

New Nain Airport

Detailed Project Description Summary

Nunatsiavut Government

September 6, 2024

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Acronyms and Abbreviations

ACCDC	Atlantic Canada Conservation Data Centre
Anorthosite	Mafic Intrusive and All Extrusive Igneous Rocks
ARU	Autonomous Recording Unit
ATV	All terrain vehicle
BGS	Below Ground Surface
CAR	Canadian Aviation Regulations
CD	Census division
CE	Current era
CFIA	Canadian Food Inspection Agency
CIRNAC	Crown Indigenous Affairs and Northern Affairs Canada
CNLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
CO	Carbon monoxide
CO ₂	Carbon dioxide
CO ₂ -eq	Carbon dioxide equivalent
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWS	Canadian Wildlife Service
DFO	Fisheries and Oceans Canada
DND	Department of National Defence
DPD	Detailed Project Description
EA	Environmental Assessment
EBSA	Ecologically and Biologically Significant Area
ESC	Erosion and Sediment Control
ESDC	Employment and Social Development Canada
FAFH	Fish and Fish Habitat
FAQ	Frequently Asked Questions
FEC	Field Electrical Center
FSC	Food, social and ceremonial
GHG	Greenhouse gas
HADD	Harmful alteration, disruption or destruction (of fish habitat)
HC	Health Canada
HVGB	Happy Valley-Goose Bay

IA	Impact Assessment (Government of Canada)
IAA	Impact Assessment Act
IAAC	Impact Assessment Agency of Canada
IBA	Important Bird Area
IFR	Instrument Flight Rules
IPD	Initial Project Description
ISC	Indigenous Services Canada
KP	Kilometre Point
LIA	Labrador Inuit Association
LIL	Labrador Inuit Lands
LILCA	Labrador Inuit Land Claims Agreement
LISA	Labrador Inuit Settlement Area
LSA	Local Study Area
N/A	Not applicable
NG	Nunatsiavut Government
NICG	Nain Inuit Community Government
NL	Newfoundland and Labrador
NLECC	Newfoundland and Labrador Environment and Climate Change
NLFFA	NL Fisheries, Forestry and Agriculture
NLMAPA	NL Municipal and Provincial Affairs
NLNR	Nunatsiavut Lands and Natural Resources
NOx	Nitrogen oxides
NRCAN	Natural Resources Canada
Project	New Nain Airport Project
QA/QC	Quality Assurance/Quality Control
Registration	Registration for Environmental Review / Registration Document
RSA	Regional Study Area
SACC	Strategic Assessment of Climate Change
SAR	Species at risk
SARA	Species at Risk Act
SOCC	Species of Conservation Concern
SOx	Sulphur oxides

SSALR	Simplified Short Approach Lighting System with Runway Alignment Indicator Lights
TEK	Traditional Ecological Knowledge
TC	Transport Canada
TLU	Traditional Land Use
TSP	Total suspended particulates
UTM	Universal Transverse Mercator
VC	Valued component
WC	Watercourse crossing
WCnew	New watercourse crossing with a unique identifier
WAGE	Women and Gender Equity

Units and Symbols

'	Minutes
"	Seconds
°C	Degree Celsius
%	Percent
<	Less than
>	Greater than
≥	Greater than or equal to
~	Approximately
#	Number
asl	above sea level
cm	Centimetre
ft	Feet
ha	Hectare
hr	Hour
k	Thousands
km	Kilometre
km ²	Square kilometre
ksp/s	Kilo samples per second
kt	Knot
kW	Kilowatt
L	Litre
m	Metre
M	Million
m ²	Square metre
m ³	Cubic metre
mm	Millimetre
MW	Megawatt
MWh	Megawatt hour
NM	Nautical mile
s	Second
t	Tonne

1. Introduction

This document is the plain language summary of the Detailed Project Description (DPD) for the New Nain Airport Project (Project), as required in the Planning Phase of the impact assessment process under the *Impact Assessment Act*. The Registration for Environmental Review / Registration Document / Initial Project Description (Registration / IPD) for the Project was submitted to satisfy the requirements for initiation of an environmental assessment (EA) for the three applicable regulatory regimes: Nunatsiavut Lands and Natural Resources (NLNR), Newfoundland and Labrador Environment and Climate Change (NLECC) and Impact Assessment Agency of Canada (IAAC) on December 4, 2023. IAAC provided a high-level summary of issues on February 27, 2024, requesting additional Project information required in the DPD based on comments received during IAAC's public comment period.

The main objective of the DPD is to assist IAAC in determining whether a federal impact assessment is required for the Project. The DPD will also facilitate the Project review process for the NLNR and NLECC. Since the submission of the Registration / IPD, the preliminary engineering design has progressed up to 60% design and as a result additional information regarding the Project description has been added to the DPD. The Project footprint has also been more refined due to advancement of the preliminary design.

This DPD summary is plain language summary of the key findings provided in the DPD and incorporates the Registration / IPD with new information incorporated throughout the main document as requested in the summary of issues.

The Project proponent is the Nunatsiavut Government (NG), which is a self-governing Inuit region in Newfoundland and Labrador (NL). The President of Nunatsiavut is Johannes Lampe.

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1.1 Name of the Project

The Project is called the New Nain Airport.

1.2 Project Overview

The NG is planning to build a new certified airport to replace the existing airstrip at Nain. The main components of the Project, shown on Figure 1.2-1, are as follows:

- Runway: new 2,133 m (7,000 ft) long gravel airstrip, with approach lighting and surrounding fence and service road.
- Airport: includes a multi-functional terminal building, aircraft (fixed wing and rotary) parking apron, taxiways, maintenance building, freight and storage warehouse, de-icing pad, and fuelling area
- Access road, a new gravel road approximately 12 kilometres (km) in length to connect the town of Nain to the new airport.

A summary of the Project components is provided in Section 2. The New Nain Airport will operate 24 hours a day, seven days a week, to serve the local population and will be able to serve as the emergency response centre for the region. Moreover, the Project will be able to operate in all weather conditions which will facilitate the use of larger aircraft (cargo & passengers) and improve medical evacuation reliability. The new airport will follow instrument flight regulations instead of visual flight regulations, with instrument approach at 200 ft. and 0.5 mile visibility.



Project Component / Composante de projet

█ Main Project Infrastructure / Infrastructure principale du projet

OCTANT
EXPERTS EN SOLUTIONS POUR L'AVIATION

Labrador Inuit Lands / Terres des Inuits du Labrador

Labrador Inuit Settlement Area (LISA) / Limite de la zone LISA
Parcel number / Numéro de parcelle

Labrador Inuit Lands (LIL) / Terres des Inuits du Labrador

Nain Inuit Community Government - Municipal Planning Area / Gouvernement de la communauté Inuit de Nain - Zone de planification municipale

Other / Autre

Existing airstrip / Piste d'atterrissage existante

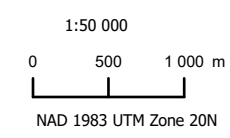


Figure 1.2-1
Project Location and Infrastructure / Emplacement et infrastructure du projet

1.3 Project Need and Purpose

The Government of NL owns and operates 12 airstrips in Labrador communities, including Nain (NL Transportation and Infrastructure. n.d.). For northern Labrador Indigenous communities, the airstrips are the only year-round connection to the rest of the province. Marine access is limited as the ferry only operates in ice-free seasons, roughly from June to early December. The airstrips are critical infrastructure as they facilitate movement of food, medical supplies and other essential goods, maintain access to necessary services such as healthcare, support attraction and retention of staff in important service areas (e.g., healthcare, education, policing), help to maintain in-person contact with family and friends, provide local employment, and support economic development in remote communities.

The existing Nain airstrip, an aerodrome certified in accordance with Canadian Aviation Regulations (CAR) 302, has operational complexities and is unsuitable for upgrading. Nain is a remote coastal community surrounded by islands and mountains. The location and alignment of the present airstrip and direction of prevailing winds result in delay or cancellation of nearly half of regular flights, which delays shipments of essential goods. Due to the surrounding mountainous environment and strong winds, the airstrip is not certified for night-flying operations. This is particularly challenging in medical emergencies when evacuation is often necessary due to limited local medical services.

The Nain airstrip is located on the coast with an official elevation of 21 ft. (6 metres; m) above mean sea level (MSL; Figure 1.3-1). During storm surges, such as one that occurred as recently as December 2022, the airstrip has been partially flooded by sea water. Storm surges result in erosion that can affect load-bearing capacity of the airstrip. This presents the possibility that the airstrip could become unusable on a short- or long-term basis.



Figure 1.3-1

Existing Airstrip /
Piste d'atterrissage existante

1.4 Anticipated Project Schedule

The preliminary engineering design and feasibility studies are scheduled to be completed by the end of 2024 and Project construction is expected to commence in 2027, with commissioning in 2030. The current estimated schedule for the Project is provided in Table 1.4-1.

Table 1.4-1: Project Milestones and Dates

Key Milestones	Completion Dates
Submission of Registration / IPD to IAAC, NG and NLECC	December 2023
Indigenous community and public comment period	December 18, 2023 and February 16, 2024
IAAC Public information sessions	January 17 and 18, 2024
NG Department of Lands & Natural Resources held community consultations on the proposed project	February 7 (virtual) and February 19, 2024 (in-person)
Issuing of Summary of Issues by IAAC	February 27, 2024
Proponent in-community open house	June 12, 2024
Submission of the Detailed Project Description	August 2024
Decision from IAAC, NG, and NLECC to determine if an EA is required	Q3 2024
Completion of feasibility studies report	December 2024
Completion of regulatory EA process (approval), if required	March 2026
Financing completed	April 2026
Development and construction phases	2025-2030
Detailed engineering, applications for certificates of authorization, obtaining certificates and construction work (in phases)	2026
Mobilization and construction	2027-2030
Commissioning and operational phase	End of 2030

1.5 Regulatory Requirements

1.5.1 Environment Assessment

The NG, provincial and federal regulatory regimes outline requirements for the EA process, permits required for construction and operation of the Project, and conditions under which the Project will operate. Discussions are ongoing with the relevant agencies regarding EA requirements for the Project. For the federal government, the *Physical Activities Regulations* of the Canadian *Impact Assessment Act* (IAA) identify activities that constitute designated projects. Designated projects under these regulations include construction and operation of new aerodromes that would meet specified thresholds or criteria. Specifically, item 46 of the *Physical Activities Regulations* (SOR/2019-285) includes:

- The construction, operation, decommissioning and abandonment of a new aerodrome with a runway length of 1,000 m or more
- The construction, operation, decommissioning and abandonment of a new aerodrome that is capable of serving aircraft of Aircraft Group Number IIIA or higher

1.5.2 Other Regulatory Compliance

The Project must be carried out in compliance with applicable NG, provincial, federal and municipal legislation. Table 1.5-1 provides a preliminary list of laws and regulations that may apply to the Project and have further permitting and/or compliance requirements.

Table 1.5-1: Applicable Legislation to the Project

Interest	Legislation
Nunatsiavut Government	
Archaeology, burial sites and human remains Traditional tenures Private interests Land use plan Protected areas	Labrador Inuit Lands Act
Traditional tenures Private interests Labrador Inuit land titles registry Land use plan Mineral exploration and development	Labrador Inuit Land Titles Act
Government of Newfoundland and Labrador	
Environmental protection	Nunatsiavut Environmental Protection Act
Air Quality	Approval of Diesel Generators Guidance Document
Building Accessibility	Buildings Accessibility Act Buildings Accessibility Regulations
Building Construction	Building Standards Act
Endangered Species	Endangered Species Act
Environmental Protection	Environmental Protection Act, 2002 Air Pollution Control Regulations Certificate of Approval (e.g., diesel power generation) Storage and Handling of Gasoline and Associated Products Regulations, 2003 (registration is required) Used Oil and Used Glycol Control Regulations, 2018 (registration or approval is required) Waste Management Regulations
Food Safety	Food Premises Act Food Premises Regulations Food Establishment Licence
Forest Fires	Forestry Act Permit to Burn (during Forest Fire Season)
Hazardous Materials	Dangerous Goods Transportation Act Dangerous Goods Transportation Regulations
Public Safety	Public Safety Act Boiler, Pressure Vessel and Compressed Gas Regulations Fire and Life Safety and Building Accessibility Compliance
Quarries	Quarry Materials Act Quarry Materials Regulations
Water Resources	Water Resources Act, 2002 Environmental Control Water and Sewage Regulations, 2003 Certificate of Approval for Sewage Disposal System

Interest	Legislation
	Permit for Alterations to a Body of Water (e.g., culverts and bridges) Permit for Constructing a Non-Domestic Well (includes groundwater monitoring) Permit to Construct Drinking Water and Wastewater Infrastructure Section 48 Permit (for work in or within 15 m of a water body) Water Use Licence (use of water for any non-domestic purpose with an existing, new or planned water use from any water source)
Wildlife	Wildlife Act Wildlife Regulations
Workplace Health and Safety	Occupational Health and Safety Act Occupational Health and Safety Regulations
Government of Canada	
Aviation	Aeronautics Act Canadian Aviation Regulations
Aviation and Airports	Canada Transportation Act TP 312 5 th Edition Aerodrome Standard and Recommended Practices Last Edition 2020-01-15 Aeronautical Assessment for Obstacle Notice and Assessment Air Transportation Regulations Land Use in the Vicinity of Aerodromes Airport Zoning Regulations Application for Airport Certificate Advisory Circulars
Fish and Fish Habitat	Fisheries Act Fisheries Act Authorization or Letter of Advice
Marine Navigation	Navigable Waters Act Minor Works Order
Hazardous Materials	Transportation of Dangerous Goods Act Transportation of Dangerous Goods Regulations
Runway Infrastructure	Manual of pavement structural design
Migratory Birds	Migratory Birds Convention Act (Damage or Danger Permit)
Species at Risk	Species at Risk Act

1.5.3 Strategic and Regional Assessments

1.5.3.1 Strategic Assessment

No strategic assessments are currently underway in Nunatsiavut. The most recent study was the Labrador Shelf Offshore Area Strategic Environmental Assessment Update completed for the Canada-Newfoundland and Labrador Offshore Petroleum Board (CNLOPB) in December 2021 (CNLOPB 2021). That study provided current information on the existing environment to identify matters that should be considered in issuing exploration licences in the area. The process was co-chaired by the NG and CNLOPB Environmental Protection Department.

1.5.3.2 Strategic Assessment of Climate Change

The Environment and Climate Change Canada (ECCC) Strategic Assessment of Climate Change (SACC), under Section 95 of the IAA, requires the IA to consider the extent to which the effects of a designated project contribute

to or hinder Canada’s ability to meet its climate change commitments, such as the Paris Agreement, and objectives, such as the 2030 target and net-zero emissions by 2050 (ECCC 2020). An initial Project GHG estimate in accordance with the SACC guidelines is described in Section 6.1 of the DPD.

1.5.3.3 Regional Assessment

No Regional Assessment relevant to the Project is being or has been carried out under the IAA.

2. Project Description

The NG is planning to build the Project (airport) to replace the existing airstrip that is unreliable due to poor design and adverse conditions and is also under stress from the effects of climate change. The Project will operate 24 hours a day, 7 days a week, to serve the local population during all seasons and act as the centre for emergency response for the region. Project-specific details are summarized in the following sections.

2.1 Project Location and Components

Nain, the northernmost Inuit Community in NL, lies on the west side of Unity Bay about 50 km from the Atlantic Ocean and 370 km north of HVGB. The Project is on Labrador Inuit Lands with a portion of the access road on Nain Inuit Community Lands. The airport is approximately 12 km from Nain and sits on a plateau, approximately 850 m from the coast at an elevation of roughly 60 m asl. Coordinates for the Project are shown in Table 2.1-1. The nearest federal land is the Natuashish Indian Reserve 2, approximately 72 km away.

Table 2.1-1: Project Coordinates

Project Component	UTM 20 NAD83		NAD83	
	Easting	Northing	Longitude	Latitude
Runway (west point)	571248.729301	6262480.1516	-61.842546	56.501343
Runway (east point)	573347.003503	6262093.51125	-61.808576	56.497548
Airport centre point	572344.116169	6262277.19189	-61.824811	56.499353
Access road starting point	580157.1391	6267013.6044	-61.696469	56.54063
Access road end point	573302.476691	6261736.26664	-61.809399	56.494346
Temporary construction access end point	572718.3991	6261053.7314	-61.819074	56.488306

The main components of the Project are presented on Figure 2.1-1. While the Project facility may evolve over time, future expansion is not planned at this time. Spatial areas associated with the various Project components are provided in Table 2.1-2.

Table 2.1-2: Project Component Areas

Project Component	Area (ha)
Runway (including approach lighting and fenced area)	63.3
Airport (including taxiways, apron, terminal and support buildings, parking area, and associated infrastructure)	15.9
Access road (including construction limit)	36.8
Rock borrow areas	79.1
Construction staging area and temporary access	5.6

Total

200.7

Runway

The runway will measure approximately 2,133 m in length and 45 m in width. It will be oriented at 120°/300° (magnetic) to optimize approaches and take-offs into prevailing winds, achieving a usability of 95% for aircraft capable of operating in crosswinds of 20 knots. The runway will be developed by blasting rock for fill due to the topography of the area and the limitations of overburden soils. The construction plan involves approximately 2 million cubic metres (m³) of material to cut and 3 million m³ of fill, with the runway constructed primarily using local rock material. The runway surface will be gravel treated with EK35®, a synthetic fluid that stabilizes gravel runways and improves operational and safety conditions. Additional features include a perimeter road for maintenance activities, a fence for safety and security, and approach lights SSLAR (Simplified Short Approach Lighting System) installed at each end of the runway over a distance of 720 m in line with the runway centreline, as required for the airport's precision approach CAT I capability.

Airport

The main airport area will house the supporting infrastructure. The following is a description of the various components included in the airport:

- Apron and Taxiways:** The apron, designed for aircraft parking, loading, and servicing, can accommodate short-term parking for two Boeing 737-800 aircraft and long-term parking for three AGN II aircraft. It includes a fuelling pad, de-icing pad, and two helicopter parking stands sized for the AgustaWestland AW101/CH-149 Cormorant (Figure 2.1-1). The airport requires two taxiways to connect the apron to the runway, reducing runway occupancy time and minimizing congestion. Each taxiway will be 23 m wide with a 5 m safety buffer. Apron floodlighting will be installed to minimize glare for pilots and controllers. The apron and taxiways will be constructed using the same rock materials as the runway and stabilized with EK35®. Taxiways will be graded at a maximum of 1.5% slope towards a runoff collection area.
- Terminal building:** The terminal building is the main space to welcome arriving and departing passengers to and from the airport. This building contains the passenger waiting area, check-in and boarding counter, baggage handling system, restaurant, cafeteria or vending machines area, offices for airport management, flight preparation and pilot rest room, multi-service room / offices, restrooms, mechanical, electrical and communication equipment room. The waiting room will be designed to accommodate approximately 96 passengers. The terminal will be located on the east-facing side of the apron, which is closer to the overall airport entrance and separates passenger related activities from fuel facilities, airport maintenance and cargo activities. The terminal building will be approximately 1,344 square metres (m²).
- Parking area:** The landside parking lot will be located adjacent to the air terminal building and will have a 200 millimetres (mm) gravel surface layered on a 500 mm granular subbase. Since the parking lot has a gravel surface and no parking lines will be applied, standard parking stalls and accessibility parking stalls will need to be identified using signage and/or curb stops to delineate each stall. The parking lot will be large enough to accommodate the minimum number of required stalls and will allow for over-sized parking stalls.
- Maintenance garage:** The maintenance garage is designed for the upkeep and storage of various machinery, vehicles, and equipment used for airport maintenance tasks like snow removal and gravel and sand spreading. The garage includes seven bays: three double service bays for heavy machinery, one double bay for smaller vehicles and equipment, and a single bay for sand storage. These bays are double-height to accommodate large machinery. The garage also features a repair workshop with a workbench, various machines and tools, and necessary outlets. Additionally, it houses an office for administrative tasks, a washroom with a shower, a break room for employees, and storage space for equipment, tools, parts, and supplies.
- Cargo Warehouse:** A 2-storey, 1,250 m² cargo warehouse will be used for short-term storage and handling of freight goods and supplies. The warehouse will include a reception desk, maintenance and parking areas for vehicles, mechanical and electrical rooms, janitorial and server rooms, general and freight storage areas,

frozen goods and cooler rooms, offices, break rooms, meeting and locker rooms, support spaces, and restrooms. Located west of the passenger terminal, it will have direct access to the apron and runway. The warehouse will also house seven bays dedicated to various functions such as a general warehouse, freight storage, repair and maintenance garage, and vehicle parking garage.

