New Nain Airport

Registration for Environmental Review / Registration Document / Initial Project Description

4 December 2023

Contents

Contents

Contents

Contents

Contents

Table index

Figure index

Appendices

Acronyms and Abbreviations

AC CDC	Atlantic Canada Conservation Data Centre
AD	Anno Domini (the Christian era in the Gregorian calendar, starting from 1 AD)
ACI	AECOM Consultants Inc.
ASL	Above sea level
ATV	All terrain vehicle
BCE	Before current era
BESS	Battery energy storage system
CAR	*Canadian Aviation Regulations*
CD	Census division
CE	Current era
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
CSD	Census subdivision
CWCS	Canadian Wetland Classification System
CWF	Canadian Wildlife Federation
CWS	Canadian Wildlife Service
DFO	Fisheries and Oceans Canada
DND	Department of National Defence
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
ECMWF	European Centre for Medium-Range Weather Forecasts
EDI	Equity, Diversity and Inclusion
EIS	Environmental Impact Statement (Government of NL)
ELC	Ecological land classification
ER	Environmental Review (Nunatsiavut Government)
ERA5	ECMWF Reanalysis v5
ESA	*Endangered Species Act*
ESC	Existing stream crossing

Acronyms and Abbreviations

ESDC	Employment and Social Development Canada
ETC	Extra tropical cyclone
FA	Federal authority
FSC	Food, social and ceremonial
GHG	Greenhouse gas
HADD	Harmful alteration, disruption or destruction (of fish habitat)
HBC	Hudson's Bay Company
HC	Health Canada
HHRA	Human Health Risk Assessment
HPCR	High-Pressure Common-Rail
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
IMTLR	*Information and Management of Time Limits Regulations*
INAC	Indigenous and Northern Affairs Canada
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*
LIM-AT	Low-income measure after tax
LISA	Labrador Inuit Settlement Area
LSA	Local Study Area
N/A	Not applicable
NEPA	*Nunatsiavut Environmental Protection Act*
NG	Nunatsiavut Government
NGC	Nunatsiavut Group of Companies
NICG	Nain Inuit Community Government
NL	Newfoundland and Labrador

Acronyms and Abbreviations

NLECC	Newfoundland and Labrador Environment and Climate Change
NLFFA	NL Fisheries, Forestry and Agriculture
NL Hydro	Newfoundland and Labrador Hydro
NLMAPA	NL Municipal and Provincial Affairs
NLNR	Nunatsiavut Lands and Natural Resources
NLOIAR	NL Office of Indigenous Affairs and Reconciliation
NO_x	Nitrogen oxides
NRCAN	Natural Resources Canada
OCTANT	OCTANT Aviation Inc.
OLS	Obstacle Limitation Surfaces
PAO	Provincial Archaeology Office
PM	Particulate matter
Project	New Nain Airport Project
PSC	Proposed stream crossing
RCMP	Royal Canadian Mounted Police
RCP	Representative Concentration Pathway
Registration	Registration for Environmental Review / Registration Document / Initial Project Description
RERI	*Regulations Regarding Environmental Reviews of Initiatives on Labrador Inuit Lands*
RPA	Regional Planning Authority
RSA	Regional Study Area
SACC	Strategic Assessment of Climate Change
SAR	Species at risk
SARA	*Species at Risk Act*
SEM	Sikumiut Environmental Management Ltd.
SML	Specified Materials Lands
SO_x	Sulphur oxides
TLH	Trans-Labrador Highway
TC	Transport Canada
TSP	Total suspended particulate
UAV	Unmanned aerial vehicle
US	United States

Acronyms and Abbreviations

VC	Valued component
WAGE	Women and Gender Equity
WGS	World Geodetic System

Units and Symbols

‘	Minutes
“	Seconds
^{o}C	Degree Celsius
%	Percent
<	Less than
>	Greater than
≥	Greater than or equal to
~	Approximately
#	Number
cm	Centimetre
ft	Feet
ha	Hectare
hr	Hour
k	Thousands
km	Kilometre
km^2	Square kilometre
kt	Knot
kW	Kilowatt
kWh	Kilowatt hour
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 Registration for Environmental Review / Registration Document / Initial Project Description (IPD) (Registration) for the New Nain Airport Project (Project). It is intended 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).

The Nunatsiavut *Regulations Regarding Environmental Reviews of Initiatives on Labrador Inuit Lands* (RERI; Part 3, Section 29) require a table of concordance to address factors set out in the Schedule to the *Nunatsiavut Environmental Protection Act* (NEPA) and in section 11.2.10 of the *Labrador Inuit Land Claims Agreement* (LILCA). Table 1.1 indicates the section(s) or page(s) where items identified in the Schedule (matters to be addressed in an environmental review (ER)) are addressed in the Registration.

Table 1.1 Table of Concordance for Nunatsiavut Environmental Review Regulations

Section 11.2.10 Requirement	Reference to this Document	
	Section	Page Number
(a) The definition and scope of the Project	1.3, 2.1-2.6	2, 20
(b) the scope of the assessment	1.7	12
(c) The purpose of the Project, the need for the Project and alternatives to the Project	1.4	4
(d) A description of the existing Environment and its relation to the Project	4.1-4.6, 5.1-5.6	37, 58
(e) Any Environmental Effects of the Project including the Environmental Effects of malfunctions or accidents that may occur in connection with the Project and any cumulative Environmental Effects that are likely to occur in combination with other undertakings, projects, works or activities that have been or will be carried out	2.3-2.5, 6.1-6.2, 7	25, 81, 94
(f) Impacts in Labrador Inuit Lands and the Inuit Communities and impacts on Harvesting by Inuit, Inuit land use and Inuit rights as set out in the Agreement	1.7.1, 1.8.2, 6.2	13, 14, 89
(g) The significance of the Environmental Effects and impacts referred to in subsections (e) and (f)	6.1-6.2	81
(h) The well-being and quality of life of residents in any community in the Labrador Inuit Settlement Area potentially affected by the Project	5.1-5.6, 6.2	58, 89
(i) Comments from the public	3.2	34
(j) Measures that are technically and economically feasible and that would Mitigate any significant adverse Environmental Effects of the Project	6.1-6.2	81
(k) Alternative means of carrying out the Project that are technically and economically feasible and the Environmental Effects of those alternative means	1.4	4
(l) The need for and requirements of a Follow-up Program in respect of the Project	6.1-6.2	81
(m) The capacity of renewable resources that are likely to be significantly affected by the Project to meet the needs of the present and those of the future	4.1-4.6, 6.1-6.2	37, 81
(n) The protection of the Environment and its eco-systemic integrity	6.1-6.2	81
(o) Inuit traditional knowledge	4.4-4.5, 5.3	43, 66
(p) The scope of the assessment factors referred to in subsections (c) through (o)	6.1-6.2	81

1.1 Proponent Contact Information

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.

Proponent Contact:	Colin Gilbride, P.Eng. Director of Infrastructure and Planning Nunatsiavut Government
Address:	P.O. Box 92, Makkovik, NL A0P 1J0
Telephone:	Office: (709) 923-2007 Mobile: (709) 899-0935
Email:	colin.gilbride@nunatsiavut.com
Web:	www.nunatsiavut.com

1.2 Name of the Project

The Project is called the New Nain Airport.

1.3 Project Overview

The NG is planning to build a new certified airport to replace the existing airstrip at Nain. The three main components of the Project, shown on Figure 1.1, are as follows:

– The Airport, which refers to the proposed terminal, equipment maintenance hangar, food cold storage / freezer building, apron, groundside parking and related facilities, as well as an area of 1,300 m^2 set aside for potential future development.
– The Runway, a new airstrip approximately 1,830 m (6,000 ft) in length and 30 m (100 ft) in width, exclusive of the apron (manoeuvring areas).
– The Access Road, a new road approximately 13 km long joining the Airport to Nain.

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.

OCTANT
EXPERTS EN SOLUTIONS POUR L'AVIATION

Project Component

- Alternative airport site
- Original access road alignment
- Access road
- Proposed temporary road
- Airport footprint
- Runway

Labrador Inuit Lands

- Labrador Inuit Settlement Area (LISA)
- Labrador Inuit Lands (LIL)
- Nain Inuit Community Government / Municipal Planning Area

Other

- Existing airstrip

Magnetic North / True North
-22°

1:50 000
0 500 1 000 m
NAD 1983 UTM Zone 20N
2023-11-14 13:55

Figure 1.1

Project Location and Alternative Airport Sites

AECOM

1.4 Need, Purpose, Rationale and Alternatives

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 October-November. 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 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 a 1 m (3 ft) buffer above ocean water (Figure 1.2). 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.

1.4.1 Existing Nain Airstrip

Being one of the few links to the rest of the world, Nain's airstrip is an essential part of community infrastructure. The most frequent and only year-round transportation method for food, goods and people at Nain is air travel. The airstrip is necessary for facilitating external medical appointments and emergency evacuations. Residents of Nain who work outside the community (e.g., at Vale's mine in Voisey's Bay) rely on the airstrip for commuting. Likewise, NG personnel and technical / professional service providers rely on air transportation to travel to Nain.

Due to design of the airstrip along with mountainous terrain and strong winds, flights are frequently cancelled at Nain. The existing Nain airstrip will continue to result in cancellations and potential safety issues when unfavourable weather conditions and crosswinds do not allow aircraft to use the airstrip.

The existing airstrip experiences frequent flight delays and cancellations, which affect delivery of essential goods such as food and medical supplies and movement of people in and out of the community. The inability to maintain flight schedules results in delayed medical treatment in larger centres (e.g., Happy Valley – Goose Bay (HVGB) and St. John's) and affects attraction and retention of workers in important sectors such as health care and education. The existing airstrip does not have sufficient length to accommodate larger aircraft.

The current 605 m (1,986 ft) airstrip is located on the seashore, at about 6 m (21 ft) above sea level (ASL). Three edges of the airstrip are exposed to the sea. At high tide, water rises to approximately 1 m (3 ft) below the airstrip surface, infiltrating it and causing erosion. The airstrip was constructed in the early 1980s at a time when no precautions were taken to protect it from the impacts of climate change. Today, climate change is a serious threat that will aggravate the already deteriorating situation, resulting in premature degradation of the airstrip and compromising the future of aerial operations at Nain.

The Nain airstrip is currently unusable much of the time due to poor site selection and adverse weather conditions. It is also experiencing the combined effect of the rise of the sea level and increased occurrence of storms, which is accelerating erosion of the coast on which the airstrip was built. Emergency closure of the airstrip would be catastrophic for the community, especially in winter when the ferry is not operating.

Airports and aerodromes in Canada are required to have an Airport Operations Manual, which includes procedures for maintaining safe runways, reporting incidents and responding to emergencies. The Operations Manual for the Nain airstrip, which is operated by Government of NL, includes an emergency response plan for incidents such as a plane crash. The Operations Manual does not include preparation for extended airstrip closure; equipment and materials presently on site at Nain are insufficient for major repairs or rehabilitation.

Addressing this issue is of critical importance to ensure public health and safety. A more reliable airport must be constructed away from the coast on the higher ground surrounding the community and oriented to address prevailing winds.

In Nain, fixed-wing aircraft remains the best and only means of year-round transportation of people, food and medical supplies and for emergency evacuations. The existing airstrip is precarious because of sea level rise, which is expected to worsen in the context of accelerating climate change. It is imperative that a new airport be constructed as soon as possible, as an analysis has concluded that the infrastructure cannot be upgraded at the current location.

Figure 1.2 Existing Airstrip

1.4.2 Transportation in Northern Labrador

Labrador's northerly communities rely on air transportation year-round. In winter, residents also use snowmobiles to travel between communities (NL Transportation and Infrastructure 2022). Marine transport is available in summer when ports are ice-free. The HVGB marine route is served by one ferry, which is only available for about five months of the year and, when it is operating, it takes three days to reach Nain from HVGB. The 877-km trip from Goose Bay to Nain stops in each community for loading and unloading and completes one return trip to Nain each week. Long shipping times, combined with the short marine season, result in higher costs for food, increased spoilage of produce and less availability of food and goods than in other areas of the province.

The Government of NL has initiated a pre-feasibility study for a potential extension of the Trans-Labrador Highway (TLH) into Nunatsiavut (NL Transportation and Infrastructure 2022). If constructed, the road would begin in the Lake Melville area and end at Nain with access to Postville, Hopedale, Makkovik, Rigolet and Natuashish. Due to its length / travel time and winter conditions, this road would not likely be a viable option for year-round travel or emergency transport for the most northernly communities.

1.4.3 Alternatives to the Project

As a result of ongoing issues at the existing Nain airstrip, the NG has considered the several alternatives, which include:

– Upgrading the existing airstrip at the same location; and
– Constructing new airport infrastructure, including an access road.

These alternatives are addressed below.

1.4.3.1 Upgrading the Existing Airstrip

In 2018, OCTANT Aviation Inc. (OCTANT) and AECOM Consultants Inc. (ACI) were engaged by the NG to identify opportunities for improvements at the existing airstrip that could be implemented to enable 24-hour operation and accommodation of larger aircraft, even in marginal weather conditions. For this purpose of this analysis, ground and flight operations on the airstrip were examined. The work included a site visit and interviews with the airstrip operator and airlines on August 7 and 8, 2018. A theoretical analysis was conducted to compare current aviation standards and regulations with those at the time when the airstrip was certified. OCTANT also assessed the risks and impacts of global warming and resulting sea level rise on the current airstrip. A summary of the results of this study follows.

The Potential Operational Improvements Assessment 2018 analysis concluded that the Nain airport infrastructure has reached the end of its service life and any improvements would be limited to a rehabilitation that would temporarily extend its usability (NG 2018a). The topography of the area is the primary constraint to potential improvements (Figure 1.1). Due to the coastal and mountainous environment (and the lack of adequate equipment and lighting), operations are restricted to day flights in accordance with Visual Flight Rules. Even with upgrades to equipment and lighting for night operations, the topography would prevent expansion of the airstrip and installation of instruments conducive to flight operations in poor weather.

The existing airstrip, at 6 m ASL, is at risk of accelerated degradation due to climate change. Sea level rise has resulted in higher tides and increased intensity of storm surges at Nain. These conditions will lead to erosion of the coastal banks of the airstrip, further limiting potential expansion and instrument installation. In addition, thawing permafrost will result in heaving of the airstrip surface structure and loss of load-bearing capacity. These factors present further barriers to potential improvements, as sea level rise is expected to increase annually due to climate change. Construction of new airport infrastructure would provide a more reliable and resilient alternative to the existing airstrip.

1.4.3.2 Constructing a New Airport

Following the 2018 report, NG engaged OCTANT and ACI to prepare a preliminary master plan, including site evaluation for new airport infrastructure at Nain. This study considered three candidate sites that lie within a radius of approximately 15 km to the south and southwest of Nain (Figure 1.1). Two sites were selected based on a 2008 study conducted on behalf of the Government of NL and a third was identified by OCTANT through analysis of aerial photographs and a low-altitude helicopter flight over the Nain area. This study, which was completed in 2020, included an on-site evaluation of the three potential sites by ground and air conducted in September 2019. A summary of this pre-feasibility study follows.

The three candidate sites were evaluated according to the following:

– Operational considerations, including obstacles in the Obstacle Limitation Surfaces (OLS), orientation along prevailing winds and altitude of cloud cover.
– Environmental and terrain features, including available space, topography, permafrost and shore erosion.
– Accessibility, including land access from Nain, proximity to Nain and ease of access from the sea.
– Future considerations, including the possibility of expansion.
– Constructability, including ease of access during construction, source of granular materials and ease of construction of the access road.

Site 1 (west of Meta Cove) is located at the following coordinates (World Geodetic System (WGS) 1984): N 56°31'9.02", W 61°40'59.10". The pre-feasibility study determined that the area available on Site 1 is too narrow to offer sufficient surface area to develop the necessary facilities and provide standard clearances. The lack of usable area would also prohibit installation of an approach lighting system and room for potential future expansion. The configuration of Site 1 does not align with the prevailing winds for aviation purposes. The altitude would also require steep grades in sections of the 2.1-km access road, which could be problematic in winter conditions. In addition, Site 1 is above critical altitude for cloud cover, making it unsuitable for landing aircraft. Lastly, several existing antennas could present obstacles and impede runway approach procedures.

Site 2 (southeast of Trouser Lake) is located at the following coordinates (WGS 1984): N 56°31'42.06", W 61°44'23.28". The pre-feasibility study determined that this site presents topographic constraints similar to Site 1: it is situated in a narrow valley that may not have enough usable area to accommodate all required facilities.

The slopes of the valley would require steep grades for the 2.5-km access road, which also could be problematic in winter. Site 2 is also above critical altitude for cloud cover. Like Site 1, several existing antennas could present obstacles and impede runway approach procedures. In addition, this site is within the Protected Public Water Supply Area for Trouser Lake, which is Nain's drinking water supply.

Site 3 (west of Delta, i.e., Kauk Brook delta) is located in a relatively flat area approximately 13 km southwest of Nain. It is bounded by the seashore at the following coordinates (WGS 1984):

– N 56 29'34.01", W 61 47'2.69"
– N 56 30'26.11", W 61 46'35.29"
– N 56 30'19.37", W 61 52'19.71"
– N 56°29'50.17", W 61°52'36.78"

The pre-feasibility study determined that Site 3 was selected as the most favourable location for new airport infrastructure. This site is located on a plateau 2 km wide and 10 km long, generally level and offering 4,000 m of usable length. It is large enough to allow development of the planned infrastructure: a 1,500 to 1,800 m runway, a taxiway, an apron and various buildings with a provision for potential future expansion. The plateau has bedrock outcrops in some places and is covered by light vegetation and evergreens in others. No permafrost was found under the Runway area. For Site 3, the required Access Road may be the most limiting factor. The 13-km route would have many curves and would pass through a gravel pit.

A potential site to the north of Nain near Akpiksai Bay was eliminated from the selection process due to its higher elevation, steep surrounding mountains and lack of a large plateau to accommodate the infrastructure. For safe approach and landing, airplanes require a long time to descend and stabilize and a large space without obstructions (e.g., mountains) on each side of the aircraft to protect it and enable it to manoeuvre at low altitude. Flights are often cancelled at the existing Nain airstrip, as aircraft are unable to descend safely in poor weather.

1.4.4 Alternatives Means of Carrying out the Project

Project planning and design are ongoing. In this Registration, Sections 2.2 and 2.3 present Project development information considered for temporary and permanent infrastructure and activities such as roads, aggregate sources, power supply, water supply and waste management. More information will be available as detailed design of Project components and activities (e.g., fuel delivery and construction planning) evolves and will be presented in R12: Environmental Impact Assessment. The principal selected alternatives are summarized as follows:

– Water supply will be from a groundwater source for the reasons explained in Section 1.5.3.1.
– Power will be produced by diesel generators with fuel storage at the Airport site. Alternatives considered are discussed in Section 1.5.3.2.
– Access Road design and route selection are underway and have been modified to account for the presence of other land uses, an archaeological feature, wetlands, potential permafrost, streams and potential fish habitat, as well as to ensure a strong geotechnical foundation. Section 1.5.3.3 addresses stream crossings and detailed Airport siting.
– The proposed alignment of the Access Road will go through the Blow Hole Pond area, which has steep terrain and is known for avalanches. The Project engineers (R8: Preliminary Engineering Services) are reviewing design options used in other snowy mountainous regions (e.g., the Rocky Mountains or the Alps) to reduce the risk of an avalanche on the Access Road. Design options include measures such as cutting slopes back or creating avalanche protection structures. The pass will be monitored for avalanche potential during operations, and snowpack management techniques (e.g., setting off controlled avalanches) can be considered for public safety if required.
– 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).

Other alternatives that were considered include the following:

– Given limited aggregate resources at Nain, optimized cut and fill techniques will be used for development of the Access Road, Runway and Airport instead of using the community quarries.
– Any facilities for construction workers will be at the Airport site instead of seeking accommodations in Nain.

– Sewage will be treated in an on-site septic system instead of connecting to the community system.
– All 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.

1.4.4.1 Potable Water

Sources of potable water in the Airport vicinity are currently under assessment. Given the preliminary findings of R4: Surficial Geology, Geomorphology, Permafrost, Geotechnical and Hydrogeological Investigations, a groundwater source is most feasible for the Project (subject to further testing). A desktop analysis has shown it would be technically complex to pump surface water, since most of the large waterbodies with adequate recharge are more than 2 km from the Airport site. Where municipal water services are not used, drinking water must be obtained from an approved off-site supply or from a dug / drilled well located and installed in accordance to the Sanitary Dug Well pamphlet. All surface supplies should be boiled or chlorinated prior to consumption.

1.4.4.2 Power Supply

R7: Electrical Power Supply Alternatives evaluated two main electrical supply options: a hybrid renewable-diesel option and a fully diesel option. The analyses are based on the following criteria:

– Technical (power generation, active operation time, efficiency, energy system reliability and security, storability, location, safety and training);
– Environmental (air pollution, noise pollution, land usage, water pollution, gas emissions);
– Economic (return on investment, payback period, total annualized cost, taxes and tariffs, economic lifetime); and
– Social (job creation, governmental support, social awareness, social trust, fairness).

Various hybrid solutions were explored to assess the effectiveness of the electrical supply, as well as necessary capital investment and resulting operational costs and greenhouse gas (GHG) generation. Budgetary estimates, equipment performance, fuel usage and fuel prices were determined based on past projects, experiences, current market prices and Project location.

1.4.4.2.1 Diesel Generator Option

The diesel generator option entails relying entirely on diesel generators for power generation. Since the maximum estimated load is currently at 975 kilowatts (kW), the proposed option suggests using three 500 kW generator units. This setup is based on having a contingency, which would allow the entire load to be handled by two units in case of a fault or maintenance on one unit.

The budgetary cost for procurement, shipping and installation of a 500-kW diesel generator unit is $200,000. The typical hourly loading is determined to be an average load of 66%, approximately 600 kW. Regarding diesel fuel costs, according to Natural Resources Canada (NRCAN), the highest daily average retail price for diesel in 2023 was $2.60/L in Labrador City, the lowest was at $1.67/L, and the average was approximately $2.00/L. To account for rapid fluctuation in diesel fuel costs, the average price of $2.00/L is used.

Using an average load of 600 kW, a yearly electrical consumption was calculated by estimating the generators would run 24 hours a day, 365 days a year. For a one-year duration, the estimated total energy consumption amounts to 5,256 MWh. This would require approximately 1.5 M L of diesel fuel (around 30,000 L per week), resulting in an annual diesel fuel cost of $3 million. This amount of fuel would require a $13.75 M capital investment for the infrastructure required to receive, transport to, and fuel the generators. Diesel generators would also require a $100,000 capital investment to construct a suitable building for their installation.

1.4.4.2.2 Hybrid Option

This option involves a combination of solar, wind, battery storage and diesel energy. Since the capital investment and fuel usage depend on the installed capacities of each energy source, multiple scenarios were simulated using typical renewable generation data. For diesel capacity, two 500 kW generators were considered. The generators would be able to supply the entire load in case of failure of renewable sources. Various installed capacities for solar (kW), wind (kW) and battery energy storage system (BESS) (kWh) were simulated. The costs provided for renewable sources include procurement, shipping and installation of the equipment.

The following scenarios for electrical supply sources were analyzed:

– Base Scenario: Fully powered by 1,500 kW of diesel. No renewables or BESS.
– Scenario A: Partially powered by 250 kW each of solar and wind, 500 kWh BESS and 1,000 kW of diesel.
– Scenario B: Partially powered by 500 kW each of solar and wind, 1,000 kWh BESS and 1,000 kW of diesel.
– Scenario C: Partially powered by 500 kW each of solar and wind, 2,000 kWh BESS and 1,000 kW of diesel.
– Scenario D: Partially powered by 500 kW each of solar and wind, no BESS and 1,500 kW of diesel.
– Scenario E: Partially powered by 500 kW of wind, no solar or BESS and 1,500 kW of diesel.
– Scenario F: Partially powered by 500 kW of solar, no wind or BESS and 1,500 kW of diesel.
– Scenario G: Partially powered by 1,000 kW each of solar and wind, 1,000 kWh BESS and 1,000 kW of diesel.
– Scenario H: Partially powered by 2,000 kW each of solar and wind, 4,000 kWh BESS and 1,000 kW of diesel.

Detailed analysis of the available capital and projected operational budgets of the Airport is crucial to selecting an optimal energy solution. This analysis will help ensure that the chosen option aligns with the financial resources and operational requirements of the Project.

1.4.4.2.3 Back-up Generator

It is essential to ensure that the entire load of the Airport can be fulfilled by conventional diesel generators. In all power supply options examined, a minimum of 1,000 kW of diesel generation was considered. In scenarios where BESS was not included, an additional 500 kW generator was added. Regardless of the scenario, the Airport's maximum load can be met in case of a generator or BESS failure.

1.4.4.2.4 Recommendations

The results of these analyses point to prioritizing a renewable energy mix consisting of solar, wind and BESS. Although these solutions require a substantial initial capital investment, they have the potential to achieve an return on investment in approximately 20 years for some options outlined. To determine the optimal placement of wind turbines and solar equipment, it is advised to gather additional weather and site-specific data.

R7: Electrical Power Supply Alternatives recommends conducting a thorough feasibility study on selected scenarios. The Project requires an independent power system as local systems do not have sufficient capacity. Integration of renewable energy solutions, such as solar panels and wind turbines, aligns with sustainability goals by reducing the environmental impact of Project operations. Through proper site selection, pre-construction surveys, equipment placement optimization and advanced monitoring technologies, alternative electrical sources could be implemented to minimize environmental impacts and increase social benefits while providing sustainable energy.

1.4.4.2.5 Greenhouse Gas Reduction

An integral part of renewable energy use is reduction of GHG, which was considered for all scenarios examined and compared with the base scenario where no renewables were included. The calculations are based on the GHG Equivalencies Calculator provided by the United States Environmental Protection Agency.

The Government of Canada has implemented a carbon pollution pricing that should be accounted for when evaluating electrical supply scenarios. The price per tonne of GHG in 2022 was $50 and will increase by $15 per year starting in 2023. For the purposes of this analysis, $65 per tonne was used. Using diesel and renewable generation results, carbon pricing for the estimated yearly CO_2 emissions from diesel generation and savings from CO_2 emission reductions by renewable generation are calculated.

1.4.4.2.6 Modern Diesel Generation Systems

The diesel energy source planned for the Airport will be a modern efficient energy system. Diesel engine efficiency is connected to combustion rate or the degree to which fuel is completely burned during ignition (Access Intelligence 2023). Combustion rate is a function of how finely and evenly dispersed fuel is during injection into the combustion chamber. Combustion rate can also be improved by turbocharging (i.e., forcing excess air into the chamber); two-stage turbocharging (with intercooling between stages) is current practice.

Modern diesel engines use high-pressure common-rail (HPCR) fuel injection (Access Intelligence 2023). This replaces traditional mechanical injection with electronically controlled multiple high-pressure injections during each combustion cycle. Rather than relying on separate injectors, HPCR uses a single system to supply all injectors with a common source of fuel. This maximizes vaporization of the fuel and, thus, combustion rate.

1.4.4.3 Stream Crossings

R6: Hydrological Study provides a detailed characterization of hydrological site conditions and makes recommendations for Project design. Investigation of watercourse stability identified suitable areas for crossing, through:

– A geomorphological assessment of the stream to assess the stability of the proposed stream crossing (PSC) or infrastructure location, as well as the definition of the effect of channel stability on design criteria.
– Interpretation of historic aerial photography or available images to document fluvial landform changes and calculate rates of erosion in areas where infrastructure traverses or approaches watercourses.
– Identification of areas prone to ice jams and estimation of associated impacts.

Based on recommendations of R6: Hydrological Study:

– The bridge alignment at Kauk Brook will be optimized based on flooding and erosion hazards.
– The Access Road will be realigned where it crosses a large wetland west of Kauk Brook, between kilometre point (KP) 10+100 and 10+750.
– Based on current understanding of hydrological conditions, the detailed Airport siting should avoid several interconnected wetlands and prioritize development on upland terrain.

1.5 Completed and Ongoing Studies

Various studies related to the existing airstrip and a potential new facility have been completed. A potential operational improvement assessment completed in 2018 determined the current airstrip was not suitable for restoration / upgrades. Subsequently, a pre-feasibility study completed in 2020 evaluated three potential sites and identified one location meeting all criteria for a new airport.

Various feasibility studies have been completed in support of the Project to date, and many other studies are ongoing or due to start (Table 1.2). Preliminary environmental studies were initiated in 2022 to support the EA and other studies are currently underway. These studies and workplans are described in Section 4. The feasibility study stage of the Project, along with the EA, will be completed at the end of 2024. A land and resource use study will be conducted under the responsibility of NLNR independently of the proponent. The results of this exercise will be used to inform the Project feasibility studies where possible.

Table 1.2 Pre-feasibility and Feasibility Studies for the New Nain Airport

Study	Completion Status
Nain Airport (airport code: YDP) Potential Operational Improvements Assessment 2018	Complete
Nain International Airport Project: Implementation Process Master Plan (pre-feasibility study) 2020	Complete
2022 Initial Field Program and Studies	Complete
2023 Field Program and Studies	Complete
R1: Weather Station and Data Collection - Phase 1	Complete
R2: Topographic Survey	Complete
R3: Environmental Review - Desktop Assessment	Complete
R4: Surficial Geology, Geomorphology, Permafrost and Hydrogeological Investigations	Complete
R5: Meteorological Studies and Report - Phase 2	Complete
R6: Hydrological Study	Complete
R7: Electrical Power Supply Alternatives	Complete

Table 1.2 Pre-feasibility and Feasibility Studies for the New Nain Airport

Study	Completion Status
R8: Preliminary Engineering Services	March 2024
R9: Preliminary Architectural Design Studies	January 2024
R10: Construction and Supply Strategy	May 2024
R11: Cost Estimation	May 2024
R12: Environmental Impact Assessment Submission	August 2024
New Nain Airport Feasibility Studies Final Report	December 2024

1.6 Anticipated Project Schedule

The regulatory authorities (i.e., IAAC, NLECC and NG) have agreed to a collaboration of processes for this EA (a letter to this effect is included in Appendix A). This agreement is expected to lead to a reduction in the overall timelines and provide better coordination for consultation, comment periods and decision-making. Without a harmonized or cooperative process, each regulatory agency would be required to adhere to schedule and timelines as outlined in their respective processes. In any case, each regulatory agency maintains their decision-making authority.

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 1.3.

Table 1.3 Project Milestones and Dates

Key Milestones	Completion Dates
Submission of Registration to IAAC, NG and NLECC	November 2023
Start of the final phase of feasibility studies	October 2024
Completion of R12: Environmental Impact Assessment Submission	November 2024
Completion of feasibility studies report	December 2024
EA decision (IAAC, NG, NLECC)	December 2025
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
Mobilisation and construction	2027-2030
Commissioning and operational phase	End of 2030

The process to complete the Project will include design, construction and commissioning phases as described below.

1.6.1 Design

– Complete the workplans required to prepare the Environmental Impact Statement (EIS) (e.g., consultation, air quality, acoustics, greenhouse gases, climate, geology, terrain and soils, hydrology and groundwater, fish and fish habitat, vegetation and wetlands, wildlife, historic resources, human environment, human health, land use).
– Complete and update remaining feasibility studies.
– Complete detailed design.
– Complete CARs 307 Consultation process.

– Complete Plan of Construction Operations and Land Use Submission for Transport Canada (TC) and Nav Canada approval.
– Secure necessary permits and approvals.
– Secure necessary funding.

1.6.2 Construction

– Prepare and issue tendering documents.
– Install environmental controls.
– Complete necessary tree-clearing.
– Construct the Airport, Runway, Access Road and associated works, including drainage systems, visual aids, safety areas, perimeter road and fencing, pavement markings, signage, etc.

1.6.3 Commissioning

– Follow TC procedures for airport certification.
– Establish new instrument approach procedures (flight checked by Nav Canada).
– Prepare Airport Operations Manual, Canada Flight Supplement, Canada Air Pilot, Airport Management Plans and other documentation. All documents required by TC will be submitted in early 2030.
– Certify the Runway in compliance with TC standards.
– Train personnel.
– Receive final inspection release from TC.
– Ensure staff training and equipment necessary for operations.
– Conduct ongoing operations and maintenance of the Airport, Runway and Access Road.

A detailed construction schedule will be determined in R10: Construction and Supply Strategy.

1.7 Environmental Assessment Regulations

In 2022, Aivek Stantec Limited Partnership, in collaboration with Sikumiut Environmental Management Ltd. (SEM), completed a desktop review of potential environmental and socio-economic constraints and regulatory requirements for the Project. The findings of the environmental and regulatory review (referred to as R3: Environmental Review – Desktop Assessment) allowed the NG to better scope future work, particularly R12: Environmental Impact Assessment to meet local, provincial and federal requirements. R3 provides:

– Early identification of potential environmental approval and permitting requirements, environmental regulatory issues and environmental management options.
– Preliminary description of potential regulatory schedule and possible harmonization or coordination of the federal, provincial and NG EA processes with the goal of identifying potential efficiencies.
– Understanding of environmental issues of potential concern by reviewing publicly available information on the biophysical and human environments and preparing environmental constraints mapping.
– Anticipated scope and nature of field studies and technical modeling (e.g., climate change risk assessment, noise modelling) to help identify risks and inform future studies.
– Potential risks to the Project's social acceptability, schedule and budget.

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. Based on discussions with the three regulators and correspondence dated September 19, 2023 (Appendix A), the regulators are willing to undertake a coordinated approach to the EA while maintaining legislative requirements of each jurisdiction. The following sections identify the current understanding of applicable EA legislation under the NG, provincial and federal governments. Discussions are ongoing with the relevant agencies regarding EA requirements for the Project.

1.7.1 Nunatsiavut Government

The Project is in the Labrador Inuit Settlement Area (LISA) and on Labrador Inuit Lands (LIL). Both land categories were created through the LILCA. The LILCA establishes Inuit fishing, hunting, trapping and gathering rights in the LISA and sets out specific provisions for those who live outside the LISA. The LISA extends eastward 12 NM offshore into the tidal waters of the Labrador Sea, encompassing a marine area referred to as the Zone in Schedule 2A of the LILCA.

Labrador Inuit have exclusive rights and ownership of LIL, which cover approximately 15,800 km^2. The *Labrador Inuit Lands Act* (Chapter 11) details many of the requirements for an ER on LIL. As per section 11.2.1 of LILCA, no project on LIL can commence until an ER has been completed and the required permits, licences or other authorizations under an Inuit law have been issued by the appropriate authority and the NG. The Airport and Runway are on a parcel of LIL (LIL-08). Along the Access Road, two smaller parcels (LIL-03C and LIL-05C) have been avoided by the current road alignment.

Projects on LISA and / or LIL are also within the scope of the NEPA (NG 2012a). The Project triggers a detailed ER based on Section D of the RERI ("D.8: an airport or runway excluding an ice strip") (NG 2012b). The NG's RERI identify requirements for project registrations for summary and detailed reviews. Section 25 states the following:

"25. A proponent must register the proponent's initiative with the minister for purposes of both summary reviews and detailed reviews:

(a) by delivering to the minister the same information as the proponent has provided to:

(i) the government of Newfoundland and Labrador with respect to Environmental Assessment of the initiative pursuant to Provincial Law and

(ii) the responsible authority of the Government of Canada with respect to Environmental Assessment of the initiative under federal Law; or

(b) where the initiative is not subject to federal or Provincial Law or has been exempted from Environmental Assessment under federal or Provincial law by delivering the information referred to in section 27."

This means that a Registration prepared for the NLECC and / or IAAC could satisfy the needs of the NLNR. As this Project is on LIL, NLNR requires a Detailed ER.

1.7.2 Government of Newfoundland and Labrador

The Project is located in Labrador and a provincial Registration is required under the *Newfoundland and Labrador Environmental Protection Act* as per section 46 of the *Environmental Assessment Regulations*, which states that *"*An undertaking that will be engaged in the establishment and operation of permanent airports on land or water shall be registered."

Following Registration and review of the information provided and receipt of comments by government agencies and the public, the Minister determines whether a project is released from EA (generally with conditions) and the project may move to the permitting stage. If not released, the project will be subject to either an Environmental Preview Report to address requirements for additional information or an EIS where the project is anticipated to result in significant potential adverse environmental effects, or the public has expressed a high level of concern. A project is sometimes considered unacceptable, and Cabinet may determine that the project will not proceed. More information is provided in the NLECC document *Environmental Assessment – A Guide to the Process*.

1.7.3 Government of Canada

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 provides:

– "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.”

The *Information and Management of Time Limits Regulations* provide time limits for the IA process, establish required information to be provided by the proponent, criteria under which legislated time limits may be suspended, guidelines and plans that IAAC is to deliver as well as funding be available for designated projects.

Upon submission of an IPD to the IAAC, the proponent enters into a process that involves five phases (i.e., planning, impact statement, impact assessment, decision-making and post decision) based on the current IAA. However, based on a Supreme Court of Canada decision (October 13, 2023), the Government of Canada has confirmed its intention to amend the IAA.

1.8 Other Regulatory Compliance

The Project must be carried out in compliance with applicable NG, provincial, federal and municipal legislation. Legislative requirements include addressing potential adverse impacts and concerns raised by regulators, Indigenous Peoples and members of the public. The following section provides a preliminary list of potentially applicable requirements under acts and associated regulations. The list may not be exhaustive.

1.8.1 Nain Inuit Community Government

The Project is primarily on LIL, with a portion of the Access Road in the Municipal Planning Area governed by the Nain Inuit Community Government’s (NICG) Land Use Plan and *Development Regulations*: 2016 to 2026 (NICG 2016). The Project is aligned with policy expressed in the Municipal Plan. Section 3.2 G) (b) of the Plan identifies the goal to “to pursue relocation of the airstrip to a location outside the built-up area of the community, and to encourage improvements to the airstrip, whether it be the existing facility or a new one, which would provide night time landings and improve passenger safety.”

The NICG has the authority to permit development within its boundary in compliance with the Land Use Plan and *Development Regulations* but does not have authority over development on LIL unless exempted (NICG 2016). Maps in the *Development Regulations* illustrate the NICG boundary; where there is any difference between the *Development Regulations* and the legal boundary defined in the LILCA, the LILCA prevails.

Nain has designated land use zones: residential, mixed development, commercial / light industrial, industrial, recreational open space, environmental protection, rural, watershed, solid waste and transportation (NICG 2016). While the Airport and Runway are outside Nain, the portion of the Access Road that road runs through Nain’s “Rural” zone, would be compatible with permitted or discretionary uses. It does not intersect Nain’s provincially protected water supply of Trouser Lake, which is zoned as “Watershed” (Government NL 2023a; NICG 2016).

Conversations have been initiated with the NICG and NL Municipal and Provincial Affairs regarding land use planning and permitting related to the Project. Based on discussions to date, the NICG *Development Regulations* do not specify permitting “road construction”. Any new roads could be constructed by a developer where the NICG would consent to construction while retaining ownership of the land on which the road is constructed. However, no new corridors are planned through Nain for re-routing of roads or installation of services and utilities for the Project.

1.8.2 Nunatsiavut Government

The *Nunatsiavut Constitution Act* is the overall legislation for implementation of the LILCA. The Project will comply with the *Nunatsiavut Constitution*, NEPA, RERI and all other applicable Inuit laws. This includes obtaining required permits for field studies on LIL (e.g., land access, harvesting, research, archaeological investigations). An application for access to and use of LIL may also be required for the Project.

Table 1.4 provides a list of NG Inuit laws that may be required in support of the Project. This list is preliminary, based on the Project as currently understood, and will be further refined as Project planning proceeds and / or as the NG may work cooperatively through legislation with provincial agencies or federal authorities (FAs) to achieve protection of the environment and the Rights of Inuit on LIL and in the LISA. The proponent will continue to consult with regulators to confirm applicable legislation and permitting. The NL *Environmental Assessment Regulations* are discussed in Section 1.7.2.

Table 1.45 Potentially Applicable Nunatsiavut Inuit Laws

Interest	Inuit Laws	Application to Project
Access to harvesting by non-Beneficiaries	Harvesting Access for Non-Beneficiaries	Presence of construction workers
Archaeology, burial sites and human remains Traditional tenures Private interests Land use plan Protected areas	Labrador Inuit Lands Act	Archaeological research and protection Easements, including rights of way for roads and utilities
Traditional tenures Private interests Labrador Inuit land titles registry Land use plan Mineral exploration and development	Labrador Inuit Land Titles Act	Ownership of private interests, including Aullâsimavet Traplines Easements Quarry materials
Environmental protection	Nunatsiavut Environmental Protection Act	Protection of water

In addition to approved legislation, the NG is developing a *Quarry Materials Act* and regulations for financial bonds for quarry closure and reclamation on LIL (Sheppard 2023). Quarrying standards are also under development for NG and these differ depending on whether a quarry is on LIL or Specified Material Lands (SML). If a quarry is on LIL and greater than 0.5 ha, a petition of the Minister of Nunatsiavut Assembly and approval of NG Executive Council is required. If a quarry is in an IC and less than 0.5 ha, a petition is not required. NLNR will prepare a briefing note for petitions to the Nunatsiavut Assembly for quarry proposals.

Quarry developments are not subject to EA. In the absence of the Nunatsiavut Regional Land Use Plan, the *Labrador Inuit Lands Act* (Part 10: Mineral Exploration and Development) applies to quarries (Sheppard 2023). Under this Act, an application and workplan are required for review by various elected officials and staff; public consultation may be required. An approved workplan also requires a land use permit from NG for any activity (including quarrying) on LIL.

