

BELLA COOLA AIRPORT MASTER PLAN



PRESENTED TO
Central Coast Regional District

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EXECUTIVE SUMMARY

The Bella Coola Airport is located 13 km from the town site of Bella Coola on Highway 20, which connects Bella Coola to Williams Lake; located 479 km to the east. The highway is subject to closure in winter months and during periods of heavy rain and, as such, the airport is a key transportation asset for the community. Different airlines have provided service to the airport since 1966, with Pacific Coastal Airlines (purchasing Wilderness Airlines) continuing regular scheduled service to the community since that time.

The necessity for a viable airport was made abundantly clear in 2010, when flooding resulted in the community being largely isolated due to disrupted road service and the airport being temporarily closed. The Central Coast Regional District (CCRD) will need to encourage the province to undertake the necessary modifications to the dike system at the airport so that the airport can maintain the vital link to essential services outside the community in times of emergency.

The CCRD owns the airport and the Official Community Plan (OCP) guides land use planning and zoning at the airport. The OCP serves as a guide for local elected government officials when they make decisions regarding development, providing the required guidance to accommodate growth. Although portions of the Bella Coola Airport lands are designated Agricultural Land Reserve and are therefore subject to the provisions of the Agricultural Land Commission Act, the airport lands on the south side of the runway are designated for industrial land uses. Private individuals or corporations own a large number of lots at the airport.

The region has a relatively small population that declined by approximately 1.0% between 2005 and 2015. A number of factors likely contributed, including the decline in forestry operations, the 2008 recession, and the loss of ferry service to the region. By comparison, the Province of British Columbia's population grew by almost 12% during this period.

For continued, long-term success at the Bella Coola Airport, the CCRD stated the following objectives to be integral to the Master Plan.

- **Aircraft Safety** – The safety of aircraft operations is paramount. Transport Canada standards and the Bella Coola Airport Operations Manual (AOM) are key references for facility development.
- **Airport Capacity** – Increases in aircraft movements, passengers, and freight will determine the requirement for the expansion of facilities such as aprons/taxiways, terminals, support facilities, vehicle parking, ground access, and other associated infrastructure.
- **Forecast Demand** – There are no official aviation forecasts; therefore, a well-defined forecasting methodology identifies current drivers and aviation demands. The forecasts provide future projections for passenger growth, which, in turn, determine terminal, airside, and landside infrastructure sizing and the suitability of existing aircraft for the Bella Coola Airport.
- **Regional Planning** – The Master Plan is, in principle, a guiding document that will assist the CCRD in making investment decisions over the plan period. The planning philosophy projects the aviation needs of the region for the long term. The development of the Bella Coola Airport should be consistent with regional development, which requires taking the community impacts of air transport growth into account. Factors like aircraft noise, airspace protection, and the hazards of aircraft operations are essential to the plan to ensure that the airport meets the region's air service expectations. The Master Plan also identifies the required lands for practical development during the master planning period.
- **Comparable Aerodrome Rates and Charges Review** – A comparison of current rates and charges issued by other comparable local and regional aerodromes allows the CCRD to review its current rate structure in order

to better capitalize on revenue potential (First Nation contribution agreement). The final recommendations will provide analysis with respect to the delivery of aerodrome services.

- **Groundside Activities** – The plan identifies potential land uses and alternate sources of revenue for the airport. Opportunities and trends prompted by the stakeholders' consultation assisted the team in determining both aviation and non-aviation land uses.
- **Land Uses** – Aviation (requiring airside access) and non-aviation land uses (not requiring airfield access).

Existing Infrastructure

The airport runway, taxiways, and aprons are in relatively good condition, although the pavements will require rehabilitation within the master plan timeframe (20 years). Fortunately, the airport is eligible for funding under the Transport Canada Airport Capital Assistance Plan, which provides 100% funding for airports with less than 50,000 annual passengers. At present, the Bella Coola Airport provides service to approximately 11,000 passengers, with forecasts showing a range of 13,500 to 17,900 passengers in the 20-year period.

One challenge for aircraft operations is that the overall topography surrounding the airport limits aircraft landings. The airport runway is not equipped with runway lighting and approach lighting systems and, as such, all aircraft must follow visual flight rules. The lack of lighting limits nighttime operations, even for essential services (e.g., medical evacuations by air). There was consideration for hazard beacons positioned on nearby "high points" to guide pilots to the airport during the night; however, the cost of the installations and the limited potential net benefit negated this option, as the overall landing limits and increased safety risk would remain. An immediate requirement is for the airport to remove obstacles (trees) on the approaches and a gravel pile that is encroaching on the runway strip transitional zoning.

The groundside access road and terminal parking lot require rehabilitation. The Province of British Columbia is responsible for Airport Road and Phoenix Road and, as such, the CCRD must communicate with the province so that the road rehabilitation can be included in the province's road rehabilitation program. The terminal access road and parking lot are CCRD responsibility and rehabilitation should be coordinated with the terminal expansion project.

Stakeholder Consultations

To support the development of the Master Plan and obtain insight from residents and stakeholders, there were two rounds of consultation. The intent of the consultation was to understand what is working well and what opportunities exist for site development. Those interviewed emphasized how important the airport is to the valley and how valuable improvements would be to the region. Key opportunities/issues arising from the interviews include:

- There is growing tourism and a limited capacity to provide adequate services for visitors.
- The Air Terminal Building and surrounding area is beyond capacity now when a 19-seat Beech 1900 arrives. For example, the terminal is difficult to walk through from apron to exit without literally bumping into people.
- The outside baggage area appears to have safety issues because arriving passengers stand on a road waiting for their baggage and motor vehicles are backed up to the same area where passengers stand to await their baggage.
- There has been no work on the dike since the 2010 failure. The danger of future flooding to safe aircraft operations therefore remains a concern.
- People interested in tourism development asked if, in the future, the CCRD would construct a longer and wider runway to accommodate larger aircraft (more passengers).

- People concerned with air services to support health wanted to see improvements made to the site to make night operations possible.
- Some interviewees suggested that the airport area would be a good place to develop commercial and light industrial development in the Hagensborg area.

Terminal Building

The ATB was constructed in 1978 and further expanded in 1982 to the current size (3,314 ft² (308 m²)). A covered baggage shelter is located at the west end of the building (constructed in 1989). The terminal serves many functions: arrival and departure services, offices, freight/baggage storage, ticket counter space, concessions, and Nav Canada. The arrival of a 19 seat aircraft and the mix of both departing and arriving passengers results in a very poor level of service. Air travel is important to the region and the air terminal building is an essential component of the traveller experience. The terminal concept expansion will increase the terminal size by approximately 50%. The cost for the expansion will be divided between the Province of British Columbia and the CCRD. The expanded terminal will provide an adequate level of service well into the future.

Land Use Plan and Development

The Land Use Plan (LUP) provides a framework that the airport can use to guide future development at the airport over the long-term (e.g., 20 years). The LUP:

- Identifies land use requirements for each airport subsystem in the plan. Common designations include airside commercial, airport operations, air terminal reserve, runway and taxiway system, airport reserve, groundside commercial, and aviation support.
- Assigns areas on the airport for use by specific facilities, based on priority. The priority approach requires a listing of airport facilities in order of priority.
- Ensures future developments proposed in the LUP will not conflict with safe airport operations. All of the work undertaken at the airport will be in conformance with Transport Canada Aerodrome Standards and Recommended Practices (TP 312-5th Edition). Transport Canada's "Land Use in the Vicinity of Airports (TP1247)" is a reference when considering appropriate land uses near airports. Electronic zoning requirements are also considered.
- Reserves land for future expansion or redevelopment (e.g., operational facilities). Lands are identified to ensure those needs are met in consideration of safe and efficient airport activities.
- Provide sufficient land for access.

Land use classifications define airport land use. Characteristics such as surrounding topography, proximity to airport services, and adjacent properties determine the most efficient use for each parcel of land. Land reserves include key aviation services, passenger, and administrative needs. Auxiliary lands are those lands not reserved for key aviation services, or lands that could serve an alternate and temporary purpose until required within the 20-year plan. Suitable guidelines for development are integral to the plan.

There are four proposed airport development scenarios:

- Existing hangar line (Phase 1) – four lots are available for development. Groundside access is from Phoenix Road. The development area requires an extended taxiway and electrical and water services.
- Commercial/Industrial Lots – there are two lots near the terminal suitable for development. Access is from Phoenix Road and Airport Road. The lots will require clearing and servicing.

- **Southwest Development Area (Phase 2)** – this area will provide an additional six lots for aviation-related development. The lots will require an extension to the existing taxiway, area clearing and servicing, and construction of a common apron for users. Access is from Phoenix Road.
- **East Development Area (Long-term)** – the east development area will provide three lots for aviation-related business development. The area will require extensive logging and clearing and will require a new taxiway, access road, and services.

The overall cost to rehabilitate existing infrastructure and develop a new terminal and development lots is \$7,576,000 (2017) of which \$4,127,000 will be funded through federal and provincial funding programs. It is essential that the CCRD take a proactive approach in submitting funding applications so that the projects are completed in the prescribed timeframes.

Based on priorities, the CCRD investment will total \$1,746,000 over the next 10 years.

Recommendations

The following recommendations are important components of the CCRD's initial 10-year planning period. In some cases, the funding required for a particular recommendation is external to the CCRD and, therefore, subject to external funding timelines. Longer term developments identified as Phase 2 or future would be challenging to predict at this time and the need for a particular expenditure will be entirely demand driven.

1. To maintain certification, it is essential that the CCRD immediately submit the updated Airport Operations Manual, Safety Management System, Airport Wildlife Management Plan, and Emergency Plan for Transport Canada approvals.
2. Obstacles on the approaches (trees) are compromising airport safety and must be removed immediately. In addition, a large pile of stockpiled gravel encroaches on airfield zoning and must be removed or reconfigured to meet zoning standards.
3. The terminal building is constrained and the CCRD, in partnership with the province, should expand the terminal building to meet long-term passenger needs. The CCRD must contract an architect to finalize the ATB expansion design drawings and contract specifications.
4. The terminal parking lot must be properly constructed to accommodate the travelling public. Of particular concern is the passenger drop-off/pick-up area.
5. Advise Pacific Coastal Airlines of the requirement to contract an environmental engineer to investigate regulatory compliance with the existing fuel tank contamination area.
6. The 2010 flood of airport lands showed the necessity for a dike rehabilitation program to ensure the long-term viability of airport operations. The dike requirement is unique to this site and it is recommended that the CCRD Board of Directors lobby the Province to seek funding to improve the dike. The potential for the dike to fail when the community most needs the airport is real and acute. This is a unique safety and emergency situation.
7. The CCRD should begin submitting funding applications to Transport Canada for all airfield pavements so that these projects are programmed into the ACAP funding queue.
8. Reconstruct the closed airfield tie-down area so that pilots have an optional area to park airplanes overnight or long-term.

9. Initially four lots will be available for development. The infrastructure required to support the lot development would be entirely demand driven.
10. To meet Transport Certification requirements on a sustainable basis, it is recommended that the airport provide at least the equivalent of 0.5 FTEs to ensure that maintenance systems and reporting are addressed in an ongoing, sustainable manner.
11. Increase fees in line with the recommended by-law in this report to generate sustainable funding.

The Bella Coola Airport Master Plan will guide CCRD investment and development over the next 10 to 20 years. Stakeholder consultations were an integral component of the plan. For a plan to be successfully implemented, it is essential local knowledge is included in the plan, particularly as related to resident and business needs.

It is apparent that the Bella Coola region is experiencing increased demand from tourism opportunities and therefore more immediate needs (e.g., a terminal building expansion and terminal parking) are forecast in the near term. Other immediate costs (e.g., access road rehabilitation) are also necessary in support of the terminal development.

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LIMITATIONS OF REPORT

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
Government/Organizations/Programs	
ACAP	Airport Capital Assistance Program
ACI	Airports Council International
ACRP	Airport Cooperative Research Program
BCFCC	British Columbia Funding Community Component
BCAAP	British Columbia Air Access Program
CCRD	Central Coast Regional District
FAA	Federal Aviation Administration
HID	Hagensborg Improvement District
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
PCA	Pacific Coast Airlines
Generic Terms	
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
LUP	Land Use Plan
MP	Master Plan
OCP	Official Community Plan
ROW	Right-of-Way
VPH	Volatile Petroleum Hydrocarbon
Airport/Aeronautical Acronyms	
AIF	Airport Improvement Fee
AGN	Aircraft Group Number
AOM	Airport Operations Manual
ATB	Air Terminal Building
AVGAS	Aviation Gasoline
FOD	Foreign Object Damage
GPS	Global Positioning System
HAPI	Hazard Beacon Vertical Guidance Lighting
IAP	Instrument Approach Procedure
LOS	Level of Service
MTOW	Maximum Takeoff Weight

OIS	Obstacle Identification Surface
OLS	Obstacle Limitation Surface
POFZ	Precision Obstacle Free Zone
VFR	Visual Flight Rules

1.0 INTRODUCTION

The town site of Bella Coola is at the mouth of the Bella Coola River, which flows to the North Bentinck Arm, a short inlet about 17 km (10.6 mi) in length in the Central Coast region of British Columbia (BC). The North Bentinck Arm is a side water of Burke Channel and is linked via that waterway and Labouchere Channel to Dean Channel, which is one of the largest inlets on the BC Coast.

The Bella Coola Airport is located 13 km from the town site of Bella Coola on Highway 20. Highway 20 connects Bella Coola to Williams Lake, located 479 km to the east. Hagensborg is located 4 km east of the airport. The highway is subject to closure in winter months and during periods of heavy rain and, as such, the airport is a key transportation asset for the community. In 2010, flooding resulted in the community being largely isolated due to disrupted road service and the airport closure resulting from portions of the airport flooding.

The airport is located on the south bank of the Bella Coola River in a narrow valley and surrounded by mountains exceeding 1,800 m in height.

The Bella Coola Valley Flying Club constructed the airport in the summer of 1966 with the first commercial charter (Harrison Airway) landing in September of that year. In 1978, airport improvements included paving the runway and taxiway and construction of a new air terminal building (ATB). Additions to the ATB followed in 1982 and 1988.

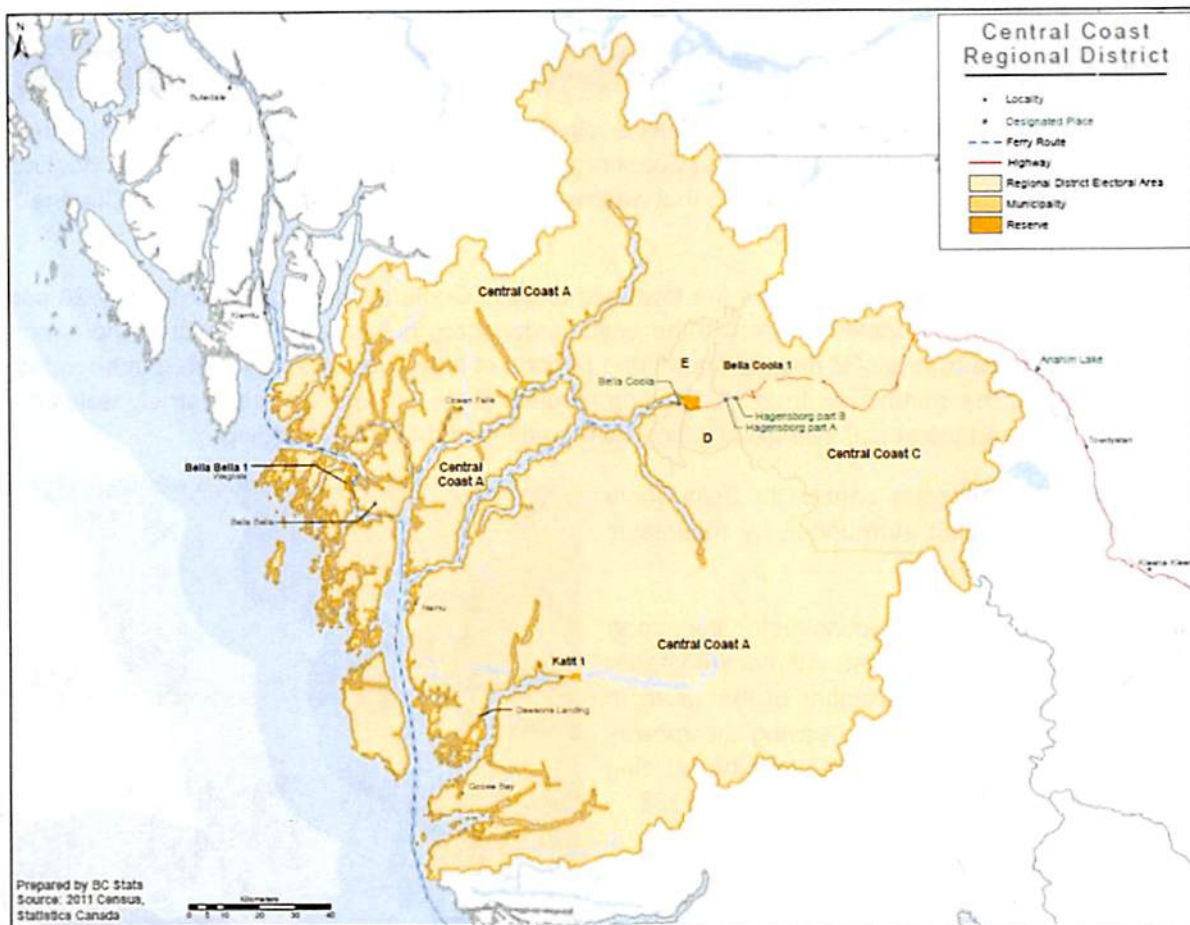
Different airlines have provided service to the airport since 1966, with Pacific Coastal Airlines (PCA) (purchasing Wilderness Airlines) continuing regular scheduled service to the community since that time.



