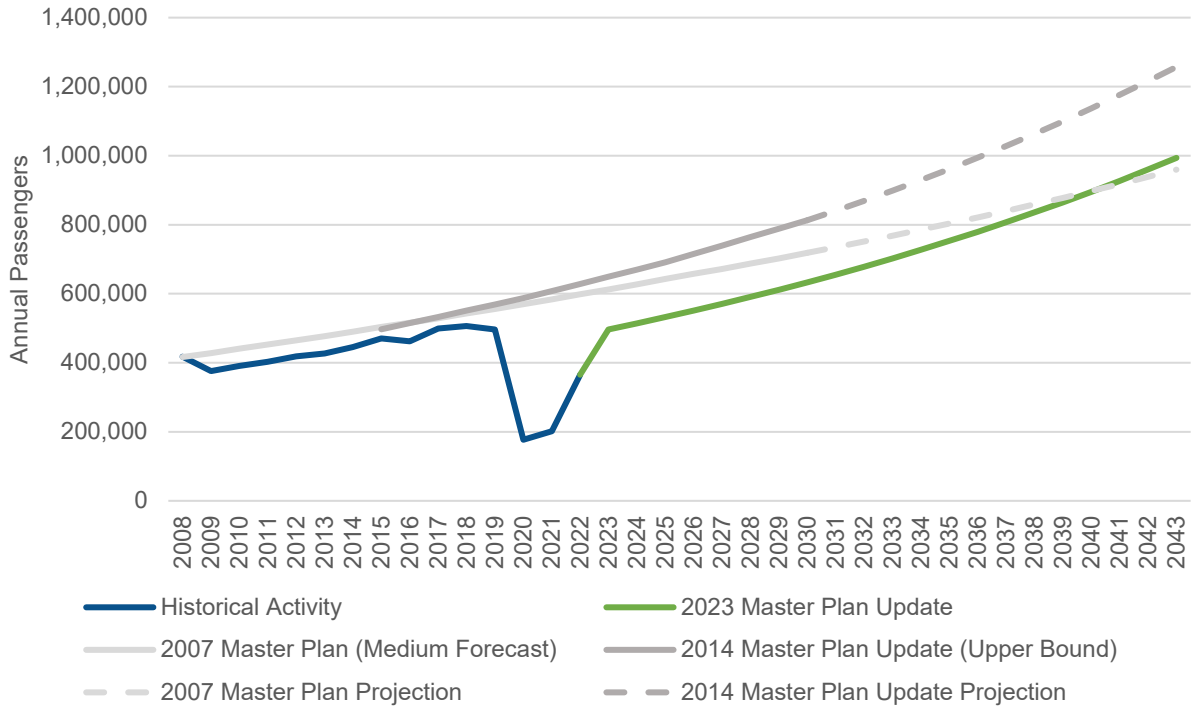
5.10.1 Passenger Activity Forecast

Based on the passenger air carrier service market assessment, historical trends in passenger activity, and the forecast continued growth of the catchment area population, a passenger activity forecast has been prepared for the Airport. As shown in Figure 5.4, passenger activity is forecast to increase from a baseline of 365,000 passengers in 2022 to:

- Over 600,000 passengers in 2029 (612,000);
- Over 700,000 passengers in 2033 (703,000);
- Over 800,000 passengers in 2037 (807,000); and
- Over 900,000 passengers in 2041 (927,000).

The passenger activity forecast assumes that, given the strong rebound in demand exhibited in both 2021 and 2022, the return to pre-pandemic 2019 activity levels occurs in 2023. Past 2023, a constant annual growth rate of 3.53% is assumed across all planning horizons, based on the historical annual rate of change between 2008 and 2022. This is comparable to the 2014 Master Plan Update's assumed annual growth rate of 3.41% and is consistent with historical and projected increases in the catchment area's population, further driving local demand. As shown in Figure 5.4, the passenger activity forecast follows a similar growth trajectory to those modelled in the 2007 Master Plan and 2014 Master Plan Update, closely aligning with the projected trendline of the 2007 Master Plan in the 2037 to 2043 period.

Figure 5.4 - Passenger Activity Forecast



Passenger forecasting is characterized by increasing uncertainty further into the addressed time horizons. As evidenced in 2001 following the 9/11 terrorism event, 2008 financial crisis, and the 2020 COVID-19 pandemic, air travel demand is inextricably tied to broader economic, social, political, and environmental contextual forces that transcend the control of the PGAA. On a regional scale, air travel remains a derived demand that is influenced by factors such as the size of the catchment area, individual needs and financial abilities to pay for services, business travel requirements and trends (e.g., increased virtual meetings decreasing business travel), and the commencement or drawdown of large-scale economic projects (e.g., new resource extraction projects). Further, the assumption of continued growth is also contingent on air carriers identifying a market opportunity and deploying their resources to Prince George – otherwise, airline capacity may become a limiting factor in achieving continued growth.

The infrastructure implications of increased passenger activity at the Airport are described further in Section 6.

5.10.2 Air Cargo Forecast

Unlike the passenger activity forecast, the degree to which air cargo volumes can be reliably projected is impacted by:

- The gap in data availability between 2015 and 2018;
- The decline in cargo throughput despite the increase in potential explanatory variables, such as catchment area population size and economic activity;
- The relative stability of cargo activity between 2018 and 2022 without a discernible trend; and
- The uncertainty regarding the potential attainment of the air cargo and logistics goals that have been pursued by the PGAA over the last 10+ years.

As was the case with the 2014 Master Plan Update, a specific air cargo forecast has not been prepared. For financial modelling purposes, it is assumed that air cargo flights and throughput will continue at an average of approximately 800 annual flights and 700 annual tonnes of throughput.

It is recognized that external forces (e.g., major construction projects or an upstart producer of time-sensitive goods) have the potential to significantly influence air cargo demand. For example, the 2014 Master Plan Update assumed that the addition of a weekly Trans-Pacific air cargo flight could generate 20 to 30 tonnes of outbound cargo per flight, while the 2007 Master Plan estimated that up to 25,000 tonnes of cargo could be processed annually on trans-Pacific flights. For planning purposes, the Airport is appropriately equipped with the infrastructure and supporting services to handle any reasonably foreseeable increases in air cargo activity within the short and medium-term planning horizons. Air cargo activity and potential future growth and associated needs can be revisited at the time of the next master planning process.

5.10.3 Aircraft Movement Forecast

The aircraft movement forecast guides planning requirements for the airfield, including the Airport's runways, taxiways, aprons, and supporting infrastructure. Itinerant and local movements are projected separately, culminating in the forecast of the Airport's total movements from 2023 to 2043.

As shown in Figure 5.5, itinerant movements have been forecast across the six operator categories, with key assumptions as follows:

- Air Carrier movements are assumed to increase modestly at a constant annual growth rate of 2.0% (Level I-III and Foreign) and 2.5% (Level IV-VI) respectively, based on the annual average pre-COVID growth rate from 2008-2019;
- Other Commercial movements are shown to increase by 1.9% annually based on pre-COVID growth trends from 2008 to 2019;
- Private are assumed to remain steady at the 2008-2021 average of approximately 3,500 annual movements, stabilizing after consistent year over year decline based on the attraction of new operators to the Airport;
- Government, Civil and Government, Military movements are assumed to remain steady at approximately 900 and 400 annual movements, respectively, based on their annual averages between 2008 and 2021 and reflecting the variation within a consistent range year-over-year.

Based on these assumptions, itinerant movements are forecast to increase from a baseline of approximately 27,000 movements in 2021, to 34,000 movements in 2033, and 42,000 movements in 2043 at the end of the medium and long-term planning horizons, respectively.

Figure 5.5 - Itinerant Aircraft Movement Forecast

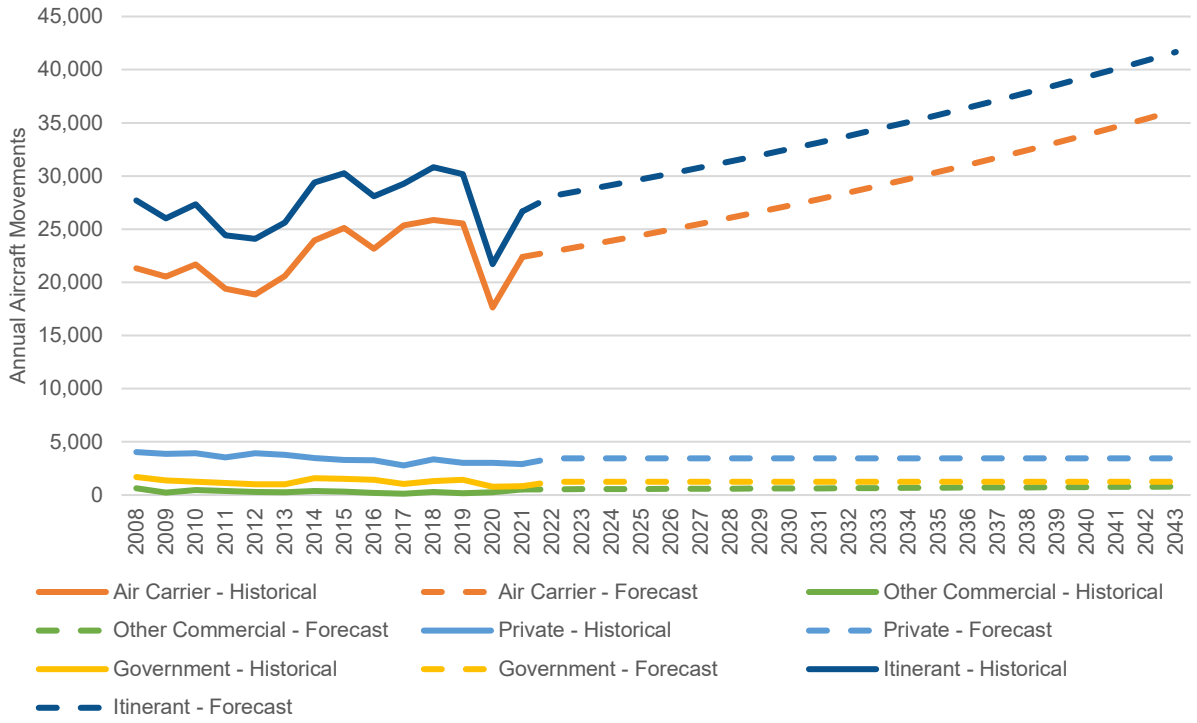
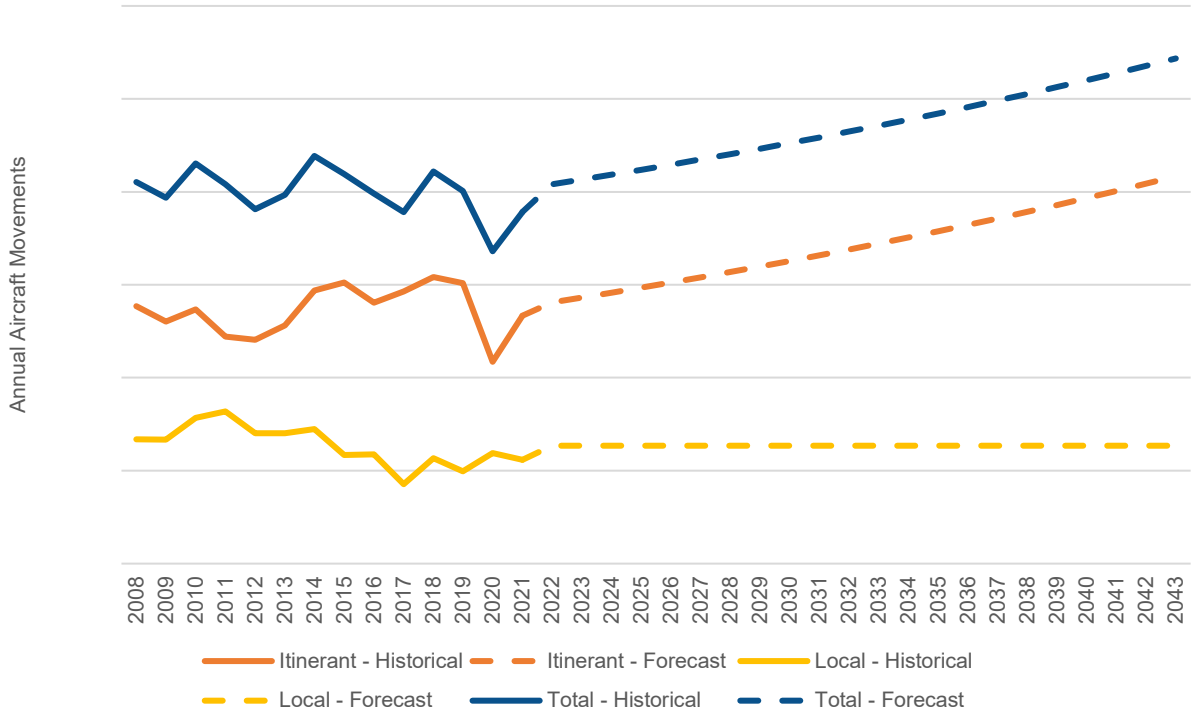


Figure 5.6 – Itinerant, Local, and Total Aircraft Movement Forecast



As shown in Figure 5.5, the Master Plan Update assumes that local movements stay consistent at approximately 13,000 movements per year. This assumption is based on the annual average number of local movements between 2008 and 2021 and has been chosen to reflect that while modest decline and annual variability has been exhibited over the past 10+ years, the attainment of select opportunities described previously (e.g., flight training, additional base operators conducting pilot recurrency exercises, general aviation growth) will continue to solidify this type of activity at the Airport.

Taking local and itinerant movements together, the total number of aircraft movements anticipated at the Airport is estimated to increase from a baseline of 38,000 movements in 2021 to approximately 47,000 movements in 2033 and 54,000 movements in 2043.

6 AIRPORT INFRASTRUCTURE ASSESSMENT

6.1 Design Aircraft

The Design Aircraft for an airport is the aircraft identified as having the most demanding operational requirements with respect to the determination of movement area dimensions, and other aerodrome physical characteristics. Through TP312 5th Edition, Transport Canada assigns aircraft a Reference Code (4th Edition) or Aircraft Group Number (5th Edition) based on an aeroplane's technical specifications and performance requirements for the runway and taxiway environments. The Code or AGN assigned to a runway environment is informed by several factors such as an aircraft's wingspan and reference approach speed and in the taxiway environment, the wingspan and tail height. The Code or AGN of the selected Design Aircraft determines minimum separation distances, pavement slope requirements, safety areas, and obstacle limitations, among other design criteria. An airport's movement surfaces can be intended for use by differing aircraft and can therefore be assigned different Codes or AGNs. The minimum pavement width of runways and taxiways is independent of AGN and is defined by the Design Aircraft's Outer Main Gear Wheel Span (OMGWS) – the distance between the outside edges of the main gear.

Two sets of Design Aircraft are identified for the Prince George Airport in the Airport Operations Manual (AOM). The Boeing 737 serves as the design aircraft for all airfield surfaces, with the exception of expanded and upgraded surfaces since 2007, where the Boeing 747-400 and Antonov 124 are referenced.

6.1.1 Primary Runway and Associated Facilities

Runway 15-33, Taxiways A, E, and F, and Apron V are designed to support operations by wide-body aircraft such as the Boeing 747 and Antonov 124. For planning purposes, the following parameters are applied/assumed for these facilities:

- Aircraft Group Number: V
- Runway Level of Service: Precision
- Runway Width: 45.0 m
- Taxiway Width: 23.0 m

6.1.2 Secondary Runway and Associated Facilities

Runway 06-24, Taxiways B, C, and D, and Aprons I, II, and IV, are designed for operation by narrow-body aircraft such as the Boeing 737. These facilities are most used by the Boeing 737, as well as regional passenger turboprop aircraft (e.g., DHC 8-400, B1900D), BC Wildfire Service aircraft (e.g., Lockheed L-188 Electra, Air Tractor AT-802F Fire Boss, Turbo Commander TC-690A), and smaller single and twin-engine turboprop and piston aircraft (e.g., Beechcraft King Air). The Master Plan Update assumed the application of AGN IIIB standards for Runway 06-24 and associated facilities. This AGN accommodates the largest aircraft anticipated to provide scheduled passenger service to Prince George within the 20-year planning horizon – the Boeing 737 MAX 8. For planning purposes, the following parameters are applied/assumed for these secondary facilities:

- Aircraft Group Number: IIIB
- Runway Level of Service: Non-Precision
- Runway Width: 45.0 m
- Taxiway Width: 23.0 m

6.1.3 Tertiary Runway

Runway 01-19 and Apron III are primarily used by single and twin-engine corporate and general aviation aircraft, such as the King Air 350, Cessna 152 / 172 / 182, Piper PA-28, Piper PA-34, and other comparable aircraft. For planning purposes, the following parameters have been applied:

- Aircraft Group Number: I/II
- Runway Level of Service: Non-Instrument
- Runway Width: 18.0 m
- Taxiway Width: 7.5 m / 10.5 m (as applicable)

Table 6.1 – Design Aircraft Identification

Surface	Code / AGN	Representative Aircraft
Runway 15-33	E / V	Boeing 747-400F
Runway 06-24	C / IIIB	Boeing 737 MAX 8
Runway 01-19	B / II	King Air 350
Taxiway A	E / V	Boeing 747-400F
Taxiway B	C / IIIB	Boeing 737 MAX 8
Taxiway C	D / IV	Boeing 767-400
Taxiway D	D / IV	Boeing 767-400
Taxiway E	E / V	Boeing 747-400F
Taxiway F	E / V	Boeing 747-400F

6.2 Airside System

The Airside System presented in Figure 6.1 includes the physical infrastructure used in support of aircraft operations, including the maneuvering areas, visual navigation aids, and airfield lighting systems. A description of the condition rating used in assessing airport infrastructure is presented in Table 6.2.

PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE

FIGURE 6.1 - SITE PLAN

APRIL 2023

0 400 800
Meters

*FOR PLANNING PURPOSES ONLY

Table 6.2 - Infrastructure Condition Ratings

Condition Rating	Definition
Very Good	• Asset is in a sound condition • Operational and well-maintained • Asset is likely to perform adequately with routine maintenance for 10 years or more.
Good	• Asset is in acceptable condition but is starting to show signs of minor wear • Minimal short-term failure risk is present but potential for deterioration or reduced performance over the next 5-10 years exists • Asset is likely to require minor remedial works
Fair	• Asset has evidence of deterioration • Minor components or isolated sections of the asset require replacement or repair, but the asset still functions safely at an adequate level of service • Failure is unlikely within 2 years, but further deterioration is likely and major rehabilitation is expected to be required in 5-7 years • Remedial work is required but the asset is still serviceable.
Poor	• Asset and its components function but require a high level of maintenance to remain operational • Significant renewal/upgrades are required
Very Poor	• Asset has failed or failure is imminent • A high risk of asset breakdown is present with a serious impact on performance • Reconstruction or replacement is required urgently

6.2.1 Runway System

Three runways are available at Prince George Airport: Runway 15-33, Runway 06-24, and Runway 01-19. The primary characteristics and reported condition of each runway are shown in Table 6.3.

Table 6.3 - Runway Specifications

	Runway 15 33	Runway 06 24	Runway 01 19
Length	11,450 ft. (3,490 m)	5,626 ft. (1,715 m)	3,769 ft. (1,149 m)
Width	150 ft. (45 m)	150 ft. (45 m)	75 ft. (23 m)
Surface Type	Asphalt	Asphalt	Asphalt
Pavement Load Rating (February 2016)	12	11	10
Planning Code/AGN	E / V Precision	C / IIIB Non-Instrument	B / II Non-Instrument
Maximum OMGWS	15 m	15 m	6 m
Last Known Construction / Rehabilitation	2009	2016	2019
Condition (December 2022)	Fair	Good*	Very Good

Runway 15-33

Runway 15-33 is the Airport's primary runway, supporting both daytime and nighttime operations, as well as arrivals and departures during Instrument Meteorological Conditions. Runway 15-33 was constructed in 1941 and was extended to its current length of 11,450 ft. (3,490 m) and rehabilitated between 2007-2009.

The Boeing 747-400F, as the design aircraft for Runway 15-33, generally requires approximately 10,000 ft of runway length at maximum takeoff weight, and 45 m of runway width given its Outer Main Gear Wheel Span (OMGWS) varying with density altitude. As such, Runway 15-33 is of sufficient length and width to accommodate operations by the most demanding passenger, freight, or air tanker aircraft anticipated to regularly make use of the Airport, and those necessary to support the identified business development opportunities presented in Sections 5.2 and 5.3.

Runway 15-33 was observed to be in fair condition in December 2022 with longitudinal and transverse cracking throughout its surface. The longitudinal cracking is uniformly spaced at 4 m intervals, the typical width of asphalt paving equipment. Transverse cracking varies from 10 m to 60 m in separation. Assuming the continued infrequent use by the aircraft for which the runway was designed, it is recommended that Runway 15-33 be rehabilitated in approximately 5-10 years, with routine crack sealing, rubber removal, and winter maintenance efforts recommended to continue until the time of rehabilitation.

The development of Runway End Safety Areas (RESAs) has been planned for both the 15 and 33 ends of the runway. A RESA, per TP312 5th Edition, is a defined area along the extended runway centreline intended to reduce the severity of damage to an aircraft undershooting or overrunning the runway. The RESAs are subject to the strict grading and slope requirements, and must be maintained free of all objects, except frangible equipment required to be present by function. Through consultations with PGAA and L&M Engineering, geotechnical and drainage constraints were identified with the majority glacial sediment deposits surrounding the Runway 15 end. It is possible to reduce the declared distances of Runway 15-33 to accommodate RESA requirements. It is recommended that a RESA Reduced Declared Distances Study be completed prior to the associated budgetary commitments associated with Runway 15-33. For capital planning purposes, the budgeted project cost for RESAs supporting Runway 15-33 have been omitted pending further study.

Runway 15-33, Facing North

Runway 06-24

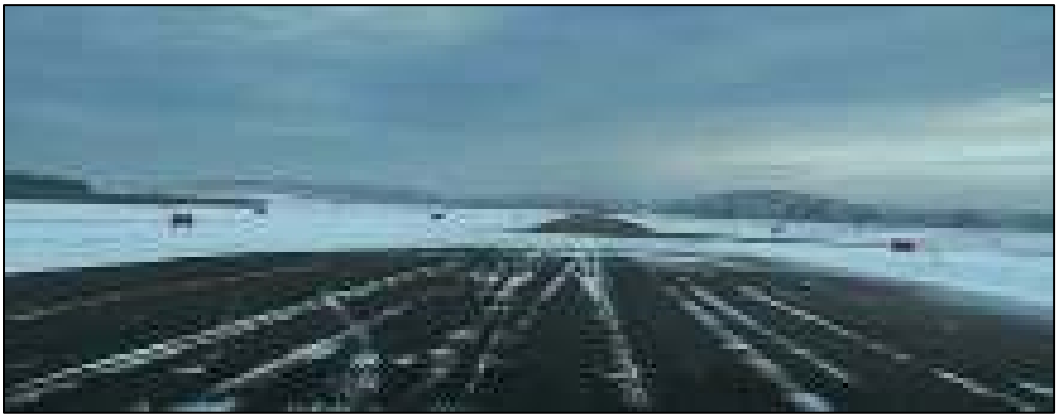
Runway 06-24 is the Airport's secondary runway and supports operations during daytime and nighttime periods. Runway 06-24 is most used in summer months by BC Wildfire Service air tanker and birddog aircraft, given the direct access to and from the Air Tanker Base via Taxiway B. Other aircraft, including those that support scheduled passenger services, air ambulance, and general aviation and flight training aircraft operators also make use of the runway when wind conditions preclude the use of Runway 15-33.

Runway 06-24 was last rehabilitated between 2015 and 2016 and is typically closed during winter months, consistent with its identification as a Priority 3 snow-clearing area in the Airport's Winter Maintenance Plan. Because the surface of Runway 06-24 was snow-covered at the time of inspection, the project team utilized recent high resolution ortho photos to evaluate condition. The pavement surface was observed to be in good condition, which was supported by consultation with PGAA staff. Rehabilitation is expected in 10-15 years, provided regular crack sealing efforts and the continued limited use in during winter months. The PGAA has planned to establish RESAs to support operations on Runway 06-24 in 2026.

Runway 01-19

Runway 01-19 is the Airport's tertiary runway and supports operations during daytime Visual Meteorological Conditions. Runway 01-19 is used primarily by general aviation and flight training aircraft operators. Runway 01-19 is also commonly utilized as a taxiway for larger aircraft, and mobile fuel trucks accessing the fuel storage facility on Apron V. Runway 01-19 is equipped with blue edge lights and is therefore exclusively used as a taxiway during nighttime or during periods of darkness or low visibility. With a width of 23 m, Runway 01-19 adequately serves as a taxiway for aircraft with OMGWS of up to 15.0 m.

Given the runway's full rehabilitation in 2019, the surface was observed to be in very good condition in December 2022. Runway 01-19 is expected to be rehabilitated according to its design life cycle in 15-20 years, with ongoing usage and maintenance routines.



Runway 01-19, viewed from Apron III

Recommendations	Year	ROM Cost Estimate
RESA Reduced Declared Distances Study	2024	$32,000
Rehabilitation of Runway 15-33	2028	$18,213,000
Establishment of RESAs on Runway 06-24	2026	$3,422,000
Rehabilitation of Runway 06-24	2032	$10,061,000
Rehabilitation of Runway 01-19	2040	$3,900,000

6.2.2 Taxiway System

The movement of aircraft between the Airport's runways and aprons is facilitated using six taxiways, listed in Table 6.4. Taxiways C and D support the majority of aircraft movements, connecting the core Aprons I, II, III, and IV to runway system. Taxiway B is exclusively used by the BC Wildfire Service for airside access to the Air Tanker Apron. Taxiways A, E, and F, are specifically designed for AGN V operations, situated at the opposing ends of Runway 15-33.

Table 6.4 - Taxiway Specifications

	Taxiway A	Taxiway E	Taxiway F
Width	75 ft. (23 m)	75 ft. (23 m)	75 ft. (23 m)
Surface Type	Asphalt	Asphalt	Asphalt
Pavement Load Rating	12	12	12
Planning Code / AGN	E / V	E / V	E / V
Maximum OMGWS	15 m	15 m	15 m
Last Known Construction	2009	2009	2009
Condition (December 2022)	Good	Fair / Good	Fair / Good
	Taxiway B	**Taxiway C**	**Taxiway D**
Width	67 ft. (20.5 m)	75 ft. (23 m)	75 ft. (23 m)
Surface Type	Asphalt	Asphalt	Asphalt
Pavement Load Rating	N/A	11	10
Planning Code / AGN	C / III	D / IV	D / IV
Maximum OMGWS	9 m	15 m	15 m
Last Known Construction	2010	2015	2015
Condition (December 2022)	Fair	Good	Good

Taxiway A

Taxiway A connects the northernmost apron, Apron V, to the Runway 15 threshold. Taxiway A was constructed between 2007 and 2009 in coordination with the Runway 15-33 extension and Taxiways E and F. Taxiway A is used most regularly by mobile fuel trucks transiting between the Apron V Fuel Facility and aircraft in the core area of Aprons I, II, III, and IV. The taxiway also serves cargo aircraft on occasion. Given the designed capacity for aircraft of AGN V classification and 15 m OMGWS, Taxiway A is considered adequate for the duration of the 20-year planning period. Taxiway A was observed by the project team to be in good condition, with intact sealant repairs to longitudinal and transverse cracks. Given lesser usage compared to Runway 15-33, which is of same age, it is recommended that Taxiway A be rehabilitated in approximately 10-15 years, with routine crack sealing and winter maintenance continuing until the time of rehabilitation.