1.8.2.1 Nunatsiavut Regional Land Use Plan

The LILCA requires that a Regional Land Use Plan be developed to manage the use of land, water and resources in the LISA, including on LIL (NG 2023). A Regional Planning Authority (RPA) was organized to prepare a draft Regional Land Use Plan through consultation in each of the Inuit Communities, as well as HVGB, North West River, Mud Lake and St. John's (NG 2023). The draft Regional Land Use Plan was accepted in principle by the Nunatsiavut Executive Council but has not yet been approved by the Nunatsiavut Assembly. The draft plan, which was submitted to the Government of NL in March 2011, has not been accepted by the province and is currently unapplicable.

1.8.3 Government of Newfoundland and Labrador

Table 1.5 provides a list of permits, approvals and authorizations that may be required in support of the Project. This list is preliminary, based on the Project as currently understood. The NL *Quarry Materials Act* may not be applicable on LIL at the time of development but has been included as the corresponding Inuit law is in draft. The proponent is committed to regulatory compliance and best practices and will continue to consult with regulators to confirm applicable legislation and permitting as the Project is further defined. The NL *Environmental Assessment Regulations* are discussed in Section1.7.2.

Table 1.56 Potentially Applicable Provincial Legislation and Permitting

Interest	Legislation / Permit / Policy	Department
Air Quality	Approval of Diesel Generators Guidance Document	Environment and Climate Change

Interest	Legislation / Permit / Policy	Department
Building Accessibility	Buildings Accessibility Act Buildings Accessibility Regulations	Municipal and Provincial Affairs
Building Construction	Building Standards Act	Municipal and Provincial Affairs
Endangered Species	Endangered Species Act	Fisheries, Forestry and Agriculture
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	Environment and Climate Change Digital Government and Service NL
Food Safety	Food Premises Act Food Premises Regulations Food Establishment Licence	Health and Community Services Service NL
Forest Fires	Forestry Act Permit to Burn (during Forest Fire Season)	Fisheries, Forestry and Agriculture
Hazardous Materials	Dangerous Goods Transportation Act Dangerous Goods Transportation Regulations	Digital Government and Service NL
Public Safety	Public Safety Act Boiler, Pressure Vessel and Compressed Gas Regulations Fire and Life Safety and Building Accessibility Compliance	Digital Government and Service NL
Quarries	Quarry Materials Act Quarry Materials Regulations	Industry, Energy and Technology
Water Resources	Water Resources Act, 2002 Environmental Control Water and Sewage Regulations, 2003 Certificate of Approval for Sewage Disposal System 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)	Environment and Climate Change Digital Government and Service NL
Wildlife	Wildlife Act Wildlife Regulations	Fisheries, Forestry and Agriculture
Workplace Health and Safety	Occupational Health and Safety Act Occupational Health and Safety Regulations	Digital Government and Service NL

Conversations have been initiated by the proponent with the NG, NLNR and NL Municipal and Provincial Affairs regarding interests (e.g., land use planning, lands, quarries) related to the Project. Based on these discussions and a review of the legislation, the NL *Lands Act, 1991* does not apply to the Project, as these matters are under the jurisdiction of the *Labrador Inuit Lands Act*. The NL *Historic Resources Act* is not applicable on LIL, though it is in the LISA.

1.8.4 Government of Canada

Designated projects undergoing assessment under the IAA may also be subject to other federal regulatory processes and legislation. Authorizations under these processes cannot be issued until a project is released from the requirements of the IAA (IAAC 2023). Each designated project is required to have a permitting plan that outlines permits, licences and authorizations that may be required. During the IA Planning Phase, the IAAC develops the permitting plan in cooperation with federal regulators, including lifecycle regulators and other jurisdictions (if applicable) based on the information provided by the proponent. The permitting plan may be revised during the IA process, based on new information from the proponent, regulators or other jurisdictions. Various federal legislation has been identified at this preliminary stage in Table 1.6.

Table 1.67 Potentially Applicable Federal Legislation and Guidelines

Interest	Associated Regulation / Guideline	Agency
Aviation	Aeronautics Act Canadian Aviation Regulations	Government of Canada
Aviation and Airports	Canada Transportation Act Aerodromes Standards and Recommended Practices, 5th edition (Version 0) 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	Transport Canada
Fish and Fish Habitat	Fisheries Act Fisheries Act Authorization or Letter of Advice	Fisheries and Oceans Canada
Marine Navigation	Navigable Waters Act Minor Works Order	Transport Canada
Hazardous Materials	Transportation of Dangerous Goods Act Transportation of Dangerous Goods Regulations	Transport Canada
Runway Infrastructure	Manual of pavement structural design	Canadian Airfield Pavement Technical Group

While primary and secondary research and analyses along with consultation related to the IA may also be relevant to other federal regulatory processes, federal authorization processes may require more detailed and specific information (e.g., additional details on project design or activities, such as detailed drawings for river crossings or detailed habitat offset plans).

1.8.4.1 Federal Lands

In Canada, federal lands include national parks, Indian reserves, land claims agreement areas and military bases. The Project is on LIL and LISA, both established by the LILCA. The other nearest federal lands are First Nation communities, national parks / reserves and the military installation at HVGB (Table 1.7).

Table 1.7 Nearest Federal Lands

Federal Lands	Distance
Natuashish Indian Reserve 2	72 km
Torngat Mountains National Park	240 km
Akami−Uapishkᵘ−KakKasuak−Mealy Mountains National Park Reserve	346 km
Sheshatshiu Indian Reserve 3	348 km

Table 1.7 Nearest Federal Lands

Federal Lands	Distance
Kawawachikamach Village	360 km
Matimekosh Indian Reserve 3 / Lac John Indian Reserve	365 km
Canadian Forces Base 5 Wing Goose Bay	367 km

1.8.4.2 Strategic and Regional Assessments

1.8.4.2.1 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.

1.8.4.2.2 Strategic Assessment of Climate Change

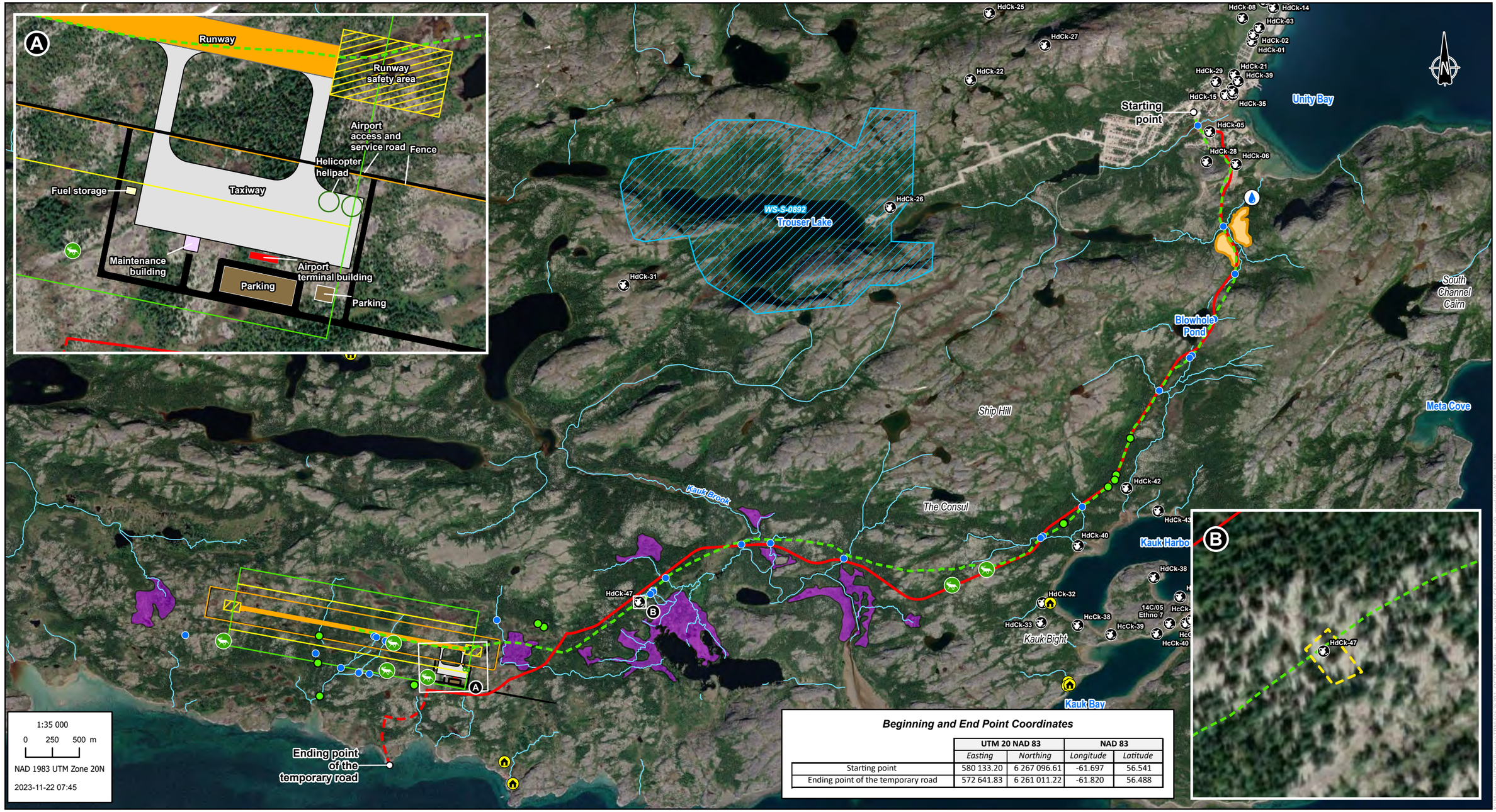
The Environment and Climate Change Canada (ECCC) Strategic Assessment of Climate Change (SACC), under Section 95 of the IAA, requires the IA to consider the extent to which the effects of a designated project contribute to or hinder Canada's ability to meet its climate change commitments, such as the 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 2.3.2.3.

1.8.4.2.3 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 a New Nain Airport, which consists of an Airport, a Runway and an Access Road, 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 New Nain Airport 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. The Project is presented in Figure 2.1 and described in the following sections.



Beginning and End Point Coordinates

	UTM 20 NAD 83		NAD 83	
	Easting	*Northing*	*Longitude*	*Latitude*
Starting point	580 133.20	6 267 096.61	-61.697	56.541
Ending point of the temporary road	572 641.83	6 261 011.22	-61.820	56.488

Project Component

- Original access road alignment
- Access road
- Proposed temporary road
- Fence
- Transitional surface (23 m)
- Transitional surface (45 m)
- Helicopter parking
- Runway safety area
- Airport terminal building
- Airport access and service road
- Fuel storage
- Maintenance building
- Parking
- Runway
- Taxiway

Environmental Constraints

- Watercourse
- Watercourse crossing (desktop)
- Additionnal watercourse crossing (2023 field mapping)
- Potential permafrost
- Caribou track observation

Socio-Economic Constraints

- Cabin
- Archaeological site
- Archaeological site protection area
- Untreated drinking water source
- Protected Public Water Supply Area
- Quarry

Figure 2.1

Project Components and Initial Environmental / Socio-economic Constraints

OCTANT
EXPERTS EN SOLUTIONS POUR L'AVIATION

AECOM

2.1 Location

Nain, the northernmost Inuit Community in NL, lies north of Unity Bay about 50 km from the Atlantic Ocean and 370 km north of HVGB. The Airport is approximately 13 km from Nain and sits on a plateau, approximately 500 m from the coast at an elevation of roughly 40 m ASL (Figure 1.1). Airport coordinates are shown in Table 2.1.

Table 2.1 Airport Coordinates

UTM 20 NAD83		NAD83	
Easting	Northing	Longitude	Latitude
570,970.65	6,262,677.06	-61.847	56.503
570,918.57	6,262,395.03	-61.848	56.501
573,671.97	6,262,177.85	-61.803	56.498
573,595.02	6,261,701.16	-61.805	56.494

The Project is on LIL with a portion of the Access Road on Nain Inuit Community Lands. The Access Road options are shown in Figure 2.1 and the coordinates are provided in Table 2.1.

Table 2.2 Access Road Coordinates

Access Road Point	UTM 20 NAD83		NAD83	
	Easting	Northing	Longitude	Latitude
Starting point	580 133.20	6 267 096.61	-61.697	56.541
End point (airport access)	572 641.83	6 261 011.22	-61.820	56.488
Temporary construction access end point	572 788.64	6 262 153.08	-61.818	56.498

2.2 Project Components and Activities

The main components of the Project include the Airport, Runway and Access Road. These are described below along with other features as illustrated in Figure 2.1. While the Airport facility may evolve over time, no future expansion is envisioned at this time.

2.2.1 Airport

The Airport site includes an apron where fixed-wing aircraft and helicopters will be parked, a maintenance equipment hanger (400 m^2), storage areas for necessary equipment and supplies (e.g., a certified aviation reservoir for Jet A fuel), service roads, a groundside parking lot and other related facilities. A 400 m^2 multi-functional airport terminal building (Figure 2.1) will include serve various functions, including:

– Waiting room for approximately 50 passengers (equivalent to the number of travellers aboard a B737-200 configured for combined cargo-passenger service);
– 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; and
– Mechanical, electrical and communication equipment room.

The equipment hangar will accommodate machinery such as snow plows, loader, grader and pick-ups, as well as various other tools and equipment. Ideally, it will have direct access to the airside. A cold storage / freezer building will also be included for storing food and medical supplies bound for Nain.

2.2.2 Runway

The Runway will measure approximately 1,830 m (6,000 ft) in length and 30 m (100 ft) in width, exclusive of manoeuvring areas. It will be constructed on a natural rock base levelled at approximately 41 m ASL. The Runway will be surrounded by a fence for safety and security reasons.

The Runway surface will be gravel treated with EK35®, a durable non-toxic synthetic fluid enhanced with a natural rosin binder that stabilizes gravel runways and improves operational and safety conditions in cold remote regions (Midwest 2023). It has been proven at over 75 gravel runways in locations including northern Alaska. EK35® has been independently tested for performance (lab and field), longevity and environmental impact by agencies including the United States (US) Army Corps of Engineers, US Environmental Protection Agency and the Bureau de normalisation du Québec. Its use will help to limit dust from take-off and landings, improve water quality in runoff due to limited sedimentation, reduce use of fossil fuels as it lowers resistance and improves efficiency during take-off and landings and lowers maintenance costs as the life of the surface is about 10 years.

The Runway includes safety features such as transitional surfaces and a runway safety area. Transitional surfaces are open areas that extend outward and upward from a runway to protect the low altitude space for the safety of aircraft as required by TP312 Aerodrome standards and recommended practices. The runway safety area is an area at the end of the runway strip suitable for reducing the risk of damage to airplanes and enhancing safety in the event of an undershoot, overshoot or excursion from the runway.

2.2.3 Access Road

The Access Road joining the Airport to Nain will be gravel and measure approximately 13 km long with a bridge to cross Kauk Brook. The proposed alignment of the Access Road is presented in Figure 2.1. The minimal width of the road surface is expected to be 9 m wide, enough to accommodate large trucks. 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 maximum speed limit will be 70 km/hr.

The Access Road has been designed to avoid as much as possible LIL, quarries, steep slopes, wetlands, potential permafrost, an archaeological feature, a second crossing of Kauk Brook and the risk of deep snow accumulations and avalanches in winter.

Longitudinal and transversal profile analyses will be completed to optimize excavations and backfill. The Access Road will also be treated with EK35® to reduce dust and gravel loss.

2.2.4 Ancillary Services

The following ancillary services will be developed to provide complete and secure services to the Airport users:

– Automated weather station;
– Approach Unicom AU with Mandatory Frequency Zone;
– Emergency equipment;
– Electrical power supply;
– Potable water supply;
– Wastewater treatment plant; and
– Communication services.

The services involving physical works with the potential to cause environmental effects are described below.

2.2.4.1 Power Supply

As described in Section 1.5.3.2, R7: Electrical Power Supply Alternatives identifies alternative sources of electrical power. R7 concludes that three 500-kW diesel generators with fuel tanks on site will be required for the Project.

Carbon neutral energy sources such as wind / solar will be considered in the future as these become more effective and feasible for northern regions.

2.2.4.2 Water and Wastewater Management

The Airport will require water and wastewater management facilities typical of a small airport. Potable water supply, treatment and distribution facilities supplying domestic use and fire protection will be designed. As explained in Section 1.5.3.1, preliminary studies indicate groundwater supply would be most suitable for the Project. Results to date confirm that there is sufficient groundwater to meet the required standard for the Airport. At present, a water tank is being considered. Wastewater collection, treatment and disposal systems (septic system) will also be designed.

2.2.4.3 Stormwater Management

Stormwater management infrastructure will be required to effectively manage runoff during Project operations. Water management is currently being designed and will consist of drainage swales and grading to divert water from the Runway surface. Drainage ditches will be installed alongside the Access Road, as well as culverts and a bridge to allow the natural watercourses to pass beneath the road.

2.2.5 Preliminary Engineering Design

The following subsections provide insights into the preliminary engineering design.

2.2.5.1 Civil Works

In addition to the main Project components, civil works will include the following:

- Any required cut, fill, grading, terracing, open drainage, barriers, signage, stability wall and avalanche diversion control structure, culverts and bridge;
- Excavation of rock, including drilling and basting of rock and stabilization of rock faces;
- Crushing of material for excavation from quarry in the vicinity of rock excavation or other area to be determined;
- Temporary access roads to sources of granular material (sand and gravel), as well as terracing for a work camp, and a staging and storage area for construction materials and equipment, including maintenance equipment temporary facilities;
- Airfield, road and building area excavation-fill for leveling and grade;
- Permanent building for airport passengers, storage and airport maintenance facilities;
- Electricity power facilities, lighting and communication infrastructures;
- Temporary works to control sedimentation and erosion during construction (e.g., sediment barriers, sedimentation ponds) and limit access to environmentally sensitive areas;
- Temporary construction work camp and associated facilities;
- Water supply and distribution for domestic use and firefighting[1];
- Wastewater collection and treatment;
- Drainage and stormwater management; and
- Snow storage areas with appropriate drainage and water management facilities. Project design will take into account requirements for snow clearing performed by pushing or blowing snow beyond the edges of site or road surfaces.

These facilities and infrastructure will be described in more detail in R12: Environmental Effects Assessment.

2.2.5.2 Electrical Works

Electrical works will include the following:

[1] Chemical fire suppressants would be used for fires in buildings; a combination of chemical suppressants and water would be used for airplane fires.

– High and low voltage electrical supply and distribution;
– A Field Electrical Centre;
– Airfield lights and navigational aids;
– Exterior lighting; and
– Telecommunication installations.

The Access Road is not expected to be lit, unless required for safety or regulatory reasons.

2.2.5.3 Airport and Public Safety

Measures for airport and public safety include:

– Airport fire and rescue compliance;
– Zoning and land development complying with OLS regulations;
– Airport fuel facilities and associated security and environment protection systems (separate refuelling areas for jet fuel and diesel);
– Fencing, access controls and security cameras; and
– Airfield signage.

2.2.6 Preliminary Architectural Design

An architectural firm will develop a Functional Program and Architectural Design as the basis for initial planning of construction of the terminal and related buildings, considering the following:

– Inuit culture and values;
– Community needs;
– Ecological considerations:
– Sustainable design,
– Water use reduction, collection of rain / snow water, water pollution,
– Energy efficient buildings, on site renewable energy,
– Indoor and outdoor environmental quality, noise pollution, air pollution, nightlight pollution, gas emissions, land usage,
– Ecological choice of materials and resources, lifecycle considerations;
– Accessibility;
– Health and safety;
– Future growth;
– Geographical location and climate challenges; and
– Consultation with key informants and stakeholders.

Based on the analysis of the collected data, recommendations will address the following:

– Estimated occupation loads per building and space;
– Estimated type, volume and size of materials to be stored in buildings / hangars;
– Applicable codes, standards and other regulatory processes;
– Design of buildings considering architectural, technical, environmental, cultural, economic, lifecycle expectation, future growth and social criteria;
– Required spaces for each building and their connexions, adjacencies, areas and occupation load; and
– Potential risks and issues for the recommended design solutions.

2.2.7 Site Preparation and Construction

While detailed design will be described in R12: Environmental Effects Assessment, it is anticipated that construction activities for the Project will include the following:

– Brush / tree trimming, crushing and clearing;
– Grubbing;
– Topsoil stripping and mulching of vegetation material mixing to be used in the affected area after completion;
– Dewatering and water control measures;
– Subgrade preparation;
– Preparation / treatment, placement and compaction of granular materials;
– Installation of stormwater management infrastructure;
– Placement of topsoil;
– Access Road construction;
– Installation of bridge and culverts;
– Installation of fencing;
– Installation of visual aids, communication infrastructure and approach lighting;
– Placement of conduits and cabling;
– Construction of the terminal building and hangar; and
– Construction of power facilities.

Temporary facilities, including site trailers, material and equipment storage yards and accommodations, as well as construction maintenance equipment will be installed. Hydrocarbons needed for construction will be delivered to Nain and stored in appropriate, environmentally safe temporary facilities at the construction site.

All backfill materials for the Airport and Access Road will come from the site with optimization of cut / fill balance. Other materials (for buildings, electricity, drinking water pumping station, water reserves and other Project-related materials) will come from outside the site, mainly by ship to the port of Nain or directly by waterway along the Airport site's coastline. A marine site near the Airport may be used to land barges to deliver equipment and materials for construction with a temporary access road from the shore (Figure 2.1). No marine infrastructure will be installed on the coast. The temporary road will be removed and the area reclaimed at the end of construction. Soil and topsoil excavated during Project construction will be re-used wherever possible for fill or landscaping. Temporary erosion and sedimentation control measures (e.g., settling ponds, silt fencing) will be required during construction to prevent release of sediment-laden water to environmentally sensitive areas.

Brush will be chopped / shredded and may be burnt on-site if required, with the approval of Department of Fisheries, Forestry and Agriculture during Forest Fire Season, or may be removed to an approved waste disposal site for proper disposal with the permission of the owner / operator of the waste disposal site. Where burning is permitted, tires and used or waste oil are not to be used to aid in the burning of brush.

2.2.8 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 (DHC)-8 turboprop aircraft and jets (e.g., Boeing 737-200) and will also be capable of landing larger Boeing 737-700 and 737-800 series airplanes.

During operations, all supplies will be transported to the Airport via the Access Road. Transport and storage of diesel and jet fuel will comply with regulations such as Canada *Transportation of Dangerous Goods Act* and *Regulations*, NL *Dangerous Goods Transportation Act* and *Regulations* and NL *Storage and Handling of Gasoline and Associated Products Regulations, 2003* and NL *Used Oil and Used Glycol Control Regulations, 2018*.

When required, light de-icing will be undertaken at the Airport, but no de-icing facilities are planned as part of the Project. De-icing treatment will be applied only to areas of the aircraft where it is needed rather than as anti-icing. A designated pad with a collection system will be constructed for de-icing in accordance with US Federal Aviation

Administration AC 150/5300-14D, *Design of Aircraft Deicing Facilities* (Canada has no such standards or guidance).

Activities such as transport, storage, use and safety for fuel and other hazardous materials will be described in more detail in R12: Environmental Effects Assessment.

2.2.9 Decommissioning and Rehabilitation

Closure, decommissioning and rehabilitation 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. Progressive reclamation does not apply in the context of the Project. The closure and decommissioning of the existing airstrip is not included in the Project.

2.3 Wastes, Discharges, Emissions and Hazardous Materials

Environmental management will be included in the Airport Operations Manual as required by TC under CAR 302. More detailed information will be provided in R12: Environmental Effects Assessment.

2.3.1 Waste Management

Airport operations generate various types of waste, including municipal solid waste, construction and demolition debris, hazardous and industrial waste, and lavatory waste. Project-related waste streams will be managed to facilitate operations and minimize potential environmental effects. All waste materials from construction will be evacuated, since the NICG disposal site has no capacity.

2.3.1.1 Solid Waste

Municipal solid waste generated at the Airport will consist of metal, glass, plastic, paper and cardboard products and disposed of at an approved waste disposal site. Municipal solid waste will be generated from three primary sources:

– Terminal waste – from public areas and airport administrative offices;
– Airline waste – from airplanes and airline offices; and
– Cargo waste – from cargo operations.

Solid waste generated during Project construction may include, without being limited to, left-over concrete, wood, metals, roofing materials, plastic and piping. Construction debris will be assessed and separated for reuse and recycling wherever possible. Any material not reused will be sent to an approved construction and demolition waste disposal site, recycling facility or waste disposal site outside of Nain. R8: Preliminary Engineering Services and R10: Construction and Supply Strategy will address solid waste, which will be the responsibility of the selected construction contractor.

A waste management plan will be prepared for construction and operations. Operational waste will be consistent with waste generated from aircraft and the terminal building at the existing airstrip. International flights are not planned for the Airport.

Waste management includes control of litter and debris. All waste material generated during construction and operations will be placed in suitable refuse containers and removed to an approved waste disposal site on a weekly basis, with the prior approval of the waste disposal site owner / operator. Derelict vehicles, scrapped equipment and other large debris will not to be stored on site, but will be disposed of at an approved waste disposal site or scrap yard on a regular basis, with the prior approval of the site owner / operator.

2.3.1.2 Liquid Waste

Lavatory waste generated at the Airport will be managed to minimize risk to human health and the environment and avoid uncontrolled releases. A wastewater treatment plant will be constructed to treat wastewater to acceptable standards prior to release to the environment.

2.3.1.3 Hazardous Materials and Hazardous Waste

Hazardous materials used during Project construction and operations will include diesel, gasoline, oil, lubricants and solvents. Hazardous waste is expected to include used oil, oil filters and waste material from aircraft and ground vehicle washing and cleaning. Firefighting foam used at the Airport will not contain Per-and Polyfluoralkyl Substances.

Jet A fuel will be transported to Nain and delivered to the Airport in a similar manner as for the current airstrip. This procedure will include arrival by tanker to the wharf at Nain twice per year (following marine ice break-up in spring and before winter freeze-up in fall) and delivery by an aviation fuel truck to specialized double-walled fuel storage at the Airport. Similar procedures will be followed for delivery and storage of diesel fuel.

Hazardous materials and waste will be transported, stored and handled in accordance with regulatory requirements and disposed of at an approved facility. Plans will be prepared for managing hazardous materials and waste, as well as emergency response.

2.3.2 Emissions and Discharges

Emissions and discharges released during Project construction and operations are summarized in the following sections.

2.3.2.1 Air Emissions

Air emission sources during Project construction will include generators and mobile equipment, including trucks and excavators. Equipment will be maintained and inspected regularly, in compliance with applicable regulations. Dust from Project activities will be controlled as necessary through the application of water as a suppressant. Waste oil will not be used for dust controls.

Air emission sources during Project operations are summarized below:

– Combustion of aviation fuel produces nitrogen oxides (NOx), carbon monoxide (CO), sulphur oxides (SOx), hydrocarbons and particulate matter (PM).
– Aircraft tires may release PM as they are worn and burnt during take-off and landing though this would be more likely on asphalt.
– Vehicles travelling to and from the Airport, as well as ground service equipment, generate NOx, PM and ozone through the burning of gasoline and diesel fuel.

2.3.2.2 Noise Emissions

The Airport will be located approximately 13 km from Nain, while the existing airstrip is in the community. From this perspective, the operation of the Airport is anticipated to result in significantly lower noise levels at residential receptors 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 equipment, including trucks and excavators. Equipment will be maintained and inspected regularly in compliance with applicable regulations.

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 and vehicle traffic at the Airport and along the Access Road. 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 (ICAO 2008).

2.3.2.3 Greenhouse Gas Emissions

For the purposes of the Registration, GHG considerations 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 (see Section 1.5.3). 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 Project design progressing in the EA. 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 B. The GHGs assessed for the Project are 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; and
– Transportation to the Airport along the Access Road.

Direct emissions from construction of the Project are currently estimated to be 12,746 tonnes (t) CO_2 equivalent (CO_2-eq) and the direct emissions from Project operations (based on a 50-year Project lifespan) are 1,005,820 t CO_2-eq. For the purpose of the assessment (Appendix B), decommissioning emissions are assumed to be one-half of Airport construction emissions (6,373 t CO_2-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. A more detailed GHG estimate will be prepared for R12: Environmental Impact Assessment as Project engineering design progresses and more information is available.

2.3.2.4 Effluent Discharges

During construction, temporary erosion and sedimentation control measures (e.g., settling ponds, silt fencing) will be implemented during construction to prevent release of sediment-laden water to environmentally sensitive areas. Hazardous materials and waste will be transported, stored and handled in accordance with regulatory requirements and disposed of at an approved facility, and will not be released as effluent.

Floor drains from service bays or other areas handling used or waste oils will be routed through an separator to remove oily waste before being discharged. Plans and specifications will be submitted to the Government Service Centre for review and approval prior to installation.

Lavatory waste generated at the Airport will be managed to minimize risk to human health and the environment and avoid uncontrolled releases. If the flow of sewage will be less than 4,546 L/day, detailed plans and specifications for a sewage disposal system will be submitted to Service NL for evaluation and to obtain a "Certificate of Approval." If a wastewater treatment plant will be constructed to treat wastewater, it will be designed by a qualified professional engineer and meet the requirements of the *Environmental Control Water and Sewage Regulations (65/03)* under the *Water Resources Act*, Schedule A.

2.4 Employment and Procurement

Following the feasibility studies, detailed engineering design will be undertaken to prepare all plans and documents required for construction. This will be followed by construction of the Airport and Access Road. Given the scale of the infrastructure involved, a detailed logistical plan will enable the work to be carried out on two sites. The first site will be near the Runway and a second at the start of the Access Road near Nain.

Two teams of specialized construction workers and day labourers will be deployed in Nain throughout the seasons under the supervision of a site management team and Project engineers. These teams must be self-sufficient in all respects (e.g., housing, electricity, food, drinking water, waste water, safety, evacuation) in the event of accidents.

Once the Airport and Access Road are open, specialized Airport operations personnel will be on hand to ensure the smooth running of the Airport. The Access Road will have to be maintained on an annual basis and accessible year-round.

2.4.1 Workforce

Detailed information on the workforce will be provided in R8: Preliminary Engineering Services, which will be available in March 2024, and R10: Construction and Supply Strategy, available in May 2024. The proponent will supply updated information for the construction and operations phases as it becomes available. The data will include an estimate of the types of positions required (according to the National Occupational Classification System 2021), approximate timelines for positions and whether positions are full-time or part-time, directly hired or contracted out.

2.4.1.1 Construction

A detailed description of the workforce will be presented in R12: Environmental Impact Assessment. At least several hundred workers are anticipated to be employed in the construction phase.

2.4.1.2 Operations

It is estimated that approximately 10 employees will be required at the Airport during operations for direction, administration, servicing and works.

2.4.2 Procurement

Detailed information on procurement will be provided in R8: Preliminary Engineering Services (March 2024), R9: Preliminary Architectural Design Studies (December 2024) and R10: Construction and Supply Strategy available (May 2024). The ownership / operations model for the Airport is not yet determined. In all stages of the Project, companies owned by the Nunatsiavut Group of Companies (NGC) or Nunatsiavut Beneficiaries will be engaged in construction and operations wherever possible.

2.4.3 Equity, Diversity and Inclusion

The NG is an equal opportunity employer. As an Indigenous government, employment preference is given to Nunatsiavut Beneficiaries. The NG's employment policies and practices adhere to the *Nunatsiavut Constitution Act*, NL's *Human Rights Act* and *Accessibility Act*, as well as to the *Canadian Charter of Rights and Freedoms*, *Human Rights Act* and *Employment Equity Act*.

Equity, diversity and inclusion (EDI) address factors such as gender, age, ethnicity, physical ability and neurodiversity. EDI has many benefits for organizations and their employees. Various studies show that organizations with more workplace diversity were more likely to be high-performing (between 25% and 45% higher revenues) (Ideal 2023; McKinsey 2023; Together 2023). Inclusion is expected by workers (especially younger ones) who want to work for organisations that invest in EDI. Organizations with a diverse mix of employees are often more innovative and better able to adapt to change. When employees feel the workplace is fair, they are more engaged, perform better and less likely to leave, which reduces costly and inefficient employee turnover. The EDI Plan for the Project will consider business and employment access for members of underrepresented populations, including Indigenous persons and immigrants.

2.5 Health, Safety and Environmental Management

Construction and operation of airports in Canada is guided by TC through its construction and certification standards. Each airport is required to have an Airport Operations Manual, which identifies the airport, dimensions of runways, buildings, lighting, training requirements, quality assurance system and procedures with references to detailed manuals as applicable (e.g., winter snow clearing, handling of dangerous goods, training, emergency response).

2.5.1 Health and Safety

A health and safety plan will be prepared for construction and operations of the Airport, Runway and Access Road. This document will be in compliance with applicable legislation, such as the NL *Occupational Health and Safety Act / Regulations*, along with applicable federal legislation and guidance, such as the CAR, *Transportation of Dangerous Goods Regulations*, *Air Transportation Regulations*, *Airport Zoning Regulations*, Aerodrome Standards and Recommended Practices and Obstacle Limitation Surfaces.

2.5.2 Environmental Management

Project construction and operations will comply with relevant plans and policies, which could include the following:

– Environmental Protection Plans for construction and operations;
– Water Management Plan; and
– Waste Management Plan.

An on-site environmental advisor will be designated to determine compliance with these plans and applicable regulatory requirements.

2.5.3 Emergency Response

An Emergency Response Plan will be prepared for the Project in accordance with the CAR Recommended Practices. The Plan will include an inventory of spill response equipment and storage locations, a Spill Prevention and Response Plan to address potential fuel shipment incidents along the Access Road, as well as spills at the Airport and Runway, along with identifying the closest disposal sites for impacted soil and other hazardous materials. It will define the roles and responsibilities of stakeholders during emergencies, identify specific threats that could affect the New Nain Airport and establish communication protocols for staff and relevant authorities.

To ensure a quick and effective response during a spill event, spill response equipment (e.g., absorbents and open-ended barrels for collection of cleanup debris) will be readily available in an accessible location at the Airport. Project personnel will be trained in response procedures. Any spill or leak of gasoline or an associated product will be immediately reported to Digital Government and Service NL by calling the Environmental Emergencies Telephone Line.

Existing conditions for soils and groundwater / surface water have been established for the Project through literature review and field work conducted in 2022 and 2023 (see Section 4). The data and information can be used to determine the effects of an incident, such as a spill.

2.6 Financial Information and Benefits

Detailed information on Project costs, funding, employment and procurement will be provided in R10: Construction and Supply Strategy and R11: Cost Estimation, which will be available in May 2024.

2.6.1 Funding

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.

2.6.2 Capital and Operating Costs

Capital and operating costs will be detailed in R8: Preliminary Engineering Services (March 2024), R9: Preliminary Architectural Design Studies (January 2024) and R11: Cost Estimation (May 2024).

2.6.3 Taxation and Royalty Revenue

As construction and operation of the Project does not include natural resource extraction, royalty regimes are not applicable.

Beyond direct employment, airports and airlines provide indirect jobs through purchases of goods and services from companies in the supply chain. Spending by industry employees results in induced economic activity. Though it will be a small airport with limited activity, it is anticipated that the New Nain Airport will contribute to taxation revenue through income tax and taxes generated by airport passenger fees, landing fees, cargo fees, fuel tax and sales tax on food and services.

2.6.4 Financial Security

Financial security is not applicable to the Project. No abandonment, closure or site restoration is anticipated.

3. Consultation and Engagement

This section summarizes the regulatory engagement conducted to date and presents the consultation and engagement plan for the Project. In addition, a summary of key issues and concerns as well as support for the Project is presented in below.

3.1 Regulatory Engagement

Regulatory consultation for the Project began during in 2022 for R3: Environmental Review – Desktop Assessment to determine potential Project-related regulatory requirements and is ongoing. Engagement has included the following government departments and agencies:

– EA regulators
– NLNR
– NLECC
– IAAC
– Other NG regulators / agencies
– NLNR (re: camps and quarries)

- Other provincial regulators / agencies
- 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
- NL Immigration, Population Growth and Skills
- Department of Digital Government and Service NL
- NL Fisheries, Forestry and Agriculture (NLFFA): Wildlife Division
- NL Health and Community Services
- NL Industry, Innovation and Technology, Mines Branch
- NL Municipal and Provincial Affairs (NLMAPA)
- NL Executive Council: Office of Indigenous Affairs and Reconciliation (OIAR)
- Other FAs / agencies
- DFO
- CWS
- TC
- Health Canada (HC)
- ECCC
- Department of National Defence (DND)
- 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, the NG has requested meetings to present the Project, receive feedback on the regulatory regimes and access regulator expertise. The proponent team has also attempted to contact the NICG about land use planning and permitting, but has not received a response to date.

The proponent team has requested data regarding the location of Aullâsimavet (plural of Aullâvik) belonging to Nunatsiavut Beneficiaries. An Aullâvik is a settlement, camp or place in the LISA (other than a community), occupied by Inuit families or groups of Inuit on a seasonal, semi-permanent or permanent basis for hunting, fishing, trapping or gathering and for the use and enjoyment of the lands, waters and ocean of the LISA. The data have not yet been received and will be included in the EA.

An overview of regulatory consultation meetings and key correspondence completed to date in 2023 is provided in Table 3.1. In additions 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.

Table 3.1 Regulatory and other Government Engagement

Date	Activity	Organizations	Purpose of Meeting / Communication
1/27/2023	Outgoing Email	NLECC	Provided a link to R3 report and requested a meeting with NLECC.
1/27/2023	Outgoing email	NLNR	Provided a link to R3 report and requested a meeting with NLNR.

Table 3.1 Regulatory and other Government Engagement

Date	Activity	Organizations	Purpose of Meeting / Communication
1/27/2023	Outgoing email	IAAC	Provided a link to R3 report and requested a meeting with IAAC.
2/3/2023	Meeting	NLECC	Discussed Project and potential exemption from EA. Regulator agreed to review draft Registration ToC and document.
2/9/2023	Meeting	NLNR	Discussed Project and potential exemption from EA. Regulator agreed to review draft Registration ToC and document.
2/15/2023	Meeting	IAAC	Discussed Project and potential exemption from EA. Regulator agreed to review draft Registration ToC and document.
2/23/2023	Outgoing email	IAAC	Shared Project overview and draft Registration ToC for input. Request to present at upcoming meeting of regulators.
2/23/2023	Outgoing email	NLECC	Shared Project overview and draft Registration ToC for input. Request to present at upcoming meeting of regulators.
2/23/2023	Outgoing email	NLNR	Shared Project overview and draft Registration ToC for input. Request to present at upcoming meeting of regulators.
2/28/2023	Meeting	NLNR, NLECC, IAAC	Presented the Project emphasizing its criticality and need. Requested harmonization of EA and any possible consideration for expedition and efficiencies given risks to the airstrip and the community.
3/13/2023	Incoming email	IAAC	Received comments on draft ToC for Registration.
3/22/2023	Incoming email	NLECC	Received comments on draft ToC for Registration.
4/5/2023	Incoming email	NLNR	Received comments on draft ToC for Registration.
5/30/2023	Outgoing email	IAAC	Provided a preliminary set of workplans for 2023.
6/8/2023	Meeting	NLNR	Discussed the Project, site selection, feasibility studies schedule, consultation, NG regulations, land use and sharing preliminary studies.
6/28/2023	Meeting	NLNR	Coordination and information sharing. Discussed NG regulations. Requested that the proponent team attend an upcoming meeting to present a Project update.
7/11/2023	Outgoing email	IAAC, NLECC, NLNR	Shared update on feasibility studies and 2023 workplans.
7/12/2023	Meeting	NLNR	Discussed EA harmonization, development process in Nain / on LIL and in LISA, proposed marine protected area, waste management and consultation.
7/26/2023	Meeting	NLNR	Discussed cooperation agreement for the EA process, contents of Registration document, 2023 work plans and information on the marine environment.
8/2/2023	Meeting	NLNR	Discussed harmonization / cooperation process, planned public information session, community comments about the new Airport, contents of Registration document and workplans for spring bird migration.
8/8/2023	Outgoing email	NLNR, NLECC, IAAC	Shared draft Registration in preparation for August 24 meeting.
8/9/2023	Meeting	NLNR	Discussed harmonization / cooperation process, contents of Registration document, comments on 2023 work plans, land use study, consultation, Project components and activities, effects of the existing airstrip and mitigations.