View to East

1.1 Regional Profile

The Bella Coola Airport is in the Central Coast Regional District (CCRD), the smallest regional district in BC when measured by population. As Figure 1-1 shows, it is a remote region of the Central Coast bordered by the Pacific Ocean to the west, the Chilcotin Plateau to the east, and mountains to the north and south. There is no incorporated municipality in this regional district; it is the only regional district in BC without one. The population of the CCRD in 2015 was approximately 3,200 people.



Source: BC Statistics

Figure 1-1: Map of Central Coast Regional District

1.2 Planning and Development Legislative Framework

The CCRD owns the airport and the CCRD Official Community Plan (OCP) guides land use planning and zoning at the airport. The OCP serves as a guide for local elected government officials when they make decisions regarding development, providing the required guidance to accommodate growth. In BC, OCPs are prepared and adopted within the statutory provisions of the Local Government Act. The Local Government Act prescribes the general content of OCP and sets out a formal procedure for adopting a Plan.

Although portions of the Bella Coola Airport lands are designated Agricultural Land Reserve, and are therefore subject to the provisions of the Agricultural Land Commission Act, the airport lands on the south side of the runway are designated for industrial land uses.

Private individuals or corporations own a large number of lots at the airport. Figure 1-2: CCRD Drawing: PWM17-01 shows lands owned by the CCRD and those owned by others. As shown, the BC Ministry of Transportation and Infrastructure owns the Right-of-Ways (ROW) for Airport Road and Phoenix Road and is responsible for the road upkeep.

The CCRD sets the airports fees via a Local Government by-law.

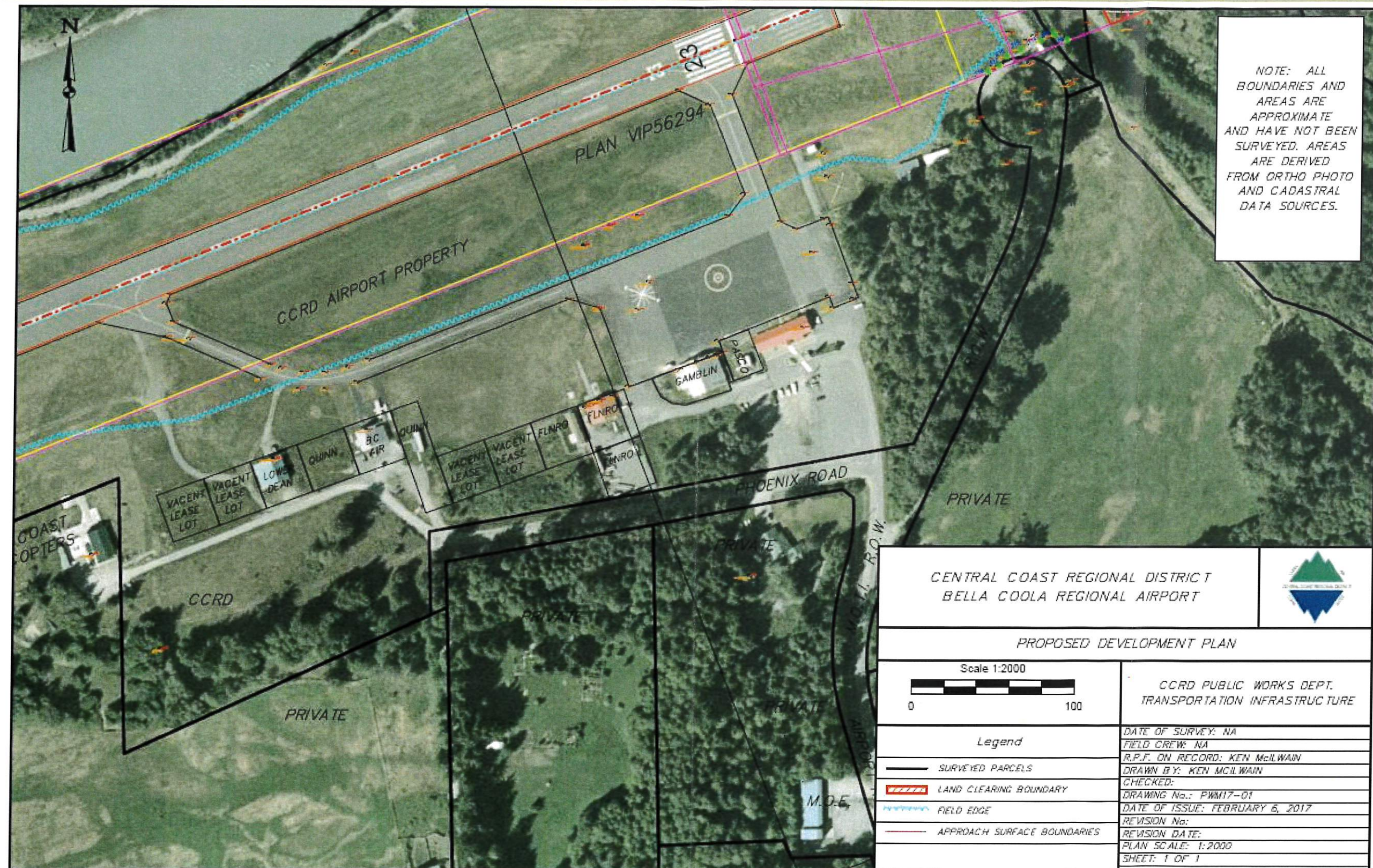


Figure 1-2: CCRD Drawing: PWM17-01

1.3 Environmental Setting

The airport lies within the Bella Coola Valley, a major east-west valley with steep, tall mountains and wet coastal forest. The climate is characterized by moist, warm summers, and cool to cold winters with relatively heavy amounts of wet snowfall or rain. Western Hemlock is dominant in the lower elevation coastal forests.

Land uses in the valley and near the airport include settlements (Bella Coola and Hagensborg), rural-residential areas, small-scale agricultural (dominantly forage with associated residential, and including vacant cleared land with evidence of previous forage use) and commercial/industrial (the airport, municipal facilities, etc.).

The main channel of the Bella Coola River lies north of the airport with riverside channels to the east and northwest. Nooklikonnik Creek is east and south of the airport and joins with the side channel of the Bella Coola River at the east end of the airport. The Bella Coola River contains numerous fish species, including four species of salmon: chinook, coho, sockeye, and pink.

The Bella Coola Valley provides habitat for a wide range of wildlife species, including white-tailed deer, grizzly bear, black bear, and many bird species using terrestrial, wetland, and aquatic habitats.

Grizzly bear are widely reported in the valley and food is abundant in the hillside and alpine areas, in the tributaries during salmon spawning, and in residential and farm clearings. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) lists grizzly bear as Special Concern, though there is no formal protection for the species in British Columbia. The main concern with grizzly bear in the Bella Coola Valley is potential bear-human interactions (CCRD 2015).

Marbled Murrelet is a coastal seabird that nests in old forests. The species is listed "Threatened" under the Species at Risk Act. Mapped critical habitat for this species is throughout the Bella Coola Valley, including one location adjacent to the south of the airport. There are no records of nesting Marbled Murrelet near the airport.

Bald Eagle and Great-blue Heron occur in the valley. BC Wildlife protects the nests of both species, even when the nest is unoccupied.



Typical Environment Around Airport. View to north.

1.4 Flooding Potential

Dike design requires the dike to be of sufficient height to exceed the height of the design flood (200-year peak instantaneous flood plus 10% for climate change), limit seepage through the dike and be resistant to erosion from impinging water. The Bella Coola River can experience high peak flows for two to three days due to a high intensity rain-on-snow event or for longer durations (two to three months) during the freshet (i.e., sudden rise in water levels from heavy rains or snowmelt).

In 2010, the Bella Coola River overtopped the east dike (upstream end) adjacent to Nooklikonnik Creek, resulting in flooding of the airport runway and surrounding area.

A study conducted in 2013¹ provided an overview of the flooding potential at the airport and recommended a final design for the existing dike to provide containment at the end of the runway to prevent future flooding. The total cost for the dike rehabilitation was \$1.95 M (2013 dollars). The dike is outside the CCRD jurisdiction and costs associated with the dike repair are the responsibility of the British Columbia government (Emergency Management).

1.5 Master Plan Objectives

For continued, long-term success at the Bella Coola Airport, the CCRD stated the following objectives to be integral to the Master Plan.

- **Aircraft Safety** – The safety of aircraft operations is paramount. Transport Canada standards and the Bella Coola Airport Operations Manual (AOM) are key references for facility development.
- **Airport Capacity** – Increases in aircraft movements, passengers, and freight will determine the requirement for the expansion of facilities such as aprons/taxiways, terminals, support facilities, vehicle parking, ground access, and other associated infrastructure.
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- **Comparable Aerodrome Rates and Charges Review** – A comparison of current rates and charges issued by other comparable local and regional aerodromes allows the CCRD to review its current rate structure in order to better capitalize on revenue potential (First Nation contribution agreement). The final recommendations will provide analysis with respect to the delivery of aerodrome services.
- **Groundside Activities** – The plan identifies potential land uses and alternate sources of revenue for the airport. Opportunities and trends prompted by the stakeholders' consultation assisted the team in determining both aviation and non-aviation land uses.
- **Land Uses** – Aviation (requiring airside access) and non-aviation land uses (not requiring airfield access).

2.0 AIRPORT GOVERNANCE

2.1 Airport Management Structure

The CCRD holds the airport certificate for the site. The CCRD's Transportation Coordinator is the designated Airport Manager and the Chief Administrative Officer is the Accountable Executive for the site.

¹ Kerr Wood Leidal, February 28, 2013, Technical Memorandum, Bell Coola Airport Dike Upgrade Project Design Brief

The CCRD currently has an arrangement with a private contractor to support daily airport operations by checking the runway for foreign object debris (FOD) and any other actions typically undertaken by an airport manager. The CCRD provides additional support as required.

3.0 EXISTING AIRPORT FACILITIES AND INFRASTRUCTURE

The following section describes existing infrastructure condition. A detailed pavement condition report² is included in Appendix A.

Table 3-1: Airport Reference

Airport Facilities	
Reference	N52 23 15 W126 35 45 6NE 190E (2012) UTC-8(7) Elevation 117 feet A5013 LO2
Operations	Central Coast Regional District 250-799-5291 Certified
PF	A-1 C-2,3,4,5,6
FLT PLN FIC	NOTAM FILE CYZT
Services	Fuel 100 LL, JA
RWY DATA	Rwy 05-23 4200 x 100 asphalt, Threshold 05 is temporarily displaced 394 feet due to tree height. Threshold 23 is displaced 206 feet. West taxiway restricted to 12,500 lbs. or less
Critical Aircraft	Cessna Citation and King Air 200 (Code 2B)
Runway	Code 2B Non-Instrument

3.1 Runway

In 1996, the CCRD repaired Runway 05-23 due to major settlements along several sections of the runway. Construction included grinding the asphalt and mixing it with the underlying base gravel layer. The remaining gravel surface was then graded and compacted to gravel runway standards. In some areas, sub-surface failure resulted in a complete reconstruction. Over 2,500 m³ of logs and organic material was removed from beneath the runway surface. Once all of the logs and organics had been removed, the entire runway was re-graded with an additional 15 cm of new base gravel and then paved with a surface layer of 6.5 cm of asphalt. The surface has not been rehabilitated since 1996. Crack filling was completed in 2014 and is minor in extent. The runway is showing no signs of settlement or structural failure.

Transverse and longitudinal cracking is minor in extent and low in severity. The few transverse cracks observed were crack-filled and had little secondary cracking. Most longitudinal cracks are sealed; however, new cracking has appeared in some locations. Due to the pavement age, raveling occurs over most of the surface but is low in severity.

² Tetra Tech, September 2016, Pavement Condition Assessment, Bella Coola Airport

3.2 Taxiways

3.2.1 Taxiway A

Taxiway A is in good to fair condition (last paved in 1996). The surface has not been rehabilitated since that time and is showing signs of settlement near the intersection with the runway, low areas, and poor drainage due to settlement.

Transverse cracking is minor in extent and moderate in severity. Longitudinal cracking is minor in extent and low in severity. Due to the pavement age, raveling occurs over most of the surface but is low in severity.

3.2.2 Taxiway B

Taxiway B is in fair condition. The taxiway is weight restricted to 12,500 lbs. Pacific Coastal Airlines does not use this taxiway for commercial flights. The surface has not been rehabilitated since 1996. Taxiway B contains more unfilled cracks as compared to the runway and Taxiway A. The taxiway is showing few signs of settlement or structural failure. Transverse cracking is minor in extent and moderate in severity. Longitudinal cracking is major in extent and moderate in severity. Raveling occurs over most of the surface but is low in severity.

3.3 Aprons

3.3.1 Apron 1

Apron I is the primary apron at Bella Coola Airport. The apron is in good to fair condition. The apron was overlain in 1996 and then sealed with a bitumen seal coat to prevent damage from fuel and hydraulic drips. Apron I has not been rehabilitated since 1996. The apron is showing few signs of settlement or structural failure. Transverse cracking is minor in extent and minor in severity. Longitudinal cracking is moderate in extent and medium in severity. Raveling occurs over most of the surface but is low in severity. Similar to Taxiway B, Apron I has more unfilled cracks that also include vegetation growth.

3.3.2 Itinerant Apron

The Itinerant Apron is used as a tie-down area for itinerant and local light aircraft. The apron is in fair condition. The apron was overlain in 1996. This portion of the apron did not receive a seal coat. The apron has not been rehabilitated since 1996. The apron is showing few signs of settlement or structural failure. Transverse cracking is minor in extent and minor in severity. Longitudinal cracking is moderate in extent and medium in severity. Raveling occurs over most of the surface but is low in severity.

3.3.3 Apron Tie-down

The Apron Tie-Down area east of Apron I was overlain with asphalt in 1996. The overlay was completed without reconstructing the underlying areas and has now failed due to settlement of the subgrade. It appears the subgrade included organics and wooden stumps which have since rotted. The area is closed to aircraft traffic and marked as a hazard with plastic cones. The area is rated as very poor.

3.4 Navigational Aids and Airfield Lighting

Comments received as part of the interviews with various stakeholders (BC Air Ambulance, Bella Coola General Hospital) indicated a preference for night operations. The CCRD has evaluated the requirement for nighttime lighting. At that time, Transport Canada rejected the need based on surrounding terrain. There is no Global Positioning System (GPS) Instrument Approach Procedure (IAP) or night procedure and it is unlikely these systems

would reduce limits to less than several thousand feet, which is not much better than current limits. At present, when an airline cannot access the airport they fly a GPS into Anahim Lake (136 km) and transfer passengers to a bus for travel back to Bella Coola (1.5 hour bus ride).

Options could include hazard beacons surrounding the airport and VFR approaches; however, one must recognize the cost for the beacons would be prohibitive and may not result in a significant change to the operational safety and/or a more reliable system, as the valley often suffers from low limits and poor visibility. The cost for hazard beacons can be relatively high. A similar project at Castlegar Airport cost in the range of \$400,000. At this time, there does not appear to be a significant cost benefit for installing navigational aids that would likely have minimum effect on aircraft operations into the airport.

There may be ways to develop a night approach for medical evacuation (medevac) helicopters but this option would have to need to be investigated further to determine if the medevac companies would even consider an IAP or night procedure with hazard beacons, vertical guidance lighting (HAPI) and a lit heliport.