Taxiway B

Taxiway B connects Runway 06-24, approximately 1,771 ft (540 m) east of the Runway 06 threshold, to the Air Tanker Apron. Taxiway B is used exclusively by the BC Wildfire Service, mainly during the peak fire fighting season between June and September. As such, the Taxiway is not maintained during winter months. It is understood that Taxiway B was last rehabilitated in 2010 and is in fair condition. It is recommended that Taxiway B be rehabilitated in approximately 5-10 years.

Taxiway C

Taxiway C serves as a main taxi route between Apron I and Runway 01-19, connecting Aprons I, II, III, and IV with the three runways. Taxiway C was last rehabilitated in 2015 and was observed by the project team to be in good condition, with intact sealant repairs to longitudinal and transverse cracks. It is recommended that Taxiway C be rehabilitated in 10-15 years, with routine crack sealing and winter maintenance efforts continuing until the time of rehabilitation.

Taxiway D

Taxiway D connects Apron II and Runway 15-33. Like Taxiway C, Taxiway D was last rehabilitated in 2015. During consultations, it was noted that Taxiway D experiences regular congestion at the Runway 15-33 hold short line, particularly during the winter. To alleviate congestion during peak periods, it is recommended that the winter maintenance priority be raised on Runway 06-24, between its intersecting points with Runway 15-33 and Runway 01-19, to allow for an additional access/egress point to Runway 15-33. Taxiway D was observed to be in good condition, with intact sealant repairs of the few longitudinal and transverse cracks. It is recommended that Taxiway D be rehabilitated in approximately 10-15 years.

Taxiway D, Facing East

Taxiway E and Taxiway F

Taxiways E and F serve as a holding bay for aircraft departing Runway 33 or landing on Runway 15. The E and F designations are assigned for three separate alignments, with Taxiway E defined as the section diagonal to Runway 15-33, while Taxiway F constitutes the parallel and perpendicular alignments. Taxiways E and F were constructed between 2007 and 2009 in coordination with the extension of Runway 15-33, Apron V, and Taxiway A. Given the designed capacity for aircraft of AGN V classification and 15 m OMGWS, Taxiways E and F are adequate to accommodate the design aircraft.

Taxiways E and F were observed by the project team to be in fair/good condition, with intact sealant repairs of the few longitudinal and transverse cracks. However, a section of Taxiway E, appears to be experiencing a higher level of discrete cracking. It is recommended that Taxiway E and F be rehabilitated in 10-12 years, with routine crack sealing and winter maintenance efforts to continue until the time of rehabilitation.

Taxiway E Facing Runway 15-33

Recommendations	Year	ROM Cost Estimate
Rehabilitation of Taxiway A	2033	$1,345,000
Rehabilitation of Taxiway B	2029	$300,000
Rehabilitation of Taxiway C	2033	$643,000
Rehabilitation of Taxiway D	2033	$564,000
Rehabilitation of Taxiway E	2034	$1,231,000
Rehabilitation of Taxiway F	2034	$913,000

6.2.3 Apron System

Aircraft parking, passenger loading and unloading, refuelling, servicing, and other similar activities are accommodated using aprons I, II, III, IV, and V. Specifications for each apron are provided in Table 6.5, including the most recent construction and observed condition as of December 2022.

Table 6.5 - Apron Specifications

	I	II	III	IV	V
Area	297,439 ft^2 27,633 m^2	123,785 ft^2 11,500 m^2	214,815 ft^2 19,957 m^2	125,141 ft^2 11,626 m^2	403,146 ft^2 37,453 m^2
Surface Type	Asphalt / Concrete	Asphalt	Asphalt	Asphalt	Asphalt / Concrete
Pavement Load Rating (February 2016)	10	10	10	10	12
Most Recent Construction	2016 / 2017	2015	2019	2019	2009
Condition (December 2022)	Good / Fair	Good	Very Good	Very Good	Fair

Apron I

Apron I is immediately adjacent to the Air Terminal Building (ATB) and is primarily used by commercial air carriers for providing passenger air services. As such, the majority of ground handling operations, including mobile fueling and de-icing take place on Apron I. A 178,160 ft^2 (16,560 m^2) Critical Restricted Area is defined on Apron I, where access is limited to aircraft with screened passengers, personnel with Transport Canada Restricted Area Clearance, and screened passengers. Apron I borders Apron II to the northeast abutting a noticeable change in grade.

Apron I consists of two distinct pavement surfaces:

1. A 19,380 m^2 asphalt area bordering Aprons II and IV, and Taxiway C. This sections of Apron I was observed to be in good condition as of December 2022. The surface was last rehabilitated in 2016, and is used primarily for taxiing and for lighter aircraft parking; and
2. An 8,253 m^2 concrete surface, mainly used for aircraft parking, is primarily comprised of 6 m x 6 m panels and was last rehabilitated in 2017. Five panels were observed to have major linear cracks, possibly evident of failures in the base and subbase layers.

It is recommended that repairs of the distressed concrete panels be undertaken in the short term, with the remainder of the concrete area not anticipated to require full scale rehabilitation within the 20-year planning horizon. The asphalt section of Apron I is expected to require rehabilitation in approximately 10-15 years. It is also recommended that pavement markings be applied to Apron I that clearly designates the boundaries of the Critical Restricted Area to prevent inadvertent encroachment by aircraft, personnel, and vehicles operating airside.

Apron I, Linear Cracking on Concrete Panels

Apron II

Apron II is located between Apron I and Taxiway D and routinely supports scheduled passenger service aircraft taxiing between Runway 15-33 and Apron I, as well as corporate aircraft accessing the Hill Aviation hangar situated in the southeast corner. Apron II is also adjacent to the PGAA's Aircraft Rescue and Fire Fighting (ARFF) and Combined Services Building (CSB). Apron II was last rehabilitated in 2015 and was observed by the project team to be in good condition, with visible sealant repairs of a few longitudinal and transverse cracks. It is recommended that Apron II be rehabilitated in approximately 10-15 years, with routine crack sealing and winter maintenance efforts continuing until the time of rehabilitation.

Apron III

Apron III consists of two sections:

1. A 415 m x 40 m section extending from the Runway 01 threshold; and
2. A 175 m x 24 m perpendicular segment to the south.

The Apron III segment aligned with Runway 01-19 supports approximately 15 aircraft tie-down positions along its western edge and the perpendicular segment accesses leased lots currently occupied by Carrier Lumber and Prince George Hydro Mechanical. The apron regularly supports general aviation and flight training aircraft, given its proximity to the development lots currently occupied by the Central BC Flying Club, Guardian Aerospace, and private hangars. Apron III was fully rehabilitated in 2019 and was observed to be in very good condition. Apron III is anticipated to require rehabilitation in approximately 15-20 years according to its design life cycle, provided preventative maintenance continues.

Apron III, Segment Aligned with Runway 01-19

Apron IV

Apron IV borders Apron I to the north, and Apron III to the southwest. Apron IV provides access to three major tenants, including NT Air, the RCMP, and Yellowhead Helicopters, and connects one of the Airport's commercial areas to Apron I and Apron III. As such, the Apron IV is commonly transited by air ambulance, corporate, and rotary wing aircraft.

Apron IV was first constructed in 1945 and was most recently rehabilitated in 2019. Given the recent rehabilitation and routine maintenance, the apron was observed to be in very good condition in December 2022. Apron IV is expected to require rehabilitation according to its design life cycle in approximately 15-20 years, with ongoing usage and continued routine maintenance.

Flying Club Access

An access route connects a development lot currently occupied by the Central BC Flying Club, to the southwest end of Apron IV. The access was noted in December 2022 by Airport Operations to require rehabilitation in the short term, with failing base and subbase layers. It is recommended that the rehabilitation of the Flying Club Access be completed in 2024, concurrently with the PGAA's planned repaving of the Maintenance Yard and Ellis Road included in the 20-Year Capital Plan. It is also recommended that the Flying Club Access be integrated as part of the Apron IV designation.

Apron V

Apron V is situated at the north end of the airport, connected to the threshold of Runway 15 threshold by Taxiway A. The apron is equipped with two concrete pads designated as parking positions for wide-body jets and supports air cargo loading and unloading. Apron V and Taxiway A currently provide airside access and egress between the Airport-owned Jet A fuel facility and the Airport's core development area to the south. A warehouse building is located on the northwest corner of Apron V, equipped with two separated airside loading docks.

Apron V was constructed between 2007 and 2009, along with Taxiways A, E, and F, and the rehabilitation and extension of Runway 15-33. Apron V was observed by the project team to be in fair condition, with visible crack sealing repairs. It is recommended that Apron V be rehabilitated in the longer term of 7-10 years. This is subject to change should the surface begin to see more frequent by heavier cargo aircraft. Routine crack sealing and winter maintenance efforts are recommended to continue until further rehabilitation is required.

Apron V, Sample Pavement Repairs in Good Condition

Recommendations	Year	ROM Cost Estimate
Rehabilitation of Apron I – Select Concrete Panels	2024	$189,000
Rehabilitation of Apron I – Asphalt Surfaces	2034	$2,606,000
Rehabilitation of Apron II	2034	$1,547,000
Rehabilitation of Apron III	2040	$3,119,000
Rehabilitation of Apron IV	2040	$1,814,000
Rehabilitation of Flying Club Access	2024	$662,000
Rehabilitation of Apron V	2035	$5,169,000

6.2.4 Lighting Systems

Aerodrome lighting systems support aircraft operations during periods of darkness and/or low visibility. In the case of Prince George, these systems include edge lights, runway centreline lights, runway end lights, runway threshold lights, runway guard lights, Precision Approach Path Indicators (PAPIs), approach lighting systems, and apron flood lighting. Typical life expectancies of incandescent airfield electrical systems are presented in Table 6.6, in accordance with Transport Canada document TP2391 (AK-76-04), Airport Facility Condition Inspection and Reporting Surveys, 1981. The rehabilitation of existing LED lighting systems is not anticipated within the 20-year planning period.

Table 6.6 - Typical Life Expectancy for Incandescent Airfield Lighting Infrastructure

System	Typical Life Span
Runway Edge Lighting	20 Years
Taxiway / Apron Edge Lighting	20 Years
Approach Slope Indicator (PAPI/VASIS)	15 Years
Runway Threshold Identifier Lights (RTILs)	15 Years
Constant Current Regulator (Indoor)	30 Years

Elements of the Airport's lighting system is summarized in Tables 6.7-6.9 below, according to data within the most current Airport Operations Manual (AOM) and as-recorded construction drawings.

Table 6.7 – Runway Lighting

RUNWAY	15	33	06	24	01 19
Edge Lights	High Intensity	High Intensity	Medium Intensity	Medium Intensity	Blue Taxiway Edge Lights; Medium Intensity
Threshold Lights	High Intensity	High Intensity	Medium Intensity	Medium Intensity	No
End Lights	High Intensity	High Intensity	Medium Intensity	Medium Intensity	No
Approach Lights	SSALR[1]	SSALR[1]	ODALS[2]	No	No
Precision Approach Path Indicator (PAPI)	P3	P2	P2	P2	No
Runway Threshold Identification Lights (RTILS)	No	No	No	Yes	No
Lighting Type	LED	Incandescent	LED	LED	LED
Last Known Replacement	2008	2008	2016	2016	2013

Table 6.8 – Taxiway Lighting

TAXIWAY	A	B	C	D	E	F
Edge Lights	Yes	Yes	Medium Intensity	Medium Intensity	Yes	Yes
Taxiway/Runway Intersection	Yes	Yes	No	Yes	Yes	Yes
Taxiway/Taxiway Intersection	No	No	No	No	No	No
Taxiway/Apron Intersection	Double Amber	Double Amber	Double Amber	Yes	No	No
Runway Guard Lights	No	Yes	No	Yes	Yes	Yes
Lighting Technology	Incandescent	LED	LED	LED	Incandescent	Incandescent
Last Known Replacement	2008	2010	2016	2013	2008	2008

Table 6.9 – Apron Lighting

APRON	I	II	III	IV	V
Edge Lights	Yes	Yes	No	Yes	Yes
Flood Lighting	Yes	Yes	No	No	Yes
Lighting Technology	LED	LED	N/A	LED	Incandescent
Last Known Replacement	2013	2013	N/A	2013	2008

[1] SSALR = Simplified Short Approach Lighting System with Runway Alignment Indicator
[2] ODALS = Omni-Directional Approach Lighting System

Airfield Lighting System

Runway 15-33 is equipped with high-intensity threshold, runway end, centreline, and edge lights. Runway 06-24 is equipped with medium-intensity threshold, runway end, and edge lights. Runway 01-19 is equipped with medium-intensity blue edge lights only, as it is exclusively used as a taxiway during periods of darkness and lower visibility.

Red Obstruction Lights on Shoulder Between Aprons I and II

The airfield lighting system is activated through a Type K Aircraft Radio Control of Aerodrome Lighting System outside of NAV CANADA Tower service hours (between 23:00 and 06:00 local time). The airfield lighting system supporting Runway 06-24 and Taxiway C was last rehabilitated in 2016. Lighting systems supporting Runway 01-19, Taxiway D, and Aprons I, II, and IV were rehabilitated in 2013 and the edge lights for Taxiway B were refurbished in 2010. Runway 15-33, Apron V, and Taxiways A, E, and F are supported by systems dating back to the 2008 airport expansion works with no deficiencies reported by the Airport Operator. Consideration may be given in the long term to replacing incandescent elements of the 2008 lighting system, including the edge and threshold lights and Runway 33 approach lighting, by upgrading to energy-efficient LED units, when they approach the end of their 20-year service life.

Precision Approach Path Indicators (PAPIs)

Type P3 Precision Approach Path Indicators (PAPIs) provide visual guidance for pilots approaching Runway 15, while Type P2 PAPIs support Runway 33, Runway 06, and Runway 24. No deficiencies were reported by the Airport Operator with the PAPI units. The PAPI units on Runway 15-33 and Runway 06-24 were respectively installed in 2007 and 2016. It is anticipated that rehabilitation on the Runway 15-33 units will be required concurrent with overall upgrades to the Runway 15-33 lighting system.

Approach Lighting Systems

A Simplified Short Approach Lighting System with Runway Alignment Indicator Lights (SSALR) approach lighting system was installed to support Runway 15-33 during the expansion works between 2007 and 2009. SSALR systems are provided for precision runways supporting Category I Instrument Approach Procedures. The provision of a SSALR system to support a potential precision approach for Runway 33 should be taken into consideration if there is a desire by the Airport to improve the Level of Service offered by this runway. In 2016, an Omnidirectional Approach Lighting System (ODALS) was installed to support operations on Runway 06 as part of the rehabilitation of the runway lighting system.

In addition, Runway 24 is equipped with Runway Threshold Identification Lights (RTILs), that provide additional threshold visibility, due to a lack of contrast between the runway and surrounding environment under certain conditions.

Recommendations	Year	ROM Cost Estimate
Upgrade of 2007-2009 Lighting System to LED (Runway 15-33, Taxiways A, E, F, Apron V)	2038	$5,196,000

6.2.5 Electronic Navigation Aids and Instrument Flight Procedures (IFPs)

Runway 15 is supported by two ILS IFPs (ILS Y and ILS Z) affording a minimum descent altitude of 200 ft. AGL and a minimum visibility of ½ statute mile. These procedures are facilitated by a localizer array installed south of the threshold of Runway 33, immediately north of Johnston Road. The localizer is paired with a glide path transmitter – located west of Runway 15-33 and south of Apron V to provide sufficiently equipped aircraft with both vertical and horizontal guidance while on approach. Distance Measuring Equipment (DME) is co-located with the glide path transmitter supporting the ILS. A VHF Omnidirectional Range (VOR) installation is located off-airport approximately 48 km south of the threshold of Runway 33.

Instrument Approach Procedures are provided by NAV CANADA to support operations during Instrument Meteorological Conditions. Sufficiently equipped aircraft can utilize GPS-based Instrument Approach Procedures to each the Runways 15, 33, 06, and 24:

- **RNAV (GNSS) RWY 15:** Includes LPV, LNAV/VNAV, and LNAV categories, with a Minimum Descent Altitude of 200 ft. AGL and Minimum Visibility of ½ Statute Mile for the LPV procedure;
- **RNAV (GNSS) RWY 33:** Includes LPV, LNAV/VNAV, and LNAV categories, with a Minimum Descent Altitude of 250 ft. AGL and Minimum Visibility of 1 Statute Mile for the LPV procedure;
- **RNAV (GNSS) RWY 06:** Includes LPV, LNAV/VNAV, and LNAV categories, with a Minimum Descent Altitude of 500 ft. AGL and Minimum Visibility of 1¾ Statute Mile for the LPV procedure; and
- **RNAV (GNSS) RWY 24:** Includes LPV, LNAV/VNAV, and LNAV categories, with a Minimum Descent Altitude of 500 ft. AGL and Minimum Visibility of 1¾ Statute Mile for the LPV procedure.

NAV CANADA is responsible for the maintenance of all ground-based navigation aids and IFPs associated with Prince George Airport. Consultation with NAV CANADA indicated the desire for future precision capability on Runway 33. The Master Plan Update provides protective areas sufficient to support a precision approach to Runway 33.

6.2.6 Visual Navigation Aids

Visual navigation aids provide guidance and information to pilots and staff operating at Prince George Airport.

Markings

Pavement markings are provided per TP312 5th Edition standards on Taxiway B, while TP312 4th Edition standards have been applied to the remaining surfaces. Standard holding position, centreline, and threshold markings on the runways, taxiways, and aprons were observed to be in good condition in December 2022. Side stripes delineate the edges of Runways 15-33 and 01-19. Aprons I and V are marked with lead-in lines for aircraft parking positions. All pavement markings were noted to be in good condition and are repainted and repaired regularly as part of the Airport's maintenance program.

It is recommended that the Critical Restricted Area of Apron I be delineated with red and white paint markings.

Signage

Illuminated mandatory instruction signs are located at each of the Apron III and Taxiways A, B, C, D, E, and F holding positions prior to the respective runway intersections. Runway 01-19 is also equipped with illuminated mandatory instruction signs at holding positions for Runways 15-33 and 06-24. Conversely, Runway 01-19 is referenced with runway exit signs from Runways 15-33 and 06-24. Each runway is also equipped with runway exit signs. Airfield signage was observed to be in good condition in December 2022 and no deficiencies were reported by the Airport Operator.

6.2.7 Airfield Electrical Systems

Power distribution is supported by equipment housed in several structures including a Powerhouse, Power Vault, Communications Vault, and two Field Electrical Centres (FEC), each installed or rehabilitated during the most recent airfield electrical refurbishment projects in 2008 and 2016. The five structures are situated in the groundside parking lot between the NAV CANADA Tower and PGAA Administration and Operations Centre. Constant current regulators and other supporting equipment were installed as part of the 2016 rehabilitation project. The system was reported to be in good working condition.

6.2.8 Airfield Access Roads

Airfield access roads are provided to connect Apron II with Runway 06-24 immediately north of the PGAA Administration and Operations Centre, access the NAV CANADA and ECCC weather stations, and access to Apron III from the BC Wildfire Service area. These roads were noted in December 2022 to be in good condition and rehabilitation is not anticipated within the 20-year planning period.

6.3 Airport Support Services

6.3.1 Aircraft Fuel

Aircraft fuel storage at the Airport is provided and managed by the PGAA. In 2013, the PGAA installed and commissioned a fuel storage facility consisting of four 150,000 L above-ground storage tanks at the north end of Apron V, accounting for the majority of the Jet A-1 ("jet fuel") supply at the Airport. Jet A-1 fuel within the four fuel tanks are individually supplied by four fuel providers: Flight Fuels, Petro Valve, Executive Flight Centre, and World Fuels. Executive Aviation is the sole into-wing Jet A-1 fuel provider at the Airport. Consultation indicates that several mobile fuel tanker movements take place per day between Apron V and Apron I, transiting Taxiway A Runway 15-33, Runway 01-19, and Taxiway C.

During consultations with both Airport Operations and NAV CANADA, these movements were noted to be disruptive and reduce overall airport availability. A concept for an access road between Apron V and Runway 06-24 was prepared by L&M Engineering in 2022, in an effort to address this operational constraint.

Through consultations, concerns were raised by select on and off-airport stakeholders regarding the current fuel distribution arrangement, including the operation by a single into-wing fuel provider and occasional shortcomings in timely distribution. Some cited these concerns as a deterrent to business development opportunities at the Airport.

It is recommended that a fuel facility relocation feasibility study be completed prior to any advancement of an Apron V access road project. This study would examine net costs and benefits in relocating the current fuel facilities, versus that of constructing an Apron V access road. An alternate location of the Jet A-1 facility is presented in Section 7.2.2.

600,000 L Jet A-1 Fuel Storage Facility, Apron V

World Fuels also operates a 180,000 L 100 Low Lead (Avgas) fuel facility, located between the NAV CANADA Tower and the PGAA Administration and Operations Centre, fronting Apron II. Fuel is distributed with mobile bowsers. This facility is located on lands that could be used for higher and better aviation uses. An alternate location for the Avgas facility is presented in the Airport Development Plan in Section 7.2.3.

180,000 L Avgas Fuel Storage Facility, Apron II

Recommendations	Year	ROM Cost Estimate
Fuel Facilities Relocation Feasibility Study	2023	$15,000

6.3.2 Ground Handling Services

Executive Aviation provides ground handling services to commercial passenger and corporate aircraft on Aprons I and II, including ground power, aircraft de-icing, baggage handling, aircraft grooming. The current equipment fleet includes mobile tankers, aircraft de-icing trucks, baggage belt loader, hydrant cart, and aircraft pushback tug. The Hill Aviation hangar at the north of Apron II also houses a private FBO in Ron's Aviation and Hill Aircraft Service, among numerous tenants. The facility provides a pilot's lounge, marshalling, hangarage, aircraft maintenance, and aircraft parking.

6.3.3 NAV CANADA Services

NAV CANADA operates an Air Traffic Control Tower (ATCT) adjacent to the Terminal Building at the intersection of Aprons I and II. The ATC is staffed between 06:00 and 23:00 local time and enforces a 7 nautical mile radius control zone up to an elevation of 5,500 ft ASL. Outside of service hours, NAV CANADA maintains a 24-Hour Flight Service Station (FSS) at Williams Lake, enabling both Remote Airport Advisory Service and Remote Vehicle Control Service. The mandatory frequency is 118.3 MHz and the ground control frequency is 121.9 MHz.

The tower was built in 1973 and NAV CANADA indicated during consultation that an interior refurbishment is expected in two years. NAV CANADA also provides a guideline figure of 60,000 movements per year for the continued operation of an ATCT. Prince George Airport was said to be on a list of potential airports where NAV CANADA considered the removal of ATCT services during the COVID-19 pandemic, and in 2022, reported 45,000 annual movements. It was announced in April 2021 that Prince George Airport would retain its tower with NAV CANADA concluding that a 'balanced approach' was needed as it continued to address the challenges brought on by the pandemic.

6.3.4 Weather Observation and Forecasting

NAV CANADA maintains an Automated Weather Observation System (AWOS) located within the triangular field bounded by the three Runways 15-33, 06-24, and 01-19. The AWOS is co-located with the Prince George Airport Weather Station, operated by Environment and Climate Change Canada (ECCC). The AWOS broadcasts on a frequency of 128.72 MHz and provides Routine and Special Meteorological Reports (METARs and SPECIs), with METARs issued on an hourly basis.

The Automated Weather Observation System provides a sufficient level of service for aircraft operations, and no deficiencies were identified or reported from a meteorological observation, reporting, and forecasting standpoint.

6.3.5 Canada Border Services Agency Operations

Prince George Airport is designated by the Canada Border Services Agency (CBSA) as an Airport of Entry. Accordingly, the facility is an authorized airport of entry for the clearance of all classes of scheduled and unscheduled aircraft, including both travellers and cargo. The CBSA operation at Prince George Airport has a capacity of 120 passengers with staged offloading.

The CBSA Office in the airport terminal is staffed only during charter seasons between November and April. CBSA Officers are not permanently stationed, and travel to the facility from the Kelowna Airport Office as required. CBSA services at the Airport were suspended in 2020 due to the COVID-19 pandemic and were restored in 2022. The current CBSA office is sized such that it may expand designations, such as allowing up to 200 passengers with staged offloading, if receiving a fully-loaded Boeing 737 MAX 8 type aircraft.

The CBSA Office is well-equipped and may be considered as overbuilt given current international flight frequencies at Prince George Airport. A lone constraint was identified in the terminal baggage area situated between the arrival gate and the CBSA Office. In the event of an international arrival of a fully-loaded 737 MAX 8 type aircraft, the baggage claim area is undersized and presents conflicts with the CBSA inspection queuing area and passenger flows during domestic arrivals.

6.3.6 Airport Maintenance

Administration and Operations Centre

The PGAA Administration and Operations Centre (AOC) is a concrete structure that is used for the storage and maintenance of mobile equipment, in addition to housing PGAA offices and the ARFF. The building is in fair condition and expansion projects are planned for 2023 and 2024 to accommodate additional ARFF equipment and maintenance fleet, and altogether enlarge office and storage spaces.

Supplies including airside sand and groundside salt are sheltered in steel and Quonset structures in the maintenance yard. Aside from one Quonset replacement in 2022, significant improvements or replacement of the storage structures is not anticipated within the 20-year planning period. Given the regular movements of heavy equipment, rehabilitation of the pavement in the maintenance yard is planned for 2025.

Salt and Sand Storage at AOC

Maintenance Equipment Fleet

Airport Maintenance Staff are responsible for daily airport maintenance operations with call-out procedures established for services outside of normal working hours. Stakeholder consultations and on-site observations indicate that the ongoing maintenance and operation of Prince George Airport is well-executed. The Airport equipment fleet is listed in Table 6.10.