Table 3.1 Regulatory and other Government Engagement

Date	Activity	Organizations	Purpose of Meeting / Communication
8/16/2023	Incoming email	NLNR	Received comments on 2023 workplans.
8/19/2023	Meeting	NLMAPA	Discussed land use planning and permitting in Nain and on LIL / LISA.
8/23/2023	Meeting	NLNR	Discussed land use study, consultation, draft Registration document, EA process and ongoing feasibility studies.
8/24/2023	Meeting	NLNR, NLECC, IAAC and FAs	Updated EA regulators and introduced the Project to FAs (ECCC, DND, TC, DFO, HC, ESDC, NRCAN, WAGE, ISC, CIRNAC). Discussed requirements of the IPD, cooperative EA process, timelines, deficiencies in the draft Registration document, temporary facilities / activities, review of work plans / draft documents, public information / consultation, community aspirations regarding the Airport and land use study.
8/30/2023	Incoming email	NLNR	Received letter from regulators confirming the EA cooperation process and timelines.
8/30/2023	Incoming email	IAAC	Received comments on draft Registration document.
8/30/2023	Outgoing email	NLNR, NLECC, IAAC	Shared New Nain Airport Presentation from August 24 meeting.
9/13/2023	Meeting	NLNR	Discussed NLNR's conformity review process and applicable Inuit laws.
9/20/2023	Meeting	NLNR	Discussed Labrador Inuit Laws related to quarries, issues with quarries and upcoming plans, studies, regulations and standards for quarries.
10/5/2023	Meeting	NLFFA, Wildlife Division	Discussed wildlife field programs.
10/6/2023	Incoming email	IAAC	Received comments from IAAC and FAs on 2023 workplans.
10/13/2023	Meeting	IAAC, ECCC, TC	Discussed requirements for GHG estimates for IPD, detailed project description and IA.
10/23/2023	Outgoing email	NLNR, NLECC, IAAC	Informed regulators that draft Registration document was available on a SharePoint site for downloading.
10/24/2023	Incoming email	NLECC	Received comments on draft Registration document.
11/08/2023	Phone call	NLECC	Discussed comments to date on draft Registration document.
11/08/2023	Incoming email	NLECC	Received comments on draft Registration document.
11/09/2023	Incoming email	NLECC	Received comments on draft Registration document.
11/09/2023	Meeting	NLNR	Discussed particulars of Registration requirements.
11/14/2023	Incoming email	NLECC	Received comments on draft Registration document.
11/16/2023	Meeting	IAAC, NLNR	Discussed interim guidance from IAAC regarding IPD and processes.
11/16/2023	Incoming email	IAAC	Provided confirmation of interim measures for administration of the IAA pending legislative amendments.
11/17/2023	Incoming email	NLECC	Received comments on draft Registration document.

Table 3.1 Regulatory and other Government Engagement

Date	Activity	Organizations	Purpose of Meeting / Communication
11/17/2023	Incoming email	IAAC	Received comments on draft Registration document.
11/20/2023	Incoming email	NLNR	Received comments on draft Registration document.
11/20/2023	Incoming email	IAAC	Sought information on whether the proponent will continue with federal assessment process.
11/21/2023	Outgoing email	IAAC	Responded to confirm the proponent will continue with federal assessment process.
11/21/2023	Meeting	NLECC, Pollution Prevention Division	Presented the Project and discussed questions (e.g., de-icing and approval of diesel generators) on draft Registration document.
11/21/2023	Outgoing email	NLNR	Forwarded copy of Notice of Registration for review to ensure compliance.
11/24/2023	Meeting	NL Immigration, Population Growth and Skills	Presented the Project and discussed requirements for reporting on employment needs for Project construction and operations.
11/27/2023	Outgoing email	IAAC, NLNR, NLECC	Notified regulators of the Registration submission date.
11/29/2023	Incoming email	IAAC, NLNR, NLECC	Provided guidance and directions for Registration.
11/29/2023	Meeting	NLNR	Discussed particulars of Registration requirements.

To date, key questions or comments regarding the Project (from regulators) include the following:

– Project location (e.g., alternatives considered);
– Project schedule (e.g., timing of EA);
– Project benefits (e.g., employment);
– Consultation and engagement (e.g., Indigenous groups, stakeholders and the public);
– Temporary facilities (e.g., worker accommodations, road for marine access);
– Construction materials (e.g., aggregate sources);
– Site access (e.g., Access Road);
– Natural environment: fish (e.g., Arctic char), birds, wildlife, rare species (e.g., caribou, plants), aquatic environment;
– Land and resource use (e.g., permanent, seasonal or temporary residences and harvesting areas of Nunatsiavut Beneficiaries);
– Land use zoning in Nain;
– Cultural heritage and archaeological sites;
– Management of hazardous materials, including transport of jet fuel;
– Air quality related to diesel generators; and
– GHG emissions.

3.2 Consultation and Engagement

The NG is committed to Indigenous engagement, stakeholder engagement and community consultation. This Project is primarily for the people of Nain and the NG is committed to engagement with interested parties and members of the public to ensure the best possible outcomes for the community and the environment. The

agencies involved in evaluating potential effects and mitigation measures expect meaningful engagement to identify and address adverse Project-related issues and enhance benefits. Beyond regulatory requirements, the NG is committed to maintaining engagement throughout the life of the Project.

Before formal engagement on the Project began, key issues and interests reported to the proponent by Nunatsiavut Beneficiaries regarding the Project included:

– The urgency of replacing the airstrip with a better facility;
– The feasibility of a new airport;
– Increasing road access may result in break-ins at camps;
– Snow-clearing on the Access Road;
– Public safety -- avalanches around Blow Hold Pond on the Access Road; and
– Accessing the Airport (e.g., time to get to the Airport, inability to walk to the Airport, parking at the Airport).

3.2.1 Public Information Session in Nain

The proponent 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. Refer to Appendix C for a copy of the presentation.

– Questions and concerns raised during the public information session included: Location
  - Concern that the Airport will be more distant from Nain, where people without vehicles are accustomed to walking to and from the airstrip.
– Site Selection
  - Interest in why this site was selected as opposed to other potential sites.
– Land Use
  - Interest in why the Airport would be fenced, resulting in an exclusion area for harvesting.
  - Interest in the upcoming land use study.
– Airport Operations
  - Interest in who the Airport owner and operator would be.
  - Interest in whether Nain residents would be employed in Airport operations.
  - Interest in what type of aircraft would be used.
– Air Cargo
  - Interest in timely delivery and safe storage of frozen and perishable food and other goods at the Airport.
– Access Road
  - Concern about heavy snow and potential avalanches along the Access Road, particularly at Blow Hole Pond.
– Old Airstrip
  - Interest in potential uses of the old airstrip infrastructure.

A detailed record of all questions, comments and responses provided during the public information session, as well as any notes about opportunities to further respond to the feedback are provided in Appendix C. Following the public information session, the NG changed the Project design to include a cold storage / freezer building at initial commissioning, rather than as a future development; this was in response to community input requesting safe storage of frozen and perishable food and other goods. Additionally, following a request for a Project Facebook page to easily access information and for community members to comment or ask questions, the proponent is exploring options for a Project-specific Facebook page.

Following the public information session and review of all the questions and responses, an Information Sheet was developed to summarize key information shared at the session and provide contact information for further comments or questions. The Information Sheet was shared with stakeholders, community members and Indigenous communities and organizations to reach a broader audience than public information session attendees. Refer to Appendix C for the Information Sheet and Project stakeholder and community list.

3.2.2 Engagement Plan

Table 3.2 provides an overview of current and upcoming engagement activities planned during R12: Environmental Impact Assessment. This engagement plan has been recently updated to reflect an adjusted schedule of activities following the public information session held on October 16, 2023, and to include sending a Notice of Interest to Innu Nation and the Hopedale Inuit Community Government as recommended by the regulators.

Table 3.2 2023-2024 Engagement Plan Overview

Activity	Description	Estimated Timing
Proponent-led Project Information Meeting: New Nain Airport Project	Proponent (NG) held initial Project Information Meeting in Nain to describe the Project, work to date and plans to continue work throughout 2023 and 2024, and answer questions from attendees.	October 16, 2023
Information Sharing and Early Consultation	Establish contact and share information with a broad list of stakeholders and community members, including Indigenous communities and organizations (e.g., government staff, Rights Holders, stakeholders and residents of Nain). Distribute Project Information Sheet #1 to list of community members and stakeholders to present Project overview, work completed to date (2018-present) including site-selection, and work that is underway to progress feasibility studies. Provide Proponent and consultant contact information with invitation to submit additional questions or comments.	November 2023
	Distribute additional Project Information Sheets to list of community members and stakeholders as needed. Subjects can include: - Questions raised during October 16, 2023 Project Information session; - Description and updates on 2023 field program, including key findings.	January – March 2024
Targeted Engagements	Invite key community members, stakeholders and Indigenous communities to participate in dedicated meetings to discuss proposed New Nain Airport: Nain, Hopedale, Innu Nation, Mushuau Innu First Nation (Natuashish) and Sheshatshiu Innu First Nation.	November 2023 to Winter 2024
Broad Engagement: Interviews	Invite key community members, Rights Holders and stakeholders to participate in interviews related to the Project to determine potential impacts on the community and region. This information will contribute to the Project's consultation record and analysis of impacts. Prepare discussion questions based on themes and / or subjects raised during early engagement activities; conduct interviews to validate baseline data and inform effects assessment (e.g., development of valued components, identification of indicators and mitigation).	December 2023 – Spring 2024

Table 3.2 2023-2024 Engagement Plan Overview

Activity	Description	Estimated Timing
Consultation Meetings (Indigenous)	Host a series of consultation meetings with potentially impacted Indigenous communities (Nain, Hopedale, Innu Nation) to receive input on the Project, identify key concerns, interests and impacts. Follow-up consultation meetings or information sharing with Indigenous communities will be determined in consultation with the communities and according to their interests. Further consultation will reflect priorities raised during discussions and indicate how feedback was incorporated into Project planning and in the draft EIS.	Winter 2024 – Summer 2024
Consultation Meetings (Community and Stakeholder)	Host a series of consultation meetings with Nain stakeholders and community members to continue to share information on the Project (e.g., technical information, field-project updates), to receive feedback and identify key concerns, interests and impacts. Follow-up consultation meetings or information sharing with Nain stakeholders and community members will reflect the priorities and interests raised during discussions and indicate how feedback was incorporated into Project planning and in the draft EIS.	Winter 2024 – Summer 2024
Record of engagement	Prepare final documentation of engagement activities and results. Consultation summary will include records of participants, input received and how it was used in the effects assessment and to identify mitigations.	Summer 2024

4. Biophysical Environment

R3: Environmental Review - Desktop Assessment, a preliminary environmental and socio-economic desktop study conducted prior to initiation of the EA described the biophysical and human environments and associated regulations and guidance from regulators. The results included: 1) Project brief; 2) evaluation of the biophysical and human environment; 3) environment constraints mapping; 4) regulatory roadmap; 5) recommended field programs and studies for the EA; and 6) identification of issues that may put the Project at risk for social acceptability, schedule and budget. The results of R3 are provided in relevant portions of Section 4 and Section 5.

The Local Study Area (LSA) consists of a 100-m buffer zone around the Airport and on either side of the Runway and the Access Road (Figure 2.1).

The biophysical environment within and surrounding the LSA has been identified based on a review of publicly available ecological data from provincial and federal data sources, available aerial imagery, LiDAR data, the Atlantic Canada Conservation Data Centre (AC CDC) database, previous EAs in the region and supporting documents, and applicable regulatory guidance. A site visit was completed during R3: Environmental Review - Desktop Assessment on June 21, 2022 to prepare acquisition of data required for the EIS; its results have been used to characterize the biophysical environment in the Registration.

It is important to note that for all aspects of the biophysical environment, data acquisition is ongoing under R12: Environmental Impact Assessment. A baseline report of all information will accompany the EIS.

4.1 Climate and Atmosphere

The Project is in the Coastal Barrens ecoregion, extending from Napaktok Bay southwards to the Strait of Belle Isle and characterized by long, sheltered inlets along the coast. The ecoregion has a low sub-Arctic maritime climate typified by short, cool and moist summers and long, cold winters (Riley, Notzl and Greene 2013; Ecosystems Science Directorate, Environment Canada 1999).

The cold climate and exposure to salt and wind limit tree growth primarily to the sheltered valleys, while dense krummholz of white spruce (*Picea glauca*), willows (*Salix* spp.) and other low shrubs are widespread elsewhere. Bedrock headlands support alpine-like tundra of dwarf and horizontal shrubs, forbs, sedges, grasses and mosses (Riley, Notzl and Greene 2013).

The climate in northern Labrador represents a transition zone between Arctic and sub-Arctic climates and is influenced by the Labrador Current and proximity to the Labrador Sea. The fall and winter seasons consist of intense, low-pressure weather systems with gale- to storm-force winds and heavy snow along the coast due to the polar circulation that brings cold air masses into Labrador. Since the region is located on the coast of Labrador, it experiences strong seasonal variations in the strength and position of dominant winds, general air circulation and seasonal storm systems. Winter winds have a strong and persistent westerly flow, and summer winds are generally easterly (Vale NL 2021b).

Long-term climate data for the LSA, recorded from 1981-2010 at the Nain airstrip climate station (Government of Canada 2023), are presented in Table 4.1. For this period, the highest daily average temperature was in August (11.0 °C) and the lowest in January (-17.6 °C). Precipitation ranged from 57.0 mm in May to 98.6 mm in July. The average annual precipitation was 925.4 mm, approximately half of which was snow.

Table 4.1 Nain Airport Station Climate Normals (1981-2010)

Parameter	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rainfall	mm	3.1	5.1	5.5	14.1	30.2	70.1	98.6	71.5	79.9	49.7	14.1	8.4	450.2
Snowfall	cm	80.9	65.9	68.2	56.9	26.7	13.3	0.0	0.0	2.0	24.5	63.5	73.4	475.3
Precip.	mm	83.8	70.9	73.6	71.1	57.0	83.4	98.6	71.5	81.9	74.2	77.6	81.9	925.4
Daily Avg. Temp.	°C	-17.6	-17.4	-12.5	-4.6	1.5	6.4	10.1	11.0	7.5	2.1	-4.4	-11.8	-2.5

Since October 2021, weather data have been collected daily for the Project by an automated meteorological station at the Airport site to monitor current conditions, as a component of R1: Weather Station and Data Collection - Phase 1. The data (e.g., wind direction and speed, temperature, dewpoint, visibility, precipitation) was analyzed in R5: Meteorological Studies and Report - Phase 2 to account for current weather conditions and potential changes in the design of the New Nain Airport. A preliminary climatological report has been prepared using data collected from October 2021 to November 2022. The final climatological report, analyzing all data collected from October 2021 to October 2023, will be available in November 2023.

The dominant wind direction at the Airport location is west-southwest compared to the existing airstrip, where the meteorological station records show prevailing west-northwest winds (Stantec 2023, Draft report for R5: Meteorological Studies and Report - Phase 2). Throughout the year, the wind direction retains a dominate westerly component, particularly during fall and winter with stronger easterly to north-easterly components in summer. However, across all seasons, the highest wind speeds were observed from the west-southwest.

Table 4.2 summarizes 2022 meteorological conditions at the Project weather station. No to minimal precipitation (e.g., 1 to 2 mm) was reported for most months between November 2021 and February 2023, except during October 2022. This may be the result of an issue with precipitation instrumentation, connection with the datalogger and / or Meteorological Aerodrome Report code reporting. Where insufficient or inconsistent data (e.g., wind, precipitation including freezing rain or drizzle, lightening) were collected, data from ECCC weather station (8502801), ECCC station (85025800) and ERA5[2] precipitation data were used.

[2] The European Centre for Medium-Range Weather Forecasts (ECMWF) conducts reanalysis of all available historic and current meteorological data using a consistent system including correction of many historical hand-drawn maps that were based on estimation in areas of data sparsity. ECMWF Reanalysis v5 (ERA5) is the most recent reanalysis released as part of Copernicus Climate Change Service at ECMWF. This product has higher spatial resolution (31 km) and covers the period from 1940 to present (ECMWF 2023).

Table 4.2 New Nain Airport Station 2022 Annual Statistics

Parameter	Value	Data Source
Mean temperature	-1.7 ºC	New Nain Airport Station
Maximum temperature	2.1 ºC	New Nain Airport Station
Minimum temperature	-4.8 ºC	New Nain Airport Station
Days with maximum temperature > 26ºC	1 day	New Nain Airport Station
Days with minimum temperature < -20ºC	63 days	New Nain Airport Station
Diurnal temperature range	7.0 ºC	New Nain Airport Station
Dew point temperature	-6.7 ºC	New Nain Airport Station
Relative humidity	70.1%	New Nain Airport Station
Freeze-thaw cycles	3.6 cycles	New Nain Airport Station
Frost-free season	167 days	New Nain Airport Station
Total precipitation	841.8 mm	ERA5
1-day maximum precipitation	32.2 mm	ERA5
3-day maximum precipitation	54.0 mm	ERA5
5-day maximum precipitation	58.3 mm	ERA5
Wet spells	15 events, maximum duration 12 days	ERA5
Dry spells	29 events, maximum duration 11 days	ERA5
Freezing rain or drizzle	20 hrs	ECCC Station (8502801)
Snow depth (maximum)	98 cm	Snow depth measurement at Site 1D
Visibility of ½ statute miles (SM) or less	1,949 hrs (23.4% of available record) Maximum event duration 96 hrs	New Nain Airport Station
Fog	1,931 hrs (23.3% of available record) Maximum event duration 132 hrs	New Nain Airport Station
Cloud base height of 200 ft or less	1,412 hrs (16.6% of available record)	New Nain Airport Station
Cloud based height of 500 ft or less	2,278 hrs (26.6% of available record)	New Nain Airport Station
Wind: dominant wind direction	240º (WSW)	New Nain Airport Station
Wind: ≥ 20 kt gusts	1,016 total hrs with 20 kt gusts (12.8% of available record) 67 hrs with 20 kt crosswind gusts (2%)	New Nain Airport Station
Lightning	Lightening report ~1 time per year (1985-2014 average)	ECCC Station (8502800)

The ECCC weather data were determined to be unrepresentative for Nain for visibility, fog and wind. ECCC station (8502801) does not reflect local conditions described by the NG, with the existing airstrip being impacted by low visibility and fog events, including prolonged (e.g., multi-day) events. Additionally, the topographic differences (e.g., elevation and surrounding terrain) between the Project weather station and ECCC station locations likely result in differing wind regimes. Since cloud-base height is not available from the ECCC stations, ERA5 was applied for the Project. However, ERA5 estimated higher periods of time with lower cloud-base heights for much of the November 2021 – February 2023 period and was determined to be unrepresentative.

4.1.1 Climate Change

Climate change has had a substantial effect on the Labrador Inuit. Traditional and subsistence activities, as well as transportation on land and sea have been affected by warmer temperatures and variability and change in snow and ice cover.

A summary of climate change projections for the Nain region is presented in Table 4.3. Projected climate conditions under the Representative Concentration Pathway (RCP) 8.5 high emissions scenario and RCP 4.5 midrange emissions scenario from downscaled CMIP5 Global Climate Model projections were used to characterize future climate at Nain. Climate projections are presented for the 2020s (2011-2040), 2050s (2041-2070) and 2080s (2071-2100), relative to the 1981-2010 baseline climate. For climate parameters with limited or no historical observations and / or CMIP5-derived climate projections available, specialized studies and scientific literature were utilized.

Table 4.3 Summary of Climate Change Projections for Nain

Climate Parameter	Projected Change
Temperature-based parameters	– Increase in mean, maximum and minimum average temperatures – Increase in frequency of extreme heat events – Decrease in frequency of extreme cold events – Decrease in diurnal temperature range – Steady to slight decrease in number of freeze-thaw cycles – Increase in frost-free season duration
Precipitation-based parameters	– Increase in total precipitation – Increases in event accumulations of high intensity, short duration rainfall events – Increases in wet spell frequency and duration – Decrease in dry spell duration (steady trend for frequency)
Freezing rain	– Increase in frequency and duration of freezing rain events – Increase in 1:20-year ice accretion loads
Snow	– Decrease in total snowfall and seasonal snowpack – Large snowfall events remain possible
Visibility / fog	– Increase in average number of hours with fog per year, particularly in summer (June-August) and autumn (September-November) seasons
Cloud-base height	– Long-term projection data not available
Wind	– Slight decrease in wind speeds – Slight decrease in number of wind gusts
Winter storms / extra tropical cyclones (ETC)	– Decrease in intense ETC frequency but potential increase in total frequency – Substantial uncertainty due to complexity of formation of ETCs
Wave height / storm surge	– Increase in maximum wave heights – Increase in Higher High Water Level tide (related to increase in relative sea level)
Lightning	– Increased flash density rate (flashes / km^2 / year)
Permafrost	– Increase in active layer thickness as permafrost thaws – Under +2ºC of global warming, permafrost is projected to become isolated patches in the Nain region – Under +3ºC of global warming, permafrost is projected to no longer be present in the Nain region

Future climate projections data provided by ClimateData.ca (a collaboration between ECCC, the Computer Research Institute of Montréal, CLIMAtlantic, Ouranos, the Pacific Climate Impacts Consortium, the Prairie Climate Centre and HabitatSeven) were accessed for Nain. For the 1971-2000 period, the annual average temperature was -3.4 ºC. Under a high GHG emissions scenario, annual average temperatures are projected to be -0.5 ºC for the 2021-2050 period, 2.2 ºC for the 2051-2080 period and 4.5 ºC for the last 30 years of this century. Average annual precipitation for the 1971-2000 period was 792 mm. Under a high GHG emissions scenario, precipitation is projected to be 18% higher for the 2051-2080 period and 23% higher for the last 30 years of this century (ClimateData.ca 2023). These data represent an accelerated rate of climate change.

4.1.2 Air Quality

The closest air quality monitoring station managed by ECCC as part of the National Air Pollution Surveillance Program is in Labrador City, approximately 500 km southwest of Nain. However, due to Nain's location, air quality in the LSA is generally not expected to be affected by human activity. In July 2023, a forest fire 30 km from Nain resulted in air quality and visibility issues; the existing airstrip was not operational for two days. The potential effects on air quality from Project construction and operations will be assessed in the EIS.

4.2 Topography, Geology and Permafrost

The Coastal Barrens ecoregion, which spans three-quarters of the Labrador Coast, has highly variable topography. The last glaciation scoured most of the soil, creating a landscape dominated by exposed bedrock and sparse, thin soils (Riley, Notzl and Greene 2013). The offshore Labrador Current cools the coast and influences the location of the treeline. The prevailing influence of the Icelandic Low brings exceptionally heavy rain and snow for such a cold climate at sea level, with up to 5 m of snow each winter. The northern sections of the coast are more sheltered from harsh, coastal weather events by a deep archipelago. Hundreds of offshore islands, islets and shoals provide a 40-km-wide buffer from the open Labrador Sea.

The Nain Coast Ecodistrict, part of the Nain structural province of the Canadian Shield, is dominated by metamorphic gneiss with igneous anorthosites. Bedrock exposures dominate and surficial deposits are scarce. This northern coastal district is notable for its steep elevations, rising to heights of 1,040 m above surface level. Average elevation is 168 m above surface level. Steep and abrupt cliffs and slopes rise above the water and narrow valleys. The ecodistrict includes many deep, narrow fjord valleys that extend north from Sango Bay to the mouth of Okak Bay, including Mugford Bay in the north (Riley, Notzl and Greene 2013).

Nain is surrounded by discontinuous scattered permafrost (<50% of land surface). Consistent with observations in other parts of northern Canada, permafrost is degrading in Nunatsiavut due to changing climate conditions (Goldhar, Bell and Sheldon 2013).

Topographic surveys in the LSA were completed during summer 2022. It is apparent that the selected site for the Airport is the only large non-mountainous area near the community (Figure 1.1). The plateau presents a rocky relief in some places. It is covered by vegetation composed of tamarack and other evergreens in other places. Permafrost is expected in the non-rocky areas (NG 2020a).

R4: Surficial Geology, Geomorphology, Permafrost and Hydrogeological Investigations, which will be available in fall 2023, has identified and delineated areas of potential permafrost. The Access Road has been realigned to avoid these areas. R4 will include the following:

– Surficial geology;
– Geomorphology;
– Permafrost;
– Geotechnical investigations; and
– Hydrogeological investigations.

More specifically, the following information will be included in the final report:

– Results of field investigations:
    - Interpretation of the regional geomorphology and regional stratigraphy,
    - Interpretation of the local geomorphology and local lithostratigraphy,
    - Interpretation of aerial photography / satellite imagery,
    - Identification and mapping of natural hazards, site constraints and issues related to geotechnical and hydrogeological conditions,
    - Identification of natural hazards, site constraints and issues related to surficial geology, geomorphology and permafrost (including potential for landslides, avalanches, snow-patches, discontinuous / continuous permafrost, and areas of ground ice), and
    - Interpretation of field investigation findings.

– Recommendations for the following:
  - Seismic site classification and liquefaction assessment,
  - Site grading and subgrade preparation requirements,
  - Frost penetration depth including potential issues related to climate change,
  - Conceptual foundation (e.g., shallow / deep foundations),
  - Groundwater control (e.g., temporary / long-term dewatering requirements),
  - Conceptual design (Access Road, Runway, taxiway, apron),
  - Potential areas of aggregate resourcing including feasible guidance for removal,
  - Quality of cut material for use as earth borrow,
  - Quality and potential quantity of bedrock for use in crushing contracts for embankment fill and road base material,
  - Areas of concern (e.g., soil zones with potential weak load-bearing resistance, frost susceptibility, soil erodibility),
  - Potential sources of potable water supply,
  - Areas of slope instability in cut / fill sections,
  - Soil and water corrosion potential,
  - Construction considerations (maximum slopes allowed, need for pumping water out of excavations, etc.), and
  - Requirements for detailed studies at subsequent phases of the Project.

4.3 Groundwater and Surface Water

In Labrador, river and stream flows are low from January until April or May when they increase dramatically. Monthly stream flows peak in May or June and then gradually decline until August or September. A secondary peak of monthly discharge has been observed in October. Monthly discharges decline from October to December until the spring flow (Government of NL 1997).

Surface water chemistry in Labrador reflects the composition of soils and bedrock. In areas where underlying geology consists primarily of gneiss and granite bedrock, surface water tends to be slightly acidic, coloured, highly corrosive and of low mineral content (AECOM 2013).

Regional data on groundwater quality and quantity in Labrador are generally scarce. Estimated annual water surplus, groundwater recharge and surface water runoff rates have been calculated for Labrador using an analytical model. On average, groundwater recharge accounts for approximately 17% of the total water balance of Labrador, with surface runoff accounting for the remaining 83%. Groundwater movement is mildly to strongly affected by permafrost in both the discontinuous and continuous permafrost zones (AECOM 2013).

R4: Surficial Geology, Geomorphology, Permafrost and Hydrogeological Investigations, which characterizes groundwater, will be available in fall 2023. It will contain information on the results of hydrogeological investigations, including mapping of hydrogeological conditions, along with recommendations for groundwater control (e.g., temporary / long-term dewatering requirements) and potential sources of potable water supply. Infrastructure design will be adapted to any drainage issues identified and characterized.

A desktop review using available maps at a 1:50k scale was conducted for the baseline freshwater environment as part of R3: Environmental Review - Desktop Assessment. In 2022, identified water features included streams intersecting the Access Road, namely:

– Two unnamed streams – PSC 1 and PSC 2;
– Kauk Brook (PSC 3); and
– Two streams intersecting the existing road into Nain -- Nain Brook (existing stream crossing (ESC) 1) and Annainak Brook (ESC 2).

Both ESCs have structures such as culverts in place. North of PSC 1, a pond (Blow Hole Pond) is present within 25 m of the Access Road.

A desktop assessment and terrain analysis of hydrological features in the LSA was conducted as a component of R6: Hydrological Study. Multiple data sources, including high-resolution drone othoimagery, a provincial digital elevation model, hydrographic vector data from the National Topographic Data Base as well as Project-specific geospatial data, were used to identify watersheds and stream crossings. The hydrological terrain analysis included:

– Delineation of streams and watersheds for each water crossing or for locations where potential water issues were identified;
– Identification and classification of erosion risks; and
– Identification and characterization of flood risk areas.

During the summers of 2022 and 2023, automatic water level sensors were used to capture continuous water level data in two streams (ephemeral or permanent). In early July 2023, precise drone imagery and field surveys of the entire Access Road route were used to identify and map additional water crossings. As a result, a total of four watersheds and 35 stream crossings with potential to interact directly with the Project were identified. The stream crossings, most of which are described as small (<1 m width) with poorly defined channels and likely seasonal flow (ephemeral), are shown in Figure 2.1.

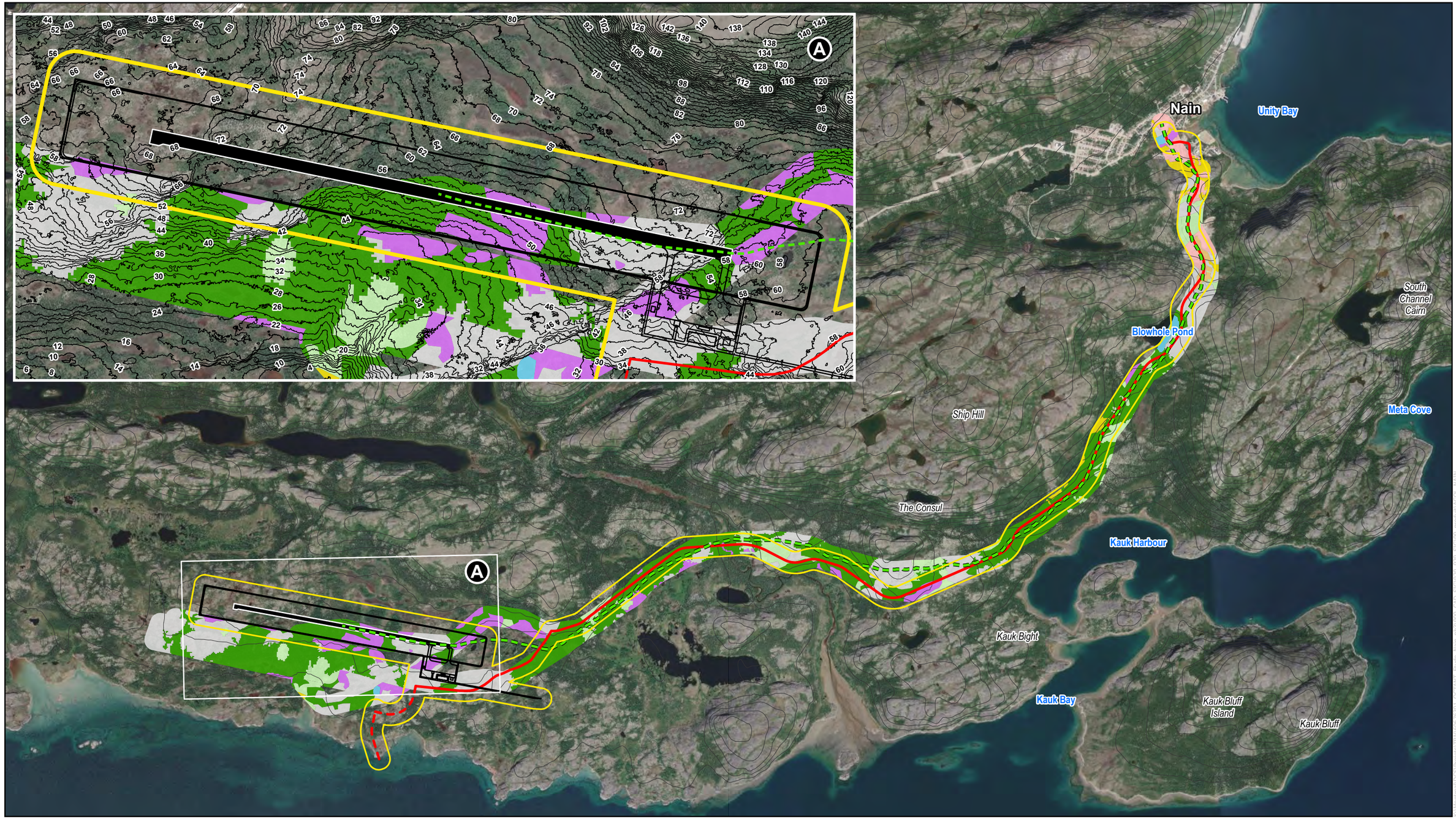
In September 2022, two hydrometric stations were installed at Kauk Brook (56.506257, -61.766097) and Blow Hole Creek (56.521278, -61.698008). The stations were equipped with a Solinst Levelogger 5 water level datalogger set to measure water level on a continuous basis by measuring at a 15-minute frequency. A Barologger was also deployed to collect barometric pressure at the Kauk Brook station. Data from the loggers were downloaded in February 2023. However, due to the presence of ice at the Kauk Brook station, the Barologger experienced a malfunction and data were not able to be downloaded. The water levels from the Levelogger were corrected using on-site meteorological data collected as part of R2: Topographic Survey. One flow measurement was taken during the site visit on September 1 and 2, 2022 at Kauk Brook and Blow Hole Creek, respectively. A flow of 0.308 m^3/s was recorded at the Kauk Brook station, and a flow of 0.006 m^3/s at the Blow Hole Creek station. Currently, insufficient data are available to identify any meaningful trends in water level. From a geotechnical perspective, the fluctuating water levels in the creeks likely correspond to a fluctuating groundwater table, which could affect excavation stability. The fluctuating depth and velocity of the flowing water would also need to be considered for erosion and shoreline stability. During future site visits, it is recommended to download logger data periodically and to complete at least five additional flow measurements at the hydrometric stations to establish a rating curve for each site (WMO 2010).

4.4 Terrestrial Environment

4.4.1 Vegetation and Wetlands

An unsupervised ecological land classification (ELC) exercise was conducted as part of R3: Environmental Review - Desktop Assessment to identify special habitats and provide a baseline classification for future studies (e.g., for stratifying effort by habitat type). It consisted of a high-level computer-based image classification procedure that automatically categorizes the pixels in an image into land cover classes that can support habitat analysis. This method reflects those of previous similar mapping projects in NL and across Canada. This information can be used in planning future studies for rare flora or wetland delineations / functional assessments. A more extensive ground-truthing exercise as part of the EA will provide a more refined suite of habitat types. For example, ground-truthing will allow classification of wetlands by type (e.g., bog or fen). In addition, the types of forest present could likely be refined to include the species of trees comprising the forest.

The initial unsupervised ELC was completed in the LSA using Sentinel-2 imagery. The ELC was refined with high-resolution imagery from unmanned aerial vehicle (UAV) flights and some ground-truthing during the initial site visit on June 21, 2022. Data acquisition with a drone was performed from June 21 to 28, 2022 (Figure 4.1).



Project Component

- Local study area (LSA)
- Original access road alignment
- Access road
- Proposed temporary road
- Airport footprint

Ecological Land Use Classification

- Barren
- Closed black spruce/moss/lichen forest
- Deciduous shrubland
- Developed
- Open tamarack/lichen forest
- Shrubland
- Water
- Wetland

Magnetic North / True North
-22°

1:35 000

0 250 500 m

NAD 1983 UTM Zone 20N

2023-11-14 09:08

Figure 4.1

Local Study Area and Ecological Land Use Classification

OCTANT
EXPERTS EN SOLUTIONS POUR L'AVIATION

AECOM

The six ELC types identified during the desktop review are provided in Table 4.4.

Table 4.4 Ecological Land Classification Habitat Classes and Proportions

Habitat Type	Area (m^2)	% of Total Area
Forest	1,561	50.7
Barren	1,270	41.2
Developed	136	4.4
Wetland	51	1.7
Shrubland	49	1.6
Water	12	0.4
Total	**3,079**	**100**

Site-specific vegetation and wetlands surveys were undertaken in the 2023 field season. The results will be presented in R12: Environmental Impact Assessment.

4.4.1.1 Vegetation

A desktop vegetation study conducted under R3: Environmental Review - Desktop Assessment aimed to identify historical occurrences of plant species listed under the federal *Species at Risk Act* (SARA) and the NL *Endangered Species Act* (ESA) in or near the LSA. The study also considered species that are ranked rare to uncommon (i.e., ranked S1 to S3) for the region by the AC CDC. A data request was submitted to AC CDC to develop a preliminary list of rare and listed plant species known to occur or with the potential to occur in the LSA. The ELC helped to generally assess the potential for each listed species to occur in the LSA.

Vegetation in the LSA is limited due to the cold climate, windy conditions, exposure to sea salt, short growing season and scarcity of soil. Table 4.5 outlines vegetation species previously observed during habitat assessments as part of the Nain Wind Micro-Grid EA (NG and Natural Forces Development Limited Partnership 2021). Local conservation rankings (S-Ranks) were compiled from the Wild Species 2015 Report dataset (Canadian Endangered Species Conservation Council 2016) and federal statuses (Schedule 1 listing) were compiled from the SARA public registry (Government of Canada 2022a).

Table 4.5 Vegetation Species Found in the Nain Region

Common Name	Scientific Name	Rank / Status
Alpine azalea	*Kalmia procumbens*	--
Alpine bearberry	*Arctous alpina*	S5[3]
Black crowberry	*Empetrum nigrum*	S5
Cottongrass	*Eriophorum* spp.	S5
Dwarf blueberry	*Vaccinium cespitosum*	--
Eastern larch / Tamarack	*Larix laricina*	S5
Glandular birch	*Betula glandulosa*	S5
Grass species	*Graminoid* spp.	--
Green alder	*Alnus viridis*	S5
Labrador tea	*Rhododendron groenlandicum*	S5
Lapland diapensia	*Diapensia lapponica*	S5
Red berry / Lingonberry	*Vaccinium vitis-idaea*	S5
Reindeer lichen	*Cladonia* spp.	S5

[3] Secure: At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations, or occurrences, with little to no concern from declines or threats.

Table 4.5 Vegetation Species Found in the Nain Region

Common Name	Scientific Name	Rank / Status
Rhodora	*Rhododendron canadense*	--
Sphagnum moss	*Sphagnum* spp.	S4[4]
Stiff clubmoss	*Lycopodium annotinum*	S5
Sweet gale	*Myrica gale*	S5
White spruce	*Picea glauca*	S5
Willow	*Salix* spp.	S5 / S4

The field assessment was completed in July 2023 and September 2023. This work resulted in a list of more than 130 identified vascular and non-vascular plant species, of which 13 are provincially ranked as vulnerable or imperilled, or a combination of both, by the AC CDC. None of the plant species observed is listed under SARA. The field study team visited representative vegetation communities of each type to assess and document habitat characteristics, including dominant species and cover within the tree layer, shrub layer, herbaceous layer and moss and lichen layer.

4.4.1.2 Wetlands

Wetlands are highly productive and biologically diverse habitats that improve water quality, store freshwater, provide flood and erosion control and often have a heightened potential for rare plants. Wetlands in the Nain region will typically be bogs or fens and the few wetlands along the Access Road will likely be classified as one or the other. Fens differ from bogs in that they have fluctuating water tables and are richer in dissolved minerals and less acidic. Bogs typically do not have water moving through them and are fed primarily by precipitation and snowmelt. Bogs are typically covered by *Sphagnum* spp. mosses and ericaceous shrubs.

The field program was completed in July and September 2023. Wetlands within a 100-m buffer of the Runway and Access Road options were confirmed by either classification and functional assessment on the ground or classification and general assessment by helicopter. Wetlands were classified according to the Canadian Wetland Classification System (CWCS) into five classes: bog, fen, swamp, marsh and shallow water (National Wetlands Working Group 1997). The CWCS standardizes wetland classification, which can be useful for identifying wetlands with high ecological value and function.

4.4.1.3 Vegetation Species at Risk

Information obtained from the AC CDC on May 27, 2022 identified two rare flora species within a 5-km radius of the Project site, which are Mountain sandwort (*Mononeuria groenlandica*) and Scheuchzer cotton-grass (*Eriophorum scheuchzeri*). Neither of these plant species is currently listed on Schedule 1 of SARA or the candidate list (Group 1 – High Priority) of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and, locally, they both rank as S3S4 (uncommon to fairly common) (Canadian Endangered Species Conservation Council 2016; COSEWIC 2022).

Mountain sandwort is a perennial flowering plant that grows low to the ground in clumps linked together at the bottom. The flowers are white and arise 5-10 cm above the thick foliage (Canadian Wildlife Federation [CWF]: iNaturalist Network 2022a). The plant exists in many isolated and elevated areas, such as large mountain plateaus, and globally is considered Secure (G5) (NatureServe 2022a). The plant has a peak flowering time of two weeks in the middle of July, although it does flower anywhere between June to August (CWF: iNaturalist Network 2022a). Mountain sandwort is found in areas of high elevation where bedrock is exposed and the plant grows on rocky ledges and in fine gravel on slopes or soils with acidic pH (3.1 to 4) and high in organic matter content. In the LSA, Mountain sandwort may be found on slopes and ridges that drain into the streams to be crossed by the Access Road.

Scheuchzer cotton-grass is a species of perennial flowering plant in the sedge family with an Arctic circumpolar and circumboreal distribution in the northern hemisphere and is globally considered Secure (G5) (CWF iNaturalist

[4] Apparently Secure : At a fairly low risk of extirpation in the jurisdiction due to an extensive range and / or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

Network 2022b; NatureServe 2022b). The inflorescence is a solitary flower head with wispy, cottony, bright white, red-tinged or silvery bristles up to 3 cm long. Indigenous Peoples, including the Inuit, have various uses for the plant, such as lamp wicks, boot insoles, swabs and wound dressings (CWF: iNaturalist Network 2022b). The plant is also edible. Scheuchzer cotton-grass is found in wet habitat types, such as wet meadows, around the margins of ponds, depressions and marshes, along streams on raised terraces and in imperfectly drained moist areas and seepage slopes. A pond and wetland within the LSA may be suitable habitat for Scheuchzer cotton grass. The presence of this species along the Access Road corridor and Runway as well as at the Airport site cannot be inferred from the information currently available.

Given the lack of information on vegetation SAR for the Nain region, a field assessment was completed in July 2023 and September 2023 to assess in further detail indicative habitat types for SAR. As a result, 13 SAR species (provincially ranked as vulnerable or imperilled, or a combination of both, by the AC CDC) were identified as:

– Alpine pondweed (*Potamogeton alpinus*; S2S4);
– Elephant's-head lousewort (*Pedicularis groenlandica*; S3S4);
– Fragile fern (*Cystopteris fragilis*; S3S4);
– Greenland stitchwort (*Mononeuria groenlandica*; S3S4);
– Hairy butterwort (*Pinguicula villosa*; S2S3);
– Hooded ladies-tresses (*Spiranthes romanzoffiana*; S3S4);
– Moor rush (*Juncus stygius*; S3S4);
– Multi-rayed goldenrod (*Solidago multiradiata*; S3S4);
– Northern bog sedge (*Carex gynocrates*; S3S4);
– Rusty woodsia (*Woodsia ilvensis;* S3S4);
– Saltmarsh sedge (*Carex salina; S2S3*);
– Scheuchzer's cottongrass (*Eriophorum scheuchzeri*; S3S4); and
– Small Burreed (*Sparganium natans*; S2S4).