3.5 Obstacle Limitations

To maintain safe airport operations, it is essential that flight paths are free from obstacles that could potentially affect aircraft safety when operating at an airport. Transport Canada Aerodrome and Recommended Practices (TP 312 5th Edition), Chapter 4, clearly defines the standards for obstacle management. The section includes standards on:

- Obstacle Limitation Surfaces (OLS)
- Precision Obstacle Free Zone (POFZ)
- Obstacle Identification Surfaces (OIS)

At present, there are obstacles (trees) within the runway approach surfaces that are compromising airport operations. Drawings provided by the CCRD (Appendix B) show the limits of tree clearing. In addition, a gravel pile is located on the north side of the runway (mid-runway). The pile is encroaching on the runway strip transitional zoning.

3.5.1 Runway Extension

In the past, the CCRD considered a runway extension to the west to accommodate a wider range of aircraft. At 4,200 ft., the existing runway length can restrict operational payloads in certain conditions (e.g., hot weather, wet runways).

One of the challenges of operating AGN IIIA aircraft like a Dash 8-300 into the Bella Coola Airport is that the valley is very narrow, and if a 180-degree turn is required it can be quite uncomfortable even in other AGN IIIA aircraft like the Beech 1900 (19 passengers) or the SAAB 340B (32 passengers). Discussions with airline personnel suggest a SAAB 340B aircraft is adequate for cargo and passengers.

The challenges of extending the runway to the west include:

- Environmental considerations: fish and wildlife habitat, and
- There is a relatively high cost for the runway construction. The continued operational constraints suggest a questionable benefit for this expenditure.

Based on the reasons noted it is not expected a runway extension will be required during the Master Plan timeframe.

The following table shows aircraft runway requirements at the airfield design temperature of 22.1°C. As shown, most aircraft common to the airport can operate without restriction using the airport existing runway length of 4,200 ft. The chart does show aircraft (blue coloured) that may use the airport that would theoretically require a longer runway length and would require weight restrictions to operate on the existing runway. The temporary displacement on Runway 05 limits the days (e.g., high temperatures) when the SAAB can operate. The table does not account for days when the runway may be wet or snow covered.

It is important to consider that calculations for runway length use a number of criterion and are very operator specific.

Examples include:

- Aircraft type, weight, engines, flap settings;
- Airport reference temperature; and
- Runway slope - the elevation difference between the runway ends.

Each of these criteria can significantly change the runway length requirement. As an example, Table 3-2 shows a SAAB 340 series aircraft at 22.1°C (airport reference temperature) requiring a runway length of 4,633 ft. for departure. At 15°C, the aircraft would need 4,327 ft., and at 30.0°C, the aircraft would require 4,974 ft.

The calculation uses International Civil Aviation Organization (ICAO) and Federal Aviation Administration (FAA) guidance materials.

Table 3-2: Aircraft Runway Requirements

Aircraft Field Length: Bella Coola Airport at 22.1 °C						
No.	Aircraft Type	Passenger Seats	Range (NM)	Reference Field Length (ft)	Adjusted Field Length (22.1°C)	Aircraft Type
1	DHC-8 Dash 8 - 100	37-40	820	3,100	3,311	Twin Engine Turboprop
2	Cessna 550 Citation II	6/10	3,260	3,450	3,685	Twin Engine Business Jet
3	Cessna 560 Citation V	8	1,760	3,160	3,375	Twin Engine Business Jet
4	DHC-8 Dash 8 - 300	50-56	878	3,600	3,845	Twin Engine Turboprop
5	Beechcraft Super King Air 350	12	1,252	3,737	3,991	Twin Engine Turboprop
6	Beechcraft 1900D	19	>1026	3,737	3,991	Twin Engine Turboprop
7	Bombardier Q400	70	1114	3,720	3,973	500 nm sector with 70 passengers
8	SAAB 340 B	34	935	4,338	4,633	Twin Engine Turboprop
9	Lockheed C130	NA	2,200	5,160	5,511	Four Engine Turbo Prop
10	Bombardier Q400	70	1114	4,600	4,913	Q400 operates out of Toronto Billy Bishop at 3,988 ft
Runway correction coefficients				Calculation Coefficients		
E=runway elevation	0.12	=>		Fe=	1.01	
G=runway gradient	-0.13	=>		Fg=	0.99	
T=temperature	22.10	=>		Ft=	1.07	
Notes:						
Calculations assume maximum takeoff weight						
Fuel is based on a requirement for the aircraft to be able to fly for 1 1/2 hours						
Accelerate Stop Distance Available (ASDA) assumes aircraft flying with one engine inoperative						
Balanced field length means the takeoff field length (TOFL) required and the one engine inoperative (OEI) accelerate stop distance are equal						

4.0 GROUND SIDE INFRASTRUCTURE

4.1 Access Roads and ATB Parking Lot

Airport Road and Phoenix Road are under the jurisdiction of the BC Ministry of Transportation and Infrastructure. The CCRD is responsible for the terminal parking lot, terminal area access roads to airfield, and the main access road starting approximately south of Lot #7 ending at Coast Copters.

There are no records of the last rehabilitation or construction for the groundside roads and parking lots. The ATB parking lot appears to have been recently chip sealed. The ATB parking lot and Airport Road and Phoenix Road are in poor condition due to age, ravelling, cracking, and potholes. The gravel parking lot west of the paved lot is in poor condition due to potholes and lack of drainage.

4.2 Services (Water and Sewer)

4.2.1 Water Supply

The Hagensborg Improvement District (HID) provides unpotable water to the airport through a 150 mm water pipe that connects to the main water line located along Highway 20. Water pressure ranges from 70 psi to 80 psi. All buildings connect to the water system. At present, the Vancouver Coastal Health Authority will not authorize further construction permits until such time potable water issues are resolved with the HID. Tenants at the airports must currently use bottled water for consumption.

4.2.2 Waste Water Sewer System

The airport does not have a community sewer system. Wastewater flows to a septic tanks and field drainage systems. The drainage field for the ATB is located east of the building. The airport drainage is poor due to a high water table and soil conditions that limit the effectiveness of the field drainage system. It is expected that a new septic system will be required if the terminal building is expanded, in order to accommodate increased terminal users and in response to more stringent environmental and health regulations.

4.3 Building Heating

Buildings are heated using heating oil. The furnaces are approximately 17 years old.

4.4 Electrical

BC Hydro and Power Authority supplies 3-phase power to the airport using overhead power lines that connect to the main power line that parallels Highway 20.

- 3-phase power to Pacific Coastal Airline Hangar
- 2-phase power to terminal building
- Single phase power to other buildings

4.5 Aircraft Fuel

The airport provides both low lead and jet aviation fuel. Shell operated the fuel station from 1979 to 1995 and in August 1995 removed three underground storage tanks (one Jet Fuel and 2 Aviation Gas (AVGAS)), associated

pipng, and a fuelling cabinet. Samples taken from five monitoring wells installed as part of the storage tank removal indicated high volatile petroleum hydrocarbon (VPH) levels exceeding regulatory guidelines. The contaminate concentration has remained relatively stable and is confined to the old Shell site.

In 1995, following the removal of the Shell infrastructure, Wilderness Airlines (now Pacific Coastal Airlines) installed two 45,000 L aboveground storage tanks; one containing Jet A fuel, and the second containing AVGAS; immediately southeast and up-gradient of the former Shell underground location. The aboveground tanks are located within an earth berm. The piping runs underground from the base of the berm to the fuel cabinet. Pacific Coastal Airlines (PCA) operates the fuel station. The AVGAS tank is now empty and is owned by Bella Coola Air, which dispenses 100LL fuel from their location farther west on another airport lease lot. The only fuel service available near the terminal building is Jet A.

In 2006, a SNC Lavalin/Morrow report³ referenced VPH concentrations from groundwater samples taken in 2003 and then again in 2005 from a series of groundwater monitoring wells located around the old Shell fuel site. **It is important to note the report incorrectly identified the CCRD as the storage tank owners.** The VPH levels were detected at higher levels in the monitoring well samples than those samples taken in mid-1999, suggesting a new source of contamination (i.e., not from the old Shell storage tanks). The report suggested the new releases were likely from existing leaking pipes.

The Canadian Environmental Protection Act, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197) regulates storage tanks located at airports. It is imperative that the CCRD require PCA to verify that the storage tanks meet all of the requirements of the regulation. The fuel operator must contract an environmental engineer to collect water samples from the monitoring wells to confirm VPH concentrations and determine whether groundwater contamination is migrating offsite. If so, the fuel operator will be required to prepare a mitigation strategy for managing contaminants.

³ SNC Lavalin, February 2006, p.3 to 5, Morrow Environmental, Evidence of Hydrocarbon Release by the Central Coast Regional District Former Shell Aviation Fueling Facility, Bella Coola Airport, Bella Coola, BC

4.6 Air Terminal Building (ATB)

The ATB was constructed in 1978 and further expanded in 1982 to the current size (3,314 ft² (30 m²)). A covered baggage shelter is located at the west end of the building (constructed in 1989). The terminal serves many functions: arrival and departure services, offices, freight/baggage storage, ticket counter space, concessions, and Nav Canada.

The terminal building is congested when a 19 seat aircraft arrives. The mixture of both departing and arriving passengers creates a very poor level of service. Air travel is important to the region and the air terminal building is an essential component of air transportation in and out of the region.

Table 4-1 shows existing terminal uses and allocated spaces. Figure 4-1 shows the existing terminal building layout.



Terminal View from Groundside

Table 4-1: Existing ATB Uses

User	Type of Use	Area (ft ²)	Area (m ²)
Main Floor			
Public Waiting	Meeters/greeters/passenger waiting	336	31
Ticket Counter	Check-in	300	28
Leased Airline Office	Ticketing and dispatch	603	56
Rented Office	For rent	160	15
Rented Office	For rent	126	12
Public Washrooms		115	11
Furnace/Electrical/Storage		128	12
Other (corridor, stairway)		586	54
Sub-Total		2,354	219
Second Floor			
Leased Office	Atmospheric Environmental Services	250	23
Rented Office/Meeting Room		518	48
Washroom		77	7
Other (corridor, stairway)		115	11
Sub-total		960	89
Total		3,314	308

Passenger processes that are applicable to passenger terminal space planning at Bella Coola include the following:

- Check-in and ticketing
- Passenger hold room
- Baggage claim
- Meeters and greeters
- Circulation space
- Baggage make-up, and baggage off load
- Offices
- Coffee shop

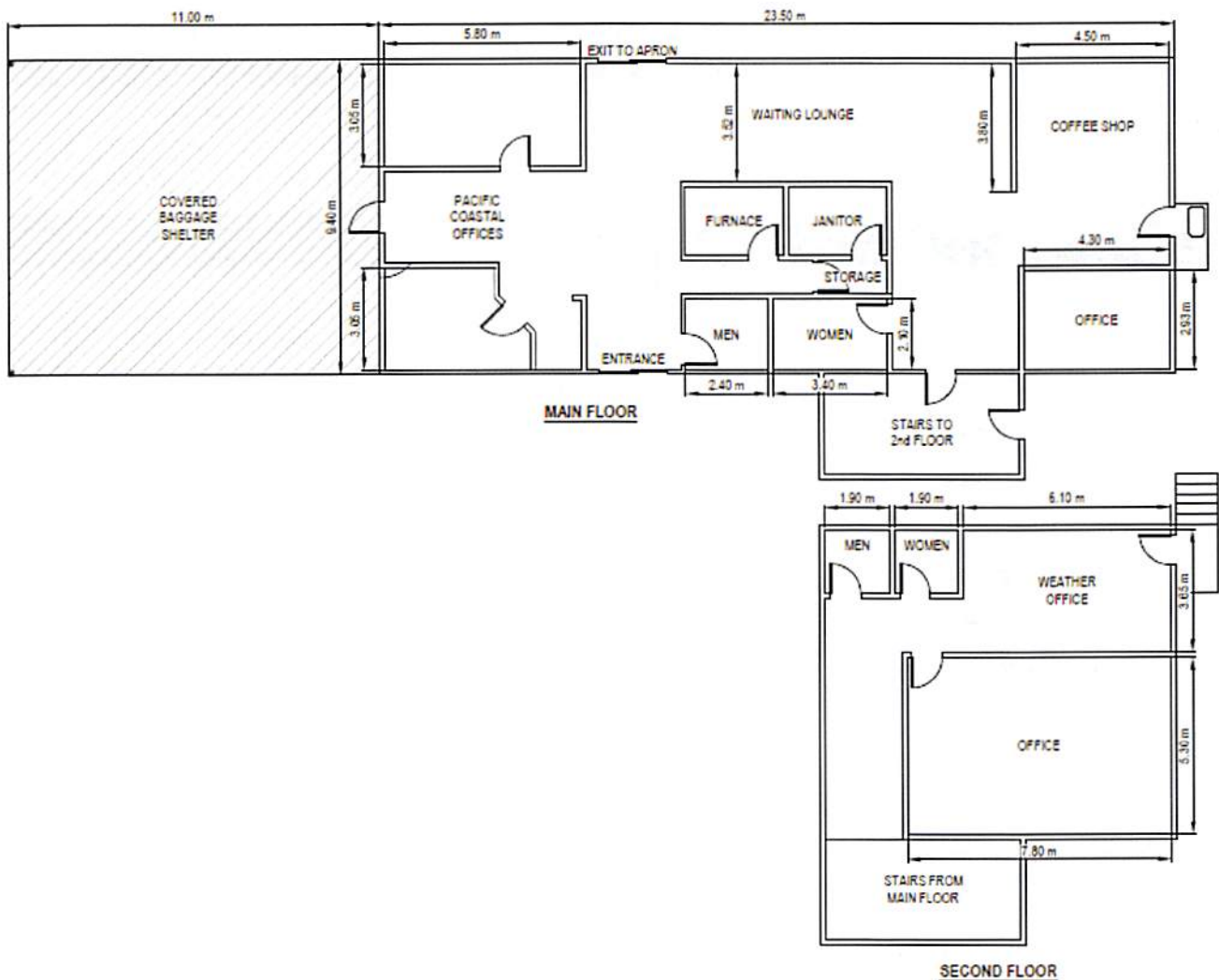


Figure 4-1: Terminal Building Layout

5.0 AIRCRAFT MOVEMENTS AND PASSENGER FORECASTS

5.1 The Airport Catchment Region

The Bella Coola Airport is located in the CCRD, the smallest regional district in BC by population.

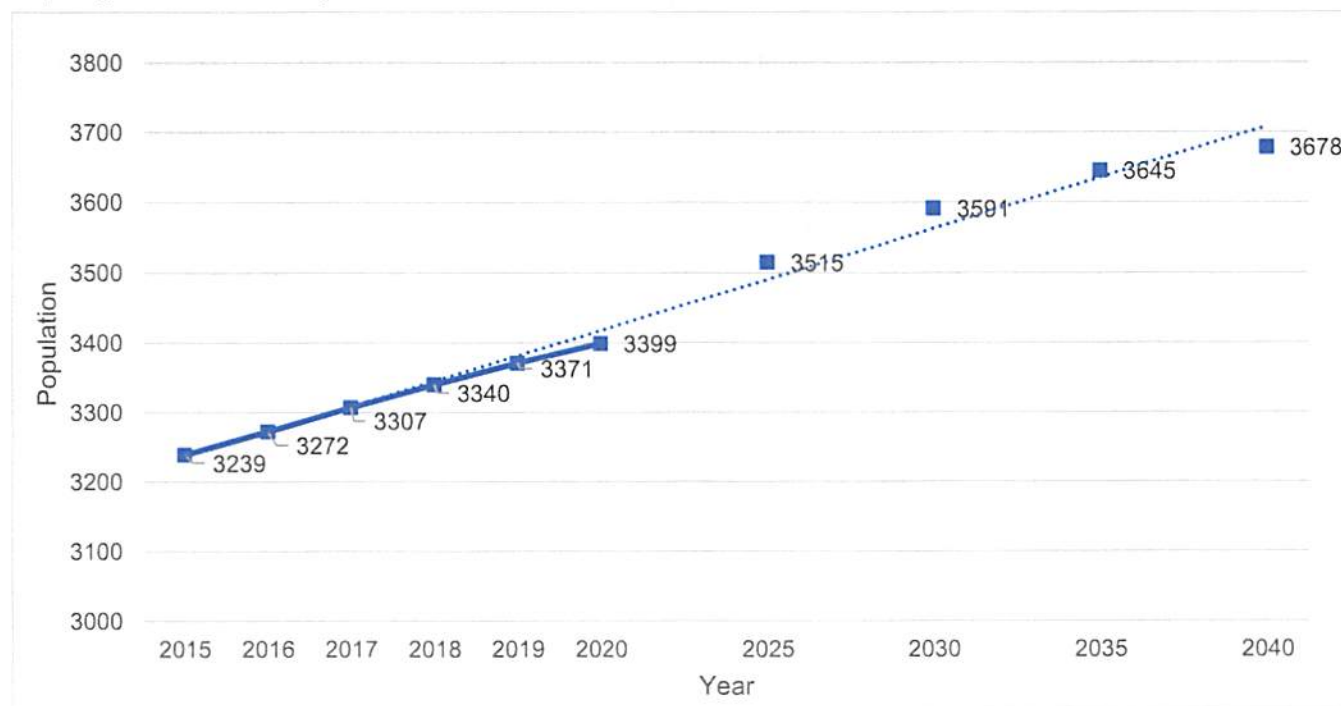
The region has a relatively small population that declined by approximately 1.0% between 2005 and 2015, as shown in Table 5-1. A number of factors are responsible, including the decline in forestry operations, the 2008 recession, and the loss of ferry service to the region. By comparison, the Province of BC's population grew by almost 12% during this period. The CCRD also includes Bella Bella, which is not part of the catchment region for the airport.