- **Power generation and fuel storage:** The airport will be powered by two main 1,125 kW diesel-fired generators and a third standby generator of the same capacity, all housed in a single building in the southwest part of the apron. One generator will power the airport's ancillary systems (HVAC, cooling, security), while the other will meet increased demand as needed. The generator building will feature a 6 to 10 m high exhaust stack to diffuse exhaust fumes and minimize impact on airport operations. The generators will use a modern, efficient diesel energy system with high-pressure common-rail fuel injection to maximize fuel vaporization and combustion rate. Specific engine specifications will be determined in future engineering designs.

To provide fuel for the power generators, diesel storage tanks will be set up in the southwest portion of the apron. The tanks will be double-walled for secondary containment, and raised on skids. The capacity of the storage area will be approximately 1,000,000 litres (L) to fuel eight months of operation. The diesel tanks will be connected to power generation building through aboveground piping. This piping will also be connected to a diesel fuel dispensing system on the apron for maintenance equipment.

- **Water supply, treatment and storage:** The airport will require approximately 13 L/minute of potable water at peak hour, with a maximum daily demand of 11,250 L/day, to support the terminal, warehouse, and maintenance garage buildings. In the event of a fire, the airport will also require 7,275 L/min of non-potable water for fire suppression.

The primary option for potable water supply being considered is withdrawal from Kauk Brook; however, further investigation will occur before Project development to confirm the proposed water supply. Water supply infrastructure will consist of an intake in the proposed surface water source, a raw water pump station and building complete with electrical supply and a raw water transmission main from the water source to the airport site. A balancing raw water storage tank will also be required at the airport site, in addition to the treated water storage tanks noted above. The water treatment building will contain pumps and tanks for testing and adding disinfection chemicals, specifically sodium hypochlorite, which will be stored in a secondary containment.

For fire suppression, two 510 m³ storage tanks will be built on concrete slabs, equipped with an active mixer system to mix the chlorinated water and prevent freezing. Tanks will be initially filled via the potable water source, and their water level will be monitored and maintained throughout Project operation. Collected stormwater from the airport may be considered as a non-potable water supply to maintain fire suppression tanks. This water will be diverted in a sustainable manner in accordance with applicable *Water Resources Act* requirements.

- **Field Electrical Center (FEC) building:** The airfield electrical lighting power equipment and a backup power system will be stored in the FEC building located in the eastern portion of the apron. The FEC will have a monitoring station where electricians can review status of equipment and historical data related to the airfield lighting system. The backup power system will consist of a single 175 kW diesel-fired generator to support emergency airfield lighting system use. The generator will be operated by oil and a fuel tank will be located under the generator.
- **Sewage collection and wastewater treatment:** All domestic wastewater from the terminal, maintenance building, and warehouse will gravity flow through PVC pipe to a septic tank. This tank will be concrete and approximately 7 m³ in volume. Waste will be stored in the tank for a time to allow particles to settle out of the wastewater, and then it will be pumped into the septic field via dosing chamber and pump station. The septic tank will be buried a sufficient depth to prevent freezing. The septic field will consist of six absorption trenches which allow the wastewater to infiltrate down into the surrounding soil. Each absorption trench consists of a 100 mm diameter perforated drainage pipe within a layer of crushed stone, which sits above a 1

m deep layer of soil. The absorption trenches will each be approximately 30 m long, and will be covered with backfill.

- **Aviation fuel station:** An aircraft refueling pad will be located near the maintenance garage; it will be constructed with a concrete surface to prevent potential infiltration of fuel to the ground. An HDPE membrane will also be installed between the pad and subgrade, to further protect against potential contaminant infiltration. The fueling pad will be connected to a drainage runoff collection system; this system will consist of a PVC pipe with a concrete bedding that will convey spilled fuel to an oil/water separator. Waste oil/fuel collected from the separator will be transported to Nain for disposal, and clean surface water runoff from the fueling pad will be directed to the stormwater collection area (Section 2.2.4.6). The dispensing system for aviation fuel will be adjacent to the fueling pad; it will be equipped with a 30,000 L aboveground storage tank. This tank will be double-walled for secondary containment.
- **De-icing pad:** A designated area will be established to de-ice aircraft in winter. This area will be a concrete pad designed to contain de-icing glycol fluid and water; it will have a central drain and sump to store waste glycol during de-icing. Waste glycol collected from the sump will be pumped out and transported to Nain for disposal. During summer, precipitation that accumulates in the pad and sump will be released to the stormwater collection area via PVC pipe.
- **Construction camp:** A temporary camp will be set up to accommodate construction workers. Initially, the camp will be placed within the construction staging area (noted below). As construction progresses, the camp will be moved to the future parking area at the airport, when that site is cleared and the embankment built up. The camp will consist of mobile trailers with bedrooms, restrooms, and a kitchen/cafeteria. Power and heat will be supplied by gas-fired generators, and a small modular wastewater treatment unit will be used to handle domestic effluent. Until the access road is fully built, workers and supplies (including potable water) will be transported to and from the construction camp via smaller marine barge vessel, with workers transported via smaller boats.

Access road

The access road joining the airport to Nain will be gravel and measure approximately 12 km long. The width of the road surface be approximately 12 m wide. A total width of 36 m along the road alignment will potentially be impacted to account for the right-of-way and ditches on each side of the road surface. The access road width will accommodate larger maintenance and operations equipment such as single unit trucks and snowplows, as well as local passenger vehicles (half ton trucks, snowmobiles, ATVs) and passenger busses.

Pull off areas will be included to allow people to safely park and leave their vehicles a corridor for hunting, fishing, trapping, and accessing cabins. The typical pull off area will be 10 m in width and 50 m in length, with 50 m long tapers to transition the pull off areas to the main corridor.

Rock borrow areas

The Nain region includes rough and mountainous topography, which requires extensive cut and fill material to develop stable subgrades for the runway and airport, and to a lesser extent, the access road. Material is also needed for backfill material and surface pavement. Multiple rock outcrops close to the Project infrastructure have been identified as good candidates to provide fill material. These borrow areas have been delineated on Figure 2.1-1 as the maximum expected extent where rock borrow material will be collected; however, the actual areas required will be subject to further investigation.

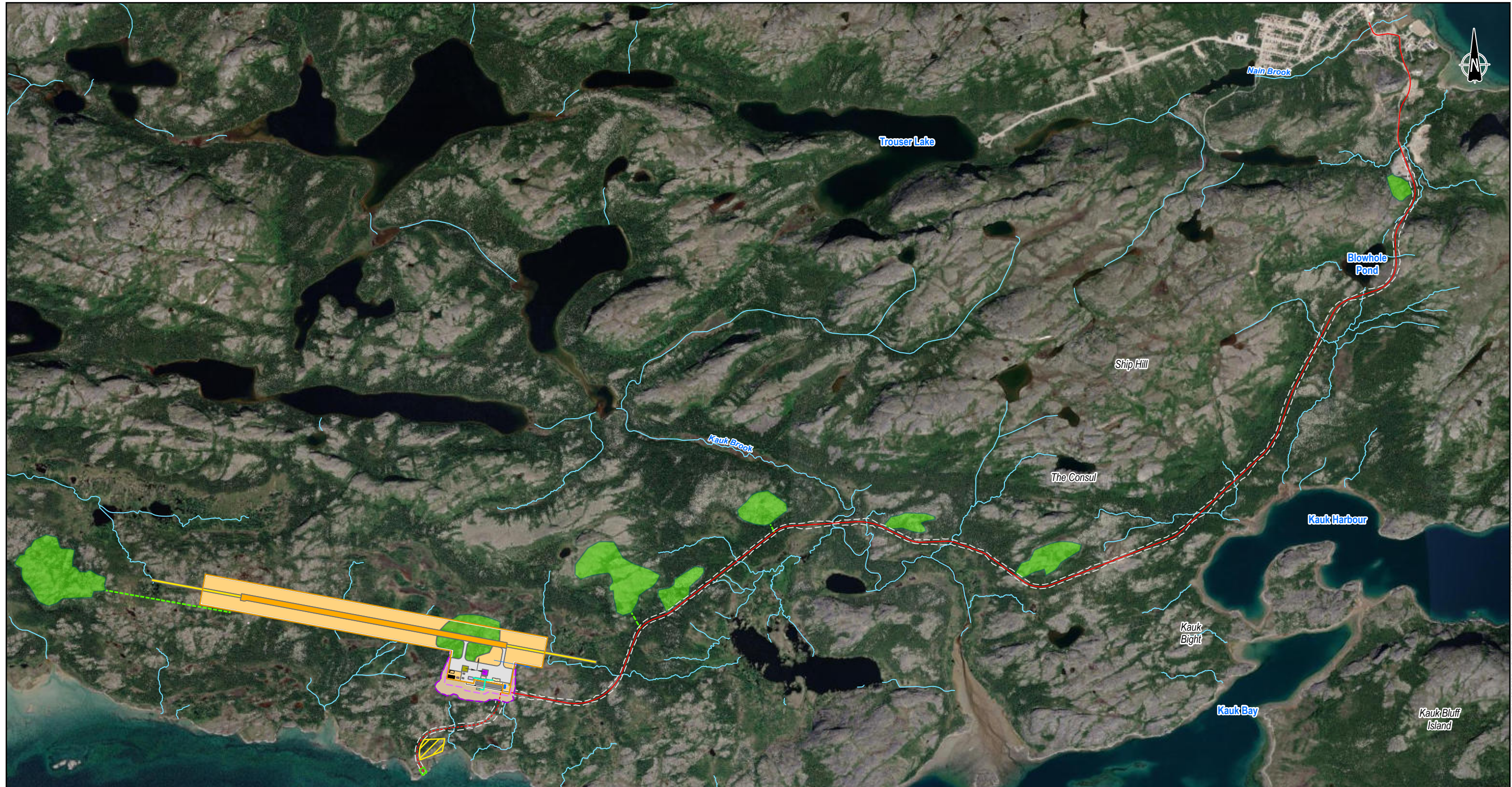
Construction staging area and access

Since there is no existing access to the proposed airport site, the initial stages of construction will require equipment and supplies to be ferried from Nain and offloaded using a roll-on/roll-off barge vessel. A coastal landing site will be set up to the south of the airport to facilitate the offload of large equipment where it will be transported to the airport site using a temporary access road. Minor preparatory work on shore (e.g., tree and brush clearing, removal of large rocks, placement of gravel) may be required to establish this area (Figure 2.1-1). A temporary access road will be constructed from the barge landing area to the airport area for equipment

transportation. The temporary access road design criteria will be similar to the airport access road in terms of geometrics and cross section. The road will be cleared of vegetation, and the temporary access road alignment follows the topography avoiding steep grades, wetlands, and significant cuts and fills where possible cut and fill construction techniques may be used to create an appropriate grade for vehicle travel.

Following establishment of the coastal landing area and initial development of the temporary access road, a construction staging area will be established between the landing area and airport. This area will be cleared of vegetation and graded as needed to allow for equipment and materials (e.g., construction machinery, fuel, aggregate) storage. A temporary construction camp will also be set up at this location; this camp will be moved the airport site parking area once it is cleared and embankment built up. The construction laydown/storage area will maintain a minimum 30 m buffer from the coastline and any watercourses in the area.

The construction landing area, staging area, and temporary access road will be discontinued and reclaimed at the end of the construction phase.



Project Component / Composante du projet

- Access road / Route d'accès
- - - Temporary access road / Route d'accès temporaire
- Construction limit / Limite de construction
- - - Temporary road to rock borrow / Route temporaire vers les bancs d'emprunt

- Rock borrow / Banc d'emprunt
- Potential construction laydown and equipment storage area / Aire de dépôt potentielle des équipements de construction
- Proposed barge landing site / Site de débarquement proposé pour les barges

- Fence / Clôture
- Sewer pipe / Tuyau d'égout
- Top of embankment / Haut de talus
- Bottom of embankment / Bas de talus
- Culvert drainage / Fossé de drainage

- Fuelling and de-icing pad drainage system / Système de drainage des plateformes de ravitaillement et de dégivrage
- Fencing and vegetation control / Clôture et contrôle de la végétation
- Parking area and embankment / Aire de stationnement et talus

- Airport access and service road / Voie d'accès à l'aéroport et voie de desserte
- Aviation fuel / Carburant
- Cargo warehouse / Entrepôt de fret
- Central power station / Centrale électrique
- De-icing pad / Plateforme de dégivrage

- Diesel fuel / Carburant diesel
- Diesel tank / Réservoir de diesel
- FEC / FEC
- Fueling pad / Plateforme de ravitaillement
- Gravel storage / Stockage de gravier
- Lights / Lumières

- Maintenance garage / Garage d'entretien
- Oil/water separator / Séparateur huile/eau
- Parking and construction camp / Stationnement et camp de construction
- Potable water supply / Approvisionnement en eau potable
- Runway / Piste d'atterrissage

- Septic field / Champ d'épuration
- Septic tank / Fosse septique
- Taxiway / Voie de circulation (avion)
- Terminal / Terminal
- Water tank / Réservoir d'eau
- Weather station / Station météorologique

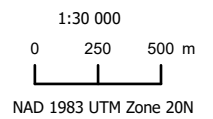
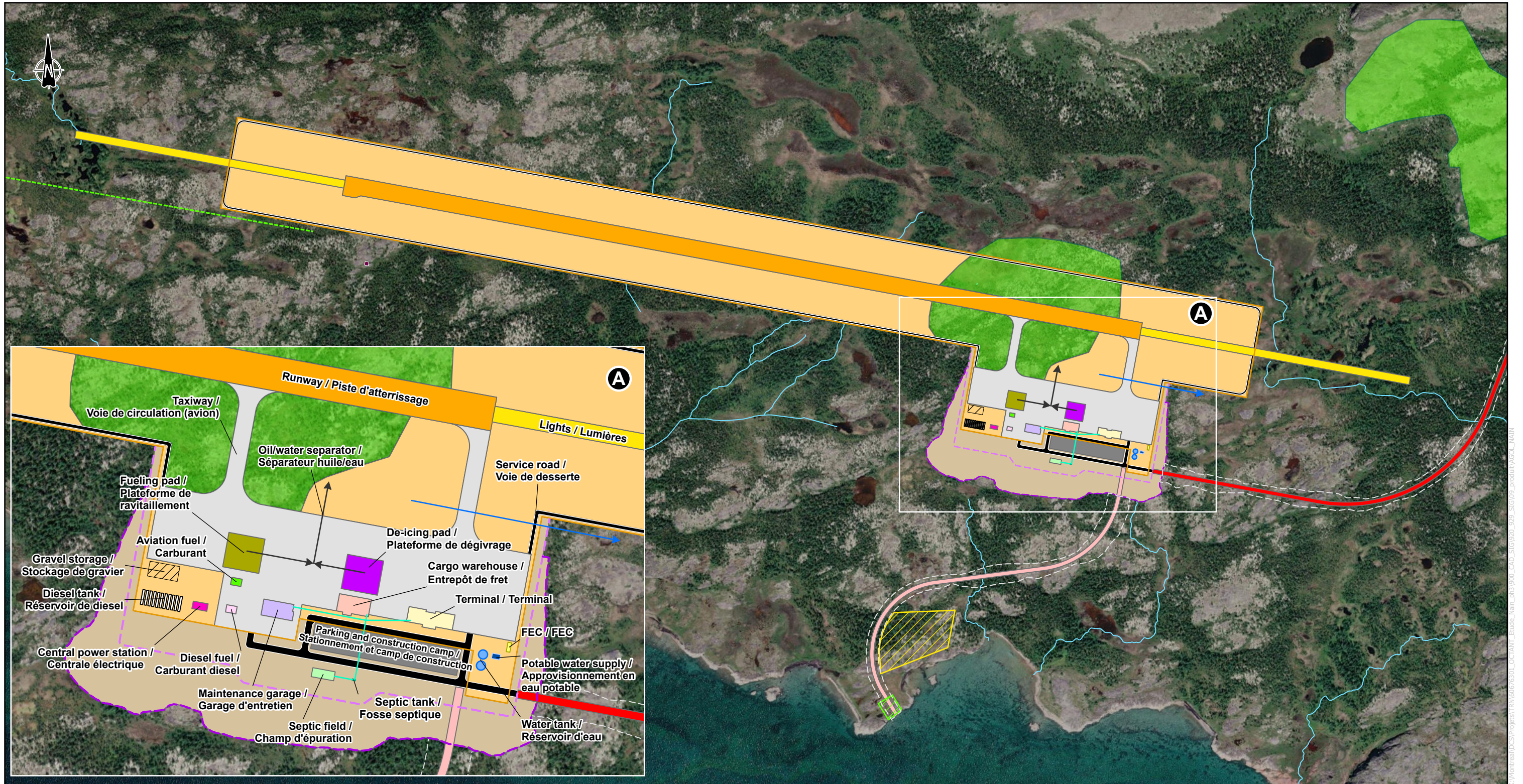


Figure 2.1-1

Project Components / Composantes du projet



Project Component / Composante de projet

- | | | | | | | | |
|---|---|--|---|---|--|---|---|
| <ul style="list-style-type: none"> — Access road / Route d'accès — Temporary access road / Route d'accès temporaire Construction limit / Limite de construction — Temporary road to rock borrow / Route temporaire ■ Rock borrow / Banc d'emprunt | <ul style="list-style-type: none"> Potential construction laydown and equipment storage area / Aire de dépôt potentielle des équipements de construction Proposed barge landing site / Site de débarquement proposé pour les barges — Fence / Clôture | <ul style="list-style-type: none"> — Sewer pipe / Tuyau d'égout — Top of embankment / Haut de talus — Bottom of embankment / Bas de talus — Culvert drainage / Fossé de drainage | <ul style="list-style-type: none"> → Fuelling and de-icing pad drainage system / Système de drainage des plateformes de ravitaillement et de dégivrage Fencing and vegetation control / Clôture et contrôle de la végétation Parking area and embankment / Aire de stationnement et talus | <ul style="list-style-type: none"> Airport access and service road / Voie d'accès à l'aéroport et voie de desserte ■ Aviation fuel / Carburant ■ Cargo warehouse / Entrepôt de fret ■ Central power station / Centrale électrique ■ De-icing pad / Plateforme de dégivrage | <ul style="list-style-type: none"> ■ Diesel fuel / Carburant diesel Diesel tank / Réservoir de diesel ■ FEC / FEC ■ Fueling pad / Plateforme de ravitaillement Gravel storage / Stockage de gravier ■ Lights / Lumières | <ul style="list-style-type: none"> ■ Maintenance garage / Garage d'entretien ■ Oil/water separator / Séparateur huile/eau ■ Parking and construction camp / Stationnement et camp de construction ■ Potable water supply / Approvisionnement en eau potable ■ Runway / Piste d'atterrissage | <ul style="list-style-type: none"> ■ Septic field / Champ d'épuration ■ Septic tank / Fosse septique ■ Taxiway / Voie de circulation (avion) ■ Terminal / Terminal ■ Water tank / Réservoir d'eau ■ Weather station / Station météorologique |
|---|---|--|---|---|--|---|---|

Figure 2.1-2
Airstrip and Airport Apron /
Aéroport et aire de trafic

2.2 Project Activities

Expected Project activities include the following: construction, operations and decommissioning. Construction is the initial phase of Project development, including site preparation activities, up until the start of operations and maintenance of the Nain airport and access road. Construction is anticipated to take approximately 3 years to complete, with limited construction activity during the winter, since sea ice will prevent use of a marine barge to transport workers and equipment.