4.4.2 Avifauna

A comprehensive review of historical bird data was conducted as part of R3: Environmental Review - Desktop Assessment, including information provided from the AC CDC. During the initial site visit on June 21, 2022, song recorders were deployed at two locations in the LSA (Figure 2.1).

Documents from previous projects in the area were reviewed, in addition to data requests to the Canadian Wildlife Service (CWS), the NL Wildlife Division and the NG. Using this information in conjunction with an understanding of the local context provided by SEM staff residing in Nain, a review of avian species that may be affected by the Project was conducted. This information, cross-referenced with the preliminary ELC, was used to identify the variety of habitats for migratory birds and potential habitats for SARA / ESA listed species in the LSA.

Labrador’s birdlife is described geographically in relation to Bird Conservation Regions, of which there are three in Labrador. Nain is located in the Taiga Shield conservation region (Bird Conservation Region 7 NL, Taiga Shield and Hudson Plains) and along the Atlantic Migratory Bird Flyway (Environment Canada 2014; Riley, Notzl and Greene 2013).

Resident and migratory species of birds in the Nain area include representatives from the bird orders Anseriformes (waterfowl), Galliformes (gamebirds), Gaviiformes (loons), Accipitriformes (raptors), Charadriiformes (shorebirds), Columbiformes (doves), Gruiformes (rails), Strigiformes (owls), Coraciiformes (kingfishers), Piciformes (woodpeckers) and Passeriformes (perching birds) (NG and Natural Forces Development Limited Partnership 2021).

Differing habitats attract different landbirds. Ruby-crowned kinglet (*Regulus calendula*), yellow-rumped warbler (*Setophaga coronata*) and boreal chickadee (*Poecile hudsonicus*) are attracted to mature coniferous forests. Broadleaf forests, which are relatively rare in Labrador, attract species such as the red-eyed vireo (*Vireo olivaceus*). Relatively common generalist species like the American robin (*Turdus migratorius*), common raven (*Corvus corax*) and white-throated sparrow (*Zonotrichia albicollis*) comprised many species observations in previous studies (NG and Natural Forces Development Limited Partnership 2021), along with observations of

species more typical of northern climes such as the American pipit (*Anthus rubescens*), common redpoll (*Acanthis flammea*) and horned lark (*Eremophila alpestris*). Aside from breeding, several species may use the Nain area as stop-over habitat during migration to the Arctic, such as the lapland longspur (*Calcarius lapponicus*) and several shorebird species like dunlin (*Caladris alpina*) (Riley, Notzl and Greene 2013).

Canada's boreal and taiga regions support half or more of North America's breeding populations of semipalmated sandpiper (*Calidris pusilla*), greater yellowlegs (*Tringa melanoleuca*), solitary sandpiper (*Tringa solitaria*), spotted sandpiper (*Actitis macularius*), least sandpiper (*Calidris minutilla*), Wilson's snipe (*Gallinago delicata*), red-necked phalarope (*Phalaropus lobatus*) and short-billed dowitcher (*Limnodromus griseus*), all of which breed in Labrador. Migrating shorebirds also rely on Labrador wetlands for stop-overs in the fall and spring. Long-distance migrants use coastal staging areas as part of a long chain of habitats for refueling for long journeys south. American bittern (*Botaurus lentiginosus*), common loon (*Gavia immer*) and red-throated loon (*Gavia stellata*) are non-colonial aquatic or wetland-dependent breeders present in Labrador. Tern, gull and other seabird colonies established in the offshore / nearshore region near Nain include those of the common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*) and black guillemot (*Cepphus grylle*) (Riley, Notzl and Greene 2013).

Though not immediately adjacent to the LSA, the coastline to the south of Nain is characterized by hundreds of islands, islets and shoals designated together as an Important Bird Area (IBA). The Nain Coastline IBA supports large numbers of moulting surf scoters (*Melanitta perspicillata*) with a few white-winged scoters (*Melanitta deglandi*) and black scoters (*Melanitta americana*) also being present, as well as breeding populations of glaucous gulls (*Larus hyperboreus*), greater black-backed gulls (*Larus marinus*) and herring gulls (*Larus hyperboreus)* (Birds Canada 2022). The islands and inlets in this IBA also support at least two nationally threatened species, the harlequin duck (*Histrionicus histrionicus*) and the peregrine falcon (*Falco peregrinus anatum*). As stated, the IBA is not in the immediate vicinity of the LSA, though it is likely that some of these species would be passing over during migration.

Labrador's coastal and interior wetlands support 19 species of waterfowl. These are dabbling ducks such as black duck (*Anas rubripes*), green-winged teal (*Anas crecca*), northern pintail (*Anas acuta*) and mallard (*Anas platyrhynchos*); diving ducks such as greater scaup (*Aythya marila*), lesser scaup (*Aythya affinis*) and ring-necked duck (*Aythya collaris*); and sea ducks such as red-breasted merganser (*Mergus serrator*), common merganser (*Mergus merganser*), common goldeneye (*Bucephala clangula*) and king eider (*Somateria spectabilis*) (Riley, Notzl and Greene 2013). Canada goose (*Branta canadensis*) is also present. Common eider (*Somateria mollissima*) is a common coastal nesting species and the Nain Coastline IBA supports at least one percent of the continental breeding population (Birds Canada 2022; Riley, Notzl and Greene 2013).

Raptors and owls are protected under the NL *Wild Life Act*. The province requires nests of raptor species to be buffered from disturbance and no vegetation is to be cleared within 800 m of an active nest during the nesting season (mid-late April until early August in the Nain region) (Rousseau and Drolet 2015; NG and Natural Forces Development Limited Partnership 2021). Raptor nests also warrant a 200 m buffer outside the nesting season (NG and Natural Forces Development Limited Partnership 2021). There are several raptor and owl species known from the Nain area.

A list of landbirds, waterbirds, seabirds, shorebirds, waterfowl, raptors and owls found in Nain and northern Labrador is provided in Table 4.6. Information was assembled from The Birds of North America Online, eBird, the Labrador Nature Atlas and previous studies conducted in the area. Local conservation rankings (S-Ranks) were compiled from the Wild Species 2015 Report dataset (Canadian Endangered Species Conservation Council 2016), provincial statuses (ESA) were compiled from the *Endangered Species List Regulations* Schedules A-C (Government of NL 2002) and federal statuses (SARA Schedule 1 listing) were compiled from the SARA public registry (Government of Canada 2022a).

Table 4.6 Avian Species Known in the Nain Region

Common Name	Scientific Name	Rank / Status*
Landbirds		
American Robin	*Turdus migratorius*	S5B, S5M
Common Raven	*Corvus corax*	S5
Gray Jay	*Perisoreus canadensis*	S5

Table 4.6 Avian Species Known in the Nain Region

Common Name	Scientific Name	Rank / Status*
Dark-eyed Junco	*Junco hyemalis*	S5B, S5M
Yellow-rumped Warbler	*Setophaga coronata*	S5B, S5M
Boreal Chickadee	*Poecile hudsonicus*	S4
Fox Sparrow	*Passerella iliaca*	S5B, S5M
Common Redpoll	*Acanthis flammea*	S4
American Pipit	*Anthus rubescens*	S5B, S5M
Horned Lark	*Eremophila alpestris*	S4B, SUM
Willow Ptarmigan	*Lagopus lagopus*	S5
White-crowned Sparrow	*Zonotrichia leucophrys*	S5B, S5M
White-winged Crossbill	*Loxia leucoptera*	S5
Pine Grosbeak	*Pinicola enucleator*	S5
Ruby-crowned Kinglet	*Regulus calendula*	S5B, S5M
Snow Bunting	*Plectrophenax nivalis*	S4B, S5M
Waterbirds, Seabirds and Shorebirds		
Herring Gull	*Larus argentatus*	S3B, SUM
Thick-billed Murre	*Uria lomvia*	S3B, S3M
Great Black-backed Gull	*Larus marinus*	S3B, SUM
Greater Yellowlegs	*Tringa melanoleuca*	S4B, SUM
Solitary Sandpiper	*Tringa solitaria*	S4B, SUM
Spotted Sandpiper	*Actitus macularius*	S4B, SUM
Least Sandpiper	*Calidris minutilla*	S3B, SUM
Short-billed Dowitcher	*Limnodromus griseus*	S3B, SUM
Semipalmated Plover	*Charadrius semipalmatus*	S3B, S4M
Semipalmated Sandpiper	*Calidris pusilla*	S2B, S3M
Wilson’s Snipe	*Gallinago delicata*	S5B, S5M
Waterfowl		
Common Eider	*Somateria mollissima*	S4B, S5N, S5M
American Black Duck	*Anas rubripes*	S5B, S5M
Canada Goose	*Branta canadensis*	S5B, SUN, S5M
Common Merganser	*Mergus merganser*	S5B, S5M
Red-breasted Merganser	*Mergus serrator*	S4S5B, S5M
Northern Pintail	*Anas acuta*	S4B, SUM
Green-winged Teal	*Anas crecca*	S5B, S5M
King Eider	*Somateria spectabilis*	S3N, SUM
Raptors and Owls		
Golden Eagle	*Aquila chrysaetos*	S2B, SUM / Not at Risk
Great Horned Owl	*Bubo virginianus*	S4
Merlin	*Falco columbarius*	S5B, S5M / Not at Risk

Table 4.6 Avian Species Known in the Nain Region

Common Name	Scientific Name	Rank / Status*
Bald Eagle	*Haliaeetus leucocephalus*	S4B, SUM / Not at Risk
Boreal Owl	*Aegolius funereus*	S4 / Not at Risk

*Definitions of rank / status:
S-ranks: S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure) and SU (Unrankable).
Breeding status qualifiers: B (Breeding), N (Non-breeding) and M (Migrant).

In addition to the desktop review for R3: Environmental Review - Desktop Assessment, early season avifauna surveys were conducted via deployment of two song meters during an initial site visit on June 21, 2022. The 2023 EIS Wildlife workplan included three field programs: a spring bird migration survey with the deployment of six bat detectors conducted in early June, a summer avian / SAR / terrestrial wildlife survey conducted in early July and a fall bird migration survey conducted in late-September. No important nesting areas (e.g., colonial nesting areas or rookeries) or areas with high concentrations of migrating birds were observed during the 2023 surveys.

4.4.2.1 Avifauna Species at Risk

Six avian SAR possibly present in the Nain region include the ivory gull (*Pagophila eburnea*), the eastern population of harlequin duck, red-necked phalarope, short-eared owl (*Asio flammeus*), rusty blackbird (*Euphagus carolinus*) and the anatum / tundrius subspecies of peregrine falcon.

The ivory gull is a medium-sized gull with a patchy, breeding distribution across the high Arctic. In Canada, it has a highly restricted range while breeding, nesting exclusively in Nunavut in close proximity to areas of ocean partially free of ice. The wintering distribution of the ivory gull is poorly known but is generally along the southern edge of pack ice or at persistent areas of open water surrounded by ice. The ivory gull forages at sea feeding primarily on small fish and macro-zooplankton. It also scavenges on carrion on the ice, such as marine mammals killed by large predators (COSEWIC 2006). The ice pack in winter off the coast of Nain would possibly provide winter habitat for the ivory gull. Although it is possible for the ivory gull to be present in the LSA during winter, the likelihood of collisions with aircraft upon approach to the proposed landing site is low. No ivory gulls were observed during any surveys conducted in 2023.

The harlequin duck is listed as Special Concern federally and Vulnerable provincially. Potential breeding habitat consists of rapids interspersed with pools, narrow rivers and inlets of lakes and bays. A significant part of the breeding range of eastern Canada's population of harlequin duck occurs in Labrador, with its primary breeding distribution extending from Hamilton Inlet to Nachvak fjord. When waters open up from ice, pairs move upstream from coastal staging areas or arrive from wintering areas. An estimated 395 breeding pairs have been confirmed along Labrador rivers and coastlines, 100 of which were in the Nain-Okak region where the birds are thought to be staging prior to departing for moulting areas in Greenland (COSEWIC 2013a). Presence of harlequin duck in the streams that intersect with existing and proposed crossings is low, given their preference for faster-moving rivers and no harlequin ducks were observed during any surveys conducted in 2023.

The red-necked phalarope is a small shorebird listed as Special Concern both federally and provincially. Both the breeding and migratory populations of the red-necked phalarope have been ranked S4 (Apparently Secure) in Labrador. Unlike most other shorebirds, the red-necked phalarope spends much of the non-breeding season at sea. While migrating and during the winter months, red-necked phalaropes concentrate at sea in areas where prey is forced to the surface (e.g., convergences and upwellings). To a lesser extent, migrants may also stop at lakes and ponds in interior North America, especially saline lakes with abundant aquatic invertebrates. The red-necked phalarope breeds in low- and sub-Arctic wetlands, near freshwater ponds, lakes or streams, and is a common breeder in northern Labrador (COSEWIC 2014a). Such habitat exists along the Access Road and Runway. However, no red-necked phalaropes were observed during any surveys conducted in 2023.

The short-eared owl is listed as Threatened federally and Vulnerable provincially. The short-eared owl prefers open habitats, such as those abundant along the south coast of Labrador and above the treeline, where there are high densities of small mammals. As small mammal populations may fluctuate widely year to year, the distribution of the short-eared owl is highly sporadic across its range. Nests are built on the ground and consist of flattened grasses or other vegetation. Nests have been reported in the Nain area and other locations in northern Labrador (COSEWIC 2021). As stated, the short-eared owl prefers wide expanses of open land, such as the coastal barrens

or meadows that exist in the LSA. As described in R3: Environmental Review - Desktop Assessment, the potential occurrence of short-eared owl in the LSA was raised as a concern during consultation with the NL Wildlife Division in 2022. No short-eared owls were observed during surveys conducted in 2023 and habitat is limited within the LSA.

The rusty blackbird is listed as Special Concern federally. The rusty blackbird occurs in all Canadian provinces and territories and, in Labrador, Davis Inlet is the northern limit of its breeding range. Data indicate rusty blackbird populations have declined in general over the last 40 years and the breeding population in Labrador is ranked as S3 (Vulnerable). The breeding range of the rusty blackbird in Canada is almost entirely within the boreal forest. Breeding habitat is characterized by coniferous-dominated forests adjacent to wetlands, such as slow-moving streams, peat bogs, sedge meadows, marshes, swamps and beaver ponds (COSEWIC 2017a). Such habitat exists in the LSA and two rusty blackbirds were detected during the songbird survey in July 2023.

The anatum / tundrius subspecies of peregrine falcon are listed as Not at Risk federally and Vulnerable provincially. Peregrine falcons inhabit a range of habitats from Arctic tundra to coastal areas. In Labrador, preferred nesting sites are ledges on cliffs between 50 and 200 m in height and up to several kilometres long. At the landscape scale, suitable nest sites are patchily distributed, but may be locally common. Breeding sites are selected based on access to sufficient food resources. Nesting sites in Labrador are mostly along coastal cliffs, with inland sites being on steep cliffs alongside rivers and lakes. They show a high degree of nest site fidelity and will often re-use nest sites for several successive seasons (COSEWIC 2017b). Peregrine falcons of the tundrius subspecies nest on islands in the Nain Coastline IBA (Birds Canada 2022). Due to the absence of suitable cliff faces for nesting, it is unlikely that peregrine falcons occur in the LSA and none was observed in 2023.

4.4.3 Terrestrial Wildlife

Information from the NL Wildlife Division, AC CDC, the Nature Conservancy, the CWS and an understanding of the local context provided by SEM staff residing in Nain were used to establish a preliminary overview of occurrences and distribution of terrestrial wildlife (including mammals and amphibians). This information, combined with the preliminary ELC, was used to identify the variety of habitats for amphibians and mammals and potential habitats for SARA / ESA listed species in the LSA.

Labrador supports 38 native land mammal species. Species like black bear (*Ursus americanus*), red fox (*Vulpes vulpes*), ermine (*Mustela erminea*), least weasel (*Mustela nivalis*) and deer mouse (*Peromyscus maniculatus*) make use of a wide range of habitats. Other species particularly dependent on tundra or barren habitat include Arctic fox (*Vulpes lagopus*) and Arctic hare (*Lepus arcticus*). Many of Labrador's mammals prefer wooded, forested or shrub-rich habitats, including lynx (*Lynx canadensis*), moose (*Alces alces*), porcupine (*Erethizon dorsatum*), snowshoe hare (*Lepus americanus*), red squirrel (*Tamiasciurus hudsonicus*), little brown bat (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*) and red-backed vole (*Myodes gapperi*). Wetland inhabitants include meadow vole (*Microtus pennsylvanicus*), while mink (*Mustela vison*) prefer water edges and aquatic-terrestrial ecotones. Beaver and muskrat rely on aquatic habitat (Riley, Notzl and Greene 2013). Two additional species of bats, hoary bat (*Lasiurus cinereus)* and silver-haired bat (*Lasionycteris noctivagans*), have been recently documented migrating through the region (Vale NL 2021a).

Mammals common to the Nain region are listed in Table 4.7. Local conservation rankings (S-Ranks) were compiled from the Wild Species 2015 Report dataset (Canadian Endangered Species Conservation Council 2016), and provincial (ESA) and federal (SARA Schedule 1 listing) statuses were compiled from the *Endangered Species List Regulations* Schedules A-C (Government of NL 2002a) and the SARA public registry (Government of Canada 2022a), respectively.

Table 4.7 Common Wildlife Species Known in the Nain Region

Common Name	Scientific Name	Rank / Status
Black bear	*Ursus americanus*	S5 / Not at Risk
Red fox	*Vulpes vulpes*	S5
Arctic fox	*Vulpes lagopus*	S5
Arctic hare	*Lepus arcticus*	S4S5

Table 4.7 Common Wildlife Species Known in the Nain Region

Common Name	Scientific Name	Rank / Status
Canada Lynx	*Lynx canadensis*	S4 / Not at Risk
Meadow vole	*Microtus pennsylvanicus*	S5
Deer mouse	*Peromyscus maniculatus*	S5
Masked shrew	*Sorex cinereus*	S5
Moose	*Alces alces*	S4S5
Beaver	*Castor canadensis*	S5
Ermine	*Mustela erminea*	S5
Porcupine	*Erethizon dorsatum*	S5
Red squirrel	*Tamiasciurus hudsonicus*	S5
Mink	*Mustela vison*	S5
Least weasel	*Mustela nivalis*	S1S3
Red-backed vole	*Myodes gapperi*	S5
Snowshoe Hare	*Lepus americanus*	S5
Muskrat	*Ondatra zibethicus*	S5

In addition to the desktop review, acoustic bat detectors were deployed during the initial site visit on June 21, 2022 at two locations along the Access Road to gather data on the potential presence of the endangered bat species. The 2023 wildlife field program included deployment of six additional bat detectors in the LSA. These were placed in early June 2023, in ideal forage habitats (i.e., adjacent to wetlands, open water bodies) to passively detect the presence / absence of bats and determine their relative abundance. A terrestrial wildlife survey was completed in early July 2023, in conjunction with the summer avian / SAR survey.

4.4.3.1 Terrestrial Species at Risk

Five mammalian SAR possibly present in the Nain region include the eastern population of wolverine (*Gulo gulo*), the eastern migratory population of caribou (*Rangifer tarandus*), polar bear (*Ursus maritimus*), little brown bat and northern myotis.

Wolverine is listed as Endangered both provincially and federally. In Canada, wolverines are found in northern and western forested areas, in alpine tundra of the western mountains and in Arctic tundra. In Labrador, reduction of the wolverine range began in the 1890s; the last verified record in Labrador was of two animals trapped in 1965 (COSEWIC 2014b). The wolverine is ranked locally as S1 (Critically Imperilled) and there is no evidence to suggest this species exists near the LSA. Its potential presence is therefore considered negligible.

Polar bear was identified within a 5-km radius of the Project site by the AC CDC in June 2018. In Canada, polar bears occupy ice-covered areas from Labrador to the Alaskan border. It is listed in Schedule 1 of SARA as Special Concern and as Vulnerable under the ESA. The polar bear requires both marine (sea-ice) and terrestrial habitat. It is a highly specialized carnivore strongly dependent on sea-ice to access marine mammal prey. Polar bears may use terrestrial habitat seasonally and most females den on land. They are typically only present inland from March to August, arriving on the coast with the drifting ice packs and then travelling north. Polar bears of the Davis Strait population are present seasonally along the northern Labrador coast, including in Nain. Qualitative observations from Elders with considerable knowledge of polar bears in Nain have indicated that their abundance has become higher now than in the past. The Elders also reported that their distribution has changed from primarily outer coast and offshore areas to now including the inner bays (which freeze first) and farther inland than previously observed (COSEWIC 2018). Given this information, it is reasonable to expect that polar bears will be present seasonally near the coast adjacent to the LSA. As well, Labrador Inuit hunters may be present nearby during the hunting season from early February to late June (NG 2020c), as they have the exclusive right to hunt polar bears in the LISA, which overlaps with the LSA. Given the low probability of interaction of polar bears with the Project, information will be sought opportunistically to document their presence near the LSA.

Little brown bat and northern myotis were both emergency-listed as Endangered under SARA in 2014 due to severe population declines largely caused by the deadly fungal infection known as White Nose Syndrome. The little brown bat is likely the most common bat species in Canada and the most familiar to the public, because it often uses buildings as day-roosts and forage in areas where it is visible (e.g., over lakes, around streetlights). The northern myotis is common in forests. Both species overwinter in cold and humid hibernacula (caves / mines). Females establish summer maternity colonies, often in buildings (mainly little brown bat) or large-diameter trees. Foraging occurs over water (mainly little brown bat), along waterways and forest edges, and in gaps in the forest (mainly northern myotis). Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate and then enter the hibernaculum, or travel to different hibernacula to overwinter (COSEWIC 2013b). Based on prior bat detector surveys of adjacent areas, such as the Nain Wind Micro-Grid EA (NG and Natural Forces Development Limited Partnership 2021) and Voisey's Bay Wind Energy Project (Vale NL 2021a), these species are known to occur in the Nain area and likely occur in the LSA.

Caribou are of great importance to the Inuit. An essential northern herbivore and the only vertebrate grazer on lichen in boreal, taiga and tundra habitats, caribou are in turn a primary food for many predators and important food source for northern residents (COSEWIC 2017c; Riley, Notzl and Greene 2013). Migratory caribou travel thousands of kilometres annually, from their calving and summering grounds above the tree line, to wintering areas in the taiga or boreal forests to the south. Migratory caribou "space away" by undertaking long-distance migrations to spring calving grounds where they give birth in large groups. They breed during the fall migration, disperse into smaller groups during the winter and reassemble into large groups, sometimes tens of thousands of individuals, on their way back to their calving grounds (Riley, Notzl and Greene 2013).

Caribou in Labrador are divided into the Torngat Mountains Population, the Eastern Migratory Population and the Boreal Population. Of the Eastern Migratory Population, the migratory forest-tundra ecotype dwellers (George River and Leaf River herds) are present in Québec and Labrador. Of the Boreal Population, the sedentary, forest-dwelling type (Lac Joseph, Red Wine Mountains and Mealy Mountains herds) are present in Labrador. The Torngat Mountains Population was assessed as Endangered by COSEWIC in 2016 and will possibly be listed federally under SARA. The entire Boreal Population is listed as Threatened under SARA and the Lac Joseph, Red Wine Mountains and Mealy Mountains herds are currently listed as Threatened under the ESA. The entire Eastern Migratory Population is under consideration for addition on SARA Schedule 1; the George River and Leaf River herds are not listed in the ESA. The principal caribou herd present in Nain is the George River herd, which is not protected under SARA or the ESA at this time but may be listed prior to Project construction (COSEWIC 2017c).

Caribou populations face variable threats, such as habitat loss and predation, the latter in part a function of human activities. Populations have decreased and ranges have contracted across most of Canada (COSEWIC 2017c; Riley, Notzl and Greene 2013). In 2013, the decline of caribou forced the Government of NL to initiate a ban on all caribou hunting in Labrador for conservation purposes. The NG and the NunatuKavut Community Council also recommended ceasing caribou hunting in Labrador (NLDFFA 2022). As previously stated, COSEWIC has recommended listing of the Eastern Migratory Population as Endangered. The Government of NL decided not to list the George River herd provincially as per the request of Indigenous governments and communities in Labrador, who established the Ungava Peninsula Caribou Aboriginal Roundtable to develop a compelling management strategy for the George River and Leaf River herds, which also includes a long-term management regime (Torngat Wildlife and Plants Co-Management Board 2017). The George River herd was last surveyed in 2020, with approximately 8,100 animals enumerated – an increase of 2,600 from the 2018 survey. Based on the survey, 35% of the herd is now made up of calves (NLDFFA 2022). In November 2020, a fall classification was conducted, including by NG departmental staff (NG 2020). The approximate size of the George River herd was estimated to be 5,500 in 2018 (a decrease of 38% since the previous survey in 2016 and 99% since 1993) (COSEWIC 2017c). The historic range of the George River herd was almost 100,000 km^2, from the eastern shore of Hudson Bay in northern Québec to the Atlantic coastline in Labrador. That range decreased by about 85% from the late 1990s to the 2010-14 range. It is now almost entirely in Labrador year-round and partially overlaps with the Torngat Mountains Population for part of the year (COSEWIC 2017c).

Caribou have declined in recent years and residents indicate they have not seen caribou around Nain in more than a decade (G. Dicker 2019 pers. comm. in R3: Environmental Review - Desktop Assessment). During 2023 field program for R12: Environmental Impact Assessment, caribou tracks were observed at six locations in the west end of the LSA (Figure 2.1). On October 5, 2023, ACI staff met with members of NL Fisheries, Forestry and Agriculture, Wildlife Division regarding the biophysical field programs completed for the Project.

4.5 Aquatic Environment

4.5.1 Fish and Fish Habitat

Watercourses in the Nain 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 (Anderson 1985). Some of the streams that cross the Access Road could provide suitable habitat for fish and benthic macroinvertebrates. Table 4.8 lists the seven anadromous and freshwater fish populations, including five salmonid species, are known to occur in the Nain-Okak region. Local conservation rankings (S-Ranks) were compiled from the Wild Species 2015 Report dataset (Canadian Endangered Species Conservation Council 2016) and federal statuses (Schedule 1 listing) were compiled from the SARA registry (Government of Canada 2022a).

Table 4.8 Fish Species Found in the Nain-Okak Region of Labrador

Common Name	Scientific Name	Rank / Status
Arctic char	*Salvelinus alpinus*	--
Brook trout	*Salvelinus fontinalis*	--
Atlantic salmon (Labrador population)	*Salmo salar*	Not at risk
Lake trout	*Salvelinus namaycush*	S5
Threespine stickleback	*Gasterosteus aculeatus*	--
Ninespine stickleback	*Pungitius pungitius*	S4
Round whitefish	*Prosopium cylindraceum*	S5

4.5.2 Freshwater Fish

Arctic char (*Salvelinus alpinus*) exists in both anadromous (migratory) and landlocked (resident) forms and typically feeds on a variety of invertebrates and fish distributed throughout the region (Bradbury, Roberge and Minns 1999). The freshwater environment is used by anadromous forms of Arctic char for spawning, rearing and overwintering. During the summer months, Arctic char returns to marine environments to feed. The anadromous fish normally spawns between October and November, at temperatures of 1-3 °C, peaking in mid-October. Most spawning takes place in streams over a variety of substrates, from fine sand and mud to gravel and cobble. Hatching occurs during ocean migrations that last one to four months (generally from mid-April to mid-June), typically in the second or third year. Return to natal stream occurs between early July to late September. Upstream migration generally occurs during high tide or periods of elevated water level. Landlocked forms of Arctic char spend their entire life cycle in lakes and ponds. Spawning generally occurs from early October to mid-November, over a variety of substrates from mud and gravel to boulders.

Atlantic salmon (*Salmo salar*) has been found as far north as Fraser River, west of Nain (Bradbury, Roberge and Minns 1999), and exists in both anadromous and landlocked forms. Certain populations of Atlantic salmon are listed under the SARA, but the Labrador population is not included. Anadromous forms of Atlantic salmon migrate upstream for spawning from July to August. Spawning sites are typically comprised of gravel-bottomed riffle sections of streams. Adults may return immediately back to sea after spawning or overwinter in freshwater habitats before migrating back to sea in the spring. Hatching occurs between mid-April to mid-June and the young remain in freshwater for two to five years before migrating to sea. Landlocked freshwater forms of Atlantic salmon, also referred to as ouananiche, remain in freshwater and spawn along rocky shorelines of lakes. Spawning typically occurs between mid-September and October over gravel substrate. Hatching generally occurs between mid-May to mid-June and young remain in tributary streams for two to three years before moving into lakes.

Brook trout (*Salvelinus fontinalis*) exists in both anadromous and landlocked forms. Upstream spawning migrations for both types occur in July and spawning normally occurs between late September and early November (Bradbury, Roberge and Minns 1999). During the 2023 field assessment, brook trout were confirmed present in two Access Road water crossings including Kauk Brook.

Lake trout (*Salvelinus namaycush*) inhabits shallow lakes and large rivers in northern Labrador (Bradbury, Roberge Minns 1999). Spawning occurs in shallow inshore areas of lakes and more rarely in streams. Spawning substrate is usually large gravel, cobble and interspersed boulders. Juveniles remain within 0.3 m of the bottom over a cobble / boulder substrate and seek shelter among boulders and woody debris.

Round whitefish (*Prosopium cylindraceum*) also inhabits ponds and streams in Labrador but has not been reported north of the Fraser River (Bradbury, Roberge and Minns 1999). Spawning occurs in November and December, in inshore areas of lakes and river mouths. Spawning substrate is generally composed of gravel or rubble bottom, in shallow water (<1 m in depth). After hatching, young remain on the bottom of the spawning area and disperse within two to three weeks.

Threespine and ninespine sticklebacks (*Gasterosteus aculeatus* and *Pungitius pungitius*) are found in both freshwater and marine environments (Bradbury, Roberge and Minns 1999). Spawning normally occurs in shallow, gravel-bottomed streams and occasionally in lakes, and is enabled by groundwater upwelling that carries dissolved oxygen to the developing embryos and provides protection from freezing. Threespine stickleback were confirmed present in Access Road water crossings of Kauk Brook (WC12) during the 2023 field assessment.

From consultation carried out in 2019 with local residents familiar with the area of the Access Road and intersecting streams, there is low potential for salmon or char in the small streams. However, it was noted that the potential for brook trout is high and there is potential for char to be present in waterbodies in the LSA, especially Kauk Brook.

The 2023 aquatic field program included assessment of all the waterbodies intersecting the LSA, which consisted of fish and fish habitat surveys with supporting environmental media sampling (e.g., fish, benthic invertebrates and surface water) for particular waterbodies as required. Surveys were conducted in July 2023 to coincide with open-water season in Nain and to avoid critical life cycle activities for fish. The number of water crossings was verified using drone-imagery and field surveys conducted under R4: Surficial Geology, Geomorphology, Permafrost and Hydrogeological Investigations and R12: Environmental Impact Assessment.

4.5.2.1 Freshwater Fish Species at Risk

No anadromous fish, freshwater fish or freshwater invertebrate SAR were identified in R3: Environmental Review - Desktop Assessment, nor were any SAR captured during the 2023 field assessment.

4.5.3 Marine Environment

The Project is located along the coast of Labrador. The Nain area is composed of Webb Bay, Tikkoatokak Bay, Nain Bay, Anaktalik Bay and Voisey's Bay. Due to high amounts of nutrient loading from local rivers, these marine coastal areas have high levels of nearshore marine productivity (Department of Fisheries and Oceans 2021). Each of the embayments has tidal connection to the Labrador Sea. The Labrador Current transports cold, relatively fresh polar waters south along the Labrador coast to the northeast Newfoundland Shelf and the Grand Banks. Due to climate warming, the marine areas surrounding and in the LSA are expected to experience an increase in freshwater flux from melting Arctic ice and subsequent changes in water column stratification.

Readings of tide-gauge 1,430 located in the Port of Nain, close to the airstrip, show that water levels at high tide with surges have increased over the past 10 to 15 years. These tides can be amplified by low-pressure wave systems that have become more frequent in the Nain region over the last few years. The tide-gauge reports a high tide of 3.40 m (NG 2018a).

The average sea level in Nain was stable for a long time. However, due to the effects of global warming, the icesheets are melting and the average sea level is rising. Furthermore, it is expected that the level will rise another 10 cm over the next 30 years (NG 2018a).

No field studies of the marine environment were conducted in 2023. The proponent has initiated discussions to access marine data being collected for other initiatives.

4.5.3.1 Marine Mammal Species at Risk

The Atlantic population of fin whales is listed as Special Concern federally. The fin whale is the second largest member of the family Balaenopteridae, after the blue whale (*Balaenoptera musculus*). Northern hemisphere

whales reach about 23 m long and 45 tonnes and are dark grey or brownish-grey dorsally and on the sides, shading to white ventrally. Some individuals have a V-shaped chevron on the dorsal side, behind the head. On the Canadian east coast, fin whales are found in coastal, on-shelf and off-shelf waters and are associated with a wide variety of bathymetric features. Almost 90% of caught fin whales in Atlantic Canada were taken off Labrador and the northeast coast of Newfoundland. Fin whale occurrence is often associated with productive oceanic fronts that contain high densities of euphausiid crustaceans (krill) and herring. Fin whales appear to move offshore and possibly southward in winter but are not completely absent from Canadian waters in winter; calls have been recorded year-round as far north as the mid-Labrador coast. This suggests that courtship, mating and potentially calving take place in Canadian waters (COSEWIC 2019). Fin whales may be present in the marine area adjacent to the LSA at various times of year.

4.5.3.2 Marine Fish Species at Risk

Northern wolffish (*Anarhichas denticulatus*) is listed as Threatened federally. Wolffish is a large marine fish characterized by the prominent, canine-like teeth in the front of the jaws, the elongate body and the lack of pelvic fins. The northern wolffish is a thick, heavy-set fish with a heavy head, pointed snout and small eyes. It is greyish to dark chocolate in colour with a light violet sheen, often with several indistinct dark spots or bars. It can reach 145 cm in length and weigh almost 20 kg. Northern wolffish is found offshore in cold (lower than 5 °C), continental shelf waters at depths varying between the surface to 900 m, but most often at depths greater than 100 m. The northern wolffish is a benthopelagic fish, meaning that it feeds mainly on benthic (bottom-living) crustaceans and invertebrates and occurs in the open sea. The species is non-schooling, non-migratory and somewhat territorial, as it makes nests and generally guards the eggs (COSEWIC 2012a). Due to these specific habitat preferences, it is unlikely that the northern wolffish would be found in the coastal marine area adjacent to the LSA.

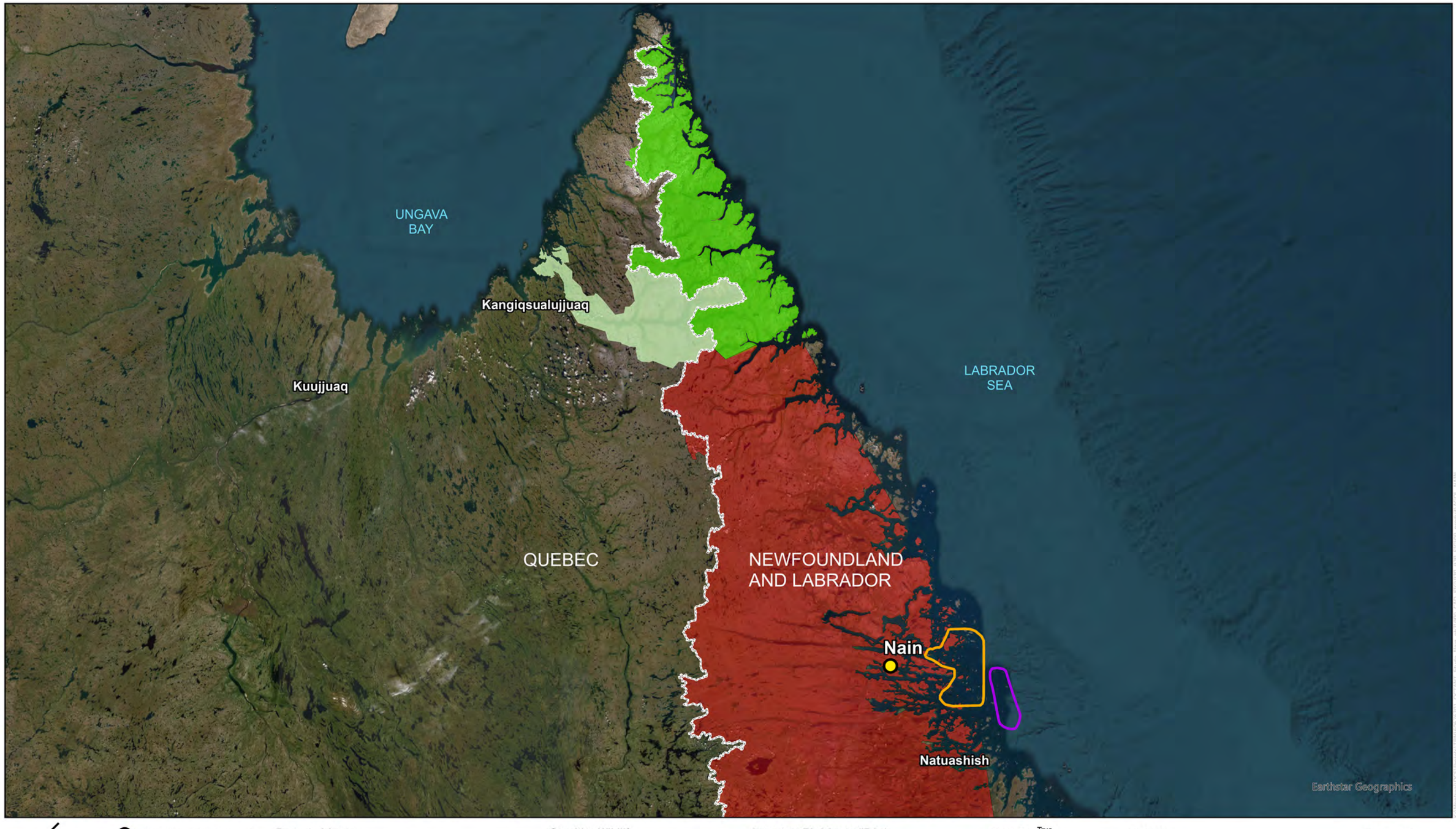
Spotted wolffish (*Anarhichas minor*) is listed as Threatened federally. The spotted wolffish has a large head, a rounded snout and a long dorsal fin. It is yellowish or greyish brown to dark brown in colour, with several distinct spots on its body. The species can be distinguished from the other two species that occur in the Atlantic by its dark spots on the body and firm musculature. It may reach a length of 150 cm. Spotted wolffish occurs in cold (lower than 5 °C), open continental shelf and slope waters between 50 and 600 m deep, over sand or mud bottoms with big boulders close by. Spotted wolffish is a bottom-dwelling predatory fish that feeds mainly on echinoderms such as starfishes, but also eats crustaceans, molluscs and other fish (COSEWIC 2012b). Due to these specific habitat preferences, it is unlikely that spotted wolffish would be found in the coastal marine area adjacent to the LSA.

4.6 Protected and Special Areas

The Project intersects the George River Caribou Herd Sensitive Wildlife Area (Figure 4.1). More information on caribou is available in Section 4.4.3.1. The Sensitive Wildlife Area designation does not prohibit development, but development proposals are referred to the Provincial Wildlife Division. Since 2013, the George River Caribou Herd has been under hunting moratorium due to population decline (NLDFFA 2022). Its population is presently not protected under SARA or the ESA, but it may be listed prior to Project construction (COSEWIC 2017c).

Two IBAs are in the Nain area: Nain Coastline; and Offshore Islands Southeast of Nain (Figure 4.1). IBAs are discrete areas that support specific groups of birds, including threatened birds, large groups of birds and birds restricted by range or habitat (Aivek Stantec Limited Partnership 2021). The Nain Coastline IBA supports pre-moulting harlequin ducks and a high density of nesting peregrine falcons. The Offshore Islands Southeast of Nain IBA has large numbers of colonial seabirds, including Atlantic puffins, razorbills and glaucous gulls. More information is included in Section 4.4.2. Designation as an IBA does not provide protection, though some IBAs are legally protected through other mechanisms; the Nain sites are not protected.

The Torngat Mountains National Park is located approximately 240 km northwest of the Project (Figure 4.1). The park, 9,600 km^2 in area, was established in 2008 as part of the Labrador Inuit and the Nunavik Inuit Land Claims Agreements (Parks Canada 2010). The area is the traditional homeland of the ancestors of the Inuit of Labrador and Nunavik, who have travelled and lived in this area for thousands of years, following the migratory paths of species such as whale, polar bear and caribou (Parks Canada 2022). More information is provided in Sections 5.2 and 5.5.5. As a National Park of Canada, the area is protected.