Table 5-1: CCRD Population Growth Table (2005-2015)

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
3559	3427	3326	3279	3249	3255	3277	3270	3237	3236	3239
	-3.9%	-3.0%	-1.4%	-0.9%	0.2%	0.7%	-0.2%	-1.0%	0.0%	0.1%

Source: BC Stats

Despite the population decline in the last decade, the Province projects an annual population growth of 0.6% between 2015 and 2035. The first five years of the projection, (as shown in Figure 5-1), are represented by a solid line. Data points show five-year increments following 2020. While the rate of growth appears aggressive, it reflects a relatively small base population and growth can be realized with a combination of economic growth and attraction of young families to the region.



Source: BC Stats

Figure 5-1: CCRD Population Projections

5.2 Transportation Options

Although the region is located mid-coast and not in northern BC, the Bella Coola Valley is one of the most remote regions in BC. There is limited ferry service, and driving distances are long, as shown in Table 5-2. To leave the valley to the east on Highway 20 requires driving over “The Hill” which rises from essentially sea level to the Chilcotin Plateau with a series of switchbacks. It is considered one of the most difficult highways in BC and much of Highway 20 is unpaved. The drive to Williams Lake requires 6.5 hours in good weather.

Larger urban centres such as Kamloops and Vancouver are 9.5 and 12.5 hours driving time, respectively. These distances are impractical for daily or even weekly trips.

The valley is, therefore, very dependent on air services for medical, social, and business purposes, including tourism. The Province of BC has committed to reintroducing ferry service between Port Hardy on Vancouver Island and Bella Coola in 2018. It is expected tourists will be the primary users of the seasonal service.

Table 5-2: Driving Distances from Bella Coola

Destination	Kilometres	Hours
Williams Lake	451	6.5
Kamloops	735	9.5
Vancouver	996	12.5

Source: Google Maps, 19 October 2016

5.3 Passenger Traffic and Projections

Figure 5-2 shows estimates of scheduled passenger traffic at the airport. Between 2010 and 2015, passenger traffic has grown at an annual rate of between 5 and 6.5% (approximately 30% over the five years). This is strong growth for an airport of any size, and particularly for a regional airport.⁴ Two primary reasons taken from regional interviews include:

- Increasing travel for medical purposes, and
- Inbound tourism is growing. The primary reasons relate to eco-tourism activities (e.g., Grizzly bear watching in the summer/fall and heli-skiing in the winter).

These activities explain why passenger traffic grew while population growth was flat.

As statistics are not available, a scenario approach projected passenger traffic at the airport over the next 20 years. Given the limited information, two scenarios, a base case and high growth, were developed. Assumptions used for the scenarios are as follows.

⁴ Passenger growth is imprecise because the CCRD does not keep airport statistics. These estimates are based on fees paid to the airport, and three different methods have been used to charge fees over this period.

Base Case

In this scenario:

- Population has dropped to its lowest point;
- The valley will receive incremental population growth over the 20-year planning period;
- Tourism will grow incrementally because limited services and infrastructure will not allow for rapid growth; and
- People will move to the region to enjoy its low costs, natural beauty, and outdoor lifestyle.

High Growth

In this scenario:

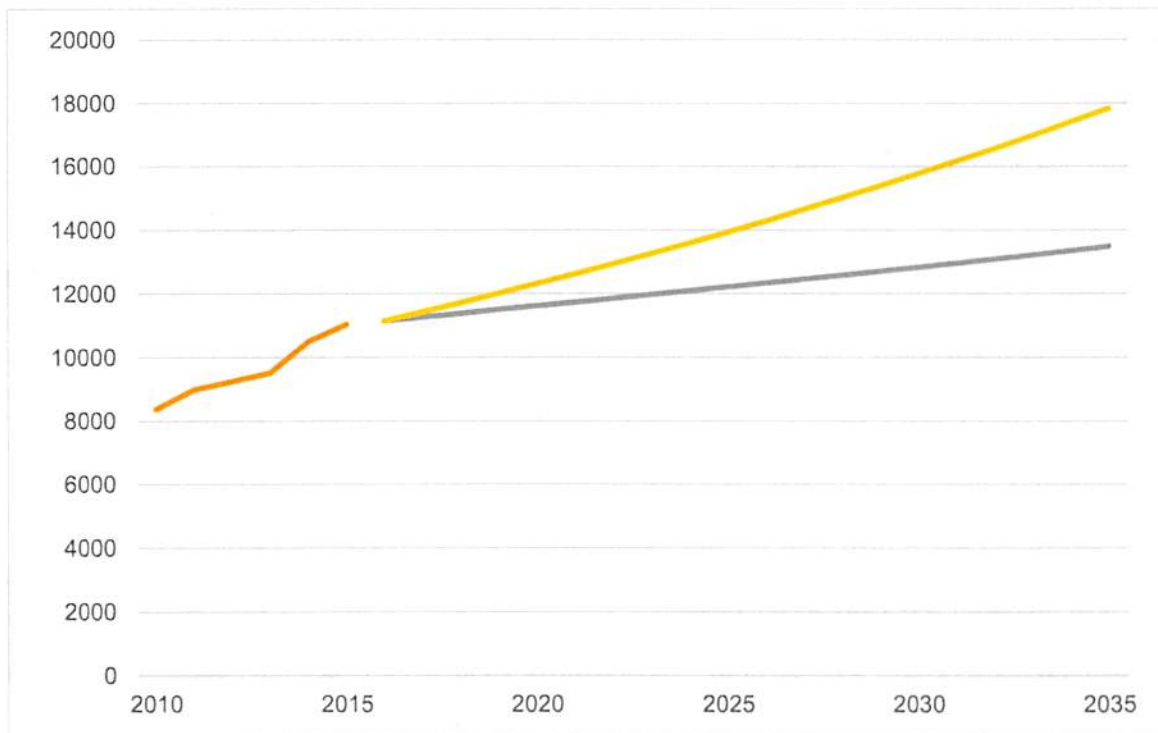
- Population will grow in line with provincial projections;
- Regional tourism will receive significant investment and increase regional services and infrastructure, leading to increased domestic and international tourism;
- The regional service industry will also grow, potentially related to green forestry or agriculture practices; and
- Economic growth will attract permanent and seasonal residents to the region.

5.4 Projections

Based on the assumptions described, the projections for the two scenarios are:

- Base Case: 1.0% average annual growth
- High Growth: 2.5% average annual growth

Figure 5-2 shows the five-year projections. Enplaned-deplaned passenger statistics count each leg of a trip as a passenger. A return trip counts as two passengers. The orange line shows the estimated actual traffic. The grey line is the base case projection and the upper yellow line is the high growth scenario. The base case projection would see passenger traffic increasing by 22% over 20 years. The high growth scenario would see growth of 61%.



Source: CCRD data

Figure 5-2: Enplaned-Deplaned Passenger Traffic and Projections (2010- 2035)

5.5 Aircraft Movements and Projections

Estimates for annual aircraft movements at the airport were also developed. As the CCRD does not keep traffic statistics, these are estimates based on interviews and published schedules. On a monthly basis, the airport supports numerous types of flights, including scheduled passenger flights, charter by fixed wing and rotary wing aircraft, medevacs, flights by government agencies, and others. Figure 5-3 shows estimated monthly activity.

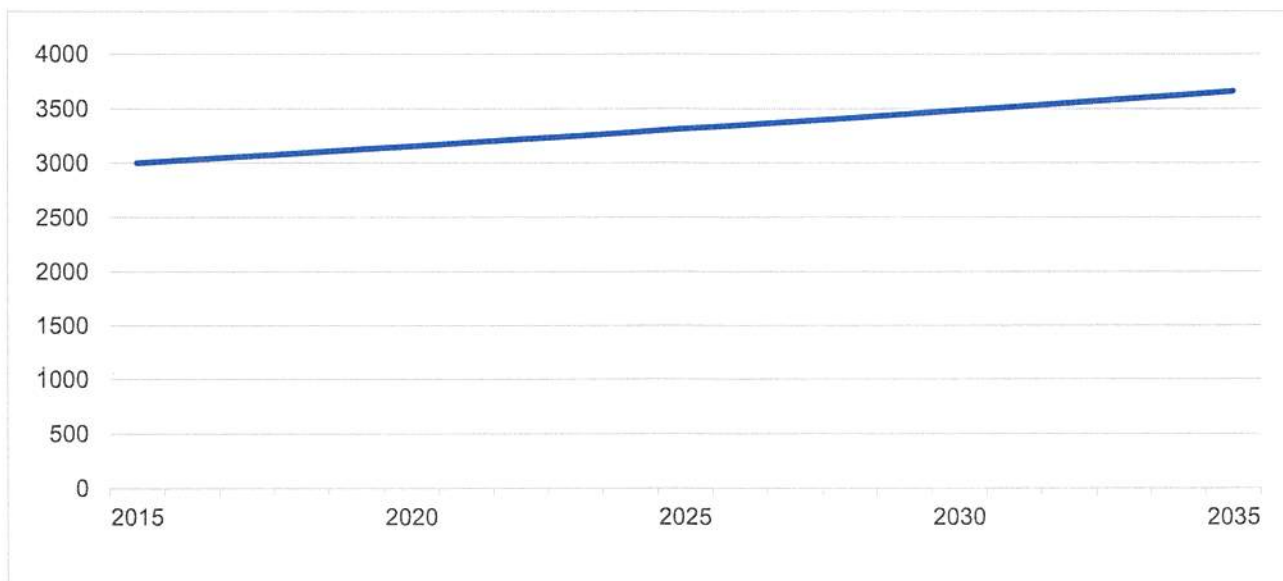
The periods of high activity are in the winter and summer when tourist activities account for multiple flights per day, weather permitting. For example, on a good day in January a helicopter may make multiple trips to and from the airport with visitors heli-skiing in the mountains.

For aircraft movements, a base projection only has been prepared. There is no data to use for estimating historic trends, although interviews point to a growth in tourism-related flight activity. Based on the annual aircraft movement projections prepared in Figure 5-3, total movements at the site are estimated at 3,000 annually. A growth rate of 1.0% is used. This is a relatively low growth rate, but the region has had a negative population growth rate in recent years, and it is unclear if the region has enough capacity to support significantly increased tourism growth. Based on this growth assumption, Figure 5-3 shows the estimated growth projection over the next 20 years.

There are only a couple of scenarios where the airport would receive a high rate of aircraft movement growth:

- The introduction of a second daily flight to the airport, at least seasonally. A Beechcraft 1900 aircraft currently serves the airport. As passenger demand appears to be increasing, the scheduled carrier can respond by using a larger seat capacity aircraft, such as a 32-seat turboprop; increasing flight frequency; or a combination of the two. Aircraft movement increases on at least a seasonal basis appear probable if passenger demand continues to increase.

- Increasing tourism demand rapidly increases helicopter movements. Tourism demand is increasing and much of it is oriented to services that support helicopter flights such as heli-skiing and flights to fishing lodges. Increasing tourism demand could therefore lead to a rapid increase in local helicopter flights.



Source: Airline Schedules and interviews

Figure 5-3: Aircraft Movement Projection

5.6 Aircraft Size

Given the passenger demand and aircraft movement trends described, one would expect airlines would continue using similar aircraft to serve the airport throughout the planning period (fixed wing aircraft of between 15 and 32 seats). If demand grows more rapidly than projected, it is probable that flight frequencies will be added rather than an increase in aircraft gauge.

6.0 STAKEHOLDER CONSULTATIONS

To support the development of the Master Plan and obtain insight from residents and stakeholders, there were two rounds of consultation. The first was in-person interviews conducted the week of October 3, 2016, and the second was telephone interviews conducted in the second half of November 2016. The intent of the consultations was to understand what is working well and what opportunities exist for site development.

6.1 In-Person Interviews

The CCRD recommended in-person interviewees. The interviewees have the requisite knowledge and experience relating to airport-related operations, use, development, and history. Table 6-1 lists the people interviewed.

Table 6-1: Stakeholder Contacts

Name	Role
Cheryl Waugh	Transportation & Land Use Coordinator, CCRD
Ken McIlwain	Public Works Manager, CCRD

Name	Role
Tanis Shedden	Community Economic Development Officer, CCRD
Megan Moody	Nuxalk First Nation, Stewardship Director
Wally Webber	Nuxalk First Nation, Chief
David Flegel	Ministry of Forests, Lands & Natural Resource Operations
Kerry Phillips	Ministry of Forests, Lands & Natural Resource Operations
Ernest Hall	Bella Coola Valley Tourism, President
Peter Mattson	President, Tweedsmuir Park Lodge
Gwyneth Anderson	Owner / operator Little Nook Cafe
Nancy Anderson	Physician / Former chair / member Bella Coola Airport
Heather Ross	Section Chief, BC Ambulance Service
Stephen Waugh	Bella Coola Vehicle Rentals
Gwen Amundsen	Nav Canada weather station
Markus Schiek	Tweedsmuir Travel

Note: The hospital was contacted but could not provide detail on medevac flights.

Those interviewed emphasized how important the airport is to the valley and how valuable improvements would be to the region. Key opportunities/issues arising from the interviews include:

- There is growing tourism and a limited capacity to provide adequate services for visitors.
- The Air Terminal Building and surrounding area is beyond capacity now when a 19-seat Beech 1900 arrives. For example, the terminal is difficult to walk through from apron to exit without literally bumping into people.
- The outside baggage area appears to have safety issues because arriving passengers stand on a road waiting for their baggage and motor vehicles are backed up to the same area where passengers stand to await their baggage.
- There has been no work on the dike since the 2010 failure. The danger of future flooding to safe aircraft operations therefore remains a concern.
- People interested in tourism development asked if, in the future, the CCRD would construct a longer and wider runway to accommodate larger aircraft (more passengers).
- People concerned with air services to support health wanted to see improvements made to the site to make night operations possible.
- Some interviewees suggested that the airport area would be a good place to develop commercial and light industrial development in the Hagensborg area.

6.2 Telephone Interviews

Additional telephone interviews provided regional business insight on opportunities and weaknesses at the airport. Interview questions are included in Appendix C. The results of the telephone interviews were similar to the comments obtained in the in-person interviews.

7.0 AIRPORT DEVELOPMENT OPPORTUNITIES

7.1 Situational Analysis

The airport is located in the midst of the Bella Coola Valley. The airport property includes the runway system and Air Terminal Building, and is zoned I2, light industrial. Figure 7-1 shows zoning on and near the airport. The green areas are zoned for agricultural, and the orange areas for residential purposes. There is one lot zoned industrial on the west side of the Airport Road, and one property zoned commercial at the north-east corner where Highway 20 and Airport Road meet.