Table 6.10 - Maintenance Equipment Fleet

Mobile Asset	Model Year	Age (2023)	Replacement Year	Replacement Cost
Doosan G30P-5	2010	13	2025	$ 65,000
Dump Truck	2010	13	2030	$ 175,000
Front End Loader	2001	22	2025	$ 130,000
Front End Loader	2003	20	2026	$ 175,000
Front End Loader	2012	11	2028	$ 220,000
Front End Loader	2006	17	2030	$ 130,000
Front End Loader	2018	5	2031	$ 270,000
Fuel Truck	2008	15	2024	$ 1,500,000
Fuel Truck	1996	27	2024	$ 1,500,000
Fuel Truck	1996	27	2024	$ 1,500,000
Generic Flat Deck	2017	6	2037	$ 4,000
Grader	2008	15	2027	$ 275,000
Loader/Sweeper	2017	6	2037	$ 180,000
Maintenance Truck	2011	12	2026	$ 80,000
Maintenance Truck	2011	12	2031	$ 80,000
Maintenance Truck	2016	7	2031	$ 80,000
Maintenance Truck	2012	11	2032	$ 80,000
Maintenance Truck	2013	10	2039	$ 80,000
Maintenance Truck	2019	4	2039	$ 80,000
Mower M-2T61	2010	13	2024	$ 9,000
Personal Vehicle	2005	18	2024	$ 75,000
Plow Truck/Spreader	2003	20	2024	$ 200,000
Quad	2010	13	OPH*	$ 13,000
Quad	2015	8	2025	$ 15,000
Snowmobile	2009	14	2029	$ 15,000
Spreader	2012	11	2032	$ 135,000
Street Sweeper	2015	8	2035	$ 330,000
Sweeper	2013	10	2024	$ 1,500,000
Sweeper	2008	15	2027	$ 1,500,000
Sweeper/Blower	2003	20	2024	$ 1,500,000
Sweeper/Blower	2002	21	2024	$ 1,500,000
Tractor	2001	22	2024	$ 130,000
Tractor	2002	21	2024	$ 130,000

Recommendations	Year	ROM Cost Estimate
AOC Office Space Expansion	2024	$1,500,000
AOC Yard Pavement Rehabilitation	2024	$750,000
Note: Projects scheduled in the 5-year Capital Forecast for 2022 and 2023 are assumed to have funding identified and have been omitted from the 20-Year Capital Plan		

6.3.7 Emergency Response Services

Prince George Airport maintains a Category 7 Aircraft Rescue and Fire Fighting (ARFF) operation on site, as per the CAR Section 303 Standards. ARFF equipment and staff are housed in the PGAA Administration and Operations Building, with direct airside access to Apron II. A training facility has also been established on Air Tanker Road, south of Apron III. ARFF operates with five daytime and up to three nighttime trained responders, with coverage between 05:00 and 01:30. The operation includes two fire trucks with a combined water capacity of 20,800 L and combined foam capacity of 3,140 L. An older fire truck is stored at the Apron V warehouse facility for use in training. The provision of an additional fire truck has been budgeted for 2023 with associated building expansion underway in December 2022. NAV CANADA has expressed concerns with respect to the expansion of the AOC and minimum Line of Sight requirements. The overall scale of ARFF operations was identified during consultations as adequate considering the current and forecasted airport traffic.

Table 6.11 – ARFF Equipment Fleet

Mobile Asset	Model Year	Age (2023)	Replacement Year	Replacement Cost
Emergency Response Truck (Red 2)	2008	15	2025	$ 70,000
Fire Truck (Red 1)	2018	5	2038	$ 1,500,000
Fire Truck (Red 3)	2017	6	OPH*	$ 1,500,000
Fire Truck (Red 4)	2017	6	OPH*	$ 1,500,000
Fire Truck (Red 5) (Incoming)	2022	0	OPH*	$ 1,500,000
*OPH: Outside Planning Horizon				

Emergency Response Services are supported by the Prince George Fire Rescue Service, British Columbia Emergency Health Services, and the Royal Canadian Mounted Police (RCMP). In accordance with Transport Canada's requirements for a Certified Airport, Prince George Airport maintains an Emergency Procedures Manual.

6.4 Terminal Building

The terminal building is a two level structure including a basement with a total main level area of approximately 4,436 m^2. The facility supports the processing of arriving and departing scheduled and charter passengers, baggage and cargo handling, and administrative functions. The existing terminal floorplan is presented in Figure 6.2. The terminal building last underwent major renovations prior to 2006 and based on consultations with PGAA staff and observations made during the site visit, the terminal is understood to be in good condition. It was noted that the glass facades installed during the last renovations have a documented history of leaks caused by extreme freeze-thaw cycles and condensation. It is recommended that regular maintenance of the building structure continue, and consideration be given to alternative designs and construction materials in future terminal renovation and expansion projects.

6.4.1 Assessment Methodology

The terminal building functionality and space requirements were assessed using guidelines published by Transport Canada, through their Systemized Terminal Expansion Program (STEP), and IATA's Airport Development Reference Manual. Terminal building requirements are determined using two industry metrics: Peak Hour Passenger – Departing (PHPD) and Peak Hour Passenger – Arriving (PHPA). The Peak Hour values are the number of departing or arriving passengers processed within the busiest hour of the average peak day of the peak month. The Peak Hour values are used in conjunction with the three-tiered IATA Level of Service (LoS) guidelines: Sub-Optimum, Optimum, and Over-Design. The Optimum LoS balances the passenger experience with responsible capital investment and operational costs and is used in this assessment. The January 2023 flight schedule, including service by Air Canada, WestJet, Central Mountain Air, Pacific Coastal, and Flair Airlines was used to analyze the existing capacity of the terminal building, supplemented by qualitative data from stakeholder consultations and the public survey. The baseline PHPD and PHPA values are calculated assuming the departure or arrival of one Air Canada DHC 8-400, one WestJet DHC 8-400, two Central Mountain B1900Ds, and one Flair B737 MAX 8 flight within a one-hour period – a situation that can commonly occur on weekdays. Based on load factor of 90%, the baseline PHPD and PHPA is estimated at 342 passengers. While it is understood that the current service to Tucson achieves a load factor lower than 90%, the results of the public survey suggest that there is sufficient demand to support service to a southern U.S. destination at this load factor in the short-term planning horizon.

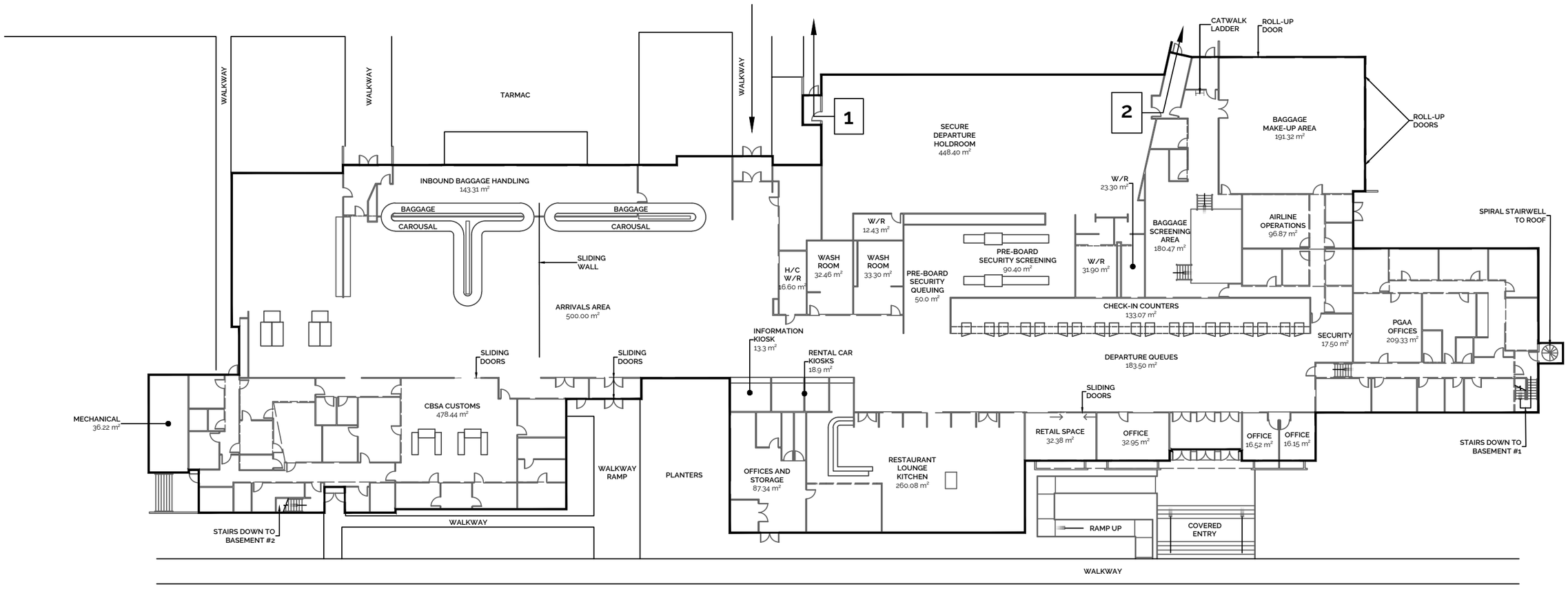
The potential future nominal schedule (Table 6.12) is consistent with the Master Plan Update passenger activity forecast (Section 5.2) and considers both additional flights and upgauging of aircraft in the peak hour. PHPD and PHPA values increase to 429 passengers in the potential future nominal schedule also assuming a 90% load factor.

Table 6.12 - Nominal Schedules

Baseline Peak Hour		
Airline	**Route**	**Aircraft**
Central Mountain	Edmonton (YEG)	B1900D
Air Canada	Vancouver (YVR)	DHC 8-400
Central Mountain	Kelowna (YLW)	B1900D
WestJet	Vancouver (YVR)	DHC 8-400
Flair	Tucson (TUS)	B737 MAX 8
Potential Future Peak Hour		
Airline	**Route**	**Aircraft**
Air Canada	Vancouver (YVR)	DHC 8-400
WestJet	Vancouver (YVR)	DHC 8-400
Central Mountain	Edmonton (YEG)	DHC 8-100*
Central Mountain	Kelowna (YLW)	B1900D
WestJet	Calgary (YYC)**	DHC 8-400
Flair	Tucson (TUS)	B737 MAX 8

* Upgauged aircraft type ** New service

APRON I



TERMINAL FRONTAGE ROAD

PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE
FIGURE 6.2 - EXISTING AIR TERMINAL BUILDING
APRIL 2023

0 10 20 Meters

*FOR PLANNING PURPOSES ONLY

6.4.2 Groundside Interface

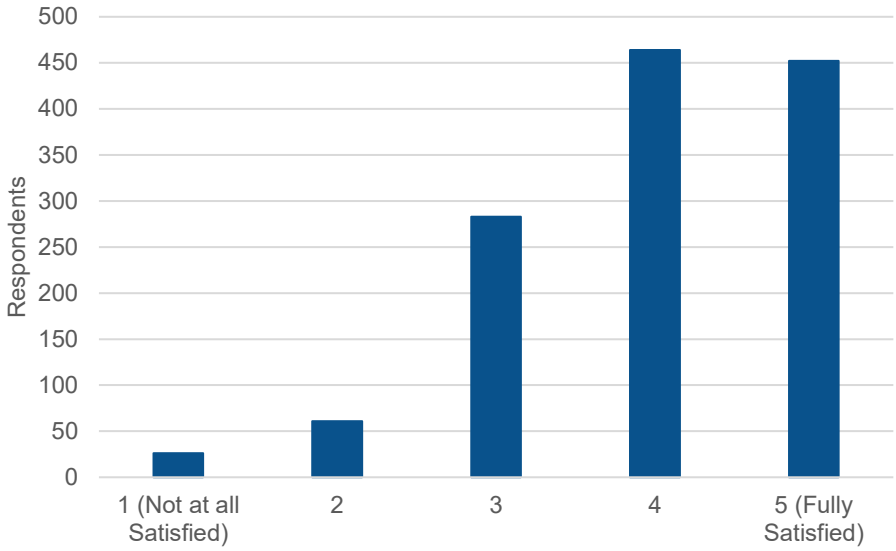
The terminal building is accessed from the curbside and public parking lot via two entryways. The entryway doors are automatic, and the groundside interface is fully accessible. Based on historical passenger levels and consultations with PGAA, congestion at these entryways has not been a concern and is not anticipated to be an issue in the 20-year planning period of the Master Plan Update.

6.4.3 Check-In Area

The check-in area provides 19 passenger / cargo processing positions. Common use terminal equipment is not available, and the installation of computers and associated technology in the check-in area is the responsibility of air carriers, which are assigned dedicated processing positions. Passenger queuing is accommodated in the adjacent open area.

Analysis, consultations with the PGAA and airlines, and results of the public survey did not identify concerns with respect to the check-in area's passenger processing capabilities or queuing during historical operations or in the baseline peak hour. As shown in Figure 6.3, survey respondents generally had favourable experiences in the check-in area, with a weighted average satisfaction level of 4.0 (greater than the overall terminal average of 3.8). Based on the optimum level of service requirements, the check-in and queuing areas are also anticipated to be sufficient or exceed the area requirement for the long-term PHPD scenario. Consideration should be given in a Terminal Building Preliminary Expansion Design Concept for the conversion of the airline specific processing positions to common use positions to provide greater flexibility and efficiency during peak periods and the associated costs investigated.

Figure 6.3 – Survey Respondent Satisfaction, Check-In, and Pre-Security Area



6.4.4 Outbound Baggage Handling

Outbound checked baggage is screened by Canadian Air Transportation Security Authority (CATSA) Hold Baggage Screening (HBS) equipment. After screening, luggage is moved to the outbound baggage make-up room via conveyors where it is held until loading onto baggage carts. Analysis and consultations with the PGAA and airlines indicated that the capacity of the outbound baggage screening position and baggage make-up room are sufficient for historical air carrier operations and the baseline peak hour operations. Analysis indicates that the outbound baggage handling area is sufficient for the long-term peak hour scenario but could be supplemented by the development of a stand-alone cargo processing building for belly cargo on scheduled passenger flights. Consideration for the size and location of such a facility is presented in the Airport Development Plan.

6.4.5 Public Waiting Area

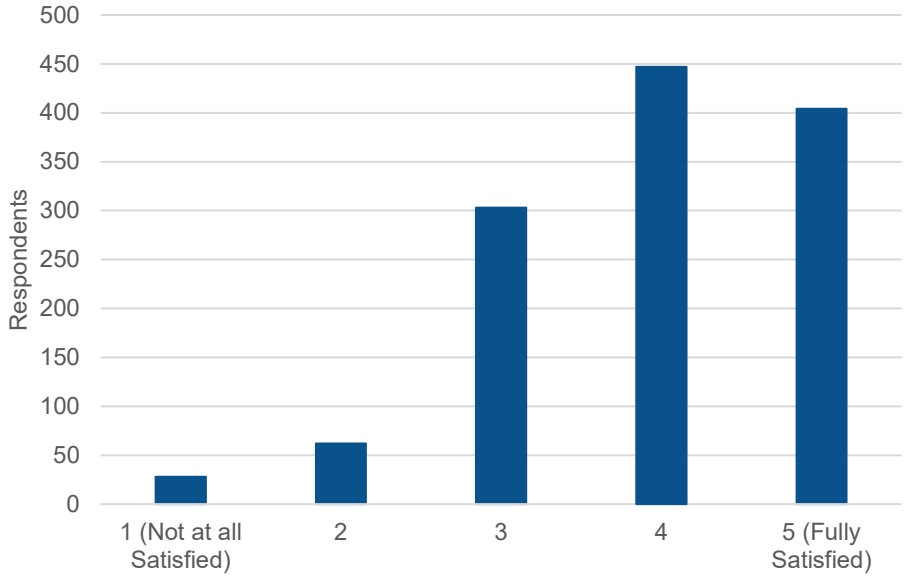
The public waiting areas within the terminal are discontinuous, with bench seating provided prior to pre-board screening, in the baggage claim area, and seating along the wall between the south entrance and the car rental counters. It is understood that the restaurant also serves as de facto public waiting area. These areas are used by passengers waiting to proceed through pre-board screening, individuals greeting arriving passengers, and other users. As noted previously in Section 6.4.3, survey respondents generally identified a positive / satisfactory experience in the pre-security public waiting area. Minimum requirements are not defined for public waiting areas through the Transport Canada or IATA resources referenced as part of the Master Plan, although the availability of this space for the above-noted users is of value.

6.4.6 Pre-Board Screening Area

Individuals departing on secured passenger air carrier flights must undergo inspection by CATSA screening officers at the pre-board screening area. Passengers enter the pre-board screening area south (left) of the check-in area, at which point they deposit their carry-on baggage on conveyors connected to one of two x-ray machines and then proceed through one of two walk-through metal detectors.

The PGAA noted that the configuration and space available in the pre-board screening area, specifically the queuing area available, was a constraint that limited efficient passenger processing under current peak hour conditions. As shown in Figure 6.4, survey respondents generally identified their experience in the pre-board screening area as being satisfactory, with a weighted average of 3.9 (i.e., moderate to high satisfaction). However, feedback received from the public survey also identified the available queuing space as an inconvenience. Functional area analysis indicates that the current queuing area of 50 m^2 should be increased to 232 m^2 to accommodate the current peak hour and would need to be increased to 390 m^2 to accommodate the long-term peak hour scenario. For both the current and long term PHPD, it is recommended that 2 additional passenger screening lines be installed and the pre-board screening area be increased from 90 m^2 to 180 m^2.

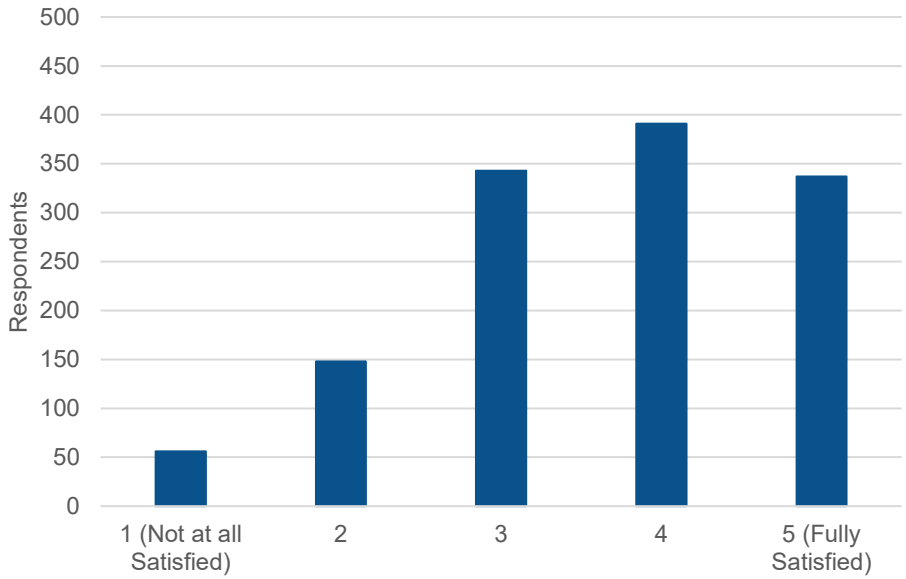
Figure 6.4 - Survey Respondent Satisfaction, Pre-Board Screening Area



6.4.7 Secure Passenger Holdroom

Departing passengers are held in the secure holdroom prior to boarding, which is facilitated through two gates. The holdroom is equipped with washrooms and a food services kiosk. Consultation with PGAA staff and feedback received from the public survey indicate that the holdroom is undersized during periods of peak activity. This is reflected in the greater propensity for survey respondents to identify lower levels of satisfaction versus other terminal areas and the lower weighted average satisfaction level of 3.6 (less than the overall terminal average of 3.8). Functional areas analysis reveals that the current floor area of 450 m^2 should be increased by 38 m^2 to 488 m^2 to accommodate the current PHP-D assuming a 90% load factor for all flights. The long term PHPD scenario would benefit from an additional 35 m^2 expansion to 523 m^2 to accommodate an additional DHC 8-400 flight and the upgauging of one B1900D flight to a DHC 8-100 during the peak hour.

Figure 6.5 - Survey Respondent Satisfaction, Secure Passenger Holdroom

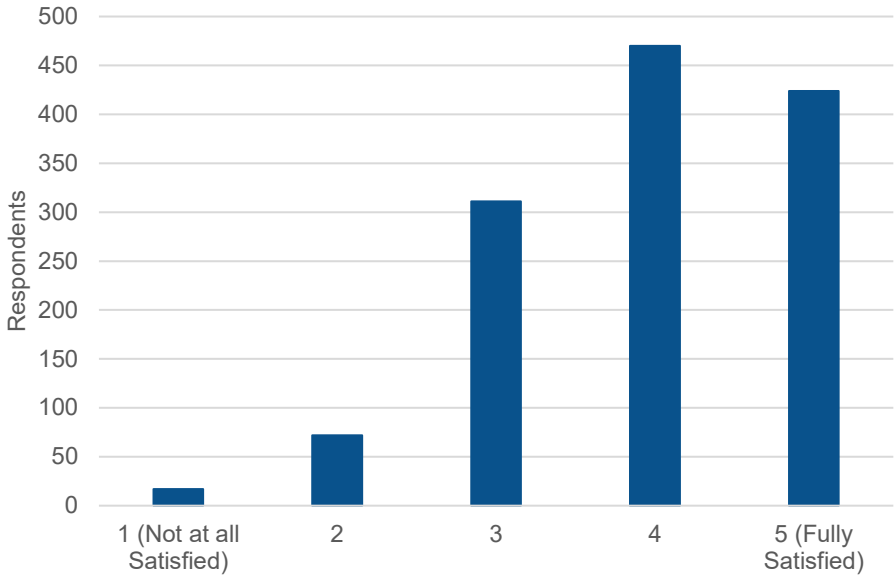


6.4.8 Arrivals Area and Inbound Baggage Handling

Arriving passengers enter the terminal building through one of two vestibules providing access from the apron. The inbound baggage conveyors are located in the arrivals area between the two vestibules. Baggage is conveyed via continuous circulating claim devices from the inbound baggage handling room to the arrivals area. During transborder operations, the arrivals area is divided by a sliding partition wall separating domestic and transborder arriving passengers and facilitating the customs clearance process.

The weighted average satisfaction level of 3.9 is comparable to the terminal building average of 3.8. Based on the functional area analysis and supported by public survey responses, the arrivals area is undersized for current peak hour operations, which include the arrival of a transborder flight. When evaluated separately, the domestic arrivals area should be expanded by 43 m^2 and the transborder/international arrivals area expanded by 124 m^2. The long term PHP-A scenario would require further expansion of the arrivals areas by 196 m^2 and 54 m^2, respectively.

Figure 6.6 - Survey Respondent Satisfaction, Arrivals Area

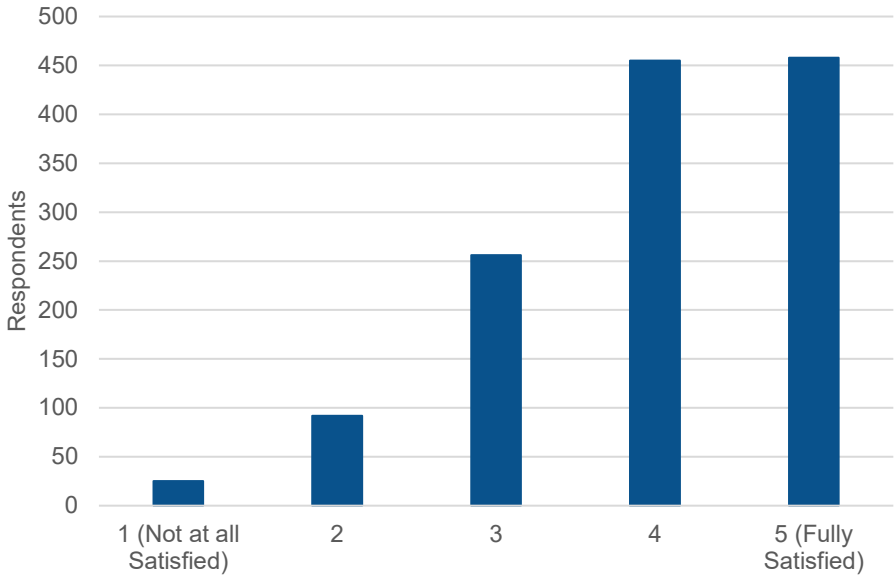


6.4.9 Washrooms, Building Amenities, and Passenger Experience

Three barrier-free washrooms are located between the pre-board screening queuing area and the arrivals area, opposite the car rental kiosks. Three additional washrooms are located in the secure passenger holdroom for passengers who have been screened. Consultation with PGAA staff, terminal tenants, and the results of the public survey indicate that the washrooms provided are sufficient for the current and long-term peak hour scenarios.

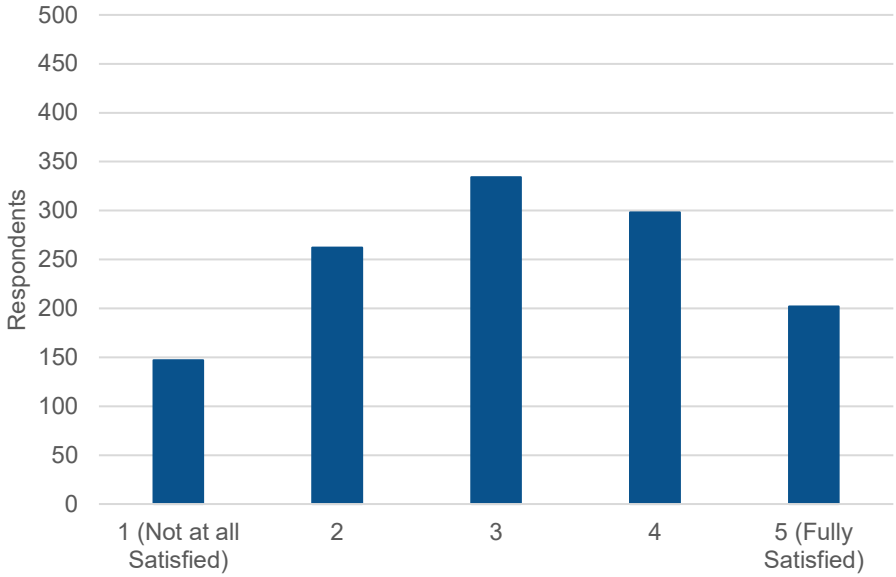
Amenities in the terminal building include a television in the public waiting area and wireless internet is available free of charge. The public survey identified a desire for better access to charging for devices and a children's play area. The provision of covered walkways on the apron was also requested. An information kiosk is also available adjacent to the rental car kiosks, providing tourist information related to local attractions and points of interest. Overall, survey respondents provided a weighted average satisfaction rating of 4.0 for available passenger amenities, exceeding the terminal-wide average of 3.8. As shown in Figure 6.7, 71% of survey respondents assigned passenger amenities a 4 or 5 satisfaction rating, with 20% of respondents indicating moderate satisfaction (rating of 3).

Figure 6.7 - Survey Respondent Satisfaction, Passenger Amenities



Food and beverage options include a pre-security full-service restaurant and a post-security food kiosk located in the secure passenger holdroom. As shown in Figure 6.8, the food and beverage options available in the terminal building received the lowest overall scores in passenger satisfaction, with a weighted average of 3.1 versus the terminal building average of 3.8. Taking survey respondent views into account, the continuation of continued food and beverage options and the potential exploration of additional providers are identified as being of high importance.

