REGIONAL DISTRICT OF NANAIMO
BYLAW NO. 1620.06

A BYLAW TO AMEND THE REGIONAL DISTRICT OF NANAIMO ELECTORAL AREA 'A' OFFICIAL COMMUNITY PLAN BYLAW NO. 1620, 2011

The Regional District of Nanaimo, in open meeting assembled, enacts as follows:

A. This bylaw may be cited as "Regional District of Nanaimo Electoral Area 'A' Official Community Plan Amendment Bylaw No. 1620.06, 2020".

B. The "Regional District of Nanaimo Electoral Area 'A' Official Community Plan Bylaw No. 1620, 2011" is hereby amended as follows:

   1. By deleting Section 8.8 Nanaimo Airport and replacing with the text as shown in Schedule '1' attached to and forming part of this bylaw.

   2. By adding Schedule C: Nanaimo Airport Land Use Plan as shown in Schedule '2' attached to and forming part of this Bylaw.

Introduced and read two times this ___ day of ____, 20XX.

Considered in conjunction with the Regional District of Nanaimo Financial Plan and any applicable Waste Management Plans this ____ day of ____, 20XX.

Public hearing held pursuant to Section 464 of the *Local Government Act* this ____ day of ____, 20XX.

Read a third time this ____ day of ____, 20XX.

Adopted this ____ day of ____, 20XX.

_____ _____

CHAIR CORPORATE OFFICER

Schedule '1' to accompany "Regional District of Nanaimo Electoral Area 'A' Official Community Plan Amendment Bylaw No. 1620.06, 2020".

_____

Chair

_____

Corporate Officer

REGIONAL DISTRICT OF NANAIMO

BYLAW NO. 1620.06

Schedule '1'

Section 8.8 Nanaimo Airport

The Nanaimo Airport is comprised of three parcels of land on 211 hectares owned by the Nanaimo Airport Commission, a federal not-for-profit corporation. A fourth, 33 hectare parcel north of Haslam Road is also owned by the Nanaimo Airport Commission and within the OCP Nanaimo Airport designation, but not within the federally designated Airport. Approximately 15 hectares of the Airport at the eastern boundary is located within the Cowichan Valley Regional District.

The Nanaimo Airport Commission's Nanaimo Airport Land Use Plan, 2019 establishes objectives, policies, development principles, and land use zones to guide development of the Airport Lands in support of the economic and environmental viability of the Airport, and the region, and supports the Airport's role as a regional transportation facility.

The Nanaimo Airport Lands are located above the Cassidy Aquifer, which is highly vulnerable to surface contamination. Aquifer protection is of utmost importance.

Objectives and Policies

Section 8.8	**Policy/Objective**
Objective 8.8.1	**Recognize the importance of the Nanaimo Airport as an economic and transportation hub for the Regional District of Nanaimo and Vancouver Island.**
Policy 8.8.1	The Lands owned by the Nanaimo Airport Commission that are shown on Map No. 3 shall be designated as Nanaimo Airport.

Policy 8.8.2	In the Nanaimo Airport designation, the RDN supports airport and airport-related use described in the Nanaimo Airport Land Use Plan and the Nanaimo Airport: Development Design Guidelines contained within Schedule C of this OCP. Outside the ALR, this Plan supports that a portion of the non-ALR lands within the Nanaimo Airport Lands designation may be zoned to allow other uses the RDN determines are compatible with the operation of an airport on the Nanaimo Airport Lands. Consultation with the Agricultural Land Commission may be required as some of the lands outside the ALR are subject to covenant EN24091 held by the Agricultural Land Commission restricting use to no other than airport-related commercial and light industrial activities.
Policy 8.8.3	In the Nanaimo Airport designation within the ALR, in addition to airport and airport-related use described in Policy 8.8.2, Agriculture use is supported.
Policy 8.8.4	The RDN encourages the Nanaimo Airport Commission to consult with the community and the RDN to address specific issues related to Airport expansion and development of light industrial and commercial uses including the following: a. establishing and regulating flight paths to minimize disturbance to nearby residents; b. communication process for addressing noise complaints; c. mitigating impact of development on groundwater, surface water and storm water management. d. traffic impacts; and e. visual character.
Policy 8.8.5	Continued operation of the golf course within the ALR in the Nanaimo Airport designation at the time of adoption of this policy is supported.

Section 8.8	**Policy/Objective**
Objective 8.8.2	**Protect the Cassidy aquifer, acknowledge the sensitivities associated with adjacent ALR lands, streams, and surrounding residential areas, and avoid or mitigate any negative impacts from development.**
Policy 8.8.6	The Nanaimo Airport Commission is encouraged to provide a high standard of wastewater and storm water management and treatment to protect the sensitive aquifer.
Policy 8.8.7	The Nanaimo Airport Commission is encouraged to consider options for coordinating shared wastewater treatment with the Cassidy Village Centre, including consideration of connection to Duke Point Pollution Control Centre.
Policy 8.8.8	The Nanaimo Airport Commission is encouraged to continue its groundwater monitoring program for both water levels and water quality, to share groundwater monitoring data with the Province and the RDN and ensure that new development does not negatively impact the aquifer.

Schedule '2' to accompany "Regional District of Nanaimo Electoral Area 'A' Official Community Plan Amendment Bylaw No. 1620.06, 2020"

_____

Chair

_____

Corporate Officer

Nanaimo Airport Land Use Plan

Schedule 'C' of Electoral Area 'A' OCP Bylaw No. 1620, 2011

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NANAIMO AIRPORT LAND USE PLAN

Adopted by the Nanaimo Airport Commission March 25th, 2019

The Nanaimo Airport is located on approximately 244 ha of land of which 211 ha are original airport designation lands. The majority of the airport is located within the Regional District of Nanaimo. A small portion of the east airport is located within the Cowichan Valley Regional District.

1. Authority:

The Nanaimo Airport ("YCD") is owned by the Nanaimo Airport Commission, incorporated under the *Canada Not-for-Profit Corporations Act*.

1.1 Federal jurisdiction

Under Section 91 of the *Constitution Act,* aeronautics is a matter of national concern. An airport is also a federal work or undertaking pursuant to Section 92(10)(a) of the *Constitution Act*. The airport operates in an area of federal competence and comes under the legislative authority of the Parliament of Canada. The Government of Canada transferred Nanaimo Airport to the Commission, subject to all the laws of Canada regarding aeronautics, airports, and federal undertakings. This includes airport construction and occupational health and safety.

1.2 Airport Operator Certificate and Airport Operations Manual

The Commission must hold and maintain an Airport Operator Certificate issued by the federal Minister of Transport to manage, operate and maintain Nanaimo Airport subject to an Airport Operations Manual approved by the Minister of Transport.

1.3 Governance

The Commission is governed by a Board of Directors responsible for its corporate mandate, including airport development. The Board is comprised of nine directors. Five directors are nominated by entities and appointed by the Board. The five nominating entities are:

- City of Nanaimo
- Cowichan Valley Regional District
- Nanaimo Chamber of Commerce
- Regional District of Nanaimo
- Town of Ladysmith

The remaining four directors are appointed to represent the Community at Large.

2. Land Use Plan Vision:

The Nanaimo Airport Land Use Plan provides a detailed land use concept that supports airport operational viability and regional economic development while being respectful of key environmental considerations, including the Cassidy aquifer.

3. Land Use Plan Mission:

The Nanaimo Airport Land Use Plan sets out a clearly defined long term direction for development of airside and groundside land uses that support the Vision and address adjacent land use compatibility considerations within the Regional District of Nanaimo and the Cowichan Valley Regional District.

4. Guiding Principles:

Based on its Mission and Vision, the Nanaimo Airport Commission has developed the following Guiding Principles to assist airport management (and land use planning) in airport decision-making.

- *The Commission aspires to be a respectful good neighbor within the region by adhering to its mandate as an airport authority and its regulatory obligation to support airport development;*
- *The Commission will protect and enhance its lands to support well planned airport development and associated infrastructure, ensuring long term airport viability;*
- *The Commission will plan and develop a multi-modal transportation hub that better serves the regional community;*
- *The Commission will communicate its plans and aspirations as a key economic partner that serves Vancouver Island needs.*

5. Planning and Development Context

The Nanaimo Airport Land Use Plan is guided by several approved Nanaimo Airport Commission (NAC) documents, including the Strategic Plan (2019-2023), SNC Lavalin Master Plan (2014), and the NAC's Land Use and Development Principles adopted in 2018.

5.1 Strategic Plan: 2019-2023 (Appendix 1)

The Strategic Plan sets out the key goals, objectives and actions for the NAC. It supports the development and implementation of the Nanaimo Airport Land Use Plan.

5.2 SNC Lavalin Airport Master Plan (Appendix 2)

Airport development is based on an Airport Master Plan, which is the airport operator's public document providing the strategy for the development of the airport regarding land use, facilities, and services to meet its objectives and accommodate expected levels of activity and traffic over a number of horizon years. It incorporates the key planning principles of adaptability, balance and hierarchy. As such, the Master Plan must integrate the airport community with its greater community. It is a tool for budgeting, expansion, organization and for balancing competing interests, such as use of airport land. It is also an instrument of control since each of the airport's policies and objectives must be consistent with the Master Plan, for example, runway capacity and land use.

The Master Plan is not an action plan. It provides overall direction for airport development and operation. It is not about airport operations, because it does not deal with the type or quality of work to be performed. It sets out broad land use considerations.

5.3 Land Use and Development Principles (Appendix 3)

Developed and approved in 2018, this document provides an overview of airport planning considerations, including the role of the NAC, regulatory framework, planning considerations, and permitting and applicable codes that affect airport operation and uses.

6. Land Use Development Plan 2019 (Figure 1)

The Land Use Development Plan has been developed after consultation and input from a cross section of interests, including a design charrette that involved representatives from the City of Nanaimo, Cowichan Valley Regional District, Greater Nanaimo Chamber of Commerce, Nanaimo Flying Club, Regional District of Nanaimo, Town of Ladysmith, Stz'uminus First Nation and three public consultation sessions in Cedar, Ladysmith and Nanaimo. The Land Use Development Plan sets out five land use zones, proposed site plan and associated conceptual transportation network.

6.1 Goals:

- 6.1.1 Set out clear development direction for airside and groundside uses.
- 6.1.2 Recognize that airport viability (and through that airport operation) requires revenue generation beyond aeronautical fees.
- 6.1.3 Support regional economic growth and environmental sustainability.
- 6.1.4 Continue to collaborate with the Cowichan Valley Regional District, Regional District of Nanaimo and Stz'uminus First Nation.

6.2 Objectives and Policies:

Objective 6.2.1: Recognize the importance of the Nanaimo Airport as a regional economic and transportation hub.

Policy 6.2.1.1: Identify a mix of groundside and airside land uses that are supportive of the long term viability of the airport.

Policy 6.2.1.2: Ensure that there is sufficient airside development land to support the continued long term operation of the airport as a key regional air transport facility.

Policy 6.2.1.3: Ensure that there is sufficient, accessible airside commercial land to support a vibrant airside development sector.

Policy 6.2.1.4: Ensure that there is sufficient, accessible and flexible groundside commercial development to support long term revenue generation that will enhance airport aviation goals and needs while addressing regional economic development and airport customer needs.

Policy: 6.2.1.5: Work with the Regional Districts, City of Nanaimo, Town of Ladysmith, City of Duncan and Vancouver Island University to explore how the airport can serve as a regional multi-modal transportation hub.

Objective 6.2.2: Support the development of Regional District of Nanaimo economic and residential development in Cassidy.

Policy 6.2.2.1 Continue to encourage dialogue and, where warranted, collaboration with the Regional District of Nanaimo on land use planning matters.

Policy 6.2.2.2: Develop and adopt Design Guidelines to ensure that development of airport lands is undertaken in a respectful, consistent and considered high quality manner.

Policy 6.2.1.3: Commit to high quality building and landscape design along and adjacent to Highway 1.

Policy 6.2.2.4: Work with the Regional District of Nanaimo to encourage an integrated nodal development for the airport and Highway 1 intersection area.

Policy 6.2.2.5: Work with the Regional Districts to ensure that adjacent land uses are respectful of airport airspace/flight path needs.

Objective 6.2.3: Commit to a 'good neighbour' relationship with Cowichan Valley Regional District, Regional District of Nanaimo and Stz'uminus First Nation.

Policy 6.2.3.1: Work with local communities to mitigate impact of airport development upon groundwater, surface water and storm water management.

Policy 6.2.3.2: Continue to update the surrounding communities on the land use designations contained in the Nanaimo Airport Land Use Plan.

Objective 6.2.4: Protect the Cassidy aquifer.

Policy 6.2.4.1: Provide high quality wastewater and storm water management and treatment.

Policy 6.2.4.2: Explore opportunities to share wastewater treatment with Cassidy Village.

Policy 6.2.4.3: Continue to initiate comprehensive groundwater impact studies for new development that may have a detrimental impact on the aquifer.

Objective 6.2.5: Promote integrated land use planning.

Policy 6.2.5.1: Continue to monitor the implications of new development opportunities upon future airport development and adjacent non-airport lands.

Policy 6.2.5.2: Promote the development of an additional access to Highway 1.

Policy 6.2.5.3: Encourage the Ministry of Transportation and Infrastructure to upgrade the current Highway 1 airport intersection to a higher safety standard.

Policy 6.2.5.4: Promote Green Building construction and operation for all new development to achieve energy efficiency, reduced material consumption, reduced water use and waste production, and enhanced waste treatment.

Policy 6.2.5.5: Promote and support off-airport regulatory zoning to protect airport aeronautical safety and operational viability.

6.3 Land Use Zones (Figure 1)

There are five land use zones that are contained in the Airport Land Use Plan: Airside, Airside Commercial, Groundside Commercial, Air Terminal Reserve, Recreation and Future Aviation.

6.3.1: *Airside*: land uses that directly support flight aircraft takeoff, landing and servicing.

6.3.2: *Airside Commercial*: land uses that support aviation industries by providing direct access to runways and taxiways.

6.3.3: *Groundside Commercial*: land uses that support aviation operation through aviation user development, development that makes use of aviation for marketing, sales and/or promotion, revenue generation and airport user needs. (Note: big box format commercial development and residential development are not permitted).

6.3.4: *Air Terminal Reserve*: land use that supports the expansion of the airport terminal.

6.3.5: *Recreation and Future Aviation*: land use that support Cottonwood Golf Course and longer term aviation needs.

Nanaimo Airport Master Plan

Updated Report – March 25th 2019

Prepared for:
Nanaimo Airport Commission

December 2014

Updated March 25, 2019

SNC·LAVALIN

Disclaimer

This document is for planning purposes only.

Release of this document in no way commits the Nanaimo Airport Commission to implement any of the recommendations contained within or to carry out any of the projects that are identified. Actual projects will only proceed after additional study work has been completed, including business case analyses and community consultations, as appropriate.

Executive Summary

Introduction

Nanaimo Airport (YCD) is located along the Trans-Canada Highway (Highway 1), adjacent to the Village of Cassidy, approximately 18 km south of the City's downtown core. Its service area encompasses areas to the north (including parts of the Comox Valley), to the west (including Port Alberni and Lake Cowichan), and to the south (including areas within the Cowichan Valley District, such as Ladysmith, Chemainus, Duncan, among others). The airport offers a 2,013m (6,602 ft) runway capable of accommodating aircraft up to the size of the B737/A320, a Passenger Terminal Building, vehicle parking, and airport operations support facilities such as maintenance and airport Emergency Rescue Services. Occupying a 211ha site, the airport is also home to an array of commercial tenants including fixed based operators, aircraft hangars, flight schools and recreational vehicle sales.

The Nanaimo Airport Commission (NAC) is responsible for the development, management and operation of the Nanaimo Airport (YCD). Its Mission Statement is to *"To provide a safe, efficient and financially viable airport, offering excellent services and value to all users while fostering economic development."* Its Vision Statement is as follows: *"The Nanaimo Airport will be a safe, reliable, air services gateway effectively meeting customer's needs."*

As part of its mandate to effectively develop, manage and operate the airport, the NAC must have an appropriate plan to guide the long-term development at the airport. To meet this requirement, SNC-Lavalin Inc. (SLI) was engaged to review past planning activities at the airport and, together with current traffic and development information, develop an updated long-term Land Use Plan to guide future development at the airport.

Planning Principles

The development of the Land Use Plan is based on the NAC's direction and business objectives for the airport. More specifically, the following principles guide the planning process:

- Long-term view, short-term focus;
- Partners with the community.
- Environmentally responsible;
- Highest and best use of land; and
- "Business-flexible".

Planning Context

The airport is located in the south west corner of Electoral Area A of the Regional District of Nanaimo (RDN), itself located within the extreme south-east corner of the District, adjacent to the Village of Cassidy, located just on the west side of Highway 1.

The RDN is responsible for setting land use policy and development direction within its limits and it does so through an Official Community Plan (OCP). While the Nanaimo Airport is located within the RDN, aviation is a federally regulated activity. Airport lands and, more specifically, definition of the Airport Zone, are currently excluded from the OCP process as a result

The NAC is very sensitive to the natural environment in which the airport resides. Aquifer and wildlife protection in and on land surrounding the airport are therefore significant considerations for land use planning and development on the site.

The airport is the only known breeding site for the Coastal Vesper Sparrows. Despite preservation efforts undertaken to date, the population has been decreasing. The associated area is identified as a Critical Habitat by the Canadian Wildlife Service and wildlife management measures are in place. Any planning for potential development in this area of the airport will need to ensure the habitat is not negatively impacted as long as the species continues to be documented.

Environmental Management

The NAC is committed to operating the Nanaimo Airport sustainably by taking into consideration its economic, social and environmental responsibilities with every business decision. Protection of the environment is one of NAC's corporate values, an element of how it views sound business practice and a fundamental corporate responsibility.

Guided by the NAC's Environmental Policy, its Environmental Management Plan (EMP) follows a "Plan, Do, Check, and Act" model. The EMP provides direction and sets priorities for improving environmental performance. Management activities are controlled and documented through the operation of an integrated Environmental Management System. The EMP implements policy in seven (7) key areas. The Land Use Plan report provides some additional information on management areas directly related to land use (water resources, land resources, natural habitat and aeronautical noise management).

In addition to the NAC's Environmental Policy and Environmental Management Plan that aims to prevent accidental contamination of the aquifers, development and implementation of a responsible Water Strategy for the site has been undertaken. The NAC's initiatives governing the protection of the Cassidy aquifers and the Vesper Sparrow habit are outlined in the Plan.

Vicinity Land Uses

The *Aeronautics Act*, among other things, lists *Airport Zoning Regulations (AZRs)* that are enacted at airports across the country. AZRs restrict the height of buildings, structures and objects (including natural growth) on lands adjacent to an airport and protect against disposal of waste attractive to birds and against electronic interference with navigational aids. The *Aeronautics Act* does not however contain AZRs for the Nanaimo Airport. It is important that the NAC work with Transport Canada and the province to identify and execute an appropriate solution that will meet the terms of Transport Canada's aviation regulatory requirements to maintain and enforce the flight path protection surfaces which extend beyond the airport property.

In addition, Transport Canada's *Land Use in the Vicinity of Airports* document contains guidelines for land uses in noise impacted areas. Land use planning is however delegated to the local authorities in British Columbia. Unlike other provinces, such as Alberta or Ontario, where provincial legislation exists to protect land around some or all airports, no such policy exists in BC. Therefore, it is equally important that the Regional Districts and the NAC work closely together so that the Nanaimo airport is protected against encroaching incompatible residential development through concerted land use and development planning at and around the airport.

Aviation Forecasts

The Nanaimo Airport handled 225,251 Enplaned/Deplaned (E/D) passengers on scheduled flights in 2013. All passengers were domestic during that year. Annual aircraft movements and passenger traffic are key drivers for airport development and forecasts of future traffic are key inputs to airport planning activities. The most recent passenger forecasts for the airport were prepared by SNC-Lavalin Inc. in 2014 and are presented in Table ES-1.

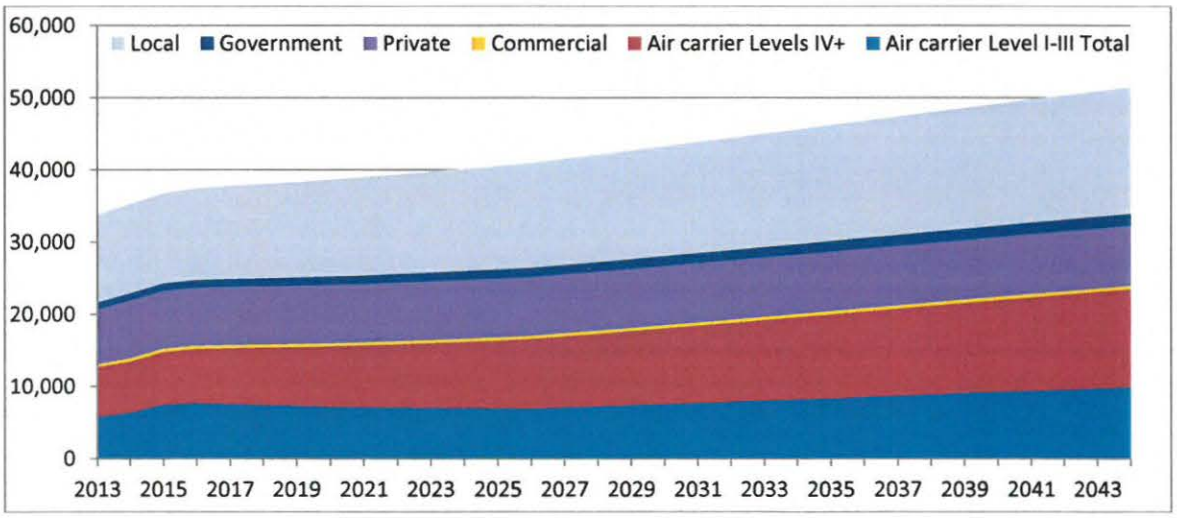
Table ES-1: Forecast Passengers and Growth Rates under the Medium, Low and High Case Scenarios

Year	E/D Passengers			Avg. Annual Growth Rates		
	Medium	Low	High	Medium	Low	High
2013 Actual	225,251	225,251	225,251			
2014 Est.	265,300	265,300	265,300	17.8%	17.8%	17.8%
2015	287,000	275,600	297,400	8.2%	3.9%	12.1%
2016	309,000	295,000	323,000	7.7%	7.0%	8.6%
2017	322,000	303,000	339,000	4.2%	2.7%	5.0%
2018	332,000	309,000	355,000	3.1%	2.0%	4.7%
2019	342,000	316,000	370,000	3.0%	2.3%	4.2%
2020	353,000	323,000	385,000	3.2%	2.2%	4.1%
2021	364,000	330,000	402,000	3.1%	2.2%	4.4%
2022	376,000	336,000	419,000	3.3%	1.8%	4.2%
2023	387,000	343,000	436,000	2.9%	2.1%	4.1%
2024	399,000	350,000	455,000	3.1%	2.0%	4.4%
2029	460,000	383,000	539,000	2.9%	1.8%	3.4%
2034	523,000	413,000	627,000	2.6%	1.5%	3.1%
2039	588,000	441,000	722,000	2.4%	1.3%	2.9%
2044	654,000	466,000	822,000	2.2%	1.1%	2.6%

Note: Estimate based on actual traffic for Jan. to August

Nanaimo Airport had 33,874 aircraft movements in 2013, including 21,596 itinerant[2] and 12,278 local movements. Aircraft movement forecasts are presented graphically in Figure ES-1.

Figure ES-1: Forecast Movements by Segment under Medium Case Scenario – 2013 to 2044



[2] Statistic Canada Aircraft movement statistics

Facility Requirements and Land Use Implications

An analysis was carried out of future facility requirements based on the projected growth presented above as well as a prime objective of maintaining a flexible plan to respond to varying futures that are always difficult to predict. The work then identified the land use implications of satisfying this future demand, starting first with the prime lands that need to be protected to maintain safe aviation operations at the airport, then those required to respond to the key commercial focus (which is the Passenger Terminal) and subsequently those lands to support overall airport operations. Finally, land development options to support other elements of the airport's operations and commercial ventures were identified. The following are the conclusions and recommendations emanating from this work.

Airfield

- The current runway length, capacity, classification and associated design and obstacle protection elements should be adequate for the airport's needs through the very long-term period.
- To provide maximum flexibility to be able to respond to future unknowns:
    - Protection should be put in place to allow for the extension of the runway to its maximum length within the given physical and land constraints (about 2,150+/-m or 7,000+ ft); and
    - A runway strip width of 150m each side of runway centerline should be protected to permit Non-precision and possibly future Precision approaches with Code 4C aircraft.
- The current taxiway system should be more than sufficient to support runway operations well into the future and to provide land access to the airport's development lands on the west side of the runway.
- Allowance should be made for a future full parallel taxiway on the east side of the runway that would provide access to (very) long-term development lands on this side. This taxiway should be for Code 4C aircraft and, per current standards, spaced 168m from the runway (centre to centre).
- Consideration should be given to establishing a 'virtual' helipad (somewhere near the Terminal area), as demand warrants.

Passenger Terminal Complex

- A review of current apron utilization indicates growing constraints associated with growth in both scheduled air services, charter operations and corporate aviation traffic on the main aircraft apron. Two options were developed to illustrate how apron demand could potentially be met through addition of 5+ aircraft positions.
- Areas both to the north and south of the existing apron should be protected for future apron expansion.
- The existing Passenger Terminal site provides adequate room to accommodate needs through the long-term period, permitting the building itself to be expanded to meet projected growth. More detailed analysis of annual and peak hour traffic forecasts will be needed to determine the specific nature and timing of expansion projects.
- A gross land area of about 15,000m^2 should be set aside to protect for future Passenger Terminal expansion. This is accommodated within current constraints.
- Any adjacent developments to the Terminal should be planned in a flexible manner to enable Terminal expansion (beyond foreseen limits, if necessary).
- Approximately 1,200 car parking spaces or a land area of about 42,000m^2 should be set aside to meet the long-term parking needs of the main Passenger Terminal complex. These should generally all be located within close proximity and contiguous to the Passenger Terminal complex. The existing inventory is expected to be adequate in meeting overall parking requirements for the next 5-10 year period.

Airport Support Areas

- The Airport Maintenance Complex (AMC) is currently well located and the site should be more than adequate to handle most future requirements. However, the AMC sits on potentially prime airside lands. If and when this site is required for higher value Airside Commercial uses, the AMC should be re-located to a site that would not be as desirable for or suited to commercial airside uses.
- The Emergency Response Services (ERS) building sits within the Passenger Terminal reserve and will eventually need to be relocated to provide for increased apron activities and Terminal expansion. Adjacency with the AMC is preferred.
- The NavCanada Flight Service Station (FSS) sits on a prime site just south of the Passenger Terminal complex. This site may be required for aircraft apron expansion in the long-term. Options for eventual relocation include in a second floor addition to the Passenger Terminal Building, on a site beside the Terminal, or on the east side of the runway.

Development Lands

- The 15+ ha of undeveloped lands along the north portion of the parallel taxiway should be developed for a variety of airside uses, such as: hangars, FBOs, aircraft sales, flight training and MRO services.
- These lands should be developed with stub taxiways that can open up access to lands further west than those immediately adjacent to the parallel taxiway.
- The development of these lands should be defined and carried out in a flexible and strategic manner that recognizes the uncertainty of future demand for these lands and in such a way as to interface and maintain flexibility with the adjacent potential Prestige Highway developments.
- The airport land located along the Highway 1 corridor should take advantage of the synergies made possible by development of land on both sides of the highway as a mixed commercial/light industrial centre to service airport needs, those of the Village of Cassidy, the large amount of transient highway traffic through the area.

Airport Access and Internal Circulation

- Mustang Road should be extended further to the north to service the proposed airside developments in this area, weaving around the new lots to eventually connect with Haslam Road to provide an inner route interconnecting the west and east sides of the runway without the need to use Highway 1.
- New east-west stub roadways will be required to connect from Mustang Road to provide direct land access to the newly created lots in this north area.
- A new service road should be constructed parallel to and west of Spitfire Road that can be used to service the lands developed as part of the Prestige Highway Developments along Highway 1. This roadway should emanate from the initial part of the Terminal loop roadway, continue south and eventually form a "T" intersection with Spitfire Road.
- Subject to further traffic planning and engineering, Spitfire Way between the highway and the roundabout, and the roundabout itself, should doubled to increase internal roadway capacity prior to realizing expansion of the road network in the commercial development areas.

- Consideration should be given to a new access road into the airport from Highway 1 located further south and connecting to a realigned Timberlands Road. The exact location, form and geometry of such an access would depend on further details of how the actual developments would be arranged along the Highway 1 corridor and what form the adjacent development in the Cassidy Village extension and commercial area would take.
- Simpson Road should be extended north in the future to provide access to new (airside) development lands along the east side of the runway.

Other Land Use Areas

- Three options are provided for consideration for the triangular parcel of land located to the extreme south end of the airport site:
  - Retain the land and continue to lease it out for current purposes, or other uses as appropriate that may come up over time; or
  - If deemed surplus to airport requirements, sell the land at market rates, and use the proceeds to finance some of the capital improvements required.
- The golf course land situated to the east of the runway should continue to be used as such, but designated for the very long-term for Airside Commercial;
- Lands adjacent and to the south and west of the golf course should eventually be developed for Airside Commercial and Support, which may require some reconfiguration of the golf course, initially, and complete relocation in the very distant future; and
- The agricultural parcel of land located in the extreme north end of the airport site, north of Haslam Rd, should remain leased for agricultural uses well into the future, though a portion of this site may be required for a potential runway extension in the distant future.

Land Use Plan

The Land Use Plan balances the various requirements for the airport and allows it to respond to future needs in a very flexible and strategic manner while being cognizant and responsive to its regional context, is illustrated in Figure ES-2 on the follow page.

The 5-10 Year Focus

The Land Use Plan depicts the ultimate layout for the airport and protects for all development requirements and scenarios that may occur well into the future (2035 and beyond) based on current operational expectations and business priorities. Although the Plan is long-term in nature, the analyses that led to its development highlights areas of focus and priorities for the upcoming 5-10 year period for the NAC in terms of upcoming capital requirements and business development/marketing initiatives.

Figure ES-2: Nanaimo Airport Land Use Plan

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1.0 Introduction

Nanaimo Airport (YCD) is located along the Trans-Canada Highway (Highway 1), adjacent to the Village of Cassidy, approximately 18 km south of the City's downtown core. Its service area encompasses areas to the north (including parts of the Comox Valley), to the west (including Port Alberni and Lake Cowichan), and to the south (including areas within the Cowichan Valley District, such as Ladysmith, Chemainus, Duncan, among others). The airport offers a 2,013m (6,600 ft) runway capable of accommodating aircraft up to the size of the B737/A320, a Passenger Terminal Building, vehicle parking, and airport operations support facilities such as maintenance and airport Emergency Rescue Services (ERS). Occupying a 211ha site, the airport is also home to an array of commercial tenants including fixed based operators, aircraft hangars, flight schools and recreational vehicle sales.

The Nanaimo Airport Commission (NAC) is responsible for the development, management and operation of the Airport. Its Mission Statement is to *"To provide a safe, efficient and financially viable airport, offering excellent services and value to all users while fostering economic development."* Its Vision Statement is as follows: *"The Nanaimo Airport will be a safe, reliable, air services gateway effectively meeting customer's needs."*

As part of its mandate to effectively develop, manage and operate the airport, the NAC must have an appropriate plan to guide the long-term development at the airport. To meet this requirement, the Airport has hired SNC-Lavalin Inc. (SLI) to review past planning activities at the airport and, together with current traffic and development information, develop an updated long-term Land Use Plan to guide future development at the airport.

2.0 Planning Principles

The ultimate objective of an Airport Land Use Plan is to ensure that sufficient land is protected and reserved to support efficient long-term airport operations and associated development. Even though large portions of the airport's current vacant land inventory will not likely be developed for a very long time, the Land Use Plan protects enough areas to allow existing operational facilities and airport businesses to expend well beyond the foreseeable future. The Plan provides for all iterations of development phasing within the defined land use areas, the highest and best uses for each land area, and portrays the intended very long-term layout for the airport.

With this in mind, the development of the Land Use Plan is based on the NAC's direction and business objectives for the airport. More specifically, the following principles guide the planning process:

- **Long-term view, short-term focus** – The intent of the Land Use Plan is to ensure that sufficient land is protected to support long-term operations and expansion of operational facilities well beyond the foreseeable future. As per the NAC's mission statement, financial viability, value and economic development are key drivers of the airport's business activities. Even though the Plan must consider a very long-term outlook, it must also take a balanced view of short-term needs and business opportunities, in particular with regards to where and how facilities and commercial activities expand in the near-term. The Land Use Plan therefore takes a very long-term view with consideration given to a 30-40 year window (or the 'ultimate' capacity of the site). To provide guidance with regards to current development requirements, it also identifies appropriate ways to accommodate development projects on the site over shorter 5- to 10-year period.
- **Partners with the community** – As a not-for-profit community-based organization, the NAC is strongly committed to addressing the community's values and to adopting responsible environmental practices. In addition, the NAC recognizes that airport operations can directly affect the quality of life of area residents and the environment in which they live. This involves not only providing safe, secure and quality air transportation facilities to residents and visitors, but also ensuring that a balance is reached between competing community development objectives and the impacts/benefits these may generate. In this context, the Land Use Plan considers the community values and expectations identified in the Regional District of Nanaimo's Official Community Plan (OCP) and Regional Growth Strategy (RGS). It aims to facilitate synergies for economic growth and employment generation through activities on the airport site, from both aviation and highway commercial/industrial businesses, to enhance the contribution it makes to the community. The Plan is also developed to reflect the NAC's community's commitment towards environmental sustainability, with a key goal of minimizing the environmental footprint of airport activities and impacts on the immediate natural environment (e.g., aquifer, noise).
- **Environmentally responsible** – The NAC is very sensitive to the natural environment in which the airport resides and to the potential impacts airport operations have on its surroundings. The NAC consistently works to mitigate impacts of aircraft noise and glycol use on the site. In addition, the aquifer that sits under the airport is of significant importance to the community's water supply and must be protected. Part of the airport site is also currently known as a Coastal Vesper Sparrow habitat, an endangered species of birds, for which a wildlife protection measure is in place. As an important guiding element to YCD's future growth, the Land Use Plan must ensure that future development and associated land uses are compatible with the airport's environmental setting.
- **Highest and best use of land** – Consistent with accepted airport planning practices, the Land Use Plan reflects a standard airport planning hierarchy that considers the facilities in the following order (1) runways, taxiways and aprons (and associated Obstacle Limitation Surfaces); (2) Passenger Terminal complex (including the aircraft apron, building, support areas, car parking, and access elements); (3) airport support areas (e.g., airport maintenance, ERS); (4) commercial development areas; and (5) operations reserves (that can accommodate interim uses). In looking towards the future, the Plan recognizes that the east side land inventory should be preserved for long-term aviation purposes, and that a maximum amount of land be dedicated along Highway 1 for prestige development benefiting the local and regional community.