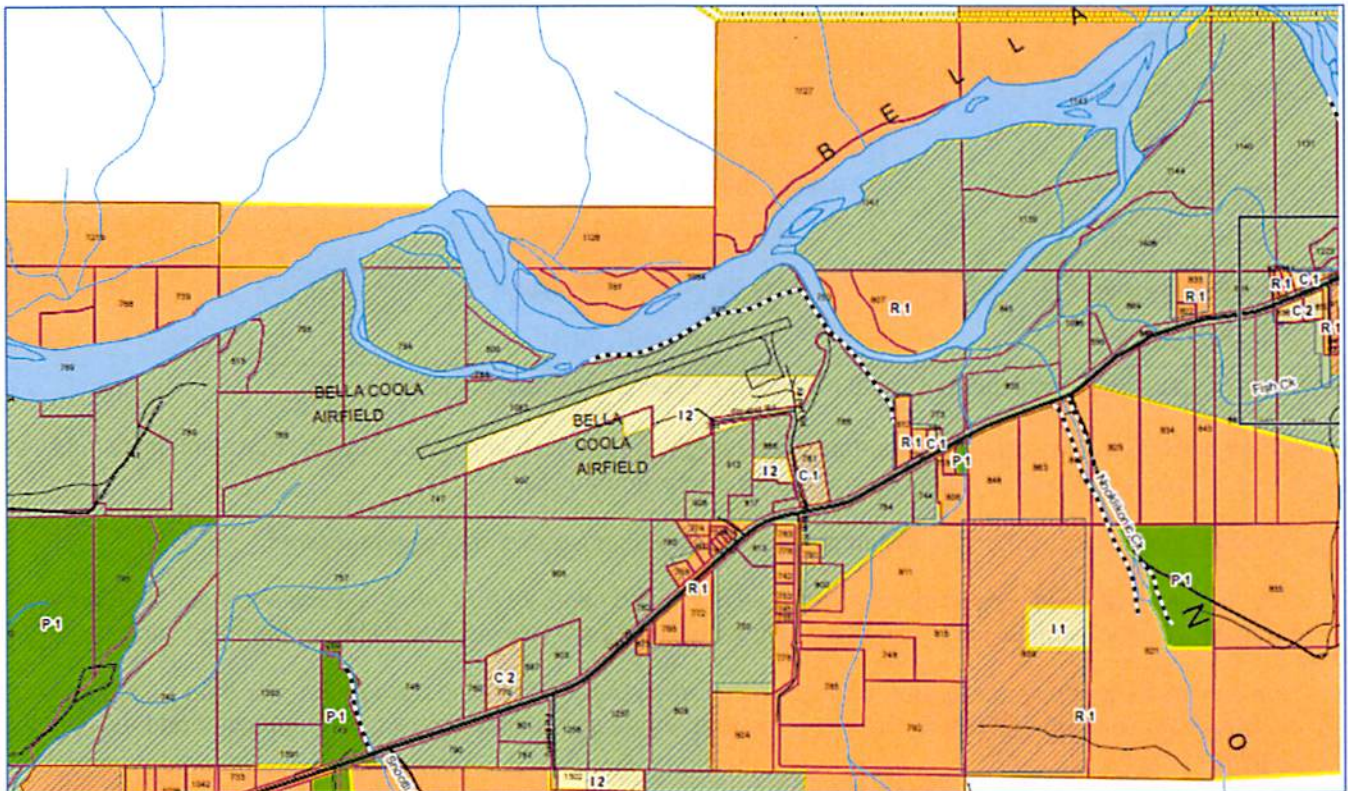


Figure 7-1: Zoning in Vicinity of Bella Coola Airport

In the coming years, commercial and industrial development is expected. At present, there are limited lands in the Hagensborg area zoned for industrial/commercial uses. The CCRD is considering the development of two industrial and commercial lots on the airport.

7.2 Land Use Plan

The Land Use Plan (LUP), Figure 7-2, provides a framework that the airport can use to guide future development at the airport over the long-term (e.g., 20 years). The drawing shows aviation, ATB and commercial and industrial development areas. Aviation-related uses define developments along existing Taxiway B.

In summary, the LUP:

- Identifies land use requirements for each airport subsystem in the plan. Common designations include airside commercial, airport operations, air terminal reserve, runway and taxiway system, airport reserve, groundside commercial, and aviation support.
- Assigns areas on the airport for use by specific facilities, based on priority. The priority approach requires a listing of airport facilities in order of priority.
- Ensures future developments proposed in the LUP will not conflict with safe airport operations. All of the work undertaken at the airport will be in conformance with Transport Canada Aerodrome Standards and Recommended Practices (TP 312 5th Edition). Transport Canada's "Land Use in the Vicinity of Airports (TP1247)" is a reference when considering appropriate land uses near airports. Electronic zoning requirements are also considered.
- Reserves land for future expansion or redevelopment (e.g., operational facilities). Lands are identified to ensure those needs are met in consideration of safe and efficient airport activities.
- Provide sufficient land for access.

Land use classifications define airport land use. Characteristics such as surrounding topography, proximity to airport services, and adjacent properties determine the most efficient use for each parcel of land. Land reserves include key aviation services, passenger, and administrative needs. Auxiliary lands are those lands not reserved for key aviation services, or lands that could serve an alternate and temporary purpose until required within the 20-year plan. Suitable guidelines for development are integral to the plan.

7.3 Development Cost Estimates

A cost estimate for each recommendation guides investment planning. The cost estimates represent Class D level cost estimates. A Class D cost estimate is preliminary, which, due to little or no site information, indicates the approximate magnitude of cost for the proposed project, based on the client's broad requirements. The overall estimates derive from lump sum or unit costs for a similar project. The Class D estimate is for developing long-term capital plans for preliminary discussion of proposed capital projects. Escalation costs are not included in future year estimates. To account for uncertainties in estimating costs without complete information (e.g., geotechnical conditions, detailed design elements), a 20% contingency and a 15% engineering fee have been added to all estimates. In the main body of the plan, all of the estimated costs are rounded. The ATB costs use a broad concept design and estimates from previous projects. An architect will design the final building expansion and verify construction costs.

This section includes a further description of development recommendations with phasing based on specific and identifiable demand triggers. Table 7-1 shows the phasing timelines for development.

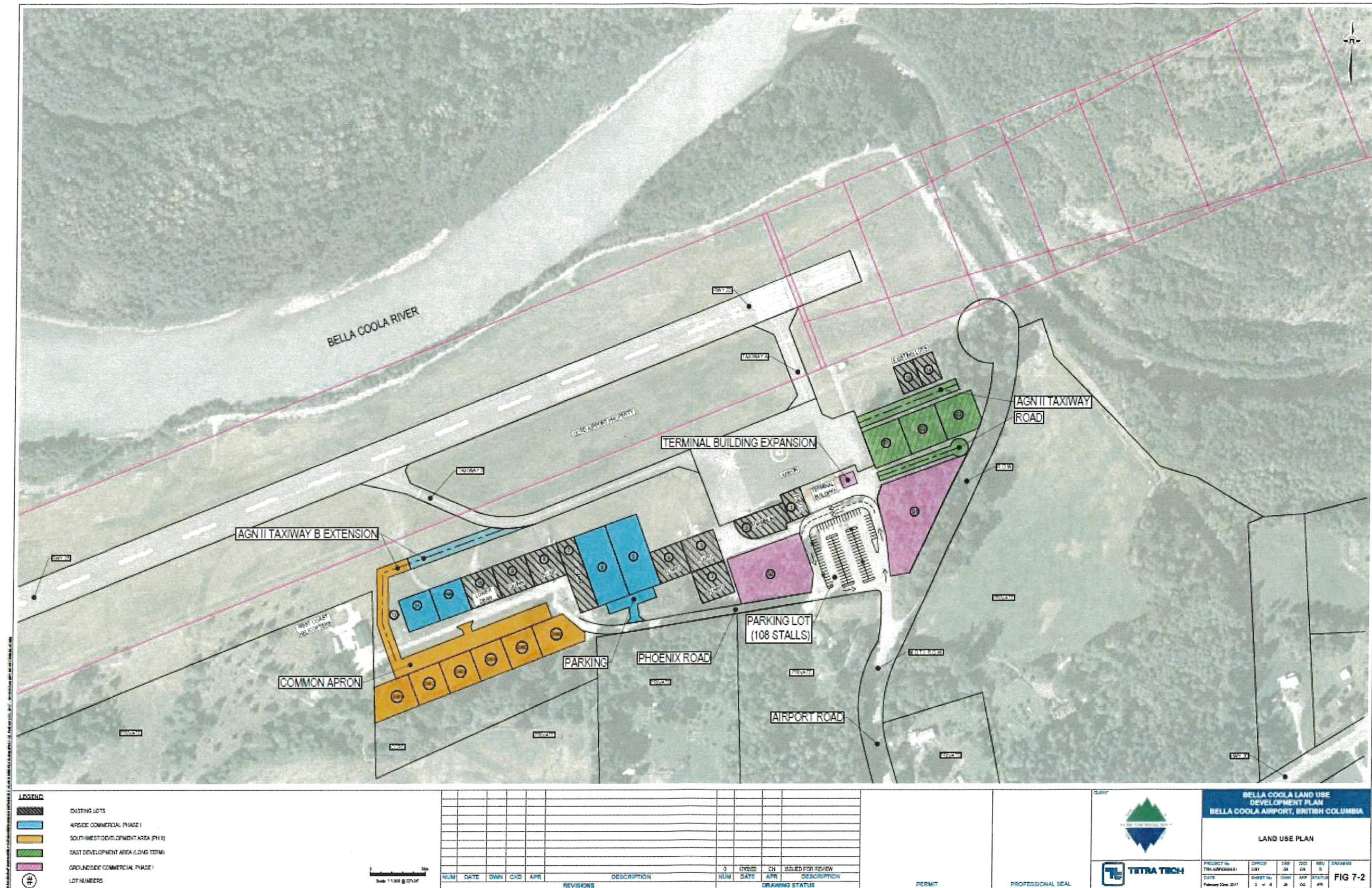


Figure 7-2: Land Use Plan

Table 7-1: Project Phasing

Phase	Planning Years
I	2017 – 2027
II	2027 - 2037
III	Future

7.4 Development Concept – General Aviation and Commercial Activity

Based on existing demand, recommendations include two development concepts.

- Aircraft hangars: possibly T-hangars (relatively inexpensive, interconnected hangars often in a T-shape to fit aircraft wings), and
- Commercial and/or light industrial buildings.

Developing hangars will support higher fuel sales at the airport while at the same time there will be more potential maintenance required (e.g., additional roadways, taxiways) in support of the developments.

7.4.1 Positioning – Markets and Clients

Over the next 10 years, commercial development will support tourism and other developments in the region, based on the interviews with businesses in the region. Potential clients will be individuals requiring hangars for personal use or businesses that require hangars with airfield access in support of their commercial business. The airport will respond to opportunities on a case-by-case basis.

7.4.2 Site and Building Requirements

The proposed hangar development at the airport will occur using lot infill along the existing hangar line. The proposed hangars will be roughly the size of existing hangars (e.g., 1,290 ft² (120 m²)).

The proposed development of commercial/light industrial lots would be on the south side of the airport lands adjacent to Airport Road. A typical industrial/commercial building for this type of site will be approximately 10,000 ft². The projection assumes the development of two buildings over the next 10 years.

For illustration purposes, the lots shown on Figure 7-3, along the extended Taxiway B range from 0.09 ha to 0.20 ha in size. The lots shown in the Southwest Development Area are 0.09 ha to 0.12 ha in size. Lots can be divided for smaller lots or combined for larger lots based on user demand.

The CCRD should plan for lot and support development as and when demand warrants.

7.4.3 Capital and Revenue Assumptions

All costs associated with lot development at the airport will be cost recovered. This means that capital and operating expenses will be included in the lease agreement. Table 7-2 discusses revenue and cost assumptions.

Table 7-2: Revenues and Costs Assumptions

Item	Assumptions
Annual leasing rate / ft ²	\$0.205 - rate for new leases. Lease rate to increase at the rate of the Consumer Price Index (CPI) in subsequent years.
Property Taxes	\$10 per year per \$1,000 of assessed value

7.4.4 Marketing Strategy and Promotion

The CCRD should integrate airport marketing with regional tourism and economic development marketing. The airport is important to residents and business interests in the region. Airport management responsibilities should include marketing lands and opportunities that relate to the Bella Coola Airport.

7.5 Air Terminal Building

When assessing terminal operating constraints and future expansion, it is important to keep in mind the fine balance between the level of service (LOS) expected by the traveling public and efficient operations at a minimum cost.

LOS, in the context of terminal planning, is a generic term that describes, either qualitatively or quantitatively, the service provided to airport travellers at various points within the passenger terminal building. It often relates to the degree of congestion or crowding experienced by a traveller at the passenger and baggage processing facilities in the terminal building. It may also be a measure of the amount of waiting or processing time, or length of the queues or lines encountered by such travellers.

A terminal is a series of processors, reservoirs or holding areas, and links or corridors. In the mid to late 1970s, Transport Canada developed the concept of LOS, as applied to airport terminal design. Airports Council International (ACI) and the International Air Transport Association (IATA) have since adopted the concept. The Airport Cooperative Research Program (ACRP) conducted a study entitled Report 55 - Passenger Level Service and Spatial Planning for Airport Terminals in 2011.

The research concluded passengers want easy access to information about flight status, signage clarity, and amenities that allow them to use their time productively or to relax and enjoy an escape from the demands of travel and that larger space by itself does not always generate increased passenger perception of a high quality level of service. IATA LOS C standards are still valid after 38 years and the observations included in Report 55 support the validity of continuing to use this LOS. Space should be planned using the necessary numbers of processing elements to achieve acceptable wait times and the LOS C guideline for a design year. Specifically, facilities should be designed with a space planning factor greater than LOS C (e.g., LOS B) but grow into LOS C as demand increases and the facility nears the passenger loads expected for the design year. It is with these principles in mind that a terminal planning recommendation is developed. One must, however, be cognizant of smaller airports and the typical use of the terminal (e.g., perhaps only a couple of times daily). Table 7-3 summarizes airline requirements for "world class" passenger terminals for processes that are present at a typical airport. These requirements assess the levels of service in terms of queue times and space allocations.

Table 7-3: Level of Service Definitions

Level of Service	Definition
A	An excellent level of service. Conditions of free flow, no delays and excellent levels of comfort
B	High level of service. Conditions of stable flow, very few delays and high levels of comfort
C	Good level of service. Conditions of stable flow, acceptable delays and good levels of comfort
D	Adequate level of service. Conditions of unstable flow, acceptable delays for short periods of time and adequate levels of comfort
E	Inadequate level of service. Conditions of unstable flow, unacceptable delays and inadequate levels of comfort.
F	Unacceptable level of service. Conditions of cross-flows, system breakdowns and unacceptable delays; an unacceptable level of comfort

Table 7-4 identifies planning standards and potential space allocations for expanded terminal design.

Table 7-4: IATA Planning Standards and Bella Coola Terminal Design

Terminal Process	IATA Planning Standard Typical Busy Day	Recommended Practices
Check-in	<p>IATA Standard</p> <p>Business Class – Maximum queuing time of 3-5 minutes.</p> <p>Economy Class – Maximum queuing time of 15-20 minutes.</p> <p>Tourist (Charter/No frills) Class – Maximum queuing time of 25-30 minutes.</p> <p>Seating for 5% of passengers.</p> <p>Bella Coola Design: Assume one check-in counter is required to serve 32 passengers</p>	Special counters for handling oversized baggage.
Hold Room	<p>IATA Standard</p> <p>Space – 1.2 m² per passenger standing and 1.7 m² per passenger seated.</p> <p>Seating – 70% of passengers should have seating.</p> <p>Meeters/Greeters: Space – 1.7 m² per passenger and greeter.</p> <p>20% of space for seating.</p> <p>Bella Coola Design: using a 19-passenger aircraft the hold room is designed to accommodate 19 passengers plus 50% of passengers as guests which would equal 27 individuals. 70% of the persons would be seated and 30% standing. The 32 seat aircraft would see 48 persons requiring room to circulate.</p>	