Operations represent day-to-day running of the airport, following construction and commissioning.

These activities are described further in the subsections below, and additional details will be established with engineering design progression and construction procurement. Operation of the Project is expected to be greater than 50 years. Decommissioning of the airport will occur when the airport reaches its end of life. The airport is planned to operate indefinitely; however, so there is no schedule for decommissioning.

2.2.1 Construction

General site preparation will involve brush clearing / tree trimming using chainsaws. This activity is planned for winter, outside of sensitivity periods for wildlife and migratory birds. Clearing crews will access Project areas via snowmobile from Nain. Salvageable wood will be decked and left on site until it can be transported to the community for use. Brush, slash, branches and other non-salvageable materials will be mulched and burnt on-site if required, with the approval of the provincial Department of Fisheries, Forestry and Agriculture during forest fire season. This material may also be disposed of in defined waste disposal areas or at the bottom of deep embankment fills.

For infrastructure development, extensive rock blasting will be required to prepare subgrade for all Project components. Rock blasting will be completed by qualified contractor in accordance with the federal Explosives Act. Rock material from cut areas and borrow areas will be used as fill material, granular subbase, and granular base layers. This material will be crushed to the appropriate particle size, piled using bulldozers and excavators, and compacted to meet engineering specifications. Most backfill materials for the Project will come from the site with optimization of cut / fill balance. In some cases, a small amount of specialized fill may need to be imported by ship.

Domestic waste generated during construction will be stored in bear safe containers and hauled to Nain where it will be shipped out for disposal. All waste materials from construction will be evacuated, since the Nain Inuit Community Government (NICG) disposal site has no capacity. Hazardous materials and waste will be transported, stored and handled in accordance with regulatory requirements and shipped out for disposal at an approved facility. Domestic sewage from construction areas (e.g., Porta Potties) will be periodically collected and transported to the Nain sewage treatment system.

Initial Phase and Staging Area

All construction equipment and materials will be transported to Nain (Unity Bay) for temporary storage in advance of construction. This process will include a large, initial cargo ship delivery, and potentially 3 or 4 barge loads from the St. Lawrence / Goose Bay area to Nain for three construction seasons when the Nain harbour is ice-free. Most equipment and materials will be kept in shipping containers, with more sensitive materials (e.g., explosives) will be stored in prefabricated, heated buildings. These storage buildings will be locked and all storage areas will be fenced and kept under 24-hour surveillance for security and safety purposes.

Site preparation (tree and brush clearing) will take place in winter using local crews from Nain accessing the site via snowmobile. Following this activity, equipment, machinery, worker camp, fuel reservoir and other supplies (food, etc.) will be transported to the airport site via roll-on/roll-off barge vessel. Construction personnel will be transported to and from site using smaller boats. The coastal landing site will be set up to the south of the airport to facilitate the offload of large equipment where it will be transported to the airport site using a temporary access road. Minor preparatory work on shore (e.g., tree and brush clearing, removal of large rocks, placement of gravel) may be required to establish this area. The roll-on/roll-off barge will be equipped with a hydraulic ramp that can be

lowered onto the beach to permit vehicles, materials and equipment to be offloaded. The barge would access the beach at high tide so that there is sufficient water to keep the barge from bottoming out. As the tide goes out, the barge bottoms out at the shoreline, allowing the ramp to be lowered and contents offloaded. At high tide, the barge will float to allow the barge to leave the area. Figure 2.2-1 shows the locations of the landing and staging area.



Project Component / Composante de projet

- Temporary access road / Route d'accès temporaire
- Construction limit / Limite de construction

- Potential construction laydown and equipment storage area / Aire de dépôt potentielle des équipements de construction

- Proposed barge landing site / Site de débarquement proposé pour les barges

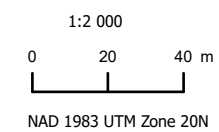


Figure 2.2-1

Construction Landing and Staging Area /
 Zone de débarquement et de préparation
 des travaux de construction

Access Road

the access road will be developed from two directions; one starting at the eastern end (near Nain), and one from the airport area. During construction, dust will be controlled through the use of calcium chloride or the application of water, as needed. Following rock blasting and cutting in to steep slopes of exposed bedrock, protective measures will be installed to protect construction crews from rockfall hazards, where necessary. Guard rails will be installed at sections of the road with steep slopes, and the gravel stabilizing agent EK35® will be applied to finished road. Road shoulder and construction limit areas will be revegetated using an approved seed mix, where practical.

The Kauk Brook crossing is designed as modular bridge. Bridge abutment areas will be graded using bulldozers and excavators, and steel pipe piles will be driven approximately 8 m deep to anchor the abutments to bedrock. The pre-fabricated bridge will be transported to the crossing, placed into position using a crane truck, and secured to the abutments. Adjustments will be made to the access road approach to the bridge to facilitate a smooth transitional surface. Additional stabilization products may be added to the access road surface base material on the approaches to the bridge to minimize loose aggregates from being transported onto the bridge deck. Following bridge installation, clean riprap will be placed around the bridge abutments at a 2:1 slope to armour them from erosion. During all construction activity in proximity to Kauk Brook, control measures will be used to protect the water from erosion and sedimentation. These measures could include sediment fencing and check dams. An aquatics monitoring program will be developed to identify and respond to releases to the water.

Culverts will be installed at the remaining watercourse crossings. Different installation techniques may be considered depending on conditions at the time of construction, in accordance with the DFO Codes of Practice and Best Management Practices for the Protection of Freshwater Fish Habitat in Newfoundland and Labrador (DFO 2022a). Methods will be determined at the time of construction, and will be in accordance with DFO Interim Code of Practice for In-water Isolation. Drainage ditches will be also installed alongside the access road, as well as culverts and a bridge to allow the natural watercourses to pass beneath the road.

Runway and Airport

Construction of the runway and airport will involve site preparation and civil works. However, construction of the runway and airport will require a large amount of cut and fill to create level surfaces for Project infrastructure including the build-up of a large fill embankment for the apron. A small, temporary access road will be created to reach the furthest rock borrow area to the west; material from this area will be used to develop the airport embankment.

Following these earthworks, subsurface infrastructure (electrical and piping) will be installed and backfilled, and the gravel surfaces will be placed. Building foundations at the airport will be established using steel pipe piles and pouring concrete slabs. Groundwater wells will be drilled and tested in accordance with provincial *Water Resources Act* requirements to confirm water source viability. Project infrastructure (such as buildings, lighting and tanks) will then be installed and connected. The building sequence for each airport component will be determined at the time of construction.

The runway will be graded with 2.5% slope on each side of the centreline to allow for runoff drainage. Ditches will be situated a minimum of 75 m from the runway centerline on either side of the runway. The ditches will be 3 m wide to account for rock spalls and snow accumulation during the winter months. Reinforced concrete culverts will be installed to maintain drainage north to south across the runway and manage rainwater runoff and melting snow.

Taxiways will be graded at 1.5% slope towards the area in between the apron, taxiways and runway. This area will serve as a runoff collection area, with a low point culvert drain that directs water east away from the airport. Areas with the potential for chemical contamination, i.e., the fuelling pad and de-icing pad, have drains to direct clean stormwater to the runoff collection area. The pads will be equipped with mechanisms to contain spilled fuel and de-icing glycol for proper disposal; these chemicals will not be released to the environment.

2.2.2 Operations

Unlike the existing airstrip, the Airport will be capable of operating 24 hours per day, though weather conditions are increasingly intense due to climate change. The airport is expected to support between 130 and 140 scheduled domestic flights per month, including both arrivals and departures, based on existing schedules. However, given the longer runway, it is anticipated that use of larger airplanes will facilitate fewer flights. The favourable orientation of the runway in relation to prevailing winds and elevation below cloud ceiling will result in fewer delays and cancellations. The larger runway will be capable of landing De Havilland Canada-8 (100, 300 and Q400 series) turboprop aircraft and will also be capable of landing larger Boeing 737-700 and 737-800 series airplanes.

Typical operation of the airport will involve scheduled landing of aircraft on the runway, taxiing to the apron for passenger and cargo loading/unloading, refuelling and de-icing (if needed), and back to the runway for departure. Additional details on operation activities are provided in the following subsections.

A shuttle bus will be operated to transport passengers between Nain and the airport. Details such as the frequency of shuttle trips and pick-up locations in Nain will be determined when the owner / operator structure is established.

An overall environmental protection plan will be developed for Project operations that describe environmental management practices. Operational activities include de-icing, fuelling, maintenance, waste management, wildlife, health and safety and emergency response.

2.2.3 Decommissioning

Closure, decommissioning, and reclamation is not anticipated as the airport will be essential for Nain for the long-term. The proposed infrastructure is anticipated to have a life cycle of more than 50 years. If closure and decommissioning are required, these processes will be subject to appropriate regulatory regimes at that time.

Areas disturbed during construction but not required for the long-term operation of the Project, such as the construction staging area and temporary access road, will be reclaimed after construction. Gravel and fill material will be removed and used re-establishing pre-construction contours, or used for other Project purposes (e.g., road and apron maintenance), or hauled back to Nain. Salvaged topsoil will be replaced and the area the areas will be seeded with an approved seed mix. Seeding will follow as close as possible to machine clean-up and surface material replacement pending seasonal or weather conditions. Areas within the fenced airport will also be revegetated.

The closure and decommissioning of the existing airstrip is not included as a Project activity.

2.3 Alternatives Means of Carrying out the Project

Various design options have been considered in Project planning including a discussion of alternatives for the Project overall, site selection process and development of specific Project components. A summary of these alternatives considered are as follows:

- Water supply considerations.
- Options analysis for power supply.
- The access road route has been selected to account for the presence of other land uses, an archaeological feature, wetlands, potential permafrost, streams and potential fish habitat, as well as to have a strong geotechnical road foundation.
- The access road will go through areas of steep terrain with avalanche potential. Construction will also require the creation of steep rock faces.
- Routing the access road from the northern side of Nain was not considered due to having to pass through the Provincially protected Trouser Lake Watershed (domestic water supply for Nain).

- Given limited aggregate resources at Nain, optimized cut and fill techniques will be used for development of the runway, airport, and access road instead of using the community quarries or overburden soils.
- Sewage will be treated in an on-site septic system instead of connecting to the community system.
- Most solid wastes from construction will be separated for reuse, construction and demolition disposal and removed from Nain for disposal elsewhere instead of using the community waste disposal site.

2.3.1 Workforce

Information on the expected workforce will be determined as feasibility studies progress, and the ownership/operation structure of the Project is established. Currently it is anticipated a peak, on-site construction workforce of 120 people will be needed for the Project. The composition of this workforce will change as construction activities progress. The average number of workers will also change based on the construction timeframe. For example, construction activities will be reduced in the winter. During operations, it is estimated that approximately 10 employees will be required at the airport during operations for direction, administration, security and baggage handling, and aircraft direction. An additional 10 employees are required for garage and warehouse staffing. Other contractors will be required periodically on site for solid and liquid waste removal, major maintenance, vegetation and weed control, and dust control.

2.4 Financial Information and Benefits

Detailed information on Project capital and operating costs, funding, employment and procurement are still being determined as part of ongoing feasibility studies. The NG has received \$3.45 M from the Government of NL and \$3.45 M from Transport Canada to conduct feasibility studies for replacement and relocation of the Nain airstrip. It is anticipated that the Project will be constructed using federal funding and other potential options, such as a public-private partnership model. As construction and operation of the Project does not include natural resource extraction, royalty regimes are not applicable. Financial security is not applicable to the Project. No abandonment, closure or site restoration is anticipated.

3. Consultation and Engagement

Consultation and engagement to date has been undertaken with the goal of forming meaningful, long-term relationships within the community and creating a collaborative environment where all perspectives are valued. To achieve this goal, engagement will continue to occur through multiple channels – email updates, virtual meetings, in-community Open House sessions etc. - to ensure transparency and community involvement throughout the Project's life span. The approach involves sharing Project insights gained from ongoing conversations with community members and stakeholders, ensuring that consultation efforts remain responsive of community needs and that community input is ultimately reflected in the final design and delivery of the Project.

3.1 Regulatory Engagement

Regulatory consultation for the Project began in 2023 during the desktop environmental review report for feasibility study which was prepared to determine potential Project-related regulatory requirements. Regulatory engagement is ongoing and has included the following government departments, agencies and their respective divisions:

- Impact Assessment Agency of Canada (IAAC)
- Nunatsiavut Government regulators / agencies:
 - Nunatsiavut Lands and Natural Resources (NLNR)
 - NLNR (re: camps and quarries)
- Newfoundland and Labrador Environment and Climate Change (NLECC)

- NLECC: Pollution Prevention Division
- NLECC: Pollution Prevention Division, Waste Management Section
- NLECC: Pollution Prevention Division, Petroleum Storage & Management Section
- NLECC: Pollution Prevention Division, Air Quality Monitoring Section
- NLECC: Pollution Prevention Division, Impacted Sites Section
- NLECC: Water Resources Management Division
- Newfoundland and Labrador Immigration, Population Growth and Skills
- Department of Digital Government and Service Newfoundland and Labrador
- Newfoundland and Labrador Fisheries, Forestry and Agriculture (NLFFA Wildlife Division)
- Newfoundland and Labrador Health and Community Services
- Newfoundland and Labrador Industry, Innovation and Technology
 - Mines Branch
- Newfoundland and Labrador Municipal and Provincial Affairs (NLMAPA)
- Newfoundland and Labrador Executive Council: Office of Indigenous Affairs and Reconciliation (OIAR)
- Other Federal Agencies
 - Fisheries and Oceans Canada (DFO)
 - Canadian Wildlife Service (CWS)
 - Transport Canada (TC)
 - Health Canada (HC)
 - Environment and Climate Change Canada (ECCC)
 - Department of National Defence (DND)
 - Natural Resources Canada (NRCAN)
 - Employment and Social Development Canada (ESDC)
 - Women and Gender Equality Canada (WAGE)
 - Indigenous Services Canada (ISC)
 - Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

These stakeholders have been invited to engage in further consultation as appropriate. Since early 2023, NG Infrastructure has requested meetings to present the Project, receive feedback on the regulatory requirements for the Project. Various regulatory consultation meetings and key correspondence were completed in 2023 and 2024. In addition to these activities, the proponent team has been in regular contact with EA regulators during this time. The proponent team has also contacted (or attempted to contact) other government departments to seek information related to the existing environment and potential permitting for the Project.

3.1.1 Indigenous Consultation and Public Engagement

As the Proponent, NG Infrastructure is committed to early engagement and meaningful participation, collaboration, and partnership with Indigenous communities, interested and public stakeholders

Consultation and engagement aim provide clarity and predictability on how the Project both positively and adversely affect communities. NG Infrastructure is committed to maintaining and upholding early and meaningful engagement with Nain community members including from Indigenous communities and the public. Throughout

the Project lifecycle, the proponent will assess the potential impacts of the Project while recognizing the Constitutional rights of Indigenous peoples in the stewardship of natural resources and lands.

Summary of the consultation activities undertaken by the proponent team (NG Infrastructure, OCTANT and AECOM) includes the following:

- The Proponent (NG Infrastructure) held a public information session in Nain on October 16, 2023. A presentation describing the Project was provided to about 25 attendees, including community residents, NG elected officials and staff members.
- IAAC held two virtual public information sessions on January 17 and 18, 2024. These meetings involved a presentation by the Proponent that provided an overview of the Project and status of the feasibility studies, including the environmental impact assessment. Attendees included IAAC representatives, Indigenous Services Canada (ISC) representatives, Proponent representatives (from NG, OCTANT and AECOM) and members of the public.
- NLNR held a virtual public consultation meeting on February 7, 2024. Attendees included representatives from the NG Infrastructure (the Proponent), IAAC, representatives from OCTANT and AECOM (proponent team), and members of the public (two attendees).
- NLNR held a hybrid meeting (virtual and in-person) on February 19, 2024. Attendees included representatives from the NG Infrastructure, IAAC, representatives from Octant and AECOM, and at least six members of the public. Due to inclement weather, NG Infrastructure, NLNR, OCTANT and AECOM attended virtually.
- Following the initial public information session in October 2023, Information Sheets and Frequently Asked Questions (FAQs) were developed and distributed to the broad community and stakeholder contact list in early 2024 was sent to attendees following the session as a valuable way of continuing to promote awareness and understanding related to the Project.
- The Proponent (NG Infrastructure) held an in-person Community Meeting in Nain on June 12, 2024. The questions and responses provided in the Community Meeting, as well as the follow-up consultation session on June 13th, 2024, were summarized to be shared back with the community.
- The Proponent (NG Infrastructure) carried out a series of targeted engagement activities to connect specifically with key community members, leadership and representatives, stakeholders, and Indigenous communities to discuss and determine their level of interest in being engaged with the Project. This outreach was conducted via email with different degrees of response.
- The Proponent reached out to the Nain Inuit Community Government, Hopedale Inuit Community Government, Sheshatshiu First Nation, Natuashish First Nation and the Innu Nation, the organization that formally represents the Innu of Labrador. The Hopedale Inuit Community Government Mayor advised that Hopedale does not need to be involved in the Project at this time but was interested in continuing to receive virtual Project updates. The Innu Nation organization responded that they have received the email and that the information was forwarded to the Innu Nation's Environmental Office. No responses were received from Sheshatshiu Innu First Nation or Natuashish Innu First Nation. The Proponent has since had two meetings with members of the Nain Inuit Community Government who have indicated an interest in continued Project updates and meetings at Project milestones.
- As part of the human-environment baseline interviews conducted through the human-environment baseline studies for the feasibility studies for the Project in 2023, engagement with Nain community members and/or interested subject matter experts was conducted by AECOM. An outcome of these human-environment baseline interviews was a list of questions received from a resident of Nain. As such, these questions become part of the Consultation and Engagement work for the Project.

3.1.2 Project Changes Due to Consultation Input

In response to early engagement and consultation activities for the Project, the proponent has incorporated several changes in the proposed Project design in response to requests or concerns. The changes that have been made to the Project to date are summarized below:

- Cold storage/freezer capacity: NG Infrastructure changed the airport site design to include a frozen goods storage and cooler rooms within the cargo warehouse at initial commissioning, rather than as a future development. This change is in direct response to community input requesting safe storage of frozen and perishable food and other goods that are often shipped into and out of communities via air travel.
- Known potential avalanche risk area: The route of the access road has been realigned to be positioned at a greater distance from an area locally known as Blowhole Pond that is a known avalanche risk area. The route has now been designed to be on a flat plateau approximately 70 m east and 45 m higher than the Blowhole Pass area. This re-route was completed in response to concerns raised by community members about the risk of avalanches.
- Kauk Brook and Arctic char: In response to the knowledge of the importance of Kauk Brook to the community of Nain and the presence of Arctic Char, mitigation measures were incorporated into the access road design to include mitigation measures that would reduce the impact of the road on the brook. Rather than constructing a culvert as originally planned, a bridge has been incorporated into the design to avoid impacting Kauk Brook.
- Dust suppression on gravel road: Community members raised concerns about the dust that would be produced from the establishment of a gravel road. In response, the Project team committed to applying a gravel stabilizer (originally limited to the runaway and apron areas) to the road to improve the operational and safety conditions (Section 2.2.1).
- Community drinking water source avoidance: There were concerns raised by community members regarding the access road's proximity to a local drinking water source known as Annainak's Brook. To address these concerns, the Project design team committed to avoiding upgrades to the access road near the brook.

4. Biophysical Environment

The biophysical environment near the Project has been characterized based on a review of publicly available data sources and field-collected data, where applicable. The description of the biophysical environment is needed to understand how Project development can impact current conditions, and subsequently design and implement measures to mitigate effects. Specific study areas, data collection methods, and descriptions of each biophysical component are summarised below.