Figure 6.8 - Survey Respondent Satisfaction, Food and Beverage Options



Survey respondents identified positive experiences overall with respect to wayfinding and signage in the terminal building, with a weighted average satisfaction level of 4.2 reported – the highest of the surveyed terminal building categories. Easily visible and understandable signage is essential to the ease of passenger wayfinding and accessibility and should be reviewed regularly by the PGAA, with updates undertaken as required.

6.4.10 Rental Car Facilities

Alamo, National, and Enterprise currently lease rental car booths in the terminal, totalling an area of approximately 19 m^2, and are located on the east side of the building between the restaurant and the south entrance. 41% of survey respondents offered their satisfaction level with respect to the rental car facilities, assigned a weighted average of 3.5. While this satisfaction level is slightly below the terminal building average of 3.8, analysis and consultations with rental car providers indicate that the car rental kiosks are sufficient for the current and long-term peak hour scenarios.

6.4.11 Administrative Facilities

Airline Operations

Dedicated air carrier administrative facilities are provided in the terminal building between the check-in counters and the outgoing baggage make-up area. Consultations with air carriers and support staff did not identify an immediate need for expanded administration offices.

Airport Administrative Facilities

PGAA offices are accessed from the north end of the check-in area and accommodate a variety of administrative functions. These administrative facilities are approaching their capacity and the PGAA's 5-Year Capital Plan indicates that additional office space my be included in a future CSB expansion.

6.4.12 Short-Term Terminal Projects

The PGAA's 5-year Capital Forecast (2022-2027) includes several planned terminal building improvements to address aging systems and improve functionality, aesthetics, and passenger comfort including:

- HAVC repairs and upgrades;
- Select flooring improvements;
- Public Announcement (PA) system upgrades;
- Fiber cement panel replacement;
- Service Animal Relief Area; and
- Public restroom counter replacement.

Recommendations	Year	ROM Cost Estimate
Terminal Flooring Improvements	2024	$75,000
Terminal Public Announcement (PA) System	2025	$150,000
Terminal Fiber Cement Panel Replacement	2025	$1,000,000
Note: Projects scheduled in the 5-year Capital Forecast for 2022 and 2023 are assumed to have funding identified and have been omitted from the 20-Year Capital Plan		

6.5 Groundside System

6.5.1 Groundside Roadways

Ellis Road

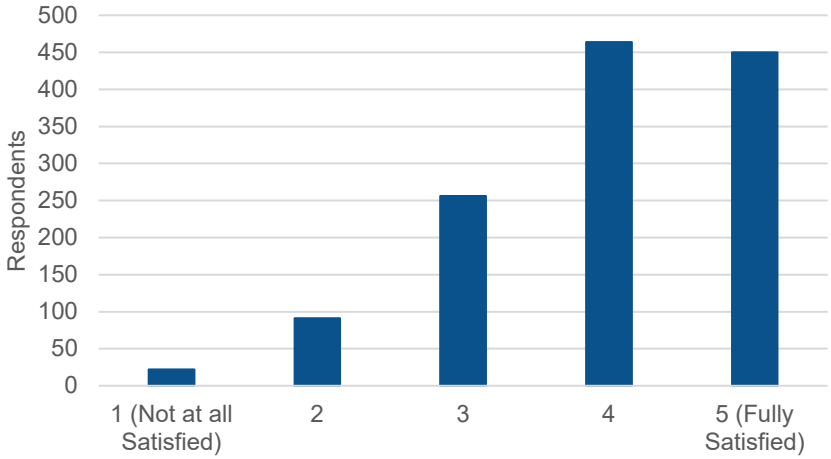
Ellis Road is a two-lane asphalt surface that provides access to the Airport from Cariboo Highway via Sintich Road. Ellis Road continues north to the intersection with Beacon Road and Hangar Road. The PGAA has identified a desire to construct a new primary access to the Airport from Boundary Road to increase visibility and improve wayfinding, reduce traffic through the residential neighborhood south of the Airport, and provide groundside access to undeveloped lands south of Runway 06-24. Concepts for the new access road prepared by L&M Engineering Limited maintain Ellis Road as an alternate access route. Deficiencies were not identified during consultations and inspections with respect to the capacity, design, or access provided by Ellis Road, which is anticipated to be sufficient until the new access is constructed. Survey respondents provided a weighted average satisfaction rating of 4.0 with respect to groundside roadway access.

The southern 2.7 km of Ellis Road is a municipal roadway and it is anticipated that future maintenance and repair projects to this section will be completed as part of the RDFFG's broader infrastructure management program. The northern 500 m of the road lies on Airport property and was observed to be in good condition with rehabilitation anticipated in approximately 10-15 years.

Terminal Frontage Road

The Terminal Frontage Road is approximately 1.2 km in length, originating and terminating at the intersection of Ellis, Hangar, and Beacon Roads. The road provides access to the terminal interface, short and long-term public parking, as well as Hangar Road and Satellite Road. The Terminal Frontage Road consists primarily of a one-way single-lane road but widens to three-lanes adjacent the Terminal Building to facilitate passenger drop-off, pick-up, and short-term parking stalls. Stakeholder consultations and the public survey indicate that the pick-up and drop-off area can become congested during peak periods, with a weighted average satisfaction rating of 4.0 assigned by survey respondents as shown in Figure 6.9. It is recommended that the PGAA consider the relocation of short-term parking to be contained within the primary parking lot and the short-term parking stalls opposite the Terminal reassigned as an additional through lane. Like Ellis Road, the Terminal Frontage Road was observed to be in good condition with rehabilitation anticipated in 10-15 years.

Figure 6.9 - Survey Respondent Satisfaction, Terminal Frontage Road



Groundside Road Network

A series of groundside roads provide access to airport businesses, tenants, and developable lands. East of Ellis Road and the Terminal parking area, Satellite Road extends from the Terminal Frontage Road providing access to the AOC and the Hill Aviation hangar. Beacon Road and Altimeter Road extend from the intersection of Ellis Road and Hangar Road and Satellite Road respectively. West of Ellis Road, Hangar Road intersect Ellis Road at Beacon Road and provides access to commercial tenants including NT Air and Yellowhead Helicopters.

Air Tanker Road connects to Hangar Road providing access to the YXS Fire Training Facility and the Provincial Air Tanker Centre. Aviator Road connects to Air Tanker Road and provides groundside access to tenants located on the south side of Apron III. The above-noted roads were observed to be in good condition, provide sufficient access to existing airport tenants and businesses, planned improvements completed as described in Section 6.5.4.

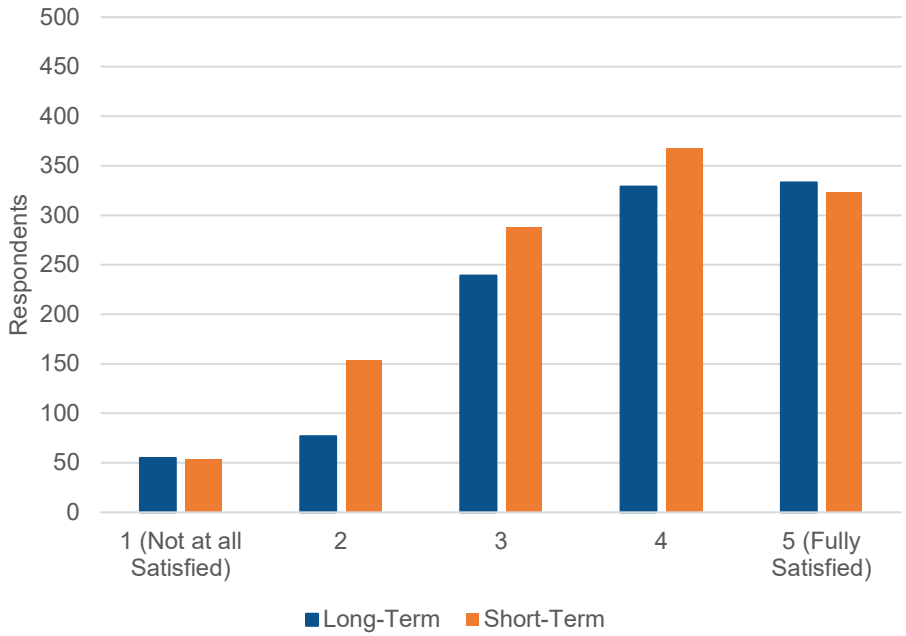
Boeing Road is located north of Apron V and the threshold of Runway 33, connecting Boundary Road and Gunn Road to the Old Cariboo Highway and accessing the air cargo facility. While the timing for the recertification Runway 15-33 to TP312 5th Edition standards in unknown, is it anticipated that the transportation corridor representing vehicles travelling on Boeing Road would constitute an obstacle. It is recommended that a detailed obstacle assessment of TP312 5th Edition OLS surfaces be completed prior to recertification of Runway 15-33 and Boeing Road closed if deemed to be an obstacle.

6.5.2 Vehicle Parking

Short Term Parking

Short term parking stalls are provided on the terminal frontage road opposite the terminal and rental car parking lot. 59 stalls provide hourly parking for up to 2 hours. Survey respondents assigned a weighted average satisfaction rating of 3.6 to the short-term parking lot (Figure 6.10) – the lowest satisfaction assigned to a component of the groundside system. As demand for short-term parking increases through the planning horizon, the PGAA should consider the relocation of the angled short-term parking stalls to the main parking lot to facilitate improved passenger the drop-off and pick-up.

Figure 6.10 - Survey Respondent Satisfaction, Short-Term and Long-Term Parking



Long Term Parking

The long-term parking area consists of approximately 940 parking stalls, including 10 accessible stalls. Because the lot is at a lower elevation than the frontage road and the terminal entrance, access is facilitated by stairs, an elevator, and a ramp. To address periods of high demand, the lot was expanded in 2019 to accommodate an additional 320 stalls. As shown in Figure 6.7, survey respondents generally identified being moderately to full satisfied with the long-term parking lot and assigned a weighted average satisfaction rating of 3.8.

To account for the forecast increase in passenger activity within the 20-year planning period, it is anticipated that additional parking capacity will be needed, however the timing for parking expansion could be impacted by several factors including actual passenger activity growth, peak hour demand, destinations served and frequency, and available transportation options (i.e., transit). A parking expansion reserve has been identified in the Airport Development Plan to ensure sufficient parking capacity can be developed to meet future demand.

Premium and Rental Car Parking

The PGAA provides 25 premium parking stalls equipped with electrical plug-ins immediately south of the terminal building. Participants in the premium program lease a spot for a year term, which can be shared by airport users. 64 rental car parking stalls are in the same lot as premium parking, with an additional 14 angled stalls on the frontage road. The requirement for future terminal expansion to the southwest would impede on the premium and car rental lot. Consideration should be given for the relocation of car rental parking to the primary parking lot in coordination with a future terminal expansion project.

The parking lots were observed to be in good to very good condition and should undergo regular maintenance and improvements on an as-needed basis. Significant rehabilitation efforts are not expected within the 20-year planning period.

6.5.3 Airside Access Control

A continuous security fence is installed along the perimeter of the Airport, limiting access by pedestrians, vehicles, and wildlife. Primary access to airside areas is provided by vehicle and person gates at the AOC, Air Tanker Base, NT Air hangar, Apron III, and Apron V. Additional gates are co-located with airport tenant facilities and at strategic points along the security fence. These access points were reported and observed to be in good condition and are expected to require only routine maintenance within the 20-year timeframe of the master plan.

Consultation with PGAA staff indicates that Prince George Airport may be obligated to meet the requirements of CATSA Non-Passenger Screening-Vehicle (NPSV) within the 20-year planning period. NPSV establishes a checkpoint through which all vehicles must pass prior to accessing airside Critical Restricted Area. Vehicles are randomly selected for screening and are then thoroughly inspected, including the driver and all occupants. Candidate locations for establishing an NPSV checkpoint are presented in the Airport Development Plan.

6.5.4 Short-Term Groundside System Projects

The PGAA's 5-year Capital Forecast (2022-2027) includes several planned groundside improvements addressing aging infrastructure including:

- Rehabilitation of the existing Arrival Road;
- Reconstruction of Hangar Road; and
- Select road and parking rehabilitation.

Recommendations	Year	ROM Cost Estimate
Rehabilitation of the Existing Arrival Road	2024	$650,000
Reconstruction of Hangar Road	2025	$100,000
Select Road and Parking Rehabilitation	2025, 2027	$200,000

6.6 Utilities and Servicing

6.6.1 Potable Water

Potable water for the Airport is provided by a 250 mm diameter underground cast iron watermain crossing under Runway 15-33 from Old Cariboo Highway, connecting for distribution to the airport core area at 3940 Satellite Road. The watermain was installed in 1985 and is reported to be undersized for current demands, requiring support from an onsite water storage reservoir and booster station on Altimeter Road. The Airport's water distribution network primarily consists of 200 mm diameter PVC watermains, servicing the Terminal Building, NAV CANADA Tower, the PGAA Administration and Operations Centre, and the Hill Aviation hangar. Another branch services all buildings along Hangar Road and Air Tanker Road.

A water tower is located north of the Airport property, northwest of the Gunn Road roundabout, providing servicing eastward on Boeing Road via a 400 mm diameter asbestos-concrete pipe. The Boeing Road watermain currently services the Rosenau Transport facility, built in 2011. There is also a 600 mm ductile iron watermain dating to 2009 along the entire length of Boundary Road, west of the Airport property.

Consultations and the 2021 Water System Assessment Report by L&M Engineering Limited indicates that the water distribution network has been inadequate to retain sufficient fire flows, especially at the T-Hangar Building, PGAA Firefighter Training Base, and Air Tanker Base. The 2021 Water System Assessment Report also noted the onsite fire pump to be approaching the limits of its service life and requires replacement. The Report also presents a supplemental connection concept to the Boundary Road watermain to supersede the current requirement for the aging reservoir and booster station. It is recommended that a Site Servicing Study and subsequent detailed design for a supplemental watermain connection be completed in the short term to address current and future water and fire flow demands, considering the proposed developments shown in the Airport Development Plan.

6.6.2 Sanitary Sewer

The sanitary sewer network at the Airport consists primarily of 200 mm diameter PVC gravity sewers, collecting at a central sanitary pump station at 3825 Beacon Road. The first collector network along Altimeter Road services the core Airport facilities such as the Terminal Building, NAV CANADA Tower, Hill Aviation hangar, and the PGAA Administration and Operations Centre. Another branch collects from all buildings on Hangar Road and Air Tanker Road, including a 76 mm diameter PVC Force Main from the BC Wildfire Service base pump station. All sewage is pumped through a 150 mm diameter asbestos-concrete Force Main eastward from the central sanitary pump station, crossing under Runway 15-33 and discharging to a City of Prince George sanitary manhole on Old Cariboo Highway. The overall system dates to 1976, with the most recent construction being the replacement of a pipe segment between Altimeter Road and the pump station in 2013. North and West of the Airport property there are 250 mm and 300 mm diameter PVC sanitary sewers, on Boeing Road and Boundary Road, respectively.

Consultations and the 2014 Master Plan indicate that numerous sections in the sanitary sewer network, along with the central pump station, are approaching the limits of their life cycles, and consideration should be made for upgrades to the overall system. A Site Servicing Study in the short term would determine requirements for rehabilitating the sanitary sewer infrastructure at the Airport.

6.6.3 Stormwater Management and Drainage

An extensive network of storm sewers and drainage infrastructure are found along the edge of each airfield pavement surface. Each of the pavement surfaces are flanked lengthwise by series of catch basins and vitrified tile pipes typically 200 mm in diameter. Main concrete collector pipes sized from 700 mm up to 1,372 mm are found along the east side of Aprons IV, I, and II, and south of Taxiway C, that discharge into the drainage ditch between Runway 15-33 and Apron II. The stormwater flow is tested for glycol concentration prior to discharge at the outfalls.

Similarly, the groundside system collects stormwater through a series of catch basins in the Long-Term Parking Lot. With a combination of subdrains, PVC, SDR, and concrete pipes, discharges are directed to the drainage ditches east of Satellite Road, and between Ellis Road and Altimeter Road.

As of 2022, camera inspection work was ongoing for the entire Airport storm sewer system. It was noted during consultations that sink holes had appeared near the thresholds of Runway 15 and 19 in 2018 due to the collapse of wood stave storm drains. Latest camera inspections from 2017 revealed a variety of conditions including clean pipes, dry pipes, flow obstructions, rusting, and deteriorating catch basin walls.

It was also identified during consultations that flooding issues occur regularly during spring thaw, at the north (Runway 15 threshold and Apron V) and south (Runway 33 threshold) ends of the Airport property. Contributing factors include the general flat terrain of the Airport, as well as drainage channels linked at the northern drainage pond between Boeing Road and Highway 16.

Given the continuing approach towards the service life limits of numerous stormwater and drainage components, it is recommended that regular monitoring and inspections continue and a Stormwater Management Plan be completed along with the previously recommended Site Servicing Study. These studies would combine necessary storm sewer infrastructure repairs and replacements, with overall drainage improvement measures for the Airport property, accounting for potential bird hazards, environmental considerations, and integrity of the overall watershed.

6.6.4 Electrical Servicing

Electrical servicing is provided by BC Hydro via overhead wires entering the Airport property along Ellis Road. Consultations with the Airport Operator did not identify any issues or deficiencies with the existing switchgear or transformer, and electrical servicing is not considered to be a constraint to future Airport development.

6.6.5 Natural Gas

BC Gas provides natural gas servicing to the ATB, NAV CANADA tower, Administration and Operations Centre, the Hill Aviation hangar, the BC Wildfire Service Base, and along development lots of Hangar Road and Apron III. Natural gas servicing can be extended by BC Gas to service new development along Aviator Road and Air Tanker Road, as required throughout the planning horizons of the Master Plan Update. No deficiencies were identified with natural gas servicing in its current form.

6.6.6 Telecommunications and Internet

Communications are provided by Telus to the terminal building and several of the leasehold lots through a fibre-optic service. Consultations identified no urgent deficiencies with the current communications arrangement infrastructure. At the time of the Update, the PGAA was in the process of implementing an internet LTE failover system.

Recommendations	Year	ROM Cost Estimate
Site Servicing Study	2024	$50,000
Stormwater Management Plan	2024	$50,000

7 AIRPORT DEVELOPMENT PLAN

7.1 Development Considerations

7.1.1 Aeronautical Factors

All future development at Prince George Airport must be compatible with the facility's regulatory obligations as a certified airport. This includes structure height restrictions imposed by Obstacle Limitation Surfaces and Obstacle Protection Surfaces, terrestrial navigation aids, meteorological observations facilities, aviation fuel facilities, and NAV CANADA tower line of sight requirements.

Obstacle Limitation Surfaces

Obstacle Limitation Surfaces are three-dimensional planes that protect the airspace surrounding the Airport's runways to assist in ensuring safe aircraft operations. According to the most current Airport Operations Manual, Obstacle Limitation Surfaces are designated for Runway 15 (Code 4E – Precision), Runway 33 (Code 4E – Non-Precision), Runway 06-24 (Code 3C – Non-Instrument), and Runway 01-19 (Code 2C – Non-Instrument) as per TP312 4th Edition. These surfaces are illustrated in Figure 7.1.

TP3212 5th Edition, implemented in September 2015 and amended in January 2020, introduced significant changes to the characteristics and specifications of Obstacle Limitation Surfaces. Airport development within the 20-year planning horizon may not trigger the requirement for certification to TP312 5th Edition, however it is considered prudent planning practice to consider this as an eventuality. Based on consultation with NAV CANADA and recommendations made in previous planning studies, Runway 33 is also protected as an AGN V-Precision facility within the Master Plan Update. The implications of an increase in the Level of Service on off-airport obstacles and development should be evaluated through detailed assessment. The Airport Development Plan has been prepared to ensure that new on-site buildings, structures, or aircraft parking will not penetrate the current TP312 4th Edition Obstacle Limitation Surfaces, nor the potential future TP312 5th Edition Obstacle Limitation Surfaces. Representative TP312 5th Edition surfaces are illustrated in Figure 7.2. Off-Airport development will continue to be controlled by the federally enacted Prince George Airport Zoning Regulations (C.R.C., c. 103).

Obstacle Protection Surfaces

Obstacle Protection Surfaces are established for Runways 15, 33. 06, and 24 to provide clear sightlines to the Precision Approach Path Indicators (PAPI). Objects including structures, vegetation, and terrain, are not permitted to protrude into the respective Obstacle Protection Surfaces.

Terrestrial Navigation Aids

Instrument Flight Procedures (IFPs) at and in the vicinity of Prince George Airport utilize satellite and terrestrial-based navigation aids located both on and off Airport property. The consideration of these facilities in the Development Plan will ensure the continued safety, availability, and efficiency of the Airport throughout the planning period. Any future development on or near the Airport must consider the associated protection surfaces presented in *TP1247 – Land Use in the Vicinity of Aerodromes* and referenced *ICAO EUR DOC 015*. Runway 15 is supported by two ILS approach procedures (ILS Y and ILS Z) affording a minimum descent altitude of 200 ft. AGL and visibility of ½ statute mile. These procedures are supported by a localizer array installed south of the threshold of Runway 33, immediately north of Johnston Road. The localizer is paired with a glide slope transmitter – located west of Runway 15-33 and south of Apron V – to provide sufficiently equipped aircraft with both vertical and horizontal guidance while on approach. Distance Measuring Equipment (DME) is co-located with the glide slope transmitter supporting the ILS. A VHF Omnidirectional Range (VOR) installation is located off-airport approximately 48 km south of the threshold of Runway 33.

Meteorological Observation Facilities

Meteorological observation facilities are maintained by NAV CANADA and Environment and Climate Change Canada in the infield bounded by the three runways. To ensure that new structures do not interfere with the functioning of the various instruments systems, a 45 m clearance area is provided surrounding these installations, and the Airport Development Plan does not recommend new growth in proximity to these systems.

Aviation Fuel Facilities

Avgas (100LL) aviation fuelling infrastructure is located on Apron II, east of the NAV CANADA control tower. The primary Jet A facility is located on the north end of Apron V. New development is not planned within 15 m of fuelling infrastructure.

NAV CANADA Tower Line of Sight

Visual line of sight across the airside system must be maintained with minimal gaps to maximize the operational awareness of Air Traffic Services (ATS) personnel. NAV CANADA has begun to implement digital control facilities using high resolution camera and screen technologies to allow ATS personnel to be located remotely with the opportunity for a future hub approach where multiple airports can be provided service from a centralized facility. The implementation of this type of strategy at Prince George Airport is currently unknown, therefore it is assumed that the tower and associated line of sight considerations will remain throughout the 20-year planning period. Future development within the line of sight fields will require assessment by NAV CANADA through the Land Use Submission process prior to construction.

7.1.2 Land Use and Environmental Factors

Future development of Prince George Airport must also consider existing and potential future land uses on and off Airport property as well as environmental factors that may constrain development or render development cost prohibitive in specific areas. Site-Specific Land Use and Environmental Factors are presented in Figure 7.3.

Lheidli T'enneh Lands

As described by the Province of British Columbia, The Lheidli T'enneh Final Agreement was negotiated by the Government of Canada, the Government of British Columbia, and the Lheidli T'enneh. The Final Agreement provides Lheidli T'enneh with certain rights and benefits regarding land and resources, and self-government over its lands and resources and its citizens, among others. West of the Airport, 585 acres of Lheidli T'enneh land abut the Airport boundary defined by Old Cariboo Highway. Development is anticipated to remain within the Airport boundary for the duration of the 20-year planning horizon and is not anticipated to impact these lands.

Archaeological Potential Areas

The City of Prince George Official Community Plan (Bylaw No. 8383, Revised October 11, 2022) indicates that development on lands within the high archaeological resource potential area may likely encounter protected archaeological sites. For this reason, a development approval applicant should be notified if the subject property overlaps with one of these areas. Notification should include direction to engage a professional consulting archaeologist. City data shows one Archaeological Potential Area southwest of the threshold of Runway 06. Archaeological Potential Areas are also identified off-airport west of the Airport boundary near the intersection of the extended centreline of Runway 06-24 and Boundary Road and immediately west of Apron V.

High Conservation Value Lands

These lands have been designated by the City as having a high conservation value because they are high risk or ecologically fragile. Areas designated on-airport include lands north and south of the extended centreline of Runway 06-24 as well as west of Runway 01-19.

Hydrography

The City of Prince George hydrography dataset portrays surface water and represent the drainage network with features including rivers, streams, canals, lakes, ponds, and dams derived from 2014 LiDAR data. Review of the dataset indicates the majority of hydrological features on-airport are immediately west of the Runway 06 threshold, south of Air Tanker Road, and west of Runway 01-19.

Significant Slope Changes

Areas of significant slope – where the grade is greater than 20% - are found north and west of the threshold of Runway 06 and both north and south of Yellowhead Highway within the Airport property boundary. While these areas do not prohibit development, the costs associated with achieving suitable grades in these areas would be significant. The proposed development of these areas in the Master Plan Update has therefore been avoided where possible.

Area of Geotechnical Concern

In preparing Apron V access road concepts for the PGAA in 2021 and 2022, L&M Engineering Limited identified an area of 'geotechnical concern' immediately south of Apron V, with all presented road alignment concepts explicitly avoiding this area. The area was first identified during the 2007 Apron V expansion works and constitutes part of a greater overall area laden with glacial sediment and silt deposits. This soil material has expansive properties due to its tendencies to entrap water. As such, future commercial or industrial development may be subject to higher lot preparation and construction costs. In addition to the contextual factors described above, other factors that influence the Airport Development Plan include privately owned properties located to the north, west, east, and south of the Airport property boundary and Old Cariboo Highway to the east, Yellowhead Highway to the north, Boundary Road to the West, Johnson Road to the south, and Boeing Road.

PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE

FIGURE 7.1 - TP312 4TH EDITION OLS

APRIL 2023

0 400 800
Meters

*FOR PLANNING PURPOSES ONLY

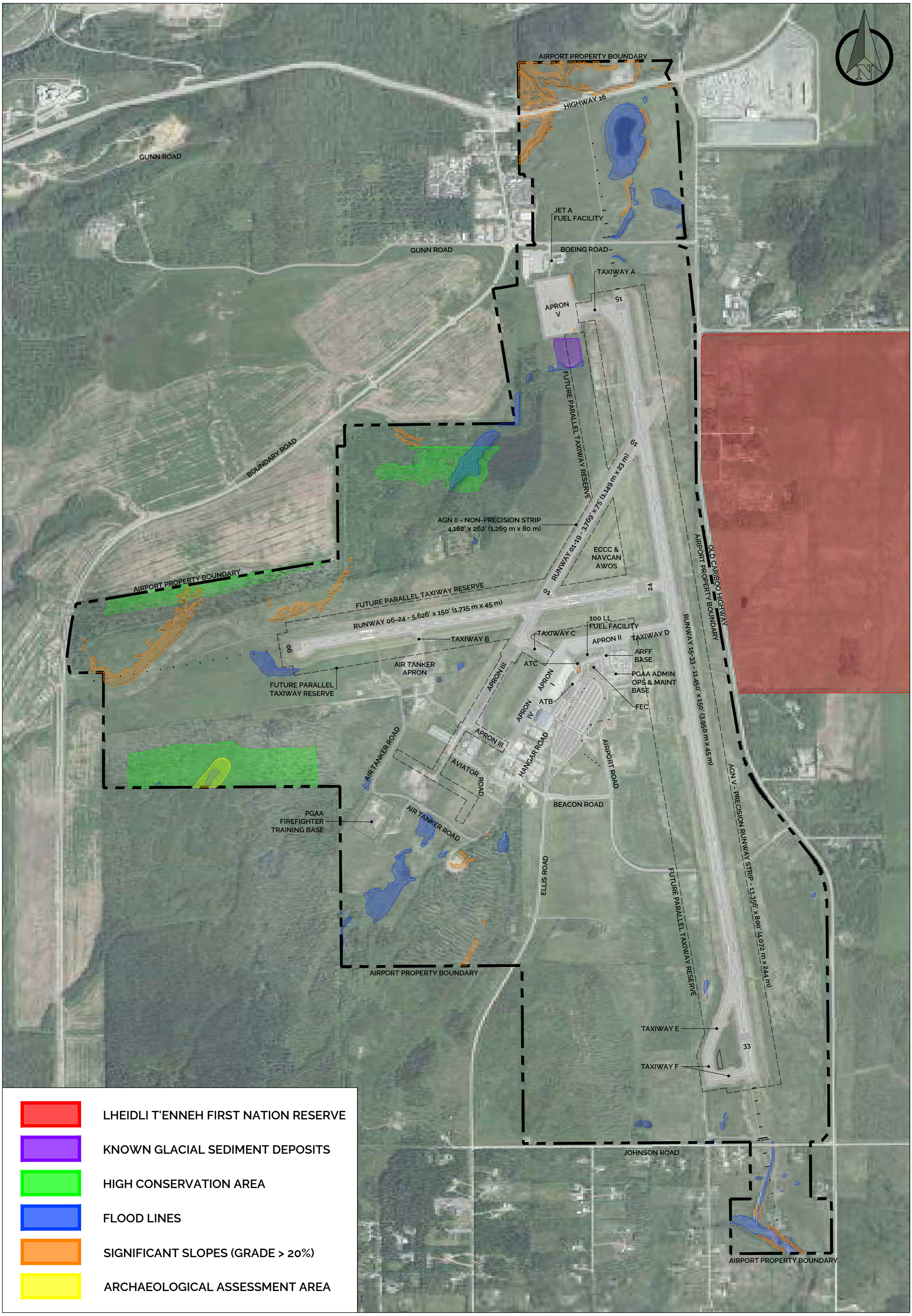
PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE

FIGURE 7.2 - TP312 5TH EDITION OLS

APRIL 2023

0 400 800
Meters

*FOR PLANNING PURPOSES ONLY



PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE

FIGURE 7.3 - LAND USE CONTEXT

APRIL 2023

0 400 800 Meters

*FOR PLANNING PURPOSES ONLY

7.2 Airport Development Plan

The Airport Development Plan, shown in Figure 7.4, integrates the capital projects recommended for Prince George Airport over the Master Plan Update time horizon, including changes and additions to existing airside or groundside infrastructure. The Airport Development Plan has been prepared to meet the current and future needs of the Airport and protects sufficient land to accommodate growth beyond the long-term planning horizon. The Airport Development Plan contains four distinct development areas: the East Development Area, West Development Area, and North Development Area. Sections 7.2.2, 7.2.3, and 7.2.4 identify and discuss major capital projects to be undertaken in each of the development areas. The Plan assumes all future development and infrastructure will satisfy the requirements of TP312 5th Edition. A comprehensive Implementation Plan including the anticipated year of completion for all recommended projects is presented in Section 10. Capital costs for all projects are summarized in Section 9 with a detailed cost breakdown provided in Appendix A.

The Airport Development Plan assigns projects into one of three time horizons:

- Short-Term (2024-2028);
- Medium-Term (2029-2033); or
- Long-Term (2034-2043)

7.2.1 Access, Servicing, and Reserves

A series of developments and reserves are recommended to improve access to the Airport, provide higher capacity servicing, and ensure the safe and efficient operation of the Airport beyond the 20-year planning period.

New Arrival Road

The Airport's core area, including the Terminal Building and most airport businesses and tenants, can currently only be accessed through a residential neighborhood via Sintich Road and Ellis Road from the south. The PGAA desires to improve public access, reduce impacts on residents south of the Airport, and provide connectivity to new groundside development lands. With the assistance of L&M Engineering Limited (L&M), the PGAA has explored several concepts for a new arrival road from Boundary Road west of the threshold of Runway 06 running parallel to Runway 06-24 and then connecting to Ellis Road at the intersection of Hangar Road and Beacon Road. The modified concept presented in Figure 7.4 utilizes a potion of the alignment of Air Tanker Road to yield as much airside commercial development land south of Apron III as possible, while also maintaining the potential for groundside commercial development both north and south of the new access road. The construction of the new public access road is anticipated within the short-term planning horizon.

Apron V Access Road

As described in Section 6, fuel trucks transiting from the fuel depot on Apron V to Apron I must utilize Runway 15-33 and Runway 01-19 on average of 20 trips per day. The PGAA and L&M have explored concepts for the construction of a dedicated access road to limit the distance traveled by fuel trucks on aircraft maneuvering surfaces. The alignment illustrated in the Airport Development Plan is a modified version of L&M's preferred alignment, considering areas of geotechnical concern, the OLS, and ultimate-term commercial development lands. This project is recommended as an option for addressing fuel truck operations in the short-term, and advancement should be subject to the completion of a fuel facility relocation feasibility study recommended in Section 6.3.1.

Improved Site Servicing from Boundary

The capacity of the Airport's water supply has been identified as an issue. The 2021 Water System Assessment Report completed by L&M indicates that the water distribution network is inadequate to retain sufficient fire flows and noted the onsite fire pump to be approaching the limits of its service life. The Report presents a supplemental connection concept to the Boundary Road watermain to supersede the current requirement for the aging reservoir and booster station. It is recommended that the supplemental water and sanitary sewer connection be aligned with the proposed access from Boundary Road in the short-term.

Parallel Taxiway Reserve

The 2007 Master Plan and 2014 Master Plan Update recommend reserving land to allow for the future development of parallel taxiways supporting Runway 15-33 and Runway 06-24. The project team agrees that protecting for this eventuality is prudent planning and has included these protections in the Airport Development Plan, though the requirement for full parallel taxiways is not anticipated within the 20-year planning period. The Plan protects for an AGN V parallel taxiway west of Runway 15-33, offset 132 metres from the runway centreline to account for the elevation of the Airport and design aircraft type. The Plan also protects for AGN IIIB taxiways north and south of Runway 06-24. The construction of portions of these taxiways is recommended in the Airport Development Plan to provide airside access to development lands. The construction of the complete full parallel taxiway system is not anticipated within the 20-year planning period of the Master Plan Update.

Runway End Safety Areas

The PGAA has planned for the establishment of RESAs for the ends of Runways 15, 33, 06, and 24 in the short-term. A RESA, per TP312 5th Edition, is a defined area along the extended runway centreline intended to reduce the severity of damage to an aircraft undershooting or overrunning the runway. The Master Plan Update recommends the completion of a RESA Reduced Declared Distances Study in the short-term (2024) to evaluate possible lower-cost options, including the reduction of runway declared distances on Runway 15-33.

7.2.2 East Development Area

The East Development Area consists of Aprons I and II; Taxiway D; Terminal Building, AOC, Hill Aviation hangar, main parking lot, and Beacon, Altimeter, and Satellite roads. The East Development Area, presented in Figure 7.5, represents highest and best uses of land while also factoring in constructability, construction costs, and forecast demand. Actual building and supporting infrastructure configurations may vary depending on future detailed design efforts.

Terminal Building Expansion

Analysis presented in Section 6 identified the requirement for incremental terminal expansion and modest reconfigurations in the short-term of the Master Plan Update. The respective expansions, illustrated in Figure 7.8 and reflected in the Airport Development Plan, expand the building envelope to the west and south to increase available area for the secure passenger holdroom. Reconfigurations are recommended to provide additional space and capacity for pre-board screening and queuing.

Parking Expansion

A parking expansion is recommended in the medium-term south of the existing main parking lot – west of Altimeter Road and north of Beacon Road. An expansion of the long-term parking lot was completed in 2019 to accommodate growth experienced pre-COVID. As passenger traffic is forecast to meet this level and continue to grow through the 20-year planning period, the expansion of the main parking lot is recommended that could also accommodate expanded rental car facilities or a cell phone lot to aid in easing congestion on the terminal frontage road.

Dedicated Cargo Facility

Consultations with the PGAA and incumbent air carriers revealed demand for a stand-alone cargo building to facilitate the processing and temporary storage of air cargo to be carried on scheduled passenger flights. Currently, this type of cargo is accepted at the passenger check-in counters and held in the outgoing passenger baggage area. The Development Plan recommends the construction of a dedicated cargo facility (approximately 1,800 m^2) to the east of the AOC in the short-term. A temporary road could provide access to this area in advance of the long-term construction of the partial parallel taxiway.

Non-Passenger Screening of Vehicle Checkpoint

Consultation with PGAA staff indicate the likely requirement for establishing an NPSV checkpoint within the planning horizon of the Master Plan Update. The Airport Development Plan recommends a candidate location south of the proposed cargo facility and assumes its construction in the medium-term.

AGN V Taxiway

The Airport Development Plan recommends the construction of a partial parallel AGN V taxiway extending south 1,036 m from Taxiway D and intersecting Runway 15-33 near the alignment of Airport Road. The taxiway would serve to access new commercial and industrial development lots and reduce congestion currently witnessed on Taxiway D. The Master Plan Update recommends the construction of the partial parallel taxiway in the long-term.

Airside Development Lots

The Plan recommends the preparation of commercial and industrial development lots in the long-term to be served by the new partial parallel taxiway, The Plan includes 6 commercial lots (40 m x 80 m typical) capable of serving corporate and commercial aviation tenants and 5 industrial lots (100 m x 200 m typical) capable of supporting an energy resource passenger terminal, airline operations, or Maintenance, Repair & Overhaul (MRO) facilities. The Plan recommends the realignment of Airport Road to access to the 3 most southern industrial lots.

Fuel Reserve (Jet A)

The East Development Area provides an allowance for the relocation of the Jet A fuel depot from Apron V to a lot served by a partial parallel taxiway west of Runway 15-33. This location was selected to reduce fuel truck transit times by locating the fuel closer to where most aircraft are refuelled and ensure adequate access for fuel delivery trucks. It is recommended that the cost comparison of relocating the Jet A fuel depot to this location versus the construction of the Apron V access road be completed in the short-term. Should this reserve no longer be required, this area could be repurposed as an industrial lot. The preparation of the fuel reserve lot is recommended in the long-term.

Service Commercial and Entertainment Hub

As introduced in Section 5.8.1, the core development area near the terminal building offers a development opportunity due to the high visibility to arriving and departing passengers as well as employees working at the Airport. Pending market interest, a parcel of land within the core area could be developed as a service commercial and entertainment hub anchored by:

- Gasoline and vehicle service stations;
- Restaurants,
- Hotels; and
- Retail and entertainment uses.

An approximate 26 acre area bounded by Ellis Road, Beacon Road, and Airport Road has been identified in the Airport Development Plan for these uses. The preparation of the Service Commercial and Entertainment Hub lot is assumed in the medium-term.

7.2.3 West Development Area

The West Development Area presented in Figure 7.6 consists of Aprons III, IV; and the Air Tanker Apron, Air Tanker Road, and Aviator Road.

GA Development Lots

The West Development Area provides 5 (45 m x 100 m) unserviced recreational lots on the west edge of Apron III and an additional 4 (45 m x 100 m) unserviced recreational lots south of the existing T-hangar. The southern most lots on the west edge of Apron III are a candidate location for the relocation of the Flying Club. The lots south of the T-hangar are appropriately sized for additional T-hangar development or other recreational aviation uses.

One commercial lot is provided east of the Carrier Lumber Hangar and an additional 16 (45 m x 100 m typical) commercial lots are provided south of Aviator Road bounding the new access from Boundary Road. It is proposed that all GA Commercial lots be provided potable water and sanitary services. The Master Plan recommends the preparation of the development lots in the short-term and medium-term.

Fuel Reserve (Avgas)

The Avgas facility is currently located on Apron II, north of the Terminal Building. The establishment of commercial and recreational GA lots south of Apron III will result in a relatively centralized grouping of Avgas users and therefore warrants reserving land for the relocation of the AvGas facility to Apron III, north of the proposed future Flying Club site. The preparation of the fuel reserve lot is recommended in the short-term.

Taxiways

The West Development Area will provide access to recreational and commercial lots south of Apron III via an asphalt AGN II taxiway extending from the southwest corner of the apron. The Airport Development Plan also recommends the redesignation of the Apron III as an AGN IIIB taxiway and the relocation of the aircraft tie-down to a centralized tie-down area east of Apron III to provide to allow for improved winter maintenance and reduce aircraft exposure to rotor wash generated by helicopters transiting the apron. An allowance is recommended between the existing T-hangar and candidate Flying Club site to facilitate helicopter hover taxiing between Apron III and the Northern Initial Fire Attack Crew (NIFAC) base.

The relocation of the tie-down area is recommended in the short-term, concurrent with the preparation of the GA lots and Avgas fuel reserve, each fronting the existing pavement of Apron III. Construction of an extended AGN II taxiway is recommended in the medium-term.

Additionally, the construction of a partial parallel AGN IIIB taxiway between the threshold of Runway 06 and Taxiway B is recommended to provide access to additional airside commercial development lands. Construction of the AGN IIIB taxiway is recommended in the medium-term.

Airside Commercial Lots

The Airport Development Plan recommends the establishment of 8 (55 m x 145 m typical) commercial lots south of the proposed partial parallel taxiway anticipated to accommodate aviation businesses and government agencies. In addition, a reserve is provided east of the Air Tanker Base to protect for future facility expansion. The Master Plan recommends the preparation of the development lots in the medium-term.

Groundside Commercial Lots

The construction of a new road accessing the Airport and associated supplemental servicing connection to Boundary Road presents an opportunity to access additional groundside commercial lots between the existing Air Tanker Road and the western Airport property boundary. As illustrated in Figure 7.4, approximately 90 acres of high visibility serviced land could be made available for airport complementary commercial uses. Due to the high levels of investment recommended in the short and medium-terms of the Master Plan Update, it is recommended that these lots be developed as demand dictates.

Air Tanker Base Expansion Reserve

Aircraft movement statistics specific to the Air Tanker Base were not available to the project team while preparing the Master Plan Update, however, it is anticipated that select factors, including the impacts of climate change, may result in increased fire activity in the region and therefore increased air tanker aircraft movements within the planning period. Consultation with Air Tanker base staff and the PGAA indicate that the Base, equipped with a dedicated taxiway and apron, is sufficiently sized to accommodate current operations. To protect for an increase in future activity, an expansion reserve has been included in the Development Plan in the area bounded by Runway 06-24, Taxiway B, and Apron III.

Fire Training Facility Expansion Reserve

The Fire Training Facility located on Air Tanker Road serves as a training facility for both Prince George Airport firefighters as well as airport firefighters from across North America through a partnership with Firemedix. Growth of the facility is anticipated within the planning period with an expansion reserve of approximately 4 acres established immediately east of the existing facility.

7.2.4 North Development Area

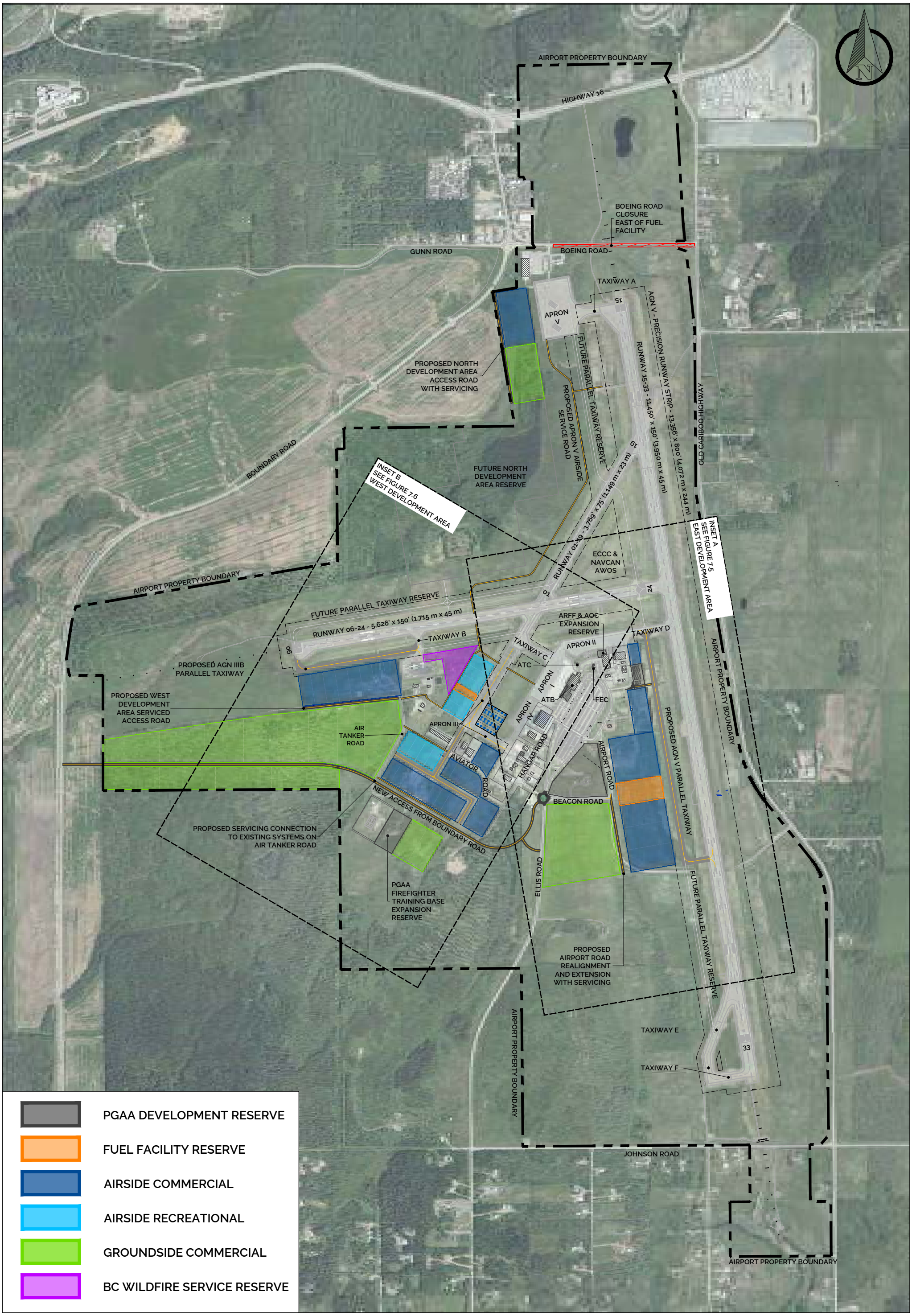
The North Development Area presented in Figure 7.4 is comprised of Apron V, Taxiway A, and lands south and southwest of the apron.

Airside and Groundside Commercial Development Lots

Consultation with the PGAA identified the requirement to prepare a 250 m x 135 m commercial lot immediately west of the apron for a future aviation user in the short-term. Additionally, a groundside commercial lot is proposed immediately south of the aviation use lot. The Airport Development Plan proposes that a new access road connecting these lots to Boundary Road be constructed.

Closure of Boeing Road

As identified in Section 6.5.1, the eventual certification of Runway 15-33 to TP312 5th Edition standards is anticipated to result in the identification of Boeing Road as an obstacle. Pending a detailed obstacle assessment, the closure of Boeing Road is expected in the short-term.



PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE

FIGURE 7.4 - AIRPORT DEVELOPMENT PLAN

APRIL 2023

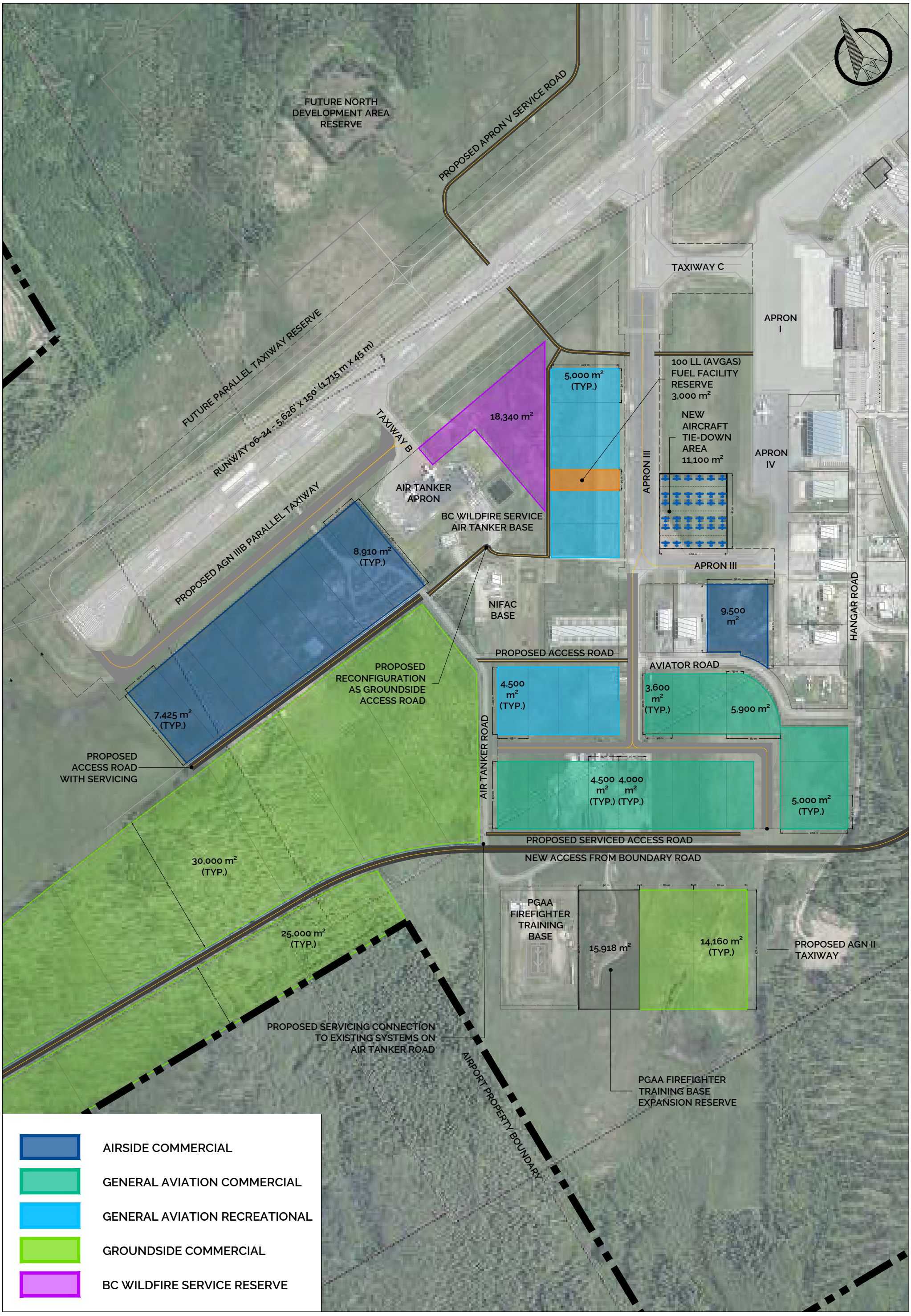
0 400 800 Meters

*FOR PLANNING PURPOSES ONLY

PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE
FIGURE 7.5 - EAST DEVELOPMENT AREA
APRIL 2023

0 150 300
Meters

*FOR PLANNING PURPOSES ONLY



PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE

FIGURE 7.6 - WEST DEVELOPMENT AREA

APRIL 2023

0 150 300 Meters

*FOR PLANNING PURPOSES ONLY

7.3 Terminal Building Development Plan

As described in Section 6.4, the capabilities of the terminal building were evaluated against two scenarios: 1) Current Peak Hour, accommodating 1 Boeing 737 MAX 8, 2 Dehavilland DHC 8-400s, and 2 Beech 1900D; and 2) Potential Future Peak Hour, whereby an additional DHC 8-400 flight is added and one B1900D flight is upgauged to a DHC 8-100 (50 seats). Both scenarios evaluated the terminal building's functional areas assuming a 90% passenger load factor on all flights.