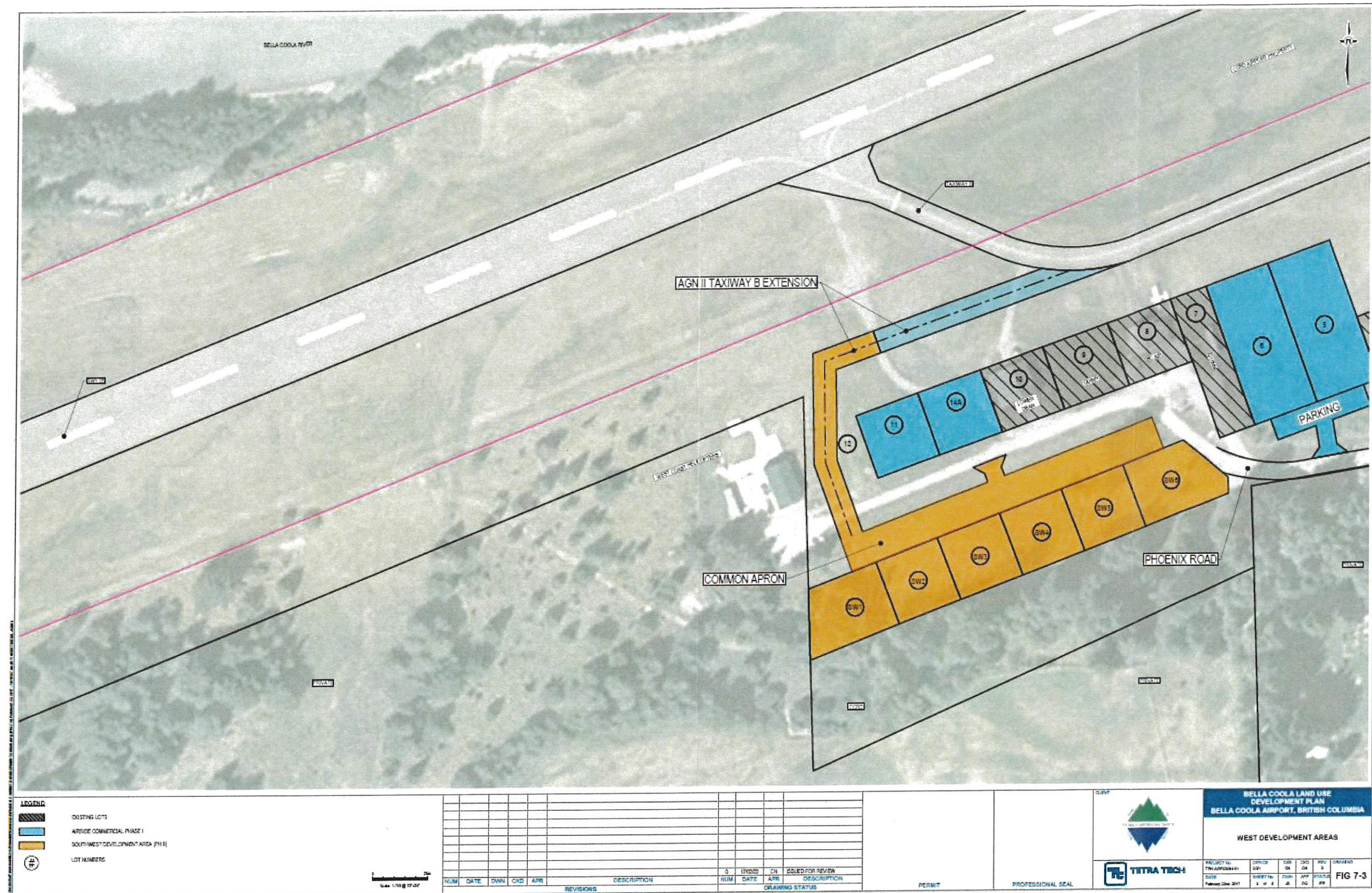


Figure 7-3: West Development Areas

Terminal Process	IATA Planning Standard Typical Busy Day	Recommended Practices
Baggage Claim	<p>IATA Standard <i>Space – 1.7 m² per passenger, (excluding baggage claim unit)</i></p> <p>Bella Coola Design: assume all baggage is taken to the baggage claim area and there is space for all passengers (1.7 m² per passenger)</p>	
Airline Offices	<p>IATA Standard <i>10 m² per staff member</i> <i>Rule of thumb - # of check-in counters x 100 m²</i></p> <p>Bella Coola Design: Basic adjustment of offices to the west as part of the open baggage area infill.</p>	<p>Sufficient space to lease to airlines and alliances.</p> <p>Located reasonably close to check-in.</p>
Coffee Shop	<p>Bella Coola Design: Assume the coffee shop is roughly double in size. Assume 80% of passengers use the coffee shop and 70% are seated.</p>	

7.6 Future ATB Needs

At present, there are approximately five tenant employees at the ATB. Airlines typically use a 19-seat sized aircraft (Beechcraft 1900) to serve this market. As detailed previously, the reason for this choice is largely due to runway approach limitations. On occasion, airlines will use a larger (SAAB 340), 32-seat aircraft, particularly during prime tourist season. The existing terminal building is constrained, particularly when large 32-seat aircraft arrive, and therefore does not provide a desirable LOS.

Improving the level of service and quality of experience in this terminal is particularly important because the projected passenger growth at this site is related largely to medical needs and international tourism, and these patients/visitors expect a high level of service. As the terminal is the primary gateway into the region for international tourism, the experience of passengers in the ATB will have a significant impact on their experience of the region. For all these reasons, ensuring a high level of service at the site is important.

Table 7-5 estimates the optimum building size to accommodate 32 passengers, staff, and meeters/greeters (Reference Figure 7-4).

Table 7-5: Future ATB Uses

User	Type of Use	Existing (Based on actual measurements)		Space Needed for 32 passenger aircraft	
		Area (ft²)	Area (m²)	Area (ft²)	Area (m²)
Main Floor					
Public Waiting	Meeters/greeters/passenger waiting	334	31	699	65
Airline Office	Ticketing and dispatch Assume 8 staff and one active counter - 2 counters for 32 passenger service	587	54.5	915	85
Coffee Shop		183	17	323	30
Passenger Flow Areas		253	23.5	334	31
Office	For rent	129	12		
Public Washrooms		129	12	131	12
Furnace/Electrical/Storage/Janitor/Hallway		161	15	140	13
Other (corridor, stairway)		581	54		
Baggage Claim	Assume 30% have carry-on. Includes a conveyor			807	75
3 new offices				495	46
Additional Washrooms	One Men and One Women			161	15
Sub-Total		2,357	219	4,005	372
Baggage Claim (estimated outdoor)		1,113	103		
Second Floor					
Office	Atmospheric Environmental Services	237	22		22
Office/Meeting Room		441	41		41
Washroom		86	8		8
Other (corridor, stairway)		194	18		18
Sub-total		958	89		89
Total	Includes open outdoor baggage area	3,315	308	4,962	461

The concept of LOS is an aggregated framework used for the design and expansion of facilities as well as for monitoring of existing facilities. The new 10th Edition of the International Air Transport Association (IATA) Airport Development Reference Manual (ADRM) (2014), a joint effort between IATA and Airport Council International, introduces a new definition for the LOS. Balancing investment decisions with LOS is a complex management and policy decision. In the new 10th Edition ADRM, the LOS definitions comprise three levels.

Table 7-6: IATA – ACI Level of Service (LOS) Definitions*

Level of Service	Space	Times
Overdesign	Excessive or empty space	Overprovision of resources
Optimum	Sufficient space to accommodate the necessary functions in a comfortable environment	Acceptable processing and waiting times
Suboptimum	Crowded and uncomfortable	Unacceptable processing and waiting times

* IATA Airport Development Reference Manual, 10th Edition, Effective March 2014

The expansion of the terminal will be a high priority so that the CCRD can provide a suitable terminal building to accommodate future passengers. Our concept drawing, Figure 7-4, shows an optimum space allocation to accommodate potential passengers.

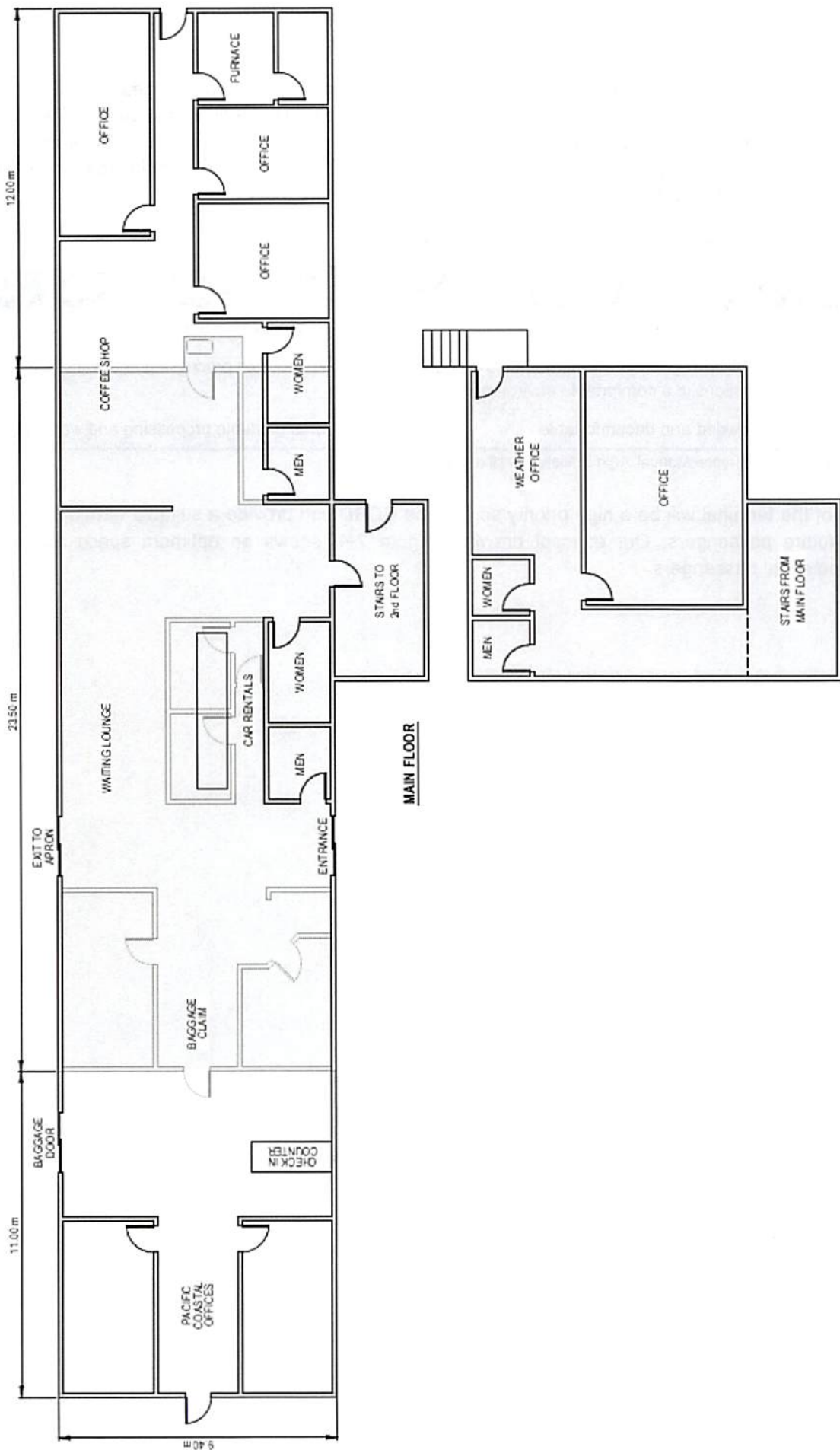


Figure 7-4: Future Terminal Floor Plan (Concept)

Table 7-7: ATB Expansion Capital Costs

Development Phase	Project Work	Estimated Cost
I	Expand the terminal building by 1,650 ft ²	\$756,000
I	Expand the field septic system	\$76,000
	Total Terminal Expansion Costs	\$822,000

7.6.1 Groundside Access and Parking

The existing access road and parking lot is in poor condition and requires rehabilitation. One of the challenges with the existing parking lot is that there is not a good access flow for individuals who are dropping off passengers at the terminal building.

The new parking lot design (Figure 7-5) shows a reconfigured parking lot with approximately 108 stalls and a defined terminal access road (8 m wide). The parking lot construction phasing can be demand based. As an example, if one assumes an arriving full 32-seat aircraft with a similar number of departing passengers there would be a potential 64 individuals, not including staff. Based on the distance from the town and the lack of public transit it is assumed 30% of the passengers are picked up or dropped off and that there would therefore be a requirement for a queuing area for roughly 10 cars. The number of parking stalls required would then be in the range of 42 passenger stalls and 15 staff stalls (including car rentals) for a total of 57 stalls.



View of Airport Road and Terminal Parking

In this scenario, only 50% of the parking lot will be constructed in Phase 1. There are economies of scale in construction so it may be prudent to construct the entire parking lot in one season.

Table 7-8: ATB Expansion Capital Costs

Development Phase	Project Work	Estimated Cost
I	Expand the terminal parking lot (50 stalls)	\$146,000
II	Expand the parking lot (58 stalls)	\$125,000
I	Rehabilitate the existing access road (west end)	\$147,000
I	Rehabilitate the existing Airport Road and Phoenix Road (Province)	\$209,000



Figure 7-5: Terminal and East Development Areas

7.7 Airfield

7.7.1 Runway, Taxiways, and Aprons

Runway 05-23, Taxiway A, Taxiway B, Apron I, Itinerant Apron

Proper maintenance (e.g., annual crack filling and sealing) of the runway, taxiways, and main aprons will extend the pavement lifecycle and rehabilitation is not required for approximately five years. The airport is eligible for Transport Canada ACAP funding and, as such, it is recommended the CCRD move forward with applications for funding as it can take several years for a project to be funded.

Aircraft Tie-down Area

The tie-down area east of Apron 1 is in very poor condition and will require immediate reconstruction to remain useable. The CCRD should consider the need for this area to determine when the area is re-constructed. As noted in the condition assessment (Appendix A) the tie-down area is currently unusable.

Table 7-9: Airfield Capital Costs

Phase	Project Work	Estimated Cost	TC Share	CCRD Share
I	Rehabilitation of Runway 05-23	\$2,425,000	\$2,425,000	\$0
I	Rehabilitation of Taxiway A	\$97,000	\$97,000	\$0
I	Rehabilitation of Taxiway B ¹	\$225,000	\$0	\$225,000
I	Rehabilitation of Apron I	\$404,000	\$404,000	\$0
I	Rehabilitation of Itinerant Apron	\$170,000	\$170,000	\$0
I	Tie-down Area rehabilitation ¹	\$339,000	\$0	\$339,000
	Total Airfield Costs	\$3,660,000	\$3,096,000	\$564,000

1. Rehabilitation of these areas is not covered under the Transport Canada ACAP because the taxiway and apron are used for non-commercial purposes

7.7.2 Obstacle Removal on Runway Approach and Transitional Surfaces

To maintain safe operations it is necessary to remove all trees that are penetrating the approach surfaces to the main runway and to remove or reconfigure the gravel pile to meet the transitional zoning requirements on the north side of the runway.

Table 7-10: Obstacle Removal Capital Costs

Development Phase	Project Work	Estimated Cost
I	Remove all trees penetrating the runway approach surfaces	\$381,000
I	Reconfigure gravel pile	\$93,000

Note: Cost estimates provided by the CCRD.

7.7.3 Dike Rehabilitation

Dike rehabilitation will be required at some point to prevent airfield flooding and maintain ongoing safe operations at the airport. As described in Section 1.4, the Kerr Wood Leidal study recommended that the final design for the existing dike provide containment at the end of the runway to prevent future flooding.

The dike is outside CCRD jurisdiction. The valley has approximately 15 flood protection structures, originally developed and maintained by the province and then abandoned. The dikes are now referred to as “orphaned” dikes. In order for the CCRD to perform works on any dike, it must become a diking authority. This is a substantial and expensive undertaking.

In 2013, the CCRD began the process of forming a local diking authority (service area), specific to the Bella Coola Airport dike upgrade. Although 2/3 funded by outside agencies, it still required borrowing a significant sum to fund the remainder of the project. A referendum was held and it was soundly defeated by the voting population. The design and construction information developed by Kerr Wood Leidal was commissioned in anticipation that the airport dike upgrade would proceed. The CCRD had identified the airport facility as a critical infrastructure asset and desired to take steps to secure the facility through anticipated flood events.

Table 7-11: Dike Capital Costs

Development Phase	Project Work	Estimated Cost
I	Rehabilitate dike at key areas of the airport to prevent flooding	\$1,950,000

Note: Costs were taken from the 2013 study.

7.8 Airport Development

7.8.1 Hangar Developments along Taxiway B (Phase 1)

The initial development includes the construction of four lots (Lots 5, 6, 11, and 14A) along Taxiway B as indicated on Figure 7-3. To access the lots there will be a requirement to construct a short extension to Taxiway B, reconstruct portions of the existing access road and construct a new access to two of the development lots.

Water lines and electrical lines extend from existing services for development lots requiring these services. All services terminate 1 m inside the property line. Prospective developers are responsible for site construction (e.g., septic fields, service connections, access and parking, aprons).

7.8.2 Commercial/Industrial Lots along Airport Road – Phase 1

Figure 7-5 shows two commercial/industrial lots (G1 and G2) located east and west of the ATB parking lot. Water lines and electrical lines extend from existing services for those development lots requiring these services. All services terminate 1 m inside the property line. Prospective developers are responsible for site construction (e.g., septic fields, service connections, access and parking, aprons).

7.8.3 Southwest Development Area – Phase 2

Figure 7-3 shows a development area south of Phoenix Road and Lots 10 and 11. The development in this area will provide six lots (SW1 to SW6) (approximately 0.09 ha to 0.12 ha in size). The concept will require a taxi extension from the main Taxiway B crossing Phoenix Road. A common apron will provide aircraft parking on the north side of the lots. Access to the lots would be from a single access connecting Phoenix Road. Services will connect to existing services lines along Phoenix Road.

7.8.4 East Development Area – Future

Figure 7-5 shows potential long-term development in the East Development Area (east of ATB). The concept will provide for three lots (Lots E1 to E3), (0.12 ha in size). Access would be near the ATB drop-off areas and services would connect to existing services along Airport Road. It is recognized this is a heavily wooded area that would require extensive clearing and lot preparation.