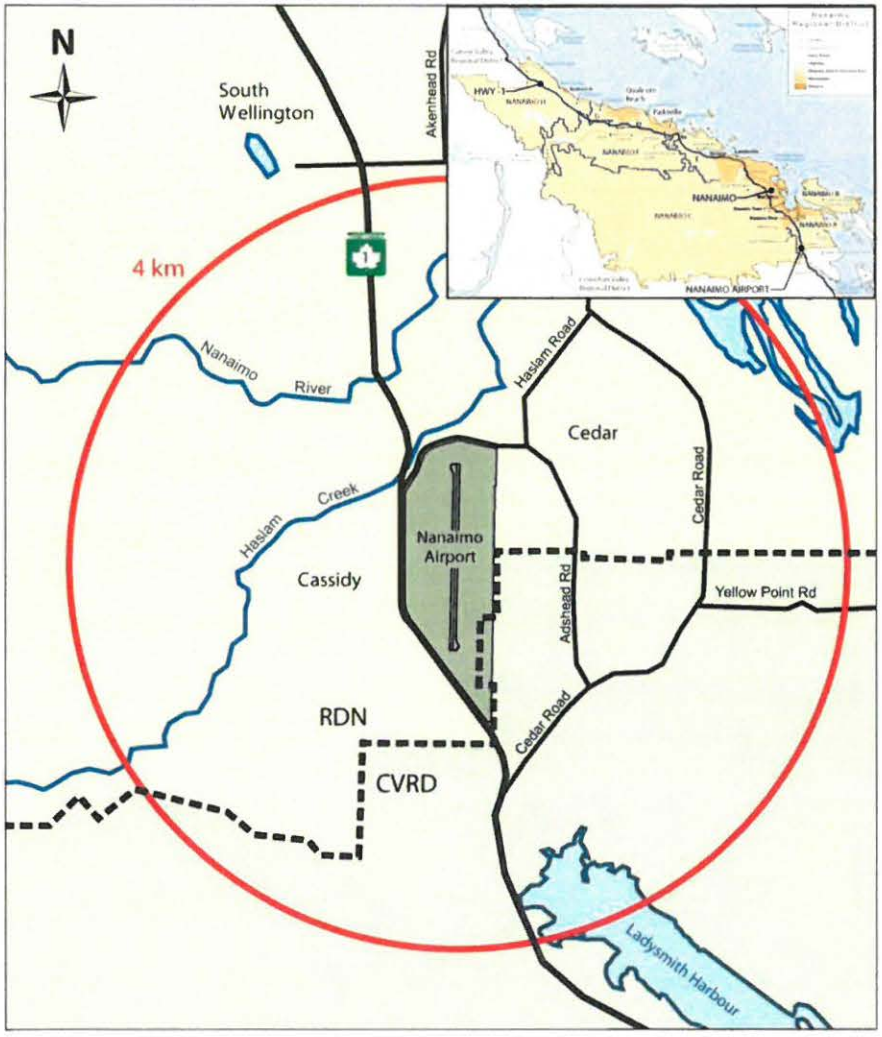
- **"Business-flexible"** – Even though the Land Use Plan identifies specific uses for specific land areas that will occur over a very long-term horizon, it is also be prepared with flexibility in mind. NAC's financial viability, value and economic development mission can only be adequately delivered if it has the tools to address market opportunities as they occur. This sometimes involves shifts in its strategic vision, mission and business objectives that are needed when unforeseen industry, economy and community conditions change over time. The application of the Land Use Plan must therefore avoid rigidity and provide opportunities to adapt to changing environments. Given the future uncertainties in any planning exercise, the Plan is developed in a manner that provides flexibility in responding to changing requirements in the future without constraining the airport's strategic growth or potential.

3.0 Planning Context

3.1 Regional Planning

The airport is located within the Regional District of Nanaimo (RDN), which extends south to the Cowichan Valley Regional District (CVRD), encompassing lands up to and including Qualicum Bay, north to the Comox Valley Regional District. Within the RDN, there are seven (7) Electoral Areas (A, B, C, E, F, G, H). The airport is located within Area A, which is in the south-east corner of the RDN, as illustrated in Figure 1, and to the north of Electoral Area H of the CVRD,

Figure 1: Airport Location



Electorial Area A mostly occupies land a peninsula of south of the City of Nanaimo, north of Ladysmith and mostly to the east of the Highway 1 corridor. The airport is adjacent to the Village of Cassidy, located just on the west side of Highway 1.

While the airport is located within the RDN, its service area extends well beyond regional boundaries to encompass areas to the north (including parts of the Comox Valley), to the west (including Port Alberni and Lake Cowichan), and to the south (including areas within the Cowichan Valley District, such as Ladysmith, Chemainus, Duncan, among others).

The RDN is responsible for setting land use policy and development direction within its limits and it does so through an Official Community Plan (OCP). While the Nanaimo Airport is located within the RDN, aviation is a federally regulated activity. Airport lands and, more specifically, definition of the Airport Zone are currently excluded from the OCP process as a result. In reviewing the OCP for Electoral Area A, a number of elements that are important and relevant to the management and planning of airport land use planning must be highlighted. These are as follows:

- An area to the east side of the airport's runway has been identified as habitat for the endangered Coastal Vesper Sparrow and needs to be protected and managed.
- There is some land in the south east portion of airport site that floods regularly and provides valuable wetlands that need to be protected.
- There are a number of water streams on the airport site, both on the east and west sides of the runway that must to be considered.
- Airport land north of Haslam Road is within the 200 year floodplain of the Nanaimo River.
- The entire airport site, the Village of Cassidy and larger areas to the north, south and especially west all lie on the Cassidy aquifer, which is an important source of drinking water for the region. Care must be exercised in development so as to not contaminate this water source.
- Land adjacent to the airport site and on the west side of Highway 1 is zoned as Light Industrial/Commercial in support of development in the Village of Cassidy. This area is further designated as a Development Permit Area for the purpose of protecting the form, character and role of farm lands.
- The Village of Cassidy is important to the RDN. It should be developed to be more self-sufficient, including water and sewer services, recreational facilities and commercial and light industrial opportunities.
- The OCP recommends that the Village of Cassidy boundaries be extended to the south and east to provide the opportunity for a more varied mix of housing in the Village. (It should be noted that this recommendation is not consistent with Transport Canada's *Land Use in the Vicinity of Airports*[4] with respect to residential developments within close proximity to airports.)
- The OCP recognizes the airport as an important contributor to the local and regional economies.
- There is a desire to improve the intersections and accessibility afforded in the area of Highway 1/Haslam Road and Spruston Road.

In preparing this Land Use Plan, the NAC is sensitive to these elements. Potential issues or possible inconsistencies that may exist are highlighted in this document, as appropriate.

The Land Use Plan has been prepared to guide airport development. In developing this Land Use Plan, consideration needs to be given to the regional development plan, but at the same time, the airport plan must be responsive to a greater regional context that goes beyond the RDN boundaries.

3.2 Natural Environment

The NAC is very sensitive to the natural environment in which the airport resides and has instituted robust programs to protect the various ecosystems. Aquifer and wildlife protection in and on land surrounding the airport are therefore significant considerations for land use planning and development on the site.

[4] *Land Use in the Vicinity of Airports, TP1247*; Transport Canada, 2005.

3.2.1 Cassidy Aquifers

A thick deposit of saturated sand and gravel sediments lying beneath the Cassidy area forms two water-bearing bodies: the Upper Cassidy Aquifer and the Lower Cassidy Aquifer. The existence of the aquifers as a productive water source was documented soon after construction of the Nanaimo Airport during the Second World War, during exploratory drilling for industrial water supply.

The aquifers continue to be used today. Residents of the Rural Village of Cassidy do not currently have access to community water and sewer services and must rely on underground wells as their primary source of water. Additionally, the groundwater flowing through the aquifers helps sustain summertime baseflows in Haslam Creek, Hokannen Creek, and their tributaries.

The NAC is aware of the value of the groundwater aquifer that lies beneath the airport, and recognizes its duty to protect this resource. In addition to the NAC's Environmental Policy and Environmental Management Plan that aims to prevent accidental contamination of the aquifers, development and implementation of a Water Strategy for the site has been undertaken. The adopted strategy is based on three simple questions:

- What do we have? (Asset)
- What do we have to manage? (Management)
- What do we have to protect? (Protection)

Details of the NAC's environmental policies and the water strategy are provided later in this document in Section 4.0 – Environmental Management.

3.2.2 Coastal Vesper Sparrow Habitat

The Coastal Vesper Sparrows (VESP) is a small migratory bird first spotted on the northern portions of the airport property in 2002.[5] Over time, however, they have steadily migrated south to primarily occupy only the most Southern portion of the fenced airside area.

The airport is the only known extant breeding site for the species in British Columbia. Despite preservation efforts undertaken to date, the population has been decreasing. In previous years, the observed population on southern Vancouver Island has ranged from three to ten pairs of Vesper Sparrows. However, monitoring undertaken in 2012-2013 found no breeding pairs. In 2013, only one male bird returned to airport land.

While the species is dwindling on the site, the associated area is identified as a Critical Habitat by the Canadian Wildlife Service. Wildlife management is therefore in place for this area. Any planning for potential development in this area of the airport will need to ensure the habitat is not negatively impacted as long as the species continues to be recorded. Details of NAC's monitoring activities are provided in Section 4.0 – Environmental Management.

[5] The species was assessed as endangered by the Committee on the Status of Endangered Wildlife in Canada in April 2006 and added to Schedule – 1 of the federal *Species at Risk Act (SARA)* in 2007.

4.0 Environmental Management

4.1 Overview

The NAC is committed to operating the Nanaimo Airport sustainably by taking into consideration its economic, social and environmental responsibilities with every business decision. Protection of the environment is one of NAC's corporate values; an element how it views sound business practice; and a fundamental corporate responsibility.

Before making operations and infrastructure decisions, it considers environmental impacts related to its commitments, compliance requirements and business risks. Once impacts are considered and a decision is made, it carefully plans to ensure that intended results are met and actions to protect the environment are implemented.

4.2 NAC's Environment Policy

Through the Environment Policy, the NAC commits as a minimum to:

- Comply with all relevant environmental legislation, regulations and approved codes of practice;
- Safeguard and protect airport assets and the environment by striving to prevent and minimise the contribution to pollution of land, air and water;
- Seek to minimize waste and maximise the efficient use and recycling of materials and resources (including water consumption);
- Manage and dispose of all waste in a responsible manner;
- Provide training for staff so that they all work in accordance with this Policy and within an environmentally aware culture;
- Regularly communicate its environmental performance through letters, media and the YCD website to employees and other significant stakeholders;
- Develop management processes to ensure that environmental factors are considered during planning and implementation; and
- Monitor and continuously improve environmental performance.

4.3 Environmental Management Plan (EMP)

The NAC's Environmental Management Plan (EMP) follows a "Plan, Do, Check, and Act" model. The EMP provides direction and sets priorities for improving environmental performance. Management activities are controlled and documented through the operation of our integrated environmental management system. The NAC also records and maintain environmental spatial information (e.g., wells, fuel storage tanks) within a geographic information system (GIS).

To operate a safe, efficient and financially viable airport requires that the NAC constantly monitor and correct risks before they result in unsafe conditions, accidents or harm to the environment. It endeavours to identify risks, prioritize actions and track progress within environmental management systems until all items are successfully resolved.

The EMP implements policy in the following management areas:

- Environmental Management System administration;
- Water resources;
- Land resources;
- Natural habitat;

- Aeronautical noise;
- Energy and climate change; and
- Waste management.

The following provides some additional information on management areas directly related to the Land Use Plan (water resources, land resources, natural habitat and aeronautical noise management).

4.3.1 Water Resources

The NAC holds a significant responsibility in ensuring the aquifer is preserved and that it is not subject to contamination from airport activities such as waste-water generation, de-icing and fuelling. The airport complies with all environmental laws and regulations and works with the RDN to ensure accidental spills are reported or runoffs that may impact water quality are monitored, reported and mitigated as soon as possible.

Within the water resources management area, the NAC has eight management strategies designed to protect surface and groundwater resources. These are as follows:

1. Store and handle fuels in a manner that prevents leaks and spills;
2. Monitor and control aircraft de-icing;
3. Monitor and control pavement de-icing;
4. Manage potable and non-potable water use;
5. Manage wastewater treatment;
6. Manage and control airport drainage;
7. Store and handle hazardous materials to prevent leaks and spills; and
8. Manage pesticide use.

4.3.2 Land Resources

In addition to the NAC's management and oversight of tenant activities that could impact the environment, the organization requires that environmental site assessments be completed prior to entering and upon exiting any lease. This ensures that each tenant retains responsibility for any environmental liability created during their tenure (e.g., contaminated land).

4.3.3 Natural Habitat

The airport is situated on approximately 211ha of land. The NAC strikes a balance between maintaining a safe airfield and managing the land as habitat for species that can safely coexist with aircraft. The NAC employs three overarching strategies to maintain this balance:

1. Maintain a Wildlife and Habitat Management Plan;
2. Participate in the maintenance of the Coastal Vesper Sparrow critical habitat; and
3. Monitor and maintain the Haslam Creek Habitat Restoration Project.

4.3.4 Aeronautical Noise

The NAC is committed to being a good neighbour and working to manage airport noise while meeting the region's need for safe, affordable, reliable and convenient air travel. Noise is created when aircraft taxi, depart and land, and during engine testing. Noise levels are affected by differences in aircraft and engine types, and weather conditions. The sensitivity to noise varies between individuals, according to time of day and by type of human activity. The NAC applies the following three strategies to manage noise related to airport operations:

1. Compatible land use planning;
2. Communicate with our neighbours; and
3. Develop a Noise Mitigation Program.

4.3.5 Performance Monitoring

NAC has selected performance indicators to measure performance against the following key objectives:

1. Prevent spills and leaks of hazardous materials;
2. Protect the ecology and biodiversity of airport lands;
3. Reduce wildlife hazards and associated risks to airport operations;
4. Minimize the noise disturbance to airport vicinity community;
5. Reduce energy consumption; and
6. Maximize waste diversion from landfill.

When environmental objectives conflict, operational goals, or significant social or economic considerations, it is committed to exercising good judgement and consulting stakeholders to seek optimal solutions.

4.4 Water Strategy

4.4.1 Overview

Operation of a large facility like Nanaimo Airport situated atop an unconfined aquifer necessarily involves some risks. The NAC's role with regards to water quality is to control the risks to the Cassidy aquifers. This means first understanding and characterizing them as follows:

- The aquifer is a reliable water source, and should remain so;
- Groundwater quality in the aquifers shall be known and protected;
- Potential contamination sources from airport operations and neighbouring properties shall be identified and mitigated; and
- Systems shall be in place to continuously monitor and report conditions.

To better understand the aquifers and the risks posed to them, the NAC has implemented a Water Strategy that involves gaining a strong understanding of the aquifers, identifying potential impacts, and then managing the activities conducted at the airport in a manner that is protective of the water asset over the long-term period.

A water level monitoring program was launched in 2013 to define the movement of the groundwater in the aquifers. It relies on existing water wells on airport lands and a neighbouring property. Precise datum elevations for the top of each well were obtained by surveying. Both water levels and temperature are measured continuously with transducer/data loggers. Based on collected information, it is understood that groundwater moves northeast. Over time, the NAC will be able to correlate the seasonal fluctuation of the water table with precipitation data and assess whether groundwater is being withdrawn from the aquifer at sustainable rates.

To identify the risks of impact to groundwater quality, an inventory of potential sources of contaminants has been made. The existing Risk Management Plan will be reviewed and updated regularly, in light of the NAC's recently developed understanding of the groundwater regime.

4.4.2 Planned Tasks

The study was expanded in 2014 to include the definition of the groundwater quality. Water samples are collected from eight monitoring locations and submitted for laboratory analyses. These activities will determine if groundwater from different aquifers varies significantly in quality, and whether water composition can be used as an additional element in defining the complex groundwater movement in the subsurface. The data will provide baseline information that can be used for comparison in the future to detect potential water quality changes.

To NAC's knowledge, no other body or organization in the region has implemented such robust programs and policies to protect the airport ecosystem.

The operation of the airport's wastewater drainfield was reviewed in 2014 to confirm that it continues to operate without causing undue environmental impact. The review entailed an audit of water quality analyses for water samples previously collected from the monitoring wells near the drainfield.

In some parts of the airport property, artesian head (pressure) exists in the aquifer, causing groundwater to flow to surface at the wellheads. If uncontrolled, this condition – called flowing artesian – can contribute to aquifer depletion. In addition, uncontrolled artesian conditions are illegal according to the Groundwater Protection Act. Part of the 2014 program involved assessing wells with artesian head to determine if any wells need upgraded well caps/surface seals to stop the flow.

4.4.3 Protection

The Airport Commission has two goals for protecting the Cassidy aquifers:

- Cause no net change in groundwater flux beneath airport lands (addressing quantity); and
- Cause no impact to groundwater quality.

Learning about the layout of the aquifers and the direction of groundwater flow through them was the start of a protection program. To monitor for changes in aquifer conditions, the NAC has a network of wells for use as sentinels. Water levels and water quality will be continually monitored, and any changes will be assessed. Should these changes be qualified as negative, and result from activities being conducted by the NAC, corrective measures will be taken.

4.5 Coastal Vesper Sparrows Habitat

Since the time the Coastal Vesper Sparrows (VESP) were spotted on the airport site, the NAC has been working cooperatively with the Canadian Wildlife Service (CWS) of Environment Canada, the Vertebrates-at-Risk Recovery Action Group of the Garry Oak Ecosystem Recovery Team (GOERT), and other local interest groups to plan and manage species protection activities that intersect with airport operation and aviation safety. The NAC has unreservedly participated with CWS and provided the necessary aviation expertise required to facilitate the implementation of species monitoring and vegetation management plans on airport land.

Coastal VESP monitoring has been conducted annually since 2008 by CWS during the breeding season, which is from April 15 to September 15.

In 2010, the NAC prepared a Site Management Plan for Environment Canada. This included retaining an experienced wildlife biologist familiar with airport operations to draft the Plan.

In 2013, NAC partnered with Environment Canada on a Coastal VESP Critical Habitat Conservation and Enhancement Project. The project was to plan and implement high priority activities for the conservation and enhancement of critical habitat for Coastal VESP, while also working to ensure standards of public safety on NAC land are not compromised. The overall goal of the project was to enhance the short- and long-term recovery of Coastal VESP in Canada.

This partnership also resulted in a draft Conservation and Enhancement Guide that was jointly developed between CWS and NAC Staff. It outlines proposed measures, protocols, actions and treatments, aimed at conserving the habitat and population of Coastal Vesper Sparrows on a prioritized portion of the airport lands. Prescriptions included in the Guide have been designed to ensure management activities associated with wildlife and vegetation management on the airside areas of the airport are compatible with all applicable NAC plans and Government regulations while ensuring public safety.

4.6 Aircraft Noise

4.6.1 Background

The Noise Exposure Forecast (NEF) is the generally recognized matrix for aircraft noise measurement at Canadian airports. The NEFs produce noise contours that are typically used to encourage compatible land use planning in the vicinity of airports in Canada through Transport Canada guidelines[6].

The NEF is not a direct measurement of noise generated by single aircraft operations, such as decibel-based acoustical measurements. Instead, it is based on a compendium of factors including traffic volumes, frequency, aircraft type and mix, and time of day operations. It represents a weighted average of continuous exposure to aircraft noise in the vicinity of airport runways, approach and departure paths. Of particular note in the production of a NEF is the increased weight of nighttime operations – weighted seven times higher than similar daytime operations to account for the higher degree of perceived disturbance of nighttime noise events.

Community response to aircraft noise will typically vary according the level of exposure within an individual noise contour area. The Table 1 provides an overview of typical community response to aircraft noise exposure based on location within different NEF contour areas.

Table 1: Community Response Prediction Within Noise Exposure Forecast Areas

Response Area	Response Prediction*
1 (over 40 NEF)	Repeated and vigorous individual complaints are likely. Concerted group and legal action might be
2 (35-40 NEF)	Individual complaints may be vigorous. Possible group action and appeals to authorities.
3 (30-35 NEF)	Sporadic to repeated individual complaints. Group action is possible.
4 (below 30 NEF)	Sporadic complaints may occur. Noise may interfere occasionally with certain activities of the resident.

Source: *Land Use in the Vicinity of Airports*, TP1247; Transport Canada, 2005.

Transport Canada's *Land Use in the Vicinity of Airports* guidelines recommend compatible land uses within various NEF contour zones. In particular, Transport Canada recommends no new residential construction in areas situated within NEF 30 or higher at existing airports.

4.6.2 Nanaimo Airport Noise Exposure Forecasts

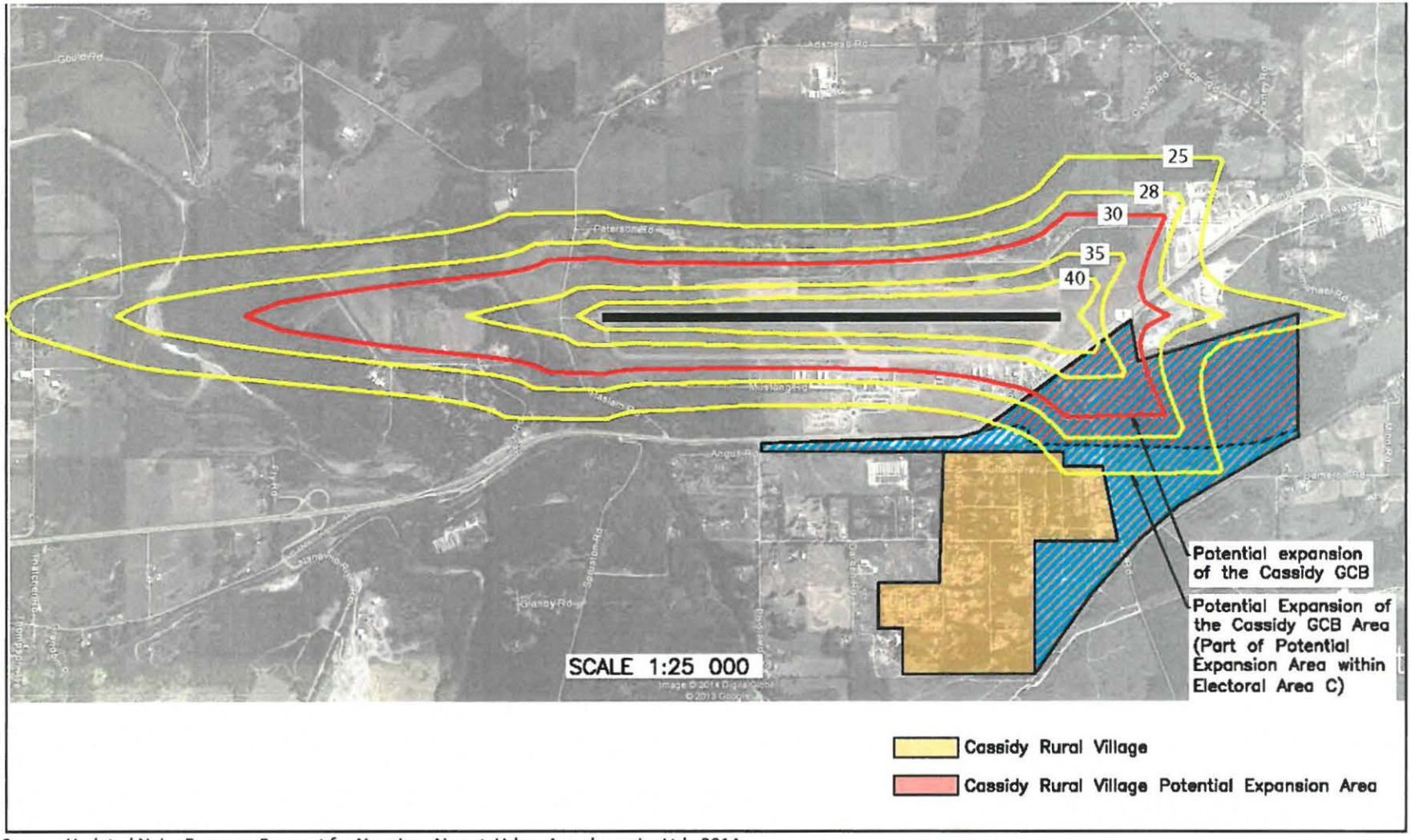
Noise Exposure Forecasts for the Nanaimo Airport for the year 2026 were prepared in 2007 and updated in 2014 to reflect recent changes in aircraft activity at the facility. The updated NEF contours are presented in Figure 2.

Review of the 2026 NEF Contours for the airport indicate that noise exposure in inhabited areas around the airport is well below Transport Canada guidelines. However, it is important to note that the area currently designed as the Cassidy Rural Village Expansion Area in the RDN's Official Community Plan (OCP) largely falls within the 30 NEF contour zone.

NAC shares its NEF contours with regional planning authorities to help guide development decisions.

[6] *Land Use in the Vicinity of Airports, TP1247*; Transport Canada, 2005.

Figure 2: 2026 NEF Contours – Nanaimo Airport



Source: *Updated Noise Exposure Forecast for Nanaimo Airport*; Urban Aerodynamics Ltd., 2014.

4.7 Vicinity Land Uses

4.7.1 Aircraft Flight Path Protection

To ensure the safety of aircraft, passengers and the general public, airports are required to maintain various height, electronic zoning and bird hazard protection surfaces. These surfaces typically extend well beyond an airport's property, creating challenges for airports to maintain these surfaces in accordance with Transport Canada regulatory requirements.

The *Aeronautics Act*, among other things, lists Airport Zoning Regulations (AZRs) that are enacted at airports across the country. AZRs restrict the height of buildings, structures and objects (including natural growth) on lands adjacent to an airport and protect against disposal of waste attractive to birds and against electronic interference with navigational aids. The *Aeronautics Act* does not however contain AZRs for the Nanaimo Airport.

AZRs give Transport Canada, the airport and local municipality the authority to control the heights and physical characteristics of obstacles that are potentially hazardous to the safe operation of aircraft in the vicinity of an airport. Without AZRs, Transport Canada, airports and municipalities have little authority to protect airports for the purposes of aeronautical safety and economic viability and instead must rely on other alternatives for the requisite protection.

Another variation is federal/provincial/municipal airport zoning bylaws. Similar to AZRs, airport zoning bylaws are enacted through the Aeronautics Act, which ultimately involves the delegation of authority of certain elements of aviation safety from Transport Canada to the province and, ultimately, the municipality. Under this option, a municipal airport zoning bylaw, similar to that of an AZR, is prepared by the municipality. The implementation of airport zoning bylaws involves coordination between Transport Canada, the province, airport and municipality.

Finally, there are potential non-regulatory solutions to maintain compliance with Transport Canada regulatory requirements such as municipal cooperation, agreements, easements and land acquisition. However, these are typically less formal, short-term, tenuous and more often than not include some level of compensation.

While there are many implementation and enforcement challenges as well as potential risks associated with each of the available options, it is important that the NAC work with Transport Canada and the province to identify and execute an appropriate solution that will meet the terms of Transport Canada's aviation regulatory requirements to maintain and enforce the protection surfaces which extend beyond the airport property.

4.7.2 Compatible Vicinity Land Use Planning

Compatible land use planning plays an integral role in airport noise management practices by airport operators. Gains achieved through noise reductions at the source, or through operational procedures are lost if residential development or other noise sensitive development is permitted to occur in high noise or air traffic areas.

While Transport Canada's *Land Use in the Vicinity of Airports* document contains guidelines for land uses in noise impacted areas, land use planning is delegated to the local authorities in British Columbia. Unlike other provinces, such as Alberta or Ontario, where provincial legislation exists to protect land around some or all airports, no such policy exists in BC. Therefore, it is important that the Regional Districts and the NAC work closely to ensure the benefits of the Nanaimo airport are protected through concerted land use and development planning at and around the airport. As discussed earlier in Section 3 of this document, this Land Use Plan will be used to achieve this goal.

The definition of an Airport Vicinity Protection Area by the province or the Regional Districts is also viewed as a means of ensuring compatible land uses around the airport. Airport Vicinity Protection Areas (AVPAs) in place in other Canadian jurisdictions are typically defined in relation to noise exposure under or in proximity to aircraft flight paths as measured by Noise Exposure contours and forecasts (see Section 4.6).

The RDN's OCP also offers another tool to ensure compatible land use development in the airport's vicinity. With the exception of the Cassidy Rural Village and the Cassidy Rural Village Expansion Area shown previously in Figure 2, most of the land surrounding the airport is designated for agricultural purposes.

4.7.3 Cassidy Rural Village and Potential Expansion Area

The Cassidy Rural Village and its Potential Expansion Area are situated within the RDN's Electoral Area A Growth Containment Boundaries (GCB). The GCB "defines the boundary between what is considered 'urban' in the context of Electoral Area A and what is considered rural."[7]

According to the OCP for Electoral Area A, the Cassidy Rural Village has the highest density of any village centre in the RDN Electoral Areas, with a large proportion of its housing units contained in three manufactured home parks. The Village does not contain any community services, including water or sewer services. Protection of the Cassidy aquifer is therefore considered of utmost importance since it is the source of domestic water for most residents.

It is also noted that residents strongly support the preservation of the 'rural village feel' of Cassidy, so future development in the Village and its Expansion Area is intended to remain low density, unless serviced with community water and sewers, with a local feel. The OCP supports the creation of a Village Plan for the Cassidy Rural Village to encourage achievement of this objective and preservation of the existing local context.

4.7.4 Vicinity Land Use Considerations

Commercial Land Uses

As outlined earlier in this document a narrow land corridor adjacent the airport site on the west side of Highway 1 is zoned as Light Industrial/Commercial to support development of commercial businesses that will serve the residents of the Village of Cassidy. (This area is further designated as a Development Permit Area for the purpose of form and character and protecting farm lands.) Although the OCP for this area specifies "development within this designation shall not take the form of a Big Box retail, highway commercial, strip commercial, or fast food outlet", some of these uses already occur on the Cassidy side of Highway 1.

The proposals outlined in this Land Use Plan also designate the strip of land on airport property facing the Cassidy commercial land on the east side of the highway for commercial purposes, most notably for a Prestige Highway Commercial development. While this may, at first, appear to conflict with OCP policy statements for preservation of the rural feel of the area and attraction of small commercial business to the community, the Prestige Highway development envisioned for the airport land can complement the commercial offerings in Cassidy due to the relatively small building footprints that it can allow (the site is too small for big box retail), its ability to accommodate businesses that require serviced land (further reducing potential impacts on the aquifer), and NAC's ability to enforce design elements and building layouts with future tenants to provide a 'village feel' on the site. The NAC supports the creation of the Village Plan for the area and harmonious commercial development on both sides of the highway.

Residential Land Uses

The OCP provides for the eventual expansion of the Cassidy Rural Village GCB to the south and east to support a varied mix of housing units on approximately 40% of the expansion area. The remainder of the potential expansion area may contain a mixture of commercial, business park/low impact manufacturing and green spaces.

As shown earlier in Figure 2, a large portion of the potential expansion area situated within Electoral Area A falls within the 30 NEF contour area and above. According to Transport Canada guidelines, future residential development is not compatible in this area. Although related OCP policy statements have yet to be enacted through Zoning Bylaw amendments, the NAC encourages the reservation of land situated within the 30+ NEF area for compatible non-residential purposes. A list of land uses and their compatibility within NEF zones is provided in Appendix A.

[7] *Electoral Area A OCP, Bylaw No. 1620, 2011 Schedule 'A'*; Regional District of Nanaimo, 2011 (amended 2013).

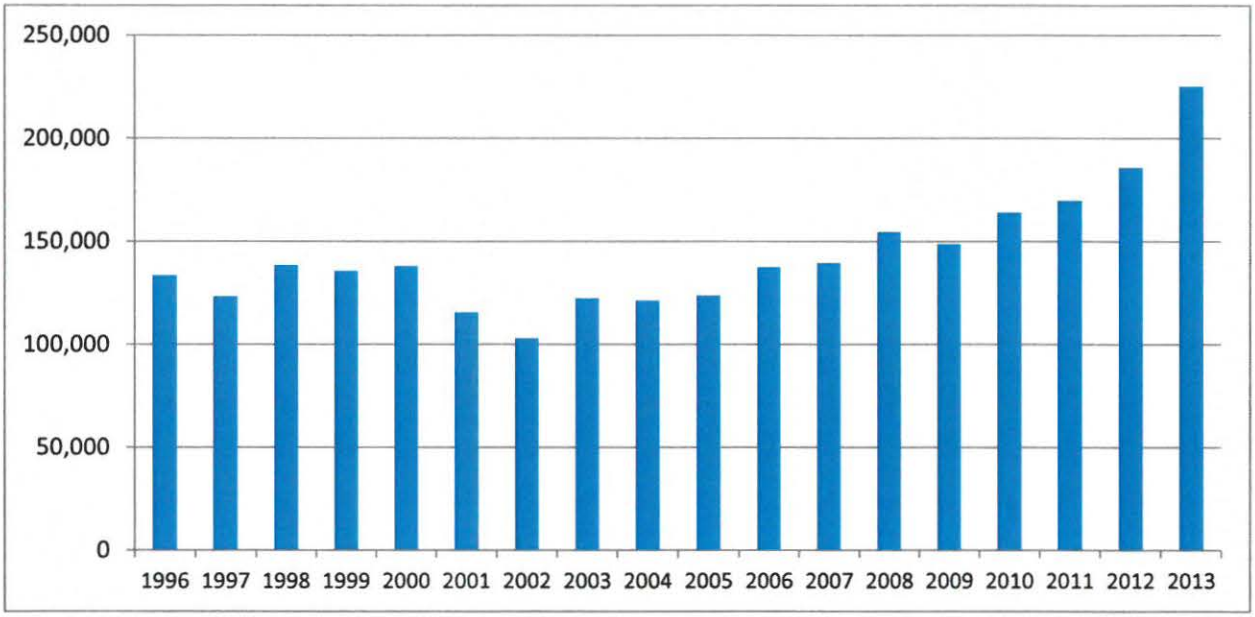
5.0 Aviation Traffic and Forecasts

Annual aircraft movements and passenger traffic are key drivers for airport development and forecasts of future traffic are key inputs to airport planning activities. The most recent forecasts for the airport were prepared by SNC-Lavalin Inc. in 2014 and are presented below.

5.1 Passenger Traffic

The Nanaimo Airport handled 225,251 Enplaned/Deplaned (E/D) passengers on scheduled flights in 2013. All passengers were domestic during that year.[8] Historical passenger traffic at YCD is presented in Figure 3.