4.1 Air Quality and Climate

The objective of the air quality and climate section is to characterize the baseline air quality and climate within the established study area for Project. The air quality and climate study area is 50 km by 50 km centred on the Nain airport. Any significant potential air quality effects at ground level due to PM₁₀, PM_{2.5}, TSP, NO₂, SO₂, and CO emissions from the facility are expected to occur within this study area. Five years of hourly air quality were used to develop background concentrations: from 1 January 2017 to 31 December 2021 for CO, from 1 January 2019 to 31 December 2023 for PM₁₀, PM_{2.5}, TSP, NO₂, and SO₂, and 1 January 2016 to 31 December 2020 for benzo(a)pyrene and benzene. Meteorological data were summarized from 1 January 2019 to 31 December 2022.

Situated in a remote area, like the proposed Nain airport, the IOCC Smokey Mountain was selected as the background station. Other nearby stations are in areas exposed to residential or industrial activity, making them unsuitable as a background station for a remote location. The SO₂ concentrations at IOCC Smokey Mountain station during 2019 to 2023 results indicate the following:

- Maximum 1-h, 3-h, 24-h, and 90th percentile SO₂ concentrations are below the Newfoundland & Labrador Air Quality Standard (NLAQ) over the period of five years
- Annual SO₂ concentrations ranged from 0.5 to 0.8 µg/m³ and were below the NLAQ of 60 µg/m³. The average of the five years is 0.6 µg/m³.
- SO₂ median 1-hour average concentrations showed minor diurnal variations with peak concentrations in the mid-day to early afternoon and minimums after midnight
- SO₂ median 1-hour average concentrations showed peak concentrations in April

4.1.1 Noise and Vibration

There are no anthropogenic sources of noise and vibration in proximity to the new airport, other than community land use such as hunting and plant gathering. Noise sources at Nain include general community activity (e.g., vehicular traffic), aircraft from the existing airstrip, and aggregate extraction from local quarries. A Project noise assessment will be completed before construction that will include estimation of current anthropogenic noise sources, as needed.

4.2 Soils and Terrain

The objective of the Soil and Terrain section is to characterize the baseline surface soil and topography within the Local Study Area (LSA) which is defined as the Project footprint (runway, airport, access road, rock borrow areas, construction staging area, temporary access road, and associated infrastructure) plus a 100 m buffer. The LSA accounts for areas that may be directly affected by the Project development and can account for potential shifts in the road alignment.

The dominant classes within the LSA are Brunisols and exposed bedrock, each comprising 33% of the LSA. Brunisolic soils are primarily found under Closed Black spruce vegetation type with gentle to moderate slopes. Organic rich surface horizons are common in this map unit and extend from the surface to 30 to 40 cm depth. These soils can be found to develop on coarse sands and gravels and finer textured surficial materials. Brunisolic soils due to their organic rich topsoils are easy to construct through and, with the surface organic rich surface topsoils, are good candidates for reclamation regrowth of forested and shrub species.

4.3 Groundwater

The objective of the groundwater section is to characterize the baseline hydrogeological conditions within the RSA. The RSA is made up of five surface watersheds (Section 4.4). The RSA is located within the subdrainage area Kogaluk and Notakwanon (03NE), which itself is within the drainage area Northern Labrador (03N). The RSA reflects the water catchment areas with water features intersected by the Project. The RSA was chosen to align with the surface water RSA since effects on these components are linked. The RSA is sufficient to characterize geology and hydrogeology conditions at a regional level. The baseline hydrogeological conditions within the RSA assessment included surficial geology, bedrock geology and hydrogeology.

Surficial Geology - Based on existing provincial documents, the most widespread surficial soils expected to be present in the Project area consist of fluvio-glacial and glacial deposits. Fine-grained glaciomarine soils may be present; however, only at locations falling below the reported marine limit (i.e., 20 to 40 m asl). These fine-grained soils, wherever present, are likely to be overlaid by other materials (e.g., fluvial and/or organic deposits). Based on a review of geological maps of the area, the area generally consists of greater than 80% exposed bedrock or concealed bedrock. Overburden sediments, where present, have been described as consisting of till and other surficial materials generally less than one metre thick and discontinuous. On the northern Labrador Peninsula, these sediments are characterized by extensive boulder fields, dominantly felsenmeer (Klassen et. al. 1992).

Bedrock Geology - Labrador is composed of segments of the Grenville, Makkovik, Nain, Churchill, and Superior structural provinces of the Canadian Shield, a region largely dominated by igneous and metamorphic bedrock

terrain (Roberts et al., 2006). The RSA is located along the eastern part of the Precambrian Shield, more precisely within the Nain Plutonic suite (or Nain Province) where bedrock is mostly composed of igneous and metamorphic rocks (Green, 1974; Wardle et al. 1997), which consists of coarse-grained, massive to well foliated, grey to bluish grey and buff anorthosite and gabbroic anorthosite, locally cut by mafic dykes, layered gabbro and anorthositic gabbro, gradational with and related to anorthosite plutons (Wardle et al., 1997). Bedrock was encountered at 63 test locations at depths ranging from 0 to greater than 22.0 mbgs (Stantec 2023).

Hydrogeology - the surficial geology (overburden) within the general Nain area including the vicinity of the proposed runway area consists of hydrostratigraphic unit of a combination of Exposed Bedrock and Drift-poor Area (Unit A) that is interpreted to have a relative very low yield with respect to groundwater development potential. However, overburden in the vicinity of the runway and northwest and northeast of the runway area are depicted (green) to consist of Glaciomarine and Marine Deposits and Glaciolacustrine Deposits (Unit D), which have relative low to moderate to high yield with respect to groundwater development potential. The typical hydraulic conductivity ranges for Unit D are as follows - Coarse Gravel: 10^5 to 10^3 m/d; Fine to Coarse Sand: 10^3 to 10^2 m/d; Silt: 1 to 10^{-4} m/d).

The bedrock geology within the general Nain area including the vicinity of the proposed runway area fall within the category of Unit 1 – Mafic Intrusive and All Extrusive Igneous Rocks (Anorthosite), which is interpreted to have a low yield with respect to relative groundwater development potential. However, Unit 2 – Granitic and Gneissic Rocks, which located northeast of the eastern end of the proposed runway, is interpreted to have a low to moderate yield with respect to relative groundwater development potential. Based on pump rate test data collected from 40 wells within bedrock Unit 2, the mean achievable pump rate is 28.7 L/min.

More recent bedrock mapping of the Nain area shows the bedrock geology within the general Nain area and partially within the vicinity of the proposed runway area. This more detailed geological mapping illustrates variances in bedrock types in the vicinity of the proposed runway; however, it should be noted that the bedrock suites depicted as: 1. Troctolitic Rocks 2. Anorthositic Rocks and 3. Mafic Ultramafic and Felsic Rocks Unit 1 category type rocks which have low yield with respect to relative groundwater development potential. The Granitic Rocks north of the proposed runway would be considered as Unit 2 category type rocks which have low to moderate yield with respect to relative groundwater development potential.

4.4 Surface Water

The objective of the Surface Water section is to characterize the baseline surface hydrological processes within the RSA. The RSA is made up of five watersheds. The RSA is located within the subdrainage area Kogaluk and Notakwanon (03NE), which itself is within the drainage area Northern Labrador (03N). The RSA reflects the water catchment areas with water features intersected by the Project. This includes Trouser Lake (74 ha in size) which is Nain's current water supply source. The RSA delineates areas where the Project could influence drainage patterns in the broader area.

The RSA boundary includes five primary watersheds, intersected by the Project infrastructure (Figure 4.4-1). Watershed characteristics are described from east (Nain) to west (New airport):

- Watershed 1 extends from PK 1+000 to PK 2+930 and drains an area of approximately 11.6 km² towards Unity Bay. Two of the main permanent watercourses are located in the watershed (Nain and Annainak Brook) as well as four small lakes between 4 and 6 ha. These waterbodies include Annainak's pond, the former source of the community of Nain's water.
- Watershed 2 extends from KP 2+930 to KP 6+850 and drains an area of approximately 8.8 km² towards Kauk Harbour. The watershed's main drainage feature is Blowhole Pond (7 ha) and its outflow stream. The rest of the hydrographic network is mainly composed of intermittent features related to wetland extents.
- Watershed 3 extends from KP 2+930 to KP 12+750, and is the main watershed draining an area of around 60.4 km² from north to south. It includes Kauk Brook, the permanent main watercourse in the study area, as well as Nain's current water supply source Trouser Lake (74 ha). The watershed features a dozen other large

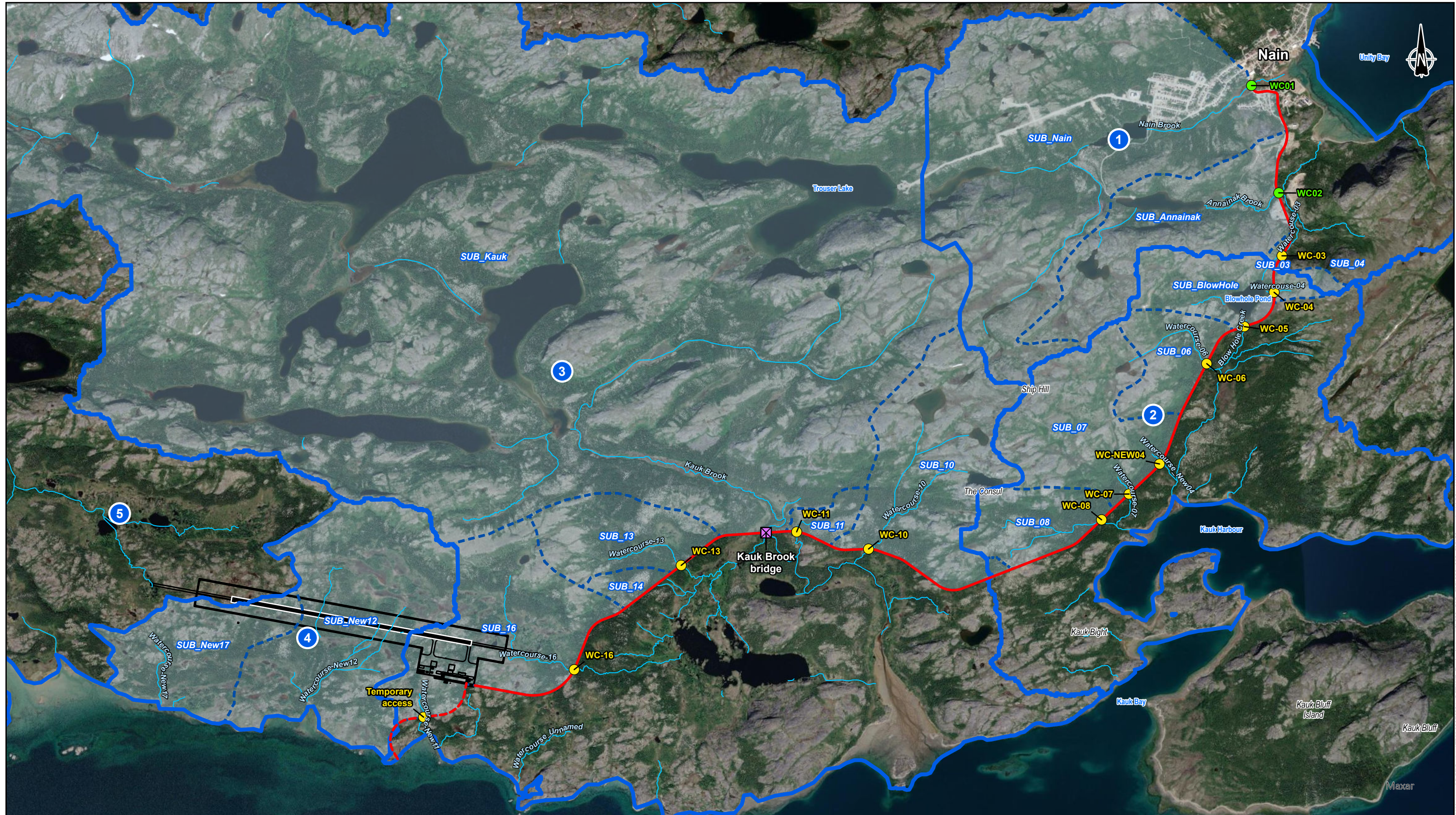
lakes (10 to 108 ha) and numerous intermittent water bodies associated with wetlands and the basin's geological configuration.

- Watershed 4 has a surface area of 3.8 km² draining to the south, and does not feature a large hydrographic entity. However, it does feature many wetlands associated with a complex network of intermittent drainage (ponds and watercourses). The majority of the proposed airport footprint is within this watershed.
- Watershed 5 also drains to the south and covers an area of 12.7 km². The hydrographic network is broadly similar to watershed 4, and the Project footprint is likely to impact only a very small area at the eastern end of the watershed (end of the runway).

A summary of the geomorphological characteristics and processes of the main watercourses located in the LSA boundary is presented in Table 4.4-1.

Table 4.4-1: Main Watercourse Geomorphological Characteristics and Processes

Group	Geology	Channel Pattern	Channel Slope	Bankfull Channel Width	Sinuosity	Streambed Materials	Geomorphic Processes
Nain Brook	Confined fluvial plain with cohesive valley walls	Single channel (step pool) to wandering	Estimated : 1.1%	25.4 m to 85 m	Straight	Fine + coarse + boulders	Anthropogenic impacts Aggradation
Annainak brook	Confined fluvial plain with bedrock walls	Stable meanders (pool and riffles)	1.8 %	≈ 7.4m	Slightly meandering	Fine + coarse + boulders	Aggradation
Watercourse-03	Confined Bedrock	N.A.	8.8 %	≈ 1 m	Straight	NA	Surficial layer incision
Watercourse-04		Single channel (Cascade)	2.9 %			Boulders	
Blowhole Creek	Mostly unconfined (Till with sporadic underlying bedrock)	Single channel (step pool)	3.0 %	≈ 3.5 m	Slightly meandering	Boulders + coarse	Stable
Watercourse-06	Unconfined (Till)	Single channel (pool and riffles)	6.6 %	≈ 1 m		Fine + Boulders	
Watercourse-new04	Unconfined (Till)	Single channel	22.5 %	≈ 0.3 m	Straight	Fine	
Watercourse-07	Unconfined (Till with underlying bedrock)	Single channel (Cascade)	23.3 %	≈ 3 m	Slightly meandering	Bedrock	
Watercourse-08	Transitional (Till)	Single channel (pool and riffles)	2.7 %	≈ 1 m	Highly meandering	Coarse + fine	
Watercourse -10	Confined (Till associated with fluvial sediments)	Single channel (Cascade)	8.4 %	≈ 3 m	Slightly meandering	Boulders + coarse + fine	
Kauk brook	Unconfined fluvial plain	Dynamic meanders (Dune and ripples)	0.1 %	≈ 15 m	Highly meandering	Fine + boulders	
Watercourse -11 and 13	Unconfined Organic blanket (wetlands)	NA	WC-11: 1.6% WC-13: 6.1 %	≈ 0.5 m	NA	Organic	Hydrological wetland connection
Watercourse -16	Unconfined (Till)	Single channel (undefined)	2.4%	≈ 1 m	Straight	Undefined	Stable



4.5 Vegetation and Wetlands

The objective of the vegetation and wetlands section is to characterize the baseline conditions of vegetation and wetlands within the LSA by compiling the results of the desktop assessment and field assessments. The baseline conditions for vegetation and wetlands included the following:

The Project is located in the Coastal Barrens Ecoregion of Labrador (Ecological Framework of Canada 1999). The ecoregion consists of sheltered inlets, islands, and coastal strips of exposed headlands from Napaktok Bay south to the Strait of Belle Isle. The six vegetation community types (forest, barren, developed, wetlands, shrubland, and water) identified during preliminary mapping were confirmed and refined during the field program. The Forest and Wetland habitat types were further split into subtypes based on dominant vegetation species and structure observed in the field.

The two dominate vegetation communities, closed black spruce/moss/lichen forest and the unvegetated/barrens/bare rock, cover approximately 67% of the LSA. Closed black spruce/moss/lichen forest are predominantly black spruce forest with occasional balsam fir and tamarack. unvegetated/barrens/bare rock are sparsely vegetated by lichen and/or ericaceous shrubs, largely devoid of trees, substrates consisting of bedrock or thin soil/organic matter over bedrock. Includes cliff faces & rocky outcrops.

The floristic list of the plant and lichen species observed within the LSA and the vegetation communities included a total of 123 species of vascular plants, nonvascular plants and lichens were identified during field surveys in the LSA. Of the 123 species, 92 are graminoid/forb species, 15 are tree/shrub species, 14 are moss or lichen species, and 2 are aquatic species.

As a component of the vegetation communities, 15% of the habitat within the LSA was determined to be wetlands. The dominant wetland classes within the LSA are fens and fen complexes comprising approximately 96% of the wetlands within the LSA. Fens located within the LSA were either open or treed fens. Treed fens were dominated by black spruce and tamarack in the overstory with some birch and willow species in the understory. Open fens were dominated by sedges, including water and star sedge, russet contongrass, and tufted clubrush with less than 10% of tamarack and black spruce. Standing water was usually present and the moss layer was saturated

There are 29 plant and lichen species at risk (SAR) that are known to occur in Newfoundland and Labrador. A total of 123 species of vascular plants, nonvascular plants and lichens were identified during field surveys in the LSA. Of these, twelve species are SOCC, listed as rare to uncommon. No plant or lichen SAR were observed. No exotic or invasive species were observed.

4.6 Wildlife and Migratory Birds

The objective of the wildlife and migratory bird section is to summarize the existing wildlife and wildlife habitat baseline conditions within the LSA and RSA by compiling the results of the desktop assessment and field assessments. The LSA delineates areas that may be directly affected by the Project development including sensory effects and zones of influence for species with small home ranges. The RSA delineates areas where Project effects may affect wide ranging species (e.g., birds of prey), indirectly affect a resource or affect resources in combination with other existing and planned projects or land uses. The baseline conditions provided a detailed discussion of wildlife valued components (VCs), SAR and SOCC.

Bird Migration surveys - The fall migration survey had a higher number of observations per minute than spring migration. Only four guilds were observed during spring migration while six guilds were observed during fall migration. Passerines had the highest number of observations per minute during spring and fall migration. The others guild (Canada jay and common raven) had the second highest observations per minute during spring migration. The shorebirds had the second highest observations per minute during fall migration.

Spring migration had greater species richness (24 species) compared to fall migration (17 species), but fall migration had higher species abundance (294 individuals) compared to spring migration (179 individuals). The difference in the number of individuals is primarily due to differences in flock size. Overall, the detection rate

during spring and fall migration was quite low compared to other areas as detection rates, total numbers of birds and flock sizes were low.

Only one SAR, the peregrine falcon (*Falco peregrinus anatum* - provincially Vulnerable, federally not at risk), was observed during bird migration surveys. There were no peregrine falcons observed during the summer avian survey and during helicopter flights near potential breeding sites on cliff faces suggesting that the species is not breeding in the LSA or RSA.

Summer Avian/SAR/Terrestrial Wildlife Surveys - A total of 227 individual birds (species abundance) of 26 species (species richness) was observed during the breeding bird survey. The yellow-rumped warbler had the highest breeding density followed by ruby-crowned kinglet, dark-eyed junco and fox sparrow. Two avian VC's were observed during breeding bird surveys: the gray-cheeked thrush (*Catharus minimus aliciae*, not at risk provincially and federally) and the rusty blackbird (federally Special Concern).

Autonomous Recording Unit (ARU) Survey - A total of 27 bird species were detected at ARU 3C during June and July, 2022. The most common vocalizations was from the American robin followed by the common redpoll. One VC, the gray-cheeked thrush, was detected frequently at ARU 3C. ARU 3C is within a black spruce/moss/lichen forest with a water body located 250 m to the southeast and bordered by an open tamarack/lichen forest to the north. The proximity of open, shrubland and aquatic habitat results in a wide range of species detected.

Given the habitat types available in the LSA, the avian species detected during various surveys conducted for the Project is fairly consistent with long term data records.

Bat survey - Bat acoustic data was recorded over 504 total detector nights in 2022 and 2023: 312 detector nights during the breeding season and 192 detector nights during fall migration. Three bat species were detected including the little brown myotis (provincially and federally Endangered), northern myotis (provincially and federally Endangered) and hoary bat. A small number of bat passes could only be identified as a myotis species.