Table 7-12: Airport Development Costs

Development Phase	Phase 1	Phase 2	Future
Hangar Lots (Lots 5,6,10 and 11)			
Access Roads	\$149,000		
Servicing	\$76,000		
Taxiway B Extension	\$277,000		
Commercial Industrial			
Lot preparation	\$155,000		
Servicing	\$41,000		
Southwest Development Area Lots SW1 to SW6			
Taxi Extension		\$152,000	
Lot Clearing		\$114,000	
Common Apron		\$282,000	
Servicing		\$192,000	
East Development Area Lots E1 to E3			
Taxi Extension			\$175,000
Lot Clearing			\$91,000
Access Roads			\$111,000
Servicing			\$122,000
Total Costs	\$698,000	\$740,000	\$499,000

8.0 COMPARISON OF FEES AND CHARGES AT AERODROME FACILITIES

In Canada, a wide range of airport fees are being charged due to different airport operating models. Understanding the range of fees is difficult because most airports no longer publicly publish their fees, and they are hidden in the ticket price or applied directly to pilots. Many airports charge a variety of land, terminal, passenger, and other fees, as well as non-aeronautical fees and revenues. Some airports have simplified their fees related to passenger flights to a simple per passenger fee to make this easier.

The one exception to this is Airport Improvement Fees (AIFs). AIFs are fees that are used only for improvements to an airport, and thus the name. To charge an AIF requires going through a formal process directly with Air Canada, WestJet, or an air carrier, with the air carriers charging it. The airport and the air carrier enter an agreement and the air carriers receive a percentage of the fee for collecting it on behalf of the operator. AIFs are comparable because they are all for capital improvements and Air Canada keeps a list of them. This list does not provide a complete overview of all fees charged by airports but provides a benchmark for capital fees alone. The AIFs listed range from \$40 per passenger at Bathurst, New Brunswick, to \$4 per passenger at Kingston, Ontario. The Air Canada list includes 71 airports. Of these, two airports charge more than \$30 per passenger, four charge \$30, and 33 charge between \$20 and \$29 per passenger. In other words, 55% of airports charge \$20 or more for AIFs alone.⁵ This does not cover all charges to air carriers, just AIFs.

Comparable BC airports supporting populations of less than 10,000 people have been chosen, and are shown in Table 8-1 below, and the complete fee by-laws for the airports are shown in Appendix D. The communities chosen, in alphabetical order, are Anahim Lake, Ft. Nelson (Northern Rockies), Massett, Quesnel, Smithers, Tofino, and Trail. Three of the airports are supported by populations of over 5,000: Quesnel, Smithers, and Trail. (Trail also has a population of less than 10,000 but the surrounding area has a population of approximately 60,000.) All of these airports are certified and have scheduled air carrier service. Of these airports, only one – Smithers – has air service from a network air carrier (Air Canada, WestJet).

Table 8-1: Comparable BC Airports

Airport	Certified	Regional Population over 5,000
Bella Coola	Y	
Anahim Lake	Y	
Ft. Nelson	Y	
Masset	Y	
Quesnel	Y	Y
Smithers	Y	Y
Tofino	Y	
Trail	Y	Y

8.1 Comparator Airport Fees

The fees for these airports vary considerably based on the financial arrangements of the organization that runs the airport and the financial needs of the site. The types of fees charged at these airports are shown in Table 8-2 below. Six of the eight airports charge per passenger fees, varying from a low of \$7 per return passenger to a high of \$50 per return passenger. Two of the airports charge no per passenger fee. All of the airports charge landing fees though these vary. Two of the airports charge terminal charges for use of the terminal. The structure and fees vary significantly. The highest fees are at Smithers and the lowest fees are at Anahim Lake. It is clear that some of these communities significantly subsidize their airports operations. The fees charged Anahim Lake and Trail are insufficient to sustain ongoing operations on their own.

⁵ https://www.aircanada.com/content/dam/aircanada/portal/html/dialog-box/additional-charges-in%20my-fare_en.html

The differing approach to fees results in significantly different fees per flight. The fees per flight for a 19-seat aircraft with 19 arriving and departing passengers vary significantly, from \$20 per flight to \$1,041, a \$1,021 variance. The average total fees charged per two-way flight is \$392, or \$10.32 per one-way passenger.

Table 8-2: Fees at Comparable BC Airports

Airport	Per Passenger Fees (Enplaned/ Deplaned)	Return passenger total fees	Landing fees	Terminal Charges	Fees for 19 return passengers on a 19-seat aircraft*
Bella Coola	\$7 / \$0	\$7	Y**		\$133
Anahim Lake	\$0 / \$0	\$0	Y		\$20
Ft. Nelson	\$32 / \$0	\$32	Y***		\$653
Masset	\$12 / \$12	\$24	Y		\$486
Quesnel	\$12 / \$12	\$24	Y	Y	\$551
Smithers	\$25 / \$25	\$50	Y	Y	\$1,041
Tofino	\$5 / \$5	\$10	Y		\$214
Trail	\$0 / \$0	\$0	Y		\$38

* Assumes MTOW (maximum take-off weight) of 7,530kg

** Landing fees not charged to scheduled flights

*** Only aircraft with fewer than 10 passengers pay landing fees

The two-way passenger charge replaces terminal and landing fees. Other airports (e.g., Smithers) charge a complex mix of terminal and landing fees. These vary by size of aircraft, rather than number of passengers.

9.0 CAPITAL FUNDING SOURCES

As the CCRD considers capital investments, it is important to evaluate the types of federal and provincial funding that may be available. There is federal funding via the Airport Capital Assistance Program (ACAP), and provincial funding via the BC Air Access Program (BCAAP), as well as other funding sources from time to time.

9.1 Airport Capital Assistance Program (ACAP)

ACAP funding provides for projects required to meet an airport's required level of safety. In order of priority:

- **First Priority:** Safety-related airside projects, such as:
 - Rehabilitating runways, taxiways, and aprons;
 - Runway, taxiway, and apron lighting;
 - Visual aids;
 - Sand storage sheds;
 - Utilities to service eligible items;
 - Site preparation costs, including directly related environmental costs;

- Aircraft firefighting equipment required by regulation; and
- Shelters for parking aircraft firefighting vehicles.
- **Second Priority:** Heavy airside mobile equipment (safety related) such as:
 - Runway snow blowers;
 - Runway snowplows;
 - Runway sweepers, spreaders;
 - Winter friction testing devices; and
 - Heavy airside mobile equipment shelters.
- **Third Priority:** ATB/groundside (safety related) such as:
 - Sprinkler systems;
 - Asbestos removal; and
 - Barrier-free access.

Rarely are third priority projects funded.

For ACAP funding approval the airport must show that the airport cannot self-finance the project, and provide audited financial statements for the airport for the past three years.

For ACAP funding approval the project must maintain or improve safety; meet accepted engineering practices; and be justified, based on current demand.

Based on the Bella Coola passenger volumes, the airport could receive up to 100% funding for approved projects.

9.2 Building Canada Fund – Communities Component (BCFCC)

The Communities Component of the Building Canada Fund targets projects in communities with populations of less than 100,000. The fund recognizes the unique infrastructure needs of Canada's smaller communities and focuses on projects that meet environmental, economic, and quality of life objectives.

The program promotes regional economic development by improving the efficiency of regional and local airports while mandating high levels of safety and security. Subcategories for funding include construction projects (e.g., runways, taxiways, aprons, hangars, lighting, Nav Aids, maintenance sheds, mobile equipment, ATB, and groundside safety related projects) as well as non-aeronautical infrastructure (e.g., groundside access, parking, and commercial and industrial activities). Funding for some of these projects is eligible under the ACAP program and may be considered as part of a larger project by the BCFCC. Funding is based on an equal matching of funds from the federal government and 33.33% from local interests.

In general, the project must promote regional economic development (i.e., number of new carriers, new business operating at the airport) and/or increase traffic volume (e.g., number of passengers, cargo). A board resolution in support of the project must be submitted with the application.

Some of the projects funded relate to stormwater management (Dawson Creek, BC), development of hangars (St. Thomas, ON) and an Airport Operations Building rehabilitation (Windsor, ON).

9.3 BC Air Access Program

The BC Air Access Program (BCAAP) offers funding to assist BC airports improve their infrastructure. The program supports airport investment in safety and infrastructure enhancements. The BCAAP generally requires funding partnerships with other government agencies and the private sector. The program considers infrastructure rehabilitation and new projects. BCAAP's share will not exceed 75% for rehabilitation projects or 50% for new projects. The program considers submissions offering multi-year projects to enable phasing of construction and funding. In 2016, Bella Bella Airport received \$500,000 towards air terminal building development.

10.0 OPERATIONS AND EXPENSES

10.1 Historic Budget

Table 10-1 shows the Bella Coola Airport 2015 budget. For both revenues and expense, the final column shows the percentage of the total. In 2015, the airport had revenues of \$70,000 and expenses of \$113,000, for a net operating loss of \$43,000. That is 61% of revenue, a significant gap. For a certified airport, both revenue and expenses are relatively low.

Table 10-1: Historic Budget, 2015

Item	Total	%
REVENUE		
Fuel (per litre charge)	\$3,797	5.4
Ground Leases	\$8,858	12.6
Landing & Improvement Fees	\$31,752	45.3
Terminal Rents	\$25,109	35.8
Rentals	\$575	0.8
Other Revenue	\$25,412	36.3
Total Revenue	\$70,090	
EXPENSE		
Administration Fees	\$20,000	17.7
Small Capital	\$20,764	18.3
Insurance	\$3,280	2.9
Maintenance	\$7,248	6.4
Airstrip Inspections	\$9,000	7.9
Heating Fuel	\$4,428	3.9
Garbage	\$718	0.6
Janitorial	\$8,400	7.4
Snow Clearing	\$27,046	23.9

Item	Total	%
Other	\$225	0.2
Development	\$1,057	0.9
Legal	\$519	0.5
Hydro	\$3,092	2.7
Water & Fire Protection	\$1,501	1.3
Asset Replacement	\$6,000	5.3
Total Expenses	\$113,277	
Net Position	(\$43,187)	

The largest revenue source is landing and improvement fees (45%), followed by terminal rents (36%), and other revenue (36%). The other revenue category includes a one-time transfer of approximately \$24,000, and is not a recurring source of revenue.

The highest expense was snow clearing at \$27,000 (24%). This cost was relatively high in 2015 as compared to other years, and snow clearing has varied between approximately \$9,000 and \$27,000 per year. The next two largest expenses are small capital at \$21,000 and airport administration fees at \$20,000, both at approximately 18% of expenses. The airport is putting \$6,000 per year away for capital contingencies (asset replacement).

Given the scale of the annual deficit, the current operating model for the airport is unsustainable. Detailed financial projections for the site based on the current operating model have not been prepared, as the site requires a modified approach.

10.2 Proposed Operating Budget Changes

10.2.1 Staffing

The level of administrative and managerial time anticipated for operation of a certified airport is generally higher than the level of staffing that the regional district has allocated. It is the view of the consulting team that the regional district should allocate at least the equivalent of 0.5 full-time equivalents to the operation of the airport to oversee operations, SMS system reporting, planning, and site development. It is the view of the consulting team that the airport will have difficulty meeting the minimum requirements set by Transport Canada for a certified airport without these additional resources.

10.2.2 Fees

The 2015 operating budget has a significant annual loss and a relatively small annual amount is allocated to capital replacement (e.g., runway overlays). It is recommended that airport revenues be increased to cover operating and capital requirements. Options will be considered below but fee increases are probably required.

10.2.3 Capital Requirements

Table 10-2 shows the total capital costs associated with the proposed planning projects identified over the plan period. The costs identified include differing percentages for contingencies and engineering based on the expected complexity of unknowns. As an example, engineering associated with a runway overlay can include more certainty

and, subsequently, the contingencies and engineering costs can be more refined (e.g., 20%). A new development area, however, includes many uncertainties and as such a higher contingency is required (e.g., 35%).

Based on the historical passenger volumes, it is expected Transport Canada will contribute 100% of the funding for those projects meeting the ACAP funding criteria. Of the total \$5.7 million in capital spending in Phase 1, Transport Canada would fund \$3.1 million under the ACAP program. Funding under the program can often result in delay in funding and so the CCRD should submit funding applications as quickly as possible.

It is expected that 50% of the terminal building expansion will also be covered through BC government funding programs. Airport Road and Phoenix Road are also provincial responsibility, so the CCRD must provide notice to the government to schedule the roadway rehabilitation in the next few years.

The capital projections also include immediate needs for airport safety (e.g., \$381,000 for obstacle removals on the runway approach and \$93,000 for the gravel pile removal or reconfiguration).

Table 10-2: Investment Prioritization

Priority	Project	Construction Costs			Construction Cost Sharing		
		Phase 1	Phase 2	Future	BC Funding	TC Funding	Local Funding (CCRD)
1	Obstacle removal on runway approaches	\$381,000			\$286,000	\$0	\$95,000
2	Gravel pile relocation	\$93,000					\$93,000
3	Terminal Building Expansion	\$822,000			\$411,000	\$0	\$411,000
4	Terminal Parking Lot and Access Road	\$627,000	\$125,000		\$209,000	\$0	\$418,000
5	Hangar Developments (Lots 5,6,11,14A)	\$433,000				\$0	\$433,000
6	Commercial/Industrial Lot Development	\$196,000				\$0	\$196,000
7	Rehabilitation Runway 05-23	\$2,425,000				\$2,425,000	
8	Rehabilitation of Taxiway A	\$97,000				\$97,000	
9	Rehabilitation of Apron I	\$404,000				\$404,000	
10	Rehabilitation Itinerant Apron	\$170,000				\$170,000	
11	Rehabilitation of Taxiway B	\$225,000					\$225,000
12	Tie-down Area Rehabilitation		\$339,000				\$339,000
13	Southwest Development Area		\$740,000				\$740,000
14	East Development Area			\$499,000			\$499,000
	TOTAL COSTS	\$5,873,000	\$1,204,000	\$499,000	\$906,000	\$3,096,000	\$3,449,000
	Overall Airport Development Costs			\$7,576,000			
	Net Cost to CCRD			\$3,449,000			

10.3 Projected Financial Performance

Scenarios

Scenario analysis has been used to analyze financial options for this airport because some of the historic information is unclear (passengers per year), and a number of options are presented for how the CCRD could increase revenues and improve management of the site. Scenario analysis allows for the discussion of wide ranging options but they are not plans. As the scenarios are based on projections that are based on estimates of passengers which may be inaccurate, the room for error in the scenarios is significant. The purpose of the scenarios is to show how the airport may perform financially under different scenarios.

To illustrate how the airport may perform financially in future years, three scenarios are modeled. The first is a base case, the second a 10,000 passengers per year estimate, and the third is addition of a services agreement to increase airport revenues. A high passenger scenario is not shown because the range of passenger growth projected did not significantly change the financial projections. The first scenario uses the passenger projections prepared for this project. The second scenario assumes 10,000 passengers per year as an estimate. This estimate is used for sensitivity analysis because the passenger numbers are based on estimates rather than passenger counts. The annual passenger number chosen is higher than the estimated current passenger estimate but lower than the 10-year projection. Finally, a scenario showing how the airport would perform if it received \$100,000 per year through a service agreement is provided.

The scenarios include annualized capital requirements that may result in the income for a year appearing as negative if revenue does not meet capital requirements, as in 2017, in every scenario. This could be addressed by deferring the capital requirement or funding the deficit through grants or taxation. However, as the requirement for moving obstacles and moving the gravel pile are immediate, these capital requirements cannot be deferred. As new fees cannot be put in place immediately, some combination of taxation or grants will probably be required to meet these spending needs.

Scenario Assumptions

The following are assumptions used to create all financial scenarios. The assumptions are used in all scenarios:

- It is assumed that no major economic or environmental event will significantly impact airport operations;
- Inflation has not been incorporated as it is assumed that revenues and expenses will respond to inflation at the same rate;
- \$50,000 per year has been added to airport's expenses to meet expected airport staff, support requirements.
- The existing requirement for airstrip inspections has been integrated into the airport staff service line item.
- Janitorial expenses have been increased by a little over 50% the year after the ATB expansions is planned.
- ATB improvements will include a new high efficiency heating system that would significantly decrease heating costs.
- A 12-year planning period is used in the analysis.
- Interest payments are not included in this analysis.
- To keep the projections conservative, new lease developments have not been included in the projections.
- The revenue changes in each scenario begin in July 2017 (i.e., new fees).

- The airport should generate sufficient revenue to maintain ongoing operations.

10.3.1 Base Case Projections

Financial projections showing how the airport is projected to perform if the site achieves base case passenger growth of 1% per year is shown in Table 10-3. This projection further assumes that the airport budget will include all proposed capital items. This scenario assumes that \$308,000 is required per year for 12 years to cover all capital costs. A 12-year period has been chosen because much of the required spending is in the earlier years of the projection and the airport therefore requires a longer period to fund adequate revenue. To raise this level of funding, analysis shows that the equivalent of \$22 for every arriving and departing passenger would have to be charged. In the base case projections, by the end of the study period the airport operates at a surplus of approximately 7.5% of operating revenue per year. This level of fee would be 80% of what Smithers is charging for a full 19-seat aircraft and would make Bella Coola the second highest fee in the airport sample.