OCTANT
EXPERTS EN SOLUTIONS POUR L'AVIATION

New Nain airport project

Protected Areas
- Kuururjuaq National Park (Québec)
- Torngat Mountains National Park of Canada

Sensitive Wildlife
- George River Caribou Herd

Important Bird Areas (IBAs)
- Nain Coastline
- Offshore Islands Southeast of Nain

Magnetic North / True North
-22°

1:2 500 000
0 20 40 km
NAD 1983 UTM Zone 20N
2023-07-20 15:53

Figure 4.2
Protected and Special Areas

AECOM

Kuururjuaq National Park is located approximately 257 km northwest of the Project (Figure 4.2). The park was established in 2009 and covers 4,460 km^2, stretching east towards the Québec-Labrador Peninsula (Sepaq 2023) with the Torngat Mountains as its eastern border. Kuururjuaq is protected by the Government of Québec.

The Imappivut (our oceans) Marine Management Plan is being developed by the NG with support from the Government of Canada (NG 2018b). It will provide a framework for using Inuit knowledge in decision-making in the coastal waters of the LISA. This planning initiative covers the entire 17,000 km coastline of Nunatsiavut, 12 nautical miles (NM) out along the shoreline and an additional 188 NM out to sea (Dives 2017). The Plan will use Inuit traditional knowledge to govern matters such as resource extraction and species management over the coastal waters on the eastern edge of the Northwest Passage. Imappivut is proposed to be Canada's first Indigenous-Led Protected Area.

The Project is in the Taiga Shield conservation region (Bird Conservation Region 7NL, Taiga Shield and Hudson Plains) and along the Atlantic Migratory Bird Flyway (Environment Canada 2014; Riley, Notzl and Greene 2013). The Taiga Shield conservation region encompasses eastern Northwest Territories, southern Nunavut, northern Manitoba and Ontario, as well as north-central Québec and Labrador (Environment Canada 2014). Bird Conservation Region 7NL encompasses most of Labrador. The Atlantic Americas Flyway is a large area extending along the eastern edge of the Americas from the Canadian Arctic Archipelago to Tierra del Fuego, the southern tip of South America (BirdLife International n.d.). Neither of these areas is protected.

5. Human Environment

Proponents are required to provide information on communities where projects are proposed or those that may experience the effects of a project. From a community perspective, projects may have both beneficial and adverse effects.

A variety of existing and publicly available data and information sources were used to understand and describe the human environment. They include R3: Environmental Review - Desktop Assessment, publicly available land claims documentation, government documents and data, community / organization websites and traditional resource use reports and studies completed for other projects and their EAs. Data and information on demographic characteristics were obtained from Indigenous and Northern Affairs Canada (INAC) and Statistics Canada, but it should be noted that these sources may differ. Some data from the 2021 census and 2012 Aboriginal Peoples Survey are rounded or suppressed for confidentiality due to the small populations involved. Where limited information was available on Nain, more general information on Nunatsiavut, Labrador North, Labrador Rural Secretariat Region, Royal Canadian Mounted Police (RCMP) Labrador District or the Inuit of Canada has been provided, if and as available.

5.1 Indigenous Peoples

The Inuit, who are one of the Indigenous Peoples of Labrador, are direct descendants of the prehistoric Thule people who lived in the circumpolar regions of the world for more than 5,000 years (NG 2020b). The Labrador Inuit share a common language and heritage with Inuit in Arctic and sub-Arctic regions of Canada, Alaska, Greenland and Siberia. The Labrador Inuit, who are the most southern representation of this culture, expanded from Alaska to the Canadian Arctic around 1000 current era (CE) (Pedersen 2016; Fitzhugh in LIA 1977).

The pre-contact Inuit lifestyle included year-round harvesting and seasonal migrations throughout northern regions in pursuit of resources for food and materials to make clothing, shelter and tools. The Inuit hunted animals (e.g., walrus, beluga, seal) from kayaks in coastal waters when ice was absent (i.e., mid-June to mid-December) (Pedersen 2016). In late autumn, they harvested bowhead whales from open skin-covered boats called umiaks. During winter, they hunted seals near the ice edge.

The heaviest concentrations of Inuit activities have been discovered on the inner islands and near the mouths of the bays (Fitzhugh in LIA 1977). Harvested resources included all types of marine mammals, many species of birds and fish and a wide variety of land mammals, especially caribou, black bear, barren-ground grizzly and many species of smaller fur-bearing mammals. Inuit used lithic resources such as soapstone, pyrites and slate, which were obtained along the coast.

The Labrador Inuit way of life remained unchanged until they first encountered Europeans. Whalers from the Basque region of Spain began arriving in southern Labrador in the 16th Century to harvest whales and extract whale oil (NG 2023). In 1752, the Moravian Brethren (missionaries of a German protestant-based church) attempted to build a station near Makkovik but ceased due to conflict with the Inuit (Rivet 2020a). In 1771, following three exploratory visits to Labrador, the Moravians established a mission at Nuneingoak, which they called Nain. Using Nain as a base, the Moravians founded seven other missions: Okak (1776-1919), Hopedale (1782-present), Hebron (1830-1959), Zoar (1865-1890), Ramah (1871-1907), Makkovik (1896-present) and Killinek (1904-1924) (Brice-Bennett in LIA 1977 [Land Use in the Nain and Hopedale Regions]). From these stations, the Moravians set about converting the Inuit to Christianity and engaging in trade, exporting goods (e.g., oil, sealskins, furs, dried fish, handicrafts) to Europe. During this period, the Hudson's Bay Company (HBC) also established fur-trading posts in Labrador beginning in 1836 (Labrador Heritage Society n.d.).

Establishment of the Moravian missions and HBC trading posts resulted in the Inuit participating in a trade economy (e.g., fur trapping, cod fishing) and many changes to their way of life (Brice-Bennett in LIA 1977; Kaplan 2012). Mainly, the Inuit became more sedentary and reliant upon commercial activities and support provided to those in need by the missionaries and HBC (NG 2023). The arrangement was mutually beneficial until the collapse of fur prices in the Great Depression created hardship for both fur-traders and trappers. In 1926, following several years of financial difficulty, the remaining Moravian mission stores were subsumed by the HBC[5] and later by the Newfoundland Commission of Government (Rivet 2020a; Pedersen 2016). While several stations founded by the Moravians continue as Inuit communities (i.e., Nain, Hopedale and Makkovik), others closed for various reasons (e.g., financial losses, deaths due to communicable disease, suspension of services following establishment of the provincial government and Confederation with Canada in 1949). Upon closure of the missions, remaining Indigenous people were relocated and many from the most northern communities settled in Nain (NG 2023; Rivet 2020a; Pedersen 2016).

Consultation with Indigenous groups on the Project includes the Inuit communities of Nain and Hopedale as well as Innu Nation, which includes Mushuau Innu First Nation (Natuashish) and Sheshatshiu Innu First Nation.

5.1.1 Labrador Inuit Land Claims Agreement

The Labrador Inuit Association (LIA) was formed in 1973 to advance land claims and address other issues (NG 2023). In 1977, the LIA filed a statement of claim with the Government of Canada seeking rights to the land and sea ice in northern Labrador. The LILCA was signed in December 2005 and the transitional government began preparations for the first elections. The first elected Nunatsiavut Assembly was sworn in on October 17, 2006.

5.1.1.1 Nunatsiavut Government

The Nunatsiavut Government is an Inuit regional self-government (established in 2005 following finalization of the LILCA) with established rights in the LISA and on LIL. Through the LILCA, NG has the power to establish its own justice system and laws to govern matters such as land and resource management, education, health, housing, culture and language (NG 2023). 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.

Nunatsiavut Beneficiaries live in the five Inuit communities in Labrador -- Nain, Hopedale, Postville, Makkovik and Rigolet, and elsewhere (NG 2023). Hopedale is the legislative capital of Nunatsiavut, while Nain is the administrative capital. Each Inuit Community Government is responsible for serving the needs of its residents.

NG has taken measures to ensure communications and support are also provided to Beneficiaries living outside the LISA. The NunaKatiget Inuit Community Corporation serves Beneficiaries in HVGB and Mud Lake, while the Sivunivut Inuit Community Corporation serves Beneficiaries in North West River and Sheshatshiu (Sivunivut 2009).

The Nunatsiavut Assembly is made up of elected officials, including a President, First Minister and Speaker. Ordinary Members are elected from each of the five Inuit Communities, as well as for Upper Lake Melville and Canada (NG 2023). The Chairpersons of the NunaKatiget Inuit Community Corporation and Sivunivut Inuit

[5] Hudson's Bay Company lists 21 fur-trade posts in Labrador, including Makkovik, Hopedale, Nain, Okak and Fort Hebron along with Rigolet and other sites (Archives of Manitoba n.d.).

Community Corporation serve on the Nunatsiavut Assembly. The AngajukKâk, or mayor, of each Inuit Community Government represents constituents as an ex-officio member of the Nunatsiavut Assembly.

5.1.2 Nain

The Project is in Nunatsiavut on LIL (Figure 1.1). A portion of the Access Road is on Nain Inuit Community lands. Nain was a municipality incorporated in 1970 (Pitt and Pitt 2015). Following implementation of the LILCA, the municipal government became the NICG, which is led by a mayor (Angajukkâk), deputy mayor (Deputy Angajukkâk) and five councillors.

5.1.3 Demographic Characteristics

5.1.3.1 Population

Nunatsiavut Beneficiaries were estimated at approximately 6,500 in 2020 with about 2,500, or 38%, living in Nunatsiavut (Rivet 2020b). This is consistent with the 2021 census, which indicated 2,323 people were living in Census Division (CD) 11: Nunatsiavut (Statistics Canada 2023). The 2021 census also shows 9,365 individuals in NL identifying as Inuit, of which roughly 6,000 lived in Labrador, with a third of them living in Nunatsiavut. As many Labrador Inuit appear to live outside Nunatsiavut (in Labrador, NL and likely beyond), census data for Nunatsiavut, Rigolet, Postville, Makkovik, Hopedale and Nain do not represent the total Labrador Inuit population or Nunatsiavut Beneficiaries.

The population of Nain is young (likely indicating a high birth rate) and increasing (Table 5.1). The 2021 median age of residents of Nain was younger than for Nunatsiavut (by 3.4 years), Labrador (by 9.5 years) and NL (by 19 years) (Statistics Canada 2023). The population of each of the other jurisdictions has decreased.

Table 5.1 Population

Jurisdiction	Population			Median Age
	2016	2021	% Change	
Nain	1,125	1,204	7%	29.4
Nunatsiavut (CD 11)	2,558	2,323	-9.2%	32.8
Labrador	27,197	26,655	-2.0	38.8
Newfoundland and Labrador	519,716	510,550	-1.8	48.4

Examining statistics such as births, deaths and migration can help to understand the reasons for population change. In 2021, the total birth rate (i.e., the ratio of live births in the population expressed per 1,000) for Nain was 14.6, nearly twice that of NL (NL Statistics Agency 2023). In 2021, Nain had 20 deaths, a 100% increase over 2020. The 2021 median age of death in Nain was 63 years, compared to 77 years for NL. The median age of death can change greatly year to year, especially for small communities.

5.1.3.2 Indigenous Identity and Language

Nain's population is dominantly Inuit (Table 5.2). The community has a small proportion of people who identify as non-Indigenous or First Nations (Statistics Canada 2023). More than half of the population of the whole of Labrador identifies as non-Indigenous followed by Inuk.

Table 5.2 Indigenous Identity

Indigenous Identity	Nain		Labrador		NL	
	#	%	#	%	#	%
Inuk	790	94%	5,070	19.4%	7,330	1.5%
First Nations (North American Indian)	15	1.8%	2,600	9.9%	28,435	5.7%
Metis	0	0%	3,255	12.4%	7335	1.5%

Table 5.2 Indigenous Identity

Indigenous Identity	Nain		Labrador		NL	
	#	%	#	%	#	%
Non-Indigenous	35	4.2%	14,915	56.9%	455,550	90.7%
Registered or Treaty Indian	10	1.2%	2,680	10.2%	22,720	4.5%
Not a Registered or Treaty Indian	830	98.8%	23,520	89.8%	479,375	95.5%

English is the mother tongue of more than 80% of Nain residents, followed by Inuktitut at approximately 15% (Statistics Canada 2023). English is also the dominant mother tongue in Labrador and NL (Table 5.3).

Table 5.3 Mother Tongue

Mother Tongue	Nain		Labrador		NL	
	#	%	#	%	#	%
English	685	81.1%	22,925	86.9%	486,560	96.4%
French	0	0%	385	1.5%	2,215	0.4%
Inuktitut	130	15.4%	215	0.8%	245	0%
Innu (Montagnais)	10	1.2%	1,560	5.9%	1,575	0.3%
Multiple Responses	15	1.8%	465	1.8%	3,375	0.7%

5.1.3.3 Family and Household Characteristics

In Nain, households tend to be large due a higher number of children and two or more generations living in the same household (Table 5.4). The 2021 census indicates approximately 18% of homes had more than 5 persons living in them (Statistics Canada 2023). This may be an indication that some homes in Nain are overcrowded. In 2021, 23.3% of families in Nain were one-parent families led by women, compared to 12.2% in Labrador and 12.3% in NL (Statistics Canada 2023).

Table 5.4 Family and Household Characteristics

Indicator	Nain	Labrador	NL
Average size of census families	3.3	2.8	2.7
Average number of children in census families with children	2.1	1.7	1.6
Couple-family households with children	42.9%	57.8%	55%
Average household size	3.4	2.5	2.3
One parent family households	20.4%	9.9%	8.9%
Multigenerational households	6.1%	2.9%	2%
Household size (5 or more persons)	18.4%	7.7%	4.2%

5.1.3.4 Education

Table 5.5 shows enrolment for schools in Local Area 80: Labrador North, which includes Nain, Natuashish, Hopedale, Postville and Makkovik. School enrolment generally declined in this area since 1990 (NL Statistics Agency 2023). Enrolment at Jens Haven Memorial all grades school in Nain was 220 in the 2022-2023 school year (NL Department of Education 2022).

Table 5.5 School Enrolment Labrador North

Indicator	School Year		Difference	%
	1989-1990	2021-2022		
Total students	741	456	-285	-38%
Primary	289	147	-142	-49%
Elementary	195	126	-69	-35%
Junior high	162	96	-66	-41%
Senior high	93	87	-6	-6%

In 2021, a higher proportion of people in Nain reported having no certificate, degree or diploma compared to Labrador and NL (Statistics Canada 2023). This rate was higher for men than women in Nain and NL (Table 5.6). In Nain, the highest proportion of people 25 to 64 years of age and older with a post-secondary education had obtained a college or other non-university certificate or diploma, followed by an apprenticeship or trades certificate or diploma (Statistics Canada 2023). In both jurisdictions, women are more likely to have university education and men are more likely to be trained in a trade.

Table 5.6 Post-Secondary Education by Gender (for Population 25 to 64 Years)

Highest Certificate, Diploma or Degree	Nain			NL		
	Total	Male	Female	Total	Male	Female
No certificate, diploma or degree	34.9%	46.3%	26.2%	12.6%	14.5%	10.9%
High (secondary) school diploma or equivalency certificate	32.5%	26.8%	38.1%	24.4%	24.3%	24.5%
Apprenticeship or trades certificate or diploma	8.4%	9.8%	4.8%	11.2%	17.1%	5.7%
Bachelor's degree or higher	4.8%	0%	7.1%	20.8%	17.1%	24.3%

5.1.3.5 Employment and Income

In 2021, the largest employment sectors in Nain were public administration followed by health care and social assistance, which are both important sectors for women (Table 5.7). Men were also most likely to be employed in public administration; they were also well represented in construction or mining, quarrying and oil and gas extraction, similarly to men throughout NL (Statistics Canada 2023). Data for sectors showing zero individuals were not included in the table but may have small numbers of people (i.e., less than 5) employed in Nain.

Table 5.7 Occupation by Gender

North American Industry Classification System 2017	Nain			NL		
	Total	Male	Female	Total	Male	Female
Public administration	30.4%	27.3%	33.3%	8.9%	8.8%	9.1%
Health care and social assistance	15.9%	9.1%	25%	16.5%	5.6%	27.9%
Construction	8.7%	15.2%	5.6%	8%	13.9%	1.8%
Mining, quarrying, and oil and gas extraction	7.2%	12.1%	5.6%	4%	6.6%	1.3%
Manufacturing	5.8%	6.1%	5.6%	4.8%	6.4%	3.1%
Retail trade	5.8%	0%	8.3%	12.3%	10.7%	14%
Transportation and warehousing	4.3%	6.1%	0%	4.9%	7.2%	2.4%
Administrative and support, waste management and remediation services	4.3%	0%	5.6%	3.1%	3.6%	2.5%
Accommodation and food services	4.3%	0%	5.6%	6.3%	4.9%	7.8%
Agriculture, forestry, fishing and hunting	2.9%	6.1%	0%	3.9%	5.8%	1.9%

Table 5.7 Occupation by Gender

North American Industry Classification System 2017	Nain			NL		
	Total	Male	Female	Total	Male	Female
Information and cultural industries	2.9%	0%	0%	1.1%	1.2%	1%
Educational services	2.9%	0%	5.6%	7.1%	4.5%	9.7%
Arts, entertainment and recreation	2.9%	6.1%	0%	1.5%	1.5%	1.6%
Other services (except public administration)	2.9%	0%	0%	4.1%	3.8%	4.3%

In 2021, overall labour force participation and employment rates in Nain were higher than for NL (Table 5.8). Women in Nain experienced higher employment than men, while the reverse was true for NL generally (Statistics Canada 2023). People in Nain were more likely to work full time year-round in permanent positions than in NL. In 2020, median individual income was the same as for NL, but median household income was higher in Nain. In Nain, women earned more income than men, while the reverse was true for NL.

Table 5.8 Employment and Income by Gender

Indicator	Nain			NL		
	Total	Male	Female	Total	Male	Female
Participation rate	58.5%	56.9%	60%	56.1%	58.6%	53.7%
Employment rate	52.5%	48.3%	55%	47.5%	48.1%	47%
Unemployment rate	10.1%	12.1%	8.3%	15.2%	18%	12.4%
Worked full year full time	41.2%	34.5%	48.3%	27.5%	28.2%	26.8%
Worked part year and / or part time	20.2%	27.6%	15%	30.1%	32.2%	28.2%
Permanent position	79.7%	75.8%	86.1%	63.1%	59.8%	66.5%
Casual, seasonal or short-term position (less than 1 year)	14.5%	18.2%	11.1%	20.6%	23%	18.3%
Median individual income (2020)	$36,800	$36,400	$37,200	$36,800	$42,000	$32,400
Median household income (2020)	$89,000	NA	NA	$71,500	NA	NA

In 2020, median family income in Nain was higher than that of NL, but less than for Labrador; the same was true for one-parent families (Table 5.9). Couples with children had lower income in Nain compared to NL and Labrador (Statistics Canada 2023).

Table 5.9 Family Income

Median Income	Nain	Labrador	NL
Families (2020)	$103,000	$129,000	$90,000
Couple with children families (2020)	$127,000	$162,000	$131,000
One-parent families (2020)	$64,000	$74,500	$57,600

In 2020, the self-reliance ratio for Nain was 75.8% (NL Statistics Agency 2023). A higher self-reliance ratio indicates a lower dependency on government transfers (e.g., Canada Pension, Old Age Security, Employment Insurance, Income Support Assistance). The self-reliance ratio in NL was 80.0%, meaning individuals in NL were on average more reliant on employment income than those in Nain. Reliance on government transfers in Nain was similar to NL, though access to COVID-19 funding was higher in Nain (Table 5.10). Labrador shows higher reliance on employment income than the other jurisdictions, owing to high employment rates in areas such as Labrador West and Churchill Falls.

Table 5.10 Government Transfer Recipients (for Population 15 Years of Age and Over)

Indicator (2020)	Nain	Labrador	NL
Market income	75.5%	85.8%	76%
Employment income	73%	78.8%	63%
Government transfers	24.4%	14.2%	24%
Employment insurance	4.8%	3.6%	4.9%
COVID-19 emergency and recovery	8.2%	3.7%	5.2%

The 2021 census identified the proportion of population with low income in 2020 based on the low-income measure after tax (LIM-AT)[6] (Table 5.11). For most age groups and genders, individuals in Nain were more likely to experience low income than their Labrador or NL counterparts (Statistics Canada 2023). In each area, women over 65 were most likely to have low income. The same was true for women aged 18-64 in Labrador and NL.

Table 5.11 Low Income After Tax by Age Group and Gender

Age Group	Nain			Labrador			NL		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
0-17 years	26%	22%	31%	11.9%	10.9%	12.9%	15.4%	15.6%	15.2%
18-64 years	12.8%	14%	12%	5.9%	5.4%	6.4%	11.3%	10.6%	12.1%
65 years and over	32%	20%	36%	18.7%	15.4%	21.9%	25.4%	22.4%	28.1%

5.1.3.5.1 Work Location and Commuting

In 2021, 85.5% of those employed in the census subdivision (CSD) for Nain worked in Nain, which was higher than for those employed in the relevant CD for Labrador and NL (Table 5.12). A small portion of workers in NL commutes to other provinces for work, but this is less common in Nain. Close to 13% of employed people in Nain commute to work outside of the community within NL, but it is more common elsewhere in Labrador and NL. In each jurisdiction, a portion of employees (most often women) worked from home (Statistics Canada 2023). The ability to work from home is related to the type of work and infrastructure, such as reliable internet service.

Table 5.12 Work Commuting

	Nain	Labrador	NL
Worked at Home	3.2%	5.6%	13%
Commute within CSD of residence	85.5%	76.1%	55.6%
Commute to a different CSD within CD of residence	3.6%	21.1%	38.3%
Commute to a different CSD and CD within province or territory of residence	9.1%	1.9%	4.4%
Commute to a different province or territory	0%	0.9%	1.8%
Commute in a car, truck or van (driver or passenger)	35%	86.8%	88.9%
Walk to work	30%	5.5%	4.8%
Commute by other methods	33.3%	6.8%	4.2%

5.2 Physical and Cultural Heritage

Labrador Inuit are descendants of the Thule, a pre-European contact hunting society that lived across northern Canada and Alaska (PAO n.d.). This culture, which was centred around capturing bowhead whales, was adapted to the Arctic and sub-Arctic conditions of Labrador. The Inuit had also occupied the Northern Peninsula of Newfoundland in the early post-contact period.

[6] The LIM-AT refers to a fixed percentage (50%) of the median adjusted after-tax income of private households (Statistics Canada, 2023).

The early Inuit hunted game throughout the year for food and to gather materials to create required items (Brice-Bennett 2012). Single-person kayaks and larger umiaks (open boats) were made from wood frames wrapped in seal skins. Clothing was made from seal pelts in summer and caribou skins in winter. The Inuit constructed skin tents for the milder seasons, and during winter they lived in sod houses (earthen huts built using sods, timber and / or stones with a roof supported by the ribs and shoulder blades of whales) or snow houses built from blocks of hard snow (Brice-Bennett 2012; Pedersen 2016). Large winter houses were usually shared by several families (Pedersen 2016).

Prior to European contact, the Labrador Inuit held their own spiritual beliefs centred around the most powerful Inuit spirit, Torngarsoak (Parks Canada 2022). AngajukKât (leaders) and shamans would communicate with Torngarsoak in hopes of good weather and bountiful hunting. Non-adherence to rules and practices associated with spiritual beliefs would result in consequences, such as storms, winds or unsuccessful hunting. Though many of the Labrador Inuit were converted to Christianity by the Moravians, the people still hold strong spiritual connections to ancient beliefs and to Torngait as the place where spirits dwell. The Inuit continue to travel north from their communities to the Torngat Mountains area for hunting, fishing and travelling throughout the year. Special places include Sallikuluk (Rose Island) in Saglek Bay, where there are more than 600 known traditional Inuit graves and two areas that have a number of traditional Inuit sod house foundations.

5.2.1 Historic, Archaeological and Paleontological Resources

Archaeological resources (i.e., archaeological materials, archaeological sites, Inuit cultural materials) provide a record of Inuit prehistory, history and use and occupancy of Nunatsaivut (LIA 2005). These resources are of ethnological, spiritual, cultural, historic, religious and educational importance to Inuit. The NG is responsible for investigation and protection of archaeological resources on LIL and in Inuit Communities.

The *Labrador Inuit Lands Act* (Part 2, Division 3: Archaeology, Burial Sites and Human Remains) provides protection of archaeological resources on LIL along with related information. The NG works with the NL Provincial Archaeology Office (PAO), which is responsible for heritage resources in the LISA outside of LIL through the *Historic Resources Act* (LIA 2005, Government of NL 2019). The PAO maintains a database of archaeological sites, but limited information is made public to protect the integrity of cultural and heritage resources (PAO n.d.). Many artefacts have been identified in coastal Labrador, with a high concentration of sites around Nain and in surrounding rivers and coastal areas. Nain sites are identified as Inuit, Intermediate Period, Innu, Maritime Archaic, Recent Period and European.

Nearly 800 Thule and Inuit archaeological sites have been identified in NL (PAO n.d.). The area now known as the Torngat Mountains National Park has been important to the Thule and / or the Inuit for thousands of years (Parks Canada 2022). Hundreds of archaeological sites have been identified in the Park, some nearly 7,000 years old. Along with the Thule culture, these sites show evidence of other prehistoric cultures. Artefacts include tent rings, stone caribou fences, food caches and burial sites. The chert quarry at Ramah was a source of glass-like tool material used by Indigenous Peoples for thousands of years.

Various places have been identified in northern Labrador for their importance to Indigenous Peoples past and present (Parks Canada 2022). The Torngat Mountains National Park provides general protection to sites within the Park, including:

– Sallikuluk (Rose Island), located in Saglek Bay at the southern boundary of the park, where more than 600 known traditional Inuit graves and two areas of traditional Inuit sod house foundations have been identified.
– Silluak (North Arm), a fjord at the western end of Saglek Bay that has been used for thousands of years by Inuit and their predecessors and where an archaeological inventory is underway.
– Upingivik, a traditional whale hunting area located in the northerly reaches of the park where Inuit who lived on Killiniq Island in the past travelled to Upingivik during the spring and fall migrations to hunt whales, walruses and eider ducks, and where Inuit, mostly from Nunavik, still travel to Upingivik to hunt whale and other animals for sustenance and to meet and share with other Inuit.
– Ramah, rich in natural and cultural resources such as chert quarries, and located in the southern region of the park, about 50 km from the boundary.
– PitukKik (Nakvak Brook), a small cove in Saglek Fjord in the southern region of the park, where Nakvak Brook flows into the sea and access to a traditional Inuit travel route between the Labrador Sea and Ungava Bay.

More recent history of European and Canadian presence in the Torngat Mountains National Park includes the remains of the Moravian Missions, HBC trading posts, a World War II German remote control meteorological station and Saglek Radar Station, part of the American distant early warning line system remaining from the Cold War (Parks Canada 2022). The Moravian Church recalled its last remaining missionary from Labrador in 2005 (Rivet 2020a). The Inuit maintain and administer the Moravian churches in the various communities.

Four sites in northern Labrador have been designated as national historic sites (Table 5.13). They include ancient archaeological sites and the remains of the Moravian missions (Parks Canada n.d.).

Table 5.13 National Historic Sites in Northern Labrador

Name	Description
Okak	Okak shows evidence of first human occupation around 5550 before current era (BCE) (about 6,000 years ago) and has been occupied by Maritime Archaic, Pre-Dorset, Intermediate Indian, Dorset and present Labrador Inuit. Sixty archaeological sites, dating from that time onwards, are representative of habitation of Maritime Archaic to Labrador Inuit. Okak is also the location of the second oldest Moravian mission in Labrador (1776 to 1919). Designated as a national historic site in 1978.
Kitjigattalik - Ramah Chert Quarries	The Ramah chert quarries were active from 3000 BCE to 1400 AD (between 600 and 5,000 years ago). The chert found at Ramah is a visually distinctive and important stone type used by several ancient cultures to manufacture tools and other objects. Ramah chert objects are found in burial complexes from northern Labrador to New England, and Ramah chert has been linked to Late Archaic burial complexes and belief systems throughout this large region. Designated as a national historic site in 2015.
Hopedale Mission	Established in 1782 by the Moravian Church, Hopedale includes the earliest surviving Moravian mission structure in Labrador. The site includes a complex of large, wooden buildings representative of Moravian mission architecture in Labrador and commemorates the interaction between Labrador Inuit and missionaries. Designated as a national historic site in 1970.
Hebron Mission	Established in 1829 as a Moravian church for conversion of the Inuit and served commercial and medical purposes. The complex consists of linked buildings, including a church, a mission house and a store, constructed in a Germanic-influenced architectural style. Designated as a national historic site in 1976.

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.

During site investigations for R4: Surficial Geology, Geomorphology, Permafrost and Hydrogeological Investigations in July 2023, the Project archaeologist (under permit of the NG) identified and reported a cultural artefact (location shown in Figure 2.1). Based on this discovery, a full Stage 1 and Stage 2 archaeological study is required as part of the EA. R4, including results of archaeological investigations, will be provided in the EA.

5.3 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 2022). 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 (NLDFFA 2022). The following NL small and large game hunting and trapping management areas apply to the Nain area (NLDFFA 2022; NG 2020c)):

– Harvesters have access to small game in all of Labrador (i.e., ptarmigan, snowshoe hare, Arctic hare and porcupine) and northern Labrador (ruffed and spruce grouse) Management Zones.
– Licences to hunt in Moose Management Area 92 are issued to the NG by the Government of NL.
– In Black Bear Management Area 200 (Labrador), hunters may harvest black bears.
– In 2013, the Government of NL enacted a prohibition on hunting the George River caribou.
– Nunatsiavut Beneficiaries may hunt caribou within the Torngat Mountains National Park.
– Trapping beaver, muskrat, otter, mink, coyote, white / coloured fox, lynx, wolf, ermine (weasel), squirrel, marten, fisher and wolverine is permitted in the Labrador North Fur Zone.

5.3.1 Current Use of Land and Resources for Traditional Purposes

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 northernly 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).

No prior or current developments or Aullâsimavet are in the Project area. Aullâsimavet identified within the general area presented on Figure 2.1.

5.3.1.1 Land and Resource Use Study

A land and resource use study will be conducted by NLNR, independently of the proponent (a letter to this effect is included in Appendix D). The study is expected to be a comprehensive accounting of current land use activities in the broader region surrounding the community of Nain. 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, if available, will be incorporated in the land use assessment in the EIS.

5.4 Community Health and Well-being

For many Indigenous communities in Canada, mental health and well-being issues are related to the experience of colonialization and the resulting inter-generational trauma stemming from experiences such as residential schools. Children who lived at residential schools were limited in their ability to maintain close family relationships and community connections and to learn cultural practices from their parents, and many were physically and sexually abused or died as a result of trauma or illness.

Five residential schools for Indigenous children were operated in NL (Procter 2020). The Moravian Church established schools in Nain and Makkovik. The Grenfell Mission (later the International Grenfell Association) operated schools at Cartwright, St. Mary's River and Northwest River and through an orphanage in St. Anthony.

The Nain school, which was operated from 1929 to 1972, was mainly a residential school, though it was sometimes offered as a day school and / or seasonally, as the children may have been sent home for the winter months (Procter 2020). The Nain school was the only Indigenous residential school in NL where children were taught in Inuktitut, though the curriculum was limited and English-speaking children were instructed separately. The Moravian missionaries taught the Nain Inuit children in Inuktitut as a measure of controlling influences rather than preserving language.

The Moravians allowed students at the Nain school little time with their families or to participate in cultural practices. Students had chores such as chopping wood, fetching water, housekeeping and mending (Procter 2020). Children were only permitted to visit their families for several hours on Sundays. When parents wished to take their children with them inland for hunting and trapping, the missionaries resisted as they wished to limit the influence of parents on the children.

The Moravian missionaries differed from Inuit parents in the philosophy and practice of child raising. Inuit parents allowed their children to learn at their own pace, take food when they felt hungry and did not force children to do things they did not want to do (Procter 2020). The Moravian missionaries maintained strict rules of behaviour and schedules and exerted punishments for non-compliance. Though Inuit parents may have converted to Christianity and willingly placed their children in the residential school for educational purposes, harsh discipline was a point of contention and resulted in conflict with the missionaries.

The Moravians did not charge fees for providing education or boarding (though parents provided support through donations such as food and firewood) and supporting the Nain residential school became infeasible (Procter 2020). In 1941-1942, the Newfoundland Commission of Government began providing funding for salaries but insisted that trained teachers be hired and the Newfoundland education system be adapted for northern Labrador. The expanded curriculum in Nain included history, geography, basic English, nature study, art and native boot making. Teaching materials were translated into Inuktitut. The updated curriculum allowed some Nain students (with financial support from the Newfoundland Commission of Government) to pursue secondary and / or post-secondary studies at central Labrador and Newfoundland.

The 1942 Newfoundland *School Attendance Act* required all children from ages 7-14 to attend if they lived within two miles of a school, but this was initially not enforced in northern Labrador (Procter 2020). In the 1950s, the Newfoundland Ranger Force helped school officials enforce the regulation, including forcing children who did not

live within two miles to attend. This resulted in families spending more time in the community rather than on the land.

From 1956 to 1973, the provincial government provided $5,000 per year to operate the Nain school, while the Moravians financed the dormitory (Proctor 2020). The English-based Newfoundland school curriculum was adopted. The Moravians were permitted to continue teaching religion and have a representative on the School Board. Local teachers who had taught the Inuit children craft skills and provided education in Inuktitut were dismissed. While many parents had wanted their children educated in English, some regretted this as it led to loss of their own language. The Nain school became a day school only in 1973.

5.4.1 Social Determinants of Health

Social determinants of health refer to a specific group of social and economic factors within the broader determinants of health (Health Canada 2018). They include income and social status; social support networks; education; employment / working conditions; social environments; physical environments; personal health practices and coping skills; healthy child development; gender; and culture (PHAC 2016). Experiences of discrimination, racism and historical trauma are important social determinants of health for distinct populations, including Indigenous Peoples (Health Canada 2018).

Various social determinants of health have been identified as particularly important for Inuit (Statistics Canada 2012). These include access to health care, food security and adequate housing. Health care access affects maintenance of health and treatment of illness. Food insecurity and lack of adequate housing are directly linked to income, which is a critical determinant of health for most populations. For Inuit and other Indigenous Peoples, cultural practices of language, social support and traditional activities are also related to health.

5.4.1.1 Access to Health Care

Labrador Grenfell Health operates the Nain Community Clinic, which provides primary health care during regular hours with a registered nurse on call for after-hour emergencies (LGH n.d.). The clinic includes exam rooms, an emergency room, basic equipment and a supply of essential medications. Services are provided by nurses / nurse practitioners and personal care attendants in consultation with a physician at the closest referral centre. The clinic offers some testing (i.e., pregnancy tests, blood glucose monitoring) and basic laboratory tests. Specimens are sent out for processing at a central laboratory. The clinic receives regular physician visits and videoconferencing is used to consult with physicians at a tertiary site for emergency care or follow-up.

Patients may be transferred by air to the Labrador Health Centre in HVGB or facilities in St. John’s for further care (LGH n.d.). The Labrador Health Centre is staffed by a general surgeon, an anaesthetist and an obstetrician / gynaecologist along with family physicians who are each responsible for medical care in one of the north coastal communities. Visiting medical specialists also provide services at the Labrador Health Centre.

The Government of NL’s air ambulance program transports critical care patients between medical facilities and non-emergency patients when a road ambulance or commercial flight is unsuitable (NL Health and Community Services n.d.). Two fixed-wing aircraft with teams of critical care paramedics and registered nurses operating out of St. John’s and HVGB serve the whole province. Supplementary patient transport services are provided by private companies (PAL Aerospace 2023).

5.4.1.1.1 Mental Health Care

The NG Mental Wellness and Healing division provides prevention, intervention and other services (NG 2023). The division’s focus includes mental health / illness and addictions with programs such as: Youth Services, Fetal Alcohol Spectrum Disorder, Inuit Child First Initiative, Justice Services, Trauma and Addictions Mobile Treatment Team, Residential School Survivor Support, Child Services and special projects (e.g., Sexual Violence Program, Harm Reduction Specialist Services). Mental health and addictions workers offer services in each Inuit Community. Other programs are delivered regionally. All initiatives aim to incorporate best clinical practices in consideration of Inuit culture and community context.

Services for youth include hands-on learning for employment skills (e.g., carpentry, small engine mechanics, promotion of education) (NG 2023). A Youth Administrator coordinates initiatives, such as participation in community, regional and national youth events, training, educational and employment opportunities and cultural and traditional knowledge and skill-building. Youth outreach workers in Nain and Hopedale provide services (e.g.,

programs providing food, shelter and / or social connections) to children and youth who may be at risk. The Nain Youth Centre provides a safe and secure environment for youth ages 13-30 in need of support.

Nunatsiavut Justice Services supports community members charged under the justice system, those at risk of involvement in the criminal justice system and inmates at correctional institutions such as the Labrador Correctional Centre in HVGB (NG 2023). Justice Services also provides sexual violence prevention and outreach counselling services to individuals with sexual violence offenses.

5.4.1.2 Food Security

Food security refers to a situation where all people have consistent access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy life (Statistics Canada 2015). Food insecurity is a contributing factor to poor health, restricted mobility, chronic health conditions and mental illness. Food insecurity is a documented issue for the Inuit.

A study on food insecurity in Canada indicates that 17.9% of households in NL had experienced some degree of food insecurity in 2021 (Tarasuk and Fafard 2021). The report also states 30.7% of Indigenous people in Canada were identified as living in food-insecure households. The situation appears to be worse in Nunatsiavut than in NL.

A 2013-2014 household food security study conducted in the five Labrador Inuit communities indicated that 61.1% of Nunatsiavut households were marginally, moderately or severely food insecure (NG 2017). Nain and Hopedale, the two most northerly communities, experienced the highest degree of food insecurity at 79.4% and 83.1%, respectively. The degree of food insecurity was lower in Makkovik (35.1%), Postville (39.6%) and Rigolet (21.6%).

In Nunatsiavut, the availability of market food is impacted by transportation and storage (Bowers 2022). Food is transported to communities in winter by airplane and in summer (ice-free months) by airplane and marine ferry. Air transportation is limited by short runways that impact the size of planes that can be used, and small planes limit the amount of food that can delivered at one time. In addition, the existing airports and ferry terminals do not have food storage facilities. The limitations of transportation infrastructure and storage impacts food availability and quality in the Labrador Inuit communities.

For about seven months of the year, food shipments to northern Labrador communities arrive by air only and food availability and quality is compromised by delayed and cancelled flights, especially in Nain. In addition, the caribou hunting ban and climate change (unreliable ice) have made it increasingly difficult to obtain food through hunting and fishing in traditional harvesting areas.

The NG and the Labrador Inuit communities are engaged in initiatives to understand and address food insecurity. The NiKigijavut Nunatsiavutinni (Our Food in Nunatsiavut) project involves completing Community-led Food Assessments to examine food security issues and enhance or develop solutions, such as community freezer programs, community kitchens, country food markets, greenhouses, hunter support programs, regional price monitoring projects and school food programs (Inuit Tapiriit Kanatami 2023). The NiKiKautik (A Place Where Food Is) Program in Nain teaches traditional Inuit and contemporary healthy cooking skills using wild meats from the Community Freezer Program and store-bought foods.

As development projects have the potential to affect natural resources, country foods will be included in the EA. Selected species are Arctic char as fish, grouse and hare (game) and waterfowl / migratory birds if feasible.

5.4.1.3 Adequate Housing

Adequate and suitable housing and a safe environment are important for mental and physical well-being and a higher quality of life. Living in poor housing conditions is associated with the spread of infectious and respiratory diseases, chronic illness, injuries and poorer mental health. Though housing conditions of First Nations, Inuit and Métis people in Canada have improved, the Indigenous population is still much more likely to live in inadequate housing than the non-Indigenous population (Statistics Canada 2022).

In 2021, Nain had a total of 380 private dwellings with 350 occupied by usual residents (Statistics Canada 2023). Nain had a larger average household size (3.4 persons) than Labrador (2.5 persons) or NL (2.3 persons). In Nain, households with five or more persons were more common at 18.4% than in Labrador (7.7%) or NL (4.2%). Nain had a high rate of home ownership, similar to that of NL, but the proportion of homes needing major repairs was much higher in Nain than for Labrador or NL (Table 5.14). The percentage of one-maintainer households was

lower than that of the other jurisdictions and no households in Nain were paying more than 30% of income on shelter costs.

Table 5.14 Housing Conditions

Indicator	Nain		Labrador		NL	
	#	%	#	%	#	%
Household owner	185	75.5%	7,360	71.5%	169,010	75.7%
Household renter	60	24.5%	2,545	24.7%	53,680	24%
Major repairs needed	65	26.5%	890	8.6%	12,205	5.5%
One-maintainer household	115	46.9%	5,630	54.7%	115,610	51.8%
Spending 30% or more of income on shelter costs	0	0%	575	5.9%	32,390	14.6%

Housing conditions for Indigenous people in Canada and Nunatsiavut are improving due to investments in new housing and home repairs (Statistics Canada 2022). Since 2016, 24 new housing units have been constructed in Nunatsiavut (CIRNAC 2019). The NG has also implemented a housing repair program and initiatives to improve comfort and energy efficiency.

Inuit are engaged in housing work in Nunatsiavut. In the 2016-2017 construction season, approximately 95% of the work was completed by Inuit businesses.