Figure 3: Annual E/D Passengers – 1996 to 2013



Source: Nanaimo Airport Commission

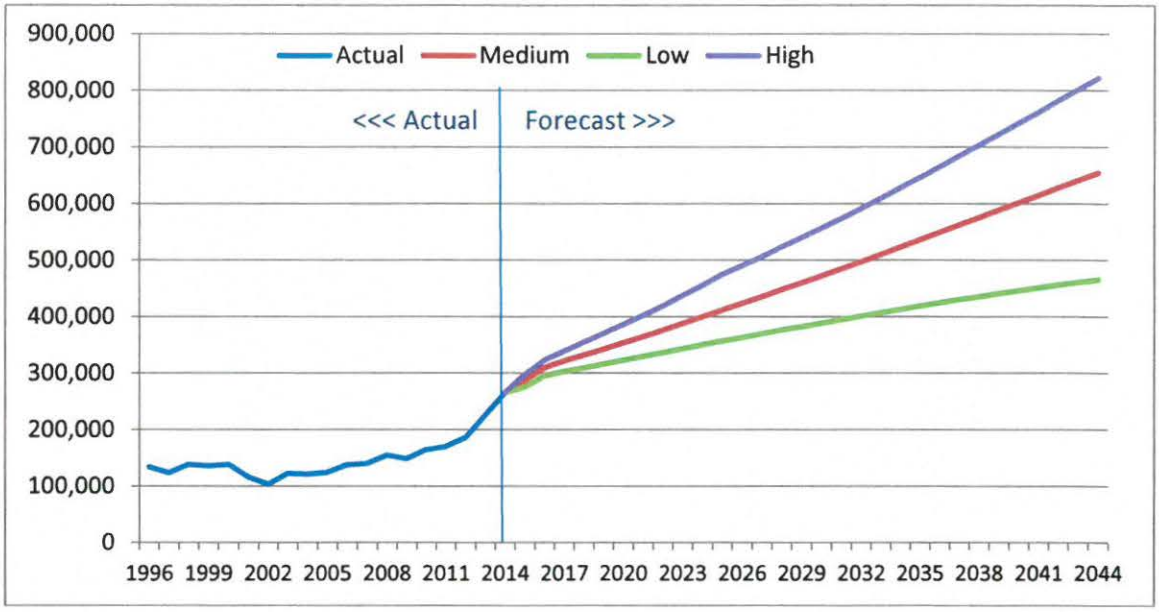
Until mid-2013, the airport was only served by Air Canada's regional carriers and there was no competition for service from YCD. Airfares were relatively high and, as a result, air travel demand in the region was negatively impacted. Unlike many airports in Western Canada in the late 1990s or early 2000s, traffic growth at YCD was modest and declined in 1997 following WestJet commencing service at Victoria and again in 2001 and 2002 with WestJet starting service at Comox.

Traffic increased steadily from 2005 to 2012, apart from a small decline in 2009 due to the economic recession. The commencement of service by WestJet Encore in late June 2013 stimulated new travel demand and recaptured leakage previously flying from Comox, Victoria and Vancouver. The new daily flights to Calgary increased weekly airline seat capacity by almost 30%. Overall traffic grew 21% in 2013; but when considering only the second half of the year when WestJet Encore's new services were operating, traffic growth was much higher during this six-month period. For 2014, passenger traffic at the Nanaimo Airport is tracking to surpass 260,000 annual E/D passengers.

The forecasts of passenger traffic under Medium, Low and High Case Scenarios are shown graphically in Figure 4, and a detailed breakdown is presented in Table 2.

[8] Note Kenmore Air introduced transborder service to Seattle in 2014.

Figure 4: Historical and Forecast Passengers under Low, Medium and High Case Scenarios – 1996 to 2044



Under the Medium Case, passenger traffic is forecast to increase to 342,000 in 2019 and to 460,000 in 2029. Average annual growth rates for the 30-year period are forecast to average 3.1%, 1.9% and 3.8% under the Medium, Low and High Case scenarios, respectively. However, for the period from 2016 to 2044, growth rates are much lower averaging 2.7%, 1.6% and 3.4% for the three cases.

Table 2: Forecast Passengers and Growth Rates under the Medium, Low and High Case Scenarios

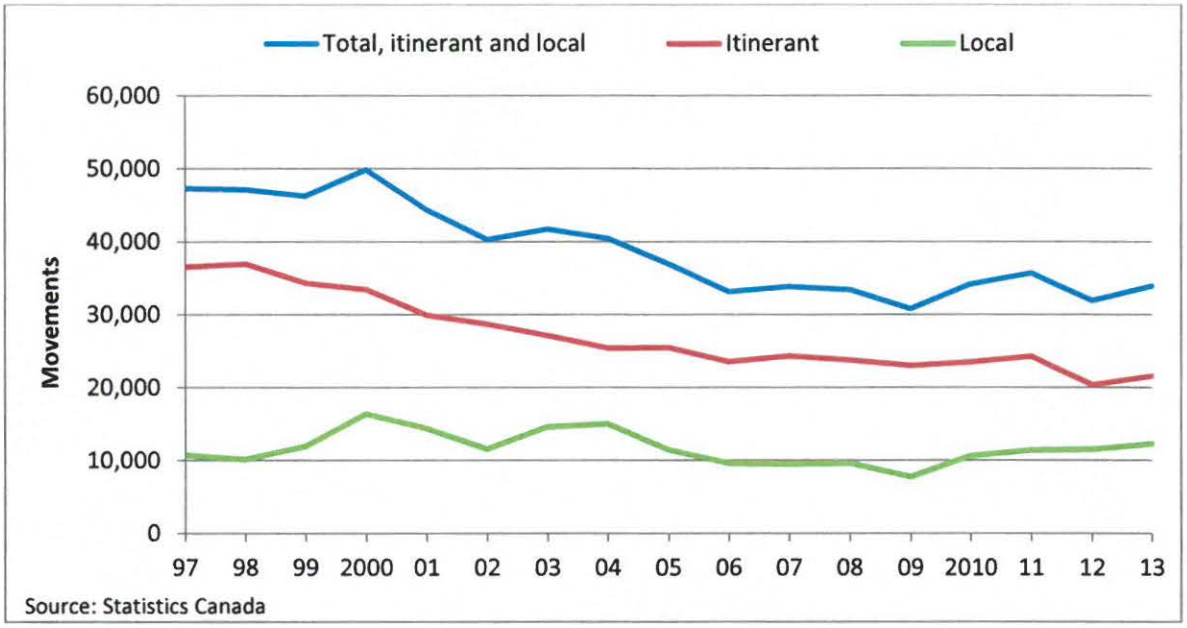
Year	E/D Passengers			Avg. Annual Growth Rates		
	Medium	Low	High	Medium	Low	High
2013 Actual	225,251	225,251	225,251			
2014 Est.	265,300	265,300	265,300	17.8%	17.8%	17.8%
2015	287,000	275,600	297,400	8.2%	3.9%	12.1%
2016	309,000	295,000	323,000	7.7%	7.0%	8.6%
2017	322,000	303,000	339,000	4.2%	2.7%	5.0%
2018	332,000	309,000	355,000	3.1%	2.0%	4.7%
2019	342,000	316,000	370,000	3.0%	2.3%	4.2%
2020	353,000	323,000	385,000	3.2%	2.2%	4.1%
2021	364,000	330,000	402,000	3.1%	2.2%	4.4%
2022	376,000	336,000	419,000	3.3%	1.8%	4.2%
2023	387,000	343,000	436,000	2.9%	2.1%	4.1%
2024	399,000	350,000	455,000	3.1%	2.0%	4.4%
2029	460,000	383,000	539,000	2.9%	1.8%	3.4%
2034	523,000	413,000	627,000	2.6%	1.5%	3.1%
2039	588,000	441,000	722,000	2.4%	1.3%	2.9%
2044	654,000	466,000	822,000	2.2%	1.1%	2.6%

Note: Estimate based on actual traffic for Jan. to August

5.2 Aircraft Movements

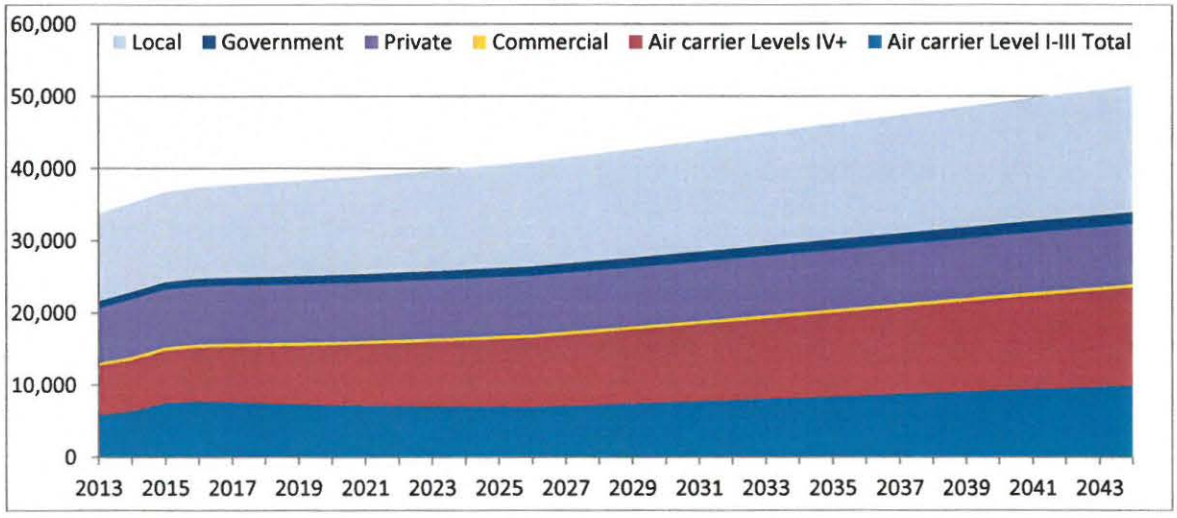
Nanaimo Airport had 33,874 aircraft movements in 2013, including 21,596 itinerant[9] and 12,278 local movements. The number of aircraft movements at the airport over the past fifteen years peaked in 2000 at 49,844; but decreased by 38% to just under 30,000 in 2009. Aircraft movements in 2013 were at close to their average value over the past eight years (see Figure 5). Data for early 2014 (January and February) show a growth in itinerant movements. Most movements, 64%, are itinerant.

Figure 5: Annual Itinerant and Local Aircraft Movements – 2002 to 2013



The forecast aircraft movements graphically by segment under the Medium Case scenario are shown in Figure 6. Total movements are expected to reach 40,200 by 2024, and 51,500 by 2044 under the Medium Case scenario.

Figure 6: Forecast Movements by Segment under Medium Case Scenario – 2013 to 2044



[9] Source: Statistics Canada aircraft movement statistics

6.0 Facility Requirements

An analysis was carried out of future facility requirements based on the projected growth presented in the previous section and the objective of maintaining a flexible plan to respond to unforeseen variances in future demand. The work then identified the land use implications of satisfying future demand, starting first with the prime land areas that need to be protected to maintain safe and efficient operations and financial viability of the airport, then those required to respond to the key commercial focus (which is the Passenger Terminal) and subsequently those lands to support overall airport operations. Finally, land development options to support other elements of the airport's operations and commercial ventures were identified. The following sections provide a discussion of the projected facility requirements and their associated land use implications.

6.1 Airfield

6.1.1 Runway

Runway 16-34, the airport's only runway, is 2,013m (6,602 ft) long by 45m (150 ft) wide. Runway 16 is equipped with an Instrument Landing System (ILS) permitting precision instrument approaches on this runway (down to 338 ft and I mile visibility, or Non-precision limits). In addition, the airport has a Non Directional Beacon (NDB) and Distance Measuring Equipment (DME) allowing a variety of non-precision approaches, as well as RNAV (GNSS)[10] and associated approaches. All of these approaches are to Non-precision limits due to the terrain surrounding the airport. These will likely remain this way even with introduction of enhancements to air navigation and approaches such as Required Navigation Performance (RNP), a subset of new Performance Based Navigation (PBN) tools.

As per Transport Canada's Aerodrome Standards and Recommended Practices (TP312)[11], Runway 16 is currently classified as a Code 3C Non-precision runway while the other end – Runway 34 – is classified as a Code 3C Non-instrument runway due to high terrain south of the airport. Runway 34 has an offset approach (8 degrees to the east) due to this terrain. Figure 7 illustrates the existing airfield layout and also shows the various Obstacle Limitation Surfaces.

Table 3 summarizes the appropriate Obstacle Limitation Surfaces parameters for the current certified arrangement. Both runway ends have displaced thresholds and increased approach slopes due to terrain (or obstacles) at either end.

Table 3: Obstacle Limitation Surfaces

	Runway 16 - current	Runway 34	Runway 16 - Future
Classification	3C Non-precision	3C Non-instrument	4C Non-precision[2]
Runway strip width (each side)	75m	75m	150m
Displaced threshold	60m	305m	60m
Approach Surface -Slope	3.0%[1]	3.0%[1]	2.5%[1]
-Length	3,000m	2,500m	3,000m
-Divergence	15%	15%	15%
Transitional Slope	1 : 7	1 : 7	1 : 7

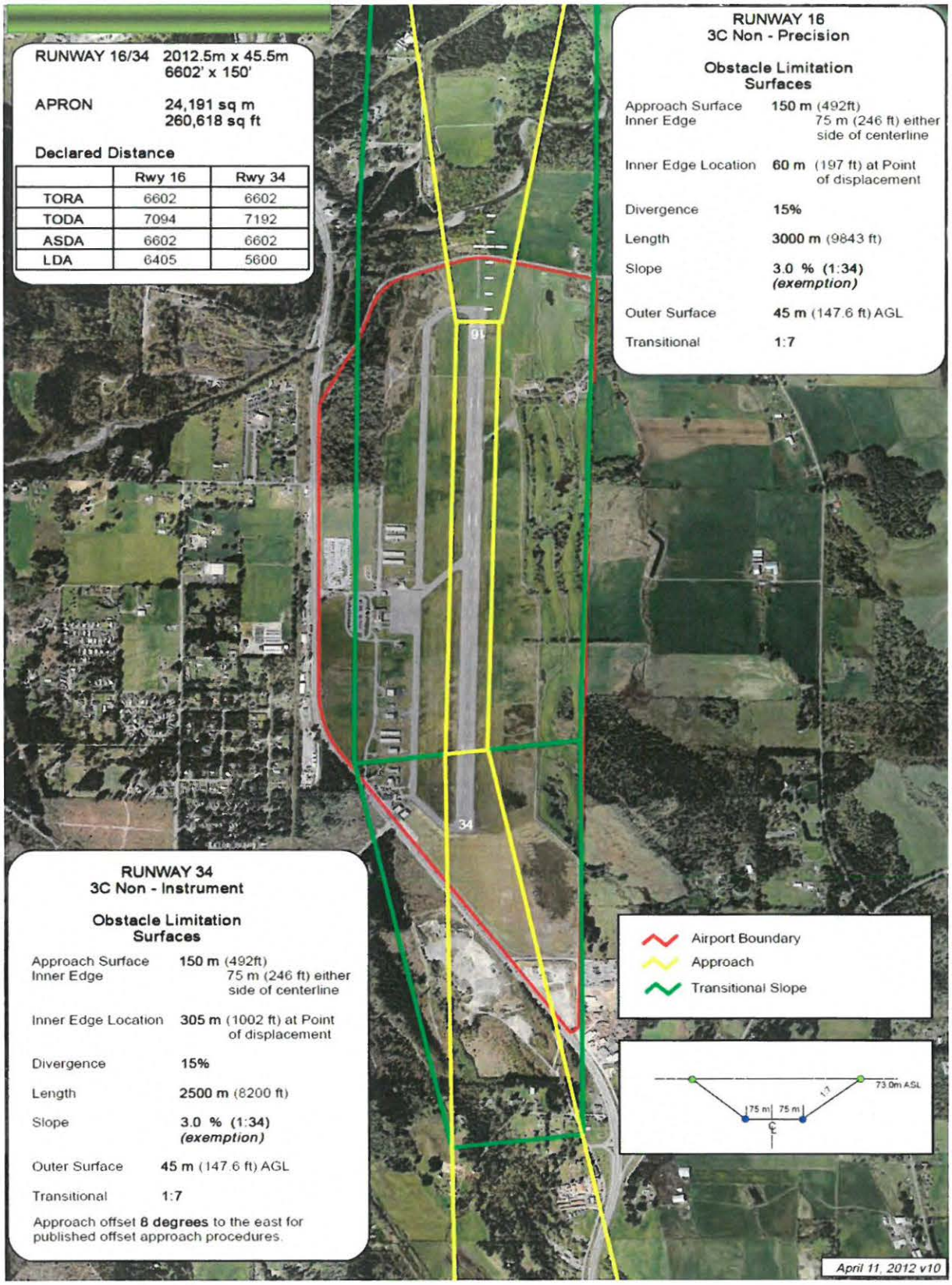
[1] *These slopes are non standard due to the terrain in the vicinity of the airport.*

[2] *Alternatively, depending on future navigation technologies/rules, this could be a 3C or 4C precision runway*

[10] Area Navigation (RNAV) Global Navigation Satellite System (GNSS) is a generic term for a group of approaches using the global navigation satellite system. These include types such as LNAV, LPV, LP, etc.

[11] *Aerodrome Standards and Recommended Practices (TP312), Fourth Edition*; Transport Canada; 1993. This document is scheduled to be replaced with new and updated standards which may relax runway Obstacle Limitation Surface requirements.

Figure 7: Airfield Layout and Obstacle Limitation Surfaces



As per the Transport Canada's current standards and recommended practices, a Code 3 runway would be a runway which can accommodate aircraft whose aeroplane reference field length was 1,800m or less. This would include aircraft such as the Q400, CRJs, and Dash 8-100/300. This would also include smaller passenger jets like the BAe146 and F70/100. Although slightly larger jets like the A319/320, B737s and MD80/90 are technically Code 4C aircraft, these can be still accommodated at YCD with reduced payload/range restrictions and permitted to operate with the 3C designation due to some flexibility in defining the boundary between these two categories.

As shown in Table 3, the strip width (or length of inner edge) for a 3C Non-precision runway is 75m from each side of runway centreline. However, the strip width for 4C aircraft would be 150m on either side of the runway centerline, even with a Non-precision designation. A Precision designation, should this become possible in the future with newer technology RNP or PBN approach, would require the 150m strip width for both Code 3C and 4C. Therefore, to protect for future operations with aircraft like the A319/320 or B737s, and to also take into consideration the possibility of future Precision approaches, it is recommended that the Land Use Plan protect for the wider 4C Non-precision/Precision strip width of 150m each side of runway centreline.

It should be noted that in protecting for this wider width, or more appropriately, when this wider strip width becomes necessary, aircraft like the A320 and B737 would not zone on the main aircraft apron with their tails parked at the rear of the apron. To clear the zoning, these aircraft may need to be parked with their tails toward the Passenger Terminal in such a way that jet blast does not become an issue. However, until such a time that the wider strip is actually implemented (or required), these larger aircraft can park in the more conventional nose-in manner.

In terms of length, the current runway length is adequate over the short- to medium-term to permit provision of new services with smaller jet aircraft like the A319 or 737-700 or E175/190 (all aircraft that are operated by Westjet or Air Canada). However, over the longer term, it would be desirable from a flexibility point of view to consider the provision or protect for the possibility of a longer runway. Discussions with Air Canada and Westjet indicate that a 2,100m – 2300m runway (approximately 7,000 -7,500 ft) is typically desirable for their longer haul operations in the noted aircraft.

Looking at the current runway, there is limited capability to extend this runway due to the current location of Haslam Creek/Haslam Road at the north end and Highway 1 at the south end. Careful scrutiny may identify the possibility of achieving an additional 150m (500ft) with a small extension to the south (without affecting the Highway) and a larger extension to the north, using the Haslam Creek as the limit. However, such an extension would require the closing of Haslam Road, with traffic then relocated elsewhere. As flexibility is very important to future planning efforts, it is recommended that at least some protection be put in place for a future runway extension. This extension is shown conceptually in the proposed Land Use Plan (shown in Figure 26) as dashed lines with extension arrows. It should be noted that should the runway be extended, under the current provisions of TP 312, the runway designation would then become a 4C as a result of the associated longer aerodrome reference length, which would require the wider 150m runway strip discussed above[12].

The capacity of a single runway system similar to that at the Nanaimo Airport is typically in the range of 150,000 – 200,000 annual aircraft movements, depending on mix of traffic, weather, supporting taxiway system, etc. The airport currently accommodates approximately 35,000 annual aircraft movements (itinerant and local) with forecasts calling for total traffic not to exceed 60,000 annual movements by 2044, under the most optimistic scenarios. Runway capacity at the airport should therefore not be an issue for a very long time.

6.1.2 Taxiways

There are a number of taxiways associated with the runway, including three connecting taxiways and a full parallel taxiway, as shown in Figure 2. The parallel taxiway is located approximately 179m (centerline to centerline) from the runway. As per the current classification of a 3C Non-precision runway, this taxiway need only be 93m from the

[12] Transport Canada has been reviewing the standards contained within TP 312 and an updated standards document is expected to be adopted in the very near future. New standards may differ from the old, and could change the situation discussed above with respect to runway strip widths.

runway. However, under a revised 4C Non-precision/Precision classification, this would need to be 168m from the runway (compared to this current 179m). Moving the taxiway to take advantage of this difference is not economical, so it is proposed that this current alignment remain in place for the duration of the planning horizon.

The current clearance from the parallel taxiway to the development property line located along its west edge is approximately 36m along the south half and about 40.5m along the north half of its length. This permits Code D aircraft with wingspans of up to 52m (vs. 36m for Code C). Runway/taxiway separation for Code D operations (Non-precision/Precision) would be 176m, so technically, the current airfield is capable of Code D Instrument operations. This could accommodate aircraft like the C130 Hercules, and the B757, among others. While these aircraft would not be expected to operate at YCD on a regular basis, these could occur as irregular operations due to weather conditions, mechanical reasons or, in the case of the search and rescue C130, in emergency situations.

Consequently, it is proposed that the clearances along the parallel taxiway be maintained at current levels, which can accommodate up to Code D-sized aircraft. This clearance should be reviewed at such a time that development pressures mount, requiring the need to expand some of the airside lots eastwards towards the parallel taxiway. Given the airport's availability of land, this should not become an issue for a very long time.

The only development currently situated along the east side of the runway is the golf course. However, in future, some developments could occur in this section, namely the potential relocation of the Flight Service Station (FSS) or a future potential Air Traffic Control Tower (as discussed later in this document). Beyond these facilities, there will be a need to locate some airside development on this side as lands on the west side of the runway fill up. While this development may not occur until a very long time into the future, it is prudent to recognise the development potential of the site and ensure that adequate protection is in place to protect for future opportunities. Per the discussion above on the parallel taxiway along the west side of the runway, the site for a future parallel taxiway on the east side of the runway should be preserved in accordance with the standards for a future 150m runway strip and Code 4C aircraft requirements. This would position the taxiway at 168m from the runway (centre to centre), and would require a 26m clearance from the centre line of the taxiway to the future property lines. This allowance is illustrated later in the proposed Land Use Plan shown in Figure 26.

6.1.3 Helipads

There are currently no helipads on the airport site. Helicopter traffic is fairly low and related movements can easily be slotted into the stream of aircraft using the runways. Primarily occurring as training-based operations, current helicopter movements tend to originate from the various airside lots located along the parallel taxiway to the south, including the flying club and flying school.

Helicopter operators should be able to continue using the runway(s) for approaches to the airport well into the future, as runway capacity is not expected to be an issue. Should future traffic warrant the establishment of a helipad site, a simple solution would be to establish a 'virtual' helipad, similar to these in place at other airports such as Abbotsford and Boundary Bay. A 'virtual' helipad is essentially an aiming point for helicopter approaches. The helicopters then use the taxiway system or hover-taxi to their final destination on one of the private lots. Although the aiming point concept is valid for potential future scheduled passenger helicopter services, similar to Helijet's services between Vancouver and Victoria, a parking position would be needed on the main aircraft apron to park the helicopter and load/off-load passengers if the operators were to use the Passenger Terminal Building. The apron plan proposed in the following section provides flexibility in accommodating such an operation.

6.2 Passenger Terminal Complex

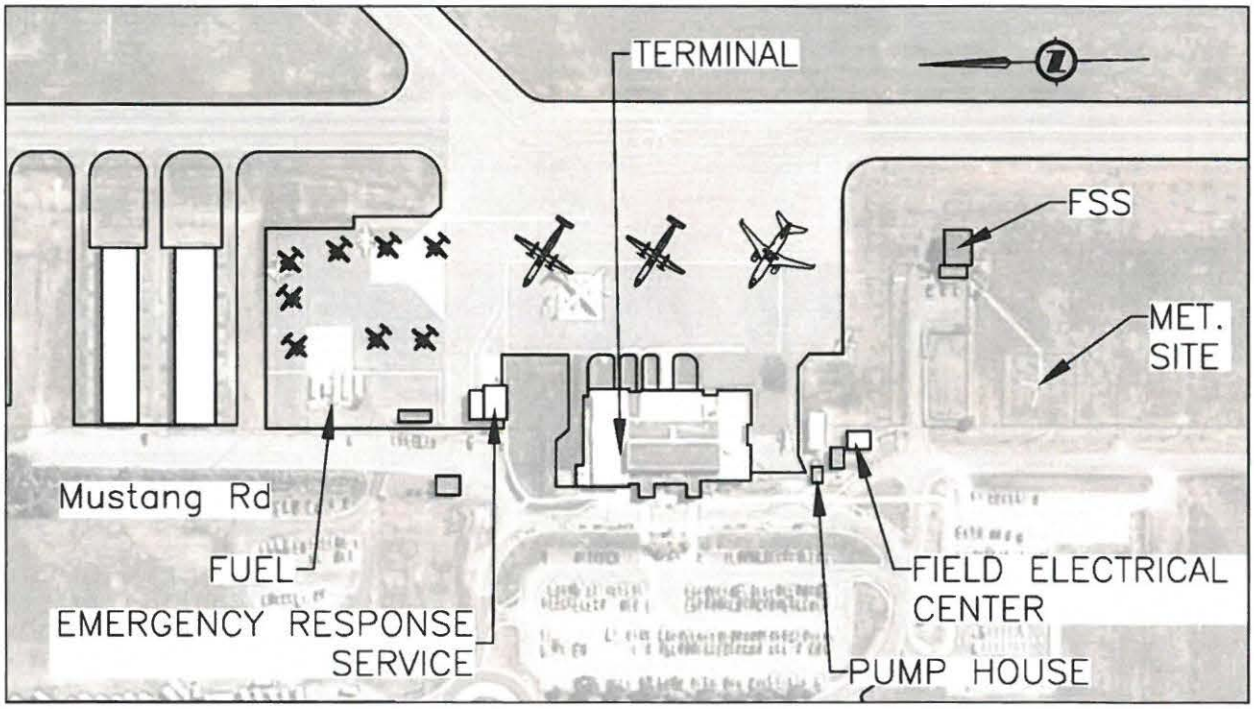
6.2.1 Main Aircraft Apron

The main aircraft apron is currently approximately 170m wide by 69m deep. This apron can currently accommodate three medium-sized aircraft (e.g., three Q400s, a 737 and two Dash 8s, or any number of other combinations of larger, medium and smaller aircraft). In addition, there is a smaller extension of this main apron to the north that is about 75m by 60m deep. This apron can accommodate six-ten aircraft the size of de Havilland Beavers/Cessna 402s. Figure 8 shows a typical arrangement of aircraft parking positions on the apron.

The likely future air service scenario for the 20-year horizon would probably consist of service to Vancouver, Calgary and possibly Edmonton, with some potential for a charter services. Smaller regional aircraft will also likely continue serving Seattle and start serving other small markets such as Abbotsford. For scheduled services alone, this traffic would require three to six aircraft parking positions. Based on the air traffic forecasts prepared in 2014 outlined earlier, and based on experience at other airports of similar (projected) size, the main apron would in theory be sufficient in size to accommodate aircraft parking requirements at least for approximately the next 15-20 years. A review of current apron utilization indicates however growing constraints associated with growth in both scheduled air services, charter operations and corporate aviation traffic.

Arrival and departure times of charter and corporate flights are difficult to predict. Workforce charter activities to oil and gas producing areas of Northern BC and Alberta are increasing in numbers. The scheduling of these flights is often dependant on rotation of aircraft to other regional centers and production sites through the week and/or shift rotations of the work sites themselves. Arrival and departure times of corporate aircraft are even more difficult to predict. The overlap of these activities with the scheduled peak hour flights identified in the recent air traffic forecasts is currently resulting in the airport's apron operating a full capacity during certain periods of the week. This operational pattern is expected to grow in the future as increased investment in Northern BC energy projects occurs.

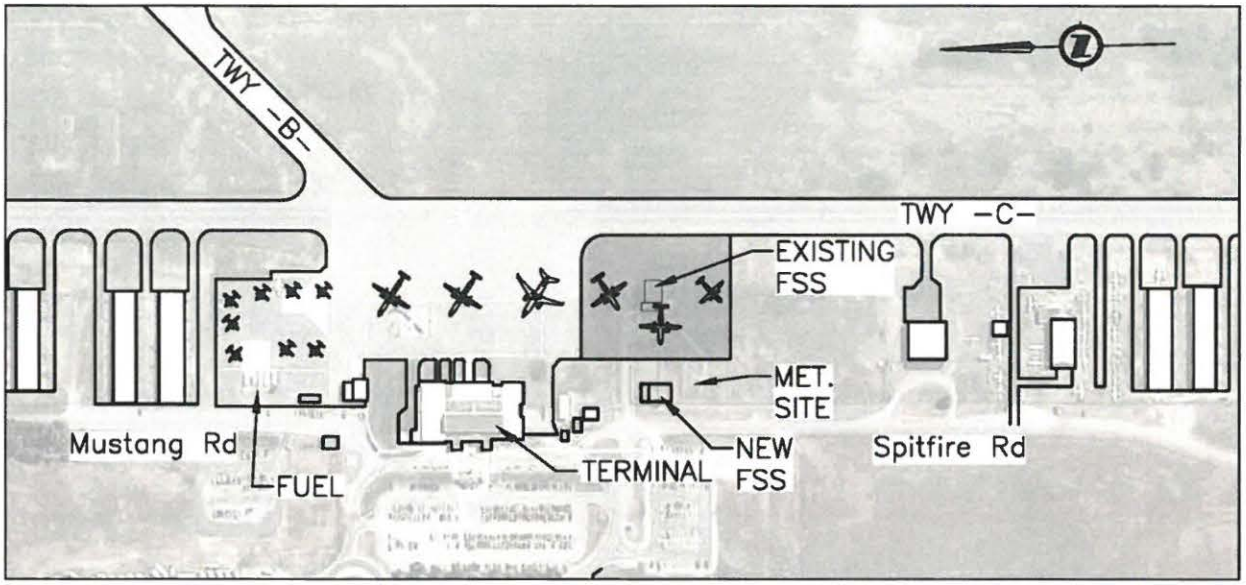
Figure 8: Existing Aircraft Apron



In the interests of maintaining a flexible plan capable of responding to a variety of future demand scenarios, two options were developed to illustrate how apron demand could potentially be met.

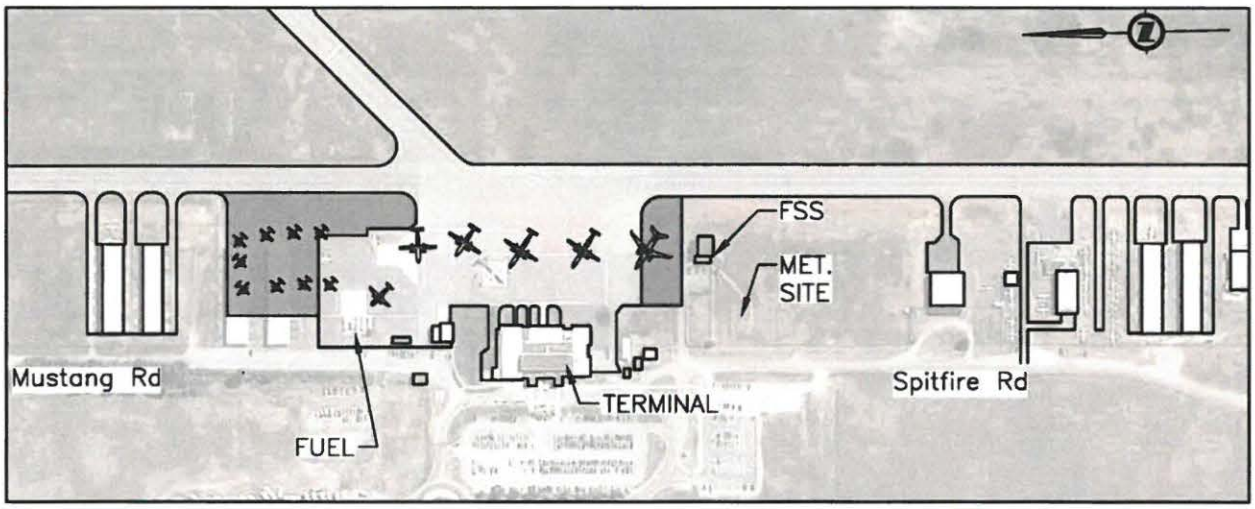
One option for handling the projected growth for aircraft parking positions on the main apron is illustrated in Figure 9. This option shows 5+/- aircraft positions in a mix of all medium-sized (like Q400s) or some variety of 737s, Q400s, Dash 8s and B1900s (or similar) could be accommodated by relocating the existing Nav Canada Flight Service Station (FSS) building and expanding the apron to the south. In this option, the FSS would be moved to the second floor of an expanded Passenger Terminal Building, to a location west of the existing site, or relocated to a site on the east side of the runway (as discussed later in this document). The exact location and building specifications will need to consider preservation of line of sight between the FSS and the entire movement area. The MET site would also need to be relocated as development in this area will interfere with proper weather data collection.

Figure 9: Expanded Aircraft Apron – Concept 1



An alternative concept for a future aircraft apron expansion is illustrated in Figure 10. In this concept, the aircraft positions on the main apron would be extended to the north to provide the 5+/- positions, and the GA apron would be extended even further north over the current hangar sites.

Figure 10: Expanded Aircraft Apron – Concept 2



The concepts illustrated both assume that the current aircraft power-in and power-out mode of operation would continue indefinitely into the future. Given the size of the aircraft expected to fly to/from the airport, this is generally the most desirable operating mode, as this results in less ground time and avoids air carriers/ground handlers the need for the costly acquisition of the tugs and tow bars required to push back aircraft. Converting to power-in / push-back operations on the apron would however require less space than shown in these concepts and could be an alternate means of handling more aircraft on the same apron. At an appropriate time in the future, consideration will need to be given to how best to optimize apron aircraft operations as a means of identifying the preferred approach to expansion. In the meantime, it will be important to protect for both scenarios, and related layout variants, to maintain flexibility in accommodating for long-term development of critical airside infrastructure.

6.2.2 Passenger Terminal

The existing Passenger Terminal is approximately 70m x 40m, providing a gross floor area of approximately 2,800m^2. It sits on a site that is approximately 150m x 80m or a gross area of approximately 12,000m^2. This includes the Terminal frontage road, the land area out to the aircraft apron and land on either side used for baggage vehicle circulation, storage, etc.