10.3.2 Passenger Projections

The financial projections for the airport if it achieved 10,000 passengers per year are shown in Table 10-4. This estimate is used for sensitivity analysis because the airport passenger numbers used in this report are based on estimates rather than passenger counts. In future years, actual passenger numbers may prove to be higher or lower than the projections developed for this report. For this reason, providing an estimate based on a concrete number of passengers appears useful to give guidance. The annual passenger number chosen, 10,000 one-way passengers annually, is higher than the current passenger estimate but lower than the 10-year projection. This scenario also includes all capital projects and a per passenger fee of \$27 for every arriving and departing passenger has been assumed. This level of fee would be 99% of what Smithers is charging for a full 19-seat aircraft and would make Bella Coola the second highest fee in the airport sample.

10.3.3 Base Case Including a Services Agreement

The third scenario uses the base case passenger growth rate, assumes that starting in 2017 the airport receives an additional \$100,000 per year in revenue through a services agreement, shown in Table 10-5. It is assumed that a large local organization such as a First Nation supports the airport's operations with a service agreement. For this scenario, the assumed fee per arriving and departing passengers drops to \$14. By the end of the study period the airport would operate at a surplus of approximately 7% of operating revenue per year. This level of fee would be 51% of what Smithers is charging for a full 19-seat aircraft and would make Bella Coola the fourth highest fee in the airports sample.

Table 10-3: Base Case Financial Projections

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
REVENUE												
Fuel Surcharge	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797
Ground Leases	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858
Landing & Improvement Fees	143,777	250,566	253,072	255,602	258,158	260,740	263,347	265,981	268,641	271,327	274,040	276,781
Terminal Rents	25,109	25,109	25,109	25,109	25,109	27,620	27,620	30,382	30,382	30,382	30,382	30,382
Rentals	575	575	575	575	575	575	575	575	575	575	575	575
Other	450	450	450	450	450	450	450	450	450	450	450	450
Sub-Total	182,565	289,354	291,860	294,391	296,947	302,039	304,647	310,042	312,702	315,388	318,102	320,842
EXPENSES												
Administration Fees	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Airport staff, services	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Small Capital	20,764	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,001	20,002
Insurance	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280
Maintenance	7,248	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
Heating Fuel	4,428	4,428	4,428	4,428	4,428	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Garbage	718	718	718	718	718	718	718	718	718	718	718	718
Janitorial	8,400	8,400	8,400	8,400	8,400	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Snowclearing	27,046	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Other	225	250	250	250	250	250	250	250	250	250	250	250
Development	1,057	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Legal	519	500	500	500	500	500	500	500	500	500	500	500
Hydro	3,092	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Water & Fire Protection	1,501	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,501	1,502
Asset Replacement	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500
Sub-Total	293,777	297,076	297,076	297,076	297,076	296,748	296,748	296,748	296,748	296,748	296,750	296,752
TOTAL INCOME	-111,212	-7,722	-5,216	-2,685	-129	5,291	7,898	13,294	15,954	18,640	21,351	24,090

Table 10-4: 10,000 Annual Passengers Financial Projections

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
REVENUE												
Fuel Surcharge	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797
Ground Leases	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858
Landing & Improvement Fees	152,500	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000
Terminal Rents	25,109	25,109	25,109	25,109	25,109	27,620	30,382	30,382	30,382	30,382	30,382	30,382
Rentals	575	575	575	575	575	575	575	575	575	575	575	575
Other	450	450	450	450	450	450	450	450	450	450	450	450
Sub-Total	191,289	308,789	308,789	308,789	308,789	311,299	314,061	314,061	314,061	314,061	314,061	314,061
EXPENSES												
Administration Fees	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Airport staff, services	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Small Capital	20,764	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,001	20,002
Insurance	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280
Maintenance	7,248	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
Heating Fuel	4,428	4,428	4,428	4,428	4,428	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Garbage	718	718	718	718	718	718	718	718	718	718	718	718
Janitorial	8,400	8,400	8,400	8,400	8,400	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Snowclearing	27,046	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Other	225	250	250	250	250	250	250	250	250	250	250	250
Development	1,057	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Legal	519	500	500	500	500	500	500	500	500	500	500	500
Hydro	3,092	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Water & Fire Protection	1,501	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,501	1,502
Asset Replacement	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500
Sub-Total	293,777	297,076	297,076	297,076	297,076	296,748	296,748	296,748	296,748	296,748	296,750	296,752
TOTAL INCOME	-102,489	11,712	11,712	11,712	11,712	14,551	17,313	17,313	17,313	17,311	17,309	

Table 10-5: Base Case Plus a Service Agreement

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
REVENUE												
Fuel Surcharge	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797	3,797
Ground Leases	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858	8,858
Landing & Improvement Fees	98,670	159,451	161,046	162,656	164,283	165,925	167,585	169,260	170,953	172,663	174,389	176,133
Terminal Rents	25,109	25,109	25,109	25,109	25,109	27,620	27,620	30,382	30,382	30,382	30,382	30,382
Rentals	575	0	575	575	575	575	575	575	575	575	575	575
Service Agreement	0	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Other	450	450	450	450	450	450	450	450	450	450	450	450
Sub-Total	137,459	297,665	299,834	301,445	303,071	307,225	308,884	313,322	315,015	316,724	318,451	320,195
EXPENSES												
Administration Fees	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Airport staff, services	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Small Capital	20,764	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,001	20,002
Insurance	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280	3,280
Maintenance	7,248	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
Heating Fuel	4,428	4,428	4,428	4,428	4,428	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Garbage	718	718	718	718	718	718	718	718	718	718	718	718
Janitorial	8,400	8,400	8,400	8,400	8,400	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Snowclearing	27,046	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
Other	225	250	250	250	250	250	250	250	250	250	250	250
Development	1,057	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Legal	519	500	500	500	500	500	500	500	500	500	500	500
Hydro	3,092	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Water & Fire Protection	1,501	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,501	1,502
Asset Replacement	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500	145,500
Sub-Total	293,777	297,076	297,076	297,076	297,076	296,748	296,748	296,748	296,748	296,748	296,750	296,752
TOTAL INCOME	-156,319	588	2,758	4,368	5,995	10,476	12,136	16,573	18,266	19,976	21,700	23,442

10.4 Financial Scenario Analysis Findings

Analysis of the four scenarios produced a number of findings:

- The level of revenue the airport generates today cannot meet the operational and capital requirements of the airport in future years.
- The airport will have difficulty funding Phase 1 of the capital plan shown in Table 10-2, let alone Phase 2 and 3, even with significant anticipated contributions from the federal and provincial governments.
- In absolute terms, the total capital funding required by the airport over 12 years is relatively limited at \$5.8 million, of which the regional district must fund \$1.7 million, but this is a significant amount of money for an airport serving approximately 10,000 one-way passengers per year. Including capital, the site requires approximately \$300,000 in revenue per year. This is relatively low for airports in BC but still high for the site considering the level of traffic.
- A services agreement as outlined previously would have a significant positive impact on airport financing. This is because in absolute terms the revenue requirements of the site are relatively low. A \$50,000 annual grant alone would have a significant impact on airport financials.
- Capital requirements are required soon so there are limited options for funding. Fees must be set to meet capital needs in the next few years.
- As the number of annual passengers is low, the scenarios provided show that the anticipated required per one-way passenger fee is \$22 to \$27. These fee levels are relatively high but will not make Bella Coola the most expensive airport in BC.

10.5 Fees Recommendation

Based on airport bylaws at comparable sites, an airport bylaw has been developed and is attached on the following pages. The proposed by-law has three parts – landing fees for aircraft not based at the airport, parking fees, and per passenger fees for scheduled flights. Leases, fuel prices and miscellaneous other revenue (such as room rentals) have not been included in the proposed by-law though recommendations on these items are made below.

Ground leases and terminal leases are ideally based on commercial rates. However, in the case of Bella Coola, comparable rates are not readily available and it is probably not worth a detailed real estate analysis. Based on professional judgement, a rate of 20 cents per square foot is recommended for land leases. Given the lack of comparable commercial leases, it is recommended that the regional district continue with the lease rates it is applying to ATB leases now with a CPI escalator clause. The current fuel flowage fee appears reasonable. No more than five cents per litre is recommended.

The proposed per passenger fee is set at the high end of fee estimates at \$27 because the actual number of passengers through the airport annually is only calculated and the estimates may be high. It is viewed as conservative to increase revenues to the airport to ensure its continued safe operations. If annual passenger traffic is low, capital projects can be deferred for a year to meet airport requirements outlined in this plan.

Collection of fees is an airport issue. The increase in airport fees and services is partly to address this. All airports have collection issues with itinerant fliers but established methods of addressing these issues exist.

10.5.1 Central Coast Regional District Schedule "A" - Bylaw Airport Fees

All charges do not include applicable tax.

1. Aircraft Landing Fees

The charges for aircraft landing fees based on per 1,000 kg, or fraction thereof, of maximum take-off weight are:

Size	Landing Fee
Less than 10,000 kg	\$3.20
10,001 to 45,000 kg	\$4.05
Over 45,000 kg	\$5.08

The minimum aircraft landing fee for commercial aircraft is \$15.00

Landing Fees for Helicopters will be as follows:

Overall Length of Helicopter	Helicopter Size (based on overall length)	Landing Fee
Less than 44 ft.	Light	\$20.00
From 44 ft. to 58 ft.	Medium	\$25.00
Over 58 ft.	Heavy	\$40.00

Air carriers with scheduled flights and helicopters based at the Bella Coola Regional Airport are exempt from landing fees.

2. Aircraft Parking Fees

Aircraft Weight	Daily Fee	Monthly Fee*	Annual Fee*
Up to 5,000 kg	\$ 7.50	\$60.00	\$480.00
More than 5,000 kg but not more than 10,000 kg	\$12.50	\$262.00	N/A
More than 10,000 kg	\$24.00	\$500.00	N/A

*Annual and Monthly rates by prior agreement

Parking Fee is based on maximum gross takeoff weight as per Transport Canada TP143.

Aircraft parked for less than 6 hours is FREE. Aircraft parked in excess of 6 hours is charged for 1 day. Subsequently, each additional daily charge is based on a calendar day.

3. Airport Passenger User Fees

Every Operator of a scheduled air passenger service shall pay to the Central Coast Regional District (CCRD) for each passenger on every flight of the Operator commencing or terminating at the Bella Coola Regional Airport an airport passenger user fee of \$12.00.

The Operator shall file to the CCRD, with each payment of the fees required under this Bylaw, a statement of the numbers of all passengers commencing and terminating flight at the Bella Coola Regional Airport for each day and a total for the applicable month, and the total number of flights for the applicable month, showing in sufficient detail the information necessary to calculate exactly the fees payable under this Bylaw.

The Operator shall keep proper books of account of passengers commencing and terminating flights at the Bella Coola Regional Airport in a form satisfactory of the CCRD, and shall keep all books of account and aircraft journey log books available for inspection by any municipal official of the CCRD at all reasonable times.

11.0 RECOMMENDATIONS

The following recommendations are important components of the CCRD's initial 10 year planning period. In some cases the funding required for a particular recommendation is external to the CCRD and therefore subject to other funding timelines. Longer term developments identified as Phase 2 or future would be challenging to predict at this time and the need for a particular expenditure will be entirely demand driven.

1. To maintain certification it is essential that the CCRD immediately submit the updated Airport Operations Manual, Safety Management System, Airport Wildlife Management Plan and Emergency Plan for Transport Canada approvals.
2. Obstacles on the approaches (trees) are compromising airport safety and must be removed immediately. In addition, a large pile of stockpiled gravel encroaches on airfield zoning and must be removed or reconfigured to meet zoning standards.
3. The terminal building is constrained and the CCRD, in partnership with the province, should expand the terminal building to meet long-term passenger needs. The CCRD must contract an architect to finalize the ATB expansion design drawings and contract specifications.
4. The terminal parking lot must be properly constructed to accommodate the travelling public. Of particular concern is the passenger drop-off/pick-up area.
5. Advise Pacific Coastal Airlines of the requirement to contract an environmental engineer to investigate regulatory compliance with the existing fuel tank contamination area.
6. The 2010 flood of airport lands showed the necessity for a dike rehabilitation program to ensure the long-term viability of airport operations. The dike requirement is unique to this site and it is recommended that the CCRD Board of Directors lobby the Province to seek funding to improve the dike. The potential for the dike to fail when the community most needs the airport is real and acute. This is a unique safety and emergency situation.
7. The CCRD should begin submitting funding applications to Transport Canada for all airfield pavements so that these projects are programmed into the ACAP funding queue.
8. Reconstruct the closed airfield tie-down area so that pilots have an optional area to park airplanes overnight or long-term.
9. Initially four lots will be available for development. The infrastructure required to support the lot development would be entirely demand driven.
10. To meet Transport Certification requirements on a sustainable basis, it is recommended that the airport provide at least the equivalent of 0.5 FTEs to ensure that maintenance systems and reporting are addressed in an ongoing, sustainable manner.

11. Increase fees in line with the recommended by-law in this report to generate sustainable funding. The CCRD can consider taxation as a means of providing any short-falls in funding.

11.1 Proposed Implementation Schedule

Table 11-1 outlines a proposed implementation schedule for airport improvements. The timing of development will be dependent on the financial and fee plan that the CCRD implements. Some projects require additional timing (e.g., those requiring funding applications) whereas other projects can be constructed start to finish within a given season. The table includes all costs and illustrates (orange cells) the costs either shared or covered by potential funding from government agencies.

The dike rehabilitation is shown in a blue cell. It is recommended that the CCRD seek unique one-time funding from the provincial and federal governments for the dike work as the airport is at risk of being inoperable during a flood when the main highway may be closed and the community would be relying on the airport. This is a unique emergency/safety issue.

Table 11-1: Proposed Timelines for Airport Improvements

Project Works	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Obstacle removal on runway approaches	\$381,000										
Gravel pile relocation	\$93,000										
Air Terminal Building											
Terminal detailed design and tender (15% of construction cost) – 50% funded		\$124,000									
Terminal Building Expansion (50% funded)			\$698,000								
Terminal Parking Lot and Access Road (Province to fund Airport Road and Phoenix Road)			\$502,000								
Hangar lot development (Lots 5,6,10,11)								\$433,000			
Commercial/Industrial Lot Development						\$196,000					
Airfield Pavements											
Detailed design and tender (100% funded)				\$242,500							
Rehabilitation of Runway 05-23 (100% funded)					\$2,183,000						
Rehabilitation of Taxiway A (100% funded)					\$97,000						
Rehabilitation of Apron I (100% funded)					\$404,000						
Rehabilitation of Itinerant Apron						\$170,000					
Rehabilitation of Taxiway B								\$225,000			
Total Cost	\$474,000	\$124,000	\$1,200,000	\$242,500	\$2,684,000	\$366,000		\$658,000			
CCRD Cost	\$188,000	\$62,000	\$642,000	\$0	\$0	\$196,000		\$658,000			

12.0 SUMMARY

The Bella Coola Airport Master Plan will guide CCRD investment and development over the next 10 to 20 years. Stakeholder consultations were an integral component of the plan. For a plan to be successfully implemented it is essential local knowledge is included in the plan, particularly as related to resident and business needs.

It is apparent that the Bella Coola region is experiencing increased demand from tourism opportunities and therefore more immediate needs (e.g., a terminal building expansion and terminal parking) are forecast in the near term. Other immediate costs (e.g., access road rehabilitation) are also necessary in support of the terminal development.

The airport is fortunate that the airfield pavements are generally in fair to good condition so ongoing crack sealing and general pavement maintenance can extend the lifecycle of the pavements. It is important to note that Transport Canada ACAP funding will pay for the majority of the airfield rehabilitation projects.

The plan shows a moderate need for tenant lots. The plans show the logical land use strategy is to simply infill lots along Taxiway B and develop lands in the southwest portion of the CCRD owned lands and finally east of the terminal building for future airside development.

There is a shortage of commercial/industrial lots available in Hagensborg, therefore two lots are proposed on the east and west sides of the terminal parking area that would meet this demand. The benefit of this location is that there are existing access roads and services and therefore CCRD costs are minimal.

The financial requirements of the site require revenue growth through fees, service agreements, or a combination of the two. Even with revenue growth, the CCRD will have to manage capital projects to reduce total cost and maximize benefit.

REFERENCES

1. Central Coast Regional District, Airport Commission, Revised 2000, Bella Coola Airport Development Plan
2. Kerr Wood Leidal Consulting Engineers, February 28, 2013, Bella Coola Airport Dike Upgrade Project Design Brief
3. SNC Lavalin, February 2006, p.3 to 5, Morrow Environmental, Evidence of Hydrocarbon Release by the Central Coast Regional District Former Shell Aviation Fueling Facility, Bella Coola Airport, Bella Coola, BC