5.4.1.4 Qanuippitaa? National Inuit Health Survey

Inuit health surveys have been inconsistent. Surveys were conducted in Nunavik in 2004 and 2017 and in the Inuvialuit Settlement Region, Nunavut and Nunatsiavut in 2007-2008 (Qanuippitaa? National Inuit Health Survey 2021). The Qanuippitaa? National Inuit Health Survey is a permanent Inuit health survey founded in 2018 and owned, controlled and led by Inuit organizations. The initial work included providing training and resources to develop the skills to ensure Inuit communities have the skills and capacity to exert greater control over data collection and analysis. The first round of data collection for Nunatsiavut began in March 2023 in Rigolet (Nunatsiavut Tugaprik 2023).

5.5 Economy, Employment and Business

5.5.1 Main Economic Sectors

Some of the main employers in Nain are the NG, NICG and other industry sectors as identified in Table 5.15. 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”.

Table 5.15 Labour Force by Industry

North American Industry Classification System 2012	Nain			NL		
	Total	Male	Female	Total	Male	Female
All Industries	345	48%	52%	236,405	51%	49%
Public administration	105	43%	57%	21,725	50%	50%
Health care and social assistance	55	27%	82%	40,245	17%	83%
Construction	30	83%	33%	19,380	89%	11%
Mining, quarrying and oil / gas extraction	25	80%	40%	9,715	84%	16%
Manufacturing	20	50%	50%	11,670	68%	32%

Table 5.15 Labour Force by Industry

North American Industry Classification System 2012	Nain			NL		
	Total	Male	Female	Total	Male	Female
Retail trade	20	0%	75%	29,955	44%	56%
Transportation and warehousing	15	67%	0%	11,815	76%	24%
Administrative and support, waste management and remediation services	15	0%	67%	7,470	60%	40%
Accommodation and food services	15	0%	67%	15,310	39%	61%
Agriculture, forestry, fishing and hunting	10	100%	0%	9,425	76%	24%
Information and cultural industries	10	0%	0%	2,740	55%	45%
Educational services	10	0%	100%	17,205	32%	68%
Arts, entertainment and recreation	10	100%	0%	3,765	50%	50%
Other services (except public administration)	10	0%	0%	9,885	48%	52%
Utilities	0	0%	0%	2,795	75%	25%
Wholesale trade	0	0%	0%	4,780	75%	25%
Finance and insurance	0	0%	0%	4,610	33%	67%
Real estate and rental and leasing	0	0%	0%	2,125	60%	40%
Professional, scientific and technical services	0	0%	0%	11,525	58%	42%
Management of companies and enterprises	0	0%	0%	260	52%	50%

5.5.2 Nunatsiavut Group of Companies

In 2006, the NG established the Labrador Inuit Capital Strategy Trust to enable Beneficiaries to gain from the socio-economic opportunities (e.g., education, training, employment, business) arising from self-governance (NGC 2021). Five Trustees (Beneficiaries appointed by the NG) provide independent oversight for business interests through the holding company NGC.

The NGC is involved in wholly owned or partnership ventures in fisheries, air and marine transportation, commercial real estate, construction and heavy civil, logistics and the Torngat Mountains Base Camp (NGC 2021). These companies provide employment opportunities in Inuit communities, including Nain. Profits from NGC are also invested in programs and services for Labrador Inuit.

5.5.3 Seafood Harvesting and Processing

The economy of Inuit Communities includes both seafood harvesting and processing. Nuluak Fisheries, NGC's fishing operation, holds commercial-communal licences for species such as shrimp, turbot and crab (NGC 2021). The shrimp and turbot quotas are fished by third parties, which provide royalties to NGC. Torngat Fish Producers Co-Op Society operates seafood processing facilities Inuit communities. The Nain plant is licenced for groundfish species, wild salmonids (Arctic char) and scallops (Government of NL 2022a). In 2020, 28 employees per shift processed char and scallops (OKalaKatiget Society 2020). At that time, there were five licenced commercial char fishermen and a three-person scallop fishing crew in Nain.

5.5.4 Mining

The mining industry is a key economic driver in NL. In 2022, 500 mineral exploration applications were approved with an estimated $189 M to be spent on exploration activities (Government of NL 2022b). This, the largest exploration investment since 2012, is driven by the search for gold, iron ore and critical minerals. The Mineral Incentive Program provides $1.7 M annually, including financial support for prospectors and junior exploration companies.

5.5.4.1 Nunatsiavut Construction Inc.

Quarries in NL are governed by the *Mining Act*, *Quarry Materials Act* and *Quarry Materials Regulations*. A Quarry Permit may be issued for up to one year and allows the permit holder the right to excavate, remove and sell quarry materials from the permit area. A Quarry Lease is issued only if the proponent can identify a demonstrable long-term need for exclusive rights to the area. The term of a Quarry Lease ranges between 5 and 20 years. A Quarry Materials Exploration Licence grants the holder exclusive rights to explore for quarry materials and to apply for a quarry permit. The term of issuance is four months for domestic use and one year for intended export. Exploration Approval is required in order to explore for quarry materials on a Quarry Materials Exploration Licence.

Quarry resources are identified within Nain's Municipal Planning Area (Figure 2.1). One Quarry Permit is listed as being 1 ha and under a current permit to Nunatsiavut Construction Inc. (NL Mining and Mineral Development n.d.). Nunatsiavut Construction Inc., a subsidiary of NGC, has three divisions, including aggregate production (NGC 2021).

5.5.4.2 Voisey's Bay Mine

Vale NL's Voisey's Bay nickel-copper-cobalt mine is located approximately 35 km southwest of Nain with a processing plant in Long Harbour, NL. The project, which includes an open pit mine that began producing in 2005, presently has reserves to operate until 2034 (Government of NL 2022b). The Voisey's Bay underground expansion project, commissioned in 2021, resulted in an annual production capacity of 40,000 tonnes of nickel concentrate, with by-products of approximately 20,000 tonnes of copper and 2,600 tonnes of cobalt.

Vale NL has impact benefits agreements with the NG and Innu Nation, on whose traditional lands the mine is located (Vale NL 2021a). Inuit and Innu employees together represent approximately 50% of Vale NL's workforce, while 65% of procurement contracts are awarded to Indigenous businesses or partnerships (Vale NL 2021a; Canadian Mining Journal 2021). Voisey's Bay is a fly-in / fly-out worksite, where Vale employees typically work in two-week rotations (Vale NL 2021a).

To decrease reliance on fossil fuels and reduce long-term operating costs, Vale NL is planning the Voisey's Bay Wind Energy project (Government of NL 2022b). The 4.2 MW of wind turbines will offset more than 13% of the mine's diesel requirements.

5.5.5 Tourism

The NG has developed a revised tourism strategy (NG 2021a). The strategy is focussed on Labrador Inuit culture, deriving economic benefits from visitors, engaging communities, leveraging partnerships and offering excellent experiences and service.

Nain offers local activities and experiences such as hiking and learning about Inuit culture and practices (Tourism Nunatsiavut n.d.). Torngat Arts and Crafts Inc. sells local and regional crafts made by Inuit artists from Nunatsiavut (Craft Labrador n.d.). Nain is the gateway to the Torngat Mountains National Park, a stopping point for small cruise ships that travel along coastal Labrador and Greenland and a stop-over for a long-distance snowmobile race.

5.5.5.1 Torngat Mountains National Park

Torngat Mountains National Park provides opportunities for sightseeing in dramatic mountains, fjords and icebergs and viewing wildlife such as polar bears, whales and seals. Torngat Mountains Base Camp and Research Station (Inuit owned and operated) is established each summer near Saglek at the southern edge of the park to support visitors and as an administrative office for Parks Canada (Parks Canada 2022). Inuit Elders and youth from Nunatsiavut and Nunavik stay at the Base Camp with visitors, researchers and Parks Canada staff. With logistical support from the Base Camp, Parks Canada offers a variety of opportunities, such as day hikes and interpretive walks, camping trips (overnight or multi-day), kayaking, rock-climbing and visiting other sites in the park. Torngat Mountains Base Camp and Research Station is a Destination Canada Signature Experience and has won awards such as the Hospitality Newfoundland and Labrador Sustainable Tourism Award and the international association Educational Travel Community Responsible Tourism Showcase.

Torngat Mountains National Park is accessed by weekly charter flights from HVGB to the Saglek radar site in summer (Parks Canada 2022). From Saglek, visitors travel to the Base Camp by boat. Some daily flights from HVGB and coastal communities stop in Saglek. Visitors may also travel to Nain by a scheduled flight or ferry (from

HVGB in the summer months) and take the charter flight to Saglek. A company offering small-ship cruises offers excursions in NL, including the Torngat Mountains National Park. The primary administrative offices for Torngat Mountains National Park are in Nain.

5.5.5.2 Adventure Canada Cruises

Adventure Canada has been offering small-ship cruise expeditions to the Torngat Mountains since 1995 (Adventure Canada 2023). These ships, which are generally enroute between southern and Arctic destinations, offer passengers opportunities to participate in day hikes and interpretive visits in the Torngat Mountains National Park (Parks Canada 2022). These trips include scientists and writers along with local artists, musicians and cultural ambassadors (Adventure Canada 2023). In 2023, the Greenland and Wild Labrador cruise, which stops in Nain (also Hebron and Torngat Mountains National Park), is offered from September 17 to October 1 and September 28 to October 12.

5.5.5.3 Cain's Quest Snowmobile Race

Cain's Quest, considered one of the longest snowmobile endurance races in the world, has taken place in March of every second year since the inaugural race in 2006 (Cain's Quest 2023). The race is approximately 3,500 km throughout Labrador. The 2023 event was scheduled for February 28 to March 11 with 18 checkpoints and five mandatory layovers, including a 12-hour layover in Nain.

5.5.5.4 Cultural Interpretation

The NG has constructed the Illusuak Cultural Centre, which opened in 2019 in Nain (McLean's 2023). The building's curved design is inspired by the layout of Inuit sod houses (Illusuaks) found in Nunatsiavut. Exhibits include Inuit-made soapstone pots and lamps as well as whalebone and ivory tools, some of which have been repatriated from the Smithsonian Institution. The cultural centre, which houses offices of the NG and Parks Canada, supports tourism through a café, craft shop, studio space and 75-seat theatre. The building is also used as a gathering site for cultural events, school visits, public presentations and meetings and weddings.

5.5.6 Scientific Research

The Nunatsiavut Research Centre in Nain supports research programs that contribute to local knowledge and enhancing the health and well-being of Inuit (NG 2021b). It also focuses on increasing local capacity of the Labrador Inuit by providing opportunities to participate in field and laboratory research. The NG leads or co-leads various research projects and the Nunatsiavut Research Centre provides a shared space for staff and research partners.

5.6 Infrastructure and Services

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.

5.6.1 Municipal Services

5.6.1.1 Water and Wastewater

The 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.

The NICG is investing in drinking water and wastewater infrastructure. Current and recent improvements include a new water supply system, upgrades to the water system and replacement of the Sandbanks Road water main, along with upgrades to the sewerage and sewage treatment system (Infrastructure Canada 2021).

5.6.1.2 Solid Waste

Each of the Inuit Communities has its own landfill and waste is collected between two and five times weekly, depending on the community and season, mainly due to wildlife issues (NLMAE 2019). Waste is delivered to local landfills where it is burned during winter, except in Nain where waste is burned year-round. Other landfill issues include lack of capacity and cover material as well as being too close to communities, airports and / or open water. Due to access limitations, it is expected that these communities will continue to manage waste locally, though practices should be improved to manage hazardous waste, eliminate open burning and optimize landfill space through waste diversion, site upgrades or developing new sites.

5.6.2 Recreation and Leisure

The Nain Husky Centre provides an ice rink for hockey and ice-skating (OKâlaKatiget Society 2017). The Jeremias Sillitt Community Centre provides a gym, workout room and multipurpose room (DJG 2023). This site and the Illusuak Cultural Centre are used for recreation programming and cultural events. The Moravian Church is important to the residents of Nain for spiritual gatherings.

5.6.3 Safety and Emergency Services

Policing in Nain is provided by the RCMP (RCMP 2015). Newfoundland and Labrador Search and Rescue maintains a trained volunteer search and rescue team at Nain (NLSR 2016). Nain maintains a volunteer fire department (OKalaKatiget Society 2022).

The Nain Transition House provides support to women facing domestic violence (THANL 2020). The NG is engaged in implementing culturally appropriate, community-based justice in the Inuit Communities and working with other agencies to deliver related services.

5.6.4 Transportation

Nain is accessible by aircraft, ferry and snowmobile. Air Borealis (PAL Airlines) offers regularly scheduled commercial flights from HVGB direct and / or stopping in coastal communities to and from Nain (Air Borealis 2022). Air access is an important issue throughout Nunatsiavut. The cost of moving freight into the communities is high, resulting in inflated costs at retail (Bowers 2022). The airstrip infrastructure limits the type and size of planes that operate, meaning that insufficient amounts of goods are delivered. Lack of appropriate storage facilities at the airports results in food spoilage during transport. Airport infrastructure is affected by the multiple jurisdictions involved. The airstrips are owned and operated by NL on lands owned by the NG. The Government of Canada regulates air safety and is responsible for infrastructure in Indigenous communities. The availability and cost of air transportation (e.g., usage fees and fuel) involve the private sector. The NG is advocating for improved airstrips but encounters federal and provincial struggles with jurisdictional overlap (Bowers 2022).

During ice-free months (generally July to October), the MV Kamutik W operates from HVGB to Nain with stops in Rigolet, Postville, Makkovik, Hopedale and Natuashish to deliver freight and passengers. It takes about three days to get from HVGB to Nain. The ferry service is funded by the Government of NL and operated by Nunatsiavut Marine Inc., an NGC company (NGC 2021).

The provincial Labrador Transportation Grooming Subsidy provides funds for grooming and marking snowmobile trails as a winter transportation link for remote Labrador communities that do not have year-round road access (LAS n.d.). These trails, with routes over fresh and salt water bodies as well as land, are maintained by community organizations such as the NICG.

In January 2023, the Government of NL initiated a pre-feasibility study on the potential installation of a road from central to northern Labrador communities (Government of NL 2023b). The road would connect to the Trans-Labrador Highway from the Labrador Straits to Labrador West, which was completed in July 2022.

5.6.5 Energy

In NL, generation and distribution of electricity is provided by Newfoundland Power and Newfoundland and Labrador Hydro (NL Hydro). Customers on the Labrador interconnected system are served by NL Hydro with

power from the Churchill Falls Hydroelectric Generating Station (NLIET n.d.). In isolated Labrador communities, customers receive power from diesel generators operated by NL Hydro.

NL Hydro is working with Indigenous governments and communities to explore options for renewable energy sources (NL Hydro 2023). NL Hydro and the NG have installed four solar installations in northern Labrador, including a 24-kW system at the Nain JS Community Centre. The NG and NL Hydro are examining the potential use of wind turbines and batteries in Nain to reduce use of diesel, air emissions and related costs (NRCAN 2021; VOCM News 2022). The NG is also investing in 240 high-efficiency wood stoves in the Inuit Communities and conducting a pilot project to ship firewood harvested in Newfoundland by Nunatsiavut Marine to Nain and Hopedale (NRCAN 2021).

The Nain Wind Micro-Grid Project, a proposed wind power project with a battery storage system, will help reduce the amount of diesel fuel consumed at the NL Hydro power plant in Nain (NG and Natural Forces Development Partnership 2023). This project, the first for an Inuit Community, is expected to serve as a pilot project for renewable energy development in Nunatsiavut. Construction is planned to start in 2024, with commercial operation anticipated in 2025.

5.6.6 Health Care

The NG provides support services to address mental health / mental illness and addictions (NG 2023). The Nain community clinic provides primary health care to residents of Nain. It has clinical exam rooms, an emergency room, basic medical equipment and a supply of essential medications. Care is provided by registered nurses who have an expanded scope of practice and consult with a physician at the closest referral centre as required (Labrador-Grenfell Health 2022). The nearest hospital to Nain is the Labrador Health Centre in HVGB, and Labrador-Grenfell Health provides air medevac for emergency transfer of patients, which is limited to daylight hours and can be affected by local weather conditions.

5.6.7 Family and Seniors' Services

The NG operates the Pigutsavik Centre, a provincially regulated and supported child day care facility in Nain (NL Department of Education 2023). The centre has capacity for 26 children of 18 months to just under six years of age and operates daytime hours on week days year-round. Nain also has a provincially funded Family Resource Centre that provides programs and support to families with small children. With funding from Indigenous Services Canada, the NG partnered with the College of the North Atlantic (CNA) to offer an indigenized early childhood education certificate program (CNA 2020). The first graduates, six students from Nain, completed the program in 2019.

Nunatsiavut has limited capacity for seniors' housing and long-term care, and the number of seniors in each community seeking care is low compared to larger centres, which makes it difficult to develop facilities. In 2020, of the 20 spaces in a private care home in Mary's Harbour (southern Labrador), eight were occupied by residents of Inuit Communities (CBC News 2020). The distance and cost of visiting limits face-to-face contact with families. The NG, with provincial support, created three seniors' apartment units in Nain and is seeking additional funding for a complex or assisted living accommodations to keep seniors in the community.

5.6.8 Education

The Newfoundland and Labrador English School District provides primary and secondary educational services to children in Nunatsiavut communities. Jens Haven Memorial in Nain provides kindergarten to high school education (NL Department of Education 2022). The NG supports the education system to enrich the educational experiences of Inuit children, including providing funds for Inuit cultural and Inuktitut language programming (NG 2023).

Nain experiences shortages of teachers. In 2022, the Newfoundland and Labrador English School District reassigned four teachers from the Grade 12 academic stream (students planning to pursue university education) to fill vacant positions at the junior high school level (Saltwire Network 2022). The Centre for Distance Learning and Innovation (a division of Newfoundland and Labrador English School District) provides high school distance education to rural areas through virtual classes. The unreliable Nain internet is particularly challenging for students who need to engage in online learning due to shortages of high school teachers (CBC News 2022). Parents feel that this poses a risk to students who wish to pursue university education.

The Nunatsiavut Education Division provides programs and services to Labrador Inuit seeking post-secondary education and / or labour market training (NG 2023). Academy Canada offers adult basic education programs in Labrador communities, including Nain (Academy Canada 2023).

5.6.9 Media and Communications

Nain residents have access to two radio services, one of which also provides television. The OKalaKatiget Society operates CKOK-FM (99.9), a Nunatsiavut-based news agency that provides Inuktitut and English language programming to Inuit in northern and central Labrador (NG 2023; OKalaKatiget Society 2023). The Society is mandated to promote cultural identity, increase use of Inuktitut, enhance communication by and between people of northern Labrador, increase awareness and discussion of social issues in northern Labrador and encourage awareness and understanding of Labrador Inuit culture outside northern Labrador. Also, CBNZ-FM (95.1) re-broadcasts HVGB's CBC Radio One feed.

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). This program includes an allocation of over $22 M to the NG to connect more than 1,000 households in Rigolet, Postville, Makkovik, Nain, Hopedale and Natuashish to high-speed Internet. Bell Canada will build and operate the network.

6. Potential Projects Effects and Mitigations

Information on the existing environment was reviewed during R3: Environmental Review - Desktop Assessment and from field work in 2022 to understand how the Project may affect the area and the steps that can be taken to avoid and / or minimize these effects. Following this report, additional field work and other studies have been taking place in 2023 as part of the R12: Environmental Impact Assessment. These studies focus on potential interactions between the Project and the environment and the community. The 2023 program includes studies and activities to better understand:

– Air Quality and Climate Change;
– Noise and Vibration;
– Water Resources: Hydrology and Hydrogeology;
– Geology, Soil and Terrain;
– Vegetation and Wetlands;
– Fish and Fish Habitat;
– Wildlife and Migratory Birds;
– Historic Resources;
– Human environment, including Land and Resource Use; and
– Community Interests and Concerns.

Activities associated with Project construction and operations have the potential to adversely and / or positively affect the environment and the community. It is important to continue to research and communicate with stakeholders and community members to understand how the Project could affect those using the area and the surrounding landscape.

A preliminary assessment of the interactions of Project activities with the surrounding environment is detailed in this section along with associated mitigation measures. Table 6.1 provides a preliminary list of valued components (VCs), how the Project may affect them and how these effects can be avoided or mitigated.

Project construction will have potential effects on the receiving environment. VCs will be comprehensively addressed in the EIS to determine the possible extent of effects. The VCs address environmental, health, social and economic importance of potential interactions with the Project, presence within the spatial boundaries, Indigenous interests or Rights, and priorities of the federal, provincial, territorial or municipal governments.

Potential effects will be based on criteria determined for each VC. The determination of each criterion will include information based on desktop reviews and field surveys, published research and professional judgement. The criteria include direction, magnitude, geographic extent, duration, frequency, reversibility and likelihood. For each, a definition will be established, and the determination of significance will vary for each VC.

The proponent will comply with all applicable regulations of the NG, Government of NL and Government of Canada, which address many of the potential adverse effects of the Project. In addition, mitigation measures will be identified for the Project to minimize effects on the surrounding environment. The mitigation measures proposed for each VC will be technically and economically feasible and anticipated to eliminate, reduce, control or offset adverse Project effects and enhance benefits during construction and / or operations activities. Follow-up programs may include monitoring, offsetting, replacement, compensation, restoration and adaptive management plans. These will be based on professional judgement, best management practices and industry standards. Residual effects are effects that remain or are predicted to remain even after mitigation measures have been implemented. Baseline conditions of the VCs, Project interactions with the VCs and proposed mitigations will be considered when determining residual effects. The assessment of residual effects will be based on professional judgment, scientific evidence, Indigenous knowledge and proposed mitigation measures, along with effectiveness, or uncertainty in the effectiveness, of the mitigation measures.

For this Registration, potential effects are described below in terms of the activities involved for each phase (construction and operations) with general mitigation measures. These are based on previous experience and knowledge under EAs conducted across Canada for similar activities and projects. R12: Environmental Impact Assessment will include detailed effects assessment based on ongoing studies, analyses and engagement activities.

Table 6.1 outlines the inter-relationships between potential Project effect sources and biophysical environmental components and socio-economic conditions. The principal sources of effects considered are:

– Construction
    - Installation and presence of the construction site
    - Ground preparation (e.g., deforestation, stripping, excavation, blasting, landscaping)
    - Construction of infrastructure including temporary and permanent facilities
    - Heavy machinery circulation, use and maintenance of equipment
    - Purchase of goods and services
    - Presence of workforce
– Operations
    - Operation of the Airport and Runway
    - Use and maintenance of the Access Road
    - Water and waste management and treatment
    - Purchase of goods and services
    - Presence of workforce

Table 6.1 Summary of Potential Project Effects

Sources of Potential Effects	Biophysical Valued Components							Socio-Economic Valued Components			
	Geology, Soil and Terrain	Climate and Air Quality	Noise and Vibration	Water Resources	Vegetation and Wetlands	Fish and Fish Habitat	Wildlife and Migratory Birds	Land and Resource Use	Physical and Cultural Heritage	Health and Well-being	Economy, Employment, Infrastructure and Services
Construction											
Installation and presence of the construction site	X	X	X	X	X	X	X	X	X	X	X
Ground preparation (e.g., deforestation, stripping, excavation, blasting, landscaping)	X	X	X	X	X	X	X	X	X	X	X
Construction of infrastructure including temporary and permanent facilities	X	X	X	X	X	X	X	X	X	X	X
Heavy machinery circulation, transportation, use and maintenance of equipment	X	X	X	X	X	X	X	X	X	X	X
Purchase of goods and services											X
Presence of workforce		X	X			X	X	X	X	X	X
Operations											
Operations of the Airport and Runway		X	X	X			X	X	X	X	X
Use and maintenance of the Access Road	X	X	X	X	X	X	X	X	X	X	X

Table 6.1 Summary of Potential Project Effects

Sources of Potential Effects	Biophysical Valued Components							Socio-Economic Valued Components			
	Geology, Soil and Terrain	Climate and Air Quality	Noise and Vibration	Water Resources	Vegetation and Wetlands	Fish and Fish Habitat	Wildlife and Migratory Birds	Land and Resource Use	Physical and Cultural Heritage	Health and Well-being	Economy, Employment, Infrastructure and Services
Water and waste management and treatment				X		X		X	X	X	X
Purchase of goods and services											X
Presence of workforce										X	X

6.1 Biophysical Environment

6.1.1 Air Quality and Climate Change

For this assessment, air quality is considered a VC due to existing regulations at the provincial and federal level and because of the effect air quality can have on human and ecological health. Climate change is known to be exacerbated by GHG, which will be created through combustion of fuel during equipment operation and vehicle use.

6.1.1.1 Key Considerations and Potential Interactions

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

– Combustion of aviation fuel produces NO_x, CO, SO_x, hydrocarbons and PM.
– Aircraft tires release PM as they are worn and burnt during take-off and landing.
– Vehicles travelling to and from the Airport, as well as ground service equipment generate air pollutants through the burning of gasoline and diesel fuel.
– Project construction activities can generate dust and exhaust type emissions.

The Project will comply with all regulations by following applicable guidelines and standards to appropriately address this VC. During the EA, studies such as air dispersion modelling using CALPUFF with full Computer Aided Learning in Meteorology will be carried out. CALPUFF results in modelling of criteria contaminants will be post-processed and quality-checked. The key considerations for air quality are:

– Dust generated by construction activities and deposition of dust and its components, such as metals, may affect sensitive vegetation and wetlands.
– Emissions from construction equipment, including criteria contaminants and air toxins.
– Emissions associated with operation of the Airport, including aircraft, ground traffic and power generation.
– Project GHG emissions.

Emissions will be quantified for the construction and operations phases. Particulate emissions are expected to be important during construction. Project GHG emissions have been initially estimated in Appendix B; the assessment will be refined as part of R12: Environmental Impact Assessment when Project engineering design progresses and more information is available.

The effects assessment will identify Project activities that may adversely affect air quality and identify mitigation measures to reduce potential effects. Residual effects will be identified and a significance determination will be provided via a comparison of predictions to ambient air quality standards at locations in the regional study area (RSA). Air quality results will be provided to other discipline leads to use in assessments such as human health risk assessment (HHRA) as relevant.

The New Nain Airport will be located approximately 13 km from Nain, while the existing airstrip is located within the community. From this perspective, the effects of air emissions on residential receptors resulting from Project operations are anticipated to be lower when compared to the existing airstrip.

6.1.1.2 Mitigation Measures

Proposed mitigation measures to avoid or reduce effects on air quality include:

– Use machinery and vehicles that minimize air emissions (e.g., low fuel consumption) according to the latest ECCC standards, or zero-emission vehicles (for on-road and off-road vehicles).
– Perform initial and regular inspections of machinery to ensure good operational condition.
– Implement a preventive maintenance program and inspection of equipment to ensure proper functioning.
– Apply dust control measures according to conditions (meteorology) and development activities that generate dust (e.g., construction / use of Access Road).
– Use of a gravel Runway and Access Road surface treated with a polymer to control dust.

– Inspect air conditioning, ventilation and heating units to ensure proper operation of equipment and limit the risk of refrigerant leaks, if necessary.

6.1.2 Noise and Vibrations

Noise will be generated throughout the life of the Project. Changes to ambient noise levels and the presence of periodic vibrations have the potential to adversely affect human health, as well as fauna and birds by influencing migration and behavioral patterns. The NG does not have any specific noise or vibration criteria or guidelines. The *Guidance for Evaluating Human Health Impacts in Environmental Assessment:* Noise (Health Canada 2017), as well as noise and vibration guidelines and best practices from other jurisdictions (e.g., Canadian provinces, US), will be reviewed and adopted for analysis of the construction and operations phases.

6.1.2.1 Key Considerations and Potential Interactions

The Airport will be located approximately 13 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 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 equipment, including trucks and excavators.

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 and vehicle traffic at the Airport and along the Access Road. 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.

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. Effects to wildlife and migratory birds resulting from noise pollution are further discussed in Section 6.1.6.

The effects of noise and vibrations will be assessed through a desktop study using inputs obtained from Project sources, and assumptions applied to address information gaps. The effects assessment 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. As noise and vibrations are two different types of emissions with different effect responses, these are also assessed independently of each other. 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.

6.1.2.2 Mitigation Measures

Proposed mitigation measures to avoid or reduce effects on noise and vibrations include:

– Perform initial and regular inspections of machinery to ensure good operational condition.
– Implement a preventive maintenance program and inspection of equipment to ensure proper functioning.
– Use light vehicles with effective mufflers to reduce noise level at the source.
– Where practical, trees and other vegetation will be left in place or encouraged to grow to muffle nuisance noise.

6.1.3 Water Resources

Surface water provides ecological value in providing habitat for aquatic species, and terrestrial species rely on accessible water sources for their survival. Groundwater resources provide ecological value by supporting surface water flows, whereas wetlands provide habitat for aquatic and terrestrial species. Socially and economically, water resources can provide a source of water, potable or otherwise, to municipal, industrial and recreation sectors, among others.

6.1.3.1 Key Considerations and Potential Interactions

Project activities have the potential to affect surface water, hydrology and groundwater in the area via several pathways. There is also the potential for effects to surface water and groundwater to indirectly affect other VCs, including vegetation and wetlands, fish and fish habitat, and wildlife and migratory birds. Indirect effects to other VCs are discussed in Sections 6.1.4 through 6.1.6.

Construction activities may produce sediment-laden runoff, which can degrade the water quality of nearby watercourses. Construction of the Access Road will require installation of either culverts or bridges to allow natural watercourses to pass beneath the road. Culverts and / or bridges are to be designed and installed appropriately to allow for fish passage; nevertheless, temporary effects to surface water are possible during the installation process as watercourses are altered or diverted. The use of construction equipment in or near watercourses has the potential to disturb sediment and release other deleterious substances, including fuel oil in the event of a spill. Construction activities may also result in areas of exposed soil, which can produce sediment-laden runoff during precipitation events if erosion and sedimentation control measures are not in place.

Several potential contaminants will be in use during Project operation, including maintenance and painting chemicals. Fuel may also be released to the environment from the on-site fuel tanks and refuelling stations in the event of an accident or spill. These contaminants have the potential to be leached into groundwater or contaminate stormwater runoff, which can pollute nearby watercourses.

The Airport's water needs will be primarily supplied from groundwater, with the potential for surface water as an emergency back-up source. The withdrawal of water has the potential to reduce the quantity of water available in a surface waterbody to support fish and fish habitat. The withdrawal of water from a groundwater aquifer has the potential to lower the groundwater table, adversely affecting the quantity of groundwater available for use (e.g., potable consumption).

For hydrogeology and groundwater elevations, relevant groundwater data from additional geotechnical investigations will be incorporated into the effects assessment. Additional data to support the hydrology assessment, such as stream discharge at low flows, have been collected during the field program. Field data have been collected for watercourses and waterbodies crossed and adjacent to the Project area. The following baseline data collection and analyses will be conducted as part of the EA:

– Low flow for fish passage;
– Effects to natural processes (e.g., sediment transport, erosion, lateral mobility) in rivers;
– Water supply and drainage modification to wetlands, streams and lakes;
– Effects of water demand on discharge or lake levels if a water intake is installed in a lake or a river; and
– Water quality (e.g., physicochemical parameters and relevant chemical constituents along with analytical quality baseline characterization, including sampling site selection, monitoring duration and frequency, sampling protocol and analytical protocol – including quality assurance and quality control measures) at various locations, such as the Airport wastewater outlet, water intake and municipal intake.

For groundwater, the following baseline data collection and analyses will be conducted during the EA preparation:

– Domestic, communal or municipal water wells within the LSA and RSA;
– Structural geology of the hydrogeological environment, including major faults, fracture density and orientation with respect to groundwater flow directions;
– Baseline groundwater quality data for physicochemical parameters and relevant chemical constituents (e.g., routine parameters and metals)
– Hydrogeological maps and cross-sections of the study area showing water table elevations, potentiometric contours, interpreted groundwater flow directions, groundwater divides and areas of recharge and discharge; and
– Groundwater flow boundaries of the hydrogeological environment providing hydraulic properties of the hydrostratigraphic units, including data on hydraulic conductivity, specific storage, transmissivity, storativity, saturated thickness, porosity and specific yield, as applicable.

For the effects assessment, a 3-dimensional numerical groundwater flow model will be developed based on the conceptual model of the hydrogeological environment. The purpose of this model is to gauge if the proposed

potable well(s) capture zone would have adequate potable water supply based on the water volume requirements of the Project.

6.1.3.2 Mitigation Measures

Proposed mitigation measures to avoid or reduce effects on water resources include:

– Install a geomembrane downstream of crossings and around work areas to intercept surface material particles, use culverts of sufficient size to prevent narrowing of flow sections at crossing points and install sediment barriers around the edges of aquatic environments to prevent transport of fine particles during work.
– A wastewater treatment plant will be constructed at the Project site to treat wastewater to acceptable standards prior to release to the environment.
– Siting infrastructure to avoid potential permafrost.
– Apply dust control measures according to conditions (meteorology) and development activities that generate dust (e.g., construction / use of Access Road).
– Treat the Runway and Access Road gravel with a polymer to control sedimentation in run-off.
– Conduct preventive inspections of fuel storage areas and supply vehicles, machinery and worksite facilities with emergency kits for recovery of petroleum products and hazardous materials.

6.1.4 Geology, Soils and Terrain

Geology, soils and terrain were chosen as a VC because surficial landforms will be disturbed during Project construction activities. Proper conservation of the top surface organic rich soil horizons and their subsequent post-construction replacement of soil is a critical step that will ensure successful vegetation regrowth. Best practices during construction activities (e.g., salvaging surface soil materials, protecting of salvaged soil from compaction and erosion) will help with successful reclamation of areas disturbed to construct Project infrastructure.

6.1.4.1 Key Considerations and Potential Interactions

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 Runway. Specific effects on geology, soils and terrain from the Project include:

– Loss of salvaged topsoil from Project site preparation and erosional loss over time.
– Degradation of physical or chemical characteristics of salvaged topsoil through disturbance, soil mixing, soil rutting and compaction from construction equipment.
– Disturbance of sensitive organic or permafrost soils, which can interrupt surface water drainage patterns.
– Disturbance of rock wall faces and steeply sloping terrain; landform stability is important for safe travel along the Access Road.

6.1.4.2 Mitigation Measures

The environmental inspector and construction personnel will be responsible for monitoring and implementation of procedures used during construction of the Airport, Runway and Access Road that result in disturbance to soils and terrain. Proposed mitigation measures to avoid or reduce effects on geology, soils and terrain during construction include:

– Select locations and routing for Project infrastructure to minimize the need for rock blasting, maximize cut and fill construction, and avoid potential permafrost areas.
– Develop a surface soil handling plan for construction, which will establish topsoil stripping depths and delineate protected soil stockpile locations. Salvaging topsoil and surface organic soil materials for the construction of the temporary access road is an important step to ensure successful reclamation.
– Implement wind and water erosion and sedimentation control measures on salvaged soils (e.g., seeding, placement of straw bales and straw) to preserve salvaged topsoil materials for reclamation. Implement wet

weather shutdown to prevent soil degradation during wet weather or wet soil conditions, which can result in rutting, compaction and degradation of soils for future use.

– Remove rocks from the area that will have salvage topsoil materials replaced for reclamation.
– Rip subsoil materials (15 to 30 cm depth) before topsoil is replaced to ensure no compaction of subsoil materials exist before topsoil replacement.
– Re-establish surface water drainage disturbed by construction before topsoil replacement operations occur, and ensure there is no evidence of surface water ponding or pooling across the site.

The main reasons the above mitigation measures are to:

1. Prevent topsoil loss between salvage and replacement and final revegetation.
2. Prevent topsoil loss after replacement of topsoil material and final revegetation.
3. Ensure the re-establishment of native species to provide long-term stabilization of the topsoil materials.

6.1.5 Vegetation and Wetlands

Vegetation and wetlands were chosen as a VC because ecosystems, habitat and fauna species reliant on these habitats may be altered directly or indirectly by Project activities. Wetlands provide important ecological value and functions, such as habitat for aquatic and terrestrial flora and fauna (including priority species), managing water storage and flow and improving downstream water quality.

6.1.5.1 Key Considerations and Potential Interactions

Project activities have the potential to affect vegetation and wetlands both directly and indirectly. Direct effects may occur through construction of Project infrastructure, while indirect effects may occur result from:

– Changes to local hydrology resulting in wetting or drying of wetlands, such as inadvertent drainage or impoundment and groundwater drawdown associated with water withdrawal.
– The spread or introduction of invasive species into upland habitats and wetlands through construction equipment, vehicles or runoff from. Increased traffic during the construction and operations phases can elevate this risk.
– Potential sedimentation within wetlands or upland habitats because of up-gradient activities (e.g., earth moving, removal of vegetation, soil stockpiling). Depending on the degree, a sedimentation event may suffocate wetland vegetation and increase nutrient levels.
– Dust deposition, which can, similarly to sediment, also introduce minerals and nutrients into wetlands and stress wetland vegetation (particularly non-vascular species).
– Changes to wetland microclimate and habitat functions because of proximity to Project infrastructure and edge effects.

Desktop-derived data along with baseline data collected during field assessments 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 activities and physical works may affect wetlands and vegetation to varying degrees, considerations are primarily related to potential effects on:

– Reduction of wetland areas and ecological communities that include habitat for rare plants and wildlife;
– Reduction of biodiversity and rare plant populations; and
– Reduction in wetland function.

Based on AC CDC data, mountain sandwort (*Mononeuria groenlandica*) and Scheuchzer cottongrass (*Eriophorum scheuchzeri*) have been recorded within a 5-km radius of the Project. Given the relative scarcity of information for the Nain region, the field program includes a search for indicative habitat types for SAR and a rare plant survey. Ground-truthing and riparian / wetland delineation will refine wetland habitat types identified during the desktop review. Wetlands will be characterized according to the CWCS into five classes: bog, fen, swamp, marsh and shallow water wetlands (National Wetlands Working Group 1997).

The effects assessment completed for the EA will identify Project activities and infrastructure that may adversely affect wetlands and vegetation. The effects assessment will involve analyzing Project footprint disturbance to wetlands and vegetation communities map units, which will inform the extent of effects to VCs.

6.1.5.2 Mitigation Measures

Proposed mitigation measures to avoid or reduce effects on physical VCs such as climate, air quality, noise / vibrations and water resources also apply to biological environment VCs. In addition to measures applied to the physical environment, the following mitigation measures are proposed to protect vegetation and wetlands:

– Minimize vegetation disturbance, as maintaining terrestrial, riparian and wetland ecosystems plays a role in supporting biodiversity, hydrology, wildlife habitats and traditional use of resources.
– Project infrastructure will be micro-sited to avoid direct effects to wetland habitat, where practicable.
– Implement construction methods that reduce the potential to drain or flood surrounding wetlands (e.g., appropriately sized / spaced culverts, no unpermitted pilling of soil / grubbing, no unnecessary ditching / artificial channelization).
– Minimize erosion of wetland soils by limiting flow velocities using hydraulic dissipation techniques and directing runoff through natural upland vegetation, wherever practical.
– Implement temporary erosion and sediment control measures (e.g., rig matting, geotextiles, vegetated buffer zones, berms, fibre rolls or silt fencing). The type of control (if applicable) is dependent on topography. Inspect erosion and sediment controls on a regular basis and correct deficiencies (e.g., inadequate control, damage, ineffectiveness) in a timely manner.
– Use of a gravel Runway and Access Road surface treated with a polymer to control dust and sedimentation.
– Employ measures to reduce the spread of invasive species (particularly by vehicles) into wetlands and retain habitat integrity. Equipment and vehicles will arrive to site clean and free of soil or vegetation debris. Inspect vehicles regularly, particularly vehicles arriving from outside the Nain area.

6.1.6 Fish and Fish Habitat

Fish and aquatic SAR are protected under federal legislation by the *Fisheries Act* and *SARA*. Habitat that supports fish may be altered, disturbed or destroyed as a result of direct or indirect disturbances from the Project. Works determined to result in Harmful Alteration, Disruption or Destruction (HADD) of fish habitat or death of fish by means other than fishing require authorization under Section 35 of the *Fisheries Act*.

6.1.6.1 Key Considerations and Potential Interactions

Project activities have the potential to affect fish and fish habitat both directly and indirectly; effects may be temporary or permanent in nature. Direct effects may occur by removal of fish habitat through dewatering, infilling or excavating watercourses, or death of fish by crushing. Indirect effects may occur by several pathways, including:

– Flow reductions in watercourses by changes in corresponding catchment areas;
– Release of deleterious substances, including total suspended solids, to watercourses;
– Operation of a marine vessel during construction to transport construction equipment;
– Transport and use of construction equipment in or near water; and
– Impingement or entrainment of fish through water management activities.

Project activities and physical works may affect different fish and fish habitat components to varying degrees. Issues are primarily related to potential effects on:

– SAR or species of conservation concern;
– Death of fish; and
– HADD.

6.1.6.1.1 Freshwater Environment

In the 2023 field season, the field crew walked the Access Road alignment (as sited at the time) to confirm waterbodies with the potential to interact with the Project and perform fish and fish habitat assessments. Two waterbodies crossing the alignment were assessed as *confirmed fish bearing* and another two waterbodies crossing the road in Nain were *assumed fish bearing*. The remaining waterbodies crossing the proposed Access Road and Runway were assessed as *likely not fish* bearing due to physical barriers to fish use (e.g., steep gradient, ephemeral, poor channelization, no flow). No SAR were identified in the freshwater environment and are therefore not expected to interact with the Project. Arctic char are of cultural importance to the Inuit. Its significance for the Inuit will be addressed in the effects assessment (e.g., through community consultations coupled with land use mapping to identify critical habitats and fishing areas).

6.1.6.1.2 Marine Environment

During construction, equipment may transported to site using a barge and a temporary access road from the shore, which may affect the marine environment, including marine fish and plant species. As no infrastructure or construction will occur in marine waters, any effects on the marine environment will result from transportation. 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 best practices are followed, the Project is not expected to affect these SAR.