Incidental Observations - A total of 286 individuals were incidentally observed during wildlife surveys including 49 bird species and 7 mammal species. Many of the bird species were already observed during systematic wildlife surveys including one SAR species, rusty blackbird. Bird species not detected during systematic wildlife surveys include American black duck, American three-toed woodpecker, common goldeneye, double-crested cormorant, great black-backed gull, ptarmigan species, and swamp sparrow. The mammal species included arctic hare, black bear, red squirrel, snowshoe hare and caribou. Harp seals were the most numerous incidental observations with 60 individuals in two groups on pack ice south of the RSA and east of Nain. Eastern migratory caribou (provincially Threatened) was the only new SAR species detected with six observations of tracks including a female with a calf. Most of the tracks are in close proximity and may represent fewer than six animals. Consultation with Inuit has confirmed that caribou are rarely observed in the area over the past decade.

4.7 Fish and Fish Habitat

The objective of the fish and fish habitat is to summarize freshwater and marine fish and fish habitat baseline conditions within the LSA. The LSA for freshwater is as defined by Fisheries and Oceans Canada and strategically chosen to align with the LSA for the Surface Water since both disciplines are closely linked.

Freshwater

Watercourses in this region generally flow toward the east and south, often through deep valleys. Bottom substrates consist of a high percentage of sand and gravel, and tributaries are often inaccessible to migrating fishes in some of the steep-walled canyons that parallel the main stems of rivers. Three major watercourses intersecting the proposed Project Area include Nain Brook WC-1, Annainak Brook WC-2 and Kauk Brook WC-12 (Figure 4.7-1). Crossing structures are currently present at the existing road crossings for Nain Brook and Annainak Brook but not at Kauk Brook. The LSA also overlaps Blowhole Pond and is the only lotic waterbody intersecting the LSA. Many of the watercourses that intersect the Project Area have the potential to provide habitat to fish populations known to be found in the Nain-Okak region of Labrador. Among freshwater fish species

that overlap with the Project Area or LSA, none are federal or provincial SAR freshwater or anadromous fish species.

From consultation with residents in Nain that are familiar with the fish in the region, there is low potential for Atlantic salmon (*Salmo salar*) or Arctic char in the watercourse crossings within the LSA, except for Kauk Brook. However, it was noted that there is high potential for brook trout (*Salvelinus fontinalis*), a salmonid, to occur throughout the LSA, which was confirmed during the FAFH field program.

Freshwater and anadromous fish species that have the potential to interact with the project. Arctic char, Brook trout and Atlantic salmon exists in both anadromous (migratory) and landlocked (resident) forms and eat a variety of invertebrates and fish which are distributed throughout the region. Certain populations of Atlantic salmon are listed SAR under the Species at Risk Act; however, the Labrador population is excluded from this.

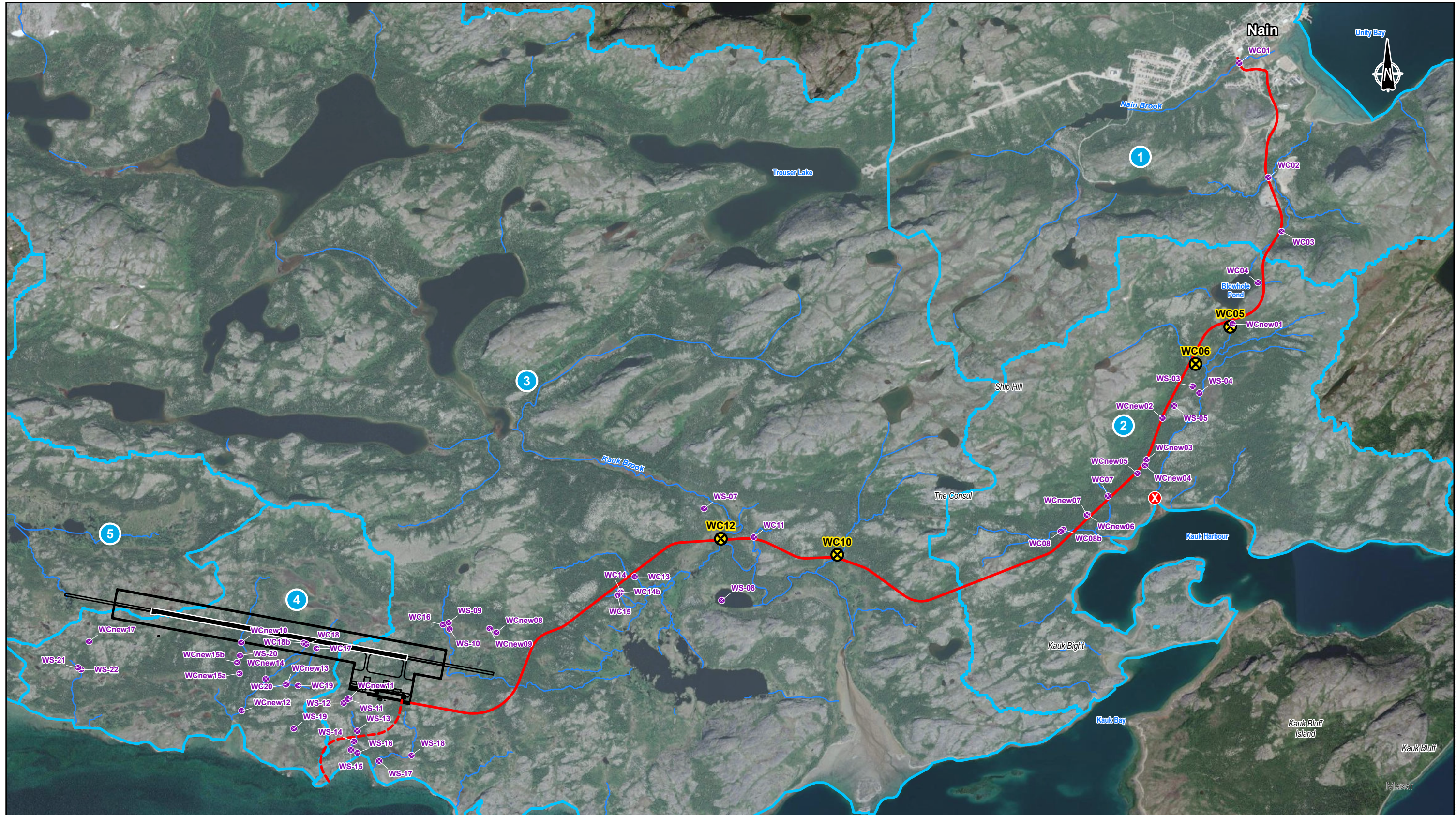
A total of 57 watercourses and waterbodies were assessed for fish and fish habitat during the 2023 field surveys. Among these watercourses, fish sampling effort was expended at five locations. No captures were recorded in Blowhole Pond and WC-05 and WC-06 (Blowhole pond outlet), despite fish habitat presence. For these watercourse crossings, downstream fish passage barriers were observed by the field crew (gradient >30%), suggesting the reaches at the watercourse crossings are potentially non-fish bearing. Additionally, no fish were captured at WC-08; however, field crews initially assessed the watercourse crossings as likely fish bearing, as no downstream barrier to fish passage was observed and suitable fish habitat was believed to be present at the crossing. Following fish sampling effort, WC-08's reach at the proposed watercourse crossings is classified as potentially non-fish bearing.

Fish were captured at WC-10 and WC-12 Kauk Brook, confirming fish bearing status. WC-12 is on Kauk Brook mainstem and WC-10 is a tributary of Kauk Brook. The fish species captured were brook trout and three-spine stickleback. Brook trout captured were all young-of-year (0+) or older. All captured fish were returned to the reach they were captured from. In addition to confirmed fish-bearing WCs (WC-10 and WC-12), two WCs are assumed fish-bearing, WC-01 and WC-02. WC-01 Nain Brook and WC-02 Annainak Brook were not field assessed due to its proximity to the existing road with crossing structures being present, which do not require upgrading for the Project.

Notable species that were not caught at the watercourse crossings, include the culturally important Arctic char and Atlantic salmon. Arctic char could reasonably be expected to inhabit in the major waterbodies of the LSA, but no individuals were observed during 2023 field program. However, it should be noted that Arctic char were captured in the Kauk Brook Estuary, 1 km west of Kauk Brook's terminus.

Watercourse crossing habitat, water quality and benthic invertebrate community were collected for select watercourse crossings receiving detailed assessments, including WC-05, WC-10, and WC-12. Benthic Invertebrates community information helps to inform of the food source presence for fish as well as provide an indication of disturbance or harsh conditions (which may be natural or due to disturbance). Benthic invertebrate summary statistics show WC-05 had a different community composition to WC-10 and WC-12. WC-10 and WC-12 are part of the same watershed, whereas WC-05 is in a watershed that is suspected to be non-fish bearing (while WC-10 and WC-12 are confirmed fish bearing).

Based on the above fish habitat characteristics, water quality sampling, and benthic invertebrate sampling conducted, evaluations for salmonid (brook trout, Arctic char) habitat suitability was completed for WC-05, WC-10, and WC-12. Due to the presence of young-of-year (+0), crossings WC-10 and WC-12 are considered nursery/rearing habitats.



Project Component / Composante de projet

- Access road / Route d'accès
- - - Temporary access road / Route d'accès temporaire
- Airport footprint / Empreinte de l'aéroport
- Runway / Piste d'atterrissage

Field Assessed Watercourses / Cours d'eau inventoriés sur le terrain

- ⊗ Watercourse crossing detailed survey / Inventaire détaillé de traversée de cours d'eau
- ⊗ Visited watercourse - fish habitat survey (WC) and Wetland survey (WS) / Cours d'eau visité - inventaire de l'habitat du poisson (WC) et inventaire des milieux humides (WS)
- ⊗ Fish barrier / Obstacle pour le poisson

Hydrography / Hydrographie

- ~ Watercourse / Cours d'eau
- Regional Study Area (RSA) - Project intersecting catchment / Zone d'étude régionale - Bassin versant traversé par le projet

1:30 000
0 250 500 m
NAD 1983 UTM Zone 20N

Figure 4.7-1
Visited Watercourse - Fish habitat survey (WC) and Wetland survey (WS) / Zone du projet montrant les cours d'eau, les plans d'eau et les obstacles au libre passage du poisson évalués lors des inventaires de terrain de 2023

Marine Fish

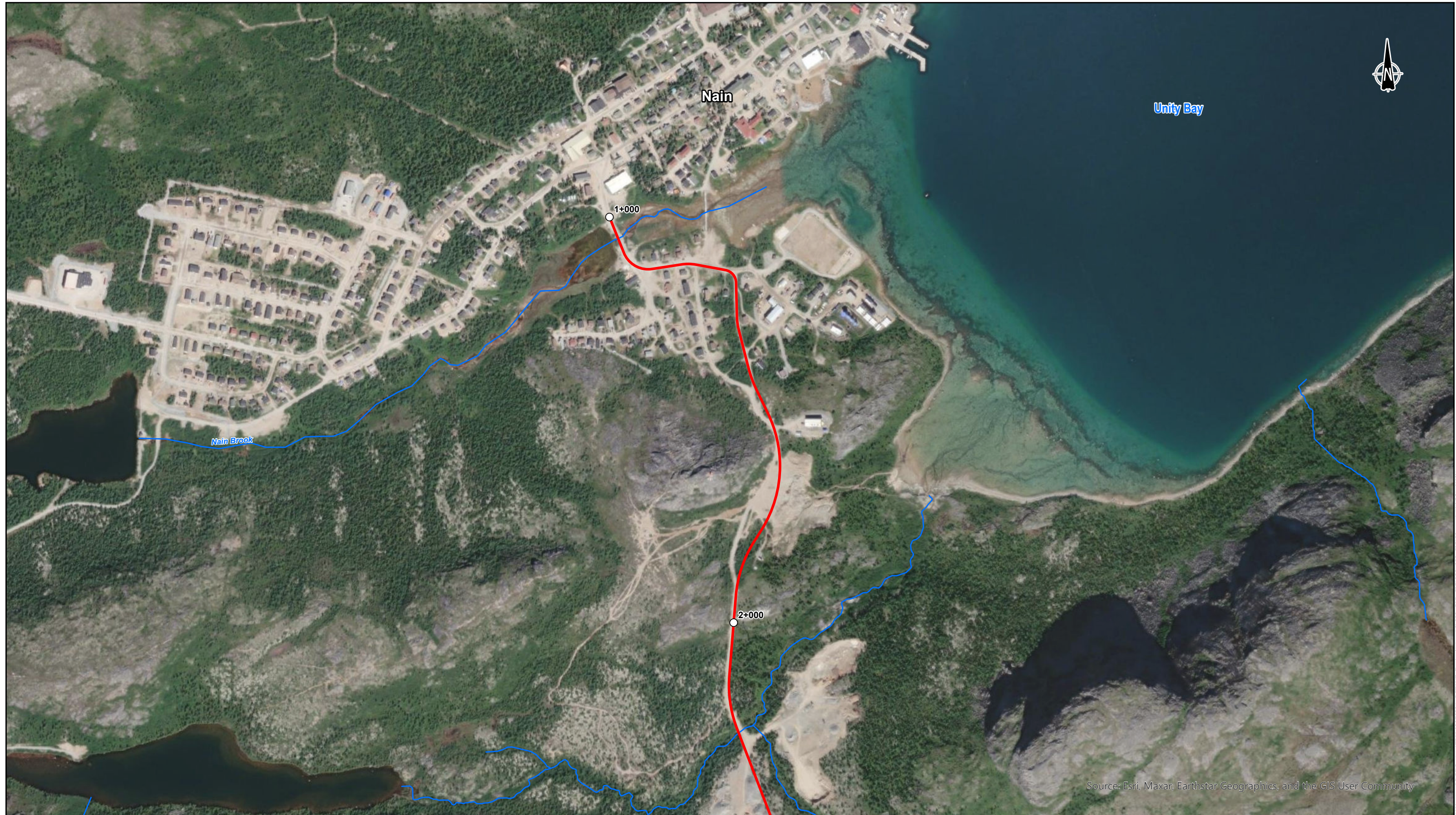
The proposed Project is adjacent to the Labrador marine coastline. In Nain, the proposed access road comes to within 50 m of the ocean (Figure 4.7-2). The maximum distance separating the proposed access road to the marine shoreline is 2.2 km, where the proposed road crosses Kauk Brook. Near the terminus of the proposed access road at approximately KP 12+000, an approximately 1 km long temporary access road, is proposed to connect the new airport footprint to the ocean for barge access during construction (Figure 4.7-3).

The shoreline environment of the proposed barge-landing site comprises a bedrock surface which extends eastward; the shoreline west of the proposed barge-landing site comprises a beach with finer sediments as well as scattered boulders and backshore vegetation. A brief inspection of the bedrock at the proposed barge-landing site appeared largely void of intertidal algae species, and displayed limited intertidal habitat components (i.e. limited algae, smooth continuous bedrock with little complexity). The beach intertidal habitat to the west of the barge-landing site; however, showed evidence of greater potential habitat for marine species by way of accumulated algae and/or kelp on the shoreline, more diverse substrates, and mature backshore vegetation.

Beyond the RSA, Nain and surrounding area fall with the 'Nain Area' Ecologically and Biologically Significant Area (EBSA), one of 15 EBSA's identified in the Newfoundland and Labrador Shelves Bioregion study area (DFO, 2013a). The Nain Area EBSA includes five bays (Webb Bay, Tikkoatokak Bay, Unity Bay, Akpiksai Bay and Voisey's Bay) that converge in an area along the Labrador coastline, and is the drainage basin for the Fraser River. Community-based Coastal Resource Inventory data identified a number of areas where aggregations of groundfish, pelagic fish, shellfish, marine mammals and aquatic plants occur within the boundaries of this EBSA. A capelin spawning beach was identified at an unspecified beach in the Nain Area EBSA based on both scientific data and Traditional Ecological Knowledge (TEK) (DFO, 2013a).

Nain's marine ecosystems provide critical benefits to residents. For example, the estuaries in Nain are highly productive, providing a variety of marine and anadromous fish to residents (e.g., salmon, arctic char, trout, capelin, and snow crab) (Fisheries and Oceans Canada, 2021). Unity Bay and surrounding areas are also noted to be highly productive for Arctic char, contributing significantly to juvenile rearing, as well as juvenile and adult feeding. Additionally, a population of spawning Atlantic salmon occurs in this EBSA.

A desktop search was conducted of marine and anadromous SAR species with the moderate likelihood potential to occur in marine environments within the Project LSA. Species of notable interest included Minke whales (*Balaenoptera acutorostrata acutorostrata*), harbour porpoise (*Phocoena phocoena*), beluga whale (*Delphinapterus leucas*), harp seal (*Phoca groenlandica*), Atlantic cod (*Gadus morhua*), Atlantic sturgeon (*Acipenser oxyrinchus*), Capelin (*Mallotus vilosus*), Arctic Char (*Salvelinus alpinus*) and Blue mussels (*Mytilus edulis*).





Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

5. Human Environment

The Human Environment section offers insight into how the Project might affect aspects of the environment directly relevant to human interaction within the study area. To comprehend these potential impacts, the Human Environment assessment examined population demographics, employment dynamics, housing conditions, community health and well-being, and the broader built environment. Understanding these factors is essential for evaluating current community conditions and predicting the Project's potential net effects on the human environment. In cases where negative consequences could arise, supplementary considerations were explored.

This section delineates these characteristics using data obtained through desktop research and insights garnered from human-environment interviews. These interviews, conducted with local community members and regional subject matter experts, validated existing conditions, the vision of the community, and evaluated the alignment or misalignment of the Project with future aspirations. By integrating perspectives from these diverse sources, we aim to identify potential impacts stemming from the Project on the human environment.

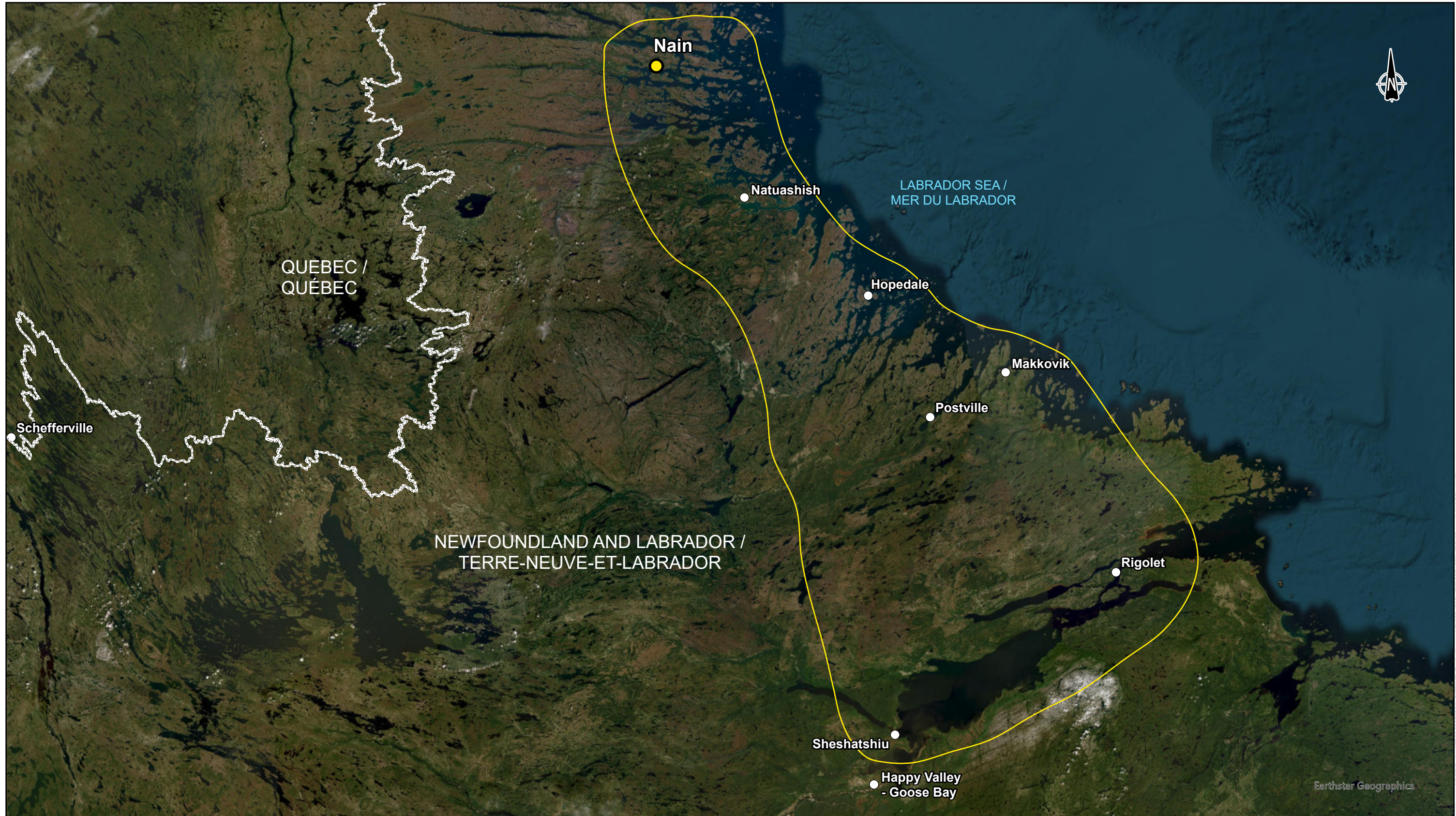
Nain, nestled in the heart of Nunatsiavut, serves as a vital cultural cornerstone for the Inuit community. However, its remote location poses significant transportation challenges. Presently, Nain's future is at risk due to the deterioration of its current airstrip infrastructure. The urgency to replace these failing structures cannot be overstated, as the New Nain Airport is more than just a convenience; it is a critical lifeline for the community's survival. With climate change intensifying the vulnerabilities of the current airstrip, the need for a dependable transportation hub becomes increasingly urgent. The Human Environment assessment conveys the profound impact of unreliable air service on fundamental community needs like sustenance, employment, shelter, and healthcare. In the absence of a viable alternative, the Project is pivotal for community resilience.

