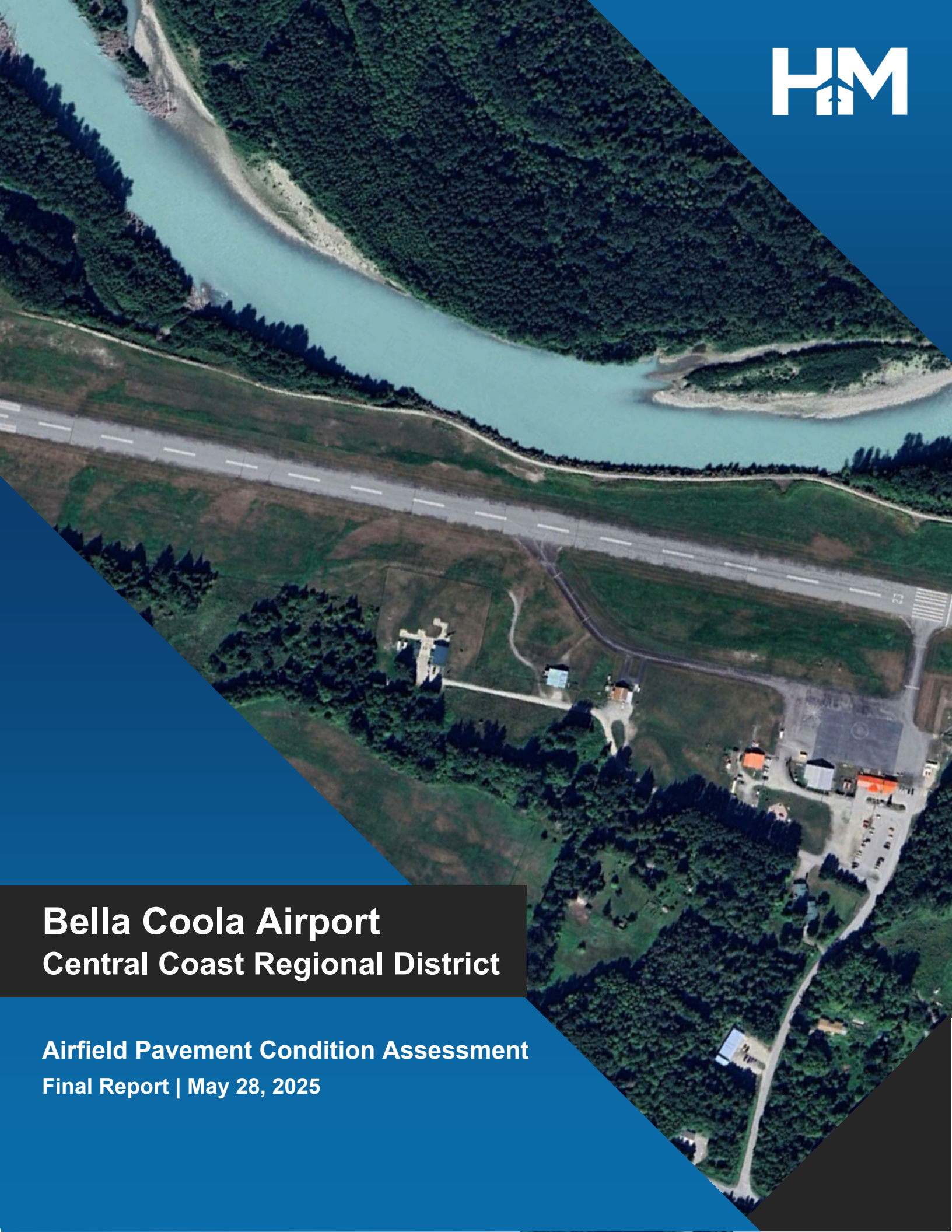

Bella Coola Airport
Central Coast Regional District

Airfield Pavement Condition Assessment
Final Report | May 28, 2025

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1 INTRODUCTION

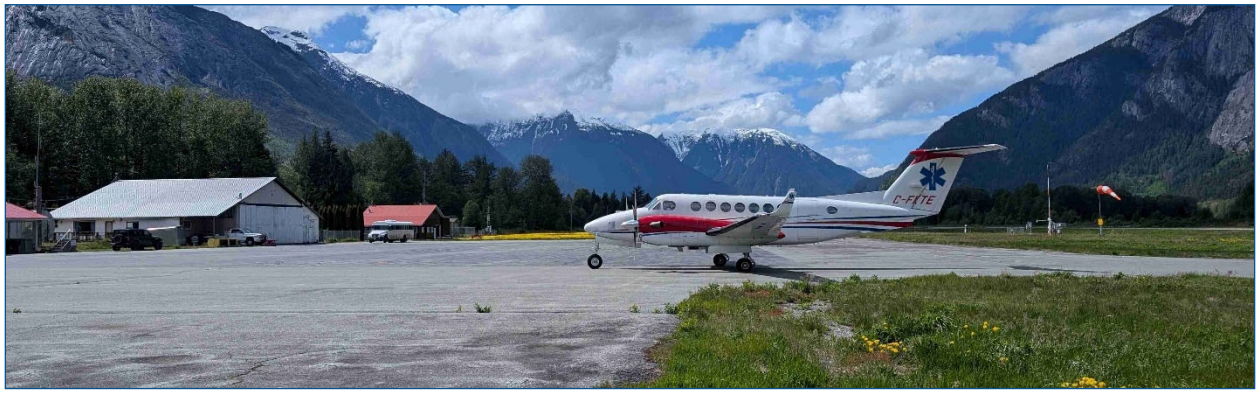
1.1 Background

Bella Coola Airport (CYBD) is a certified public-use aerodrome located approximately 6 nautical miles northeast of Bella Coola, British Columbia. Situated at an elevation of 117 feet (36 meters), the airport features a single asphalt runway (05-23) measuring 4,200 feet (1,280 meters) in length and 100 feet (30 meters) in width.

Pacific Coastal Airlines operates scheduled services connecting Bella Coola Airport to Vancouver International Airport and Anahim Lake Airport, providing vital air links for residents and visitors to the region.

The Bella Coola Airport is most importantly a social lifeline, in addition to its role as a transportation hub for the Central Coast. For air ambulance services, it is a vital component of the healthcare chain in rural British Columbia, ensuring residents of the Bella Coola Valley have access to life-saving care that would otherwise be unavailable or dangerously delayed. Its continued operation is essential for the health, safety, and well-being of the community.