6.1.6.2 Mitigation Measures

Proposed mitigation measures to avoid or reduce effects on physical VCs such as climate, air quality, noise / vibrations, surface water, hydrology and groundwater all apply to biological environment VCs. In addition to measures applied to the physical environment, the following mitigation measures are proposed to protect fish and fish habitat:

- If works occur in close proximity to freshwater or estuarine environments, apply to DFO for a Request for Review of Project works near water that may cause HADD.
- Conduct work outside the fish and fish habitat Restricted Activity Period.
- Ensure free passage of fish at all times during temporary diversion of a watercourses.
- Avoid movement of any vehicle or construction equipment within 20 m of a permanent watercourse or 5 m of an intermittent watercourse and, if such movement is necessary, divert water flowing in ruts to a vegetated area at least 20 m from a watercourse. Install culverts in a manner that facilitates flow of water by embedding the base of the culvert below the natural streambed, stabilizing with rock fill and constructing stream crossings during summer low-flow period (mid-July to early September), where possible.
- Avoid direct contact with aquatic areas on site and adjacent to the site. Minimize disturbance, where possible.
- Develop and implement a spill response plan.
- Develop and implement a marine mammal management plan.
- Plan the locations of temporary work areas to minimize the need for aquatic area disturbance.
- Minimize frequent access to the freshwater environment to avoid cumulative impacts (e.g., erosion, run-off, elevated total suspended solids).

6.1.7 Wildlife and Migratory Birds

Wildlife and migratory birds were selected as a VC, as certain species are known to have significant value to the Inuit (e.g., snowshoe hare), or are provincially or federally listed SAR or species of conservation concern.

6.1.7.1 Key Considerations and Potential Interactions

Considerations related to terrestrial species important to the Inuit (e.g., snowshoe hare, migratory birds) are primarily related to potential effects on:

- Wildlife habitat availability resulting from habitat loss and fragmentation, and from reduced habitat effectiveness (e.g., from noise, human presence);
- Habitat connectivity caused by barriers to wildlife movements;
- Wildlife populations resulting from increased levels of direct and indirect mortality risks;

– Wildlife diversity resulting from changes in wildlife habitat availability;
– Wildlife diversity resulting in habitat patch size (e.g., effects of fragmentation); and
– Wildlife diversity resulting from changes in rare species occurrence.

Project-related effects to wildlife and migratory birds are possible via several pathways, including:

– Reduction in the type and extent of habitats;
– Bird strikes and road kill;
– Disturbance from light pollution; and
– Disturbance from noise 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 / or 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. 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. Noise pollution from the Project can result in behavioural changes, lead to changes in wildlife communities and alter species interactions (Francis et al. 2009).

Three field surveys were dedicated to this VC in 2023: spring migratory birds; summer avian / SAR / terrestrial wildlife survey; and fall migratory birds / country foods.

6.1.7.2 Mitigation Measures

Proposed mitigation measures to avoid or reduce effects on physical VCs such as climate, air quality, noise / vibrations, surface water, hydrology and groundwater all apply to biological environment VCs. In addition to measures applied to the physical environment, the following mitigation measures are proposed to protect wildlife and migratory birds:

– Minimize the Project footprint to the extent possible to reduce effects on habitat.
– Minimize vegetation disturbance, as maintaining terrestrial, riparian and wetland ecosystems plays a role in supporting biodiversity, hydrology, wildlife habitats and traditional use of resources.
– Suspend noisy activities if caribou are observed near the work areas.
– Schedule construction activities to avoid avian migration periods as per ECCC guidelines.
– Impose a speed limit on the Access Road to reduce potential for wildlife collisions.
– Implement a bear management plan and garbage management plan to minimize bear / human interactions.
– Maintain cross road movements during Access Road construction (e.g., provide breaks in any soil berms or slash pile rows).

6.2 Human Environment

The following sections present an overview of potential effects of the Project on the human environment. Mitigation measures to address effects are also presented and will be refined and / or expanded as applicable in the EA to help avoid / reduce adverse effects and enhance benefits of the Project. The effects on other VCs and mitigations may also have a direct connection to human health and well-being.

6.2.1 Consultation and Ongoing Engagement

Consultation activities aimed to establish open, meaningful communication and information exchange through continuing dialogue with Rights Holders, key stakeholders and community members will occur throughout Project planning and development. The key objectives of consultation are to:

– Enhance understanding and awareness of the Project and activities that will be undertaken during the EA;
– Seek input from residents of Nain, Rights Holders and key stakeholders to inform the EA; and
– Listen and respond to questions / concerns raised by residents of Nain, Rights Holders and key stakeholders.

After receiving feedback through early engagement activities and an in-person community information session, the study team will implement a second phase of consultation activities. It will focus on engaging with Rights Holders, key stakeholders and community members to further assess potential Project effects and consider appropriate mitigation measures, which will be presented in the EA.

It is also expected that information (e.g., social and economic priorities of the community) gathered during community meetings and focused interviews / meetings with Rights Holders, key stakeholders and community members will be relevant to the effects assessment for the human environment, including human health (e.g., country foods), physical and cultural heritage (e.g., traditional / sacred sites) and land-use (e.g., access and use of land for hunting / fishing / traditional practices).

6.2.2 Indigenous Peoples

For Indigenous groups and communities, developments may affect Aboriginal Rights within the meaning of section 35 of the Canada *Constitution Act,1982* and Treaty Rights. The Inuit have protected Rights established through this Act and the LILCA. The proponent is consulting consultation with the following Indigenous communities or groups:

– Inuit communities of Nain and Hopedale
– Innu Nation (Mushuau Innu First Nation and Sheshatshiu Innu First Nation)

Each of the Indigenous groups / communities noted above have received the Information Sheet with an overview of the Project when it was distributed to all stakeholders and communities in November 2023. Subsequent consultation activities will be determined in dialogue with potentially affected Indigenous groups / communities, according to their interests.

6.2.2.1 Key Considerations and Potential Interactions

The LILCA is a modern, comprehensive treaty and land claims agreement that gives the NG ownership and authority, including administration, control, development, conservation and management of LIL (LIA 2005). The LILCA also provides harvesting rights in the LISA and the Labrador Sea, where Nunatsiavut Beneficiaries have protected rights to hunting, fishing and harvesting. No presence or activities by anyone other than Nunatsiavut Beneficiaries is allowed on LIL without prior approval of the NG through a permit. This will apply to all components and activities related to the Project and to all activities by non-Beneficiaries present on LIL for the Project.

6.2.2.2 Mitigation Measures

– The Project will comply with all applicable regulations and permitting regimes of the NG, along with those of NICG, Government of NL and Government of Canada.
– The proponent will continue to work with Rights Holders to identify and develop potential measures to avoid or mitigate any potential effects of the Project on Aboriginal Rights, Treaty Rights and interests.

6.2.3 Physical and Cultural Heritage

Heritage (or cultural) resources can include archaeological remains, both above ground and buried; historic buildings and sites, including registered heritage buildings, cemeteries, parks, historic areas / landscapes and other structures of architectural or historic merit. Development projects, particularly construction activities, may adversely affect heritage resources through land disturbance. Changes to physical heritage may also result from introducing anthropogenic features in the landscape, and by alterations to biophysical environment components of importance to Indigenous Peoples.

6.2.3.1 Key Considerations and Potential Interactions

Heritage assets are irreplaceable and more difficult to understand if removed from their context, including the landscape in which they are found. If disturbance is unavoidable, mitigation measures include removing archaeological artefacts for recording and preservation in conformity with applicable regulations.

For the Project, historic resources of interest would be limited to archaeological remains that may occur within the Project footprint as the area is undeveloped. A professional archaeologist, engaged to undertake a heritage resources study in 2022 and 2023 (under permit to NG), identified an archaeological site along the Access Road alignment.

6.2.3.2 Mitigation Measures

– Based on the archaeological finding, the Access Road has been re-routed to avoid Project effects on the archaeological site , which has been reported to the NG and protected in the location where it was found, in keeping with the *Labrador Inuit Lands Act*.
– Any further cultural resources identified through Project activities will be managed and reported in compliance with legislation and best practices.

6.2.4 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.

6.2.4.1 Key Considerations and Potential Interactions

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.

6.2.4.2 Mitigation Measures

– 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.

6.2.5 Community Health and Well-being

Labrador’s northerly communities rely on air transportation year-round. Marine transport is available in summer when ports are ice-free and the ferry from HVGB stops in each community for loading and unloading, completing one return trip to Nain each week. Long shipping times, combined with the short marine season, result in higher costs and lower availability of goods compared to other areas of the province. Food in particular costs more and fresh food is subject to spoilage, both affecting food security. Also, the small remote communities have limited

services and rely on air travel to access services (e.g., health care) in larger centres such as HVGB and St. John's. Limited access to health services adversely affects community health and well-being.

6.2.5.1 Key Considerations and Potential Interactions

Nain is most affected by cancelled flights and potential emergency closures due to issues at the existing airstrip. With the Airport, the people of Nain will have better access to food and other essential goods that are delivered by air year-round, especially since the potential to use larger aircraft and the greater reliability of landing on schedule will help to ensure perishable foods do not spoil in transit. The improved ability to travel out of the community as needed for services (not available locally) will help Nain residents to access essential health care and other services in a timelier fashion. The ability of planes to take off and land at night will improve management of medical emergencies. A more reliable Airport will be an asset to Indigenous and non-Indigenous residents in Nain, the other Inuit communities of Nunatsiavut as well as Mushuau Innu First Nation at Natuashish through improved reliability of air transportation throughout northern Labrador.

The Airport 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 and eliminate the potential of an aviation incident or airstrip closure (due to damage from sea level rise and storm surges) affecting the community. However, concerns have been expressed regarding the safety of the Access Road given local experience with heavy snow and avalanches around Nain.

Developments may result in wastes or emissions that are harmful to the environment and affect human health and well-being. These are discussed under Section 6.1. Information from other VCs will be used to predict effects on human health and well-being. For instance, the effects of the Project on air quality and noise will be used as the basis for HHRA, which will involve the following:

– Identification of a list of common and priority air pollutants, including toxins and persistent and bioaccumulative substances for air quality modelling and assessment of:
    - Potential emissions from aircraft,
    - On-site energy generators,
    - Fuel and chemical storage areas, and
    - Heavy vehicle and construction equipment use during Project construction and operations.

To address effects on human health, the EA will include the following studies and analyses:

– Identification of health effect-related topics of potential concern, such as:
    - Air quality and noise
        – Surface water quality and fish and aquatic species, particularly those integral to the local diet and economy (e.g., Arctic char, a cornerstone to local diet and fishing industry in Nain),
        – Perception of risk to human health associated with Project construction and operations in an undisturbed northern environment,
        – Protection of country foods through management of air quality, noise and vibrations, using criteria from applicable regulations and guidance published by HC, ECCC, Canadian Council of Ministers of the Environment, Government of NL, Public Health Agency of Canada and other credible health and environmental protection agencies; and
        – Compilation of the potential for risks to human health from each potential exposure pathway, mechanism of exposure and sources of contaminant releases to air, water and land associated with Project construction and operations.

6.2.5.2 Mitigation Measures

– The location of the Airport will result in elimination of community safety issues during take-off and landing.
– Aircraft will no longer be operating adjacent to the community, resulting in a safer environment.
– The Airport will be fenced for aviation and public safety purposes in accordance with TC's Aerodromes Standards and Recommended Practices - TP 312.
– The Access Road route has been selected to avoid steep slopes and narrow passes wherever possible.

– The Access Road will be designed for existing conditions using wind and snow deposition modelling to predict avalanche locations so these areas may be avoided.
– The sides of the road will be terraced and specialized infrastructure will be installed around known avalanche areas (i.e., Blow Hole, Mount Sophie) to reduce potential for snow avalanches.
– Speed limits will be controlled to reduce the potential of wildlife collisions or accidents due to vehicular circulation along the Access Road.
– A shuttle service will be provided from Nain to and from the Airport.

6.2.6 Economy, Employment and Business

Development projects, especially construction of large infrastructure, result in economic opportunities through procurement and employment.

6.2.6.1 Key Considerations and Potential Interactions

More information on procurement will be available through R10: Construction and Supply Strategy and R11: Cost Estimation, which will be available in May 2024. Provisions will be made for local, regional and provincial procurement and business opportunities wherever feasible. Specialized goods and services may be sourced from other provinces.

Detailed information will be provided in the EA on the construction workforce, Project spending, employment and procurement opportunities in Nain and Nunatsiavut related to Project construction. Operating airports and aviation also generate employment and economic benefits. Employment can be divided into direct, indirect, induced and catalytic. Table 6.2 provides examples of each. At this point, it is anticipated that the Airport itself will employ approximately 10 people in Nain. This does not include airline and security staff employed by other agencies. The Airport will result in new long-term employment opportunities in Nain.

Table 6.2 Types of Airport-Related Employment

Effect	Definition	Examples
Direct	Employment related to the operation of airports or airlines	Airport operator, airlines, handling agents, security, concessions, freight agents, flight caterers, hotels, car parking, aircraft servicing, fuel storage
Indirect	Employment supported by the supply chain of goods and services to the direct activities	Utilities, retail, advertising, cleaning, food, construction, information technology, fuel
Induced	Employment supported by the spending of incomes earned in the direct and indirect activities	Retail, restaurants, entertainment
Catalytic	Employment supported by the attraction, retention or expansion of economic activity as a result of access by air	Tourism

A more reliable airport will be an asset to businesses and service providers throughout northern Labrador. Existing businesses in Nain, Nunatsiavut and Natuashish will benefit from improved air access year-round for more reliable delivery of goods. This will help to provide in better quality products (i.e., fresh food) and less wastage at grocery stores, hotels and restaurants, possibly resulting in lower prices and / or more profitable businesses.

Limited effects are anticipated on businesses and other industrial activities. Two quarries (with limited remaining resources) and the NL Hydro power generating station are identified along or near the Access Road. Discussions have been initiated with NL Industry, Energy and Technology and the NG regarding quarries and aggregate resources near Nain.

6.2.6.2 Mitigation Measures

– The Access Road has been re-routed to avoid disturbance to two quarries located near Nain.
– The existing quarries will not be used for this Project. R10: Construction and Supply Strategy will provide information on the precise location of quarries, which will be along the Access Road.

6.2.7 Infrastructure and Services

Construction of large infrastructure developments can create increased demand for services (e.g., medical, transportation) and infrastructure (e.g., housing) used by community members and may result in potential conflicts mainly related to the increased presence of non-resident workers during construction.

6.2.7.1 Key Considerations and Potential Interactions

Nain is a small community with limited capacity to provide services and infrastructure in support of Project construction. However, the Project will be less reliant on the community for services and infrastructure than the existing airstrip, as it will have its own power supply, water supply and energy generation systems. Project activities, particularly for construction, could result in increased usage of the air travel system, which could impact access for residents.

A more reliable Airport will have positive effects on community infrastructure and services, as fixed-wing aircraft remains the best and only means of year-round transportation of people, food and medical supplies and for emergency evacuations. The Runway will have sufficient length to accommodate larger aircraft and help ensure shipments of essential goods arrive in a timelier fashion. The Airport will be certified for night-flying operation, facilitating immediate medical evacuation in emergencies.

6.2.7.2 Mitigation Measures

– Project construction will be self-contained in terms of water supply, waste water, energy, solid waste, worker accommodations and services, including housing, food services and basic medical services.
– R10: Construction and Supply Strategy will determine best methods of transporting workers to limit impacts on community transportation.
– During construction, solid waste will be separated for reuse, recycling and / or disposal at an approved site with suitable facilities and programs.
– During operations, the Airport will also be self-contained in terms of water supply, waste water and energy.

6.3 Federal Lands

The Project occurs within the Province of NL; no other provinces are involved. The Project is within the land claims area established by the LILCA, which is Federal Lands. Impacts on Federal Lands could result from construction and operations components and activities as described in Sections 6.1 and 6.2. Likewise, mitigations for impacts on the biophysical and human environment would be applicable to Federal Lands.

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 region. After identifying the spatial and temporal limits of the cumulative effects assessment, the VCs' characteristics and distribution will be outlined. The VCs considered for the cumulative effects assessment are those determined following the assessment of the Project's residual effects, taking into account mitigation measures. Potential cumulative effects will then be assessed for each VC.

Determination of potential cumulative effects on VCs includes effects of other activities / projects identified as cumulative to the Project's effects. Cumulative effects will be assessed and additional mitigation measures will be proposed where required.

The Airport is expected to be under construction in 2027 and commissioned in 2030. The new infrastructure is anticipated to last for 50 years without renewal, but will remain in operation indefinitely with upgrades and renovations as required. The cumulative effects assessment will identify past, current or future activities / projects that may affect VCs of the biophysical and human environment within the same timeframe and location. The projects listed in Table 7.1 are known projects within the LSA / RSA and will be included in the cumulative effects assessment.

Table 7.1 Projects Considered for Cumulative Effects Assessment

Project	Location	Phase and Timeline	Potential for Cumulative Effects
Vale NL Mine (CMJ 2021)	Voisey's Bay	Operations: 2005-2034	Vale NL's current activities in Voisey's Bay Area and maritime transportation
Nain Wind Micro-Grid (Natural Forces 2023)	Nain	Construction: 2024-2026 Operations: 2026-2056	In Nain, not likely to overlap with the Project or construction timeline.
Strange Lake Rare Earth Project: Mine Road (Torngat Metals 2023)	Nain to Nunavik	Pre-feasibility study stage	Construction of a road from the mine site in Nunavik to Nain
Road to Northern Labrador (Government of NL. 2023b)	Central Labrador to Nain	Pre-feasibility study stage	Ends at Nain, construction date unknown

8. References

Academy Canada. 2023. Faculty of Adult Basic Education. https://www.academycanada.com/programs/faculty-of-adult-basic-education/

Access Intelligence. 2023. Diesel Gensets Aim at the Future. https://www.powermag.com/diesel-gensets-aim-at-the-future/

Adventure Canada. 2023. Trips. https://www.adventurecanada.com

AECOM. 2013. Hydrogeology of Labrador. https://www.gov.nl.ca/ecc/files/waterres-cycle-groundwater-hydro-hydrogeology-of-labrador.pdf

Air Borealis. 2022. Where We Fly. https://www.airborealis.ca/en/fly-borealis/where-we-fly/

Aivek Stantec Limited Partnership. 2021. Labrador Offshore Area Strategic Environmental Assessment Update. Final Report. December 13, 2021.

Anderson, TC. 1985. The Rivers of Labrador. Department of Fisheries and Oceans, Fisheries Research Branch, Newfoundland Region. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/89967.pdf

Archives of Manitoba. n.d. Hudson's Bay Company Archives – HBC Fur Trade Post Map: Newfoundland and Labrador. https://www.gov.mb.ca/chc/archives/hbca/post_maps/newfoundland_labrador.html

BirdLife International. n.d. Atlantic Americas Flyway. http://datazone.birdlife.org/userfiles/file/sowb/flyways/3_Atlantic_Americas_Factsheet.pdf

Birds Canada. 2022. IBA Directory: Nain Coastline (LB006). Retrieved from Important Bird Areas of Canada. https://www.ibacanada.org/site.jsp?siteID=LB006&lang=en

Bowers, R. 2022. Food security in Nunatsiavut: From historical perspectives to future prospects. Thesis submitted to the University of Ottawa in partial Fulfillment of the requirements for PhD degree in Population Health.

Bradbury, C., Roberge, M. M., & Minns, C. K. 1999. Life History Characteristics of Freshwater Fishes Occurring in Newfoundland and Labrador, with Major Emphasis on Lake Habitat Characteristics. Canadian Manuscript Report of Fisheries and Aquatic Sciences, 2485, p. vii + 150.

Brice-Bennett, C. 1977. Land Use in the Nain and Hopedale Regions. In: C. Brice-Bennett (ed.), Our Footprints are Everywhere: Inuit Land Use and Occupancy in Labrador. Labrador Inuit Association, Nain, NL.

Brice-Bennett, C. 2012. The Inuit. Heritage Newfoundland and Labrador. https://www.heritage.nf.ca/articles/indigenous/inuit.php

CMJ (Canadian Mining Journal). 2021. Vale unlocks the next phase of Voisey's Bay. https://www.canadianminingjournal.com/featured-article/vale-unlocks-the-next-phase-of-voiseys-bay/

Cain's Quest. 2023. Event Info. https://cainsquest.com/event-info/

Canadian Endangered Species Conservation Council. 2016. Wild Species 2015: The General Status of Species in Canada. National General Status Working Group. Retrieved from Wildlife: General Status of Species. https://www.wildspecies.ca/reports

CWF (Canadian Wildlife Federation): iNaturalist Network. 2022a. Greenland Stitchwort (Mononeuria groenlandica). Retrieved from iNaturalist Explore: https://inaturalist.ca/taxa/836799-Mononeuria-groenlandic

CWF: iNaturalist Network. 2022b. Scheuchzer's Cotton-Grass (Eriophorum scheuchzeri). Retrieved from iNaturalist Explore: https://inaturalist.ca/taxa/162680-Eriophorumscheuchzeri

CBC News. 2013. Nunatsiavut, N.L. governments clash over land use plan. https://www.cbc.ca/news/canada/newfoundland-labrador/nunatsiavut-n-l-governments-clash-over-land-use-plan-1.1367629

CBC News. 2020. This Hopedale senior had to choose between health and home. He's not the only one. https://www.cbc.ca/news/canada/newfoundland-labrador/nunatsiavut-seniors-housing-challenges-1.5619640

CBC News. 2022. Poor internet access jeopardizing Nain students' academic future, say parents. https://www.cbc.ca/news/canada/newfoundland-labrador/nain-parents-school-concerns-1.6627184

ClimateData.ca. 2023. Climate data for Nain, NL. https://climatedata.ca/explore/location/?loc=AAPBP&location-select-temperature=tx_max&location-select-precipitation=r1mm&location-select-other=frost_days. Accessed June 2023.

CNLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). 2021. Labrador Shelf Offshore Area Strategic Environmental Assessment Update. Prepared by Aivek Stantec Limited Partnership, December 13, 2021. Available at: https://www.cnlopb.ca/sea/labrador/

CAA (Civil Aviation Authority). 2001. Large flocking birds: An international conflict between conservation and air safety. http://www.caa.co.uk/docs/224/srg_dps_flockingbirds.pdf.

CNA (College of the North Atlantic). 2020. CNA Nunatsiavut Government celebrate first graduates of indigenized program. https://cna.nl.ca/news/news-article.aspx?messageid=1337

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2006. COSEWIC assessment and update status report on the Ivory Gull Pagophila eburnea in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://www.sararegistry.gc.ca/virtual_sara/files/cosewic/sr_ivory_gull_e.pdf

COSEWIC. 2012a. COSEWIC assessment and status report on the Northern Wolffish Anarhichas denticulatus in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlifespecies.canada.ca/species-riskregistry/virtual_sara/files/cosewic/sr_Northern%20Wolffish_2013_e.pdf

COSEWIC. 2012b. COSEWIC assessment and status report on the Spotted Wolffish Anarhichas minor in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlife-species.canada.ca/speciesrisk-registry/virtual_sara/files/cosewic/sr_loupe_tachete_spotted_wolffish_1113_e.pd

COSEWIC. 2013a. COSEWIC assessment and status report on the Harlequin Duck Histrionicus histrionicus Eastern population in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlifespecies.canada.ca/species-risk-registry/virtual_sara/files/cosewic/sr_Harlequin%20Duck_2013_e.pdf

COSEWIC. 2013b. COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlife-species.canada.ca/speciesrisk-

registry/virtual_sara/files/cosewic/sr_Little%20Brown%20Myotis&Northern%20Myotis&Tricolored%20Bat_2013_e.pdf

COSEWIC. 2014a. COSEWIC assessment and status report on the Red-necked Phalarope Phalaropus lobatus in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlifespecies.canada.ca/species-risk-registry/virtual_sara/files/cosewic/sr_Rednecked%20Phalarope_2014_e.pdf

COSEWIC. 2014b. COSEWIC assessment and status report on the Wolverine Gulo gulo in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Ottawa. Available at: https://wildlife-species.canada.ca/speciesrisk-registry/virtual_sara/files/cosewic/sr_Wolverine_2014_e.pdf

COSEWIC. 2017a. COSEWIC assessment and status report on the Rusty Blackbird Euphagus carolinus in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlifespecies.canada.ca/species-riskregistry/virtual_sara/files/cosewic/sr_Rusty%20Blackbird_2017_e.pdf

COSEWIC. 2017b. COSEWIC assessment and status report on the Peregrine Falcon Falco peregrinus (pealei subspecies – Falco peregrinus pealei and anatum/tundrius – Falco peregrinus anatum/tundrius) in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlifespecies.canada.ca/species-risk-registry/virtual_sara/files/cosewic/srPeregrineFalcon2017e.pdf

COSEWIC. 2017c. COSEWIC assessment and status report on the Caribou Rangifer tarandus, Eastern Migratory population and Torngat Mountains population, in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlife-species.canada.ca/species-riskregistry/virtual_sara/files/cosewic/sr_Caribou%20Eastern%20Migratory%20Torngat%20Mountains%20populations_2017_e.pd

COSEWIC. 2018. COSEWIC assessment and update status report on the polar bear Ursus maritimus in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlife-species.canada.ca/speciesrisk-registry/virtual_sara/files/cosewic/OursBlancPolarBear-2019-Eng.pdf

COSEWIC. 2019. COSEWIC assessment and status report on the Fin Whale Balaenoptera physalus, Atlantic population and Pacific population, in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/cosewic/srRoqualCommunFinWhale-v00-2019-Eng.pdf

COSEWIC. 2021. COSEWIC assessment and status report on the Short-eared Owl Asio flammeus in Canada. Ottawa: Committee on the Status of Endangered Wildlife in Canada. Available at: https://wildlife-species.canada.ca/speciesrisk-registry/virtual_sara/files/cosewic/sr%20Short-eared%20Owl%202021_e.pdf

COSEWIC. 2022. COSEWIC candidate wildlife species. Retrieved from Committee on the Status of Endangered Wildlife in Canada: Reports: https://cosewic.ca/index.php/en-ca/reports/candidate-wildlife-species.html.

Craft Labrador. n.d. Torngat Arts and Crafts. https://www.craftlabrador.com/craft-community/craft-organizations/torngat-arts-and-crafts/

CIRNAC (Crown-Indigenous Relations and Northern Affairs Canada). 2019. Inuit Nunangat Housing Strategy. https://www.rcaanc-cirnac.gc.ca/eng/1554820296529/1554820324561#chp2

DFO (Fisheries and Oceans Canada). 2001. Effects of sediment on fish and their habitat. DFO Pacific Region Habitat Status Report 2000/01.

DFO. 2019. Unpublished data on Commercial Communal and Food, Social and Ceremonial Fishing Licences in Atlantic Canada.

DFO. 2021. Biophysical and Ecological Overview of a Study Area within the Labrador Inuit Settlement Area Zone. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2021/003. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/40944773.pdf

DFO. 2022. Food, social and ceremonial fisheries. https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/fsc-asr-eng.html

DJG (DJ Group). 2023. Nain. https://djgrouplabrador.com/nain/

Dicker, G. 2019. Personal communication. Interview in Nain on July 2, 2019.

Dives, J. 2017 Inuit will write marine management plan for eastern edge of Northwest Passage. The Globe and Mail. Retrieved from https://www.theglobeandmail.com/news/politics/inuit-will-write-marine-management-plan-for-eastern-end-of-northwest passage/article36428995/

Ecosystems Science Directorate, Environment Canada. 1999. National Ecological Framework for Canada. Ottawa: Center for Land and Biological Resources Research, Agriculture and Agri-Food Canada. https://open.canada.ca/data/en/dataset/3ef8e8a9-8d05-4fea-a8bf-7f5023d2b6e1

Environment Canada. 2014. Bird Conservation Strategy for Bird Conservation Region 7 and Marine Biogeographic Unit 10 in Newfoundland and Labrador - Taiga Shield and Hudson Plains and Newfoundland-Labrador Shelves (Abridged Version). Canadian Wildlife Service.

Environment and Climate Change Canada (ECCC). 2020. Strategic Assessment of Climate Change Revised, October 2020. https://www.canada.ca/en/services/environment/conservation/assessments/strategic-assessments/climate-change.html

European Centre for Medium-Range Weather Forecasts (ECMRWF). 2023. ECMWF Reanalysis v5 (ERA5). https://www.ecmwf.int/en/forecasts/dataset/ecmwf-reanalysis-v5

Felt, L, D.C. Natcher, A. Proctor, N. Sillitt, K. Winters, T. Gear, D. Winters, S. Nochasak, S. Anderson, R. Ford, H. Flowers, S. Rich and R. Kemuksigak. 2012. The More Things Change: Patterns of Country Food Harvesting by the Labrador Inuit on the North Coast. In: D. Natcher, L. Felt and A. Proctor (eds.), Settlement, Subsistence, and Change Among the Labrador Inuit. University of Manitoba Press, Winnipeg, Manitoba.

Fitzhugh, W.W. 1977. Indian and Eskimo/Inuit Settlement History in Labrador: An Archaeological Overview. In: C. Brice-Bennett (ed.), Our Footprints are Everywhere: Inuit Land Use and Occupancy in Labrador. Labrador Inuit Association, Nain, NL.

Francis, C. D., Ortega, C. P., and Cruz, A. 2009. Noise pollution changes avian communities and species interactions. Current Biology, 19(16), 1415-1419.

Goldhar, C., Bell, T. and Sheldon, T., editors. 2013. Learning from others: Recommendations for best practices in adaptation of the built environment to changing climate and environment in Nunatsiavut, Nunatsiavut Government, Nain, NL, 303 p.

Government of Canada. 2023a. Projects funded by the National Trade Corridors Fund. https://tc.canada.ca/en/programs/funding-programs/national-trade-corridors-fund/projects-funded-national-trade-corridors-fund#wb-auto-2

Government of Canada. 2023b. Canadian Climate Normals 1981-2010 Station Data. Available at: https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnName&txtStationName=nain&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=6787&dispBack=1

Government of Canada. 2022a. Species at risk public registry: Species Search. Retrieved from Wildlife plants and species: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html.

Government of NL (Newfoundland and Labrador). 1997. The Hydrology of Labrador.

Government of NL. 2002. Endangered Species List Regulations. Regulation 57/02. St. John's, Newfoundland and Labrador, Canada: Queen's Printer. https://www.assembly.nl.ca/legislation/sr/regulations/rc020057.htm#1

Government of NL. 2019. Historic Resources Act. https://www.assembly.nl.ca/legislation/sr/statutes/h04.htm#8_

Government of NL. 2022a. Fish Producers. https://www.gov.nl.ca/ffa/files/fish-processors-2022-23.pdf

Government of NL. 2022b. Mining in Newfoundland and Labrador: Fall 2022. https://www.gov.nl.ca/iet/files/22445-Mining-in-NL-Final-for-Web-Oct-24.pdf

Government of NL. 2023a. Land Use Atlas. https://www.gov.nl.ca/landuseatlas/details/

Government of NL. 2023b. Contract Awarded for Pre-Feasibility Study for Road into Northern Labrador. https://www.gov.nl.ca/releases/2023/ti/0126n02/

Health Canada. 2017. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. http://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-noise.html

Health Canada. 2018. Determinants of Health. https://www.canada.ca/en/services/health/determinants-health.html

Hood, Bryan C. 2008. Towards an Archaeology of the Nain Region, Labrador. Contributions to Circumpolar Anthropology 7. National Museum of Natural History, Smithsonian Institution.

ICAO (International Civil Aviation Organization). 2008. Aircraft Noise: Balanced Approach to Aircraft Noise Management. https://www.icao.int/environmental-protection/Pages/noise.aspx

Ideal. 2023. What Diversity, Equity and Inclusion Really Mean. https://ideal.com/diversity-equity-inclusion/

IAAC (Impact Assessment Agency of Canada). 2023. Coordination of Federal Authorizations through the Impact Assessment Process. https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/coordination-federal-authorizations-impact-assessment-process.html

Infrastructure Canada. 2021. Infrastructure Canada Projects and Programs (since 2002) - Nain, N.L. https://www.infrastructure.gc.ca/investments-2002-investissements/nl-eng.html?municipality=Nain+

Inuit Tapiriit Kanatami. 2023. NiKigijavut Nunatsiavutinni (Our Food in Nunatsiavut) Project. https://www.itk.ca/nuluaq-mapping-project/initiative/nikigijavut-nunatsiavutinni-our-food-in-nunatsiavut-project/

Kaplan, S.A. 2012. Labrador Inuit Ingenuity and Resourcefulness: Adapting to a Complex Environmental, Social and Spiritual Environment. In D. Natcher, L. Felt and A. Proctor (eds.), Settlement, Subsistence, and Change Among the Labrador Inuit. University of Manitoba Press, Winnipeg, Manitoba.

LAS (Labrador Affairs Secretariat). n.d. Labrador Transportation Grooming Subsidy. https://www.gov.nl.ca/exec/las/grantsprograms-we-offer/labrador-transportation-grooming-subsidy/

LGH (Labrador Grenfell Health). 2022. Nain Community Clinic. https://www.lghealth.ca/facilities/community-clinics/nain

LGH (Labrador Grenfell Health). n.d. About Us. https://www.lghealth.ca/about-us/

LIA (Labrador Inuit Association). 1977. Our Footprints are Everywhere: Inuit Land Use and Occupancy in Labrador. Carol Brice-Bennett, Director and General Editor.

LIA. 2005. Labrador Inuit Land Claims Agreement. https://www.gov.nl.ca/exec/iar/overview/land-claims/labrador-and-inuit-land-claims-agreement-document/

Labrador Heritage Society. n.d. Labrador Heritage Museum. http://www.labradorheritagemuseum.ca/home/home.htm

McLean's Magazine. 2023. The Building: Labrador's striking new cultural centre. https://macleans.ca/culture/arts/tundra-labrador-cultural-centre/

McKinsey & Company. 2023. What is diversity, equity, and inclusion? https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-diversity-equity-and-inclusion

Midwest Industrial Supply. 2023. SECUR® Stabilization System. Installation, Maintenance, and Repair Manual. 2nd Edition – Effective Date: 2/15/2023.

Nain Inuit Community Government. 2016b. Nain Inuit Community Government Municipal Plan 2016-2026. https://www.gov.nl.ca/mpa/files/registry-community-nain-files-nain-icg-mp.pdf

Nain Inuit Community Government. 2016a. Land Use Plan and Development Regulations for 2016-2026. https://www.gov.nl.ca/mpa/files/registry-community-nain-files-nain-icg-dr.pdf

National Wetlands Working Group. 1997. The Canadian Wetland Classification System. Second Edition. https://nawcc.wetlandnetwork.ca/Wetland%20Classification%201997.pdf

Natural Forces. 2021. Nain Wind Micro-Grid Project: EWGS

Natural Forces. 2023. Nain Wind Micro-Grid Project May 2023 Newsletter. https://nunatsiavut.com/wp-content/uploads/2023/05/Nain-Newsletter-May-2023.pdf

NatureServe. 2022a. Mountain Sandwort Minuartia groenlandica. NatureServe Explorer: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.144359/Minuartia_groenlandica.

NatureServe. 2022b. Scheuchzer's Cotton-grass Eriophorum scheuchzeri. NatureServe Explorer: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.160125/Eriophorum_scheuchzeri.

NL Department of Education. 2022. Download a Database of K-12 Schools. https://www.gov.nl.ca/education/faq/schooldatabase/

NL Department of Education. 2023. Early Learning and Child Care Directory. https://www.childcare.gov.nl.ca/public/ccr/search

NL Health and Community Services. n.d. Emergency Health and Paramedicine Services. https://www.gov.nl.ca/hcs/ehps/#air-ambulance-program-information

NL Executive Council and Industry, Energy and Technology. 2022. New Broadband Investment in Labrador. https://www.gov.nl.ca/releases/2022/exec/0324n04/

NL Hydro. 2023. Our Indigenous Community Partnerships. https://nlhydro.com/good-to-know/our-indigenous-community-partnerships/

NLIET (NL Industry, Energy and Technology). n.d. Electricity. https://www.gov.nl.ca/iet/energy/electricity/

NL Mining and Mineral Development. n.d. GeoScience OnLine. https://www.gov.nl.ca/iet/mines/geoscience-online/

NLMAE (NL Municipal Affairs and Environment). 2019. Finishing what we started: Solid Waste Management in Newfoundland and Labrador. https://www.gov.nl.ca/ecc/files/waste-management-final-report-review-pswms.pdf

NL Municipal and Intergovernmental Affairs. 2015. Lands Act Review Final Report. August 2015. https://www.gov.nl.ca/ffa/files/lands-lands-act-lands-act-review.pdf

NL Statistics Agency. 2023. Community Accounts. https://nl.communityaccounts.ca

NL Transportation and Infrastructure. n.d. Provincial Airports. https://www.gov.nl.ca/ti/airportservices/

NL Transportation and Infrastructure. 2022. Request for Proposals Road into Northern Labrador Pre-Feasibility Study. October 28, 2022.

NLDFFA (Newfoundland and Labrador Department of Fisheries, Forestry, and Agriculture). 2022. 2022-2023 Hunting and Trapping Guide: Caribou Conservation and Management. Corner Brook: Government of Newfoundland and Labrador. Available at: https://www.gov.nl.ca/hunting-trappingguide/2022-23/labrador-caribou/

NLSR (Newfoundland and Labrador Search and Rescue). 2016. Team Locations. https://www.nlsara.org/team-locations/

NRCAN (Natural Resources Canada). 2021. Canada Invests in Indigenous Clean Energy Projects in Northern Newfoundland and Labrador. https://www.canada.ca/en/natural-resources-canada/news/2021/05/canada-invests-in-indigenous-clean-energy-projects-in-northern-newfoundland-and-labrador.html

NG. 2012a. Nunatsiavut Environmental Protection Act. https://www.nunatsiavut.com/wp-content/uploads/2015/07/CIL-31-12-2012-N-5-Nunatsiavut-Environmental-Protection-Act.pdf

NG. 2012b. Environmental Review Regulations. https://nunatsiavut.com/wp-content/uploads/2021/06/E-004-Environmental-Review-Regulations31-03-20171.pdf

NG. 2017. Household Food Security Survey results released. Media Release: May 23, 2017. https://www.nunatsiavut.com/wp-content/uploads/2017/05/NEWS-RELEASE-Food-security-survey-results-released.pdf

NG. 2018a. Imappivut Knowledge Collection Study (Interview transcripts and spatial data provided to Aivek-Stantec for incorporation into the SEA Update Report).

NG. 2018b. Nain Airport (CYDP) Potential Operational Improvements Assessment. Prepared by OCTANT Aviation.

NG. 2018c. The Imappivut (Our Oceans) Marine Planning Initiative – An Inuit-led approach to marine management. http://parkscanadahistory.com/publications/imappivut/laing-2018.pdf

NG. 2020a. Nain International Airport Project Implementation Process Master Plan. Prepared by OCTANT Aviation.

NG. 2020b. Imappivut Nunatsiavut Marine Plan. https://imappivut.com/communities/

NG. 2020c. Beneficiaries reminded that hunting caribou outside of Torngat Mountains National Park is illegal. https://nunatsiavut.com/wp-content/uploads/2020/03/Notice-to-Beneficiaries-Harvesting-Caribou-outside-TMNP-illegal.pdf

NG. 2021a. Refreshed: Nunatsiavut Tourism Strategy 2021-2025. https://acrobat.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A7bfafcb8-d86c-3c4b-bf0d-00e708463e17&viewer%21megaVerb=group-discover

NG. 2021b. Nunatsiavut Research Centre. https://nunatsiavutresearchcentre.com/about/

NG. 2022. Nain Airport R3. Prepared by Aviek Stantec Limited Partnership.

NG. 2023. Nunatsiavut Kavamanga / Government. https://nunatsiavut.com

NG and Natural Forces Development Limited Partnership. 2021. Nain Wind Micro-Grid Project: Environmental Registration Document. Newfoundland and Labrador Department of Environment and Climate Change: Environmental Assessment Division. https://www.gov.nl.ca/ecc/files/env_assessment_y2021_2118_registration.pdf

NGC (Nunatsiavut Group of Companies). 2021. Home. https://www.ngc-ng.ca/

Nunatsiavut Tugaprik. 2023. Spring 2023. https://nunatsiavut.com/wp-content/uploads/2023/06/NG-newsletter-SPRING-2023.pdf

OKâlaKatiget Society. 2017. Nain Husky Centre Update. http://www.oksociety.com/nain-husky-centre-update/

OKalaKatiget Society. 2020. Nain Fish Plant. http://www.oksociety.com/nain-fish-plant-5/

OKalaKatiget Society. 2022. Nain Seeking Members for Fire Department. http://www.oksociety.com/nain-seeking-members-for-fire-department/

OKalaKatiget Society. 2023. Our Mission Statement. http://www.oksociety.com/sample-page/mission/

PAL Aerospace. 2023. Air Ambulance. https://palaerospace.com/en/our-services/special-missions/air-ambulance

Parks Canada. n.d. Directory of Federal Heritage Designations. https://www.pc.gc.ca/apps/dfhd/page_nhs_eng.aspx?id=229

Parks Canada. 2010. Welcome to the Torngat Mountains National Park of Canada. http://rapidlake.com/wp-content/uploads/2011/02/Info-Package-Latest-Jan-2010.pdf

Parks Canada. 2022. Torngat Mountains National Park. https://parks.canada.ca/pn-np/nl/torngats/activ

Pedersen, A. 2016. Labrador Inuit (Labradormiut). Published Online February 7, 2006. Last Edited March 8, 2016. https://www.thecanadianencyclopedia.ca/en/article/labrador-inuit

Pitt, J and Robert Pitt. 2015. Nain. The Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/nain. Published online: September 16, 2012. Last

Procter, A. 2020. A Long Journey: Residential Schools in Labrador and Newfoundland. ISER Books.