This new airport not only increases capacity but also introduces advanced features, ensuring Nain's connectivity with neighboring regions and beyond. To support alignment with efficiency and community needs, the Human Environment assessment also addresses concerns voiced by Nain residents and Nunatsiavut stakeholders.

Study areas for various components of the human environment study are presented on Figures 5.0-1 and 5.0-2. The community of Nain, NL is the focus area for this study. Nain is an Inuit community situated within the autonomous region of Nunatsiavut in northern Labrador, Canada. Nain is more broadly located within Inuit Nunangat, which is the Inuit homeland across Canada, and covers over 40% of Canada's land mass and 72% of its coastline). For the purposes of this study, the Inuit community of Hopedale was assessed for impacts in addition to Nain, given its proximity to Nain. In addition, the Innu Nations of Sheshatshiu and Natuashish were also assessed for impact.



<p>OCTANT EXPERTS EN SOLUTIONS POUR L'AVIATION</p>	<p>Project Component / Composante du projet</p> <ul style="list-style-type: none"> — Access road / Route d'accès - - - Temporary access road / Route d'accès temporaire Airport footprint / Empreinte de l'aéroport Runway / Piste d'atterrissage 	<p>Study Area / Aire d'étude</p> <ul style="list-style-type: none"> Land use study area / Zone d'étude de l'utilisation des terres 	<p>Labrador Inuit Lands / Terres des Inuits du Labrador</p> <p><small>Parcel number / Numéro de parcelle</small> 024-003X Labrador Inuit Lands / Terres de Inuits du Labrador (LIL)</p> <p> Nain Inuit Community Government / Gouvernement de la communauté Inuit de Nain</p>	<p>Hydrography / Hydrographie</p> <ul style="list-style-type: none"> ~ Watercourse / Cours d'eau 	<p>Other / Autre</p> <ul style="list-style-type: none"> Cabin / Cabine — Snowmobile trail / Piste de motoneige 	<p>1:37 000</p> <p>0 250 500 m</p> <p>NAD 1983 UTM Zone 20N</p>	<p>Figure 5.0-1</p> <p>Land Use Local Study Area / Zone d'étude locale de l'utilisation du territoire</p> <p style="text-align: right;">AECOM</p>
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5.1 SocioEconomic Conditions

In the region of Nain, the transportation of goods and services faces considerable constraints. Presently, the sole means of transportation to and from Nain are by sea and air. These modalities are subject to the unpredictability of weather patterns inherent to northern climates. Air travel is the only method in and out of the community year-round. Sea transportation is only available during months when the surrounding water remains unfrozen. During winter months, residents rely on air travel to transport goods since ferry services are unavailable.

The advent of a new airport promising 24-hour operational capacity, capable of accommodating larger aircraft, and strategically located in a less weather-affected area, holds promise for transformative effects on the accessibility of goods and delivery services to Nain such as food, business materials, and emergency repair materials. For instance, the utilization of larger aircraft with increased cargo capacity may potentially mitigate the cost burden associated with large air freight services, such as materials to make emergency repairs to housing, which has been noted as a concern for Nain residents throughout interviews.

Residents of Nain have access to a series of publicly funded roads which connect critical infrastructure in the town such as the airport, school, community center, and Touser Lake (water supply). These roads are confined to the community, and do not permit access from outside of the region. Ice paths in Nain have been used to access the lands surrounding Nain in late fall to spring months. However, climate change has caused the ice travel capability to have shorter seasons, melting earlier in the year and freezing later in the year. Transportation over ice is becoming increasingly dangerous with unexpected ice melts leading to thinner ice to travel on.

5.2 Demographics

According to a 2021 census data amendment, the population of Nain is 1,204 (Statistics Canada, 2021). It is important to note, however, that Indigenous communities may have lower rates of participation in census surveys resulting in reported population totals lower than reality. The population of Nain is characterized by its youthfulness, likely indicating a high birth rate, and it is steadily increasing. Nain also exhibits a higher proportion of residents aged 0-64 compared to the national average. The average age of Nain residents is 30.6 years, notably lower than the national average of 41.9 years. A significant portion of Nain's population, approximately 30%, falls within the age bracket of 0-14, contrasting with the national average of 16%. These demographic indicators suggest a youthful and expanding population, potentially indicative of elevated birth rates in the region.

Nain's population is predominantly Inuit representing 94% of the total population. The community has a small proportion of people who identify as non-Indigenous or First Nations (Statistics Canada, 2023). In contrast, more than half of the population of the whole of Labrador identifies as non-Indigenous, with Inuit being the second most represented group. English is the dominant language for more than 80% of Nain residents, followed by Inuktitut at approximately 15% (Statistics Canada, 2023). English is also the dominant language in Labrador and NL (Table 5.4-8) (Statistics Canada, 2023).

5.3 Social Determinants of Health

The Inuit community of Nain receives limited health resources due to its remote location and limited financial resources. The community has several concerns around health that are tied to issues such as food security, access to resources and medical professionals, as well as climate change. The information summarized in this section is limited by information uncovered during the desktop study. Much of the information is not specific to Nain but more general data collected about the Inuit in Nunatsiavut. Social determinants of health includes:

Access to health care, food security, food stability, drinking water quality and housing.

5.4 Economy and Labour Force

According to Statistics Canada (2021) the Town of Nain has a lower labour participation rate when compared to Canada. However, Nain has a slightly higher participation rate and a lower unemployment rate than the province of Newfoundland and Labrador. Residents of Nain often work in public administration, health care and social

assistance, and construction. Industry sectors in Nain include mining, quarrying, oil and gas extraction, and manufacturing. Nain has higher employment rates for these industries when compared to the average across Canada. These rates suggest that since the Nain labour force primarily operates in fewer industries and consequently might lack labour market security.

In 2021, more than 50% of the Nain workforce was employed in “Public Administration”, “Health Care and Social Assistance” and “Construction” (Statistics Canada 2023). Women were dominant in Educational Services, Health Care and Social Assistance and Retail Trade, while men dominated in other categories such as Agriculture, Forestry, Fishing and Hunting, Arts, Entertainment and Recreation, Construction, Mining, Quarrying and Oil / Gas Extraction and Transportation and Warehousing. Key employers in Nain including Nunatsiavut Group of Companies, Seafood Harvesting and Processing, Nunatsiavut Construction Inc, Voisey’s Bay mine, The Nunatsiavut Research Centre, Tourism.

5.5 Built Environment in Nain

Nain's built environment comprises public infrastructure, cultural spaces, community centers, art shops, and historical and tourist sites, all designed to reflect Inuit culture and the Arctic environment's distinctiveness. Recent efforts have focused on enhancing capacity-building development projects, although demand remains high for improved servicing of existing sites.

The NG provides services in cooperation with Inuit Community Governments and other agencies (NG 2023). Community services and areas of concentration include education, economic development, health, social development, language, culture, housing development and home repair programs. Nain also has a variety of commercial enterprises, including accommodations and food services. Municipal water and wastewater services by NICG provides a variety of community infrastructure and services, such as providing drinking water (Trouser Lake water supply), collecting, and treating wastewater and managing solid waste. The waste disposal site is near Nain on Akpiksai Bay, approximately 500 m from the airstrip. Residents are also known to collect untreated drinking water from a stream located between the community and the quarries. Power is supplied by diesel generators managed by Newfoundland and Labrador Hydro. Nain residents have access to two radio services, one of which also provides television. In February 2022, the Governments of NL and Canada announced funding to connect all remaining households in NL to reliable high-speed Internet by 2030 (NLEC and IET 2022).

5.6 Human Health Conditions

This provides an overview of the human health conditions prevalent in the Nain region. This includes an examination of physical health conditions, mental health aspects encompassing cultural influences, and the implications of climatic factors on health. Furthermore, specific attention is given to the considerations surrounding Country Foods, commonly referred to as Traditional foods. Changes to the environment which may affect human health are linked to the technical studies related to the biophysical determinants of health.

An understanding of the existing health landscape within the region is imperative for assessing the potential interactions of the Project with these health conditions. The analysis primarily relied on desktop research to gain insights into health conditions, albeit acknowledging its inherent limitations. In addition, primary data pertaining to Country Foods was gathered, with numerous samples subjected to testing for metals and PAHs (Polycyclic Aromatic Hydrocarbons). Furthermore, insights gleaned from interviews conducted with community members served to enrich our understanding of the potential health impacts of the Project within the region.

It is known that the lands around the community and proposed Project site are used for recreation and the procurement of country foods including hunting, fishing, and harvesting. Following from early engagement and consultation activities, an NG led Regional Land Use Study began in October 2023. Information will be collected from hunters and fishers from the local community. Additional information from this study related to the frequency and duration of land use for each purpose and if there is any seasonality associated with each use will be used as data inputs for development of human exposure estimates.

Country Foods are those foods which are procured from activities including hunting, fishing, and harvesting in the region. In the region of Nain, the top ten country foods include Fish, Caribou, Partridge (Ptarmigan), Seal, Berries, Char, Mussels, Rabbits, Porcupine, and Ducks. Sharing of country foods resources is widespread and is an important strategy for distribution that attempts to support as many members of the community as possible (Dombrowski, 2014). Though, the accessibility of country foods is hindered by various factors such as hunting bans, access expenses, and climate change impacts (Bowers et al., 2020; Food First NL, n.d.).

As country foods have become more difficult to access, residents have cited the need to supplement country foods with foods sourced from grocery stores in the region. However, Nain has the highest grocery costs of any community under the Nutrition North Canada federal government program.

Notably, climate change presents additional hurdles for acquiring country foods. The adverse effects of climate change have impeded community members' mobility across the land, consequently limiting their access to traditional foods. This restriction has been observed to pose potential risks to physical health within the community (Harper et al., 2015; Macdonald et al., 2015). Country Foods and country foods harvesting are important to the culture and livelihood of Nain and nearby communities.

5.7 Indigenous Peoples

In Nain, Inuit culture exerts a significant influence on both governance and cultural initiatives. Approximately 93.5% of the population identifies themselves as Inuk (Inuit pl.) in Nain, with approximately 31.6% possessing conversational-level fluency in Inuktitut (Statistics Canada, 2021). Being the administrative center of the Nunatsiavut Government, Nain also houses many important Inuit institutions. Examples include the OKâlaKatiget Society, the Illusuak Culture Centre, as well as additional language and cultural. Nain remains a crucial hub for Inuit culture and administration within the Nunatsiavut Region, emphasizing the need to prioritize its connectivity with other Inuit regions.

Inuit in Labrador have established Aboriginal rights under section 35 of the Canada Constitution Act, 1982; Nunatsiavut Beneficiaries also have treaty rights, including the right to harvest throughout the Labrador Inuit Settlement Area (NG 2005). The LILCA outlines the rights of the Labrador Inuit to domestic harvest in their territory which also dictates that Inuit in Labrador are the only individuals with the right to harvest wildlife and plants in Labrador Inuit Lands. The LILCA outlines conditions for hunting, trapping, and fishing in the LIS and non-Beneficiaries must obtain a permit from the NG to pursue any activities on Labrador Inuit Lands.

The Nunatsiavut Government (NG) was the first Inuit entity in Canada to attain self-governance, a milestone accomplished after several decades using a modern land claim process. The region of Nunatsiavut remains a part of the province of Newfoundland and Labrador. Still, it is autonomous in that it can make laws and holds authority over important parts of the region including health, education, governance, culture, and language. Self-governance enables the Inuit to better protect their land and resources, including benefiting from developments. It can also ensure Inuit culture and Inuktitut are taught in schools. The NG continues to strive for more autonomy and plays a critical role supporting, providing services to, and protecting the rights of Labrador Inuit.

5.8 Physical and Cultural Heritage

Limited archaeological studies have been conducted in Nain (Fitzhugh in LIA 1977). The remains of Inuit winter sod houses have been identified throughout Nunatsiavut along the Labrador coast from Hamilton Inlet north to Saglek. Where more extensive investigation has been undertaken on islands near Nain (including the Dog Islands), various sites hold historical resources mainly consisting of tent rings and sod houses, but also other items, including a small number of burial cairns and stone fox traps. Tent rings and other evidence of Inuit occupation have been identified around Nain and the Kauk Bight / Kauk Bluff Island area east of the Airport site.

A desktop Stage 1 AA was conducted for the Project that, based on the interpretation of landforms and previous research, divided the Project footprint into areas of high, moderate, and low potential for the presence of yet unrecorded archaeological sites. The Stage 1 AA recommended a Stage 2 AA that included examining all areas

with archaeological potential and revisiting the previously recorded site HdCk-47 that lies within the Project footprint.

The Stage 2 AA for the Project was conducted between the 3rd and the 7th of July 2023. The assessment included the excavation of 164 shovel test pits; all 164 test pits were negative for cultural material. The Stage 2 archaeological assessment also involved revisiting and evaluating the previously recorded site HdCk-47. The revisit of site HdCk-47 included further assessment of the site boundaries and it was determined to be restricted to a small area of less than 200 m² around the original positive tests. Although several lithic flakes were observed on the ground by the original tests, six additional shovel tests were negative for cultural material.

5.9 Land and Resource Use

The Labrador Inuit have established Aboriginal rights under section 35 of the Canada Constitution Act, 1982; Nunatsiavut Beneficiaries also have treaty rights, including the right to harvest throughout the LISA (NG 2005). Indigenous Peoples' right to fish for food, social and ceremonial (FSC) purposes is collective rather than individual, and catches may not be sold (DFO 2022c). Designated Indigenous harvesters may catch what is needed for themselves and / or their community for FSC purposes. The NG holds FSC fishing licences for Arctic char, salmon and trout throughout the LISA and licences for salmon, trout, Arctic char, smelts and seals in Upper Lake Melville (DFO 2019). Beneficiaries have the right to harvest at any time of the year throughout the LISA for any species or stock of fish or aquatic plants, up to the quantity needed for FSC purposes (NG 2005).

Overlap Agreements were established with Innu Nation and the Nunavik Inuit to allow harvesting by Labrador Inuit for FSC purposes beyond the LISA (CNLOPB 2021). Labrador Inuit travel north from Nain each summer to fish Arctic char, which is also a source of income (Pedersen 2016). The LILCA outlines conditions for hunting, trapping and fishing in the LISA. Non-Beneficiaries must obtain a permit from the NG to pursue any activities on LIL (NLDDFA 2022).

Indigenous Peoples, including the Inuit, have historically lived nomadic lifestyles, travelling seasonally throughout large territories harvesting a variety of fish, birds, terrestrial and marine mammals, and plants and other materials for food, medicines, clothing, tools, and spiritual and cultural practices. The traditional territory of the Labrador Inuit extends from Cape Chidley in the north to south of Groswater Bay; it also extends west to the Labrador-Québec border and includes a portion of the offshore area adjacent to northern Québec (LIA 1977).

Inuit use of land and resources included extensive exploitation of coastal and marine zones from the edge of land-fast ice to the head of the bays (Fitzhugh in LIA 1977). Despite major changes in settlement patterns and subsistence, Inuit people have continued to live off the land and occupy their territory. The main exception is that, due to relocation of the Inuit from Nutak and Hebron, Nain is now the most northerly settlement.

The most extensive study to date of Inuit land and resource use in Labrador was completed in 1976. An anthropologist along with local fieldworkers conducted interviews and prepared maps of land use in Labrador Inuit communities (LIA 1977). Mapping around Nain identified spring, summer, fall and / or winter Aullâsimavet in coastal locations on islands, including Satosoak Island, Akuliakatak Peninsula, Kauk Bight, Kauk Bluff Island and on Tasiyuyaksuk Brook and Anaktalik Brook that drain into marine waters (Brice-Bennett in LIA 1977). At that time, no Aullâsimavet were identified on the land proposed for the Airport and the Runway. Camps were identified in Nain, but the mapping is not sufficiently detailed to understand the spatial relationship with the Access Road.

Historic and current Inuit land use is primarily driven by the presence or absence of sea ice (NG 2018c). A 2008 report discussed resource harvesting around Nain, identifying key resources from spring to fall as Canada geese, migratory ducks, seabirds, eggs, seals (i.e., harp, ringed, harbour, grey and bearded), Arctic char, Atlantic salmon and polar bears (Hood 2008). During freeze-up and in the winter months, the Inuit were also known to harvest Canada geese (fall migration), harp and ringed seals and walrus. Caribou was the only species identified as being harvested year-round, though the preferred time to harvest caribou hides for clothing was September and October. The geographic range of caribou was known to vary over time; core winter concentration areas nearest to Nain were in the Kiglapait Mountains near Kingurutik Lake and between Tasisuak Lake and Anaktalik Brook.

Prior to the mid-1960s, caribou hunting had required lengthy trips up the Fraser Valley to the inner plateau about 80 km inland from Nain.

Many Inuit still undertake traditional land and resource use activities, including hunting, fishing and trapping, in the LISA. Key harvested resources, identified by at least 50% of households in 2007, included Atlantic salmon, Arctic char, caribou, eider ducks and eggs (Felt et al. 2012). Caribou are currently under a hunting ban, but each year a quota is approved by the Government of NL for sharing among Indigenous groups. For the Inuit, traditional food has important value beyond market criteria due to its cultural, social and nutritional qualities. In a 2012 health survey, 90% of Labrador Inuit (15 years of age and older) indicated that, in the previous 12 months, they had participated in hunting, fishing, trapping or gathering plants (Statistics Canada 2015). In coastal and marine environments, the Labrador Inuit harvest plants, berries, wood, animals, birds, marine mammals, fish and shellfish. Harvesters often return to the same areas year after year and many Inuit have Aullâsimavet outside their communities that they use for hunting, fishing, harvesting and recreation (NG 2018c).

Residents of Nain have a long and rich history of fishing, hunting, trapping and foraging from the land. The general area surrounding the Airport site has been historically used for berry picking, fox trapping and ptarmigan and spruce grouse hunting. In the past, the area was also used for caribou hunting, primarily from the George River Herd (LIA 1977).