Bella Coola Airport (CYBD) is eligible for funding under Transport Canada's Airports Capital Assistance Program (ACAP), which supports safety-related capital projects. The program provides up to 100% federal funding for airports handling fewer than 50,000 passengers annually, a category that includes Bella Coola Airport. The airport recorded 10,249 passenger movements in 2023 and 10,329 passenger movements in 2024.

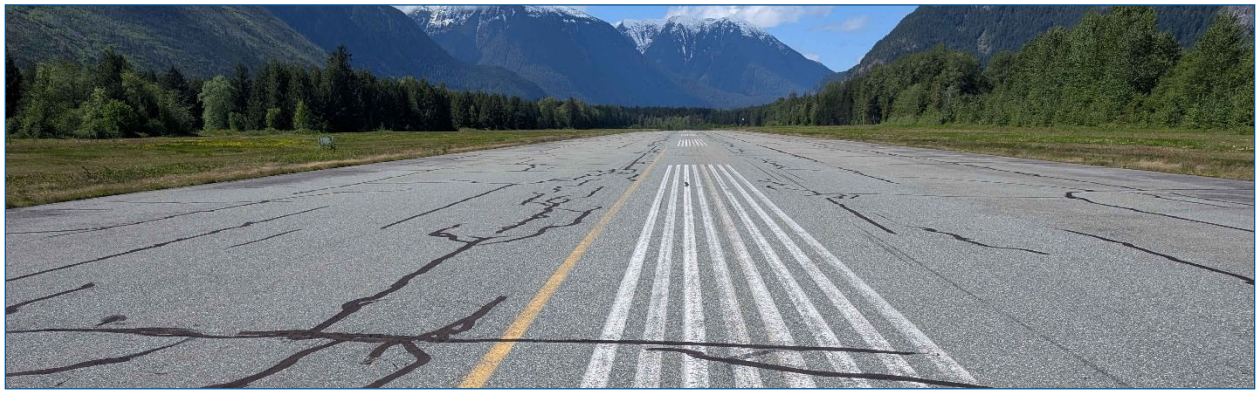


Air Ambulance Flight – Beechcraft Super King Air – Operated by Carson Air

1.2 Project Objectives

HM Aero Aviation Consulting (HM Aero) was retained by The CCRD to complete an Airfield Pavement Condition Assessment of the Airport. The objectives of the Airfield Pavement Condition Assessment are to identify:

- Document the existing condition of all airfield pavement surfaces used by scheduled passenger services, surfaces that are eligible for funding under Transport Canada's ACAP Program;
- Develop two (2) options for rehabilitation and associated costs; and
- Provide a recommendation for a preferred pavement rehabilitation strategy.