The Passenger Terminal was expanded in 2012 and includes Canada Border Services Agency (CBSA) inspection facilities for international/US arrivals. A good rule of thumb for sizing smaller Passenger Terminals, such as Nanaimo's, is to provide 1,000m^2 per 100,000 annual passengers. (Note that while these estimates account for standard Customs and Pre-Board Screening (PBS) facilities, they does not account for agency specific requirements that may occupy larger or smaller footprints to meet changing regulations and processing methods such as Nexus.) Under this principle, the current Terminal could provide an approximate capacity of 280,000 annual passengers. Given recent traffic stimulation at the airport, this traffic level would very likely be reached by 2015. More detailed analysis of annual and peak hour forecasts against capacities of individual Passenger Terminal processors (e.g., check-in area, PBS, holdroom, bag claim) will be needed however to refine the nature and timing of expansion projects.

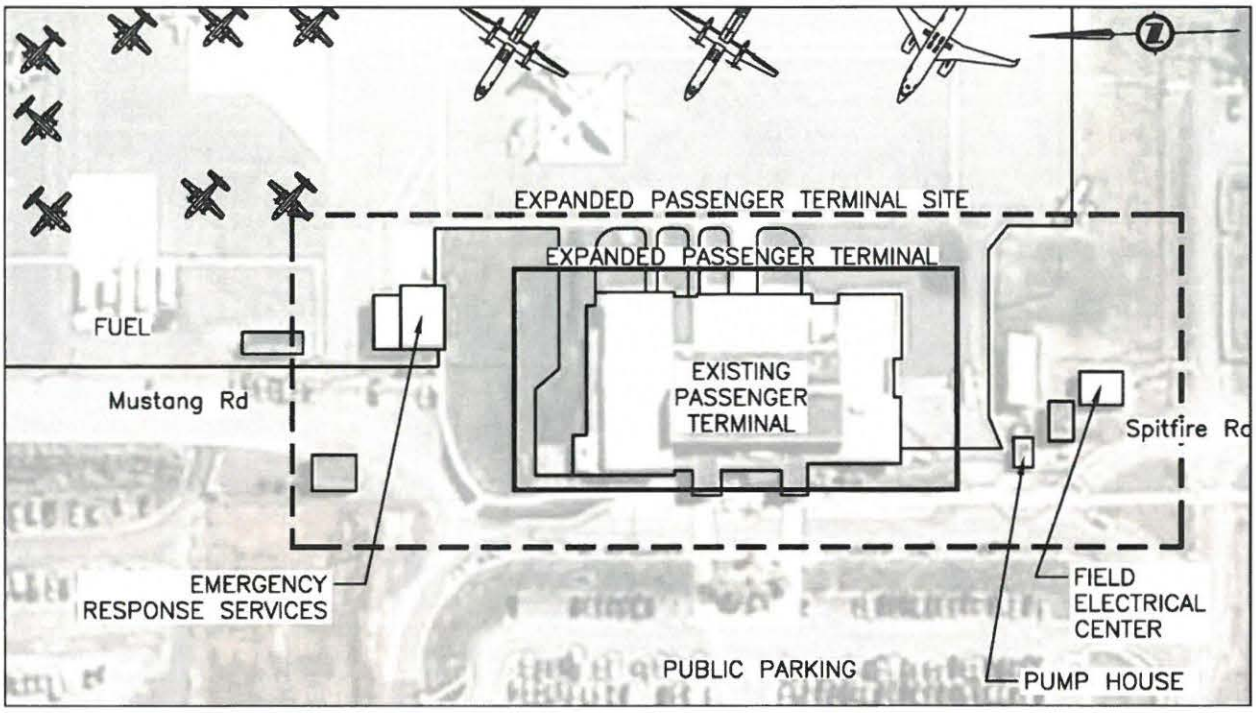
The 2014 forecasts presented earlier in this document project 2024 traffic of around 399,000 annual passengers under the Medium growth case, or in the vicinity of about 455,000 annual passengers under the High growth case. These would represent near-term minimum expansion requirements of between approximately 40 and 60% over the current building size.

For land use planning purposes, it is necessary to identify Terminal site needs based on the 'ultimate' demand or build out requirements. Looking out to the 30-year horizon (or to 2044), projections show volumes of approximately 650,000 annual passengers under the Medium case scenario and close to 820,000 annual passengers under the High case scenario. These passenger levels would respectively represent 130% and 200% expansions of the current building size. A future Passenger Terminal footprint of approximately 6,000m^2 is suggested therefore given the 2014 passenger traffic forecasts and the associated uncertainties. This Terminal size would require protection for an approximate gross land area of about 15,000m^2.[13] Areas adjacent to this Terminal area should be allocated to allow for flexibility in use so that the building could easily be expanded beyond the suggested size should traffic increase at a higher rate than originally forecast.

Figure 11 illustrates the existing Passenger Terminal site compared with that required for an ultimate doubling of the Terminal size. Although a future expansion can be easily accommodated within the constraints of any of the adjacent developments, it would necessitate the relocation of the aircraft fuel facilities, the Field Electrical Centre (FEC) and vehicle washbays.

[13] The current ratio of gross site to floor area is about 4. This has been reduced to 2.5 for the ultimate 'build-out' as more efficient use is anticipated of the area required.

Figure 11: Passenger Terminal Site



6.2.3 Car Parking Areas

Parking for the public, employees and rental cars is provided in a number of areas in the vicinity of the Passenger Terminal. An expansion to parking lot facilities was completed in 2014, and the airport now offers 655 parking stalls. Current lot allocation is outlined in Table 4 and illustrated in Figure 12.

Table 4: Car Parking Lot Allocations (November 2014)

Lot		# of Stalls			
		Public	Car Rental	Employee	Total
A	Paved	227	30		257
B	Paved	54			54
C	Gravel	53			53
D	Gravel	47			47
E	Gravel	32			32
F	Gravel	90			90
G	Paved			58	58
H	Gravel	50			50
Street	Paved	14			14
Total		**567**	**30**	**58**	**655**

Note: Public stalls include handicap and metered stalls.

An industry rule of thumb for planning small Canadian airports is to provide a minimum of approximately 100 spaces per 100,000 annual passengers for public parking (including short-term and long-term). Under the current traffic level of approximately 265,000 annual passengers, this principle would translate into a need for approximately 265 public car parking spaces. Based on pre-expansion parking inventories and utilization patterns, a more appropriate planning figure for Nanaimo was found to be closer to 150 spaces per 100,000 annual passengers. Based on this assumption, the recent expansion would provide sufficient capacity for approximately the next 5-10 years depending whether passenger traffic tracks the Medium or High growth cases outlined earlier in this document.

At 30-year planning volumes of approximately 650,000 annual passengers, this would involve provision of approximately 975 public spaces at the Passenger Terminal by 2044[14]. Sufficient land needs to be identified and reserved to accommodate this growth in demand.

Figure 12: Existing Car Parking Facility Locations (November 2014)

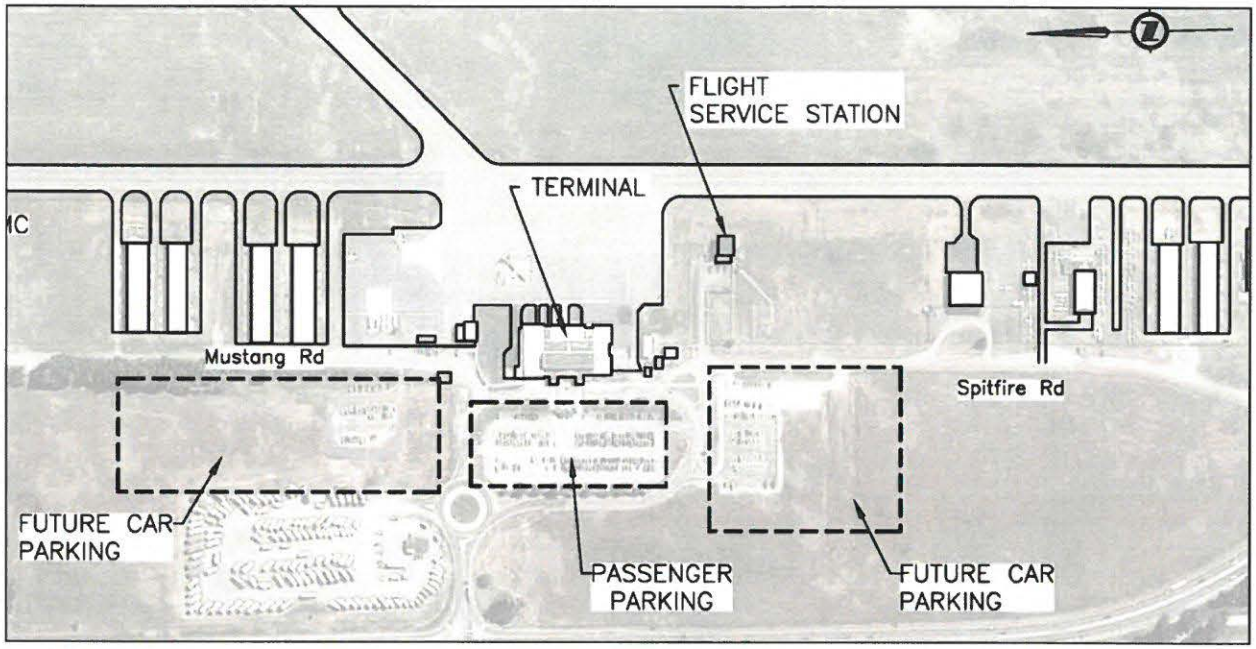
Based on comparison with other small airports, it is estimated that approximately 25 spaces per 100,000 annual passengers be provided for staff parking, with a similar number provided for rental cars. Based on this assumption, the airport would need approximately 65 spaces for each of these groups today and 165 spaces for each of these groups at the 650,000 annual passenger level.

At these assumed levels, the existing inventory of employee and car rental stalls would appear to be stressed. The current excess capacity provided by the recent expansion provides flexibility in meeting current demands, in particular by its ability to accommodate periodic peaks in car rental demand in Lot A. The NAC will however, monitor parking demands from each group of users to ensure an adequate of mix of associated stalls is provided between lots over the short-term period.

The total car parking inventory for the airport for the long-term period would total approximately 1,200 stalls by 2044. Based on an area of approximately 35m^2 per parking space, this requirement would involve a gross land area of about 42,000m^2. When this projected area requirement is superimposed on the previous Land Use Plan, it appears that sufficient land had been set aside for future parking north and south of the currently constructed and planned parking surfaces, as illustrated in Figure 13. The Land Use Plan protects sufficient areas for expansion of the airport's parking facilities. The NAC will however need to undertake some expansion in the next 5-10 year period to meet expected growth in demand. Paving of the newer gravel lots will also need to occur.

[14] Demand for public parking at airports can be influenced by a number of factors, such as the airport location (in the city or remote), the peaking characteristics of flight activity, the mix of business and leisure traffic, the airport's pricing policies, availability of alternate transportation modes, such as taxi, shuttle bus, etc, among others. For the purposes of a land use plan, it is probably best to protect for the worst case scenario, or at least be aware of the implications of the worst case scenario, but then plan and implement according to more realistic scenarios at the time.

Figure 13: Future Car Parking Area Requirements



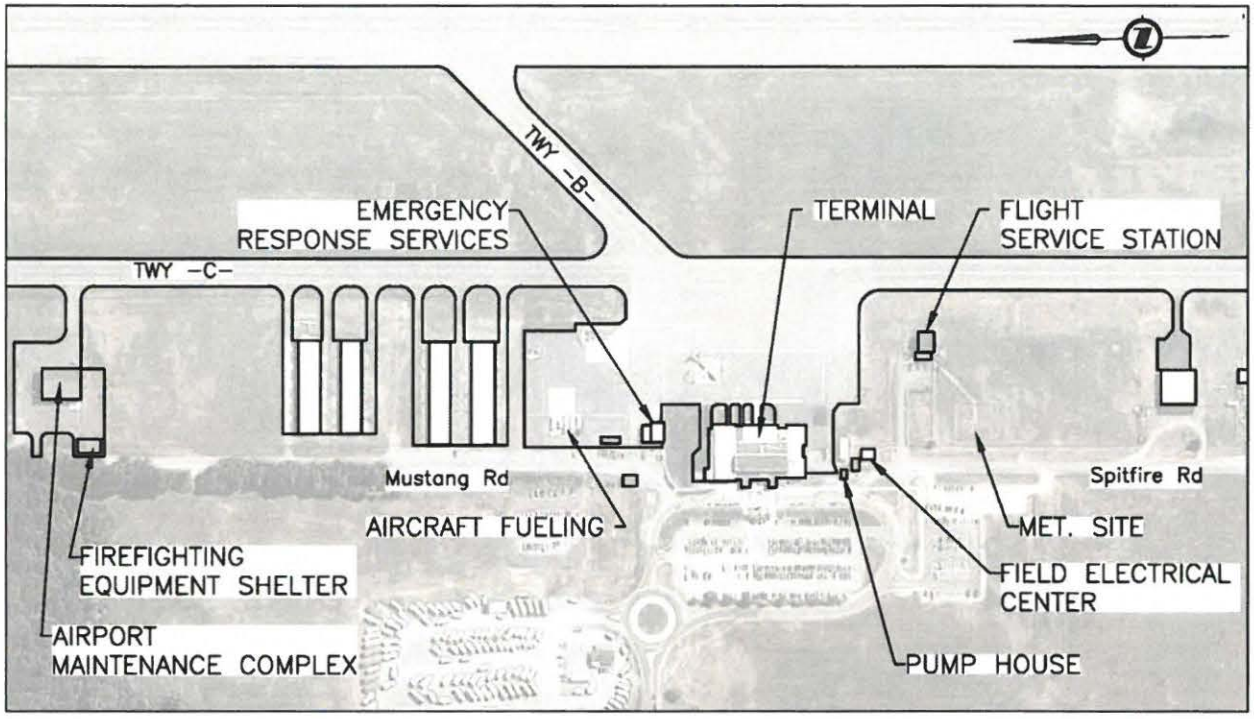
6.3 Airport Support Areas

There are a number of airport support areas on the airport site. These include:

- The Airport Maintenance Complex (AMC), which houses various equipment for snow clearing, grass cutting as well as a number of other maintenance functions. This complex also houses the airport administration offices. This area is located on a 1.2ha airside site north of the existing development area, and with direct access to the airfield.
- The Flight Service Station (FSS) which is located immediately to the south of the Terminal area on 1ha site, providing convenient access for visiting or other pilots to get to the FSS for weather briefings, and other related flight information. This site also accommodates the airport's meteorological weather station (MET).
- An Emergency Response Services (ERS) building which is located to the north of the main aircraft apron. A firefighting equipment shelter is also located in the south west corner of the AMC site.
- The aircraft fuelling facilities, which are located adjacent to the northern portion of the aircraft apron, providing fuel for both the commercial operations and the general aviation users.

The locations of these facilities are illustrated in Figure 14.

Figure 14: Airport Support Facilities



Although a need may emerge in the future to expand the AMC building, the site itself should be sufficient in size to continue to support airport operations for the entire period of this plan. However, the existing AMC facility is located on land that has a high premium value for commercial tenants. The site has excellent landside access and airside connectivity to the taxiway system. Given the desirability of this site for Airside Commercial uses, consideration may be given in the future to potentially relocating the AMC facility to land on the south side of the airport or on the other side of the runway that is less attractive for tenant development at such a time that commercial land becomes scarce on west side development area, or should an appropriate tenant wish to lease the current site.

The current location of the ERS building sits within the Terminal Reserve. When a Terminal expansion is undertaken, the ERS facility will need to be relocated to a suitable location on airside land. Adjacency with the AMC is preferred. Note that any future site selection will need to consider a three-minute response time requirement from the ERS facility to the airfield incident site.

With respect to the FSS, as discussed earlier in this document, this facility may need to be relocated to accommodate expanded apron operations. There are a number of options for relocating this building, including:

- Locating the FSS on second floor of a future Terminal expansion;
- Building the FSS on a new site on the east side of the runway; and
- Moving the building west to be located along the service road (per Figure 15). This location would still provide appropriate service to the aircraft users/pilots and still have visibility of the airfield for advisory services.

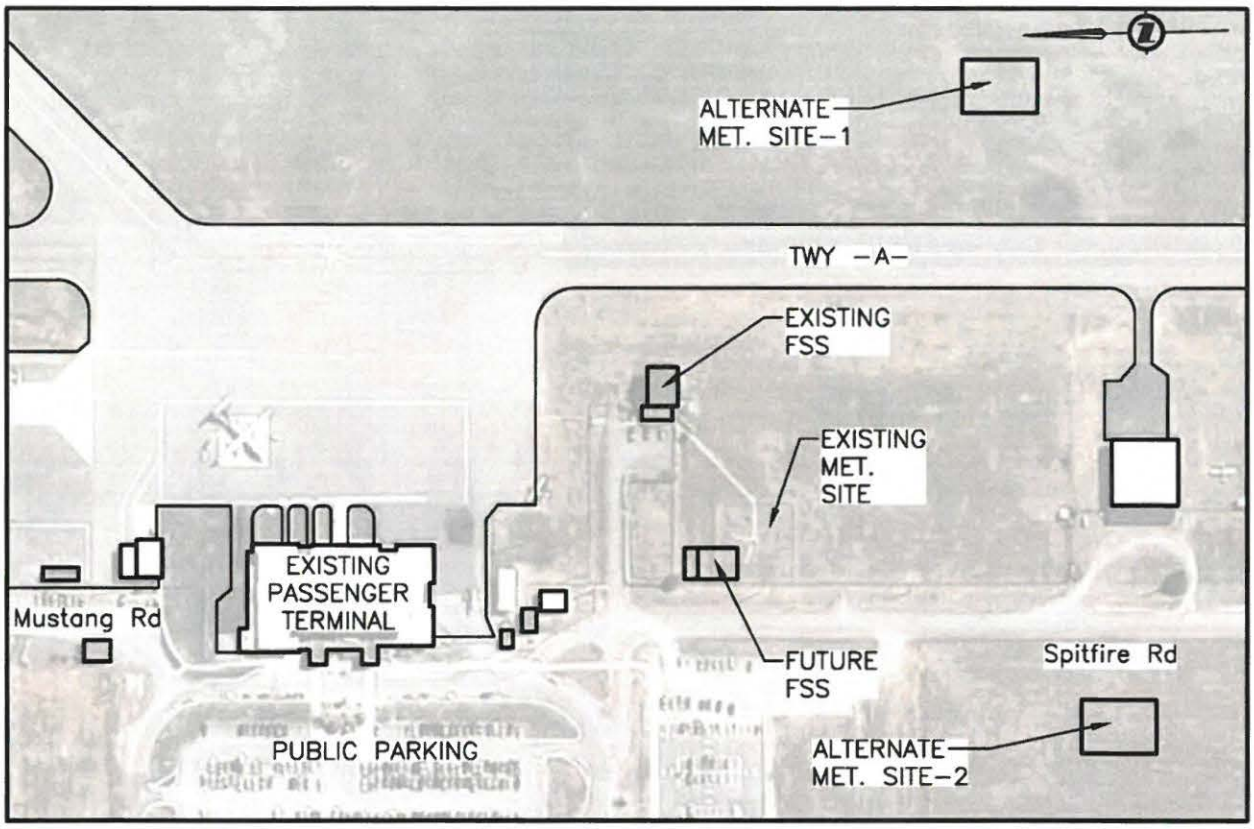
All of these are viable options that would need to be discussed with Nav Canada in the future. However, for the purposes of this Land Use Plan, it is sufficient to understand that options exist, and that all or most of these options should be protected until such a time that a decision is made on a preferred location.

It should be noted at this point that with future growth, at some point, the airport will approach traffic levels that could eventually require an Air Traffic Control (ATC) Tower. This trigger point is typically in the vicinity of some 50,000 – 60,000 aircraft annual movements, depending on various combinations of traffic mix, weather, local vs. itinerant movements, and other conditions. The 2014 air traffic forecasts presented earlier anticipate these levels

to be reached towards the end of the 30-year time frame of this Plan. Should an ATC Tower become a requirement, the most likely and best site would probably be on the east side of the runway.

A number of options also exist with respect to the location of MET site associated with the FSS. In the case where the FSS stays in its current location, is moved within the existing site or is located on a future second floor of the Terminal, the MET site could be moved to a location immediately east of the FSS and between the runway and taxiway, or just to the southwest of the FSS, as illustrated in Figure 15. Should the FSS/ATC Tower be located on the east side of the runway, then logically the Met site would also be located here.

Figure 15: Alternative Met Site Locations



The current aircraft fuel area, illustrated earlier in Figures 8 and 9, should be adequate to meet the airport's fuel needs well into the future. Should the facility require increased tank storage space, the current site itself should be adequate to accommodate any potential expansion requirements. Note that the current fuelling facilities are 'mobile' and could be relocated if required.

6.4 Development Lands

The above discussions have focussed on identifying the elements needed in the primary operating areas of the airport to support commercial air services at the airport, most of which are primarily passenger-related. This section addresses complementary activities on the site that are also integral parts of the airport operation; but that occur on land leased to third-party businesses. These lands support the airport's commercial tenant activities and private aircraft operator requirement. They contribute to the airport's service base, financial success and sustainability, and enhance the levels of service provided to airport users and the local community.

6.4.1 Airside Development Lands

The NAC is fortunate to possess an extensive inventory of lands with airside access. The parallel taxiway currently provides a total frontage of some 2,000 linear metres, offering a total airside development land area of

approximately 25ha (excluding the areas required or allocated for the Passenger Terminal complex), with approximately two-thirds of the frontage currently developed. Of the developed area, approximately 10ha accommodate airside businesses, primarily supporting general aviation activities such as private hangars, flights schools, Fixed-Base Operations (FBO), and approximately 6ha is occupied by the Passenger Terminal complex and associated aviation support functions such as the AMC, future ERS and the FSS. There are currently approximately 15ha of land that is still available at the north end of the development area with direct access to the parallel taxiway. These could be used for a variety of Airside Commercial development uses.

An opportunities and competitive analysis was carried out as part of this study to assess the development potential for airport commercial land areas. This analysis looked at the Nanaimo Airport in comparison to other airports on the Island, including Victoria, Comox, Campbell River, Tofino, Qualicum Beach and Port Hardy. The results are contained in Appendix B.

The analysis ranked the Nanaimo Airport as second only to Victoria in terms of aerospace strengths and readiness to attract aviation investments. This work also identified opportunities to attract investments for the development of a number of activities at the airport. The top five commercial development sectors are:

- Hangars (private / corporate);
- Fixed Based Operator (FBO), (incl. aviation fuel);
- Aircraft sale;
- Flight training; and
- Maintenance Repair and Overhaul (MRO) services (incl. a/c conversions, interiors, painting, etc.).

In addition to these top five opportunities, there are also many other opportunities that could be pursued in the future. Although these opportunities were not strong enough to rank as highly, investments could still materialize over time and should not be neglected. However, the lower probability of success in the attraction of the lesser ranking sectors means that NAC's marketing efforts and dollars will be better spent on the top five ranked sectors listed above.

In addition to the ranking and prioritization of development sectors, the opportunities and competitive analysis also concluded:

- Success in increased commercial development at the airport will depend on the interest and capacities of local entrepreneurs to invest in commercial land development on the site.
- The airport's expansion needs to build upon existing activities and uses. This will generate better returns, and is easier than attracting new users, activities, etc.
- The types of opportunities available need to be qualified in terms of the potential scale of activity. "Smaller scale" operations are the most obvious targets. Larger airport commercial operations are more difficult to sustain due primarily to the low population base in the immediate region and the associated availability of a smaller pool of skilled workers.
- To capitalize on current or priority opportunities, the NAC must either have the appropriate facilities already in place, or possess an easily actionable plan to develop them. In addition, it must aggressively market itself and pursue these potential opportunities.

With the purpose of providing additional background to support commercial land development at the airport, a comparison was carried out of the lot sizes that accommodate different uses at a variety of airports. The comparison was based on SLI's experience and the specialized knowledge it has earned from working at various airports.

The lot size analysis indicates the following:

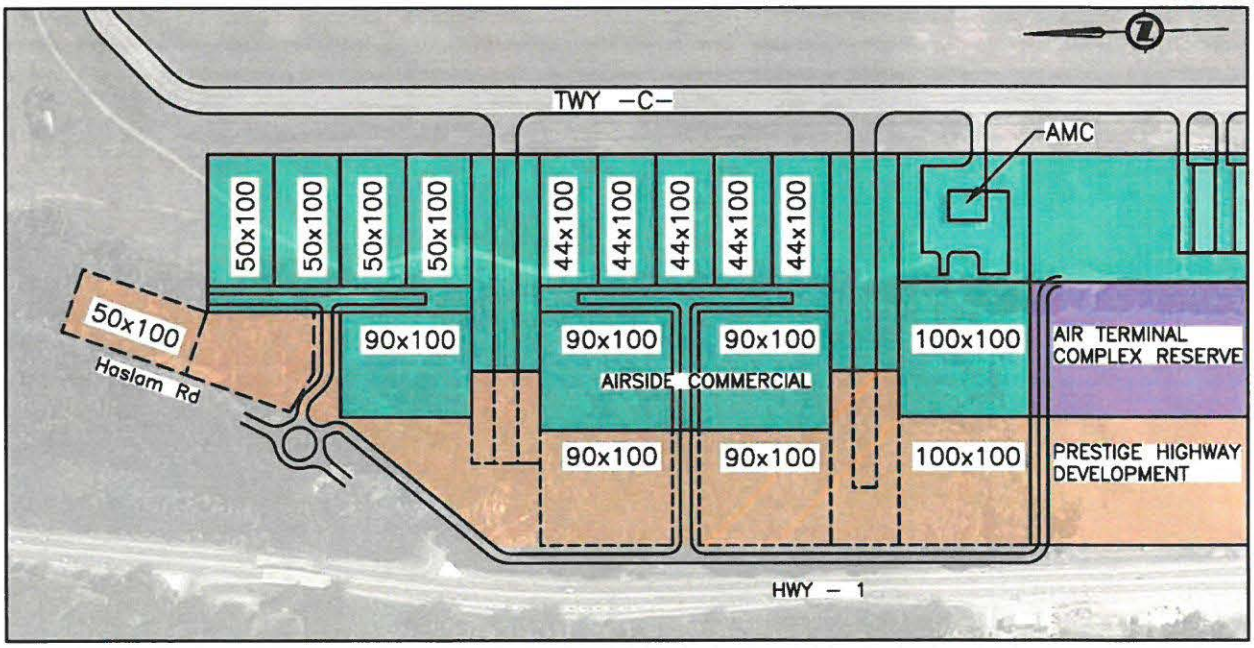
- Airside lots for aircraft hangars, whether private or corporate, or for small aircraft maintenance tended to average about 5,000 – 6,000m^2 with typical dimensions in the range of about 50m X 100m or 60m X 100m. At larger airports, these lots typically range up to approximately 10,000m^2.
- T-hangar developments typically occupy lots in the range of 3,000-5,000m^2 in size, with typical lot dimensions of 30m X 100m up to 50m X 100m (at YCD many of the T-hangar lots are approximately 30m X 100m).
- Lots for FBOs varied greatly, and could range from 10,000m^2 to 30,000m^2 in size.
- Aircraft maintenance activity lots varied the most in size, ranging from as little as 6,000m^2 at some of the smaller airports reviewed, to approximately 30,000m^2 at medium-sized airports, and to approximately 90,000m^2 at larger airports.
- Forestry support bases tended to show similar variations in size as those of the aircraft maintenance facilities, although the largest base inventoried was only 60,000m^2.

Details of this analysis are provided in Appendix C.

Using the findings of the analyses presented above as a basis for site planning, two lot layout concepts have been prepared for the development of the airside land currently available in the north portion of the airport site.

In Concept 1 (Figure 16), proposed new development lots are shown being extended north in a manner similar to the existing layout to the south, using lot sizes of 44m and 50m X 100m that could be doubled-up to frontages of approximately 90m to 100m. The layout concept also provides the possibility of leaving two lots open to allow for a stub taxiways to be built immediately north of the AMC as well as within a corridor 220m further north. This layout would provide airside access to the 'landlocked' area situated closer to the highway and provide options for larger airside lots, if required. In this layout, the taxiway allowance would be for Code C aircraft, with the back airside lots dimensioned at 100m x 100m. (Alternatively, these 'back lots' could also be subdivided to dimensions similar to those proposed along the parallel taxiway.) Given the airside lot size options illustrated, this concept would provide considerable flexibility in accommodating a wide variety of future aviation-related uses.

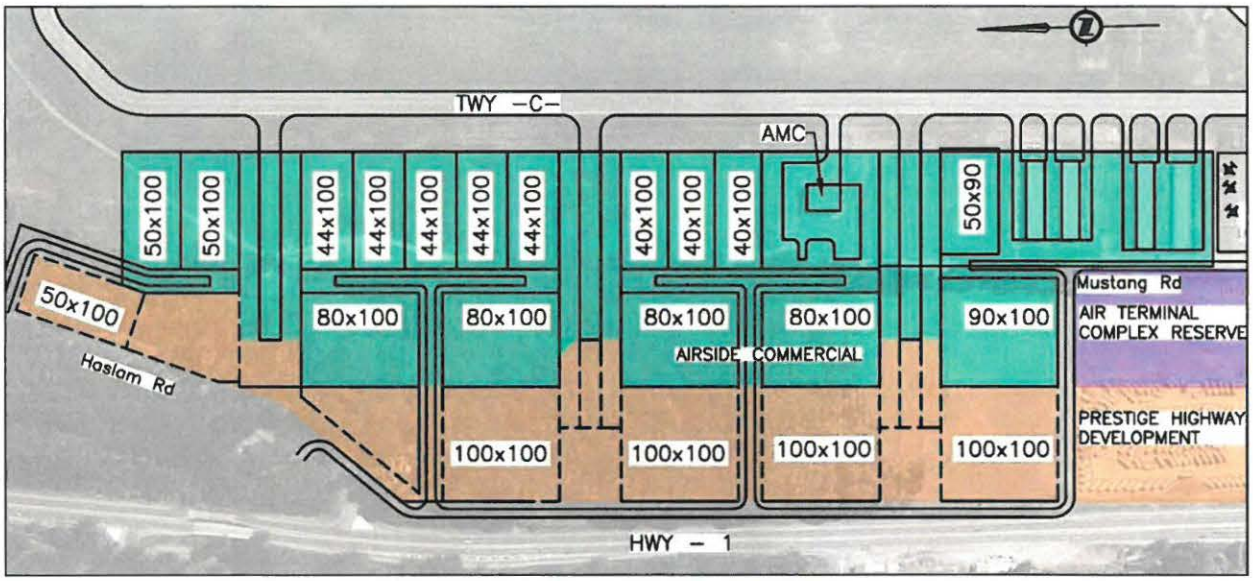
Figure 16: Airside Developments North Lots – Concept 1



Additional flexibility can also be achieved by using the lots situated along the highway for Airside Commercial purposes, similar to the area along the highway immediately to the south. In this case, the stub taxiways would have to be extended to provide aircraft access to the new lots. While the NAC wishes to preserve the availability of highway adjacent land for other commercial purposes to serve the surrounding community, some flexibility is offered in this concept to meet shifts in market demand and opportunities as this area is developed.

Concept 2, shown in Figure 17, depicts an alternate layout for development of these land area. This concept is very similar to Concept 1 except that the first stub taxiway is located south of the AMC site. This layout provides for a greater number of airside 'back' lots. As in Concept 1, the lots along the highway are also designated for Prestige Highway activities.

Figure 17: Airside Developments North Lots – Concept 2



The runway obstacle clearances and the zoning associated with the tail heights of larger aircraft, such as the 737s and A320s, force related aircraft aprons and hangars to be located further from the runway than available in the lots adjacent to the parallel taxiway. Protecting for these activities to be located in the proposed Airside 'back lots', shown in Concepts 1 and 2, would provide considerable flexibility should opportunities for larger aircraft operations and/or maintenance-related activities emerge in the future.

To access the lots proposed in both Concepts, the existing service road would need to be extended to the north. As development occurs and stub taxiways are built, additional roadways would also need to be built around the 'back lots' and back up to the lots situated along the parallel taxiway. This service road network could be eventually extended all the way north to connect to Haslam Road.

Concepts 1 and 2 provide up to 7ha and 8ha of net developable airside land. By comparison, the currently leased airside lots occupy less than 6ha of land. It is difficult to forecast the projected take-up of the proposed new land inventory, as this will depend on a wide variety of factors such as market conditions, competing airport activities, NAC marketing/investment attraction strategies, etc. However, given the airport's current leaseholder base, coupled with SLI's experience at other airports, the NAC can expect that the proposed new inventory of airside land will be sufficient to satisfy the airport's requirements for at least the next 20 years. Beyond this period, additional airside land may be provided on the east side of the runway, as discussed in a later section.

6.4.2 Groundside Development Areas

The airport is located along the Trans-Canada Highway 1, which is the main north-south vehicle transportation corridor through the south portion of Vancouver Island. This highway and the associated volume of traffic[15] provide opportunities for a number of Groundside Commercial investments to occur at the airport.

Typically, Groundside Commercial activities at small airports are limited to such uses as car rental parking and service areas, gas station, restaurants/bars, bus parking and support facilities and, in the case of larger airports, hotels. While all of these uses are also valid for YCD, the airport's prime location along Highway 1 presents significant additional opportunities due the ease of community access and visibility to regional through traffic.

The airport's boundary along Highway 1, between Haslam Road and Timberland Road, has total frontage of approximately 1,800m in length. The prime access point to the west side of the site is situated at the Terminal access road/roundabout located mid-point along the airport's western boundary along the highway. There is also an opportunity to consider a second major access point in the future at the south end of the site.

Currently, the only Groundside Commercial use on the airport is the RV storage site located just north of the main airport roundabout and the associated main RV sales area / maintenance building located at the south end of the site along Spitfire Road. To date, jurisdictional issues with the RDN and community concerns relating to airport land uses have constrained the NAC's ability to develop the land adjacent to the highway.

Based on SLI's past experience at other airports and with various complementary commercial developments, significant opportunities exist at YCD to stimulate the development of a mini commercial centre to serve airport passengers, employees, the nearby community and through traffic at the existing main access/roundabout. This commercial node could initially include a gas station, convenience store, fast food outlet and a number of other ancillary commercial functions and sales related activities. The site also provides potential to accommodate a small motel/hotel, office spaces above the commercial units, as well as some light industrial activities. While these services would be primarily aimed at airport passengers, visitors, highway traffic and staff, the benefits would clearly also be enjoyed by the Village of Cassidy residents, as community commercial services are not currently available in the area.

More importantly, these commercial activities would complement current airport activities and provide the services needed to support long-term growth and financial sustainability of the facility. Key linkages of the proposed commercial node to airport activities include:

- A gas station to support customers of the airport, rental car operations at the airport, as well as highway traffic and Cassidy residents;
- A restaurant/fast food establishment to provide food choices for airport workers, visiting pilots, air passengers (given that food is no longer provided free of charge on board flights), highway traffic and Cassidy residents;
- A small hotel/motel providing accommodations for visiting GA pilots, passengers who may have delayed flights, and visitors to the Island;
- Retail/commercial units to provide valuable convenience and cater to the needs of the estimated 150 workers on the airport site, air passengers using the airport, as well as for Cassidy residents; and
- Office space for services, such as medical and dental, to the community and airport staff.