A land and resource use study will be conducted by NLNR, independently of the proponent. The study is expected to be a comprehensive accounting of current land use activities in the broader region surrounding the community of Nain, independent of the Project. This will be achieved through various activities, including interviews and mapping exercises with Elders, leaders and harvesters (e.g., trappers), to understand activities and identify land users practising traditional and / or recreational activities. Relevant information obtained from the NLNR-led land and resource use study and will be incorporated into further Project planning..

5.10 Summary of Feedback in Nain

Primary data was collected from Nain residents and community leaders related to the existing community conditions and the potential effects of the proposed airport plan. This included a set of ten key informed interviews from anonymous participants who live in or have a direct relationship with the region of Nain. This section highlights key feedback from community members as it relates to the broader project, and the Human Environment workplan more specifically. Findings from the interviews were analyzed and coded into 15 topics which communities believed may result in positive or negative impacts in the region. The key theme includes

flight reliability, food security, health and safety for emergency evacuation, access road accessibility, and environmental impacts of constructing and maintaining a new airport.

Overall, interview participants were in support of the new airport project and recognized that it could lead to key positive impacts on the health of residents, food security, emergency preparedness, and the reliability of transportation. Other benefits that were mentioned was the possibility of improved housing conditions from emergency repairs, improved economic conditions, increased recreational activities along the Labrador coast, and improved connectivity with other regions.

Though participants often saw the benefit of constructing a new airport, there were many notable considerations. Potential negative impacts include the potential impacts to the environment including plant and animal life, the safety of travelling the access road due to avalanche risk and the distance required to travel, the temporary increase in foreign workers during construction, and the potential for service to remain inconsistent due to a lack of influence over airlines.

6. Potential Projects Effects and Mitigations

Activities associated with the Project have the potential to adversely and / or positively affect the environment and the community (health, social and economics). A preliminary assessment of the interactions of Project activities with the surrounding environment and the community is detailed in this section along with associated mitigation

measures. Identified effects are based on the current Project design and activities during construction and operations and within the spatial boundaries for each component. Where applicable, Valued Components have been selected to focus the preliminary assessment on key representative resources. The following subsections will provide a summary of the potential effects and how these effects can be avoided or mitigated.

Sources of potential interaction during construction include:

- Site preparation (e.g., vegetation clearing, soil stripping, excavation, rock blasting)
- Construction of infrastructure including temporary and permanent facilities
- Vehicle and heavy machinery transportation, use and maintenance of equipment
- Purchase of goods and services
- Presence of construction workforce

Sources of potential interaction during operations include:

- Operation of the airport and runway
- Use and maintenance of the access road
- Potable water withdrawal
- Waste and wastewater management and treatment
- Purchase of goods and services
- Presence of operations workforce

6.1 Air Quality and Climate

Project activities have the potential to affect air quality and GHG emissions through a range of sources, including:

Construction:

- Combustion of gasoline, and diesel produces NO_x, CO, SO_x, hydrocarbons, GHGs, and particulates.
- Generation and deposition of dust from blasting and vehicle/equipment use.

Operation:

- Combustion of aviation fuel, gasoline, and diesel produces NO_x, CO, SO_x, hydrocarbons, GHGs, and particulates.
- Aircraft tires release particulate as they are worn and burnt during take-off and landing, and dust can be generated during take-off and landing on gravel runways.
- Vehicles travelling to and from the airport, as well as ground service equipment on-site, generate air pollutants through the combustion of gasoline and diesel fuel. Power generation, and backup power generation, will also result in air emissions.

GHG considerations for Project design to date included the following:

- The airport will require energy generation for heating and lighting at the terminal. Due to the high cost of non-renewable energy sources and requirement for diesel back-up, a diesel generation system will be used at this time. However, the airport's diesel generation system will be modern and efficient.
- The airport will be independent of the current diesel system in Nain and, following decommissioning of the existing airstrip, the NG anticipates it will be possible to remove one of the existing generators from service.

- Operation of the airport is not anticipated to result in an increase in GHG emissions from flights when compared with operation of the existing airstrip. For instance, the Airport will accommodate larger aircraft with increased loads, resulting in fewer flights.
- The runway will be a gravel surface treated with a polymer that improves efficiency of aircraft on take-offs and landings.
- A more effective airport will result in reduction of fuel usage and wastage due to aborted flights (~50% of flights at Nain are cancelled). A more efficient airport will decrease the number of flights diverted from Nain. Flight diversions result in additional fuel consumed to fly to another airport and / or transport passengers to their original destination. Through reducing flight diversions, it may be possible for the operation of the airport to have a net benefit to GHG emissions and climate change.
- Fossil fuels will be used to operate mobile equipment during construction and operations.
- Use of the access road will result in increased GHG emissions from vehicles, but emissions are not expected to be greater than the reduction in emissions from flight diversions.
- The NG will follow all requirements for long-term mitigation measures to offset carbon use. Carbon neutral energy sources such as wind / solar will be considered in future as these become more effective and feasible in northern climates. The airport will be net-zero GHG by 2050.

These considerations will be confirmed as the Project design progresses. It is also important to note that the NG is implementing carbon neutral energy projects to reduce reliance on fossil fuels. These include the Nain Wind Micro-Grid Project and a 24-kW solar system at the Nain JS Community Centre, which is one of four solar installations in Nunatsiavut (NL Hydro 2023).

An initial estimate of GHG emissions associated with the Project based on the SACC guidelines is provided in Appendix H of the DPD. The GHGs assessed for the Project are carbon dioxide, methane and nitrous oxide, based on expected construction and operation activities as detailed below:

- Use of diesel-combustion construction equipment
- Rock blasting
- Land cover changes (deforestation and wetland loss)
- Operation of diesel-powered generators
- Incoming and outgoing aircraft flights
- Use of vehicles and equipment for general Airport operation
- Transportation to the airport along the access road

Direct emissions from construction of the Project are currently estimated to be 12,746 tonnes (t) CO₂ equivalent (CO₂-eq) and the direct emissions from Project operations (based on a 50-year Project lifespan) are 1,005,820 t CO₂-eq. For the purpose of the DPD, decommissioning emissions are assumed to be equivalent to construction emissions (12,746 t CO₂-eq).

It should be noted that the available data at this stage of the Project are insufficient to provide an accurate emission estimate; the current emission calculation has been developed using data currently available and professional judgement. The downstream and upstream GHG emissions were not included as per the SACC guidelines due to lack of information. As an example, emissions related to potential transport of equipment / materials / fuel to the site by barge were not included in the assessment. Also, the development of a temporary construction camp was not included in this assessment due to the lack of available data. This initial assessment focused on the new airport's construction, operations and decommissioning activities.

During construction, the existing airstrip will still be in operation. The existing airstrip's GHG emissions are not part of this assessment. Similarly, emissions from decommissioning the existing airstrip, overlapping with the start of

operation of the new airport are also not included. More detailed GHG estimates will be prepared as Project engineering design progresses and more information is available.

A summary of potential project effects related to air quality and climate is presented in the DPD (Section 6.1).

6.2 Noise and Vibration

The airport will be located approximately 12 km from Nain, while the existing airstrip is located in the community. From this perspective, the operation of the airport is anticipated to result in significantly lower noise levels at residential receptors in Nain when compared to the existing airstrip. Similar to air emissions, the most significant noise sources during Project construction are expected to be generators and mobile construction equipment, such as trucks and excavators. During construction, the existing airstrip will still be in operation. The existing airstrip's noise emissions are not considered as part of the Project.

Construction vibration is expected from the operation of mobile equipment during the construction phase of the Project in the areas surrounding new infrastructure (terminal building, parking, access roads, runway, and grading).

The most significant source of noise during Project operations will be aircraft take-off and landing. Other sources of noise during operations include taxiing aircraft, the application of reverse-thrust (an optional braking aid on landing), engine tests, vehicle traffic at the airport and along the access road, and airport building mechanical systems. As with emissions, the aviation industry has been successful in developing relatively quieter aircraft. Every new aircraft must comply with noise standards developed by the International Civil Aviation Organisation. Project operations are not expected to be a significant source of vibration.

The effects of noise pollution on human health can include loss of concentration, sleep disturbance and, in cases of prolonged or excessive exposure, hypertension and ischaemic heart disease. Potential effects to wildlife from Project activities vary greatly from species to species. Changes to ambient noise levels and presence of periodic vibrations have the potential to adversely affect wildlife migration patterns and behaviour. Potential effects to wildlife and migratory birds resulting from noise are further discussed in Section 6.7.

Before construction, the effects of noise and vibration will be assessed through an internal study using inputs obtained from Project sources. The study will identify Project activities and infrastructure that may adversely affect noise and vibrations and exceed accepted criteria. If criteria are exceeded, mitigation measures will be identified to meet criteria and general recommendations will be made to minimize potential effects. Depending on the source of noise and vibrations and applicable criteria, predictions at sensitive receptors are conducted differently (modelling) for facility noise, road transportation and aircraft noise.

A summary of potential project effects related to noise and vibration is presented in DPD (Section 6.2).

6.3 Soils and Terrain

Project activities, specifically during construction, have the potential to directly affect soils and terrain. During construction, the uppermost surface soil mineral and organic topsoil will be stripped to provide a stable surface for Project infrastructure. The salvaged surface soil and organic material will be stored and protected from disturbance during Project construction until it can be replaced for reclamation activities. Rock blasting will also occur to level out slopes for the access road and airport, and to access fill material for subgrade material.

Potential Project effects could include:

- Degradation of topsoil and upper organic soils from construction equipment operations and activities, admixing, rutting, compaction and wind and water erosion
- Wet weather impacts and wet soil conditions resulting in soil compaction and soil rutting
- Dry windy conditions, due to landscape valleys can result in wind erosion and topsoil loss

- Low lying depressional areas and sensitive organic soils which can affect moisture regimes and surface water flow over the landscape
- Permafrost areas, mineral and organic permafrost areas resulting in loss of ice layers and lenses and melting of subsoils leading to unstable land surfaces and reclaimed surfaces
- Disturbance of rock faces and rock walls especially the map unit steeply sloping rock face, making these steeply sloping areas unstable and susceptible to rock falls and landslides and avalanches in winter
- Alteration to exposed rock landforms through rock blasting for borrow fill material

The salvaged surface soil horizons will be placed in clearly marked and protected in soil storage (stockpiled) locations. These soil storage locations will be protected from further construction impacts and prepared to manage water and wind erosion. The mineral topsoil and upper organic soils will be stored to ensure surface water drainage is not impeded and that soil storage areas do not pond surface water around the soil stockpiles. Stockpiles will not be located where they can collect water or interrupt surface water flow or drainage.

A professional environmental monitor or inspector will be on site in the field during surface stripping operations to help guide soil stripping operations to ensure all suitable soil materials are salvaged. Soils stripping and topsoil depths will be placed on construction alignment sheets used during construction, identifying topsoil depth and colour of surface soils to be salvaged.

Surface soil stripping operations (i.e. topsoils and surface organic horizons) will be conducted under dry soil conditions as much as feasible which will protect soils against, rutting, compaction and soil admixing. Stripped surface soils will be stored in assigned soil storage areas which will be set up and located to protect soils against further degradation (i.e. wind and water erosion, water seepage and water saturation).

During operations, anticipated effects to soil include potential for contamination via fuel or chemical spill. A spill contingency plan will be implemented to mitigate this risk.

As the airport is expected to be in operation for greater than 50 years, and therefore details regarding decommissioning have not been developed. A decommissioning and reclamation plan will be developed as the airport nears end of life; it will be subject to appropriate regulatory regimes at that time. This plan will involve replacing salvaged surface soil material over disturbed lands to create reclaim lands similar to preconstruction soils suitable for revegetation of native vegetation and reclamation of the affected sites.

Areas disturbed during construction but not required for the long-term operation of the Project, such as the construction staging area and temporary access road, will be reclaimed after construction. Gravel and fill material will be removed and used re-establishing pre-construction contours, or used for other Project purposes (e.g., road and apron maintenance), or hauled back to Nain. Salvaged topsoil will be replaced and the areas will be seeded with an approved seed mix. Seeding will follow as close as possible to machine clean-up and surface material replacement pending seasonal or weather conditions. Areas within the fenced airport will also be revegetated.

A summary of potential Project effects and proposed mitigation measures is provided in the DPD (Section 6.3).

6.4 Groundwater

A preliminary groundwater investigation was undertaken to understand the viability of groundwater resources at the airport location. This program yielded marginal results from the investigative wells. These results, in combination with the lack of successful groundwater wells completed historically in the region, have indicated low confidence in the potential for groundwater as a potable water supply for the Project. Impacts to groundwater quantity from direct withdrawal have not been evaluated. In addition, an analysis of potential surface water sources indicates the expected peak potable water demand will not represent a substantial change in flow or water levels for those sources. Therefore, surface water withdrawal is not expected to influence groundwater

recharge. Overall, no impacts to groundwater quantity are expected as a result of Project construction or operation.

For groundwater quality, potential effects are related to the risk of accidental spills or releases during construction and operation, which could contaminate shallow groundwater. Sources of contamination could include vehicles, aircraft and equipment, fuel storage, transportation, and dispensing, and de-icing activities. A summary of potential project effects and proposed mitigation measures is provided in the DPD (Section 6.4).

6.5 Surface Water

Project activities have the potential to affect surface water in the area via several pathways. There is also the potential for effects to surface water to indirectly affect other environmental resources, including soils and sediments, vegetation and wetlands, fish and fish habitat, and wildlife and migratory birds. The main indicators of potential Project effects to surface water are:

- Changes to hydrology (via local drainage modifications resulting from construction and water withdrawal for airport operation)
- Changes to watercourse processes as a result of Project construction
- Changes to fish passage from Project construction, and changes to water quality from construction and operation

6.5.1 Hydrology

6.5.1.1 Drainage Modifications

Transport infrastructure can directly modify the drainage network in the LSA by intercepting flow path and routing it to surface water feature through ditches. This process can contribute to changes in the timing and extent of runoff and floods. These modifications may cause stream process modifications and alter both aquatic habitat and fauna. By altering surface or subsurface flow, road development can also lead to a modification of the hydrological functioning of wetlands and eventually result in a change in wetland composition and class (Trombulak, 2000).

For the main permanent and ephemeral watercourses identified, the Project includes the implementation of watercourse crossings (bridge and culverts) to ensure the continuity of flows under the access road. Airport components will be graded to allow for runoff drainage. Ditches will be situated a minimum of 75 m from the runway centerline on either side of the runway. The ditches will be 3 m wide to account for rock spalls and snow accumulation during the winter months. Reinforced concrete culverts will be installed to maintain drainage north to south across the runway and manage rainwater runoff and melting snow. The area in between the apron, taxiways and runway will serve as a runoff collection area, with a low point culvert drain that directs water east away from the airport.

Additional culverts and drainage channels will be created to facilitate overall flow of surface water across the runway and access road. Details on locations of these features will be determined at a future stage of design.

A preliminary assessment of potentially impacted wetlands was performed based on the Project footprint areas. Impacts would mainly result from runoff and small ephemeral watercourse being routed outside of wetland drainage areas. The most affected location would be the airport since it has the highest density of wetlands. As described above, additional design considerations will be dedicated to runoff management in the runway vicinity to maintain hydrological functioning and class of wetlands.

6.5.1.2 Water Supply and Distribution

The airport will require approximately 13 L/min (or 0.22 L/s) of potable water for domestic use at peak hour demand for the terminal and maintenance garage (e.g., washrooms) and fire suppression. Watercourses within a 3 km radius were evaluated as potential candidates for to supply the Project's water demand. Based on this analysis, Kauk Brook and the lake within catchment SW_Watercourse16B are considered the primary options for Project

potable water. Amongst the watercourses in the vicinity of the airport, Kauk Brook would be able to sustain 12 months of water withdrawal. Kauk Brook is also advantageous since an intake could be placed at the proposed bridge location, facilitating construction and maintenance access. Additionally, a pipeline for transporting water to the airport would follow the proposed access road corridor, removing the need for new disturbance. If Kauk Brook is selected, additional investigation will occur to locate a trench sufficiently deep to position the water intake and avoid freezing in winter.

The lake within the catchment of SW_Watercourse16 is also an acceptable candidate for water supply, since the analysis has demonstrated that the yield would be sufficient in the ice-free season. This lake is also reasonably close to the proposed access road, allowing for more feasible transport options. Based on community feedback from the June 12 open house, the other proposed water source options are shallow lakes similar to wetlands, and do not have the characteristics needed for a consistent water supply. If this option is selected, further analysis would be conducted to demonstrate sustainable yield during 4 months of winter withdrawal. Design modifications would also be considered such as additional water storage at the airport, so water could be withdrawn and stored during the ice-free season, and this additional capacity would be used during winter.

The NG will obtain a water use licence under the *Water Resources Act* before withdrawing water for the Project. The licence application will include an evaluation that demonstrates the sustainability of the proposed surface withdrawal for both construction and operations.

6.5.2 Watercourse Processes and Fish Passage

6.5.2.1 Guidelines

Construction of the access road will require the installation of either culverts or bridges to allow natural watercourses to pass beneath the road. The morphological study of the watercourses showed overall low potential for lateral mobility and sediment transport, especially for the ephemeral watercourses. Culverts are to be designed and installed appropriately to allow for sediment transparency and fish passage, primarily for permanent watercourses.

New watercourse crossings will allow for an unaltered passage of sediments, from upstream to downstream, to maintain the balance of the morpho-sedimentary processes. To avoid adverse impacts on the physical and ecological function of the watercourse, the location and design of an appropriate crossing will consider several hydraulic, geomorphological, ecological, and economic factors.

This approach shares many common criteria with fish passage design, allowing these themes to be addressed simultaneously. Except for bridges, open bottom structures are one of the best solutions to ensure free fish passage. The structure can maintain natural water flow conditions by conserving watercourses' physical features such as substrate roughness, slope and width, if footings are installed outside the wetted perimeter of the stream (Fisheries and Oceans Canada, 2022). Design of stream simulation culverts are based on the same principles.

The guides mentioned below provide reliable resources for better watercourse crossing design, considering geomorphic and fish passage principles:

- Water Resource Division, Newfoundland and Labrador (2018)
- Fisheries and Oceans Canada (2022)
- Fisheries and Oceans Canada (2016)
- Parish Geomorphic and Dougan & Associates (2004)
- Credit Valley Conservation Authority (2011)

6.5.2.2 Potential Impacts

Potential impacts linked to watercourse crossings can occur during the construction and operation of infrastructure. Temporary effects to surface water are possible during the construction process as watercourses are altered or diverted from their natural streambed. On the long-term aspect, improper design (diameter and slope) or routing of

runoffs (timing and extent of floods), can lead to changes in morphological processes (aggradation, incision) and the need to design corrective measures. Flow through culverts can also modify the structure of surrounding soils by promoting heat exchange through culvert walls (Hua, 2014). In permafrost conditions these exchanges can increase the risk of structural deformation (L'Hérault E., 2014).

WC-10 and WC-12 were identified as containing fish and therefore fish passage design at these watercourse crossings is required. WC-10 culvert will be fitted with baffles and energy dissipation pool to accommodate fish passage in accordance with DFO guidelines (DFO 2022a). No impacts on geomorphic processes and fish passage are expected at WC-12 (Kauk Brook) as the modular bridge will span the entire watercourse width.

Considering permanent watercourses, crossing design at WC-05 (diameter), WC-07 (slope) and WC-08 (internal culvert bed sizing and slope) will be adapted to match reaches characteristics and prevent detrimental morphological processes. Despite the lower mobility potential of temporary watercourses, complying with these recommendations is likely to limit maintenance costs (WC-04, WC04-new, WC-11, New culvert unidentified).

Potential impacts from the Project could also occur from surface water withdrawal. As described in Section 6.5.2, water withdrawal from Kauk Brook is a primary option for Project potable water. The installation of a water intake could lead to obstruction of fish passage and entrainment or impingement of fish-on-fish screens. Best practice provided by Fisheries and Oceans Canada (2022) notes that water withdrawal should be planned with consideration for maintenance of downstream flows and intakes will be equipped with fish screens (screening, netting or mesh) designed and installed in such a manner as to prevent potential losses of fish due to entrainment or impingement.