Runway 05-23 looking West

2 PAVEMENT CONDITION ASSESSMENT

2.1 Methodology

The visual inspection of the airfield pavement surfaces was completed in accordance with an industry standard five-point rating system, pursuant to the ASTM 5340-12 Airport Pavement Condition Index methodology. Infrastructure condition ratings and their definitions are presented in Table 2.1. This test method determines the existing condition of airfield pavements by visually inspecting the asphalt surface to determine the severity and extent of each pavement distress observed. These observations are catalogued, and an overall condition rating is assigned to each asset.

The visual assessment was completed by HM Aero on May 7th, 2025 including Runway 05-23, Taxiways A, and Apron I. At the time of the inspection, the pavement surfaces were properly cleared and weather conditions permitted an unimpeded visual examination of all surfaces.

Table 2.1 – Infrastructure Condition Ratings

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

2.2 Runway 05-23

Runway 05-23 is 4,200 ft. (1,280 m) long and 100 ft. (30 m) wide. The runway was constructed in 1978 with a granular base and asphalt surface and was last rehabilitated in 1996, nearly 30 years ago, through a pavement overlay project.

Table 2.2 – Runway 05-23 Specifications

Specification	Runway 05-23
Length	4,200 ft. (1,250 m)
Width	100 ft. (30 m)
Surface	Asphalt
Constructed	1978
Last Rehabilitation	1996
Condition (2023)	Poor to Very Poor

Runway 05-23 was observed to be in **Poor Condition** and should be rehabilitated in the short term. Non-uniformly distributed transverse cracking was observed throughout Runway 05-23. As well, uniformly distributed longitudinal cracks were observed along existing paving lanes. Most of the identified cracks were sealed through The CCRD's preventative maintenance program, which is the primary treatment technique for this type of surface defect.

Specifically, twelve (12) non-uniformly distributed high severity transverse cracks were observed during the visual condition assessment. The widths of the transverse cracks generally range from 1.5 to 2 inches. Depending on the chosen rehabilitation strategy, these transverse cracks should be locally repaired during construction.

Samples of transverse cracking

Evidence of edge cracking, vegetation growth, and localized ponding were each observed near the threshold of Runway 05.

Minor Evidence of Vegetation Gowth & Ponding (Left) Edge/End Cracking (Right)

In addition, there was a particular section of Runway 05-23 that was observed to be **Very Poor Condition** compared to the remainder of the surface which was observed to be in **Poor Condition**. This area is located east of the Taxiway Bravo connection to Runway 05-23 and spans approximately 170 m toward Taxiway A and the threshold of Runway 23 and is shown below in an aerial image. Depending on the preferred rehabilitation strategy, this area may be a candidate for more extensive rehabilitation efforts compared to the remainder of the runway, taxiway and apron areas.

Runway 05-23 – Section in Very Poor Condition

2.3 Taxiway A

Taxiway A connects Apron I to the displaced threshold of Runway 23 and measures approximately 50 ft. (15 m) in width. Taxiway A was constructed in 1978 and was last rehabilitated in 1996 through a pavement overlay project. Taxiway A was observed to be in **fair condition** with two (2) transverse cracks: one located at the paving joint/lane with Runway 05-23; the other located near the mid-section of the taxiway. In addition, minor evidence of localized ponding was observed. While the surface was observed to be in fair condition, it has been nearly 30 years since the surface was last rehabilitated and therefore would benefit from modest rehabilitation efforts (i.e. a mill and pave or pavement overlay).

Sealed Transverse Crack (left) and Low Severity Ponding (right)

Table 2.3 – Taxiway A Specifications

Specification	Taxiway A
Length	247 ft. (75 m)
Width	50 ft. (15 m)
Surface	Asphalt
Constructed	1978
Last Rehabilitation	1996
Condition (2023)	Fair

2.4 Apron I

Apron I is used for aircraft parking, fuelling, loading and unloading, and access to the terminal facility. Tie-down facilities to support itinerant aircraft are provided along the western edge of Apron I while fuelling operations are situated on the eastern edge. Apron I was observed to be in **poor condition** and is recommended for rehabilitation in the short term. Apron I had similar pavement surface deficiencies as compared to Runway 05-23 and Taxiway A, including:

- Discrete cracking;
- Vegetation Growth;
- Select locations where evidence of ponding has occurred; and
- Tie-down anchors that appear to have decayed and are recessed into the pavement structure, rendering them unusable;

Pavement Repairs (left) and Recessed Aircraft Tie-Down Anchors (right)

Table 2.4 – Apron I Specifications

Specification	Apron I
Length	498 ft. (152 m)
Width	226 ft. (69 m)
Surface	Asphalt
Constructed	1978
Last Rehabilitation	1996
Condition (2023)	Poor

3 REHABILITATION OPTIONS

The following section presents options to rehabilitate the airfield pavement surfaces. Prior to the advancement of the detailed engineering design process, a comprehensive geotechnical investigation should be completed to:

- Confirm the competence of the existing gravel base and subbase materials;
- Determine the existing asphalt thickness of each pavement surface, informing the adequacy of a mill and pave rehabilitation strategy; and
- Confirm the recommendations presented in this study.