Such a commercial/industrial development would be consistent with the Electoral Area A OCP designation of the land along this portion of Highway 1 as a *Light Industrial/Commercial Area* to support the Village of Cassidy. Developing on both sides of the Highway – on the airport side, as well as the Village side – would not only create a significant node with a large variety of services that would benefit both airport users and Village residents, it would also establish a substantial employment node for residents.

[15] Highway traffic volume data was not available at the time this report was prepared.

Figures 18 and 19 illustrate two preliminary layouts of the potential mini commercial centre and the interface with other airport development areas.

Figure 18: Prestige Highway Development – Concept 1

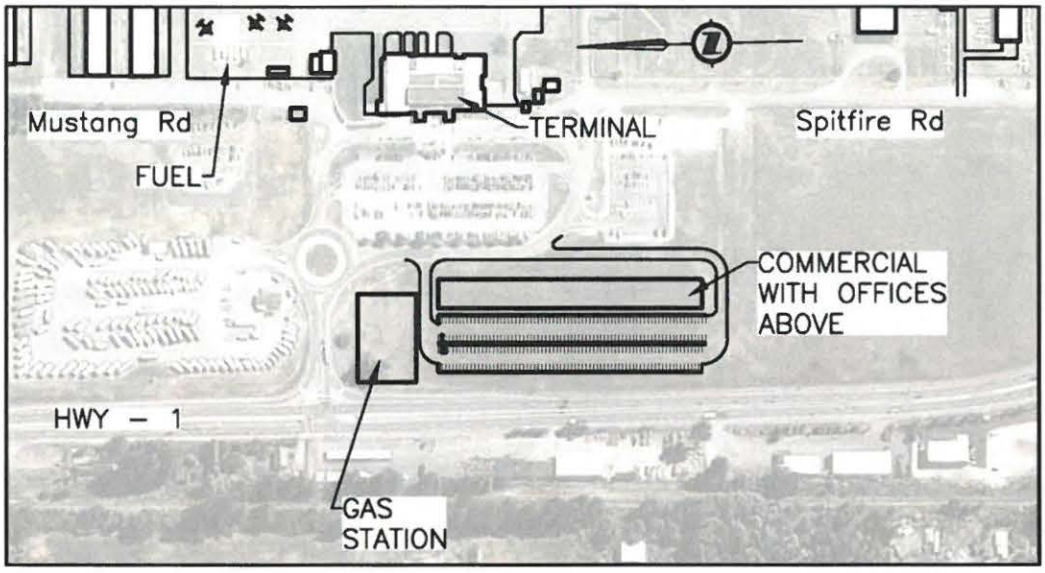
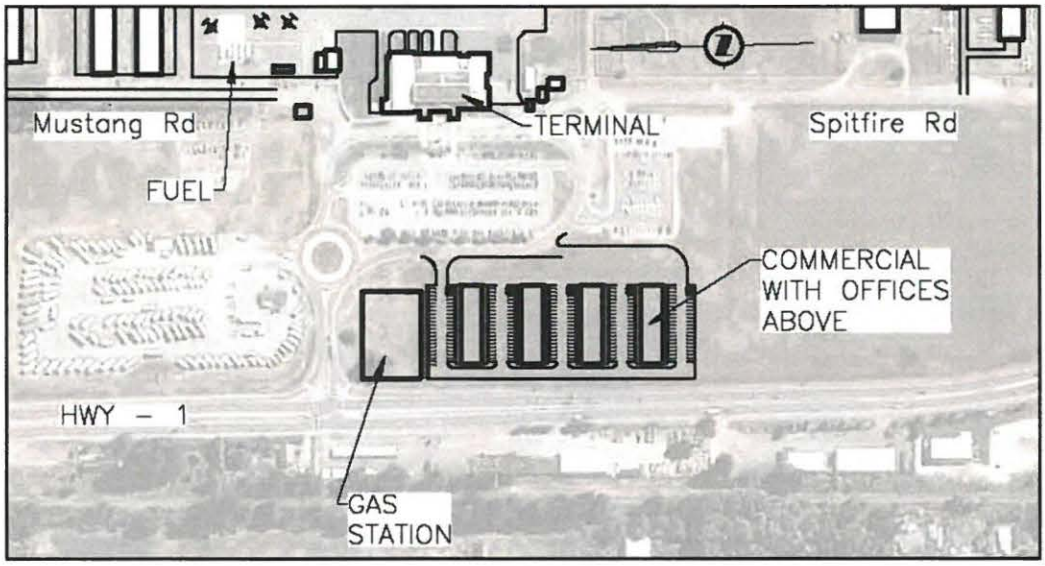


Figure 19: Prestige Highway Development – Concept 2



A number of factors will ultimately influence how much land may be allocated and absorbed for commercial activities along Highway 1. It is difficult therefore to estimate precisely how much land should be allocated for these purposes. Influencing factors include:

- The amount of commercial land that may be developed on the other side of the highway given current land use policies and bylaws;
- The types of activities that would ultimately be appropriate given community and RDN considerations;
- The ability to improve site access to capture passing highway traffic;
- How successful developments would be in satisfying airport user needs and those of the Village of Cassidy residents;

- The nature of competing land use in the area; and
- How much residential, industrial and commercial growth would occur or be permitted within the Village of Cassidy.

More detailed market studies, coupled with additional discussions with the community and local planning authorities, will provide a better understanding of the development potential and the impacts of the current limitations associated with this land area. For now, it can be argued that the allocation discussed for the commercial centre may be a sufficient starting point for consideration. The initial development can also be expanded by extending south into an area currently allocated to aviation uses, but for which little need is envisioned at this time (as this land does not have airside access). Since this expanded site could also be used in the future to accommodate expanded parking facilities, on-site car rental operations, bus parking/maintenance activities, etc., it is therefore proposed that the south boundary of this area be left flexible as shown in Figure 20.

To maintain consistency in terms of providing a very flexible plan, it would also be prudent to consider flexible protection of the lands to the north as illustrated in Figure 21. This would allow the boundary between the areas allocated for prestige highway and airside lands to be adjusted depending on how actual demand may materialise in the future.

Figure 20: Boundary between Prestige Highway and Airport Development to the South

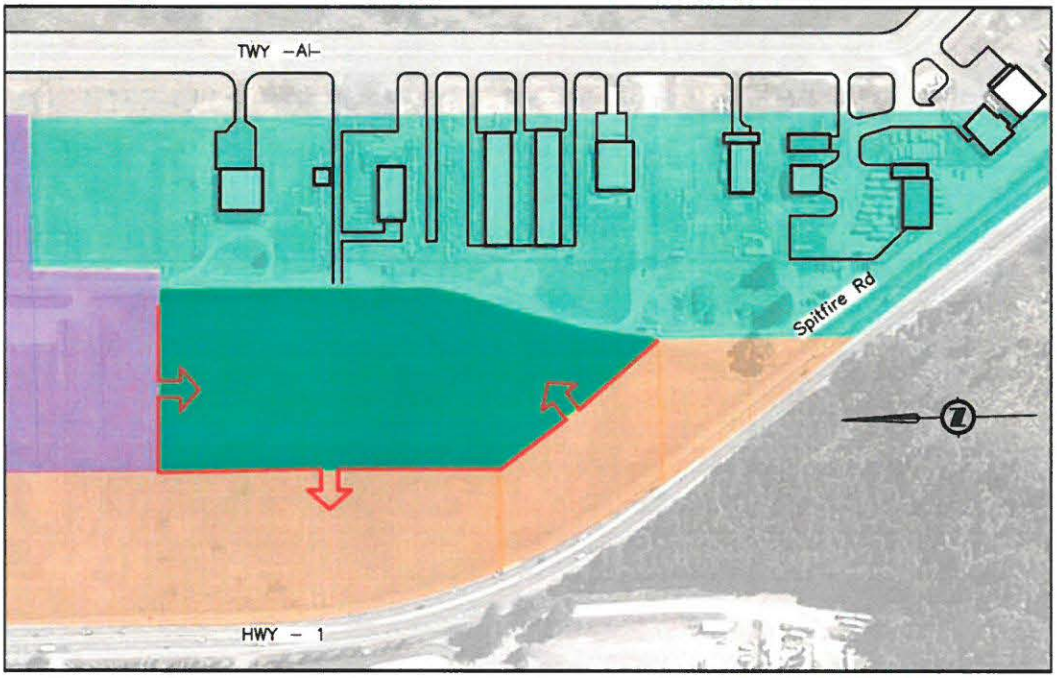
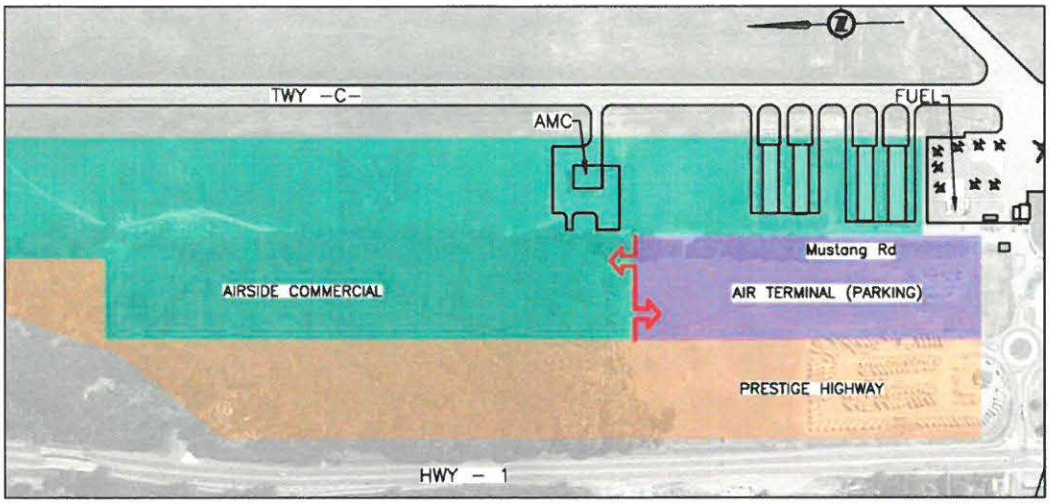


Figure 21: Boundary between Prestige Highway and Airport Development to the North



6.5 Airport Access and Internal Circulation

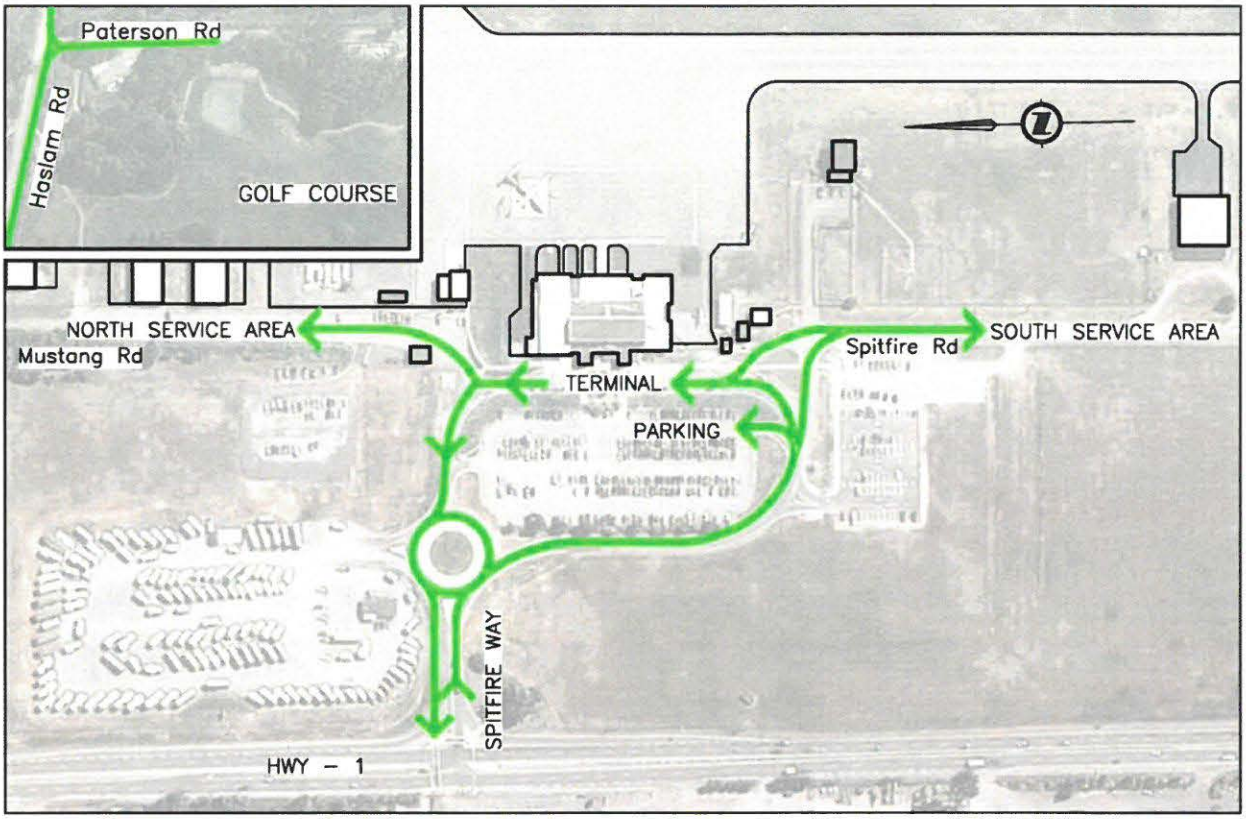
Access is currently provided into the airport site via a signalized "T" intersection with Highway 1 located almost midpoint (north-south) on the airport site. Called Spitfire Way, this roadway enters the airport site and then goes through a roundabout as illustrated in Figure 22. Emanating from the roundabout are roadways that access the Terminal area, egress from the Terminal area and feed some parking areas located to the south of this roadway.

Internal circulation within the main airport site (west side of the runway) is provided by a series of on-site roadways as follows:

- A Terminal loop roadway that forms a one way loop around the main parking area, providing access to the Terminal frontage road and the parking lot located within it.
- A service road (Spitfire Road) that runs south from the Terminal loop roadway to serve airside developments located along the south portion of the runway and taxiway system, and ends near the south end of this development area.
- A service road (Mustang Road) that runs north from this same loop roadway to access the developments located along the north portion of the runway and taxiway system, and ends at the existing AMC site.

In addition, access is provided to the golf course by Patterson Road, which is accessed from Haslam Road via a right-in/right-out intersection with Highway 1 (see upper left inset in Figure 22). Lands to the south and east of the airport site are accessed via Simpson Road (not illustrated Figure 22).

Figure 22: Existing Airport Access / Circulation



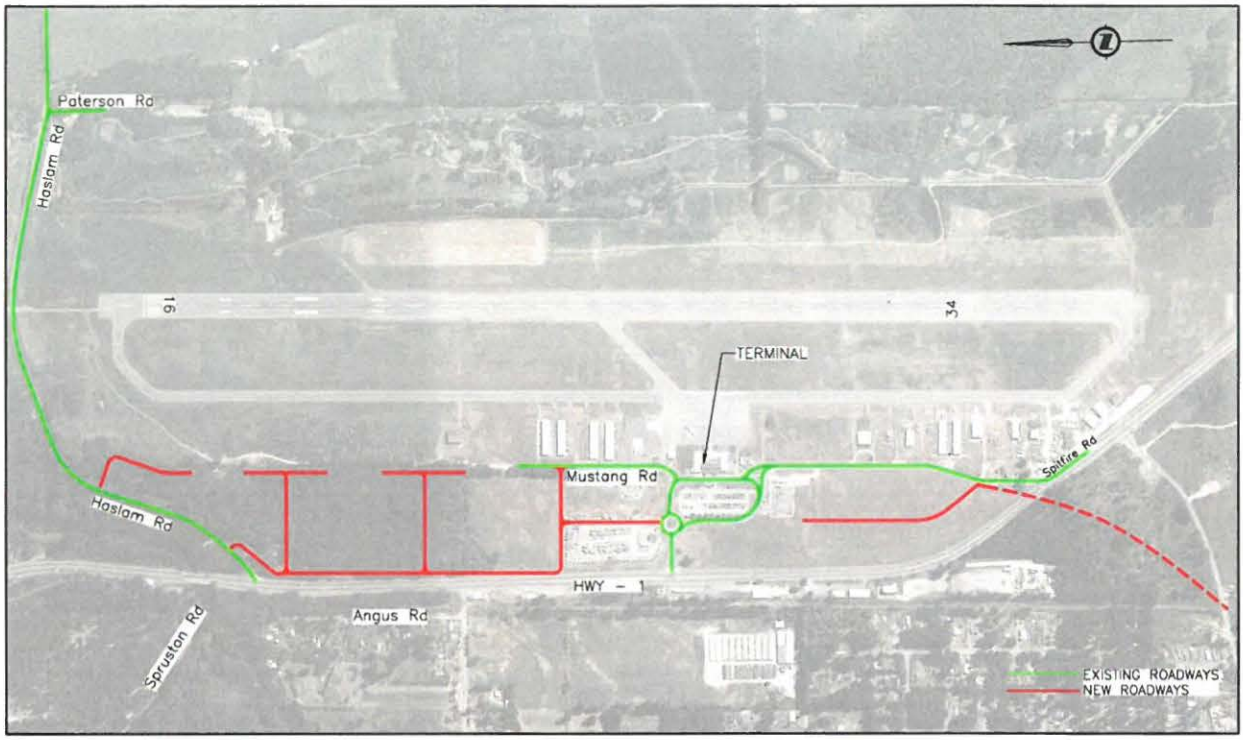
To support the various development sites proposed in this Land Use Plan, a number of roadway improvements, as illustrated in Figure 23, will be required as follows:

- Mustang Road will need to be extended further to the north to service the proposed airside development lots in the north portion of the airport site. This roadway will need to curve to the west, away from its current alignment, to provide access to and around airside 'back lots' in this area. It should then continue north to intersect with Haslam Road to provide an inner route interconnecting the west and east sides of the runway without the need to use Highway 1.
- New east-west stub roadways will be required to connect from Mustang Road and to provide direct land access to the newly created lots in the north area.
- A new service road should be constructed parallel to and west of Spitfire Road that can be used to service the lands developed as part of the south portion of the Prestige Highway Developments along Highway 1. This roadway should emanate from the initial part of the Terminal loop roadway, continue south and eventually form a "T" intersection with Spitfire Road.

Until commercial development to the north and/or south can justify the expansion of the road network, consideration may need to be given to the doubling of Spitfire Way between the highway and the roundabout, and the roundabout itself to increase roadway capacity. This will require however further traffic planning and roadway engineering.

The road layout illustrated in Figure 23 may need to be adjusted therefore depending on how the proposed lots to the north are eventually allocated between the airside and Highway Prestige uses. The layout is capable however of serving both uses, and many potential land use configurations.

Figure 23: Future Airport Access and Circulation Roads



In addition to these on-site improvements, current planning proposals show potential for a new access road into the airport from Highway 1 located further south and connecting to a realigned Timberlands Road (illustrated in Figure 23 as a dashed red line). The exact location, form and geometry of this potential corridor would depend on how the actual development area would be arranged along the Highway 1 corridor and on the form the adjacent development in the Cassidy Village extension and commercial area would take. As well, details would need to be worked out with respect to how this access would be connected onsite to Spitfire Road and the newly built parallel service road in this area. Note that the NAC is working with BC Highways to refine specific highway access points so the location of future new highway intersections is subject to change.

Finally, as part of the potential development of lands along the east side of the runway, presented in the following section, Simpson Road should be extended further north to access these various developments (not illustrated in Figure 23).

6.6 Other Land Use Areas

6.6.1 Land at Simpson Road and Highway 1

The land parcel situated at Simpson Road and Highway 1 is designated in the previous Land Use Plan as "under policy review". This land is located to the extreme south east portion of the airport site and consists of an area approximately 3.5ha in size. As illustrated in Figure 24, Simpson Road is directly accessed by Highway 1 northbound via two separate right-in/right-out intersections located approximately 300m apart. Full directional access to Highway 1 to/from Simpson Road is provided approximately 800m to the south at the interchange of Highway 1 and Cedar Road.

Figure 24: Land Parcel at Simpson Road and Highway 1

This land parcel is currently being used to park containers and tractor-trailer units. The land is situated within the Coastal Vesper Sparrow Critical Habitat where wildlife management measures are currently in place. Due to the routing of Simpson Road, this parcel does not have airside access and is therefore considered groundside land. However, if airside access were desirable for this parcel, this could be achieved by closing the east-west portion of Simpson Road.

Given the location of this land away from the airport's main developed areas and, given the abundance of land for airport development in other areas of the site, it is difficult to foresee this land being required for immediate airport related development. As a consequence, it is suggested that the airport designate this land as Groundside Commercial and consider three options for the land:

- Retain the land and continue to lease it for current purposes, or other uses that may arise over time; or
- Sell the land at market rates.

6.6.2 *Recreational Uses*

Much of the land situated to the east of the runway is currently used as a golf course. Situated on approximately 43ha of land, the golf course occupies the entire length of the airside frontage on the east side of the runway.

The current Recreational designation of this land should remain for the foreseeable future, as the NAC appears to possess sufficient lands on the west side to satisfy its development requirements to the end of the planning period. However, over the very long-term period, this land, or a portion of it, could be required for airport related/airside related uses. Meeting potential requirements to eventually relocate the FSS to accommodate Terminal/apron expansion, to relocate the AMC to leverage the commercial value of its current site, or to construct an ATC Tower may involve consideration of a location on the east side of the runway. This site selection would in turn render this area of the airport more attractive for future commercial development.

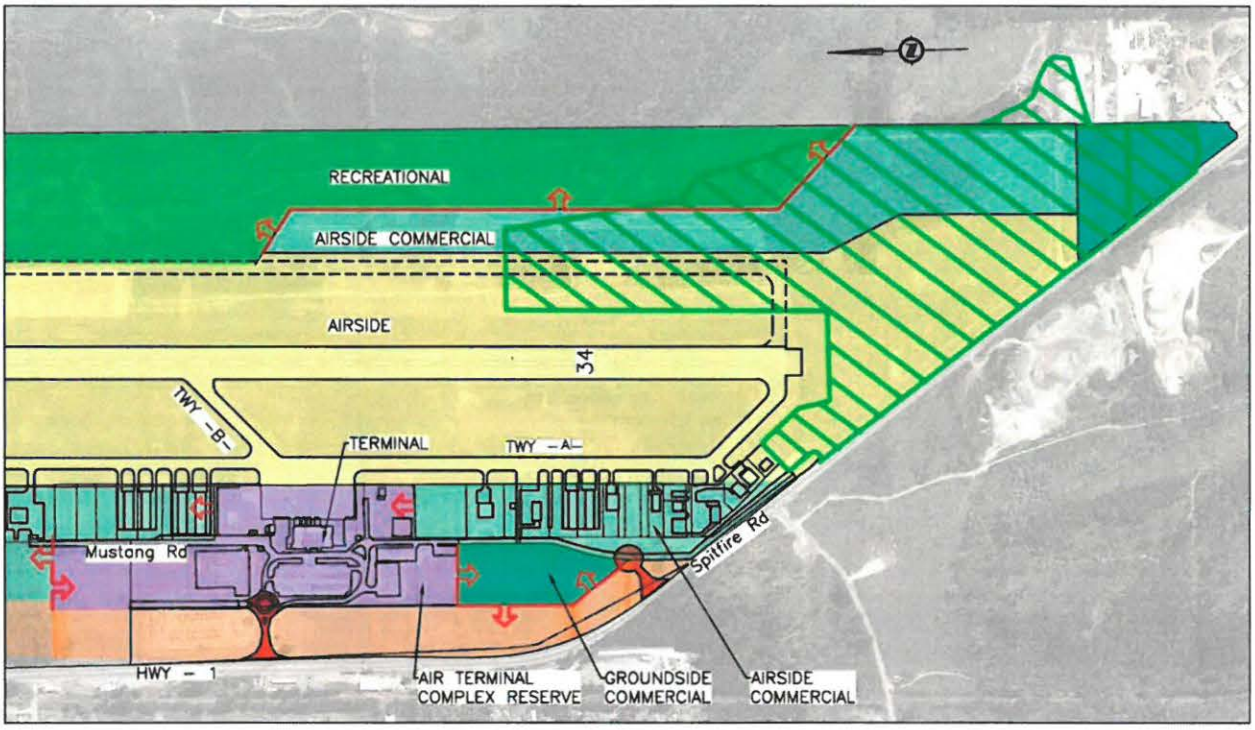
Consequently, it is proposed that a portion of the land on the east side of the runway, adjacent to and south of the golf course, be considered for potential Airside Commercial uses. As discussed previously in this document, however, a portion of this area is identified as a Critical Habitat for the Coastal Vesper Sparrow by the Canadian

Wildlife Service, where wildlife management measures are in place. Development on this portion of the airport would require further assessment. The associated land area is shown in Figure 25.

If the land area is deemed too sensitive for development, or as demand for commercial land increases on this side of the airport site, the development area could eventually push into the golf course, possibly requiring some golf course reconfiguration. Over the extremely long-term period, it is possible that closure of the golf course may become necessary to make way for additional airside development along a potential future east parallel taxiway (illustrated as dashed lines in Figure 25).

Road access to these lands should be provided via a simple extension of Simpson Road to the north. Details of how this roadway would provide appropriate connections to Highway 1 would need to be worked out at a future date. The Cedar Road/Highway 1 interchange would most likely provide the best long-term means of accessing this east side area.

Figure 25: Future Airside Lands on East Side



6.6.3 Agricultural Lands

The NAC owns a 12.7ha site immediately to the north east of the runway. This site is located across Haslam Road and, as a result, is not connected directly to the other airport lands. This site is currently used for agricultural purposes. Given its location and the abundance of developable sites within the airport's boundaries, this site should generally remain leased for agricultural uses for the foreseeable future.

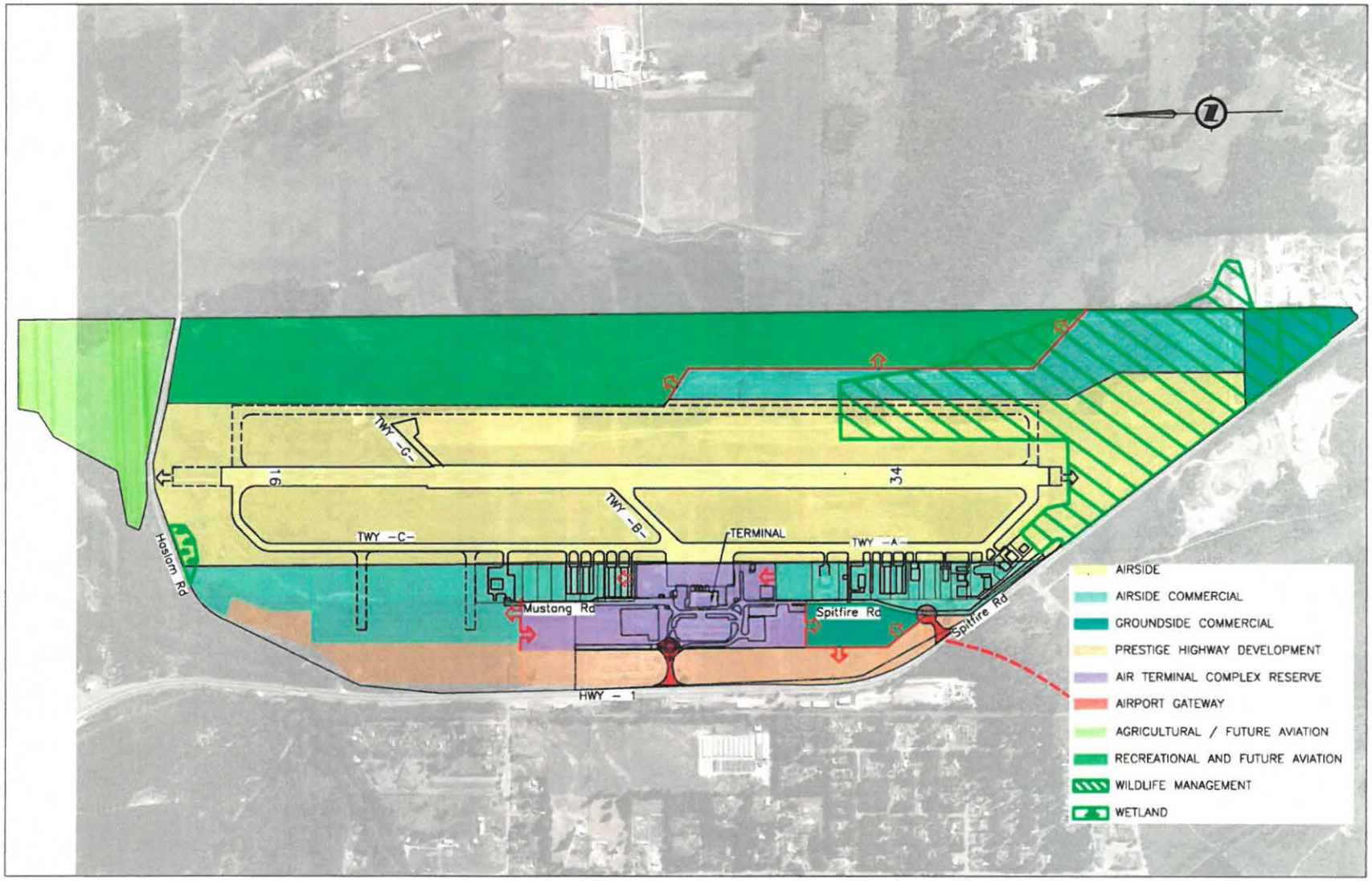
A small portion to the west of this agricultural area may ultimately be required to accommodate the potential northern runway extension and associated safety and clearance areas discussed earlier in this document. The remainder of the site could continue to be used for agricultural purposes well into the future, and could protect very long-term conversion to airside uses for the potential runway extension. Alternatively, the land could be used to protect against encroachment or accommodate relocation of a portion of the golf course should the current site start to be converted to Airside Commercial uses in the future.

7.0 Nanaimo Airport Land Use Plan

7.1 Long-Term Land Use Plan

The proposed Land Use Plan is illustrated in Figure 26. The proposed Plan balances the various requirements for airport development; allows the NAC to respond to future needs in a flexible manner; and is cognizant and responsive to the facility's location within a regional setting. Key operational areas are reserved for future expansion. These should be viewed as defined 'land reserves'. The commercial development areas shown can shift between Airside, Groundside and Prestige Highway development, as needed and subject to market demand.

Figure 26: Land Use Plan



7.2 Summary of Land Development Requirements

A summary of the airport's land development requirements for the short-, medium-, long- and very long-term periods, based on the analyses, findings and recommendations of this document, is provided in Table 5.

Table 5: Summary of Land Development Requirements

	Development Requirement	Objective	Development Option			
			Short Term (2015-2019)	Medium Term (2020-2024)	Long-term (2025-2034)	Very Long-term (2035 and beyond)
Airfield						
Runway	Protect for 150m runway extension (distributed at both ends)	Remove aircraft payload restrictions/increase aircraft range	Land protected via Land Use Plan			X
Taxiways	Protect for future east parallel taxiway - 168m from runway (centreline to centreline)	Support future eastside airside commercial development	Land protected via Land Use Plan			X
Helipads	Establish "virtual' helipad	Support potential future growth of helicopter operations		X		
Passenger Terminal Complex						
Apron	Apron Expansion (north or south of existing)	Accommodate 5+ aircraft positions	Phase 1 - Relocate GA	Phase 2 - 5+ positions		
Passenger Terminal	Passenger Terminal Building expansion	Address expected capacity shortfalls	40% to 60% expansion over current size to meet traffic needs to 2024		130% to 200% building expansion (over current size) - 650,000-820,000 annual passengers	
Car Parking Areas	Expand parking areas	Address expected capacity shortfalls beyond current expansion plan		Needed when 335,000 annual passengers are reached - Dependant on parking management practices	Dependant on size of previous expansion and parking management practices	Dependant on size of previous expansion(s) and parking management practices
Airport Support Areas						
ERS	Relocate to new site / adjacency with AMC	Provide for expanded Passenger Terminal Building	Development subject to timing of terminal expansion and demand for airside commercial land	Development subject to timing of terminal expansion and demand for airside commercial land		
FSS and MET Compound	Relocate to new site adjacent to expanded main apron and Passenger Terminal	Enable south Terminal and main apron expansion	Subject to timing of south Terminal and main apron expansion			
Future ATC Tower	Develop future ATC Tower east of Runway	Address potential ATC traffic growth requirements				Potentially needed when 50,000-60,000 annual movements are achieved

Table 5: Summary of Land Development Requirements (cont'd)

	Development Requirement	Objective	Development Option			
			Short Term (2015-2019)	Medium Term (2020-2024)	Long-term (2025-2034)	Very Long-term (2035 and beyond)
Development Lands						
All Groundside Land	Establish land use and development agreements (MOU) with local governments	Establish agreement on land uses and development potnetial of Groundside land	X			
Current Airside North Vacant Lots	Lease existing vacant lots	Address market opportunities for expansion of aviation businesses on the airport site	X			
New Airside North Lots	New services and taxiway infrastructure to expand commercial lot inventory	Address market opportunities for expansion of aviation businesses on the airport site		Inventory and phasing subject to market demand and NAC business development objectives		
Prestige Highway Development	Extend services and associated infrastructure to Spitfire Way / Hwy 1 gateway	Create local/regional commercial node serving airport users/employees and Village of Cassidy residents	Timing subject to land use agreement (MOU) with local governments and NAC business development objectives			
Airside East Lots	New services and taxiway infrastructure to expand commercial lot inventory	Address market opportunities for expansion of aviation businesses on the airport site			Subject to market demand and environmental compatibility of area development	
Groundside Light Industrial/ Commercial Lot	New services and associated infrastructure to expand commercial lot inventory	Address market opportunities for incremental light industrial/commercial business growth on airport property		Inventory and phasing subject to market demand (for excess airside and groundside land inventory) and NAC business development objectives		
Airport Access and Internal Circulation						
Spitfire Way and Roundabout	Doubling of roadway and roundabout	Increase roadway capacity prior to expansion of commercial development area road network	Undertake traffic planning and engineering study	X		
Mustang Road and Other North Lot Access	Realignment and north extension of Mustand Road and development of east-west stub roads	Provide access to future Airside North Lots		Subject to timing and demand for Airside North Lot development		
South Access Rd	Provide new service road parallel and west of Spitfire Road	Provide alternate access to future Prestige Highway Development and south groundside light industrial commercial lots		Subject to timing and demand for south groundside lots		
Simpson Road	North extension	Provide access to future Airside East Lots				Subject to timing and demand for Airside East Lots
Other Land Use Areas						
Simpson Road Land	No specific development requirement	Retain or sell	Under policy review			
Recreational Land	No specific development requirement	Assess environmental compatibility for future development	Protection of some land for future airside development (Airside East Lots)			

7.3 The 5-10 Year Focus

The Land Use Plan proposed in this document depicts the ultimate layout for the airport and protects for all development requirements and scenarios that may occur well into the future (2035 and beyond) based on current operational expectations and business priorities. The Plan provides a framework for facility expansion areas and is to be used to guide the location of future commercial investment on airport land. Although the Plan is long-term in nature, the analyses that led to its development highlights areas of focus and priorities for the NAC in terms of upcoming capital requirements and business development/marketing initiatives for the individual timeframes covered by the Plan.