6.5.3 Water Quality

6.5.3.1 Sediment

Construction activities may produce sediment-laden runoff and suspended solids in aquatic environments, which can degrade both water quality and aquatic habitats (clogging) of nearby watercourses. Sediment production can result from sediment-laden runoff during precipitation events if erosion and sedimentation control measures are not implemented areas of exposed soil (stripped land, exposed embankments). The use of construction equipment in or near watercourses has also the potential to disturb sediments.

During Project operation, most sediment enters waterbodies from mass failure (Gilbert, 2021) and overflow from improper watercourse crossing design. However, surfaces of unpaved roads can drain fine sediments to surface water features and impact aquatic organisms and habitats.

6.5.3.2 Wastewater and Pollutants

During construction, the use of mechanical equipment can release other deleterious substances, including fuel or oil in the event of a spill.

Several potential contaminants will also be in use during Project operation, including maintenance and painting chemicals and domestic effluent from airport building washrooms and kitchens. Fuel could also be released from the on-site fuel tanks and refuelling stations in the event of an accident or spill. Road operation (vehicular traffic) can alter the surface water environment. Heavy metals derived from gasoline additives and road de-icing salts can be washed into watercourses and wetlands during rainfall. These contaminants have the potential to be leached into groundwater or contaminate stormwater runoff, which can pollute nearby watercourses. Sediment barriers will be installed around the edges of aquatic environments to prevent transport of fine particles during work (filter berm, sedimentation basins, worksite runoff diverted to vegetation area).

Airport wastewater will be treated on site using a septic tank and septic field. This system has been designed according to NL Private Sewage Disposal requirements and will be located at a minimum distance of 30 m from any watercourse.

The potential project effects and proposed mitigation measures is provided in the DPD (Section 6.5).

6.6 Vegetation and Wetlands

Desktop-derived data along with baseline data collected during field assessments were and will be used to determine the quantity and quality of wetlands and vegetation communities, potential habitat for rare plants and rare plant populations. Although Project construction activities may affect wetlands and vegetation communities to varying degrees, considerations are primarily related to potential effects on:

- Reduction of wetland areas and vegetation communities that include habitat for culturally important plants and SAR and SOCC plants and wildlife
- Reduction of biodiversity and traditional, SAR or SOCC plant populations
- Reduction in wetland function

Based on ACCDC data, two SOCC had been recorded within a 5-km radius of the Project. During the field assessments in 2023, twelve species are SOCC, listed as rare to uncommon by the ACCDC (S1 to S3S4) were observed within the LSA and no plant or lichen SAR were observed.

Project construction activities have the potential to affect vegetation and wetlands both directly and indirectly. Construction activities with the potential to impact vegetation and wetlands include vegetation clearing, laydown areas, excavation, stockpiling of material.

During operations, anticipated effects to vegetation and wetlands include potential for contamination via fuel or chemical spill. A spill contingency plan will be implemented to mitigate this risk.

Potential effects on vegetation and wetland that may occur during Project construction and operations are provided in the DPD (Section 6.6).

6.7 Wildlife and Migratory Birds

Project activities have the potential to affect wildlife and migratory birds both directly and indirectly. Project effects may be temporary or permanent in nature as there are no plans to decommission the airport. The assessment is focussed on VCs selected to be representative of broader groups of wildlife. VCs are identified with consideration from Indigenous communities, federal, provincial, territorial, or municipal authorities or entities, and the public. The following are criteria that were used to select wildlife VCs:

- VC presence in the LSA and RSA
- The extent to which the VC is linked to the interests or exercise of Aboriginal and Treaty Rights of Indigenous peoples, and whether an Indigenous group has requested the VC
- The extent to which the effects (real or perceived) of the Project and related activities have the potential to interact with the VC
- The extent to which the VC may be under cumulative stress from other past, existing or future undertakings in combination with other human activities and natural processes
- The extent to which the VC is linked to federal, provincial, territorial or municipal government priorities (e.g., legislation, programs, policies)
- The possibility that adverse or positive effects on the VC would be of particular concern to Indigenous groups, the public, or federal, provincial, territorial, municipal, or Indigenous governments
- Whether the potential effects of the Project on the VC can be measured and / or monitored or would be better ascertained through the analysis of a proxy VC

Based on the above criteria, a preliminary list of VCs include:

- Peregrine Falcon

- Red-necked Phalarope
- Short-eared owl
- Spruce Grouse
- Rusty blackbird
- Gray-cheeked thrush
- Little brown myotis
- Northern myotis
- Polar bear
- Eastern Migratory Caribou

Potential effects on wildlife VCs may occur during Project construction and operations are provided in the DPD (Section 6.7). Project-related effects to wildlife and migratory birds are possible via several pathways, including:

Construction:

- Reduction in the type and extent of habitats and habitat fragmentation from the Project footprint
- Disturbance from human activity, noise and light pollution

Operation:

- Bird strikes, vehicle collisions, incidental take, increased hunting
- Disturbance from human activity, noise and light pollution

Habitat loss occurs when infrastructure is constructed within previously undisturbed areas, destroying, fragmenting or degrading the habitat of flora and fauna. Habitat fragmentation occurs when a larger area of habitat is divided by roads, fencing or other infrastructure, creating barriers to foraging and migration. Habitat degradation reduces the attractiveness of the habitat for flora and fauna and may result from the removal of wetlands or vegetation, the introduction of invasive species, or contamination of surface water, sediment or soil.

Aircraft operation may result in bird strikes during take-off and landing and wildlife collisions with construction and operations traffic on the access road may occur. Approximately 85% of bird strikes involve aircraft below 800 ft and up to 40% of bird strikes take place beyond the airport perimeter (CAA 2001). Changes in avifauna song characteristics, reproduction, abundance, stress levels and species richness have been documented due to sustained noise pollution at sound levels greater than 45 A-weighted decibels (dBA). Noise pollution from the Project can result in behavioural changes, lead to changes in wildlife communities and alter species interactions (Francis et al. 2009).

The Project is in a remote location with no other disturbances currently on the landscape. Habitat availability is not a limiting factor for most species of wildlife in the area, including for the VCs selected for the assessment. Based on a preliminary review of habitat availability and Project details, impacts on wildlife are anticipated to be negligible. Of the VCs, red-necked phalarope, peregrine falcon and short-eared owl were not observed nesting in the LSA and RSA. Polar bears appear to occur infrequently in the area and based on discussions with a local hunter, are typically found further north. Eastern Migratory Caribou are also infrequently observed in the area around Nain and are typically found further north, despite the observation of a few caribou tracks during surveys.

Potential effects on these species, therefore, are anticipated to be negligible. Impacts on the remaining VCs (spruce grouse, rusty blackbird, gray-cheeked thrush, little brown myotis and northern myotis) are also anticipated to be negligible as the loss of habitat is expected to be low relative to habitat available for these species in the RSA.

6.8 Fish and Fish Habitat

Potential Project interactions, effects and associated mitigation measures related to FAFH are described in the DPD. Project activities have the potential to affect fish and fish habitat (FAFH) both directly and indirectly; effects may be temporary or permanent in nature. Direct effects may occur by alteration, disruption, or destruction of fish habitat through dewatering, infilling, or excavating watercourses, or death of fish may also occur by direct impact from equipment or materials. Indirect effects may occur by several pathways, including:

Construction:

- Flow reductions in watercourses by changes in corresponding catchment areas or water extraction
- Release of deleterious substances, including sediment-laden water caused by excavation and grading works, to watercourses
- Creating fish passage issues
- Operation of a marine vessels during construction to transport construction equipment and deliver materials
- Transport and use of construction equipment in or near water

Operation:

- Release of deleterious substances, including fuel or chemicals, to watercourses
- Impingement or entrainment of fish through water withdrawal or management activities

Project activities and physical works may affect different FAFH components to varying degrees. Issues are primarily related to potential effects on SAR or species of conservation concern; and death of fish and harmful alteration, disruption, or destruction of fish habitat (HADD), as prohibited by Sec. 34.4(1) and 35(1) of the *Fisheries Act*.

6.8.1.1 Freshwater Environment

There is potential for fish to occur within the freshwater watercourses and marine environment within the LSA. Fish were captured (brook trout and three-spine stickleback) within two watercourses (WC-10 and WC-12) intersected by the access road alignment during the 2023 FAFH field program. Remaining watercourses have existing crossings that will be used for the Project or have limited value as potential fish habitat. The access road crossing at Kauk Brook has been designed as modular, clear-span bridge, and culverts will be sized to allow fish passage with the inclusion of weirs and boulders for fish to rest. An aquatics monitoring program will be developed to identify and respond to direct releases to the water and if required, erosion and sediment control (ESC) measures (i.e., sediment fence) will be implemented between the edge of disturbance and any watercourses.

6.8.1.2 Marine Environment

During the initial phases of construction, equipment will be transported from Nain to the airport site via boat and coastal landing/staging area. A roll-on/roll-off barge will be used to ferry and offload workers, equipment and supplies. This process may affect the marine environment including marine fish and plant species, specifically through the presence of the barge in the tidal area and its ramp being lowered on to the shore. Minor preparatory work on shore (e.g., removal of large rocks, placement of gravel) may also be required to facilitate the offload of large equipment. No in-water works will occur in the marine environment as part of the Project (i.e., no infrastructure or disturbance below the natural water boundary); therefore, impacts in the marine environment will be minimized. Three marine SAR (i.e., fin whale and two species of wolf eel) were identified as having the potential to interact with the Project. However, if mitigation measures are followed, the Project is not expected to affect these SAR. The single barge for Project use will be part of a broader set of marine traffic already existing in the Nain area (marine /commercial vessels, ferry, community navigation smaller boat use). Environmental monitoring will be implemented during barge trips to observe and avoid marine mammals.

6.9 Human Environment

The Project will interact with several key Human Environment aspects in Nain. The key considerations in this section are supported and validated by stakeholders from Nain, to identify valued components align with community priorities for the Project. Key considerations within the Human Environment includes the way individuals travel and stay connected with others, emergency preparedness and healthcare access, food security, and broad airport logistics including how individuals will work at and use the airport.

This assessment investigated key aspects of the airport infrastructure project to understand how it impacts the local community. Evidence was gathered through desktop searches and community interviews to analyze existing conditions. These conditions were then compared with the expected changes from the improved airport infrastructure to see if they would have positive, neutral, or negative effects. Table 6.9-1 summarizes the evidence supporting these effects.

Table 6.9-1: Overview of Potential Project Impacts on the Human Environment

Valued Component	Potential Effects					
	Baseline Condition		Future with New Airport		Supporting Evidence	
	Negative	—	Neutral	●	Positive	+
Travel and Connectivity						
Flight Reliability	—		+		The new airport location and infrastructure upgrades proposed for the Project provide a unique advantage of accommodating 24-hour flights due to increased space and apron. This means improved reliability and reduced downtime, resulting in increased efficiency.	
Commutable Employment Opportunities	●		+		Community members note that improved flight reliability would enable them to fly to additional employment opportunities.	
Delivery of Goods and Services	—		+		Deliveries are often delayed in transit. Perishable goods often expire in transit due to landing delays at the current airport. More reliability of flights shortens shipping times.	
Emergency Preparedness						
Health Service Access	—		+		Community members cite having to wait multiple days for healthcare evacuations due to flight delays. More reliable service, less influenced by adverse weather, shortens this wait.	
Emergency Evacuation	—		+		Existing infrastructure conditions prevent planes from landing at night (e.g. no lights on the strip). New airport would have night landing infrastructure.	
Food Security						
Grocery Store Availability	●		+		Larger planes and less delays may enable more frequent grocery deliveries. Onsite airport storage may improve availability in the region.	
Cold and Dry Food Storage	●		+		Improved infrastructure at the airport will enable cold and dry food storage.	
Airport Logistics						

Safety of Travel to Airport	●	●	Proposed access road is further from community and will require vehicle access. Road is located near avalanche risk areas but mitigation measures limit risk.
Employment Opportunities	●	+	Proposed airport construction and operations would generate new employment opportunities. Potential for entrepreneurship tied to the airport (e.g. shuttle).
Human Health Impacts			
Community Health and Well-being	—	+	Airport activities can impact air quality, water quality, noise, and vibration. By relocating the airport outside of the community, impacts on residents may improve. Construction may result in additional temporary negative impacts on air quality.
Accidents and Malfunctions	—	+	Existing airport is degrading which may result in airstrip closures. The proximity from the community, altered flight path, and improved landing conditions may reduce likelihood of aviation incident in the community.

6.9.1 Land and Resource Use

Developments have the potential to result in land use conflicts where resources overlap with lands used for traditional purposes by Indigenous Peoples and / or used by residents.

The Project will result in changes in the landscape and access. Construction will result in direct disturbance to natural areas, leading to the loss (quantity / quality) of available resources (e.g., vegetation, wildlife habitat) related to land use activities, such as hunting, trapping and traditional plant gathering. Airport operation (e.g., vehicular traffic, aircraft noise) may also displace wildlife and further affect hunting and trapping in the area. Development of the access road will extend all-weather access into previously remote areas west of Nain; this may benefit land users who use conventional vehicles. However, the improvement in access may lead to an increase in land use activities in these areas, which may reduce resources and negatively affect current users. Some residents have expressed concerns that increased access may result in break-ins at camps.

A land use study led by the NLNR will seek information from Labrador Inuit / Nain residents on land use activities within the broader region surrounding the Project. Information obtained from this study will be used to further refine understanding of potential Project effects and identify mitigation measures. In addition, data have been requested from the NLNR on the location of Aullâsimavet (leased to Nunatsiavut Beneficiaries through the *Labrador Inuit Land Titles Act*) for identification of these locations.

Mitigation measures include:

- Project components have been, and will continue to be, sited to avoid where possible features known to be environmental sensitive and / or of cultural importance to the Inuit.
- Mitigation measures for Project effects on resources related to land use activities, such as vegetation, wildlife, fish and fish habitat, are described above.
- The Project will be developed in accordance with NG regulations and any applicable local and provincial land use regulations.

6.9.2 Community Health and Well-being

The Project will be less convenient to access from Nain, but the location will serve to reduce potential adverse effects (e.g., noise, air quality) on the community. The establishment of the Project carries the potential for generating waste products or emissions that may pose environmental hazards and impact human health and well-being. Information collected from biophysical and human environment components will be leveraged to assess the likelihood of such impacts, including the identification of potential exposure pathways and receptors.

The potential determinants for human health and well-being impacts, including baseline conditions and potential project effects are provided in the DPD (Section 6.9.6).

6.9.3 Accidents and Malfunctions

The Project will serve to reduce the likelihood of an aviation incident in the community, driven by the new location away from the community. Damage from sea level rise and storm surges on the existing air strip pose additional threats in the community.

The timely development of the Project may also eliminate the potential of airstrip delays and closure, as the existing airstrip continues to degrade.

Examples of type of accidents and malfunctions that may be anticipated for the new airport and the potential to impact human health are provided in the DPD (Section 6.9.7). Further consideration of these will be addressed in the human health impact assessment but is more appropriately addressed under the Emergency response section in accordance with the relevant Acts and Regulations such as operating an airport, transportation of dangerous goods, and roads and building construction.

6.9.4 Physical and Cultural Heritage

A stage 2 AA (AECOM 2024) was conducted for the Project footprint and submitted to Nunatsiavut Department of Language, Culture, and Tourism under the *Historical Resources Act* (RSNL 1990), C H-04 and the Labrador Inuit Land Claims Agreement (SNL 2004, C L-3.1). One site (HdCk-47) was confirmed within the footprint, and based on this information the access road was slightly rerouted to avoid the site. During construction the site area will be fenced and buffered by 30 m to avoid potential impacts.

A Project-specific "Chance Find Protocol" will be prepared and implemented in case that archaeological or contemporary land use sites, not previously identified, are discovered during Project construction. The protocol will also prohibit the collection of historic resources by Project personnel.

7. Cumulative Effects

Cumulative effects result from the combined effects of the Project and those of other activities (past, current or future) occurring in the same spatial and temporal boundaries. Potential cumulative effects could include: combined emissions/noise effects that cumulatively exceed thresholds, multiple project land disturbances interact which impact vegetation communities and wildlife habitat, and overlapping construction periods put pressure on the local community's services and infrastructure. The airport is expected to be under construction in 2027 and commissioned by the end of 2030. The airport is anticipated to operate for at least 50 years and remain in operation indefinitely with upgrades and renovations as required. Projects with the potential for cumulative effects includes Vale NL Mine, Nain Wind Micro-Grid, Strange Lake Rare Earth Project Mine, Road to Northern Labrador and Nain quarry development. Based on these listed projects there are limited identified potential cumulative effects as a result of the Project. Development of projects in the region with roughly the same construction timeframes may lead to increased maritime vessel traffic, particularly if equipment and materials are travelling from the same location. Overall, the development of the Project is expected to support other projects in the region by providing a more reliable source of air travel.

8. Conclusion

Air travel to and from Nain is critical for connecting the community to the rest of the world; it facilitates movement of food, medical supplies and other essential goods, maintains community access to necessary services such as healthcare and emergency services, and helps to maintain in-person contact with family and friends. The current Nain airstrip is inadequate due to its location and alignment. Issues from climate change (i.e., sea storm surges inundating the airstrip) result in erosion that presents risk the airstrip could become unusable on a short- or long-term basis.

Additionally, the New Nain airport will serve as a strategic mobilization point for the various exploration and mining projects in the future. Travel of staff for this regional development necessarily involves the use of air transport.

Development of the Project will provide Nain the critical infrastructure it needs to maintain and grow the community. A new, larger airport in a more advantageous position will:

- Remove surrounding mountains which allows for safer aircraft approaches
- Accommodate Simplified Short Approach Lighting System with Runway Alignment Indicator Lights (SSALR) which will allow for night flights
- Meet the requirements for instrument-based aircraft approaches, which will provide for more consistent and safer landings during inclement weather
- Allow for flexibility to use larger aircraft if needed

Given these characteristics the Project will increase the reliability of flights to Nain significantly, which will alleviate many of the concerns expressed by the community related to food security and medical evacuation capability.

Baseline environmental conditions have been characterized for the biophysical and human environment for within established study areas for each component. Project activities during construction and operation were evaluated to understand their potential of affecting baseline conditions. Decommissioning of the Project is not currently planned, and was therefore not considered in the evaluation of potential Project effects. A summary of the main identified effects are as follows:

- An environmental review was conducted in advance of road route selection. Identified archaeological sites were avoided and set back from the Project footprint, and potential permafrost areas and watercourse crossings were avoided to the extent practical.
- The airport will have similar air and noise emissions as the current airstrip. In general, the re-location of the airport 12 km away from Nain will reduce the air quality and noise impacts from airport operation on human receptors (e.g., residences).
- The access road will cross Kauk Brook, which is a key Arctic char fishing area for the community. A modular, clear-span bridge will be installed at the crossing location which will represent the lowest potential disturbance to fish habitat in Kauk Brook, and allow for complete fish passage. An aquatics monitoring program will be implemented during construction to identify and respond in the event of a sediment release. Operational monitoring of watercourse crossings may also be considered to maintain the aquatic environment.
- The main option being considered for airport potable water is Kauk Brook. An intake and pipeline that follows the proposed access road corridor would be constructed to convey water to the airport. Preliminary analysis indicates Project peak hour water demand will be a fraction (0.1%) of Kauk Brook's 0.25 mean annual discharge.
- The new airport location to the west of Nain will require a 12 km access road, portions of which will be through steep terrain with rock fall and avalanche hazards. An evaluation of the road route at each of these areas will be conducted before construction, and protective measures such as energy barriers and rockfall netting will be considered for installation to reduce safety hazards.

Further environmental and regulatory permits will be obtained as Project design progresses. A regional Land Use Study conducted by the NLNR will also be reviewed and incorporated into Project planning.

Overall, the identified environmental and socio-economic effects will be mitigated through the site selection process by avoiding sensitive areas where practical and adheres to regulatory requirements. As such, based on the environmental and socio-economic perspective this Project is feasible and should proceed with the mitigation measures and best practices during the construction and operations phases of this Project.