3.1 Option 1 – Surface Overlay

Option 1 involves completing a 50 mm hot-mixed asphalt surface overlay. Prior to the application of a surface overlay, all existing transverse and longitudinal cracking should be routed and sealed to prevent the infiltration of water. A tack coat should be applied to the surface prior to the overlay to promote adherence to the existing pavement surface and to limit the amount of delamination following the overlay.

The primary advantage to a surface overlay is the relatively low cost as compared to a mill and pave project or partial or full depth pavement structure rehabilitation. However, the main disadvantage to a surface overlay is existing cracks along the asphalt pavement surface are not properly repaired and have the ability to further degrade over time, which can lead to these cracks permeating through the new surface overlay resulting in a reduced service life for the pavement structure.

The rough order of magnitude (ROM) cost estimate to complete a 50 mm hot-mixed asphalt surface overlay for Runway 05-23, Taxiway A and Apron I is $3,041,300. Option 1 would be expected to extend the service life of the pavement surfaces by 8 to 10 years but would likely require localized repairs in the future as larger cracks permeate through the new surface overlay.

Table 3.1 – Option 1 – Surface Overlay Cost Estimate

Item	Cost Estimate
Engineering Design and Supporting Studies	$190,100
Civil Works	$2,018,000
General Construction Items	$358,000
Contingency (20%)	$475,200
Total Estimate (ROM)	**$3,041,300**

3.2 Option 2 – Mill and Pave

Option 2 includes a partial depth mill and pave operation. This includes a 50 mm milling of the existing pavement surface followed by completing localized pavement repairs of any exposed cracks that are identified following the milling. Following the localized repairs, a tack coat should be applied followed by one (1) 50 mm lift of hot-mix asphalt.

The ROM cost estimate to complete a 50 mm mill and pave is $4,012,800. Option 2 is expected to extend the service life of the facilities by 15 to 20 years, depending on activity levels and routine maintenance efforts (crack sealing, snow clearing, etc.).

Table 3.2 – Option 2 – Mill and Pave Cost Estimate

Item	Cost Estimate
Engineering Design and Supporting Studies	$250,800
Civil Works	$2,678,000
General Construction Items	$457,000
Contingency (20%)	$627,000
Total Estimate (ROM)	**$4,012,800**

3.3 Recommendation

It is recommended that The CCRD proceed with Option 2 – Mill and Pave for Runway 05-23, Taxiway A and Apron I based on:

- The opportunity that will be presented to repair existing cracks in the pavement surface, extending the useful service lives of the rehabilitated assets; and
- The longer extension to the useful service lives of the airfield pavements that will be realized. Option 2 will extend the lifespan of these assets by 15 to 20 years (next rehabilitation required between 2038 and 2043) versus the 8-to-10-year extension that will be realized with Option 1 (rehabilitation required between 2031 and 2033).

4 IMPLEMENTATION STRATEGY

4.1 Engineering Design and Supporting Study Requirements

To move forward with the implementation of this project, the following supporting studies and engineering design processes will be required:

- Geotechnical Investigation Program to verify the gravel base and subbase materials and confirm the adequacy of the mill and pave strategy;
- Topographic Survey to inform the detailed engineering design;
- NAV CANADA Land Use Submission to notify the air navigation service provider of the construction project and identify impacts; and
- Detailed Design Construction Specification Package to be used during the tender and construction processes.

Cost estimates for these items are identified Table 4.1 and are integrated in the overall project cost estimate provided previously in Table 3.2.

Table 4.1 – Engineering Design and Supporting Study Cost Estimates

Item	Cost Estimate
Geotechnical Investigation Program	$60,000
Topographic Survey	$30,000
NAV CANADA Land Use Submission	$10,800
Detailed Design Construction Specification Package	$150,000
Total Estimate (ROM)	**$250,800**

To be eligible for ACAP funding, it is important to note that these studies must be procured in a competitive manner.

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