Table 6 outlines NAC's needed focus for facility and land development, and key upcoming priorities for the next 5-10 year periods. Note that these items are identified for planning purposes only. Further technical analyses and studies will be required prior to making specific capital expenditure decisions.

Table 6: 5-10 Year Focus for Facility and Land Development

2015-2019 (1-5 Years)

• Establish Memorandum of Understanding (MOU) on Airport Zone with RDN and CVRD
• Initiate phase 1 Passenger Terminal Building expansion (min 40-60% over existing).
  • Relocate adjacent facilities to allow for expansion.
  • Select option for potential ERS relocation.
• Initiate phase 1 aircraft apron expansion
  • Relocate general aviation aircraft parking
• Potential expansion of car parking facilities within the existing land reserve if passenger traffic reaches forecast of 335,000 annual passengers in this period.
  • Expansion dependant on parking management practices and lot organization.
• Leasing/development existing vacant north Airside lots
  • Developments subject to market demand
• Targeted/staged development of the Prestige Highway lots.
  • Subject to establishment of MOU with RDN.
  • Developments are subject to market demand and strategic needs.
• Expand Spitfire Way and roundabout
  • Undertake traffic planning and engineering feasibility
• Expansion of the main access, groundside road network and services, as needed, to support development of commercial lots.

Table 6: 5-10 Year Focus for Facility and Land Development (Cont'd)

2020-2024 (6-10 Years)

• Phase 2 apron expansion.
  • Subject to air carrier, charter and corporate traffic patterns.
• Expand Spitfire Way and roundabout
  • Subject to traffic planning and engineering feasibility
• Staged development of the Prestige Highway, north Airside lots and initiation of expanded groundside light industrial/commercial lots.
  • Subject to market demand.
• Further expansion of groundside roads and services, as needed, to support development of commercial lots.
• Establishment of "virtual" helipads.

Appendix A: Land Use Tables – Aircraft Noise Consideration Only

Source: *Land Use in the Vicinity of Airports, TP1247*; Transport Canada, 2005.

No	Indicates that new construction or development of this nature should not be undertaken.
No	Indicates that new construction or development of this nature should not be undertaken See Explanatory Note B.
(A)	This particular land use may be acceptable in accordance with the appropriate note and subject o the limitations indicated therein.
Yes	The indicated land use is not considered to be adversely affected by aircraft noise and no special noise insulation should be required for new construction or development of this nature.

(A)

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Residential				
Detached, Semi-Detached	No	No	(No)	(A)
Town Houses, Garden Homes	No	No	(No)	(A)
Apartments	No	No	(No)	(A)

(B)

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Recreational - Outdoor				
Athletic Fields	No	(J)	(K)	Yes
Stadiums	No	No	(K)	Yes
Theatres - Outdoor	No	No	No	(H)
Racetracks - Horses	No	(K)	(K)	Yes
Racetracks - Autos	Yes	Yes	Yes	Yes
Fairgrounds	(K)	(K)	Yes	Yes
Golf Courses	Yes	Yes	Yes	Yes
Beaches & Pools	Yes	Yes	Yes	Yes
Tennis Courts	No	(K)	Yes	Yes
Playgrounds	(K)	(K)	Yes	Yes
Marinas	Yes	Yes	Yes	Yes
Camping Grounds	No	No	No	(H)
Park & Picnic Areas	No	(K)	Yes	Yes

C

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Commercial				
Offices	(F)	(E)	(D)	Yes
Retail Sales	(F)	(D)	Yes	Yes
Restaurants	(F)	(D)	(D)	Yes
Indoor Theatres	No	(G)	(D)	Yes
Hotels & Motels	No	(F)	(G)	Yes
Parking Lots	Yes	Yes	Yes	Yes
Gasoline Stations	Yes	Yes	Yes	Yes
Warehouses	Yes	Yes	Yes	Yes
Outdoor Sales	(E)	(K)	Yes	Yes

D

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Public				
Schools	No	No	(D)	(C)
Churches	No	No	(D)	(C)
Hospitals	No	No	(D)	(C)
Nursing Homes	No	No	(D)	(C)
Auditoriums	No	No	(D)	(C)
Libraries	No	No	(D)	(C)
Community Centres	No	No	(D)	(C)
Cemeteries	(N)	(N)	(N)	(N)

E

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Municipal Utilities				
Electric Generating Plants	Yes	Yes	Yes	Yes
Gand & Oil Storage	Yes	Yes	Yes	Yes
Garbage Disposal	Yes	Yes	Yes	Yes
Sewage Treatment	Yes	Yes	Yes	Yes
Water Treatment				
Water Storage	Yes	Yes	Yes	Yes

F

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Industrial				
Factories	(I)	(I)	Yes	Yes
Machine Shops	(I)	(I)	Yes	Yes
Rail Yards	Yes	Yes	Yes	Yes
Ship Yards	Yes	Yes	Yes	Yes
Cement Plants	(I)	(I)	Yes	Yes
Quarries	Yes	Yes	Yes	Yes
Refineries	(I)	(I)	Yes	Yes
Laboratories	No	(D)	Yes	Yes
Lumber Yards	Yes	Yes	Yes	Yes
Saw Mills	(I)	(I)	Yes	Yes

G

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Transportation				
Highways	Yes	Yes	Yes	Yes
Railroads	Yes	Yes	Yes	Yes
Shipping Terminals	Yes	Yes	Yes	Yes
Passenger Terminals	(D)	Yes	Yes	Yes

H

Noise Exposure Forecast Values	>40	40-35	35-30	<30
Response Areas	1	2	3	4
Agricultural				
Crop Farms	Yes	Yes	Yes	Yes
Market Gardens	Yes	Yes	Yes	Yes
Plant Nurseries	Yes	Yes	Yes	Yes
Tree Farms	Yes	Yes	Yes	Yes
Livestock Pastures	(M)	Yes	Yes	Yes
Poultry Farms	(L)	(L)	Yes	Yes
Stockyards	(M)	Yes	Yes	Yes
Dairy Farms	(M)	Yes	Yes	Yes
Feed Lots	(M)	Yes	Yes	Yes
Fur Farms	(K)	(K)	(K)	(K)

Notes:

The location of the lines between noise zones cannot be fixed exactly. It will therefore be necessary for the responsible public authority to make an appropriate interpretation of what regulations are to apply at a specific location.

In cases where reference is made to a detailed on-site noise analysis, or to peak noise levels, it will be appreciated that the notes are intended to apply specifically at existing airports, where a field assessment is possible. For planning with respect to new airports, such zones should be considered cautionary. Before reaching a final decision with respect to permitting the particular land-use in question, the authority may wish to consider local topographic effects and ambient noise levels, in conjunction with generalized peak noise level "footprints" for the predominant aircraft types to be using the new airport.

A. Annoyance caused by aircraft noise may begin as low as NEF 25. It is recommended that developers be made aware of this fact and that they undertake to so inform all prospective tenants or purchasers of residential units. In addition, it is suggested that development should not proceed until the responsible authority is satisfied that acoustic insulation features, if required, have been considered in the building design.[2]

B. This Note applies to NEF 30 to 35 only. New residential construction or development should not be undertaken. If the responsible authority chooses to proceed contrary to Transport Canada's recommendation, residential construction or development between NEF 30 and 35 should not be permitted to proceed until the responsible authority is satisfied that:

   (1) appropriate acoustic insulation features have been considered in the building[3] and

   (2) a noise impact assessment study has been completed and shows that this construction or development is not incompatible with aircraft noise.

Notwithstanding point 2, the developer should still be required to inform all prospective tenants or purchasers of residential units that speech interference and annoyance caused by aircraft noise are, on average, established and growing at NEF 30 and are very significant by NEF 35.

Appendix B: Aviation Opportunities Analysis

Investment Attraction Model

In any business there are always opportunities for expansion or to grow the business whether they are only limited, as in the case of sunset industries, or very significant, as in the case of new innovative industries, such as high tech and the internet. The challenge in any industry, and especially airports, is to identify the specific opportunities that exist in that industry and within the specific local and region context that the airport or industry operate.

For the Nanaimo Airport, potential opportunities were initially identified using an investment attraction model developed in consultation with FedNor, for use by airports and communities. The model has worked well in the past to indentify strengths and weaknesses of airports' attractiveness for aviation opportunities. This model includes a two-step process that first evaluates the community's strengths in the aerospace sector in the region (Vancouver Island); and then assesses the community's readiness to attract new investment.

The District's aerospace strengths or assets were broken into four main categories:

1. Aerospace products and services;
2. Airport infrastructure;
3. Aerospace training and education supply; and
4. Location / access.

While each criterion within the main categories is scored equally on a scale of 0-5, the number of criterion in each main category determines the importance of the category in the overall score. For instance Airport infrastructure represents 41% of the total score as it is an important factor. For this step of the assessment, Nanaimo Airport was compared to other island airports such as Comox, Campbell River, Victoria, Port Hardy, Tofino, and Qualicum Beach. Nanaimo ranked 2nd out of 6 as shown in the Table A-1 and A-2 below.

Table A-1: Aerospace Strength Comparison – Converted Score of out 100

Main Category	Overall Score (out of a 100)						
	Nanaimo	Comox	Campbell River	Victoria	Port Hardy	Tofino	Qualicum Beach
Aerospace Products & Services	40	20	40	80	20	10	10
Airport Infrastructure	68	55	68	90	30	23	23
Aerospace / Aviation Training & Education	10	15	10	30	0	0	10
Location / Access	70	60	60	90	45	40	60
Overall Score	**52**	**43**	**50**	**76**	**26**	**20**	**27**

Table A-2: Aerospace Strength Comparison – Rank

Main Category	Rank						
	Nanaimo	Comox	Campbell River	Victoria	Port Hardy	Tofino	Qualicum Beach
Aerospace Products & Services	2	4	2	1	4	6	6
Airport Infrastructure	2	4	2	1	5	6	6
Aerospace / Aviation Training & Education	3	2	3	1	6	6	3
Location / Access	2	3	3	1	6	7	3
Overall Rank	**2**	**4**	**3**	**1**	**6**	**7**	**5**

Victoria Airport clearly has the infrastructure in place and being well situated. Many available aerospace products and services are also there to attract a broader range of opportunities compared to other island airports. However Nanaimo and Campbell River are both expanding and enhancing services and opportunities. They have tied in airport infrastructure, aerospace products and services as well as aerospace training and education. What gives Nanaimo an edge is its location and access being closer to Vancouver and Victoria.

The investment readiness component of the model uses 10 main demographic/geographic and investment criteria factors with 65 sub factors within the 10 combined with a series of aerospace and aviation opportunities for Nanaimo. Each opportunity gets a score out of 12 based on the criteria/investment factors and an overall score out of 120 is calculated. As shown in the Table A-3 and A-4, the top five ideal opportunities currently for Nanaimo are:

1. Hangars (private / corporate);
2. FBO (incl. aviation fuel);
3. Aircraft sales;
4. Flight training; and
5. MRO services (incl. a/c conversions, interiors, painting, etc.)

Table A-3: Investment Readiness Analysis for Nanaimo

INVESTMENT FACTORS	Aircraft Manufacturing &/or Assembly	Expanded Post Secondary Specialty / Technical Training	Base for Public Services (medevac, firefighting, policing)	MRO Services (incl. a/c conversions, interiors, painting, etc.)	Flight Training	Maintenance Base for Scheduled Carriers	Aviation Equipment Manufacturing	Air Cargo Base / Logistics Centre	Cold Weather Testing	Test Flights	Aircraft Sales	FBO (incl. aviation fuel)	Aeronautical R&D	Aerospace Supply Chain Entry	Aeronautical Recreational	Hangars (private / corporate)	Category Weight
Labour Force	9.3	7.1	9.0	10.7	10.8	3.9	9.6	1.8	7.2	1.1	9.6	11.1	7.1	4.5	2.7	12.0	12
Local Industry	8.0	4.8	10.8	6.0	8.0	4.4	9.8	6.6	4.8	1.8	10.8	11.4	2.6	5.4	8.0	9.4	12
Transportation / Distribution	12.0	12.0	12.0	8.4	12.0	12.0	2.2	12.0	12.0	12.0	12.0	12.0	12.0	10.4	12.0	12.0	12
Taxes	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12
Utilities	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12
Local Business Environment	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	10.8	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12
Property Availability And Cost	12.0	10.9	10.9	12.0	10.9	12.0	12.0	12.0	12.0	10.9	12.0	12.0	12.0	12.0	12.0	12.0	12
Incentives / Business Support	0.0	9.6	0.0	9.6	9.6	9.6	9.6	9.6	7.2	9.6	9.6	9.6	9.6	0.0	7.3	12.0	12
Education & Training	8.0	8.0	12.0	12.0	12.0	10.0	10.0	8.4	7.8	10.0	12.0	11.0	9.0	10.0	7.5	12.0	12
Quality Of Life	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12
Overall Score	**97.3**	**100.4**	**102.7**	**106.7**	**111.3**	**99.9**	**101.2**	**98.4**	**97.8**	**93.5**	**114.0**	**115.1**	**100.3**	**90.3**	**97.6**	**117.4**	**120**
Rank	**14.0**	**8.0**	**6.0**	**5.0**	**4.0**	**10.0**	**7.0**	**11.0**	**12.0**	**15.0**	**3.0**	**2.0**	**9.0**	**16.0**	**13.0**	**1.0**	

Investments, expansions and related activities were also assessed at competing airports in the broader region to see what they were undertaking. General trends were also considered trends in the broader aviation industry and more specifically in the general aviation component such as:

- With the baby boom generation retiring, there will be lots of shortages for jobs like pilots, mechanics, sales, management, etc.
- Decline in private and small piston aircraft usage and increase in corporate, share ownership and charter turboprop and jet aircraft usage.

Table A-4: Investment Readiness Analysis for Nanaimo in Order Rank

Nanaimo Aviation Opportunities	Score (out of 120)	Rank
Hangars (private / corporate)	117.4	**1**
FBO (incl. aviation fuel)	115.1	**2**
Aircraft Sales	114.0	**3**
Flight Training	111.3	**4**
MRO Services (incl. a/c conversions, interiors, painting, etc.)	106.7	**5**
Base for Public Services (medevac, firefighting, policing)	102.7	6
Aviation Equipment Manufacturing	101.2	7
Expanded Post Secondary Specialty / Technical Training	100.4	8
Aeronautical R&D	100.3	9
Maintenance Base for Scheduled Carriers	99.9	10
Air Cargo Base / Logistics Centre	98.4	11
Cold Weather Testing	97.8	12
Aeronautical Recreational	97.6	13
Aircraft Manufacturing &/or Assembly	97.3	14
Test Flights	93.5	15
Aerospace Supply Chain Entry	90.3	16

Activities and trends were reviewed at the Airports on Vancouver Island in general to identify:

- Any Capacity constraints at Victoria Airport that will force some private and corporate customers to relocate their aircraft and associated hangars
- Policies at Victoria Airport favouring big commercial traffic could lead to relocation of corporate and other traffic to outlying airports.
- Some airports in the region have been expanding and actively pursuing new opportunities (e.g., Nanaimo and Campbell River), while other airports have not.

Future steps would be to review and meet with stakeholders and community leaders to develop and finalize the opportunities for Nanaimo Airport and ways to attract them.

The following are a number of key findings and topics to discuss from the investment attraction model exercise:

- There are a lot of potential opportunities for the Nanaimo Airport to pursue in order to expand operations and investment at the airport;
- A lot of the potential development and whether or not it is realized depends on local entrepreneurs
- An important key to airport expansion is building on activities and uses you already have. This brings you better returns, and is easier than attracting new users, activities, etc.
- The types of opportunities available need to be qualified in terms of the potential scale of activity, with the obvious potential generally being for a "smaller scale" rather than one you might find at other larger airports, due primarily to the low population base and consequent small pool of skilled workers, and
- To capitalise on opportunities the airport must first have the appropriate facilities in place, or at least a plan to develop these facilities and then it must aggressively market itself and pursue the potential opportunities.

Appendix C: Lot Size Analysis

Comparative Review of Lot Sizes at a Variety of Airports

In order to establish appropriate lot sizes to use for this land development plan, a quick survey was conducted of other similar sized and larger airports. This survey involved a combination of checking of our SNC files from previous work that we had done (using CAD files), as well as using aerial photos available on Google Earth. The airports surveyed, as illustrated below, generally involved mostly BC airports, but do include some info on some small international airports, such as in the Bahamas and Turks and Caicos, where we have done extensive work as well, as well as a number of Alberta airports.

The data below is categorised into airside and landside uses.

Airport	Development Type	Width (m)	Depth (m)	Typical Area (m^2)
		Airside Uses		
Cranbrook	Small hangar – private	50	100	5,000
	Small hangar – maintenance	60	100	6,000
	Small forestry base	60	100	6,000
Kamloops	Small hangar – maintenance	50	115	5,750
	Small hangar – maintenance	60	115	6,900
	Small hangar – general use	70	100	7,000
	Small hangar – general use	50	100	5,000
	Small hangar – general use	100	80	8,000
	Large forestry base	300	200	60,000
	"T" Hangars	50	110	5,500
Prince George	Small hangar – general use	100	80	8,000
	Small hangar – general use	70	80	5,600
	Small hangar – general use	70	100	7,000
	Small hangar – general use	80	80	6,400
Abbotsford	Large aircraft maintenance	230	300	69,000
	Mid size hangar	120	100	12,000
	Mid size hangar	120	80	9,600
	General aviation – flying school	120	150	18,000
	"T" Hangars - single	50	60+	3,000+
	"T" Hangars - double	80	60+	4,800+
Pemberton	General airside lots	40	120	4,800
Kelowna	Large aircraft maintenance	300	300	90,000
	Small hangars/general aviation	100	100	10,000
	Small hangars/general aviation	120	100	12,000
Vancouver	Fixed based operator (FBO)	160	150	24,000
	Fixed based operator (FBO)	120	80	9,600
	Helicopter Terminal/base	100	150	15,000
	Small aircraft maintenance	50	80	4,000

Airport	Development Type	Width (m)	Depth (m)	Typical Area (m^2)
Calgary	General use/corporate/FBO	70	110	7,700
	General use/corporate/FBO	100	110	11,000
	General use/corporate/FBO	90	110	9,900
	General use/corporate/FBO	60	150	9,000
	General use/corporate/FBO	70	150	10,500
	General use/corporate/FBO	120	150	18,000
Springbank	T-Hangars – single –larger	40+/-	100+/-	4,000
	T-Hangars – double - smaller	45-50	100+/-	5,000
Nassau	Large FBO	200	180	36,000
(Bahamas)	Small FBO	80	120	9.600
	Aircraft Maintenance	120	250	30,000
Marsh Harbour	Small FBO	120	100	12,000
(Bahamas)	Small FBO	200	120	24,000
	Small FBO	80	80	6,400
Providenciales	Small FBO	150	120	18,000
(Turks&Caicos)	Small FBO	100	120	12,000
	Small FBO	70	150	10,500
	General Landside Uses			
Vancouver	Small industrial/office combo	50	Variable	5,000+/-
	Small industrial/office combo	60	variable	6,000+/-
	Small warehouse/industrial	80	Variable	8,000+/-
	Small warehouse/industrial	120	Variable	10,000+/-
Cranbrook	Warehouse/industrial	75	140	10,500
	Warehouse/industrial	75	75	5.625
	Warehouse/industrial	75	110	8,250
	Industrial/office	40	100	4,000
	Industrial/office	50	80	4,000
	Industrial/office	70	90	6,300
Kamloops	Warehouse/industrial	70	120	8,400
	Warehouse/industrial	70	90	6,300
	Warehouse/industrial	60	100	6,000
	Industrial/office	60	100	6,000
	Industrial/office	80	90	7,200
	Industrial/office	70	110	7,700

Conclusions

Based on the above comparisons, it can be seen that an appropriate size for typical airside lots for general uses should be in the order of about 50m x 100m (or about 5,000m^2 in area). These general uses could accommodate hangars for private or corporate aircraft, aircraft maintenance activities for smaller aircraft. The depth of these lots could also accommodate Fixed Based Operators who would build a hangar and facilities to handle multiple aircraft, but these uses could require several lots in terms of width, depending on the size of the facility. Two lots could

provide a total area of about 10,000m^2 while 3 lots would provide a total area of 15,000m^2. These sizes are consistent with small FBOs as evidenced in the above table.

With respect to landside lots, typical dimensions for developments in Cranbrook and Kamloops and smaller type developments in Vancouver tended to indicate lot sizes averaging some 4,000m^2 to 10,000m^2. Most of these tending to be in the middle of this range around 6,000 to 8,000m^2. Frontages varied between 40 and 120m. Based on this data, it appears that landside lots might be sized at about 8,000m^2 +/- for warehousing/industrial and for closer to about 6,000m^2 for the office/industrial types, if we were to consider these uses.

This analysis shows the sizes of typical lots at other airports. The current lot layouts at Nanaimo are generally in this same size range, with airside lots generally about 40m x 90m with the width varying from smaller to wider than this and with the depth (90+/-) reflective of the distance between the main service road and the parallel taxiway.

NANAIMO AIRPORT LAND USE AND DEVELOPMENT PRINCIPLES

Nanaimo Airport Commission (the "Commission")

Nanaimo Airport ("YCD") is owned by the Nanaimo Airport Commission, incorporated under the *Canada Not-for-Profit Corporations Act*.

The Commission is governed by a Board of Directors responsible for its corporate mandate, including airport development. The Board is comprised of nine directors. Five directors are nominated by entities and appointed by the Board. The five nominating entities are:

- City of Nanaimo
- Cowichan Valley Regional District
- Nanaimo Chamber of Commerce
- Regional District of Nanaimo
- Town of Ladysmith

The remaining four directors are appointed to represent the Community at Large.

Mission Statement

> *"To provide a safe, efficient and financially viable airport, offering excellent services and value to all users while fostering economic development."*

Vision Statement

> *"The Nanaimo Airport will be a safe, reliable, air services gateway effectively meeting customer's needs."*

Under direction from the Board, the President/CEO manages the affairs of the Commission, and directs staff in the daily operation of the airport.

Based on its Mission and Vision, the Commission has developed the following guiding principles to assist airport management in its decision-making process. As guiding principles, they must be conscientiously done in good faith, taking into consideration social, economic, and political factors.

- *The Commission aspires to be a respectful good neighbor within the region by adhering to its mandate as an airport authority and its regulatory obligation to support airport development;*
- *The Commission will protect and enhance its lands to support well planned airport development and associated infrastructure, ensuring long term airport viability;*
- *The Commission will plan and develop a multi-modal transportation hub that better serves the regional community;*
- *The Commission will communicate its plans and aspirations as a key economic partner that serves Vancouver Island needs.*

LAND USE AND DEVELOPMENT PRINCIPLES

These Land Use and Development Principles are intended to provide information to the public, and to parties interested in the development of commercial land at the Airport. These principles do not modify any applicable laws or regulations.

Legal and Regulatory Background

Federal jurisdiction

Under Section 91 of the *Constitution Act,* aeronautics is a matter of national concern. An airport is also a federal work or undertaking pursuant to Section 92(10)(a) of the *Constitution Act*. The airport operates in an area of federal competence and comes under the legislative authority of the Parliament of Canada. The Government of Canada transferred Nanaimo Airport to the Commission, subject to all the laws of Canada regarding aeronautics, airports, and federal undertakings. This includes airport construction and occupational health and safety.

Airport Operator Certificate and Airport Operations Manual

The Commission must hold and maintain an Airport Operator Certificate issued by the federal Minister of Transport to manage, operate and maintain Nanaimo Airport subject to an Airport Operations Manual approved by the Minister of Transport.

Master Plan

Airport development is based on an Airport Master Plan, which is the airport operator's public document providing the strategy for the development of the airport regarding land use, facilities, and services to meet its objectives and accommodate expected levels of activity and traffic over a number of horizon years. It incorporates the key planning principles of adaptability, balance and hierarchy. As such, the Master Plan must integrate the airport community with its greater community. It is a tool for budgeting, expansion, organization and for balancing competing interests, such as use of airport land. It is also an instrument of control since each of the airport's policies and objectives must be consistent with the Master Plan, for example, runway capacity and land use.

The Master Plan is not an action plan. It only restricts any undertaking that is not consistent with the Master Plan. It is not about airport operations, because it does not deal with the type or quality or work to be performed.

Land Use Plan

The Land Use Plan is an integral part of the Master Plan, and is updated from time to time, to be consistent with the Master Plan. The primary purpose of the Land Use Plan is to define the uses to which airport lands are to be put.

Nanaimo Airport Land Use Principles

The issuance and updating of the Master Plan and the Land Use Plan shall be the responsibility of the Commission.

The process for updating the Master Plan and the Land Use Plan for the Airport lands shall include the following principles:

- Opportunities for the public, stakeholders and other interested parties to provide input shall be provided.
- Protection of environmentally sensitive resources including the Cassidy Aquifer will be a key consideration in determining future land use.
- The objectives of the consultation process will be clearly established.
- The process shall allow for a meaningful level of involvement.
- All positions and input shall be considered; not all input can and will be accommodated.
- The integrity of broad public involvement must be paramount to the process and must not be superseded by any individual or interest group.
- Technical information used in decision making shall be made available to the public.
- Airport operations will be paramount and all uses shall either be airport related or complimentary.
- A timeline for the process will be clearly communicated.

Nanaimo Airport Land Development Principles and Process

Community Engagement

The Cowichan Valley Regional District, the Regional District of Nanaimo, Stz'uminus First Nation and affected stakeholders will be consulted regarding all significant planned airport development or construction. The Commission will also inform the community of all such developments or construction. Where appropriate, the Commission will consult with the community in a manner consistent with its process for updating its Master Plan and Land Use Plan as set out above in this document.

Nanaimo Airport Construction and Permitting Principles and Process

The issuance of leases, licences, and permits for airport land development, including building construction and alteration permits, shall be the responsibility of the Commission in accordance with the following.

Airport Development Requirements

- Developments must comply with the Master Plan and Land Use Plan.
- NAV Canada technical review is required to ensure all new developments do not unduly impact air navigation facilities or services, or impair line of sight.
- Industry Canada must be consulted for communications towers proposals.
- Transport Canada review is required to ensure obstacle limitation zoning is complied with to ensure no structures penetrate safe zones or aircraft corridors.
- Developments must comply with TP1247 – *Land Use in the Vicinity of Airports*.
- A "Plan of Operations" is required by Transport Canada in advance for airside works to minimize impact to airside operations.
- A Servicing and Utility Plan must be submitted to the Commission.
- A Dig Permit must be obtained from the Commission before any below ground work.
- A Permit must be completed for the Commission to review to determine special building, lease or operational conditions attached to construction approval.
- An YCD Building Permit is required.
- An environmental impact analysis report will generally be required.

Applicable Codes and Standards

Construction must meet all applicable codes and standards applicable to airports in Canada.

Schedule 1 sets out Applicable Codes and Standards that apply at Nanaimo Airport.

SCHEDULE 1
APPLICABLE CODES AND STANDARDS

- *Aeronautics Act*
- *Canadian Aviation Regulations*
- *TP 312 – Aerodrome Standards and Recommended Practices*
- *TP 2586 – Heliport and Helideck Standards and Recommended Practices*
- *TP 7775 – Procedures for the Certification of Aerodromes as Airports*
- *TP 1247 – Land Use in the Vicinity of Airports*
- *Canadian Aviation Security Regulations*
- *2015 National Building Code of Canada*
- *2015 National Fire Code of Canada*
- *2015 Canadian Electrical Code*
- *Canada Labour Code – Part II*
- *Canada Occupational Health and Safety Regulations*
- Roads and Transportation Association of Canada Standards
- Canadian Transportation Association – Code of Practice: Passenger Terminal Accessibility
- CSA Standard B836-05 – *Storage, handling, and dispensing of aviation fuels at aerodromes*
- *Sanitation Code* of the Canadian Restaurant Association
- *Transportation of Dangerous Goods Act*
- *Department of Health Act*
- *Non-Smokers Health Act*
- *Canadian Environmental Assessment Act*
- *Canadian Environmental Protection Act*
- *Fisheries Act*
- *Hazardous Products Act*
- *Migratory Birds Convention Act*
- *Pest Control Products Act*

This list in not intended to be a comprehensive list of all laws, regulations, codes and standards that may apply at Nanaimo Airport.

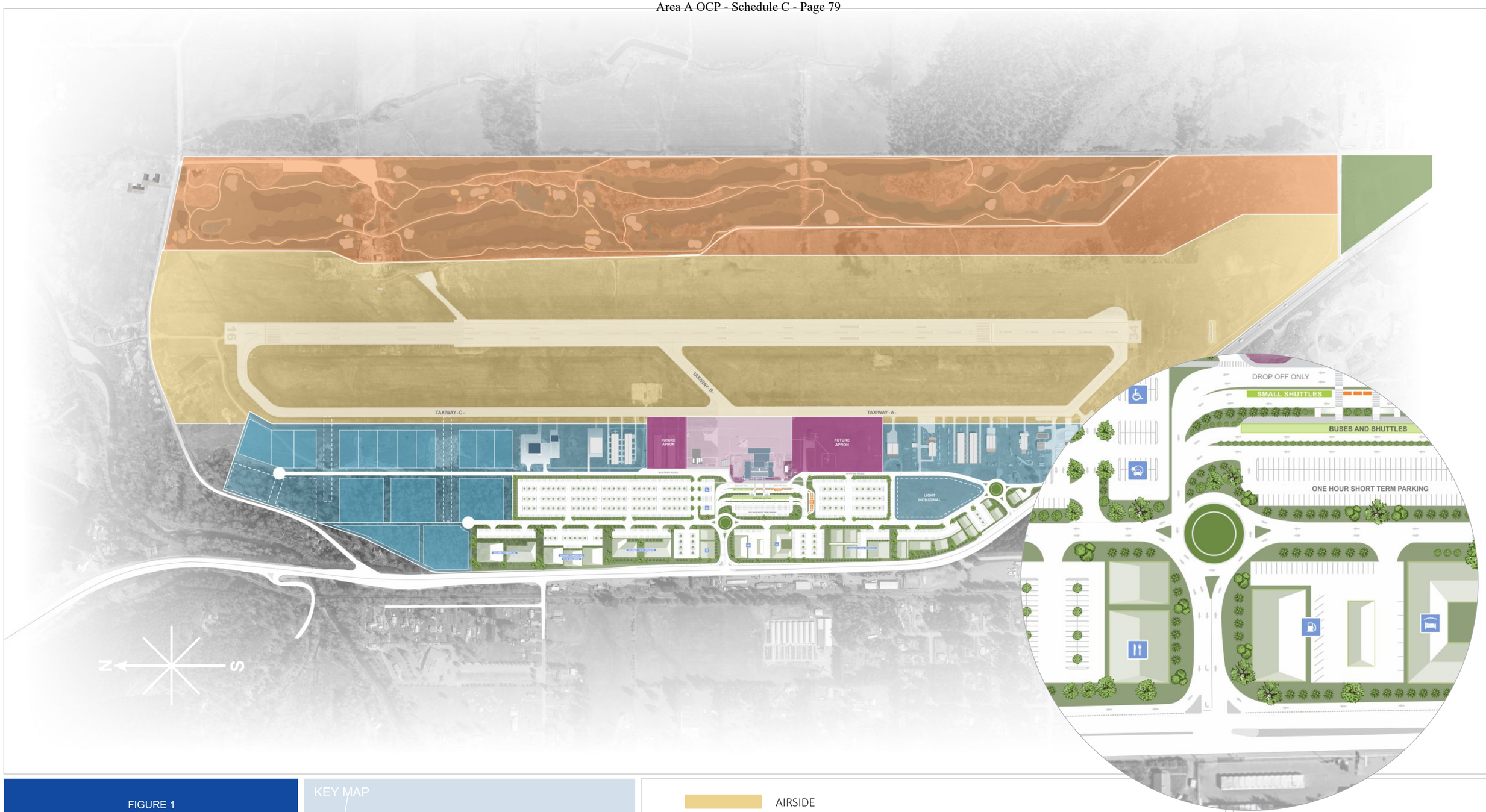
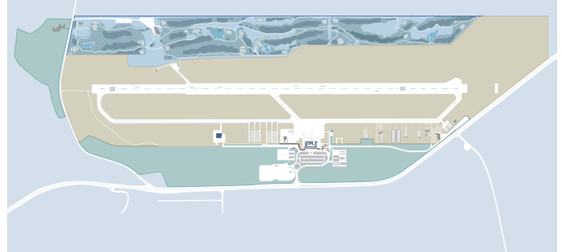


FIGURE 1

NANAIMO AIRPORT LAND DEVELOPMENT SITE MASTERPLAN

VERSION 1.6 - SEPTEMBER 2019

KEY MAP



- AIRSIDE
- AIRSIDE COMMERCIAL
- GROUNDSIDE COMMERCIAL
- AIR TERMINAL RESERVE
- FUTURE AVIATION

*all measurements in meters

NANAIMO AIRPORT YCD

Nanaimo Airport

DEVELOPMENT DESIGN GUIDELINES

November 2019

Report Prepared by:

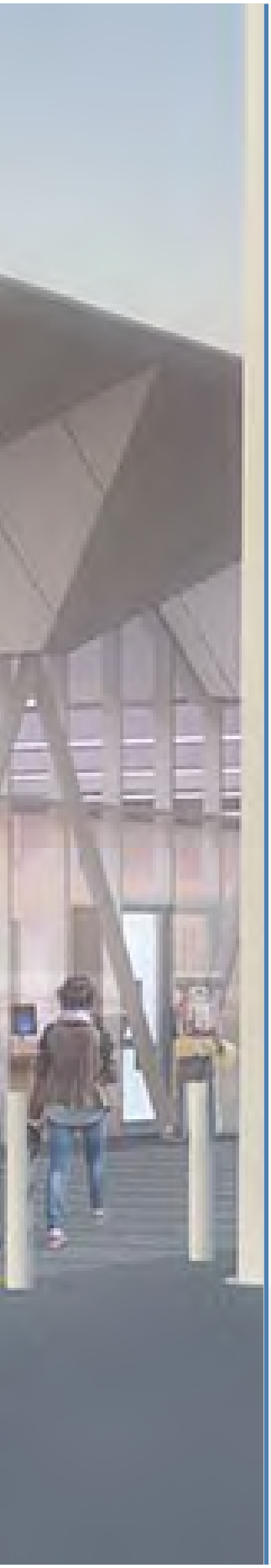
URBAN systems

Report Prepared for:

NANAIMO AIRPORT YCD

Nanaimo Airport Commission
3350 Spitfire Rd. Cassidy, BC
V0R 1H0

Contents



1. Introduction

The Nanaimo Airport Development Design Guidelines promote the airport's objectives toward well planned high quality airport development and associated infrastructure, ensuring long term airport viability while being a respectful neighbour within the region.