7.3.1 Current Peak Hour

The Current Peak Hour concept focuses on short-term improvements to increase functional areas found to be deficient through analysis, consultations with the PGAA, and the responses to the public survey. Through the series of works described herein, the PGAA can optimize the existing terminal building to better accommodate current peak hour traffic. Recommended improvements to the terminal building to support the current peak hour include:

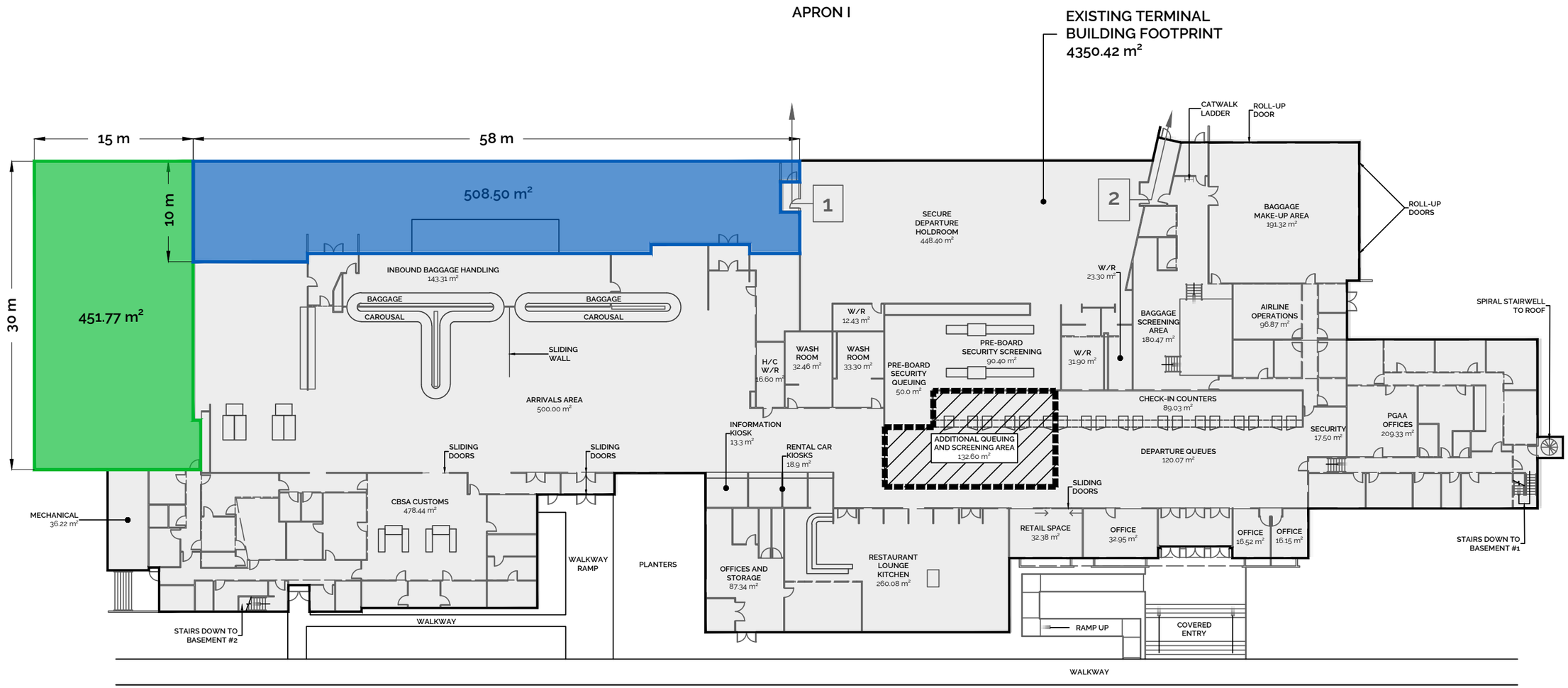
- Expansion of the Pre-Board Security Queuing area;
- Expansion of the Pre-Board Security screening area and installation of additional screening equipment;
- Expansion of the Secure Departure Holdroom; and
- Expansion of the arrivals area to better facilitate the simultaneous arrival of domestic and transborder flights,

The expansion requirement and hypothetical location/direction of expansion to meet current processing requirements is shown in Figure 7.8. The expansion shown does not consider all interrelationships of the terminal functional areas and it is recommended that a Terminal Building Preliminary Expansion Design Concept be completed in the short term to further detail the expansion and reconfiguration options.

7.3.2 Future Peak Hour

The Future Peak Hour scenario considers a peak hour period that may be witnessed within the 20-year planning period, though the anticipated requirement for additional expansion beyond the short-term requirements cannot be reasonably forecast as it is subject to several external factors including passenger demand, airline decision making, and general trends in scheduled and charter passenger air travel.

This scenario, like the current Peak Hour scenario, identifies the pre-board security queuing area, secure departure holdroom, and arrivals area as deficient, and recommends further building envelope expansion. It is recommended that this potential future peak hour be considered in the above mentioned Preliminary Expansion Design Concept. The size and location of this expansion in addition to the current peak hour expansion requirement is presented in Figure 7.8. The terminal building functional area requirements for the two expansion scenarios are presented in Table 7.1.



PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE
FIGURE 7.7 - AIR TERMINAL BUILDING DEVELOPMENT PLAN
APRIL 2023

0 10 20 Meters

*FOR PLANNING PURPOSES ONLY

Table 7.1 - Terminal Building Functional Area Requirements

Terminal Elements	Existing (m^2)	Current Peak Hour (m^2)	Future Peak Hour (m^2)
Departures Functions			
Check-In Area - Queuing	184	184	184
Check-In Area - Counters	133	133	133
Pre-Board Security - Queuing	50	232	390
Pre-Board Security - Screening Equipment	90	180	180
Secure Departure Holdroom - Waiting Room	450	488	523
Secure Departure Holdroom - Washrooms	67	67	67
Baggage Screening Area	180	180	180
Baggage Makeup Area	191	191	191
Arrivals Functions			
Arrivals Areas Domestic - Waiting Area	200	243	439
Arrivals Areas Trans-Border - Waiting Area	164	288	342
Baggage Carousel - Domestic	127	127	127
Baggage Carousel - Transborder	124	124	124
Washrooms	82	82	82
Rental Car - Kiosks	33	33	33
Others Terminal Functions			
CBSA Customs	480	480	480
Restaurant/Lounge/Kitchen	260	260	260
Retail Space	32	32	32
General Office and Storage	153	153	153
PGAA Offices	209	209	209
Airport Security	18	18	18
Airline Operations	97	97	97
Mechanical & Electrical	36	36	36
Circulation and Structure	1076	1076	1076
TOTAL	**4436**	**4913**	**5356**

7.4 Terminal Building Apron Management Plan

A Future Peak Hour Apron Management Plan has been prepared to ensure that sufficient space has been allocated for current and anticipated future service levels. As shown in Figure 7.9, the Terminal Building Apron Management Plan has been prepared to accommodate:

- The arrival, parking, and departure of the long-term peak hour aircraft mix including 1 x B737 Max 8, 3 x DHC 8-400, 1 x DHC 8-100, and 1 x B1900D;
- Power-in, push-back operations by both above-noted aircraft; and
- The provision of covered passenger walkways to the extreme north and south Apron I parking positions.

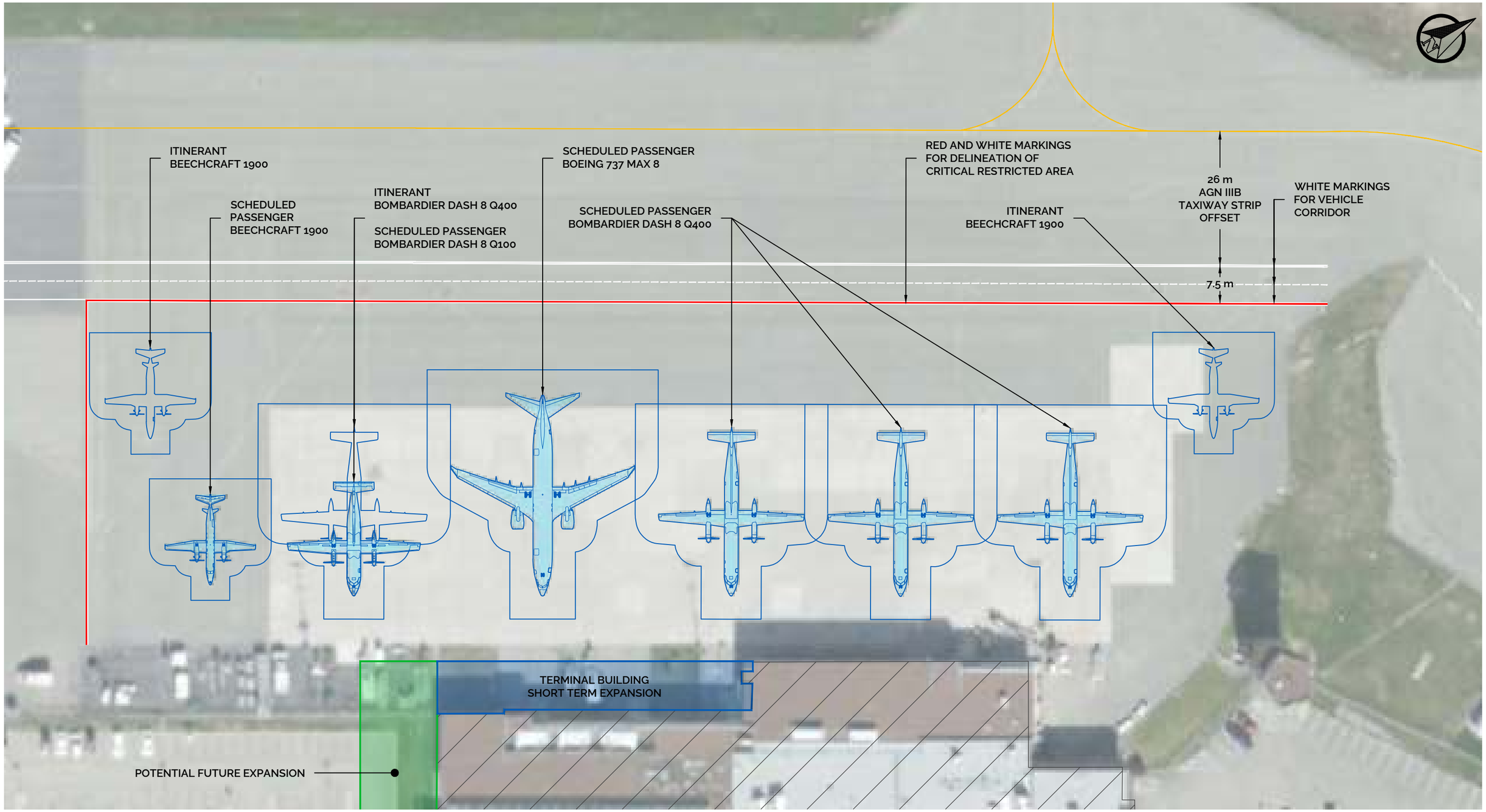
It is recommended that the provision of critical restricted area paint markings and vehicle corridor be included in the next paint marking rehabilitation.

7.5 Airport Land Use Plan

An Airport Land Use Plan should be consistent with the Master Plan and Airport Development Plan in its systematic distribution of uses throughout the property according to the applicable regulatory standards, environmental constraints, and planning best practices. It is intended to:

- Manage the land supply and direct new uses to their most appropriate location(s);
- Ensure new land uses do not conflict with aeronautical safety and the Airport's regulatory obligations;
- Protect for future infrastructure projects; and
- Maximize the aviation and non-aviation development potential of the facility.

In 1998, Transport Canada created a Land Use Plan for the Airport lands which PGAA adopted upon transfer of control of the Airport lands to PGAA in 2003. In 2020, the PGAA completed a revised Land Use Plan to allow for flexibility in Airport development, remove information no longer relevant, and reflect current land uses. The Land Use Plan was submitted to Transport Canada in January 2021 and is awaiting ministerial approval. It is recommended that the Land Use Plan be revisited and revised as necessary in the short-term to align with the Airport Development Plan presented herein.



PRINCE GEORGE AIRPORT
AIRPORT MASTER PLAN UPDATE
FIGURE 7.8 - FUTURE PEAK HOUR APRON MANAGEMENT PLAN
APRIL 2023

0 20 40
Meters

*FOR PLANNING PURPOSES ONLY

8 BUSINESS DEVELOPMENT AND GROWTH STRATEGIES

Based on the business development and growth opportunities identified for Prince George Airport in Section 5, guidance is provided below on the strategies to support the pursuit of these opportunities. Unique differences exist in how each of the opportunities identified herein are best pursued, and the potential time horizon for the attainment of each prospect is subject to numerous external factors beyond the PGAA's control. For example, the ability of regional air carriers to increase scheduled flight frequencies to better serve Prince George Airport may be impacted by the availability of qualified pilots.

The strategies presented herein are preliminary in nature and are intended to guide the PGAA – however, it is recognized that variations may exist in how implementation is pursued in the future. As with other recommendations articulated within the Master Plan Update, the success of the business development strategies is contingent on sufficient resources being allocated to such pursuits, both in terms of PGAA staff time and financial resources (e.g., for marketing initiatives).

8.1 Air Service Development and Retention

At the outset of this discussion, it is understood that air carriers are private businesses. An airline considering whether to expand service at Prince George Airport or introduce a new service will only do so based on the identification of sufficient market potential and a viable business case. This encompasses the size and travel requirements of catchment area travellers and the proportion of this market that the air carrier can expect to serve based on their product offering. This is in addition to the airfares that the market will support and whether sufficient Revenue per Available Seat Mile (RASM) can be attained relative to the Costs per Available Seat Mile (CASM). In short, carriers must be able to identify a sufficiently large market that generates high enough RASM that exceed the CASM of operating the service. Service decisions may be further affected by numerous factors, including fleet availability and alternative prospective markets with better potential performance.

The results of the public survey identified demand for lower-fare options and additional destination offerings as high priority of the participants with higher flight frequency to current destinations and new air carriers a lower priority. Consultations with mainline air carriers indicated that frequency increases to existing hubs in Vancouver and Calgary are more likely as airlines are currently consolidating operations to cope with industry labour shortages. Although additional direct services are preferred by those surveyed, increased frequencies to hubs will provide access to additional indirect destination offerings.

8.1.1 Market Research and Data Collection

To support prospective airlines in their determination of whether a viable business case can be established for new or expanded passenger air services, the PGAA can take a proactive role in conducting market research and data collection. While major air carriers typically have extensive information on local demand and traveller behaviour based on their internal booking datasets, the PGAA can provide less readily available information on matters that may positively influence local demand, such as:

- The composition of the regional economy, including the travel requirements of major employers;
- The potential future of the catchment area, including forecast population growth levels and economic sectors that the City and Regional District are seeking to expand into;
- Data collection through passenger surveys;
- Data on historical air carrier services at the Airport and demonstrated regional demand; and
- The composition of the catchment area.

8.1.2 Air Carrier Incentives

The PGAA can improve the value proposition of Prince George Airport through a series of potential incentives. These are discussed below and include cost reduction incentives and marketing and advertising support. Commentary is also provided on revenue incentives, which are typically less common in the industry, and must carefully consider forecast market conditions and potential impacts on Airport finances resulting from route underperformance. It is recommended that incentives be considered for both prospective and existing air carriers and that they be determined by the PGAA pre-emptively so that they can be communicated consistently throughout outreach and negotiation processes.

Cost-Related Incentives

While the PGAA has limited influence on the number of travellers that may utilize a potential service and the RASM that would be generated, the Authority does have direct control over numerous cost elements associated with Prince George Airport. Incentives may be used to reduce the costs borne by a carrier while taking on the risk of launching a new service while ensuring that a fair opportunity is given for the service to mature and grow, and over time generate revenues for the PGAA.

- **Landing Fees:** Air carriers operating at Prince George Airport incur landing fees with each arrival based on the number of available seats on the aircraft, which directly influence their route operating costs. For new air carriers entering the market, fees could be reduced by 50% during their first year of operations and by 25% during their second year of operations, before the full landing fee is applied in the third year of operations.
- **Terminal Building Usage Fees:** Usage fees are levied on a per flight basis for air carriers operating from the terminal building based on the seating capacity of the aircraft. As with the recommendations pertaining to landing fees, terminal building usage fees could be discounted by 50% and 25% in the first and second years of an air carrier's operations.
- **Aircraft Parking Fees:** Generally, parking fees are levied on air carriers that spend extended periods of time at the Airport, such as during Remain Over Night (RON) turns. It is recommended that parking fees should not be levied on air carriers staying for extended periods during RON turns. Such flights permit late evening arrivals and early morning departures that are often favourable for traveller schedules and have ancillary benefits if crews remain in Prince George overnight and spend money on local accommodations and services. Review of the Airport's 2022 financial statements indicate that aircraft parking fees generate relatively modest revenue compared to other sources.

Revenue-Related Incentives

A practice implemented at airports as part of air service development is for revenue-related incentives to be used, whereby a service that may not initially benefit from sufficient RASM and is subsidized by the Airport with the expectation that it will generate sufficient revenue on the short term (second or third year of service) to no longer require an incentive. Revenue-related incentives, such as minimum annual revenue guarantees, are paid to the air carrier based on predetermined thresholds – i.e., if annual market-supported revenues (Value Y) on a route do not exceed predetermined Value X, then the airport operator will pay the difference between Values Y and X.

From an air carrier perspective, revenue incentives can be a competitive advantage by addressing the risk of potential market underperformance during the early months / years of a route. However, revenue guarantees transfer risk from the carrier to the airport operator and therefore must be considered with caution and after thorough market research and financial forecasting.

In addition to financial risk, a revenue guarantee agreement may yield artificial demand for a service and should the route not become financially self-sustaining within the agreement term, result in the loss of the service. It is recommended that focus be placed on exploring cost-related incentives to attract new or expanded service prior to the consideration of revenue-related incentives.

Marketing and Advertising Support

As part of the air service development information to be provided to carriers, it is recommended that the appropriate marketing and advertising support provided by the PGAA be identified. A full range of marketing modes can be considered and offered to air carriers with several currently offered by the PGAA, including:

- Online marketing campaigns and the inclusion of service information on the Airport website;
- The offering of no-cost or discounted advertising space;
- Press releases published upon the announcement and inauguration of new or expanded service, as well as at future intervals (e.g., to celebrate one year of service); and
- A service inauguration ceremony, including speeches by elected officials and dignitaries, as well as media coverage.

Furthermore, many of these tools have been implemented by the PGAA to promote Flair Airlines service to Tucson. Valuable support can also be offered by aligned economic organizations in the region, including Prince George Economic Development, the RDFFG, and the Prince George Chamber of Commerce.

8.2 Commercial Aviation Strategy

In contrast to air service development, the PGAA has greater influence over the extent and rate of growth of commercial aviation at Prince George Airport. When considering a prospective airport, aviation business operators must take several factors into consideration. Of those factors, there are four which an airport operator typically controls:

1. Costs including lease rates and fees;
2. Airside and groundside Airport infrastructure;
3. Availability of serviced lease lots; and
4. Availability of high-value aviation support services such as aviation fuelling.

The consultation program identified general themes and opinions of the above mentioned factors with respect to Prince George Airport.

- Costs including landing fees and lease rates were not identified as a detractor to establishing operations at Prince George.
- Airport users spoke highly of airfield infrastructure including the number and condition of runways, taxiways, and aprons as well as instrument approaches. Some users indicated that existing infrastructure exceeds their requirements.
- There are currently few serviced lots with airside access available for lease. Aviation commercial lots with supporting taxiways, access roads, and municipal servicing identified in the Airport Development Plan will need to be prepared in the short-term to accommodate forecast demand.

- Select current and prospective airport businesses expressed concerns with the current aviation fuelling arrangement including the inability for airport businesses to collect revenue from fuel sales.

Considering the factors within the PGAA's control, the continued growth of commercial aviation can be facilitated by:

- Modifying the current fuel arrangement by allowing into-wing fuelling providers to attract new aviation commercial business. Consultation with comparator airports and commercial fuel providers confirmed that the PGAA's current arrangement could be limiting competition, thereby limiting commercial development;
- Prepare additional serviced lease lots to accommodate commercial aviation growth; and
- Consider select cost-related incentives like those discussed in Section 8.1.2 to attract new business to the Airport and support start-up businesses in their initial operations.

8.3 Energy Resource Strategy

Current and planned resource extraction projects in the Prince George area have the potential to leverage the Airport, particularly for the transportation of workers on scheduled rotations and contractors in and out of the region. To achieve desired efficiency and cost targets, a resource company or a group of companies may elect to construct a stand-alone no frills passenger terminal (potentially combined with an FBO) to process workers originating from or destined to a resource extraction operation. Workers could be flown from across the province or country to Prince George Airport and then transported to the site by ground transportation. The viability of such an arrangement depends upon the proximity of the site to Prince George, the price and availability of aviation commercial land, and cost of constructing a resource terminal.

The PGAA should explore the opportunity to increase aviation activity and revenue generating potential associated with the energy resource industry through:

- Engagement with energy resource companies through direct outreach and attendance at energy resource conferences and trade shows to identify potential and planned resource projects in central and northern B.C. and gauge interest from resource companies;
- Prepare commercial lots strategically located on the Airport and of sufficient size to accommodate an Energy Resource Terminal; and
- Consider cost-related incentives for the development such a facility.

8.4 General Aviation Development Strategy

Private general aviation can complement the Airport's role and can contribute to a diversified mix of on-site activity. A balanced approach should be pursued that includes the PGAA's continued recognition of the value that general aviation can bring to Prince George Airport when implemented appropriately, while understanding the pragmatic realities associated with competing priorities for pursuing higher revenue and revenue generating opportunities (e.g., aviation commercial growth, air carrier services).

Within the PGAA purview as the operator of Prince George Airport, the continued accommodation (i.e., retention and growth) of general aviation activity can be accomplished by:

- Facilitating opportunities for based aircraft through leasehold hangar lots as part of the West Development Area, as well as long-term outdoor parking at the General Aviation Tie-Down Area;
- Providing a financial environment (i.e., rates and fees) that balances the generation of revenue with the price elasticity of general aviation stakeholders, including the consideration of land lease rates, landing fees / access fees, and parking fees; and
- Supporting current and prospective general aviation-oriented commercial tenants, including Flight Training Units, AMOs, FBOs, etc.

8.5 Air Cargo Strategy

As identified in Section 5.3.2, the primary opportunity that may arise for the Airport from an air cargo demand perspective is the development of an inland freight distribution hub for high value of time e-commerce products. For example, an e-commerce distributor could benefit from opportune sea and rail access from production centres in Asia and develop a distribution hub in Prince George. Products would then be shipped by air on an as-required, time efficient basis from Prince George. Therefore, this would primarily be focussed on inbound cargo flows and onward distribution.

This business development opportunity differs from those detailed above in that the requisite infrastructure including adequate runway length and dedicated cargo apron are currently available. Therefore, the Master Plan Update does not anticipate notable investments in capital projects to support air cargo growth within the 20-year planning period. It is recommended that more detailed analysis and outreach with the Port of Prince Rupert, Prince George Economic Development, and industry stakeholders be completed to ascertain the potential of this opportunity, including the consideration of Canada's role in the distribution networks of e-commerce providers and competition with established centres in areas such as the Lower Mainland. The project team notes that this opportunity has lower potential relative to the preceding four strategies.

9 FINANCIAL OUTLOOK

9.1 20-Year Capital Plan

Table 9.1 summarizes the 20-Year Capital Plan that considers all projects, mobile asset replacements, and studies that are recommended throughout this Master Plan Update. Rough Order-of-Magnitude cost estimates are provided for each item to assist the PGAA with its annual capital budget process. Most of the cost estimates were developed using local construction unit rates, costs calculated in previous studies, and research completed by the project team. The detailed 20-Year Capital Plan is presented as Appendix A

The following assumptions apply throughout the 20-Year Capital Plan:

- Cost estimates are in Canadian Dollars and are adjusted for inflation in the project year;
- The annual inflation rate is set at 2.5%;
- All cost estimates assume a competitive bidding process is used.

The 20-Year Capital Plan does not include:

- Costs associated with marketing and business development initiatives;
- Costs associated with financing the projects and mobile assets;
- Funding through borrowing or external grant programs;
- Legal and / or regulatory permitting fees necessary for the completion of the projects;
- Engineering and project management contingencies. A 10% contingency should be added to all capital infrastructure projects.

The 20-Year Capital Plan identifies significant capital expenses in the short-term relative to the medium and long terms of the Master Plan Update. Of these recommended expenses, approximately $37M (58%) is assigned to the rehabilitation of existing infrastructure and the replacement of aging mobile equipment. In the medium-term this decreases to close to $16M (45%) and increases to around $32M (74%) in the long-term planning horizon.

Table 9.1 - 20-Year Capital Plan Summary

	2023*	Short Term (2024 2028)	Medium Term (20229 2033)	Long Term (2034 2043)
Infrastructure Rehabilitation	$ 0	$ 24,478,000	$ 15,369,000	$ 28,723,000
Infrastructure Development	$ 0	$ 27,328,000	$ 20,488,000	$ 11,330,000
Mobile Assets	$ 0	$ 12,873,000	$ 1,201,000	$ 3,193,000
Studies and Plans	$ 15,000	$ 168,000	$ 102,000	$ 0
Total	**$ 15,000**	**$ 64,847,000**	**$ 37,160,000**	**$ 43,246,000**

*Represents recommended capital projects not included in the PGAA's 5-Year Capital Forecast (2022)

9.2 20-Year Financial Outlook

The projected Pro Forma Financial Statement anticipates a consistent increase in operating revenues over the Master Plan Update horizon, while operating expenditures remain relatively constant. An operating deficit of approximately $208,000 is anticipated for 2023.

However, it is forecast that an operating surplus will be witnessed in 2025 and continue to grow for the remainder of the 20-year planning period. However, these surpluses will be insufficient to fund the capital projects recommended in the short-term of the Master Plan Update, and the requirement for external funding is foreseen.

The financial implications of federal and provincial grants on capital expenses have not been modelled in the 20-Year Pro Forma Financial Outlook. While the PGAA has experienced success in obtaining grant funding, such funding is not guaranteed as evaluation processes are competitive in nature. Further, the number and purpose of available grant programs can vary over time. However, the continued proactive identification and pursuit of grant opportunities by the PGAA will be a key process during the implementation of the Master Plan Update. The assumptions made in the preparation of the financial forecast are presented below. The 20-Year Financial Outlook is summarized in Table 9.2 and the Pro Forma Financial Statement is presented as Appendix B.

Operating Revenue

- General terminal fees, concessions, and vehicle parking will grow proportionally with forecast passenger activity and increase with inflation, assumed at 2.5% per year. Canadian inflation, while high at the time of preparing the Update, is forecast by the International Monetary Fund (IMF) to return to 2%-2.5% within the short term.
- Landing fees and aircraft parking will grow with forecast aircraft movements and increase with inflation.
- With respect to Rentals, land lease revenues for existing tenants will increase with inflation. New lease agreements are entered into with the PGAA beginning in 2023 with airside and groundside lots leasing for $3.50/m^2/year, increasing annually with inflation.
- Thirty-four commercial lots, 9 recreational lots, and 4 groundside lots will be absorbed during the 20-year planning period. It is assumed that there will be limited demand for groundside leasehold lots north and south of the new arrival road within the 20-year planning horizon. The cost of preparing these lots and potential revenue generated has been omitted from the financial outlook.
- Other Income/Billable Services for 2021 and 2022 are considered outliers as they include revenue received from grant funding. The 2023 budgeted value will increase annually with inflation.

Operating Expenses

- Airport Marketing & Economic Development is budgeted as $330,000 and $220,000 in 2023 and 2024 respectively and will increase with inflation thereafter.
- The remaining operating expenses will increase from the 2023 budgeted values with inflation for the remainder of the planning period.
- Land Rent payments to Transport Canada will recommence in 2024 and have been calculated in coordination with the PGAA based on forecast operational revenue.
- An operating reserve will be established starting in the medium term that will be equivalent to 25% of the Operating Surplus before Airport Improvement Fees.

Jetmark and Cargo Warehouse

- Jetmark's operating surplus has been forecast by the PGAA up to 2026 and will increase with inflation annually for the remainder of the planning period. If the current fuel distribution arrangement is modified within the planning horizon, it is assumed that equivalent revenue could be collected by the PGAA through a fuel delivery surcharge that applies to all fuelling providers.
- The 2023 operating surplus of the cargo warehouse has been budgeted by the PGAA and will increase with inflation annually.

Other Revenue and Expenses

- The current AIF of $25 applied to each enplaned passenger will remain constant throughout the 20-year planning period and associated revenue will be proportional to forecast growth of passenger activity.
- Amortization, Amortization of Deferred Contributions, Remeasurement of Pension Benefit Assets, and Unrealized Gain (Loss) Derivative Financial Instrument are non-cash items and have been omitted from the financial outlook based on discussions with PGAA.