The Development Design Guidelines follow the Nanaimo Airport Lands Development Site Master Plan and incorporate the key planning principles of adaptability, balance and hierarchy. The Guidelines describe the expectations and requirements for future development applications on Nanaimo Airport lands and are written to convey the potential for attractive, flexible and innovative development and placemaking.

1.1. Intent of the Nanaimo Airport Development Design Guidelines

The purpose of these Development Design Guidelines is to articulate a sense of land use coordination and design continuity for the future development of Nanaimo Airport Lands. As such, these Guidelines provide recommendations for the general development practices, as well as detailed design for three '**Design Districts**.' These Development Design Guidelines (hereafter Guidelines), are performance based rather than prescriptive and provide general direction in the following areas:

- Buildings (form/ character/ materials/ siting/ massing)
- Landscape (fencing/ lighting/ / vegetation)
- Signage
- Parking, Loading & Storage
- Pedestrian Areas
- Interfaces (highway interface, internal road interface, airside interface)

Together, these elements are intended to ensure high quality development on airport lands. High quality development creates a distinct identity by expressing and reinforcing a cohesive character that reflects the nature of each development's purpose, responds to the development character and expectations of the Nanaimo Airport Commission (NAC), reflects regional context and climate, and contributes to a safe and attractive airport.

A developer will be required to provide plans and other supporting information to demonstrate that the layout, landscape and architecture of their developments are reflective of these Guidelines, as well as all other relevant policies and bylaws.

1.2. How to Use These Guidelines

The Guidelines should be used to further the understanding of dimensional, form and character, public realm, thematic and general requirements prior to submitting a formal development application to the NAC. They also provide a framework to improve the functional quality of the internal streetscape, public interfaces and the pedestrian experience with lease properties and infrastructure. The Guidelines should be read in association with the Objectives and Policies identified in the Nanaimo Airport Land Use Plan (March 25th, 2019).

The Guidelines are for developers, sign makers, architects, landscape architects, and designers who are mandated to adhere to these Guidelines and its relevant regulations. Representing a compilation of qualitative design-related considerations, the Guidelines have been provided to address and respect public and private concerns without compromising individuality or creativity.

Applicants seeking to develop lands within the Nanaimo Airport will need to demonstrate that the design principles of these Guidelines have been fulfilled. It should also be noted that all development is subject to meeting the criteria and requirements of the British Columbia Building Code for standards of safety, structural stability and accessibility. Alignment with the Guidelines should not supersede the British Columbia Building Code, nor does it guarantee approval.

1.3. Vision

Future development will enhance the functional quality of the Nanaimo Airport and inspire a unique character through the application of the Development Design Guidelines. These Development Design Guidelines will facilitate a platform for the coordinated development of airport lands that is clear, flexible, visually appealing and consistent with quality design expectations.

1.4. Guiding Principles

The Nanaimo Airport has completed a series of workshops and planning exercises that identified and built a consensus on design-oriented goals of the Airport related to placemaking and institutional branding. These goals, which share common themes, provide the foundation for a set of Guiding Principles. These Guiding Principles set out a common approach to functional and aesthetic elements of urban design and built form that once implemented can be characterized as creating high-quality development, and public realm.

SENSE OF SCALE – The scale of future development should reflect its context, its relationship to adjacent land uses and accommodate its intended users and uses.

UNIQUE CHARACTER – Development should have an aesthetic that promotes the West Coast environment of the Nanaimo Airport and supports a "brand" consistent with the Airport's objectives and policies contained in the Nanaimo Airport Land Use Plan.

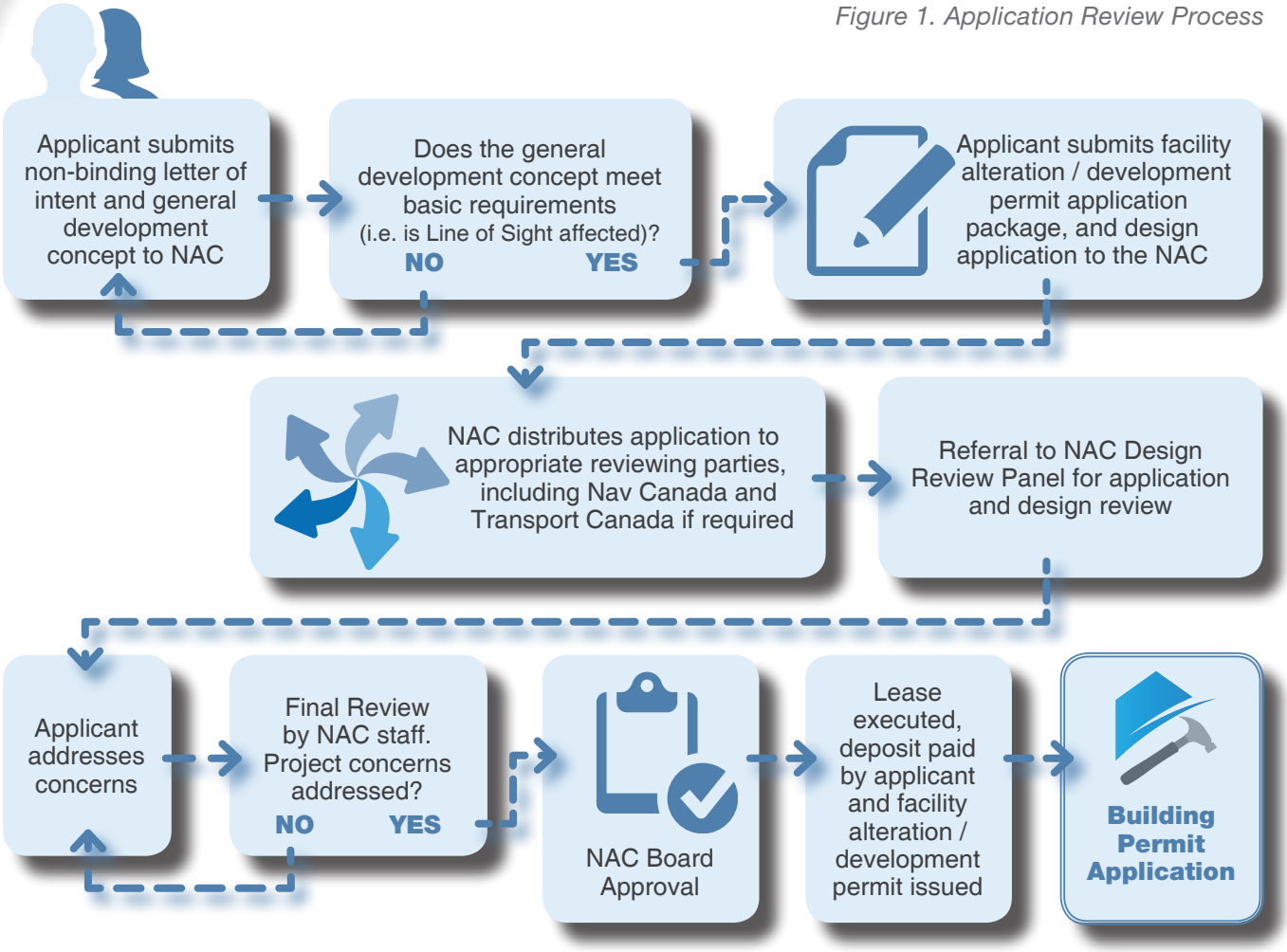
COMMUNITY INTERFACE – Future development should respect the Airport's neighbours and support opportunities for regional and community partnerships.

COMMERCIAL INTERFACE – Buildings should meet objectives of business frontage, identify business type and address, while respecting the interaction with the pedestrian realm.

DIVERSITY OF FORM – Building form should consider adjacent context and may include projections, painted wall signs, and other interesting architectural features.

DURABILITY AND PRACTICALITY – Building design and materiality should respect the climatic conditions of the region and strive to integrate green building and renewable energy technologies.

Figure 1. Application Review Process



1.5. Development Procedures

The following section provides a high-level overview of the application process and submission requirements for development occurring on Nanaimo Airport lands.

1.5.1 Development Permit Application Process Overview

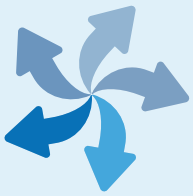
The Nanaimo Airport Commission (NAC) operates its own development application process. All construction projects on Airport lands, including the alteration or modification of existing structures, must comply with the NAC's Development Design Guidelines. Developers and contractors ("Applicant") should ensure they have a current copy of the Guidelines and application process for the Airport prior to the completion of a Land Sublease and Development Proposal Submission. The process is summarized as follows:

1.5.2 Expression of Interest

- Initial discussions to take place with the NAC's Director of Operations, to determine if the scope and character of the development fits with the Airport's objectives and current Site Master Plan.
- Proponent submits a general development concept plan in colour.
- Discussions take place regarding the terms and conditions of a sublease agreement.
- If the NAC supports the basic concept, the proponent is to complete and submit a Development Permit Application.

1.5.3 Development Permit Application Submission

- The Applicant submits the Development Permit Application.
- The application is referred to Appropriate Reviewing Parties (including NavCan).
- Airport staff from an operational, engineering, and environmental perspective review the Application.
- The Application will be reviewed by the airport's Design Review Panel for consistency with the Development Design Guidelines. The Applicant may be asked to present the proposed development to the Design Review Panel.
- The Applicant will revise submitted plans addressing any Airport concerns that have been provided in writing to the Applicant.
- Revised plans will be reviewed by the NAC.
- The NAC will prepare a sublease for signature by the Applicant when the Land Sublease and Development Proposal requirements, including approval by the airport's Design Review Panel, have been met. The sublease agreement is to be completed and the Applicant may submit a Building Permit Application when the sublease has been executed by the NAC.
- Prior to application for Building Permit the Applicant shall submit construction plans to the NAC / Independent Professional for verification of compliance with the Development Permit requirements, which includes adherence to the Nanaimo Airport Development Design Guidelines.



The Design Review Panel will be responsible for ensuring Development Permit Applications meet the intent of the Development Design Guidelines. The Design Review Panel will be composed of the following:

- 2 Staff Members
- 1 External Urban Designer
- 1 Board Member

2. General Development Design Guidelines

The following section provides general Guidelines that apply to development in all areas of the Nanaimo Airport lands, Key terms used in the following sections are noted in **Appendix A**.

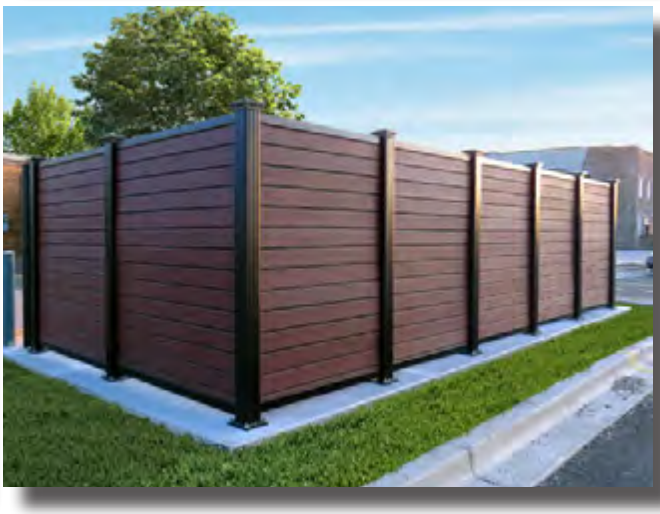
2.1. Fencing and Screening

a. Buildings are encouraged to screen rooftop and mechanical systems with the building's architecture.

b. Screening for outdoor storage areas, loading bays, and parking is encouraged.

c. Screening materials should employ high quality wood or steel vertical pickets in an industrial aesthetic and the use of chain link fencing should be avoided.

d. Planting beds, shrubbery, and vegetation should be prioritized over man-made materials for screening.



2.2. Utilities

e. The Applicant is responsible to determine the existing infrastructure, locate all existing underground and overhead utilities, confirm capacity is adequate for the planned development and comply with the NAC standards.

f. The Applicant is responsible to install all applicable metering systems including an accessible remote meter for a water meter.

g. Underground servicing (i.e. hydro/telephone) should be considered in all development areas but may be an operational requirement for some sites.

h. Final connections to all services will be inspected by a representative of the NAC and if applicable a local government authority.

i. Servicing arrangements must meet the applicable standards for the type of occupancy to the satisfaction of the NAC.

j. The Applicant is responsible for ensuring all infrastructure and utilities maintain an appropriate set back from the current and future highway right-of-way.

2.3. Fire Protection

a. The Applicant will be required to provide an approved water supply to meet firefighting needs.

2.4. Grading and Stormwater Management

a. Applicants are required to grade the site in such a way that it will complement the Airport drainage system.

b. Grading, drainage and storm water management design must be part of the Development Application and shall be in conformance with Airport standards.

c. Development must be designed so as to maintain the quality of any storm water flowing toward or into identified water features. Any detrimental effects on the environment from effluent or storm water discharge must be avoided.

d. Proposed development must be designed to avoid any increase in volume or peak flow of runoff.

e. Controls are required on surface-water drainage to prevent pollutants from entering water features including aquifers.

f. Any development must be designed to avoid storm water runoff that could destabilize the slope or cause damage to neighbouring properties.

2.5. Outdoor Storage and Refuse Areas

a. All proposed developments must minimize the visual impact of their outdoor storage and/or refuse area.

b. In general, these areas should be located within a principal building, or to the side or rear of a principal building, provided that it is not in a required minimum yard or in a required parking or loading space.

c. Landscape screening in the form of a fence, hedge (as per **Section 2.7 Landscaping**), or both no less than 1.8 metres above finished grade shall be incorporated around the area.

d. Garbage containers, garbage compounds, loading, unloading and storage areas will be located, orientated and designed to minimize their effect on adjacent properties and views from the street and Highways.

2.6. Signs

2.6.1 General Requirements

The NAC is the approving authority for all new signage or alteration of existing signage. A sign may not be erected, altered, rebuilt, enlarged, extended or relocated, and no change can be made to any part of the supporting structures, surrounding framework, illumination, colour or copy until NAC approval has been obtained.

a. All signs and their supporting structures shall be continuously maintained so that they are structurally sound and free from all hazards.

b. All signs, sign backgrounds, copy and lighting shall be maintained in readable and clean condition.

c. All wiring and conduits for electrical power shall be either placed below grade or otherwise concealed.

d. No sign or its supports shall be erected, placed or maintained in such a manner as to contact or interfere with any source of electric light, power line, communications line or their supports.

e. No sign or its supports may interfere or otherwise obstruct traffic control devices, or in any way interfere with airport traffic visibility or vehicular traffic visibility from a street, highway or intersection or the use of any access or means of egress.

f. All signs must meet adhere to Ministry of Transportation regulations and standards where applicable.

2.6.2 General Design Considerations for All Signs:

a. Signs should be integrated into the overall design of the building and should not conflict with the general character of the surrounding streetscape or adjacent buildings.

b. If any trees are removed or damaged during sign installation, new trees must be planted or landscaping improved.

c. Signs should be integrated into the building facade or landscaping.

d. Signs should be unobtrusive and in scale with their surroundings.

e. Building canopies and awnings should be coordinated with building signage.

2.6.3 Prohibited Signs

The following signs shall not be permitted:

a. Balloon Signs

b. Flashing Signs

c. Roof Signs

d. Third-Party Signs

e. Wind Activated Signs

f. Vehicle Signs

2.6.4 Permitted Signs

The following signs shall be permitted in one or all Design Districts:

a. Freestanding Signs

b. Electronic Signs

c. Fascia Signs

d. Wall Signs

e. Projecting Signs

f. Awning / Canopy Signs

g. Directional Signs

h. Portable Signs

i. Directory Signs

Figure 2. Permitted Sign Types

2.6.5 Number of Signs

a. A maximum of two (2) signs per business frontage of the following sign types are permitted per business:
    i. One (1) fascia sign, awning sign or canopy sign;
    ii. One (1) window sign, projecting sign, or hanging sign.
b. In addition to the signs allowed under **Section 2.6.5** (a), subject to NAC approval, NAC will permit one wall sign on one additional non-business frontage building face.
c. In addition to the signs allowed under **Section 2.6.5** (a), subject to NAC approval, NAC will permit one (1) freestanding sign, directional sign or directory sign at a designated lease parcel lot entrance.
d. In addition to the signs allowed under **Section 2.6.5** (a), subject to NAC approval, NAC will permit one (1) of the following types of temporary signs per business premises.
    i. One (1) banner sign;
    ii. One (1) portable sign.

2.6.6 Sign Type Regulations

The types of signs permitted are subject to the following regulations:

a. Fascia, Awning and Canopy Signs:
    i. Maximum sign area shall not exceed 0.75 m2 per linear metre of building face length of the business frontage, awning or canopy to which the sign is affixed, up to a maximum sign area of 10.0 m2 per business frontage;
    ii. The sign shall only be located on the portion of the building containing the business premises to which the sign refers;
    iii. Where more than one (1) business occupies a building the signs for each such business shall be limited to the portion of the business frontage containing the business premises to which it refers;
    iv. Copy shall be permitted only on the exterior front or side face of an awning or canopy; and
    v. If a business frontage exceeds 25.0 m, they may be permitted one additional sign under **Section 2.6.6** (a).
b. Hanging, Window and Projecting Signs:
    i. Maximum sign area shall not exceed 0.56 m2; and
    ii. No hanging or projecting sign shall be higher than 4.0 m, nor lower than 2.2 m from the ground directly underneath.

c. Freestanding, Directional or Directory Signs:

   i. Shall be setback a minimum of 3.0 m from the parcel lot line, and outside of established site triangles;

   ii. Maximum height shall not exceed 2.0 m;

   iii. Maximum sign area shall not exceed 2.0 m except where four (4) or more businesses share a sign then a total sign area not exceeding 4.0 m2 is permitted;

   iv. Notwithstanding **Section 2.6.6.c** (ii) the maximum height for a freestanding sign on a parcel lot located within the Gateway design district and adjacent to a primary highway access to airport lands, shall not exceed a total height of 7.5 m including podium from natural grade;

   v. Notwithstanding **Section 2.6.6.c** (iii) for a freestanding sign on a parcel lot located within the Gateway design district and adjacent to a primary highway access to airport lands, shall not exceed 6.0 m2 except where four (4) or more businesses share a sign then a total sign area not exceeding 12.0 m2 is permitted; and

   vi. Shall not contain changeable copy except when located on a parcel lot located within the Gateway design district and adjacent to a primary highway access to airport lands.

d. Temporary Signs:

   i. Shall be displayed for no more than ten (10) consecutive days and not more than thirty (30) days in a calendar year and on not more than three (3) separate occasions;

   ii. Shall not be displayed on building faces with street frontage;

   iii. Shall not be located less than 3.0 m from any lot line or driveway;

   iv. A banner sign shall not exceed a sign area of 4.0 m2;

   v. A portable sign shall not exceed a sign area of 0.75 m2; and

   vi. Shall not be illuminated.

2.6.7 Removal of Signs

When a business vacates a parcel or premises, all signs and their supporting structures on the parcel or premises which relate to that business shall be removed within thirty (30) days by the owner of the sign or the leaseholder of the parcel or within seven (7) days of being so notified by NAC.

2.7. Landscaping

All properties will incorporate landscaping in accordance with an approved landscaping plan to enhance the appearance of each development.

2.7.1 General Criteria for Landscaping

a. Areas of a site not covered by buildings, designated outside storage, parking and parking spaces or vehicle circulation areas must be landscaped.

b. Landscape development and work shall be approved by the NAC.

c. Ongoing maintenance of landscaping is the responsibility of the Applicant.

d. Efficient underground irrigation systems are required complete with an automated 'smart' irrigation controller.

e. Maximize the amount of landscaped areas and minimize the amount of impervious paved surfaces to increase the natural absorption of rainwater on a site.

f. Energy efficiency and conservation should be considered in the design of landscaped areas and in the selection of plant material. This can be accomplished through:

   i. Designing the landscaping to moderate the effect of wind;

   ii. Providing shade in summer;

   iii. Allowing natural drainage to occur throughout the site;

   iv. Allowing daylight into buildings; and

   v. Redirecting water from rooftop runoff and downspouts into vegetated areas or bioswales and rain barrels for later irrigation use.

2.7.2 Species

a. When choosing plant material, select species that are capable of sustaining healthy growth in the Nanaimo region and which do not intentionally attract birds, cause excessive debris or otherwise conflict with Airport operations. The landscaping should utilize only drought tolerant, native plant species shown in the recommended Plant Species List in **Appendix B**. The species of trees and shrubs that are to be planted must be shown on the proposed landscape plan and will require approval from the NAC.

2.7.3 Trees and Shrubs

a. Fifty per cent of the trees at the time of planting should be larger trees as defined below.

b. The minimum size for deciduous trees shall be:

   i. For smaller deciduous trees, 5.0-centimeter diameter at breast height (DBH);

   ii. For larger deciduous trees, 9.0-centimeter DBH.

c. The minimum size for coniferous trees shall be a height of 2.0 metres.

d. No fruit bearing trees are permitted.

e. The planting of trees is strongly encouraged, and trees should be planted in groups.

f. Mature trees shall be preserved and, where possible, integrated with new landscaping.

g. In development areas where existing woodland areas may be retained, the applicant will be expected to adhere to tree protection measures and practices during the construction process.

h. The Tenant is responsible to keep all tree heights below the obstacle limitation surface of the Nanaimo Airport.

i. The Applicant is responsible for maintaining the health of the planted vegetation, as determined by a professional arborist retained by the NAC from time to time, and, where it is determined that the planted vegetation is unhealthy, the Applicant will replace the vegetation as noted within 6 month of such notice.

2.7.4 Landscaping Plan

a. A registered landscape architect or certified designer who is a member of the BC Society of Landscape Architects (MBCSLA) must prepare all landscaping plans for new developments. All plant material and contractor's work must meet or exceed the standards of the B.C. Nursery Trades Association or the B.C. Society of Landscape Architects The landscape plan shall identify at a minimum:.

b. The existing topography with the vegetation that is to be retained and tree protection measure to be undertaken during construction.

c. The layout of soft and hard landscaping, pedestrian circulation and open space, screening, berms, slopes and retaining walls.

d. The types, sizes and numbers of plant material and the types of hard landscaping.

e. The sufficient set back for landscaping from highway right-of-way.

2.7.5 Lighting and Glass Guidelines

a. All properties must comply with current NAC lighting and anti-glare guidelines.

3. Development Design Guidelines by Land Use Design District

In addition to the General Guidelines, more specific guidelines are provided for four distinct areas, each responding to different functional requirements and forms of development envisioned. All building will be designed and supervised by a Registered Architect who is a member of the Architectural Institute of British Columbia.

The Gateway Design District is intended to provide guidance for developments occurring alongside the main entrance to the Airport, leading up to the terminal building itself. The Airport Business Park District comprises lands adjacent to the main north-south interior road and the Airside Design District focuses on the lands furthest away from the Island Highway, at the fringe of the airport lands. The Terminal District is focused on uses that support the core functions of the airport, including the terminal buildings and parking areas.

While overall, a cohesive approach and identity is promoted for development within the airport lands, the four Design Districts are intended to direct certain forms of development to where they are best suited to assist the Airport in achieving its overall vision and Nanaimo Airport Land Use Plan Goals, Objective and Policies.

Organizations looking to develop on airport lands can use the following District Development Design Guidelines (**Section 3**) to promote a sense of place that is cohesive within its setting and within the broader context of Nanaimo Airport and each of the four Design Districts.

In addition, the District Development Design Guidelines in this section aim to achieve the following goals in all Design Districts:

- Promote the Nanaimo Airport's character and identity through site development and building design;
- Foster the integration and meaningful interface of public space and buildings;
- Provide a graphic tool to improve ease of interpretation for building design and site planning;
- Create flexibility to allow for creativity;
- Prevent the proliferation of excessive and unattractive signage;
- Provide location specific regulations for each of the three Design Districts;
- Reduce confusion prior to application; and
- Assist with streamlining the development approval process.

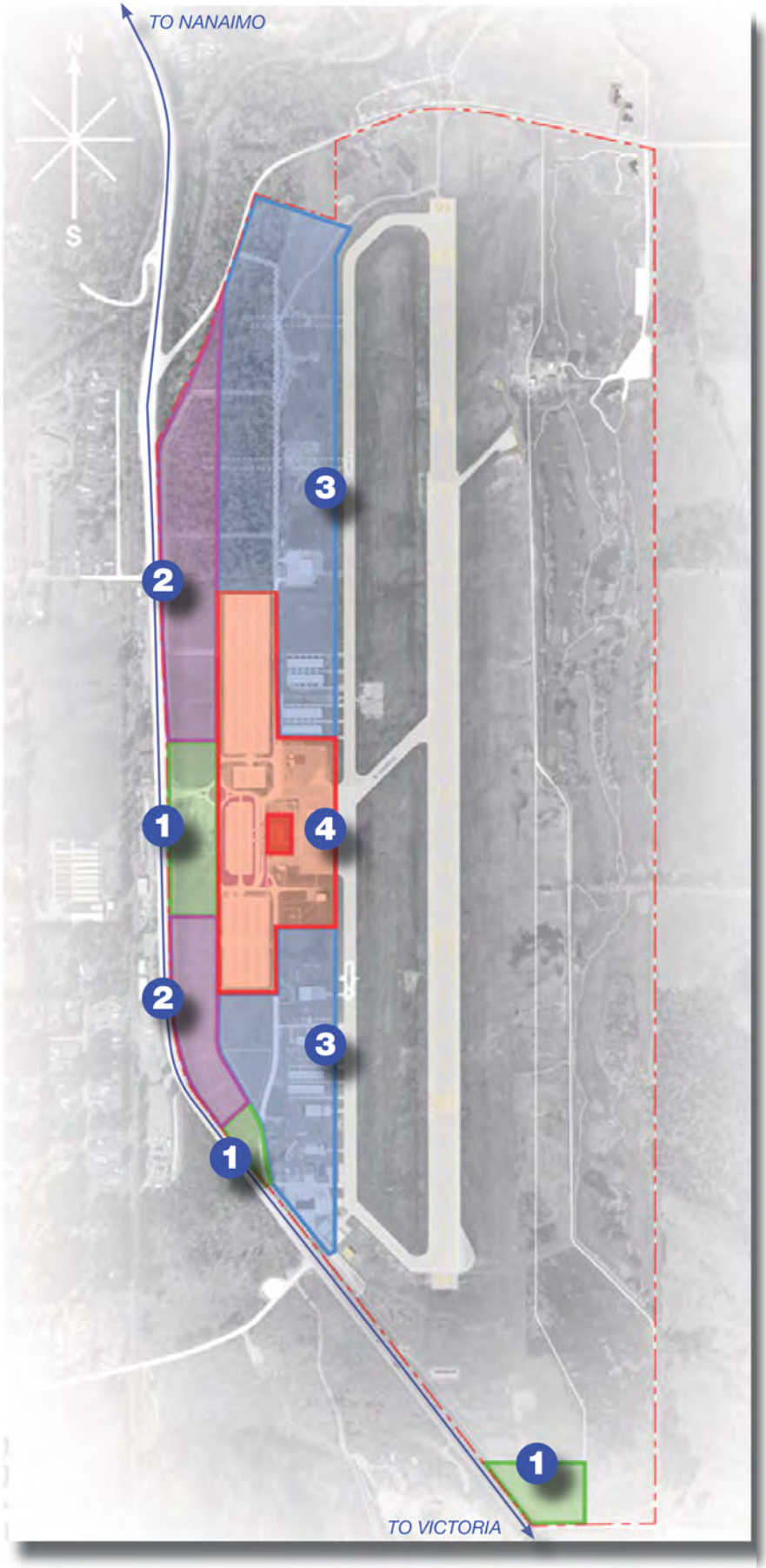


Figure 3.
Airport, (4) Airport Design Districts

1 GATEWAY DESIGN DISTRICT

2 AIRPORT BUSINESS PARK

3 AIRSIDE DESIGN DISTRICT

4 TERMINAL DISTRICT

3.1. Gateway Design District

The Gateway Design District incorporates the main entrance to the airport and the commercial sites immediately adjacent to the entrance, leading up to the airport terminal building itself. This precinct is intended to provide a gateway to and from the airport, incorporating the highest design standards and generally, a strong entry image. Pedestrian connections are well defined, the highest landscaping standards are apparent, and land uses generally provide amenity to the airport. This may include accommodation, restaurants/ cafes, a gas bar and tourist facilities.

This district also includes two other entry points located south of the terminal that may become important future airport access locations. Both of those locations will have separate future detailed site plans prepared to identify site development requirements.

3.1.1 Regulations

1. Building Set back to entrance road (min) 5-7.5m
2. Building Set back to Internal (min) Road 2-4m
3. Building Set back to Highway right-of-way (min) 20-25m
4. Building separation distance will vary depending upon building function and location(min) 10m
5. Minimum Landscape Area (25%)
6. Maximum hardscape Area (35%)

3.1.2 Building Siting

1. Locate buildings close to the main entrance road and internal airport road to provide a street wall that encloses the space.
2. Orientate building entrances and frontages to the internal road within the airport lands to activate the streetscape with windows and doors facing streets.
3. Locate building entrances close to adjacent property entrances to minimize pedestrian travel distances between complementary uses and developments.
4. Face buildings away from the highway.

Figure 4. Gateway District Render & Cross Section

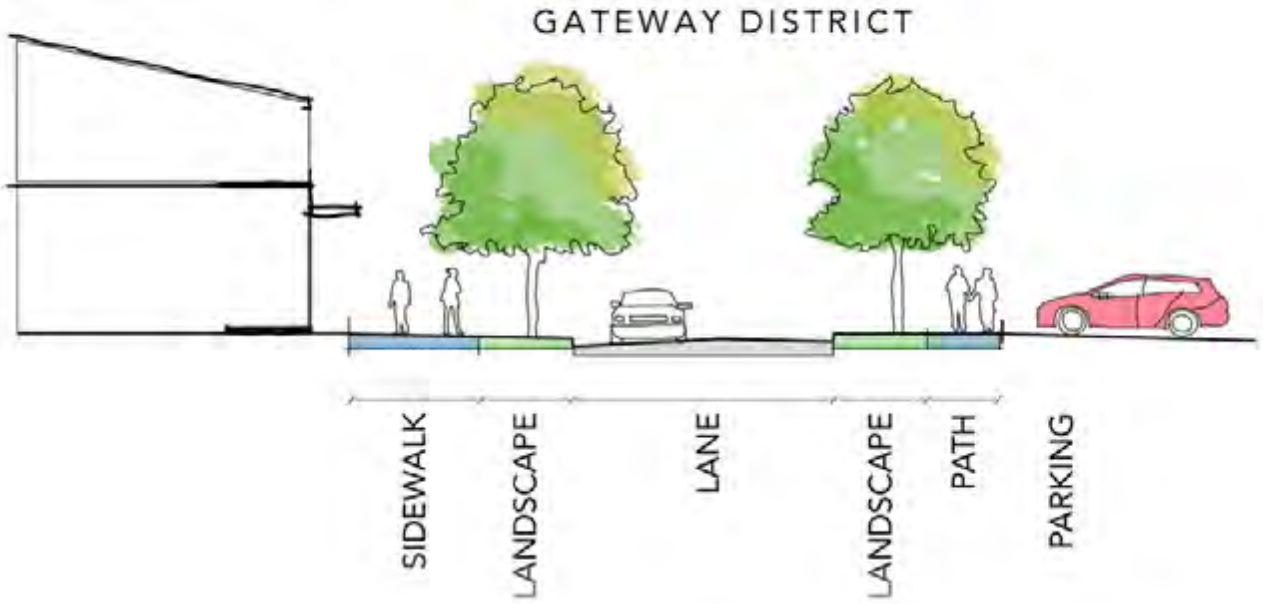
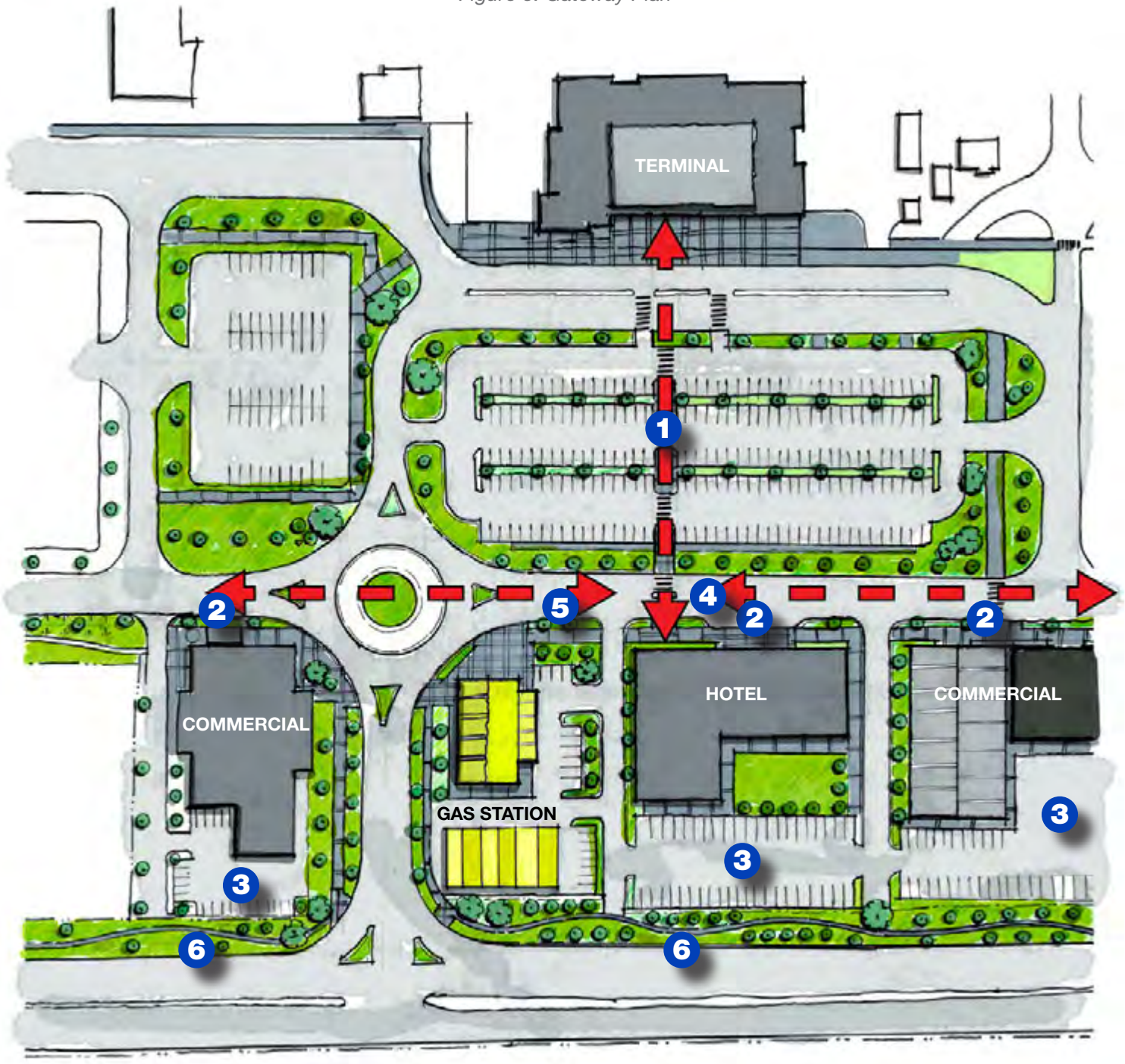