Capital Reserve

- The Master Plan Update has not identified specific capital projects for 2041-2043, however capital spending is anticipated to be identified for these years. For this reason, a Capital Reserve has been identified equivalent to 80% of the AIF for each of those respective years.

Interest Charges

- Interest payments will be made on borrowed funds. Based on available forecasts, the interest rate has been assumed to be 4.5% in the short term (Years 1-5) and then reduced to 3.5% for the remainder of the planning period (Years 6-20).

Table 9.2 - 20-Year Financial Outlook Summary

	Short Term (2024 2028)	Medium Term (2029 2033)	Long Term (2034 2043)
Operating Revenue	$ 50,350,200	$ 66,018,700	$ 202,690,600
Operating Expenses	$ 47,563,600	$ 57,815,100	$ 169,467,600
Operating Surplus / Loss	$ 2,786,600	$ 8,203,600	$ 33,223,000
Other Surplus / Loss	$ 1,739,300	$ 2,047,800	$ 4,811,300
Airport Improvement Fee	$ 30,087,900	$ 35,782,600	$ 93,164,100
Total Before Capital Expenses	$ 34,613,800	$ 43,471,100	$ 121,689,600
Infrastructure Rehabilitation	$ 24,478,000	$ 15,369,000	$ 28,723,000
Infrastructure Development	$ 27,328,000	$ 20,488,000	$ 11,330,000
Mobile Assets	$ 12,873,000	$ 1,201,000	$ 3,193,000
Studies and Plans	$ 168,000	$ 102,000	$ -
Total Capital Expenses	-$ 64,847,000	-$ 37,160,000	-$ 68,375,200
Operating and Capital Surplus / Deficit	**-$ 30,233,200**	**$ 6,311,100**	**$ 53,314,400**
Interest and Financing	$ 2,566,100	$ 6,035,700	$ 6,083,000
Net Surplus / Deficit	**-$ 32,799,300**	**$ 275,400**	**$ 47,231,400**

The long-term financial outlook considers a 10-year period versus the 5-year periods of the short and medium-terms. The operating revenue realized in the long-term is attributed to revenue associated with continued passenger growth such as terminal charges and AIF, concessions, and vehicle parking as well as revenue generated by the absorption of commercial lots over the 20-year planning period.

9.2.1 Financial Position

Based on the foregoing assumptions, the operating deficit of the Airport in 2023 is assumed to be approximately $208,000 and $82,000 in 2024 but returning to a surplus in 2025. This is forecast to continually improve in subsequent years to $4.6 million in 2043 (Figure 9.1). The operating surpluses realized are primarily a result of the forecast growth of passenger movements and the absorption (lease) of commercial, recreational, and groundside lots. When other surpluses and revenue are factored in, including the Jetmark operating surplus, the cargo warehouse operating surplus, and the AIF, the PGAAs excess revenues over expenses is positive.

Conversely, a sensitivity analysis (Section 9.2.3) has been completed that considers the financial implications of a growth scenario below that forecast in Section 5. Considering the recommended capital project costs, the total level of external financial support exhibits significant variability over time, depending on the implementation year of each project. Accounting for capital project costs and assuming that no grant support can be secured, the annual funding support requirement ranges between $1.6M and $14.2M in the short-term planning horizon ($2.1M and $15M respectively when the cost of borrowing is included). Surpluses realized in the medium and long-terms are anticipated to be assigned to debt repayment. The capital costs associated with the Airport emphasize the need for the PGAA to proactively identify funding opportunities.

Figure 9.1 - Projected Operating Financial Position

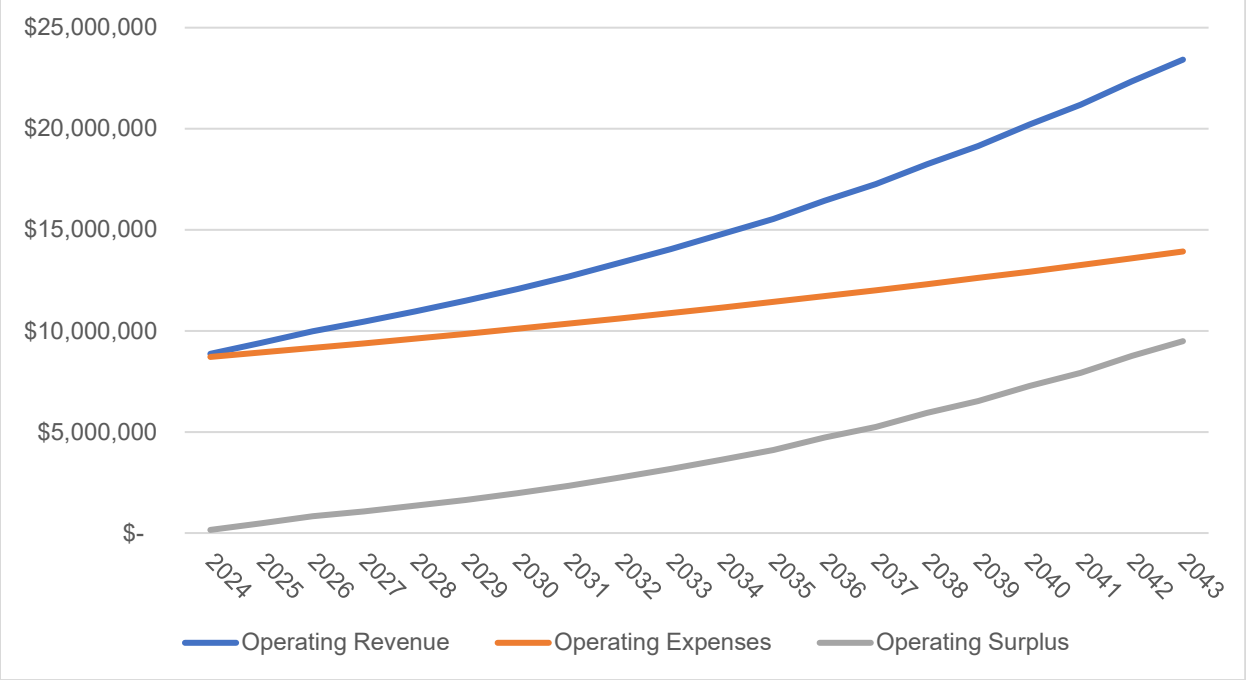


Figure 9.2 - Projected Capital Expense Distribution

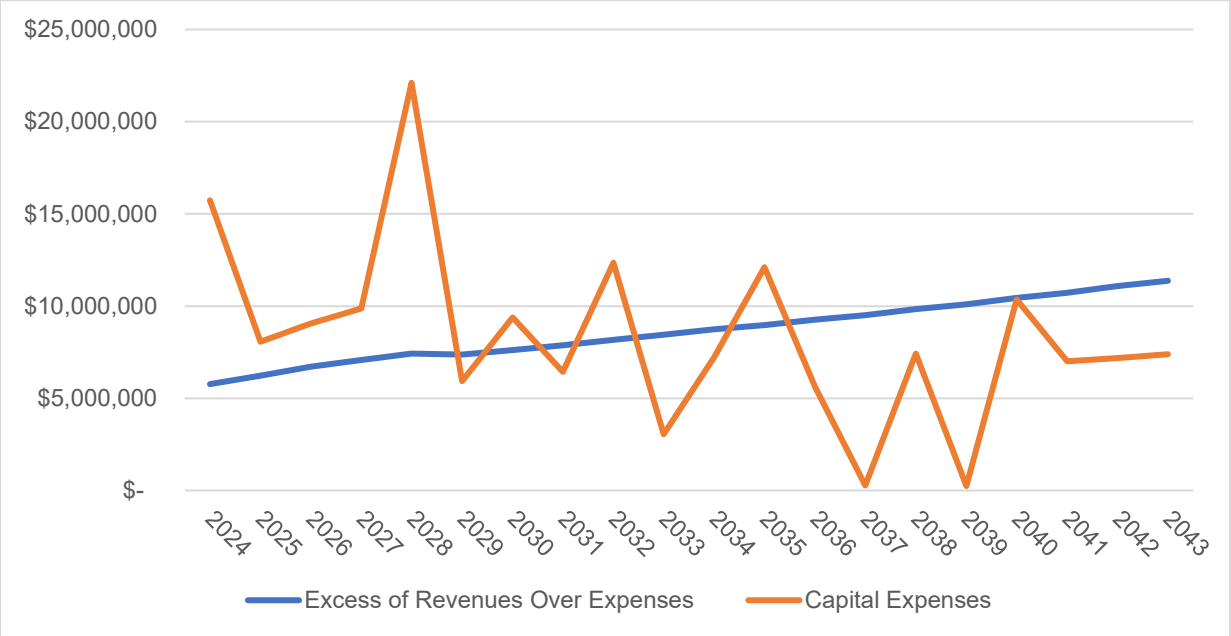


Figure 9.1 illustrates the forecast divergence between operating expenses and revenue resulting from increased aviation activity and absorption of development lots. Figure 9.2 compares excess revenues over expenses against recommended capital expenses indicating that capital expenses will far outpace the surplus in the short-term, requiring consideration for external funding sources.

9.2.2 Sensitivity Analysis

The forecasts presented in Section 5 and the supporting Airport Development Plan and Financial Outlook have been based on historical growth and plausible future air service and land development scenarios. However, as indicated in previous sections of the Master Plan Update, there are several factors that could result in annual growth lower than forecast. These factors include, but are not limited to:

- Actual population growth of the catchment area;
- Duration of aviation workforce shortages;
- Performance of local industries; and
- Airline decision-making and general aviation industry trends.

The sensitivity analysis considers a passenger movement growth rate consistent with the 2007 Master Plan long-term rate of 2.7% annually (versus 3.53% presented in Table 9.2) to demonstrate the potential financial impacts. All other revenue and expense assumptions described above are held constant. The resulting revenues and expenses with associated percent increase or decrease are presented in Table 9.3.

Table 9.3 - 20-Year Sensitivity Analysis Summary

	Short Term (2024 2028)	Medium Term (2029 2033)	Long Term (2034 2043)
Operating Revenue	$ 49,669,000 **(-1.4%)**	$ 63,675,700 **(-3.6%)**	$ 188,585,300 **(-7.0%)**
Operating Expenses	$ 47,563,600	$ 57,815,100	$ 169,467,600
Operating Surplus / Loss	$ 2,105,400 **(-24.5%)**	$ 5,860,600 **(-28.6%)**	$ 19,117,700 **(-42.5%)**
Other Surplus / Loss	$ 1,739,300	$ 2,047,800	$ 4,811,300
Airport Improvement Fee	$ 29,357,700 **(-2.4%)**	$ 33,540,900 **(-6.3%)**	$ 82,100,300 **(-11.9%)**
Total Before Capital Expenses	$ 33,202,400 **(-4.1%)**	$ 39,472,100 **(-9.2%)**	$ 100,046,900 **(-17.8%)**
Infrastructure Rehabilitation	$ 24,478,000	$ 15,369,000	$ 28,723,000
Infrastructure Development	$ 27,328,000	$ 20,488,000	$ 11,330,000
Mobile Assets	$ 12,873,000	$ 1,201,000	$ 3,193,000
Studies and Plans	$ 168,000	$ 102,000	$ -
Total Capital Expenses	-$ 64,847,000	-$ 37,160,000	-$ 64,817,680
Operating and Capital Surplus / Deficit	**-$ 31,644,600 (+4.7%)**	**$ 2,312,100 (-63.4%)**	**$ 35,229,220 (-33.9%)**
Interest and Financing	$ 2,649,400 **(+3.3%)**	$ 6,557,400 **(+8.6%)**	$ 9,664,400 **(+58.9%)**
Net Surplus / Deficit	**-$ 34,294,000**	**-$ 4,245,300**	**$ 25,564,820**

This reduction in passenger activity growth yields a net deficit over the duration of the 20-Year planning period and thereby demonstrates the level of sensitivity of future financial performance to fluctuations in activity. Other factors that could significantly impact financial performance include the number of and rate at which development lots are absorbed and possible future increases to the AIF.

9.3 Potential Funding Sources

To assist with reducing the costs directly borne by the PGAA in future capital projects, profiled herein are provincial and federal grant programs active as of the spring of 2023 that can be leveraged. As the availability of grant funding programs evolves over time with the introduction of new programs and as existing opportunities become fully allocated, ongoing efforts will be required by the PGAA to monitor for emergent opportunities applicable to the Airport. Examples of recent grant programs that are now fully subscribed including the Investing in Canada Infrastructure Program – Rural and Northern Communities stream and National Trade Corridors Fund.

Based on the most recent information available, it is anticipated that one-time funding programs related to the COVID-19 pandemic, including the Airport Relief Fund and expanded Airports Capital Assistance Program eligibility, will not continue in the future. Therefore, these programs are not profiled despite having been previously leveraged by the PGAA.

9.3.1 British Columbia Air Access Program

The British Columbia Air Access Program is administered by the Province of British Columbia's Ministry of Transportation and Infrastructure, with the goal of supporting communities and enhancing the long-term potential of the aviation sector. Prince George Airport is eligible as a public use facility that serves fewer than one million annual passengers – on this basis, it is anticipated to remain eligible until at least the long-term planning horizon based on forecast activity levels. Up to $2M will be provided to an applicant each year, with base provincial funding allocations determined based on the type of project as follows:

- 75% for airside projects (e.g., runways, taxiways) and core aviation infrastructure;
- 60% for transitional projects (e.g., terminal buildings, fencing, and gates);
- 50% for groundside projects (e.g., vehicle parking areas, access roads); and
- 75% for climate / environmental projects (e.g., greenhouse gas audits).

Applicants that meet certain eligibility criteria may allocated up to an additional 15% of provincial funding (up to 90% provincial funding), with considerations including whether the facility:

- Serves an Indigenous, isolated, rural, or remote community;
- Has limited revenue streams available;
- Has a greenhouse gas reduction plan and / or active transportation policies and infrastructure in place;
- Requires the project for medevac, wildfire suppression, or emergency response purposes;
- Requires the project in response to an extraordinary event, such as a natural disaster;
- Requires the project to correct a non-compliance with federal aviation regulations; and
- Requires the project for climate change mitigation or adaptation.

The British Columbia Air Access Program is a consistent source of airport infrastructure funding and is anticipated to be available to the PGAA in the years ahead. Based on the program parameters, an expansive number of the capital projects recommended through the Master Plan Update would likely be supportable for funding.

9.3.2 Northern Development Initiative Trust Economic Infrastructure Program

The Northern Development Initiative Trust maintains a quarterly intake for its Economic Infrastructure Program, which is designed to support capital projects of regional significance that contribute to economic growth. The PGAA is eligible as a not-for-profit entity and the evaluation process considers metrics such as job and revenue creation, stakeholder support, and the demonstration of a strong business case. Grant funding is available under two categories:

- Up to $100,000 is available to a maximum of 70% of total project costs for upgrades or repairs to an existing facility; and
- Up to $300,000 is available to a maximum of 50% of total project costs for new construction and/or substantial upgrades to existing facilities.

Support in the form of loans is also available through the Northern Development Initiative Trust. The Economic Infrastructure Program has been repeatedly leveraged by airports throughout the region, including the PGAA, to support capital projects such as investments in fuel facilities, airside rehabilitation projects, parking lot upgrades, terminal updates, and instrument approaches.

9.3.3 Disaster Mitigation and Adaptation Fund

The Disaster Mitigation and Adaptation Fund is a federal funding program that was launched in 2018 to support infrastructure projects that increase resiliency to the impacts of climate change. Examples of natural hazards that are addressed through the program include wildland fires, droughts, and floods. Resiliency projects are prioritized where they address threats to health and safety, threats to critical infrastructure and essential services, and disruptions in economic activity. As a facility providing both essential services and supporting considerable economic activity, the Airport aligns with these goals.

It is anticipated that further consideration will be required internally by the PGAA to identify infrastructure vulnerabilities because of climate change and related capital projects, including those recommended in the Master Plan Update that meet the objectives of the Disaster Mitigation and Adaptation Fund. The current call for proposals opened in January 2023 and will close in July 2023.

10 MASTER PLAN IMPLEMENTATION

The approval of the Master Plan by the PGAA establishes the recommended direction that will guide the future of Prince George Airport. However, the adoption of the Master Plan Update does not bind or oblige the PGAA to follow the recommendations presented throughout this report.

10.1 Implementation Strategy

A comprehensive Implementation Strategy considers both the infrastructure-related projects previously included in the 20-Year Capital Plan and non-capital projects such as supporting studies. It is recommended that the PGAA strive to follow the Implementation Strategy where practical and feasible, especially with respect to lifecycle renewal and asset rehabilitation projects. Deferring projects beyond their recommended implementation timeline has the potential to rapidly increase the Airport's capital costs, while also limiting the PGAA's ability to achieve the goals established for the Airport, such as growth and business development.

The recommendations advanced through the Master Plan Update are based on the information available as of February 2023, including materials identified through background research and the numerous findings of the stakeholder engagement program. Although all efforts have been taken to maximize the accuracy and validity of the recommendations proposed herein, factors both within and external to the PGAA's control will influence the Airport throughout the short, medium, and long-term planning horizons. The Master Plan Update therefore should be reviewed regularly and updated on a 10-year cycle or sooner, if required.

The Implementation Strategy presented in the following tables outlines the key initiatives and recommendations of the Master Plan Update to assist decision-makers in establishing annual and longer-term priorities. For the scheduled timing of each project or initiative, consideration should be given to preparatory actions that may be required in advance of the implementation year, including preliminary and detailed engineering design, grant pursuits, and / or competitive procurement.

Table 10.1 - Infrastructure Development Implementation Plan

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041 4043
Capital Projects - Development																			
Apron V Access Road																			
Terminal Building - Flooring																			
CSB Office Space Expansion																			
North Development Area - Closure of Boeing Road																			
Western Access from Boundary Road																			
Site Servicing from Boundary Road																			
Terminal Building - PA System																			
Terminal Building - Fiber Cement Panels																			
Runway 06-24 RESAs																			
West Development Area - Commercial Lot Preparation																			
West Development Area - Recreational Lot Preparation																			
West Development Area - Tie-Down Area Preparation																			
West Development Area - Avgas Fuel Facility Reserve																			
North Development Area - Commercial Lot Preparation																			
North Development Area - Access Road																			
North Development Area - Servicing																			
Terminal Building - Expansion																			
Airline Cargo Facility																			
NPSV Quonset																			
West Development Area - Recreational Lot Preparation																			
West Development Area - AGN II Taxiways																			
West Development Area - Commercial Lot Preparation																			
West Development Area - Commercial Lot Servicing																			
West Development Area - Service Roads																			
Terminal Parking Expansion																			
Commercial and Entertainment Hub - Lot Preparation																			
West Development Area - Partial Parallel AGN IIIB Taxiway																			
West Development Area - Commercial Lot Preparation																			
West Development Area - Access Road Realignment																			
West Development Area - Servicing																			
East Development Area - Partial Parallel AGN V Taxiway																			
East Development Area - Airport Road West Realignment																			
East Development Area - Lot Preparation																			
East Development Area - Servicing																			
East Development Area - Jet A Fuel Facility Reserve																			

Table 10.2 - Infrastructure Rehabilitation Implementation Plan

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041 4043
Capital Projects - Rehabilitation																			
Maintenance Bay Pavement Rehabilitation		■																	
Arrival Road Rehabilitation		■																	
Flying Club Access Rehabilitation		■																	
Apron I Repairs - Select Concrete Panels		■																	
Parking Rehabilitation			■																
Hangar Road Rehabilitation			■																
Runway 15-33 Rehabilitation						■													
Taxiway B Rehabilitation							■												
Runway 06-24 Rehabilitation										■									
Taxiway A Rehabilitation											■								
Taxiway C Rehabilitation											■								
Taxiway D Rehabilitation											■								
Taxiway E Rehabilitation												■							
Taxiway F Rehabilitation												■							
Apron I Rehabilitation - Asphalt												■							
Apron II Rehabilitation												■							
Apron V Rehabilitation													■						
Runway 15-33, Taxiway A, E, F, Apron V Lighting Upgrades																■			
Runway 01-19 Rehabilitation																		■	
Apron III Rehabilitation																		■	
Apron IV Rehabilitation																		■	

Table 10.3 - Plans and Studies Implementation Plan

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041 4043
Plans and Studies																			
Fuel Facility Relocation Feasibility Study	■																		
Site Servicing Study		■																	
Stormwater Management Plan		■																	
RESA Reduced Declared Distances Study		■																	
Terminal Building Expansion Concept Design		■																	
Airport Master Plan Update											■								

Table 10.4 - Mobile Asset Replacement Plan

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041 4043
Mobile Assets																			
Plow Truck/Spreader																			
Sweeper																			
Sweeper/Blower																			
Sweeper/Blower																			
Tractor																			
Tractor																			
Mower M-2T61																			
Fuel Truck																			
Fuel Truck																			
Fuel Truck																			
Personal vehicle																			
Front End Loader																			
ATV																			
Doosan G30P-5																			
Emergency Response Truck																			
Front End Loader																			
Maintenance Truck																			
Sweeper																			
Grader																			
Front End Loader																			
Snowmobile																			
Dump Truck																			
Front End Loader																			
Front End Loader																			
Maintenance Truck																			
Maintenance Truck																			
Maintenance Truck																			
Spreader																			
Street Sweeper																			
Loader/Sweeper																			
Generic Flat Deck																			
Fire Truck																			
Maintenance Truck																			
Maintenance Truck																			

Appendix A - 20-Year Capital Plan

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041 4043
Capital Projects - Development																			
Apron V Access Road		$ 1,471,000																	
Terminal Building - Flooring		$ 84,000																	
AOC Office Space Expansion		$ 1,576,000																	
North Development Area - Closure of Boeing Road		$ 5,000																	
Western Access from Boundary Road			$ 3,381,000																
Site Servicing from Boundary Road			$ 2,960,000																
Terminal Building - PA System			$ 162,000																
Terminal Building - Fiber Cement Panels			$ 1,051,000																
Runway 06-24 RESAs				$ 3,422,000															
West Development Area - Commercial Lot Preparation				$ 210,000															
West Development Area - Recreational Lot Preparation				$ 552,000															
West Development Area - Tie-Down Area Preparation				$ 243,000															
West Development Area - Avgas Fuel Facility Reserve				$ 66,000															
North Development Area - Commercial Lot Preparation				$ 1,490,000															
North Development Area - Access Road				$ 1,660,000															
North Development Area - Servicing				$ 1,137,000															
Terminal Building - Expansion					$ 3,378,000														
Airline Cargo Facility					$ 4,480,000														
NPSV Quonset							$ 59,000												
West Development Area - Recreational Lot Preparation							$ 428,000												
West Development Area - AGN II Taxiways							$ 2,068,000												
West Development Area - Commercial Lot Preparation							$ 1,657,000												
West Development Area - Commercial Lot Servicing							$ 892,000												
West Development Area - Service Roads							$ 464,000												
Terminal Parking Expansion								$ 6,437,000											
Commercial and Entertainment Hub - Lot Preparation								$ 2,577,000											
West Development Area - Partial Parallel AGN IIIB Taxiway									$ 2,523,000										
West Development Area - Commercial Lot Preparation									$ 1,630,000										
West Development Area - Access Road Realignment									$ 691,000										
West Development Area - Servicing									$ 1,062,000										
East Development Area - Partial Parallel AGN V Taxiway													$ 5,707,000						
East Development Area - Airport Road West Realignment														$ 650,000					
East Development Area - Lot Preparation														$ 3,405,000					
East Development Area - Servicing														$ 1,003,000					
East Development Area - Jet A Fuel Facility Reserve														$ 565,000					
Development - Total	**$ 0**	**$ 3,136,000**	**$ 7,554,000**	**$ 8,780,000**	**$ 7,858,000**	**$ 0**	**$ 5,568,000**	**$ 9,014,000**	**$ 5,906,000**	**$ 0**	**$ 0**	**$ 0**	**$ 5,707,000**	**$ 5,623,000**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041 4043
Capital Projects - Rehabilitation																			
Maintenance Bay Pavement Rehabilitation		$ 769,000																	
Arrival Road Rehabilitation		$ 683,000																	
Flying Club Access Rehabilitation		$ 767,000																	
Apron I Repairs - Select Concrete Panels		$ 189,000																	
Parking Rehabilitation			$ 108,000																
Hangar Road Rehabilitation			$ 108,000																
Runway 15-33 Rehabilitation						$ 21,854,000													
Taxiway B Rehabilitation							$ 345,000												
Runway 06-24 Rehabilitation										$ 12,078,000									
Taxiway A Rehabilitation											$ 1,542,000								
Taxiway C Rehabilitation											$ 748,000								
Taxiway D Rehabilitation											$ 656,000								
Taxiway E Rehabilitation												$ 1,412,000							
Taxiway F Rehabilitation												$ 1,050,000							
Apron I Rehabilitation - Asphalt												$ 2,998,000							
Apron II Rehabilitation												$ 775,000							
Apron V Rehabilitation													$ 5,941,000						
Runway 15-33, Taxiway A, E, F, Apron V Lighting Upgrades																$ 5,196,000			
Runway 01-19 Rehabilitation																		$ 4,679,000	
Apron III Rehabilitation																		$ 3,587,000	
Apron IV Rehabilitation																		$ 2,085,000	
Rehabilitation - Total	**$ 0**	$ 2,408,000	$ 216,000	**$ 0**	**$ 0**	$ 21,854,000	$ 345,000	**$ 0**	**$ 0**	$ 12,078,000	$ 2,946,000	$ 7,235,000	$ 5,941,000	**$ 0**	**$ 0**	$ 5,196,000	**$ 0**	$ 10,351,000	**$ 0**
Plans and Studies																			
Fuel Facility Relocation Feasibility Study	$ 15,000																		
Site Servicing Study		$ 51,000																	
Stormwater Management Plan		$ 53,000																	
RESA Reduced Declared Distances Study		$ 32,000																	
Terminal Building Expansion Concept Design		$ 32,000																	
Airport Master Plan Update											$ 102,000								
Plans and Studies - Total	**$ 15,000**	**$ 168,000**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 102,000**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041 4043
Mobile Assets																			
Plow Truck/Spreader		$ 210,000																	
Sweeper		$ 1,576,000																	
Sweeper/Blower		$ 1,576,000																	
Sweeper/Blower		$ 1,576,000																	
Tractor		$ 137,000																	
Tractor		$ 137,000																	
Mower M-2T61		$ 9,000																	
Fuel Truck		$ 1,576,000																	
Fuel Truck		$ 1,576,000																	
Fuel Truck		$ 1,576,000																	
Personal vehicle		$ 79,000																	
Front End Loader			$ 140,000																
ATV			$ 16,000																
Doosan G30P-5			$ 70,000																
Emergency Response Truck			$ 75,000																
Front End Loader				$ 193,000															
Maintenance Truck				$ 88,000															
Sweeper					$ 1,697,000														
Grader					$ 311,000														
Front End Loader						$ 255,000													
Snowmobile							$ 18,000												
Dump Truck								$ 213,000											
Front End Loader								$ 158,000											
Front End Loader									$ 337,000										
Maintenance Truck									$ 100,000										
Maintenance Truck									$ 100,000										
Maintenance Truck										$ 102,000									
Spreader										$ 173,000									
Street Sweeper													$ 455,000						
Loader/Sweeper															$ 261,000				
Generic Flat Deck															$ 6,000				
Fire Truck																$ 2,227,000			
Maintenance Truck																	$ 122,000		
Maintenance Truck																	$ 122,000		
Mobile Assets - Total	**$ 0**	**$ 10,028,000**	**$ 301,000**	**$ 281,000**	**$ 2,008,000**	**$ 255,000**	**$ 18,000**	**$ 371,000**	**$ 537,000**	**$ 275,000**	**$ 0**	**$ 0**	**$ 455,000**	**$ 0**	**$ 267,000**	**$ 2,227,000**	**$ 244,000**	**$ 0**	**$ 0**
Total Capital Expense	**$ 15,000**	**$ 15,740,000**	**$ 8,071,000**	**$ 9,061,000**	**$ 9,866,000**	**$ 22,109,000**	**$ 5,931,000**	**$ 9,385,000**	**$ 6,443,000**	**$ 12,353,000**	**$ 3,048,000**	**$ 7,235,000**	**$ 12,103,000**	**$ 5,623,000**	**$ 267,000**	**$ 7,423,000**	**$ 244,000**	**$ 10,351,000**	**$ 0**

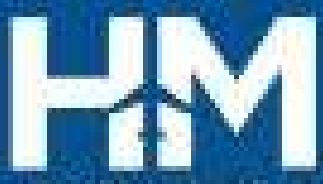
Appendix B - 20-Year Financial Outlook

	2023 (Budget)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
OPERATING REVENUE											
Landing Fees	$ 2,872,000	$ 3,002,700	$ 3,139,300	$ 3,282,100	$ 3,431,500	$ 3,587,600	$ 3,750,800	$ 3,921,500	$ 4,099,900	$ 4,286,500	$ 4,481,500
General Terminal Charges	$ 1,627,000	$ 1,726,500	$ 1,832,200	$ 1,944,300	$ 2,063,200	$ 2,189,500	$ 2,323,400	$ 2,465,600	$ 2,616,400	$ 2,776,500	$ 2,946,400
Aircraft Parking	$ 45,000	$ 47,000	$ 49,200	$ 51,400	$ 53,800	$ 56,200	$ 58,800	$ 61,400	$ 64,200	$ 67,200	$ 70,200
Concessions	$ 800,000	$ 848,900	$ 900,900	$ 956,000	$ 1,014,500	$ 1,076,600	$ 1,142,400	$ 1,212,300	$ 1,286,500	$ 1,365,200	$ 1,448,700
Rentals	$ 514,000	$ 599,800	$ 738,800	$ 890,000	$ 912,400	$ 962,900	$ 1,001,500	$ 1,070,700	$ 1,147,100	$ 1,258,200	$ 1,346,800
Parking	$ 2,168,000	$ 2,300,600	$ 2,441,400	$ 2,590,800	$ 2,749,300	$ 2,917,500	$ 3,096,000	$ 3,285,400	$ 3,486,400	$ 3,699,700	$ 3,926,100
Other Income / Billable Services	$ 370,000	$ 379,200	$ 388,700	$ 398,400	$ 408,400	$ 418,600	$ 429,100	$ 439,800	$ 450,800	$ 462,100	$ 473,600
Total Operating Revenue	**$ 8,396,000**	**$ 8,904,700**	**$ 9,490,500**	**$ 10,113,000**	**$ 10,633,100**	**$ 11,208,900**	**$ 11,802,000**	**$ 12,456,700**	**$ 13,151,300**	**$ 13,915,400**	**$ 14,693,300**
OPERATING EXPENSES											
Salaries and Employee Benefits	$ 3,950,000	$ 4,048,700	$ 4,150,000	$ 4,253,700	$ 4,360,100	$ 4,469,100	$ 4,670,200	$ 4,880,300	$ 5,099,900	$ 5,329,400	$ 5,569,300
Travel	$ 100,000	$ 102,500	$ 105,100	$ 107,700	$ 110,400	$ 113,100	$ 118,200	$ 123,600	$ 129,100	$ 134,900	$ 141,000
Management Support	$ 26,600	$ 27,300	$ 27,900	$ 28,600	$ 29,400	$ 30,100	$ 31,400	$ 32,900	$ 34,300	$ 35,900	$ 37,500
Postage, Freight & Cartage	$ 4,200	$ 4,300	$ 4,400	$ 4,500	$ 4,600	$ 4,800	$ 5,000	$ 5,200	$ 5,400	$ 5,700	$ 5,900
Telecommunications	$ 77,000	$ 78,900	$ 80,900	$ 82,900	$ 85,000	$ 87,100	$ 91,000	$ 95,100	$ 99,400	$ 103,900	$ 108,600
Information & Advertising	$ 88,000	$ 90,200	$ 92,500	$ 94,800	$ 97,100	$ 99,600	$ 104,000	$ 108,700	$ 113,600	$ 118,700	$ 124,100
Airport Marketing & Economic Development	$ 330,000	$ 230,000	$ 235,700	$ 241,600	$ 247,700	$ 253,900	$ 265,300	$ 277,200	$ 289,700	$ 302,800	$ 316,400
Professional Services	$ 150,000	$ 153,800	$ 157,600	$ 161,500	$ 165,600	$ 169,700	$ 177,300	$ 185,300	$ 193,700	$ 202,400	$ 211,500
Contract Services	$ 1,524,000	$ 1,562,100	$ 1,601,200	$ 1,641,200	$ 1,682,200	$ 1,724,300	$ 1,801,900	$ 1,882,900	$ 1,967,700	$ 2,056,200	$ 2,148,700
Service Charges	$ 80,000	$ 82,000	$ 84,000	$ 86,200	$ 88,300	$ 90,500	$ 94,600	$ 98,800	$ 103,300	$ 107,900	$ 112,800
Dues, Subscriptions & Fees	$ 87,000	$ 89,200	$ 91,400	$ 93,700	$ 96,000	$ 98,400	$ 102,900	$ 107,500	$ 112,300	$ 117,400	$ 122,700
Training & Educational Services	$ 80,000	$ 82,000	$ 84,000	$ 86,200	$ 88,300	$ 90,500	$ 94,600	$ 98,800	$ 103,300	$ 107,900	$ 112,800
Rentals	$ 9,500	$ 9,700	$ 10,000	$ 10,200	$ 10,500	$ 10,700	$ 11,200	$ 11,700	$ 12,300	$ 12,800	$ 13,400
Fuel & Petroleum Products	$ 314,000	$ 321,900	$ 329,900	$ 338,100	$ 346,600	$ 355,300	$ 371,200	$ 388,000	$ 405,400	$ 423,700	$ 442,700
Utilities	$ 430,000	$ 440,700	$ 451,800	$ 463,100	$ 474,600	$ 486,500	$ 508,400	$ 531,300	$ 555,200	$ 580,200	$ 606,300
Materials & Supplies	$ 650,000	$ 666,300	$ 682,900	$ 700,000	$ 717,500	$ 735,400	$ 768,500	$ 803,100	$ 839,200	$ 877,000	$ 916,500
Property Tax	$ 160,000	$ 164,000	$ 168,100	$ 172,300	$ 176,600	$ 181,000	$ 189,200	$ 197,700	$ 206,600	$ 215,900	$ 225,600
Legal Services	$ 28,000	$ 28,700	$ 29,400	$ 30,200	$ 30,900	$ 31,700	$ 33,100	$ 34,600	$ 36,200	$ 37,800	$ 39,500
Insurance	$ 320,000	$ 328,000	$ 336,200	$ 344,600	$ 353,200	$ 362,100	$ 378,300	$ 395,400	$ 413,200	$ 431,800	$ 451,200
Board Support	$ 180,000	$ 184,500	$ 189,100	$ 193,800	$ 198,700	$ 203,700	$ 212,800	$ 222,400	$ 232,400	$ 242,900	$ 253,800
Board Travel	$ 15,000	$ 15,400	$ 15,800	$ 16,200	$ 16,600	$ 17,000	$ 17,700	$ 18,500	$ 19,400	$ 20,200	$ 21,100
Bad Debts	$ 1,500	$ 1,500	$ 1,600	$ 1,600	$ 1,700	$ 1,700	$ 1,800	$ 1,900	$ 1,900	$ 2,000	$ 2,100
Land Rent	N/A	$ 275,600	$ 314,800	$ 356,200	$ 392,800	$ 432,500	$ 474,600	$ 518,100	$ 565,000	$ 615,800	$ 667,700
Total Operating Expenses	**$ 8,604,800**	**$ 8,987,300**	**$ 9,244,300**	**$ 9,508,900**	**$ 9,774,400**	**$ 10,048,700**	**$ 10,523,200**	**$ 11,019,000**	**$ 11,538,500**	**$ 12,083,200**	**$ 12,651,200**
Operating Surplus (Loss)	**-$ 208,800**	**-$ 82,600**	**$ 246,200**	**$ 604,100**	**$ 858,700**	**$ 1,160,200**	**$ 1,278,800**	**$ 1,437,700**	**$ 1,612,800**	**$ 1,832,200**	**$ 2,042,100**
OTHER SURPLUS											
Jetmark Operating Surplus	$ 90,000	$ 90,000	$ 110,000	$ 120,000	$ 123,000	$ 126,100	$ 129,200	$ 132,500	$ 135,800	$ 139,200	$ 142,600
Jetmark Land Rent	N/A	$ 36,000	$ 36,000	$ 43,100	$ 47,500	$ 48,600	$ 49,900	$ 51,100	$ 52,400	$ 53,700	$ 55,000
Cargo Warehouse Operating Surplus	$ 285,000	$ 292,100	$ 299,400	$ 306,900	$ 314,600	$ 322,500	$ 330,500	$ 338,800	$ 347,200	$ 355,900	$ 364,800
Cargo Warehouse Land Rent	N/A	$ 17,900	$ 18,300	$ 18,800	$ 19,300	$ 79,800	$ 20,300	$ 20,800	$ 21,300	$ 21,800	$ 22,400
Total Other Surplus	**$ 375,000**	**$ 328,200**	**$ 355,100**	**$ 365,000**	**$ 370,800**	**$ 320,200**	**$ 389,500**	**$ 399,400**	**$ 409,300**	**$ 419,600**	**$ 430,000**
Operating Reserve	$ -	$ -	$ -	$ -	$ -	$ -	$ 417,100	$ 459,300	$ 505,500	$ 563,000	$ 618,000
Operating Surplus Before Other Revenue	**$ 166,200**	**$ 245,600**	**$ 601,300**	**$ 969,100**	**$ 1,229,500**	**$ 1,480,400**	**$ 1,251,200**	**$ 1,377,800**	**$ 1,516,600**	**$ 1,688,800**	**$ 1,854,100**
Airport Improvement Fee	$ 5,416,700	$ 5,607,700	$ 5,805,600	$ 6,010,300	$ 6,222,400	$ 6,441,900	$ 6,669,100	$ 6,904,400	$ 7,147,900	$ 7,400,100	$ 7,661,100
EXCESS OF REVENUES OVER EXPENSES	**$ 5,102,900**	**$ 5,853,300**	**$ 6,406,900**	**$ 6,979,400**	**$ 7,451,900**	**$ 7,922,300**	**$ 7,920,300**	**$ 8,282,200**	**$ 8,664,500**	**$ 9,088,900**	**$ 9,515,200**
CAPITALEXPENSES											
Infrastructure Rehabilitation	$ 2,408,000	$ 216,000	$ -	$ -	$ 21,854,000	$ 345,000	$ -	$ -	$ 12,078,000	$ 2,946,000	$ 2,408,000
Infrastructure Development	$ 3,136,000	$ 7,554,000	$ 8,780,000	$ 7,858,000	$ -	$ 5,568,000	$ 9,014,000	$ 5,906,000	$ -	$ -	$ 3,136,000
Mobile Assets	$ 10,028,000	$ 301,000	$ 281,000	$ 2,008,000	$ 255,000	$ 18,000	$ 371,000	$ 537,000	$ 275,000	$ -	$ 10,028,000
Studies and Plans	$ 168,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 102,000	$ 168,000
Capital Reserve	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Capital Expenses	**$ 15,740,000**	**$ 8,071,000**	**$ 9,061,000**	**$ 9,866,000**	**$ 22,109,000**	**$ 5,931,000**	**$ 9,385,000**	**$ 6,443,000**	**$ 12,353,000**	**$ 3,048,000**	**$ 15,740,000**
OPERATING AND CAPITAL SURPLUS / LOSS	**$ 5,087,900**	**-$ 9,886,700**	**-$ 1,664,100**	**-$ 2,081,600**	**-$ 2,414,100**	**-$ 14,186,700**	**$ 1,989,300**	**-$ 1,102,800**	**$ 2,221,500**	**-$ 3,264,100**	**$ 6,467,200**
Interest & Financing	**N/A**	$ 23,300	$ 469,300	$ 565,300	$ 684,400	$ 823,800	$ 1,166,100	$ 1,137,300	$ 1,215,700	$ 1,180,500	$ 1,336,100
NET ANNUAL SURPLUS / LOSS	**$ 5,087,900**	**-$ 9,910,000**	**-$ 2,133,400**	**-$ 2,646,900**	**-$ 3,098,500**	**-$ 15,010,500**	**$ 823,200***	**-$ 2,240,100**	**$ 1,005,800***	**-$ 4,444,600**	**$ 5,131,100***

*Annual surplus applied to debt repayment.

	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
OPERATING REVENUE										
Landing Fees	$ 4,685,400	$ 4,898,600	$ 5,121,500	$ 5,354,500	$ 5,598,200	$ 5,852,900	$ 6,119,200	$ 6,397,600	$ 6,688,700	$ 6,993,000
General Terminal Charges	$ 3,126,600	$ 3,317,900	$ 3,520,900	$ 3,736,400	$ 3,965,000	$ 4,207,500	$ 4,465,000	$ 4,738,200	$ 5,028,000	$ 5,335,700
Aircraft Parking	$ 73,400	$ 76,800	$ 80,200	$ 83,900	$ 87,700	$ 91,700	$ 95,900	$ 100,200	$ 104,800	$ 109,600
Concessions	$ 1,537,400	$ 1,631,400	$ 1,731,300	$ 1,837,200	$ 1,949,600	$ 2,068,900	$ 2,195,400	$ 2,329,800	$ 2,472,300	$ 2,623,600
Rentals	$ 1,462,000	$ 1,558,700	$ 1,771,300	$ 1,874,900	$ 2,104,300	$ 2,211,000	$ 2,432,300	$ 2,532,600	$ 2,770,500	$ 2,881,000
Parking	$ 4,166,300	$ 4,421,200	$ 4,691,700	$ 4,978,800	$ 5,283,400	$ 5,606,600	$ 5,949,600	$ 6,313,700	$ 6,699,900	$ 7,109,900
Other Income / Billable Services	$ 485,500	$ 497,600	$ 510,000	$ 522,800	$ 535,900	$ 549,300	$ 563,000	$ 577,100	$ 591,500	$ 606,300
Total Operating Revenue	**$ 15,536,600**	**$ 16,402,200**	**$ 17,426,900**	**$ 18,388,500**	**$ 19,524,100**	**$ 20,587,900**	**$ 21,820,400**	**$ 22,989,200**	**$ 24,355,700**	**$ 25,659,100**
OPERATING EXPENSES										
Salaries and Employee Benefits	$ 5,819,900	$ 6,081,800	$ 6,355,500	$ 6,641,500	$ 6,940,300	$ 7,252,600	$ 7,579,000	$ 7,920,100	$ 8,276,500	$ 8,648,900
Travel	$ 147,300	$ 154,000	$ 160,900	$ 168,100	$ 175,700	$ 183,600	$ 191,900	$ 200,500	$ 209,500	$ 219,000
Management Support	$ 39,200	$ 41,000	$ 42,800	$ 44,700	$ 46,700	$ 48,800	$ 51,000	$ 53,300	$ 55,700	$ 58,200
Postage, Freight & Cartage	$ 6,200	$ 6,500	$ 6,800	$ 7,100	$ 7,400	$ 7,700	$ 8,100	$ 8,400	$ 8,800	$ 9,200
Telecommunications	$ 113,500	$ 118,600	$ 123,900	$ 129,500	$ 135,300	$ 141,400	$ 147,700	$ 154,400	$ 161,300	$ 168,600
Information & Advertising	$ 129,700	$ 135,500	$ 141,600	$ 148,000	$ 154,600	$ 161,600	$ 168,800	$ 176,400	$ 184,400	$ 192,700
Airport Marketing & Economic Development	$ 330,600	$ 345,500	$ 361,000	$ 377,300	$ 394,300	$ 412,000	$ 430,500	$ 449,900	$ 470,200	$ 491,300
Professional Services	$ 221,000	$ 231,000	$ 241,300	$ 252,200	$ 263,600	$ 275,400	$ 287,800	$ 300,800	$ 314,300	$ 328,400
Contract Services	$ 2,245,400	$ 2,346,500	$ 2,452,100	$ 2,562,400	$ 2,677,700	$ 2,798,200	$ 2,924,200	$ 3,055,700	$ 3,193,200	$ 3,336,900
Service Charges	$ 117,900	$ 123,200	$ 128,700	$ 134,500	$ 140,600	$ 146,900	$ 153,500	$ 160,400	$ 167,600	$ 175,200
Dues, Subscriptions & Fees	$ 128,200	$ 134,000	$ 140,000	$ 146,300	$ 152,900	$ 159,700	$ 166,900	$ 174,400	$ 182,300	$ 190,500
Training & Educational Services	$ 117,900	$ 123,200	$ 128,700	$ 134,500	$ 140,600	$ 146,900	$ 153,500	$ 160,400	$ 167,600	$ 175,200
Rentals	$ 14,000	$ 14,600	$ 15,300	$ 16,000	$ 16,700	$ 17,400	$ 18,200	$ 19,000	$ 19,900	$ 20,800
Fuel & Petroleum Products	$ 462,600	$ 483,500	$ 505,200	$ 528,000	$ 551,700	$ 576,500	$ 602,500	$ 629,600	$ 657,900	$ 687,500
Utilities	$ 633,600	$ 662,100	$ 691,900	$ 723,000	$ 755,500	$ 789,500	$ 825,100	$ 862,200	$ 901,000	$ 941,500
Materials & Supplies	$ 957,700	$ 1,000,800	$ 1,045,800	$ 1,092,900	$ 1,142,100	$ 1,193,500	$ 1,247,200	$ 1,303,300	$ 1,361,900	$ 1,423,200
Property Tax	$ 235,700	$ 246,400	$ 257,400	$ 269,000	$ 281,100	$ 293,800	$ 307,000	$ 320,800	$ 335,200	$ 350,300
Legal Services	$ 41,300	$ 43,100	$ 45,100	$ 47,100	$ 49,200	$ 51,400	$ 53,700	$ 56,100	$ 58,700	$ 61,300
Insurance	$ 471,500	$ 492,700	$ 514,900	$ 538,000	$ 562,300	$ 587,600	$ 614,000	$ 641,600	$ 670,500	$ 700,700
Board Support	$ 265,200	$ 277,100	$ 289,600	$ 302,600	$ 316,300	$ 330,500	$ 345,400	$ 360,900	$ 377,200	$ 394,100
Board Travel	$ 22,100	$ 23,100	$ 24,100	$ 25,200	$ 26,400	$ 27,500	$ 28,800	$ 30,100	$ 31,400	$ 32,800
Bad Debts	$ 2,200	$ 2,300	$ 2,400	$ 2,500	$ 2,600	$ 2,800	$ 2,900	$ 3,000	$ 3,100	$ 3,300
Land Rent	$ 727,800	$ 879,800	$ 1,070,100	$ 1,246,200	$ 1,438,200	$ 1,622,400	$ 1,830,200	$ 2,031,200	$ 2,259,700	$ 2,481,700
Total Operating Expenses	**$ 13,250,500**	**$ 13,966,300**	**$ 14,745,100**	**$ 15,536,600**	**$ 16,371,800**	**$ 17,227,700**	**$ 18,137,900**	**$ 19,072,500**	**$ 20,067,900**	**$ 21,091,300**
Operating Surplus (Loss)	**$ 2,286,100**	**$ 2,435,900**	**$ 2,681,800**	**$ 2,851,900**	**$ 3,152,300**	**$ 3,360,200**	**$ 3,682,500**	**$ 3,916,700**	**$ 4,287,800**	**$ 4,567,800**
OTHER SURPLUS										
Jetmark Operating Surplus	$ 146,200	$ 149,900	$ 153,600	$ 157,500	$ 161,400	$ 165,400	$ 169,600	$ 173,800	$ 178,100	$ 182,600
Jetmark Land Rent	$ 56,400	$ 57,800	$ 69,400	$ 76,300	$ 78,200	$ 80,200	$ 82,200	$ 84,300	$ 86,400	$ 88,500
Cargo Warehouse Operating Surplus	$ 373,900	$ 383,300	$ 392,900	$ 402,700	$ 412,800	$ 423,100	$ 433,700	$ 444,500	$ 455,600	$ 467,000
Cargo Warehouse Land Rent	$ 22,900	$ 23,500	$ 24,000	$ 24,700	$ 25,300	$ 25,900	$ 26,600	$ 27,200	$ 27,900	$ 28,600
Total Other Surplus	**$ 440,800**	**$ 451,900**	**$ 453,100**	**$ 459,200**	**$ 470,700**	**$ 482,400**	**$ 494,500**	**$ 506,800**	**$ 519,400**	**$ 532,500**
Operating Reserve	$ 681,700	$ 722,000	$ 783,700	$ 827,800	$ 905,800	$ 960,700	$ 1,044,300	$ 1,105,900	$ 1,201,800	$ 1,275,100
Operating Surplus Before Other Revenue	**$ 2,045,200**	**$ 2,165,800**	**$ 2,351,200**	**$ 2,483,300**	**$ 2,717,200**	**$ 2,881,900**	**$ 3,132,700**	**$ 3,317,600**	**$ 3,605,400**	**$ 3,825,200**
Airport Improvement Fee	$ 7,931,300	$ 8,211,100	$ 8,500,800	$ 8,800,600	$ 9,111,100	$ 9,432,500	$ 9,765,200	$ 10,109,700	$ 10,466,300	$ 10,835,500
EXCESS OF REVENUES OVER EXPENSES	**$ 9,976,500**	**$ 10,376,900**	**$ 10,852,000**	**$ 11,283,900**	**$ 11,828,300**	**$ 12,314,400**	**$ 12,897,900**	**$ 13,427,300**	**$ 14,071,700**	**$ 14,660,700**
CAPITALEXPENSES										
Infrastructure Rehabilitation	$ 7,235,000	$ 5,941,000	$ -	$ -	$ 5,196,000	$ -	$ 10,351,000	$ -	$ -	$ -
Infrastructure Development	$ -	$ 5,707,000	$ 5,623,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Mobile Assets	$ -	$ 455,000	$ -	$ 267,000	$ 2,227,000	$ 244,000	$ -	$ -	$ -	$ -
Studies and Plans	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Capital Reserve	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,087,760	$ 8,373,040	$ 8,668,400
Total Capital Expenses	**$ 7,235,000**	**$ 12,103,000**	**$ 5,623,000**	**$ 267,000**	**$ 7,423,000**	**$ 244,000**	**$ 10,351,000**	**$ 8,087,760**	**$ 8,373,040**	**$ 8,668,400**
OPERATING AND CAPITAL SURPLUS / LOSS	**$ 2,741,500**	**-$ 1,726,100**	**$ 5,229,000**	**$ 11,016,900**	**$ 4,405,300**	**$ 12,070,400**	**$ 2,546,900**	**$ 5,339,540**	**$ 5,698,660**	**$ 5,992,300**
Interest & Financing	$ 1,156,500	$ 1,101,000	$ 1,200,000	$ 1,058,900	$ 710,400	$ 581,100	$ 179,000	$ 96,100	$ -	$ -
NET ANNUAL SURPLUS / LOSS	**$ 1,585,000***	**-$ 2,827,100**	**$ 4,029,000***	**$ 9,958,000***	**$ 3,694,900***	**$ 11,489,300***	**$ 2,367,900***	**$ 5,243,440****	**$ 5,698,660**	**$ 5,992,300**

*Annual surplus applied to debt repayment. **Portion of annual surplus applied to debt repayment



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November 24, 2022

COLLABORATION AGREEMENT

Lheidli T'enneh First Nation & Prince George Airport Authority

On August 5, 2022, representatives of Chief and Council, and Administration of the Lheidli T'enneh First Nation (LTFN) met for an historic lunch meeting with the Chair of the Prince George Airport Authority (PGAA) Board of Directors and CEO of the PGAA. Both parties unanimously agree to proceed to work together and celebrate the new relationship in the form of a Collaboration Agreement (PA). The PGAA, as part of our Strategic plan, acknowledge our responsibility to implement meaningful cultural and economic reconciliation initiatives and look forward to the mutual growth and benefits of this relationship.

SHARED VISION

Our shared vision for the future is a sustainable environment that supports a healthy economy and a high quality of life for the betterment of the Lheidli T'enneh First Nation (LTFN), the City of Prince George, and Central British Columbia. The Prince George Airport Authority (PGAA) respectfully acknowledges that the Prince George International Airport exists on traditional Lheidli T'enneh territory. Both parties respectfully acknowledge that this Collaboration Agreement will guide development of a proactive, supportive working relationship for both the LTFN and the PGAA.

MUTUAL COMMITMENTS

1. Both parties agree to attend an annual Spring Collaboration Agreement Dinner.
2. Both parties agree to attend an annual Fall Collaboration Agreement Dinner.
3. Both parties agree that part of the Fall Dinner will be an annual review of the PA with any proposed changes to be reviewed at the Spring Dinner.
4. The PGAA will work to ensure that LTFN is invited to participate in all PGAA Special Events.
5. LTFN will work to ensure that the PGAA is invited to participate in all LTFN Special Events.
6. Both parties will reach out to one another as required throughout the year to meet and discuss new initiatives that benefit both parties.
7. The PGAA will display the LTFN flag at the Prince George International Airport, updated from time to time as required.
8. The PGAA will forward any internal job postings to the LTFN.
9. Both parties agree to contact each other regarding 'Joint Advocacy' on issues of importance to the community.

Signed this day _____.

Chief Dolleen Logan	Derek Dougherty	Gordon Duke, President & CEO
Lheidli T'enneh First Nation	Chair, PGAA Board of Directors	PG Airport Authority

Disclaimer: LTFN and PGAA are each committed to working in good faith with each other and acknowledge that this Collaboration Agreement is a relationship agreement setting forth the framework for the development of the relationship between the LTFN and the PGAA. As such, neither party will have any liability for good faith mistakes, errors or omissions that may occur.