Figure 5. Gateway Plan



1 COVERED TERMINAL CONNECTION

2 BUILDING AT STREET WALL WITH DIRECT PEDESTRIAN CONNECTION

3 PARKING AT REAR SIDE

4 CROSS WALK

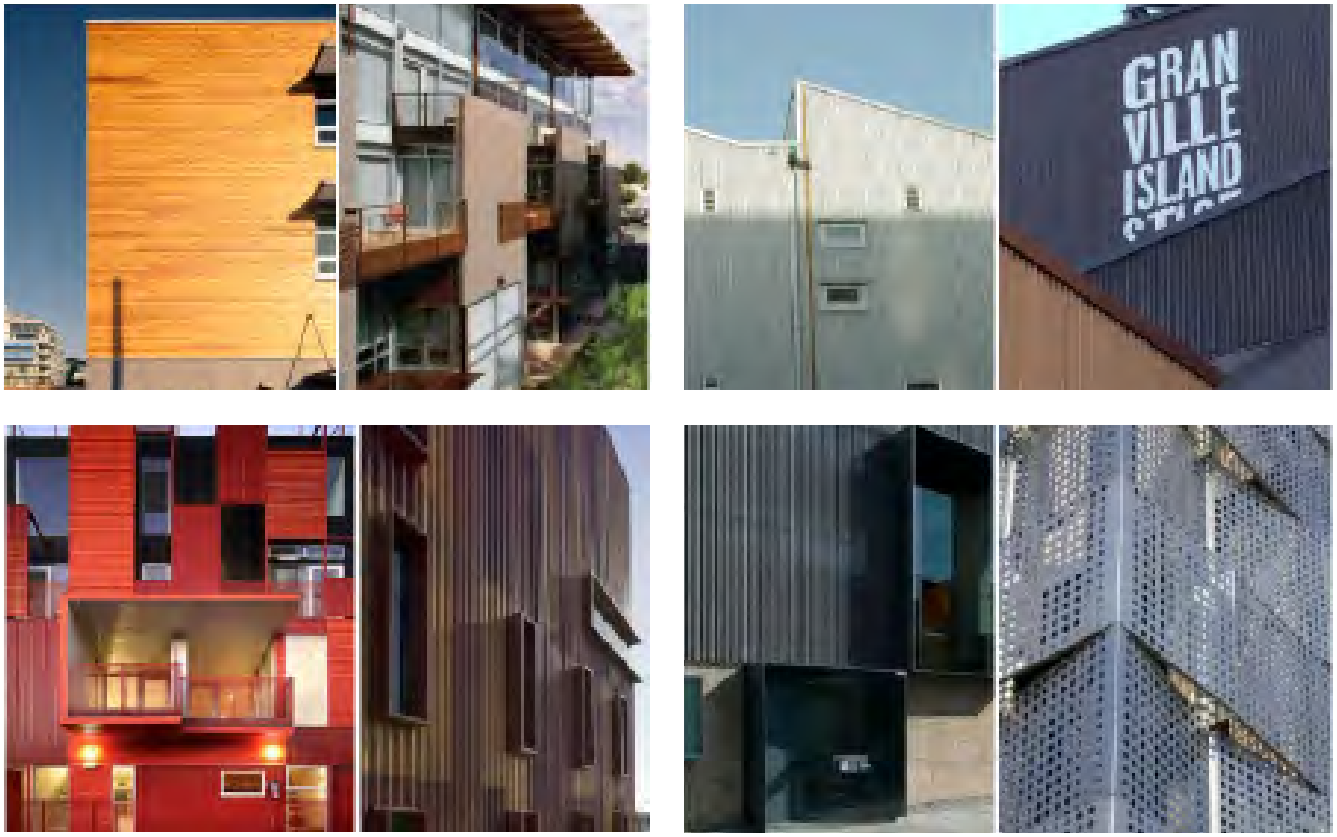
5 PARKING SCREENED

6 HIGHWAY SCREENED

3.1.3 Building Form, Mass and Scale

1. Buildings are encouraged to have a height and massing that supports the efficient use of land and appropriate transitions to adjacent land uses outside the Airport Lands. Building heights shall comply with the Regulations established by Transport Canada.
2. Buildings are encouraged to have architectural articulation in form and materials. Large blank wall surfaces along street frontages are discouraged.
3. Larger buildings with longer building frontages should be visually modified using architectural design elements to modulate the scale of the building's frontage. Long, continuous blank walls should be avoided. Individual functional elements should be expressed to create identity, rhythm and variety, and to help reduce apparent bulk and visual scale.
4. Architectural design should emphasize entrance areas through a change in building form, increased height, and / or a change in materials from the main building component.
5. Entrances of appropriate size which are easily identifiable should be provided at each main building access point.
6. Building entrances should be defined by entrance canopies, awnings and other architectural elements.
7. Separate building access points for different uses are encouraged.
8. Building elevations and composition should promote a balance between solid walls, windows, and wall glazing to support green building design strategies, future flexibility and function.
9. Buildings should be expressed as simple volumes.

Figure 6. Highway View Rendering



3.1.4 Building Materials

1. Buildings are encouraged to utilize natural wood exterior materials to the greatest extent possible, particularly at their main entrances, within canopies, and where massing changes occur.
2. Industrial standard materials are encouraged
3. A limited range of building materials is encouraged in favour of achieving a unified building image.
4. For durability and consistency, custom colours should be factory applied to all materials and finishes whenever possible.
5. Where material changes occur, changes in the building plane should also occur though the articulation of building mass (bump outs or subtractions from the building mass).
6. Material changes should be purposely employed and not used to only break up large wall expanses.
7. In general, all buildings should be grounded in a West Coast Contemporary/ Industrial expression (see below).

WEST COAST CONTEMPORARY:

- Building materials should incorporate natural wood to define building character, expression and context, such as:
- Simple structures in wood, concrete or steel
- Generous clear glazing, especially in connection with outdoor space
- Concrete or stone walls, stairs, and platforms
- Wood, metal and cementitious wall panels
- Wood windows and doors
- Metal doors
- Metal or vinyl windows
- Latticed wood or metal screens
- Wood and metal railings

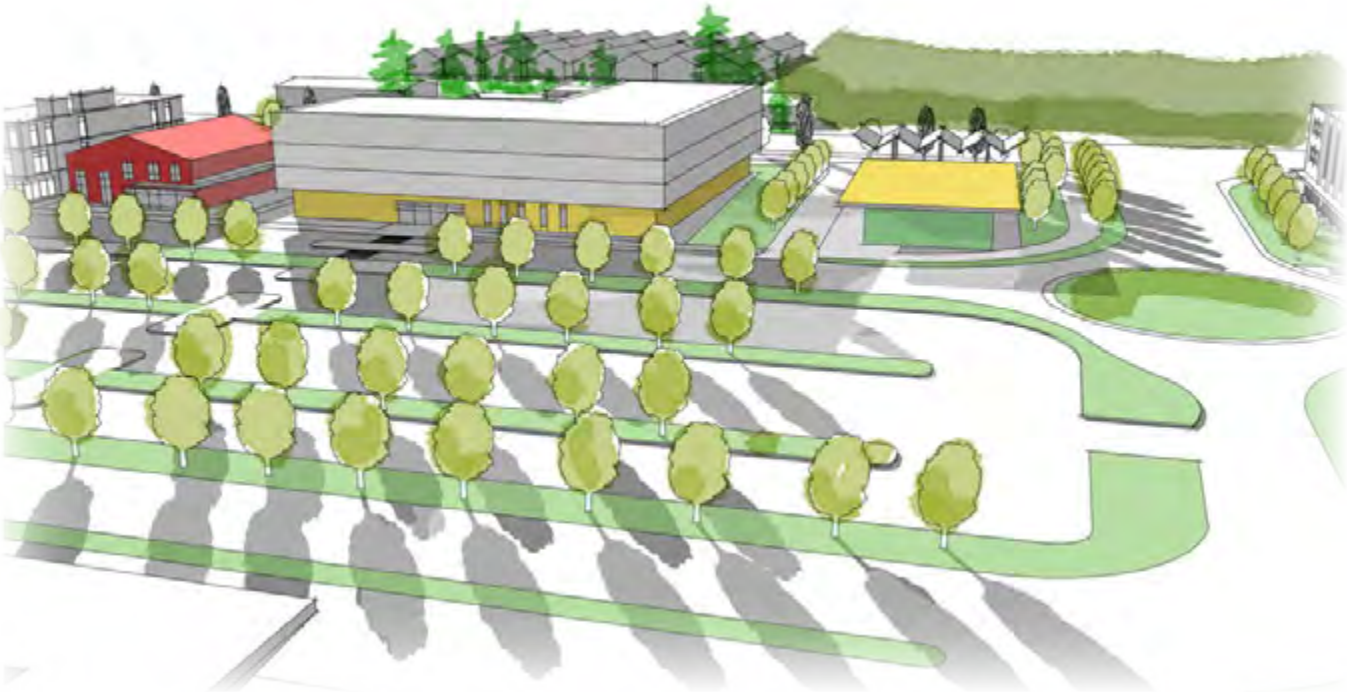
INDUSTRIAL CHARACTER ELEMENTS:

- Industrial structural systems - steel and heavy timber
- Large expanses of clear glazing with mullion grids reminiscent of industrial steel windows
- Metal panel or siding
- Wood siding
- Large shingled or metal roof planes
- Industrial grating, stairs and similar components
- Galvanized or stainless steel
- Robust structures, including wood piles, steel and wood trusses
- Wood decking
- Wood siding
- Cable railings

MATERIALS THAT MUST NOT BE USED:

- Vinyl siding
- Mirrored or heavily tinted glass

Figure 7. Airport to Highway View Rendering



3.1.5 Parking and Street Interface

1. High-quality and varied paving materials should be used, in particular for pedestrian paths and for permeable surfaces to support groundwater recharge.
2. Parking areas should minimize off-site surface water runoff.
3. Parking, loading and servicing is required to be located to the sides and rear of the development sites and buildings, to ensure that the impact on the pedestrian realm areas is minimized.
4. Paths should connect from directly in front of building entries to public sidewalks without vehicle parking or circulation interruptions.
5. Large expanses of parking should be avoided and/or broken up with significant landscaping elements and trees.
6. Clear pedestrian routes should be elevated throughout parking areas to prioritize safe, connected pedestrian movement.
7. Treed and vegetated buffers should be employed at the perimeter of ALL surface parking areas and bisect large surface parking areas in conjunction with elevated pedestrian routes.
8. Parallel on street parking is encouraged.
9. Shared driveways are encouraged

Figure 8. Parking Rendering

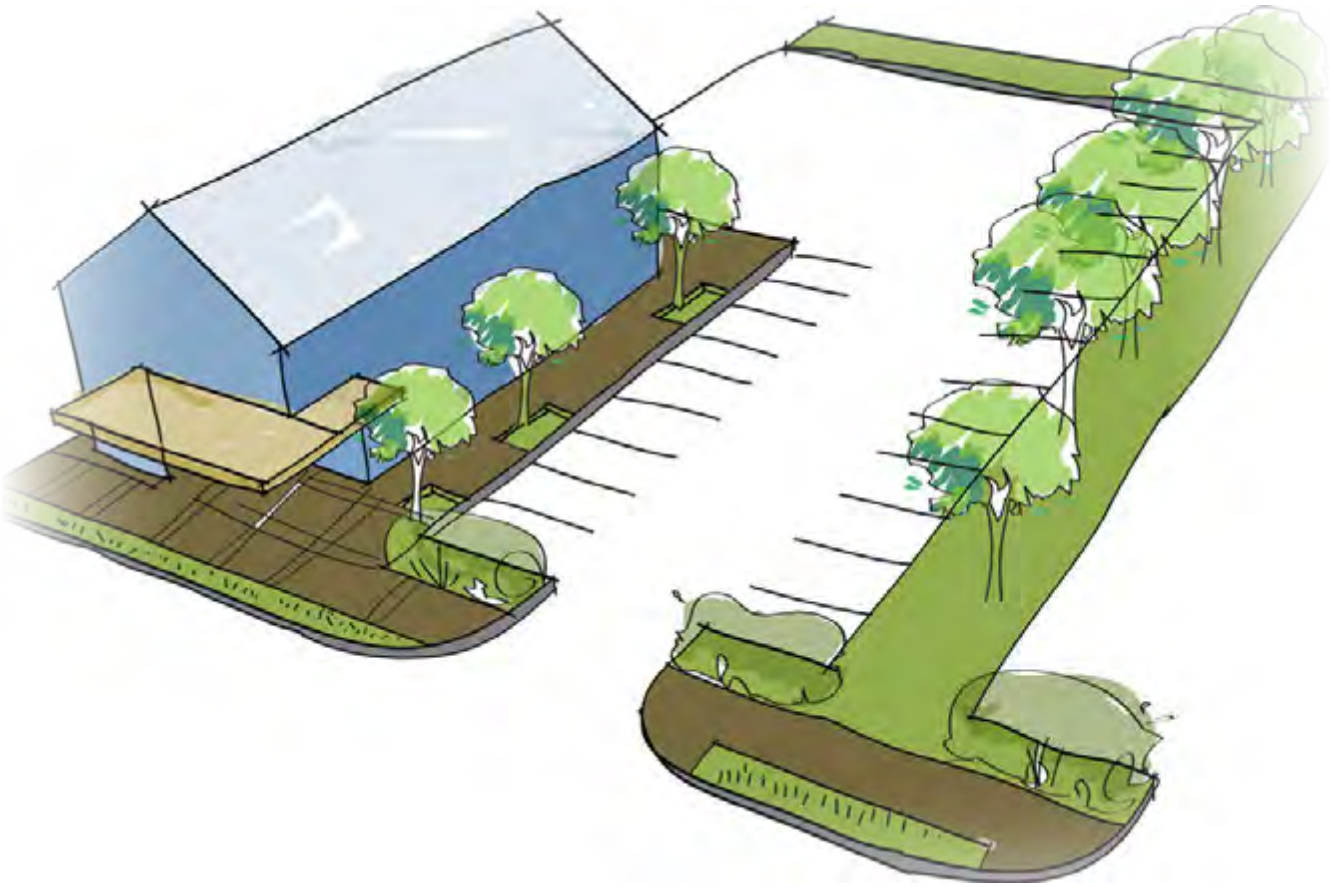
















Figure 9. Gateway Plan with Example Photos

3 PARKING AT REAR SIDE

4 CROSS WALK

5 PARKING SCREENED

6 HIGHWAY SCREENED

3.2. Airport Business Park

The Airport Business Park encompasses the majority of lands that line the main internal road, running North-south within the airport lands. This district is envisioned as the business park hub for the area, with a high quality business park setting along the west side of the internal road. Less enclosed than the Gateway District, this area still aims to achieve a street wall, however, parking areas are anticipated to reduce opportunities for buildings to abut one another along the street frontage. Anticipated land uses include offices, light industrial, green industrial, clean energy, aviation related non-airside uses. Further, a landscaped buffer will be created between Highway 1 and all building sites in this District.

3.2.1 Regulations

1. Building Set back to Internal (min) Road 2-4m
2. Building Set back to Highway (min) 20-25m
3. Minimum Landscape Area (15%)
4. Maximum hardscape Area (50%)

3.2.2 Building Siting

1. Locate buildings close to the internal airport road to provide a street wall that encloses the space.
2. Orientate building entrances and frontages to the internal road within the airport lands and activate the streetscape with windows and doors facing streets.
3. Face buildings away from the highway.
4. Orientate long, featureless building walls to be perpendicular to the internal streets within the airport to minimize inactive frontages. The office component of the building should be located closer to the street than the plant or warehouse component to be visible from the street and break up a long building mass.

Figure 10. Business Park Building Rendering

Figure 11. Business Park District Render & Cross Sections

3.2.3 Building Form, Mass and Scale

1. Buildings are encouraged to have a height and massing that supports the efficient use of land and appropriate transitions to adjacent land uses outside the Airport Lands. Building heights shall comply with the Regulations established by Transport Canada.
2. A variety of roof shapes should be considered to avoid the monotony of flat roofs.
3. Buildings are encouraged to have architectural articulation in form and materials. Large blank wall surfaces along street frontages are discouraged.
4. Larger buildings with longer building frontages should be visually broken using architectural design elements to modulate the scale of the building's frontage. Long, continuous blank walls should be avoided. Individual functional elements should be expressed to create identity, rhythm and variety, and to help reduce apparent bulk and visual scale.
5. Building heights along highways are encouraged to be higher to ensure a strong visible presence of development. Building heights shall comply with the Airport Zoning (Height) Regulations established by Transport Canada.
6. Architectural design should emphasize entrance areas through a change in building form, increased height, and / or a change in materials from the main building component.
7. Entrances of appropriate size which are easily identifiable should be provided at each main building access point.
8. Building entrances should be defined by entrance canopies, awnings and other architectural elements.
9. Separate building access points for different uses are encouraged.
10. Building elevations and composition should promote a balance between solid walls, windows, and wall glazing to support green building design strategies, future flexibility and function.
11. Buildings should be expressed as simple volumes while addressing item, 2, 3, 4, ad 6 above..

3.2.4 Building Materials

1. Buildings are encouraged to utilize natural wood exterior materials, particularly at their main entrances and within canopies.
2. Industrial standard materials are encouraged
3. A limited range of building materials is encouraged in favour of achieving a unified building image.
4. For durability and consistency, custom colours should be factory applied to all materials and finishes whenever possible.
5. Where material changes occur, changes in the building plane should also occur though the articulation of building mass (bump outs or subtractions from the building mass).
6. Material changes should be purposely employed and not used to only break up large wall expanses.
7. In general, all buildings should be grounded in a West Coast Contemporary/ Industrial expression

3.2.5 Parking and Street Interface

1. High-quality and varied paving materials should be used, in particular for pedestrian paths and for permeable surfaces to support groundwater recharge.
2. Parking areas should minimize off-site surface water runoff.
3. Parking, loading and servicing is required to be located to the sides and rear of the development sites and buildings, to ensure that the impact on the pedestrian realm areas is minimized.
4. Paths should connect from directly in front of building entries to public sidewalks without vehicle parking or circulation interruptions.
5. Large expanses of parking should be avoided and/or broken up with significant landscaping elements and trees.
6. A sidewalk with a minimum width of 2 metres is required to front each parcel and connect with the sidewalk(s) on adjacent parcels.
7. Treed and vegetated buffers should be employed at the road frontages for ALL surface parking areas (internal road and Highway)
8. Parallel on street parking is encouraged.








3.3. Airside Design District

The Airside Design District includes the airside commercial lands and lands at the north and south extents of the airport. This district is intended to support more industrial and aviation / aerospace focused land uses that are directly related to runway access and typically require larger warehouse type structures, ample exterior storage and operational space and use that are less conducive to an urban setting. Simpler building forms, minimal glazing requirements, larger warehouse and manufacturing spaces and exterior vehicular operational areas typify this district.

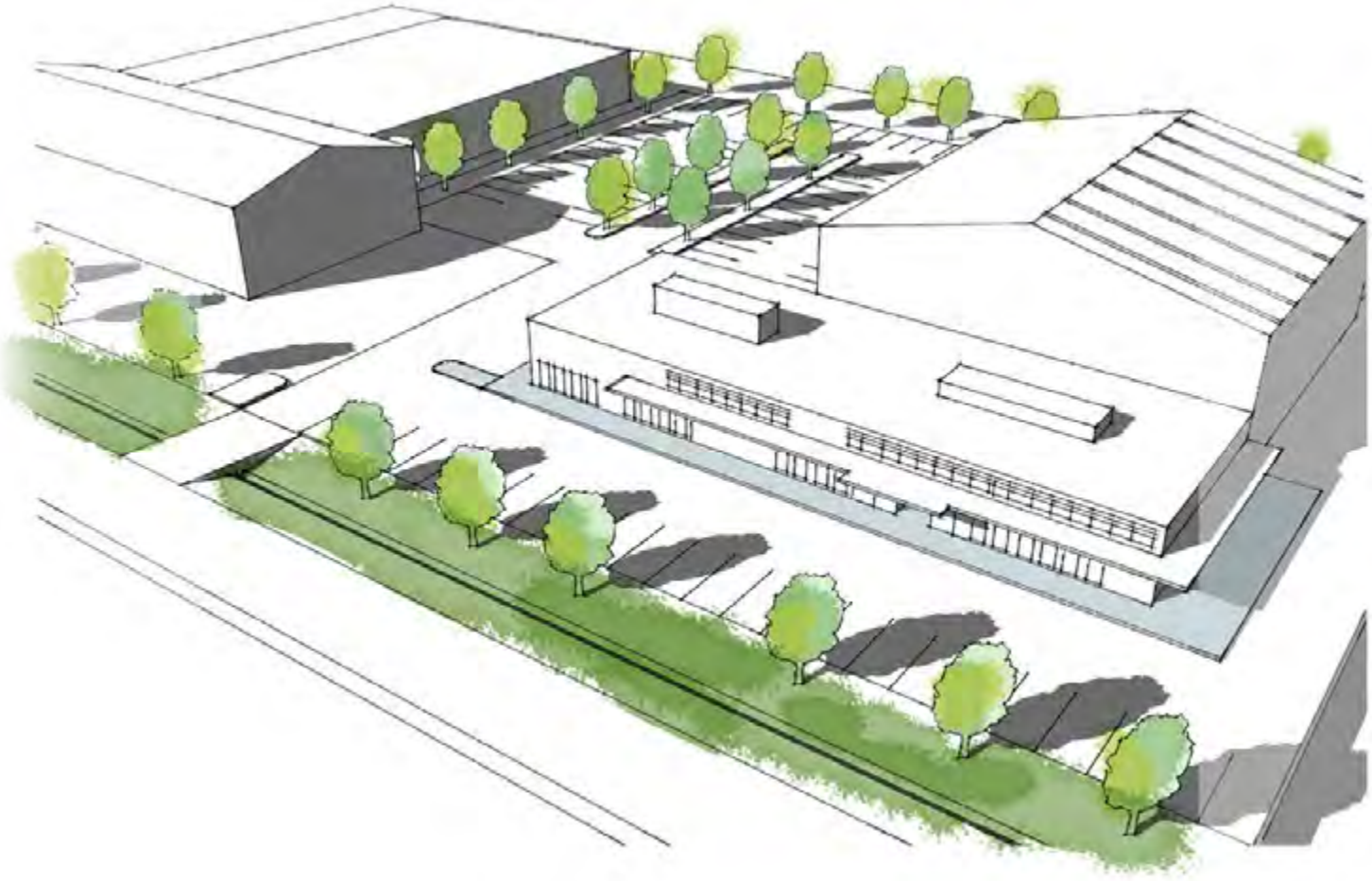
3.3.1 Regulations

- Building Set back to airside boundary (min) Road 10-15mm
- Building Set back to Highway (min) 20-25m
- Minimum Landscape Area (10%

3.3.2 Building Siting

1. Face buildings away from the airside boundary.
2. Orientate long, featureless building walls east/west to minimize inactive frontages visible from the public realm.
3. Locate the office component of the building closer to the street than the plant or warehouse component to be visible from the street and break up a long building mass.

Figure 12. Airside Design District Render & Cross Sections



3.3.3 Building Form, Mass and Scale

1. Buildings are encouraged to have a height and massing that supports the efficient use of land and appropriate transitions to adjacent land uses outside the Airport Lands. Building heights shall comply with the Regulations established by Transport Canada.
2. A variety of roof shapes should be considered to avoid the monotony of flat roofs.
3. Larger buildings with longer building frontages should be visually broken using architectural design elements to modulate the scale of the building's frontage. Long, continuous blank walls should be screened.
4. Building heights along highways are encouraged to be higher to ensure a strong visible presence of development. Building heights shall comply with the Airport Zoning (Height) Regulations established by Transport Canada.
5. Architectural design should emphasize entrance areas through a change in building form, increased height, and / or a change in materials from the main building component.
6. Entrances of appropriate size which are easily identifiable should be provided at each main building access point.
7. Building entrances should be defined by entrance canopies, awnings and other architectural elements.
8. Buildings should be expressed as simple volumes.

3.3.4 Building Materials

1. Buildings are encouraged to utilize natural wood exterior materials, particularly at their main entrances and within canopies.
2. Industrial standard materials are encouraged
3. A limited range of building materials is encouraged in favour of achieving a unified building image.
4. For durability and consistency, custom colours should be factory applied to all materials and finishes whenever possible.
5. In general, all buildings should be grounded in a West Coast Contemporary/ Industrial expression

3.3.5 Parking and Interfaces

1. Parking, loading and servicing should generally be located to the sides and rear of the development sites and buildings.
2. Parking areas should minimize off-site surface runoff.
3. Consider opportunities to connect pedestrian paths to adjacent paths at the main building entry.
4. Treed and vegetated buffers should be employed at the road frontages for ALL surface parking areas (internal road and Highway)

3.4. Terminal District

The Terminal District is reserved for uses that support the core functions of the airport and is not open for general development. This district supports airport related development including terminal buildings and parking areas, which will primarily be undertaken by the Nanaimo Airport Commission. No specific Guidelines have been applied to these lands at this time.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APPENDIX A - KEY TERMS

The following definitions are the understanding of terms used in the subsequent sections unless the context requires otherwise:

Accessory building: means a building or structure located on a parcel, the use of which building or structure is incidental or ancillary to the principal permitted use of the land, buildings or structures located on the same parcel.

Building: means any structure or portion thereof, including mechanical devices, that are used or intended to be used for the purpose of supporting or sheltering any use or occupancy.

Building Face: means the exterior face of a building, which is the primary access to the building and upon which an identifying sign is to be placed.

Building Permit: allows construction of buildings or structure to proceed on condition of compliance with the British Columbia Building Code which addresses building and fire safety. A Building Permit is required for the construction, alteration, repair, relocation, demolition, or change of use of a building.

Business Frontage: means an area of a building that creates a public presence for the building and is allocated for signs located on the ground floor building face of a building adjacent to the street.

Business Premises: means that part of a building or parcel owned or occupied for the conducting of a business or service.

Character: means the qualities that assist in the identification of a place or brand.

Changeable copy: means a sign or portion of a sign in or on which the information that is displayed can be changed through the use of attachable letters, numerals and pictorial panels or electronic switching of lamps or illuminated tubes.

Character: means the qualities that assist in the identification of a place or brand.

Copy: means letters, characters, numbers, symbols, logo or graphics on a sign.

Corner lot: means a lot which abuts two or more roads where the interior angle of the intersection is less than 135 degrees.

Development Permit: allows a specific type of development on a specific parcel of land within the Nanaimo Airport (Airport) Boundary to proceed in accordance with the development requirements of the Nanaimo Airport Commission (NAC). A Development Permit may stipulate some of the following conditions: the allowed use of the property, intensity of that use, building height, building site coverage, setbacks from property lines and other buildings and parking requirements.

Design District: means a design district established under **Section 3** of these Guidelines.

Exterior lot line: means any side yard that abuts a street.

Finished grade: means for the purpose of determining maximum height of a building or structure, the average elevation of natural grade calculated from the four corners of the smallest rectangle that will encompass the building or structure.

Frontage: means that length of a parcel boundary which abuts an internal street or principle vehicle access street at the front lot line.

Front lot line: means the yard area between the property line and the building face. In the case of a corner lot, it may be either of the exterior yards.

Height: means the vertical distance of a structure measured from finished grade to the highest point of a structure of a flat roof; to the deck line of a mansard roof; and to the mean level between the eaves and ridge of all gables, hip gambrel or other sloping roof. In the case of a structure without a roof, height will be measured to the highest point of the structure. Where a structure incorporates a roof exceeding a pitch of 12:12 (45-degree slope), height shall be measured to the highest point of the structure.

Natural grade: means the elevation of the ground surface of a site prior to the commencement of any development excavation, filling or relocation of on-site materials.

Natural Materials: means any product that comes from plants or the ground. Minerals and the metals that can be extracted from them (without further modification) are also considered to belong into this category.

Lot: means the same as parcel.

Lot coverage: means the horizontal area in which land is held or into which it is subdivided but does not include a highway.

Lot width: means the mean distance between side lot lines, excluding access strips of panhandle lots.

Parcel: means any lot, block or other area in which land is held or into which it is subdivided but does not include a highway.

Principal building: means the building for the principal use of the lot as defined under the permitted uses of the sublease.

Principal use: means the primary use of land, buildings or structures as defined under the permitted uses of the sublease.

Property line: means lot line.

Rear lot line: the lot line opposite to the front lot line.

Setback: means the horizontal distance measured from the lot line or natural boundary to any building or structure.

Side lot line: means any side yard that does not abut a street.

Sign: means any structure, device, advertisement, advertising device or visual representation that is visible from any street, highway, lane or from any parcel lot or property other than the one on which it is located, and that is intended to advertise, identify, or communicate information or attract the attention of the public for any purpose and without limiting the generality of the foregoing includes any symbols, letters, figures, illustrations or painted forms, but specifically excludes seasonal decorations, murals, window coverings or interior window displays of merchandise.

Sign area: means the total surface area of a sign within the outer edge of the sign frame or sign border but where a sign has no frame or boarder, means the area contained within the smallest square or rectangle that will enclose all of the copy of the sign. In the case of a double-face or multi-face sign only half of the total area of all sign faces will be counted.

Sign, Awning: means a sign painted on, attached to, or constructed in or on the surface of an awning supported entirely from the exterior wall of a building and composed of non-rigid materials except for the supporting framework.

Sign, Banner: means a sign composed of fabric or similar material which may be secured or mounted to allow movement of the sign caused by air movement.

Sign, Canopy: means a sign which is painted, attached or constructed on the surface of an unenclosed permanent roofed structure.

Sign, Digital: means any sign the copy of which can be remotely changed on or off Site and has a varying message duration. Digital signs incorporate a technology or method allowing the sign to change copy without having to physically or mechanically replace the sign face or its components. Digital signs may include moving effects, electronic moving copy, message transition effects, and video images.

Sign, Directional: means a sign indicating the direction only, of a business, parking area, product, service or event for the purpose of directing pedestrian or vehicular traffic.

Sign, Directory: means a sign that lists only name and unit number of businesses or tenants located in a shared building or on a common parcel of land.

Sign, Fascia: means a sign which is painted on or attached to and supported by an exterior wall or fascia of a building provided the face of the sign is parallel to the wall and does not project more than 0.31 m (1 ft.) beyond the wall surface.

Sign, Flashing: means a sign containing an intermittent or flashing light source but does not include an automatic changeable copy sign.

Sign, Freestanding: means any sign wholly supported from the ground by a structural member or members, independently of and visibly separated from any building or other structure and permanently fixed to the ground.

Sign, Hanging: means a sign suspended under a canopy, awning, eaves or portico.

Sign, Height: means the vertical distance measured from the highest point of the sign to the grade elevation directly below the sign.

Sign, Portable: means a movable temporary sign not permanently attached to the ground or a building.

Sign, Projecting: means any sign other than an awning sign, canopy sign or fascia sign which is attached to and projects more than 0.31 m (1 ft.) from the face or wall of a building where the copy is perpendicular to the face or wall.

Sign, Roof: means a sign placed or erected on or above the roof of a building, in the air space above a roof, or painted or marked on the roof of a building, but specifically excludes mansard roof sign.

Sign, Temporary: means a sign displayed for a limited period of time.

Sign, Third-party: means a sign advertising or identifying anything other than a business, product or service being conducted or offered on a parcel where the sign is located.

Sign, Vehicle: means a sign which is erected on or attached to any vehicle or trailer parked where the principal purpose of the vehicle is to serve as a sign or a sign support structure

Sign, Wall: means a sign painted, pasted, or otherwise affixed to or inscribed directly upon any wall or other integral part of a building or structure, but does not include a mural.

Sign, Wind Activated: means a wind activated sign or device designed to attract the attention of the public with movement, including flag signs.

Sign, Window: means a sign which is painted on, attached to or installed on or inside a window that faces the outside and is intended to be seen from the outside of the Building.

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APPENDIX B - RECOMMENDED PLANT SPECIES LIST

Form	Common Name	Scientific Name	Drought Tolerant	Native Species
Tree	Grand fir	Abies grandis	Yes	Yes
Tree	Red alder	Alnus rubra	Yes	Yes
Tree	Pacific madrone; arbutus	Arbutus menziesii	Yes	Yes
Tree	Nootka false cypress (yellow cedar)	Chamaecyparis nootkatensis	Semi	Yes
Tree	Pacific dogwood (western flowering dogwood)	Cornus nuttallii	Semi	Yes
Tree	Shorepine	Pinus contorta var. contorta	Yes	Yes
Tree	Lodgepole pine	Pinus contorta var. latifolia	Yes	Yes
Tree	Ponderosa pine	Pinus ponderosa	Yes	Yes
Tree	Trembling aspen	Populus tremuloides	Yes	Yes
Tree	Douglas-fir	Pseudotsuga menziesii	Yes	Yes
Tree	Garry oak	Quercus garryana	Yes	Yes
Shrub	Redstem ceanothus	Ceanothus sanguineus	Yes	Yes
Shrub	Snowbrush	Ceanothus velutinus	Yes	Yes
Shrub	Shrubby cinquefoil	Dasiphora fruticosa	Yes	Yes
Shrub	Oceanspray	Holodiscus discolor	Yes	Yes
Shrub	Twinflower	Linnaea borealis	Yes	Yes
Shrub	Mock orange	Philadelphus lewisii	Yes	Yes
Shrub	Red flowering currant	Ribes sanguineum	Yes	Yes
Perennial	Yarrow	Achillea millefolium	Yes	Yes
Perennial	Pearly everlasting	Anaphalis margaritaceae	Yes	Yes
Perennial	Red columbine	Aquilegia formosa	Yes	Yes
Perennial	Large headed sedge	Carex macrocephala	Yes	Yes
Perennial	Bleeding heart	Dicentra formosa	Semi	Yes
Perennial	Wooly sunflower	Eriophyllum lanatum	Yes	Yes
Perennial	Tigerlily	Lilium columbianum	Yes	Yes
Perennial	Oregon stonecrop	Sedum oreganum	Yes	Yes
Perennial	Broad-leaved stonecrop	Sedum spathulifoloium	Yes	Yes
Perennial	Goldenrod	Solidago canadensis	Yes	Yes
Perennial	Trillium	Trillium ovatum	Semi	Yes
Fern	Deer fern	Blechnum spicant	Semi	Yes
Fern	Sword fern	Polystichum munitum	Yes	Yes