Provincial Archaeology Office (PAO). n.d. https://www.gov.nl.ca/tcar/archaeology-sites/#inuit

Public Health Agency of Canada (PHAC). 2016. Social Determinants of Health. https://cbpp-pcpe.phac-aspc.gc.ca/public-health-topics/social-determinants-of-health/

The Qanuippitaa? National Inuit Health Survey. 2023. About. https://nationalinuithealthsurvey.ca/about/#history

RCMP (Royal Canadian Mounted Police). 2015. Nain Detachment. https://www.rcmp-grc.gc.ca/detach/en/d/743

Riley, J. L., Notzl, L., & Greene, R. 2013. Labrador Nature Atlas: Ecozones, Ecoregions and Ecodistricts (Vol. II). Toronto, Ontario: Nature Conservancy of Canada.

Rivet, F. 2020a. Moravian Missions in Labrador. The Canadian Encyclopedia. Published online February 7, 2006. Last Edited February 26, 2020. https://www.thecanadianencyclopedia.ca.

Rivet, F. 2020b. Nunatsiavut. The Canadian Encyclopedia. Published online March 5, 2020. Last Edited March 5, 2020. https://www.thecanadianencyclopedia.ca.

Rousseau, F., & Drolet, B. 2015. Prediction of the nesting phenology of birds in Canada. In J. Hussell, & D. Lepage, Bird Nesting Calendar Query Tool. Project NestWatch. Bird Studies Canada / Études d'Oiseaux Canada.

Sepaq. 2023. Parc national Kuururjuaq. https://www.sepaq.com/pq/kur/index.dot?language_id=1

Saltwire Network. 2022. 'Where's your orange T-shirt now?': Lela Evans says school board doesn't understand impact of Nain teacher shortage. https://www.saltwire.com/atlantic-canada/news/wheres-your-orange-t-shirt-now-lela-evans-says-school-board-doesnt-understand-impact-of-nain-teacher-shortage-100787897/

Sivunivut Community Corporation. 2009. Welcome to Sivunivut. http://www.sivunivut.ca/home/

Statistics Canada. 2012. Inuit Health: Selected findings from the 2012 Aboriginal Peoples Survey. https://www150.statcan.gc.ca/n1/pub/89-653-x/89-653-x2014003-eng.htm

Statistics Canada. 2015. Inuit health: Selected findings from the 2012 Aboriginal Peoples Survey. https://www150.statcan.gc.ca/n1/pub/89-653-x/89-653-x2014003-eng.htm#a4.

Statistics Canada. 2022. Housing conditions among First Nations people, Métis and Inuit in Canada from the 2021 Census. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-X/2021007/98-200-X2021007-eng.cfm

Statistics Canada. 2023. Census Profile. 2021 Census of Population. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released February 8, 2023. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E

THANL (Transition House Association of Newfoundland and Labrador). 2020. Find a Shelter. http://thanl.org/shelters/find-shelter/

Tarasuk V, Li T, Fafard St-Germain. A. 2021. Household food insecurity in Canada, 2021. Toronto: Research to identify policy options to reduce food insecurity. https://proof.utoronto.ca/

Together (US) Inc. 2023. Best practices for diversity, equity, inclusion, and belonging. https://www.togetherplatform.com/blog/diversity-and-inclusion-best-practices

Torngat Metals. 2023. Strange Lake Rare Earth Project. https://torngatmetals.com/strange-lake/

Torngat Wildlife and Plants Co-Management Board. 2017. Re: George River and Torngat Mountains Caribou and the Newfoundland and Labrador. https://www.torngatsecretariat.ca/home/files/cat13/2017grch_endangered_species_act_listing_recommendation.pdf

Tourism Nunatsiavut. n.d. Explore Nunatsiavut. https://www.tourismnunatsiavut.com/home/nain.htm

VOCM News. 2022. NL Hydro Looks to Establish Renewable Energy Sources in Remote Areas. https://vocm.com/2022/12/03/nl-hydro-looks-to-establish-renewable-energy-sources-in-remote-areas/

Vale NL (Vale Newfoundland & Labrador Limited). 2021a. Vale announces first ore at Voisey's Bay Mine Extension. https://www.vale.com/w/vale-announces-first-ore-at-voisey-s-bay-mine-extension

Vale NL (Newfoundland & Labrador Limited). 2021b. Voisey's Bay Wind Energy Project Environmental Assessment Registration. https://www.gov.nl.ca/ecc/files/env-assessment_y2021_2180_registration-document.pdf

Appendices

Appendix A

Letter from Environmental Assessment Regulators Regarding Cooperation Process

NUNATSIAVUT
kavamanga Government
Nunaliginikmik amma Nunamiutanik Ujaganik Imaniklu
Lands and Natural Resources

September 19th, 2023

Good afternoon,

As discussed in previous meetings, the three jurisdictions potentially requiring an impact/environmental assessment of the Nain Airport Project (the Project) have discussed a coordinated approach for the registration and planning phases of their respective processes that would maintain the legislated requirements of each jurisdiction. A coordinated approach would enhance efficiency of the assessment processes, reduce duplication, facilitate stakeholder engagement, and achieve the high-level goal of one project – one review. As you know, a single registration document/initial project description (RD/IPD), one set of guidelines, and a single impact statement document could help achieve this goal.

To this end, the first option is to coordinate the planning phase and comment periods. Nunatsiavut Infrastructure (the Proponent) has expressed its intent to submit one RD/IPD. In order to facilitate a coordinated comment period on the RD/IPD, we encourage your cooperation with the timing of its submission to each jurisdiction. This approach would consider submitting your document to Nunatsiavut Government and the Impact Assessment Agency first and then to Newfoundland and Labrador. This staggered approach would assist the three jurisdictions in completing their legislated requirements and facilitating one comment period for all three jurisdictions.

In terms of the specific timing of registration, we encourage you to consider two factors. First, the length of each jurisdiction's process before the first comment period and, second, the scheduling of the Nunatsiavut Assembly sessions (around 105 days into the process). The Nunatsiavut Assembly sessions establish the Assembly committee, which is required for the next phases of the review process for the Nunatsiavut Government. As you are aware, the Nunatsiavut Assembly meets a limited number of times each year, with meeting dates currently scheduled for January and March 2024. Registration in time for the January Assembly would require submission of the RD/IPD in early October 2023. Submission should be to both the Nunatsiavut Government and the Agency, to allow the Agency to do its conformity review and for the Nunatsiavut Minister of Lands and Natural Resources to notify the proponent of alternative/additional publication requirements. Once these steps have been completed, you can then submit the final version of your registration document to the province. Should submission in early October not be possible, we would suggest registering your project towards the end of November in order to meet the March Assembly meeting. Regulators encourage you to plan ample time for the submission and review of an updated draft RD/IPD, before registration.

This coordinated approach would involve each jurisdiction working toward aligning steps in their respective EA processes, especially in terms of comment periods. Adjustments to the Nunatsiavut Government environmental review process would be within existing leeway, while adjustments that would extend the planning phase of the federal process requires a request from the other jurisdiction. The three jurisdictions are committed to work together to align their EA processes to help facilitate one project – one review.

We will be happy to answer questions on these elements during our next regulators-proponent meeting, as well as provide details on each of the processes under this coordinated approach.

Thank you,

<Original signed by>

Rodd Laing
Director of Environment

Cc: Impact Assessment Agency of Canada
Environmental Assessment Division, Government of Newfoundland and Labrador

Appendix B

Greenhouse Gas Estimate

Initial Greenhouse Gas Assessment under Strategic Adaptation of Climate Change (SACC) – Planning Phase

Nain Airport Project

Impact Assessment Agency of Canada (IAAC), Government of Newfoundland and Labrador (NFL) and Nunatsiavut Government (NG)

60706559

November 2023

Delivering a better world

Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Client ("Client") in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

AECOM shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. AECOM accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

AECOM agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but AECOM makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

Without in any way limiting the generality of the foregoing, any estimates or opinions regarding probable construction costs or construction schedule provided by AECOM represent AECOM's professional judgement in light of its experience and the knowledge and information available to it at the time of preparation. Since AECOM has no control over market or economic conditions, prices for construction labour, equipment or materials or bidding procedures, AECOM, its directors, officers and employees are not able to, nor do they, make any representations, warranties or guarantees whatsoever, whether express or implied, with respect to such estimates or opinions, or their variance from actual construction costs or schedules, and accept no responsibility for any loss or damage arising therefrom or in any way related thereto. Persons relying on such estimates or opinions do so at their own risk.

Except (1) as agreed to in writing by AECOM and Client; (2) as required by-law; or (3) to the extent used by governmental reviewing agencies for the purpose of obtaining permits or approvals, the Report and the Information may be used and relied upon only by Client.

AECOM accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of AECOM to use and rely upon the Report and the Information. Any injury, loss or damages arising from improper use of the Report shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

AECOM: 2015-04-13

Quality Information

Prepared by

<Original signed by>

Piotr Staniaszek, Ph.D.
Senior Air Quality Specialist
Global Air Quality Modelling Specialty Lead
M: 403-463-9682
E: Piotr.Staniaszek@aecom.com

Prepared by

<Original signed by>

Lina Zhang P.Chem., M.Sc.,
Air Quality Specialist

Prepared by

<Original signed by>

Randy Rudolph, M.Sc.
Senior Air Quality Scientist
Randy.Rudolph@aecom.com

Verified by

<Original signed by>

Jean-François Morin, Eng, M.Sc.A, MBA
Physical Environment Lead

Distribution List

# Hard Copies	PDF Required	Association / Company Name
	✓	Impact Assessment Agency of Canada (IAAC, Federal Government)
	✓	Government of Newfoundland and Labrador (NFL)
	✓	Nunatsiavut Government (NG)
	✓	AECOM Canada Ltd.

Prepared for:

Impact Assessment Agency of Canada (IAAC),
Government of Newfoundland and Labrador (NFL) and
Nunatsiavut Government (NG)

Prepared by:

Randy Rudolph, M.Sc.
Senior Air Quality Scientist
Randy.Rudolph@aecom.com

AECOM Canada Ltd.
48 Quarry Park Blvd. SE., Suite 300
Calgary, AB T2C 5P2
Canada

T: 403.254.3301
F: 403.351.1678
www.aecom.com

Table of Contents

Figures

Tables

Appendices

List of Acronyms and Abbreviations

AADT	Average Annual Daily Traffic
AEPA	Alberta Environment and Protected Areas
ANFO	Ammonium nitrate fuel oil
BAT	Best Available Technologies
BC MECCS	B.C. Ministry of Environment and Climate Change Strategy
BEP	Best Environmental Practice
CH_4	Methane
CO_2	Carbon dioxide
CSA	Canadian Standards Association
ECCC	Environment and Climate Change Canada
GHG	Greenhouse Gas
GWP	Global Warming Potential
ha	Hectare
HFCs	Hydrofluorocarbons
IAA	Impact Assessment Act
IAAC	Impact Assessment Agency of Canada
ICAO	International Civil Aviation Organization
IPCC	Intergovernmental Panel on Climate Change
IPD	Initial Project Description
N_2O	Nitrous oxide
NF_3	Nitrogen trifluoride
NFL	Government of Newfoundland and Labrador
NG	Nunatsiavut Government
O&M	Operations and Maintenance
PFCs	Perfluorocarbons
RCP	Representative Concentration Pathway
SACC	Strategic Assessment of Climate Change
Scope 1	Direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization
Scope 2	Indirect GHG emissions from consumption of purchased electricity, heat, cooling or steam
SF_6	Sulfur hexafluoride
VKT	Vehicle Kilometres Travelled

1. Introduction

In order to enable consistent, predictable, efficient and transparent consideration of climate change throughout the impact assessment process, Environment and Climate Change Canada (ECCC) has developed the strategic assessment of climate change (SACC). The latter is conducted under section 95 of the Impact Assessment Act (IAA) and it applies to designated projects under the IAA. The SACC describes the greenhouse gas and climate change information that project proponents need to submit at each phase of a federal impact assessment and requires proponents of projects with a lifetime beyond 2050 to provide a credible plan that describes how the project will achieve net-zero emissions by 2050. The sections below described how these objectives will be achieved for the construction of a new airport (the Project), in Nain, Labrador.

This initial greenhouse gas assessment for the purposes of the Registration phase – Registration for Environmental Review / Registration Document / Initial Project Description (IPD) (Registration) for the New Nain Airport Project (Project). It should be noted that the available data at this stage of the Project is insufficient to provide an accurate emission estimate; the current emission calculation has been developed using the data currently available and professional judgement. This initial assessment focused on the new airport's construction, operation and decommissioning activities. A more detailed GHG estimate will be prepared for the Environmental Impact Assessment as Project engineering design progresses and more information is available.

1.1 General Project Description

The Project is a New Airport for Nain, the northernmost Inuit Community in Labrador, Newfoundland and Labrador (NL). Nain lies north of Unity Bay, about 50 km from the Atlantic Ocean and 370 km north of Happy Valley-Goose Bay (HVGB). The Nunatsiavut Government (NG) is planning to build the new certified airport to replace the existing airstrip at Nain. The three main components of the Project are:

- New Airport, which refers to the terminal, equipment maintenance hangar, apron, groundside parking and related facilities, as well as an area of 1,300 m^2 set aside for potential future development.
- Runway, a new airstrip approximately 1,830 m (6,000 ft) in length and 30 m (100 ft) in width, exclusive of the apron (manoeuvring areas).
- Access Road, a new road approximately 13 km long joining the Airport to Nain.

The New Nain Airport will operate 24 hours a day, seven days a week and will be able to serve as the emergency response centre for the region.

2. Strategic Climate Change Assessment

2.1 Greenhouse Gas Emissions

The greenhouse gas (GHG) emissions quantification allows the identification of carbon sources and their relative significance to give a better understanding of the most impactful mitigation strategies which may apply. The quantification of GHG emissions will consider the seven gases defined as GHGs under the United Nations Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2022) and by ECCC:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs – a family of gases);
- Nitrogen trifluoride (NF_3);
- Perfluorocarbons (PFCs – another family of gases); and
- Sulphur hexafluoride (SF_6).

It is anticipated that GHG will mostly be emitted as CO_2, CH_4 and N_2O, and only these gases are quantified using an appropriate emissions factor based on the source of fuels and activities shown in Table 2-4, Table 2-5, and summarized in Table 2-6. The emissions are converted into tonnes of CO_2 equivalent (tCO_2-eq) using global warming potential (GWP) which is the heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide. The scope of emissions inventory of the Project will include all direct emissions (Scope 1) associated to combustion of fossil fuels by stationery and mobility sources.

The initial estimation of GHG emissions associated with the Project includes the construction, operation, and decommissioning phases. The estimation will be updated and completed as part of the environmental impact assessment.

2.1.1 Data Requirements and Gathering of Quantifiable Data

Carbon accounting begins with appropriate setting data collection templates which defines aspects of GHG quantification aligning with the physical scope of the activities taking place throughout all life cycle stages of the Project. Collecting the data used to quantify the inputs and outputs in the GHG emissions assessment process is a critical component of the reporting and methodology development. To distinguish the data collecting process related to GHG quantification, the Project will be categorized into three (3) separate phases: construction, operation, and decommissioning.

The GHG quantification period will match the required service life of the infrastructure asset. It will include all activities leading to carbon emissions within the system boundary, and only exclude activities that do not significantly change the result of the quantification (i.e., less than 1% of total GHG emissions) with justification from assumptions, inputs, and data gaps used and sensitivity analysis demonstrating validity of exclusions.

The boundaries for the construction phase include the details of the equipment involved in the Project and changes to land use. GHG emissions and carbon sinks removal resulting from the Project's land use conversion will have a direct impact in the GHG assessment. This assessment will be conducted according to the area of land affected in each land use category of the intergovernmental panel of climate change (IPCC, 2019) and using the Greenhouse Gas Emissions Quantification Guide (Quebec Government, 2022).

The emissions associated with the construction phase will include materials and equipment used to construct the access road and airport, transportation, clearing of the area (tree removal and blasting of rock material). The operation phase will be evaluated through the aircraft use and maintenance, including the buildings related to the airport operations, access road and power generating station.

Decommissioning emissions include activities related to the closure of the airport including equipment, transportation, waste treatment and land use. We anticipate decommissioning emissions will be lower than construction emissions. There will be demolition of buildings and removal of concrete, which emissions are expected to be lower than blasting for construction. The access road will not be decommissioned, but the airport site will be decommissioned and revegetated for CO_2 sequestration.

2.1.2 Net Greenhouse Gas Quantification Methodology

The GHG quantification assessment has been conducted using the key principles of relevancy, completeness, consistency, accuracy, transparency, and conservativeness. These principles are aligned with the CSA-ISO 14064 standards (CSA, 2018) and the GHG Protocol[1] standards and are defined below. It is also noted that the emission factors are acquired from the National Inventory Report 1990-2021: GHG Sources and Sinks in Canada, Part 2 (Government of Canada, 2023) and Canada's Greenhouse Gas Quantification Requirements (Version 6.0) (ECCC, 2022).

- **Relevance:** The relevance of GHG sources, data, and methodologies regarding the selected, defined documented and used boundaries.
- **Completeness:** All relevant GHG emissions will be included in the assessment with supporting information on criteria and procedures. The GHG quantification assessment will describe what sources will be included and excluded.
- **Consistency:** The assessment shall enable meaningful comparisons in GHG-related information. Consistent methodologies and data sources for carbon management are to be used to allow comparison over time.
- **Accuracy:** The assessment must reduce bias and uncertainties as far as is practical. GHG quantification will be based on available data, emission factors and estimation methodologies used, recognizing that uncertainties exist due to the early stage of the Project and to emission factor availabilities for the identified activities. A conservative approach will be undertaken in the latter cases.
- **Transparency:** The assessment must disclose sufficient and appropriate GHG related information to allow conclusions and decisions to be made with reasonable confidence.
- **Conservativeness:** The assessment must use conservative assumptions, values and, and procedures to ensure that GHG emission reductions are not over-estimated.

Tables 1-1, 1-2 and 1-3 list the emission factors used in conjunction with activity factors to estimate GHG emissions of CO_2, CH_4 and N_2O associated with the Project.

Table 2-1: Emission Factors for Diesel Combustion

Diesel Burning Sources	g CO_2/L	g CH_4/L	g N_2O/L	Source
Heavy Duty Diesel Truck	2,680.5	0.11	0.151	Part 2 Table A6.1-14 (Government of Canada, 2023)
Off-Road Equipment Tier 1-3	2,680.5	0.073	0.022	
Off-Road Equipment Tier 4	2,680.5	0.073	0.227	
Stationary Equipment	2,681	0.078	0.02	Table 2-2 and 2-7 (ECCC, 2022)

1. *Homepage | GHG Protocol*

Table 2-2: Emission Factors for Road Construction

Source	Unit	CO_2	CH_4	N_2O	Source
Blasting	t of CO_2/ t of ANFO*	0.189	-	-	The Mining Association of Canada (2014)
Forest Loss	t of CO_2/ha**	153	-	-	Quebec Government (2022) Eq. 10 & IPCC (2019) Table 4.4.; 4.7
Sequestration Loss	t of CO_2/ha	75	-	-	Quebec Government (2022) Eq. 11 & IPCC (2019) Table 4.3; 4.4; 4.9
Wetland Loss	kg/ha	440	2.0	3.2	Quebec Government (2022) Section 3.12

*Notes: *ANFO – Ammonium nitrate fuel oil*
***ha – Hectare*

Table 2-3: Emission Factors for Access Road and Airport Operations

Source	Unit	CO_2	CH_4	g N_2O/L	Source
Aircraft (Jet Fuel)	Kg/kL	2,559.7	0.018	0.0711	Table A6.1-14 (Government of Canada, 2023)
Access Road small cars	g/VKT*	146.3	0.01	0.001	US EPA MOVES model
Access Road trucks	g/VKT*	202.9	0.01	0.007	US EPA MOVES model
Commercial large vehicles	g/VKT*	723.7	2.04	0.05	US EPA MOVES model
Auxiliary Equipment at Airport – diesel (Tier 4)	Kg/kL	2,680.5	0.073	0.227	Table A6.1-14 (Government of Canada, 2023)
Auxiliary Equipment at Airport - gasoline	Kg/kL	2,307	5.08	0.064	Table A6.1-14 (Government of Canada, 2023)
Diesel Burning Generation Station	Kg/kL	2,681	0.078	0.02	ECCC (2022)

*Note: *VKT – Vehicle Kilometres Travelled – total kilometres travelled by all vehicles in a one day*

2.2 Direct Emissions from Road and Airport Construction and Airport Decommissioning

Since the terrain and weather are challenging, it was assumed that construction will be completed over two five-month periods.

During construction the main source of Scope 1 emissions is the combustion of diesel. The detailed list of equipment expected to be used for construction is listed in Appendix A (Table A-1). Emissions from crushing and transportation of crushed material for use as road and airport construction / fill material are included, and transportation of sand from the Nain quarry may also be required. Limited permafrost (wetland) will be lost.

Vegetation clearing for airport, landing strip and access road causes GHG emissions due to loss of forest land carbon stocks. In addition, cutting trees causes loss of CO_2 sink (loss of CO_2 sequestration) for the next 100 years. Details of emission calculations are in Appendix A.

Direct emissions from construction of the access road and airport are estimated to be 12,746 tCO_2 eq (Table 2-4). Decommissioning emissions are assumed for the purpose of this assessment to be one-half of airport construction emissions (6, 373 tCO_2 eq), as the access road is not reclaimed.

Table 2-4: GHG Emissions from Construction of Road and Airport and Decommissioning of Airport

Scope	Source	Material (Unit)	Amount	tCO_2	tCH_4	tN_2O	tCO_2-eq
Scope 1 Emissions	Diesel Combustion (two years of construction assumed)	Diesel (L)	4,001,862	10,727	0.306	0.165	10,780
	Loss of Forest Land Carbon	Forest Lost (ha)	7.91	1,208	-	-	1,208
	Net Loss of CO_2 Sequestration over 100 y	Forest Lost (ha)	7.91	758	-	-	758
			TOTAL for Construction	**12,693**	**0.306**	**0.165**	**12,746**
			TOTAL for Decommissioning	**6,346.5**	**0.153**	**0.0825**	**6,373**

2.3 Direct Emissions from Airport Operation

During airport operations, aircraft flights and landing / departing / maneuvering are the main sources of Scope 1 emissions (around 83% of total airport operations GHG emissions). Auxiliary equipment includes tugs, tractors, forklifts, snow truck, landing strip maintenance equipment, trucks, and cars, etc. In addition, there will be electricity generators at the power plant. According to the average annual flights to and from Nain (9 flights per day on average with expected range from 4 to 18 flights), and an operation phase of 50 years, the direct emissions from operations are 1,005,820 tCO_2 - eq (Table 2-5). Appendix A contains assumptions and detailed calculations.

Table 2-5: GHG Emission Values from Airport Operations

Scope	Operations	Fuel Consumption (L/y)	tCO_2/yr	tCH_4/yr	tN_2O/yr	tCO_2-eq/yr	tCO_2-eq Operational Phase (50 years)
Scope 1 Direct Emissions	Landing / Departing / Maneuvering	4,055,082	10,380	0.073	0.288	10,458	522,912
	Auxiliary Equipment	269,164	698	0.330	0.051	721	36,054
	Flights to Goose Bay and Natuashish	-	-	-	-	6,316	315,790
	Electricity Generation	975,000	2,614	0.076	0.020	2,621	131,064
	TOTAL		**13,692**	**0.48**	**0.36**	**20,116**	**1,005,820**

2.4 Acquired Energy Emissions

Acquired energy emissions are assumed to be zero, as all power will be generated at the airport site.

2.5 Avoided Domestic GHG Emissions

The Project does not avoid domestic GHG emissions.

2.6 Excluded from Analysis GHG Emissions

The GHG emissions which are below 1% of the total were excluded from Table 2-4 and Table 2-5. In Table 2-4 blasting of rock would yield CO_2 emissions 0.2% of total and loss of wetland (permafrost), would be below 0.5% of total CO_2-eq for construction. In Table 2-5 access road emissions would be 0.8% of total airport emissions during operational phase. Appendix A provides calculations and values of excluded from analysis sources of the CO_2-eq calculations.

2.7 Total New Nain Airport Emissions

Table 2-6 summarizes total Project emissions from construction, operation for 50 years and decommissioning. Net GHG emissions for 50 years of operations will be 1,005,820 tCO_2 - eq. Decommissioning and construction emissions are significantly lower than operating emissions. Including construction and estimated decommissioning emissions, the total net GHG emissions of the new airport will be 1,024,939 tCO_2-eq (Table 2-4 and Table 2-5).

Table 2-6: Total New Nain Airport Emissions (tCO_2-eq) for Construction, Operation for 50 years, and Decommissioning

Source	tCO_2-eq
Construction of Airport and Access Road	12,746
Operation of Airport over 50 Years	1,005,820
Decommissioning of Airport	6,373
TOTAL	1,024,939

2.8 Mitigation Measures, Net-Zero Plan

As required by SACC guidelines, developing, and implementing a net-zero plan for 2050 will be included in the environmental impact assessment. Stemming from the need to find innovative ways to reduce carbon within the infrastructure delivery process, a baseline will be established to set the goals and develop mitigation measures.

The development and implementation of mitigation measures will follow the principles outlined below:

- Emphasis on reducing the net GHG emissions of the Project as early as possible during the project lifetime.
- Based on the concept of energy efficiency, the BAT/BEP (Best Available Technologies / Best Environmental Practice) reduces energy and resource consumption at the source
- A BAT/BEP will be performed over the Project lifetime, including any emerging technologies and practices that may become technically and/or economically feasible during the lifetime of the Project.

The BAT/BEP Determination process, shown in Figure 2-1 (Government of Canada, 2021), will involve a structured analysis developed in six steps to identify and select the most effective technologies, techniques and practices that are technically and economically feasible to minimize GHG emissions associated with the Project. The scope of the BAT/BEP analysis will consider all main sources of emissions of the Project, from the construction, operation, and decommissioning phases. This provides the flexibility to create Project-wide scenarios that include technologies and practices minimizing GHG emissions from the main emission sources of the Project.

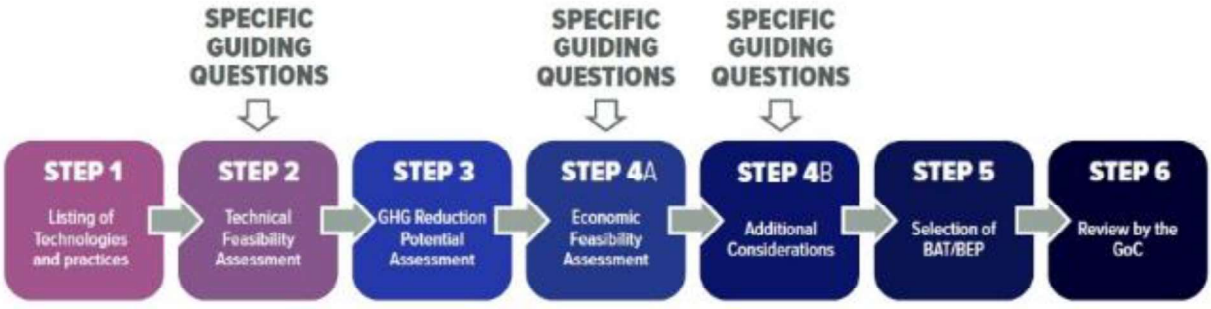


Figure 2-1: Steps of the BAT/BEP Determination Process

At this stage in the Project, the mitigation measures that could lead to the greatest GHG emission reductions are:

- Installation of solar panels and wind farm together with battery storage system to reduce or eliminate emissions from power generators.
- Energy-efficient and/or electric airport auxiliary equipment

- Use of aviation biofuels
- Implementation of an energy management system (ISO 50 001)

Additional mitigation measures considered can include:

- Use of local materials – minimize haul distance for construction material. For example, the sand quarry in Nain can provide sand for access road construction and for concrete used in buildings.
- Using repurposed or recycled or materials – wood from cut trees can be used as construction material.
- Low-carbon materials selection
- Minimizing building heating and cooling requirements and associated systems
- Minimizing waste
- Minimizing site transport
- Efficient construction methods (e.g., modular systems, precision manufacturing and MMC) contributing to better built quality, reducing construction-phase waste and need for repairs in the post completion and defects period (snagging)
- Lightweight construction which uses less material
- Encourage durable construction and flexible designs.

2.9 Limitations

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

The assessment is focusing on the new airport's construction, operation, and decommissioning activities. During construction phase, the old airport will still be in operation. The existing airport GHG emissions are not part of this assessment. Similarly, decommissioning emission of existing airport, overlapping with beginning of the operation of the new airport are also not included. It should be mentioned that the existing airport is much smaller (i.e., with smaller aircrafts) than the proposed new airport. The current annual average is three flights a week to, from Natuashish and six flights a week to and from Goose Bay. There is only one small building on the site of the existing airport, and decommissioning of this site will produce very low emissions.

The assessment will be reviewed when Project engineering progresses and when project Tailored Impact Statement Guidelines are received. At that time, the estimation will be reassessed, using more accurate information, as part of the environmental impact assessment as the Project moves forward.

2.10 Resilience to Climate Change

As part of the SACC, a climate change resilience analysis will be conducted. This will include a selection of weather-related risks that may change under current and anticipated climates. In 2021, ECCC published a technical guide that provides instructions and details on the level of information for the climate change resilience assessment. The climate change resilience analysis will be completed in accordance with this document and the procedures contained in Canadian Standards Association published CSA 4011:19 – Technical Guide: Infrastructure in permafrost: A guideline for climate change adaptation (CSA, 2019). This document provides guidance and practical advice on location and design for infrastructure in northern environments. The document describes the

nature of permafrost, trends in climate change, foundation systems for community infrastructure, and presents a process for ensuring climate change is incorporated into design and location decisions. In that context, the following activities will be conducted:

- Assessment of the interactions of historical climate conditions within the Project area, both in terms of trends in key climate variables (e.g., precipitation or temperature) and records of extreme events (e.g., heat waves, floods).
- Collect information and observations from the Indigenous peoples affected by the Project.
- Analysis of projected future changes in the climate using climate model projections for two ranges of emission scenarios also called the Representative Concentration Pathway (RCP). These scenarios will be the intermediate scenarios (RCP 4.5) and the high emission scenario (RCP 8.5). Uncertainty, including estimates of the level of confidence in the projections of changes to the likelihood of a given climate hazard of interest, will be evaluated.
- Determination of climate indicators, which represents conditions or events that can cause loss of productivity, damage to the infrastructure, harm to employees or visitors, etc. The probability associated with an indicator will be calculated from observations at weather stations and climate simulations.
- Assessment of the potential climate change vulnerability. This screening determines the exposure, sensitivity, and adaptive capacity of Project assets/components, the people, and the environment to the selected climate indicators. Assets and operations that are exposed, sensitive and have low inherent capacity to adapt will go to the next stage of Risk Analysis. The latter will be conducted to evaluate the impacts of the climate indicators on each of the Project components by evaluating their likelihood of occurrence and their potential consequences to the Project, environment, and people.
- Risk will be evaluated to rank them from unacceptable risks to acceptable levels. This risk evaluation will provide the basis for identifying when risk treatment and adaptation measures are necessary. These adaptation measures will be divided by the implementation stage:
  - Design: Measures to be incorporated during the design phase of assets for these to be resilient to future climate risks and to prevent costly revamps.
  - Operations and Maintenance (O&M): Measures to be incorporated over the lifespan of the assets during operation and maintenance to ensure resiliency.
  - Policy: Measures to be executed to always provide and maintain safe and healthy working

3. References

AEPA, 2023:
Alberta Greenhouse Gas Quantification Methodologies. Technology Innovation and Emissions Reduction Regulation. Version 2.3. https://open.alberta.ca/dataset/5d79b86b-7811-413f-88d8-acd36cb9d6d2/resource/29984c25-29bc-46cd-83fb-1f54fb3e2f5c/download/epa-alberta-greenhouse-gas-quantification-methodologies-version-2-3-2023-09.pdf

BC MECCS, 2023:
2022 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions for Public Sector Organizations, Local Governments, Modern Treaty Nations And Community Emissions. 17145 - Appendix 1 Best Practices Methodology for Quantifying Greenhouse Gas Emissions (gov.bc.ca)

CIMA+, 2023:
Nain Airport – R7 Feasibility Study. Electrical Power Supply Alternatives Analysis.

CSA, 2018:
ISO 14064-1 :2018 Inventaires des GES et mesure de l'empreinte carbone. ISO 14064-1 :2018 Inventaires des GES et mesure de l'empreinte carbone | Product | CSA Group

CSA, 2019:
CSA 4011:19 – Technical Guide : Infrastructure in permafrost : A guideline for climate change adaptation. May 2019. CSA PLUS 4011 :19, Technical Guide : Infrastructure in permafrost : A guideline for climate change adaptation (toolkitnwtac.com)

ECCC, 2022:
Canada's Greenhouse Gas Quantification Requirements (Version 6.0). December 2022. Microsoft Word – EN_Canada's Greenhouse Gas Quantification Requirements (2022) – v3b.docx (publications.gc.ca)

Government of Canada, 2021:
Draft Technical Guide Related to the Strategic Assessment Of Climate Change. August 2021. Draft technical guide related to the strategic assessment of climate change – Canada.ca

Government of Canada, 2023:
National Inventory Report 1990-2021: GHG Sources and Sinks in Canada, Part 2. https://publications.gc.ca/collections/collection_2023/eccc/En81-4-2021-2-eng.pdf

IPCC, 2022:
Climate Change 2022: Impacts, Adaption and Vulnerability, Sixth Assessment Report.

IPCC, 2019:
Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 4: Agriculture, Forestry and Other Land Use. https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch04_Forest%20Land.pdf

The Mining Association of Canada, 2014:
Towards Sustainable Mining Energy and Greenhouse Gas Emissions Management Reference Guide. June 2014. EnergyandGreenhouseGasEmissionsManagementReferenceGuide2014.pdf (mining.ca)

Quebec Government, 2022:
Greenhouse Gas Emissions Quantification Guide. Ministère de l'Environnement, de la Lutte contre les Changements Climatiques, de la Faune et des Parcs. Greenhouse Gas Emissions Quantification Guide (gouv.qc.ca)

Appendix A

Detailed Emission Calculations

Construction Phase

A-1 Emissions from Diesel Combustion Construction Equipment

In the absence of construction design information, **Table A-1** lists construction equipment conservatively assumed in emission calculations. Days per year were estimated for two years of construction (five months each year – ten months in total). **Table A-2** summarizes Global Warming Potential (GWP – AR5) values used to calculate emissions as CO_2-eq.

Table A-1: Construction Equipment

Diesel Combustion Sources	Classification	Fleet Size	Hours/ Day	Days/ Two Year	Engine Power (Hp)	Ave. Fuel Consumption (L/h)
Sandvik QJ241I Mobile Jaw Crusher	Off Road Tier 1-3	4	12	240	225	30
Truck CAT773D	Heavy Duty Truck	2	12	240	650	48.1
Excavator CAT374D with Breaker Attachment	Off Road Tier 1-3	3	12	60	476	44.6
CAT 990H Wheel Loader	Off Road Tier 1-3	2	12	240	627	66.7
Water Truck CAT773 Modified	Heavy Duty Truck	1	6	240	650	48.1
Scraper CAT627K	Off Road Tier 1-3	3	12	240	290	71.6
Wheel Compactor CAT CP54B	Off Road Tier 4	3	12	240	131	12
Wheel Compactor CAT CS44B	Off Road Tier 1-3	3	12	240	100	10
Grader CAT 16H	Off Road Tier 1-3	3	12	240	275	25
Track Bulldozer CATD9R	Off Road Tier 1-3	2	12	240	405	52.8
Crane – SCX 1500A-3	Off Road Tier 4	2	12	60	282	40
TERRAMAC RT9 Concrete Mixer	Stationary	2	12	60	220	30
Pump for Pouring Cement PB51AT-4-E	Stationary	2	12	60	40	8
EK300LS Cable Crowd Piling Rig	Stationary	4	12	60	443	55
Track Bulldozer CATD9R	Off Road Tier 1-3	2	12	240	575	56
Atlas Copco D65 drill	Off Road Tier 1-3	8	12	180	540	52.6

Table A-2: Global Warming Potential

Chemical Formula	GWP
CO_2	1
CH_4	28
N_2O	265

Using emission factors from **Table 2-1**, applied to equipment from **Table A-1** and GWP from **Table A-2**, fuel consumption and GHG emissions for diesel burning construction equipment were calculated (**Table 2-4**). It was assumed that total time of construction will be two years (10 months).

A-2 Blasting Emissions

To conservatively estimate the rock volume blasted, the following assumptions were made:

1. The most challenging part of the road construction will be the steeply sloped bedrock area of Mount Sophie. It was estimated that around 800,000 m^3 of rock will be blasted in this area assuming corridor 20 m deep, 20 m wide and 200 m long, representative of the terrain variations through the pass.

2. The remainder of the road is a mix of permafrost, forested area, and bare rock. Some parts of the road, landing strip and airport area will be smoothed (with cut and fill approaches) with material from blasting. To simplify calculations, it was assumed that on average, the whole road length was cut 0.33 m deep and 20 m wide. Total volume of the blasted rock was 85,800 m^3.
3. The landing strip will have maximum length of 1,829 m and width of 30.5 m. Total area of the strip will be 55,784.5 m^2. There will be additional 1,300 m^2 space (for parking, terminal, etc.,). It was estimated that on average, the blasting was equivalent to a depth of 0.33 m over this area.

The total blasted volume was estimated as 184,638 m^3.

Blasting emissions were based on the use of ammonium filtrate mixture with fuel oil (ANFO), with a range of emulsion over volume from 0.75 to 0.30 kg/m^3. Using the 0.75 kg/m^3 ratio, 138.5 t of ANFO is required for blasting of all material during road and airport construction. Using emission factor from the Mining Association of Canada (0.189 t of CO_2/t of ANFO), emissions were estimated as 26 t CO_2-eq. It was assumed that drilling of holes for blasting and blasting of the rock will be done for 3 months at beginning of every year of construction. It was assumed all blasted rock will be used in road and airport construction (coarse and fine, road and strip layers).

Since blasting emissions (26 t CO_2-eq) would be 0.20% of total construction emissions, these emissions were not used in the assessment.

A-3 Emissions from Deforestation

The forest around Nain is described as boreal forest, tundra woodland based on surveys to date. Emissions of CO_2 from loss of forest land carbon stocks can be calculated using Equation 10 from Quebec Government (2022):

$$GHG\ (tCO_2\text{-}eq) = N_H \times t_{DMh} \times (1+T_X) \times CC \times 44/12$$

Where: N_H = Number of hectares deforested – estimated as 7.91 ha
t_{DMh} = Tonnes of dry matter per hectare – for tundra woodland primary forest = 63.7 t/ha
T_X = Ratio of below-ground biomass to above-ground biomass – for tundra woodland = 0.39
CC = Carbon content of wood, expressed as tonnes of carbon per tonne of dry matter – default = 0.47
44/12 = Molecular weight ratio of CO_2 to carbon
GHG (tCO_2-eq) = 7.92 ha x 73.7 t CO2/ha x (1+0.39) x 0.47 x 44/12 = 1,208 tCO_2-eq

A-4 Emissions from Loss of CO2 Sequestration

Loss of CO_2 sequestration over 100 years can be calculated using Equation 11 from Quebec Government (2022):

$$L_{SEQ}\ (tCO_2\text{-}eq) = N_H \times GAB \times (1+T_X) \times CC \times 44/12 \times 100$$

Where: N_H = Number of hectares deforested – estimated as 7.91 ha
GAB = Annual growth rate of above-ground biomass, in tonnes of dry matter per hectare per year = 0.4 t/ha/yr
T_X = Ratio of below-ground biomass to above-ground biomass – for tundra woodland = 0.39
CC = Carbon content of wood, expressed as tonnes of carbon per tonne of dry matter – default = 0.4
44/12 = Molecular weight ratio of CO_2 to carbon
L_{SEQ} (tCO_2-eq) = 7.91 ha x 0.4 tCO2/ha x (1+0.39) x 0.4 x 44/12 x 100 years = 758 tCO_2-eq

A-5 Emissions from Wetland Loss

There will be loss of permafrost and marshes along access road and at the future site of the landing strip and airport. The loss of wetland will be larger than the area used for construction, and it was conservatively estimated using Google Earth as 43.82 ha. The CO_2 emissions from wetland loss can be calculated using Equation 13, 14 and 15 from Quebec Government (2022):

Equation 13: CO_2 emissions from wetland loss: $E_{CO2} = L_{WL} \times EF_{CO2} \times 44/12$

Where: L_{WL} = Wetland loss in hectares – estimated as 43.82 ha
EF_{CO2} = CO_2 emission factor due to wetland loss – for boreal forest = 0.12 t of carbon/ha
44/12 = Molecular weight ratio of CO_2 to carbon
E_{CO2} = *43.82 ha x 0.12 t CO2/ha x 44/12 = 19.28 tCO2-eq*

Equation 14: CH_4 emissions from wetland loss: $E_{CH4} = L_{WL} \times EF_{CH4}$

Where: EF_{CH4} = CH_4 emission factor due to wetland loss – for boreal forest nutrient rich = 2.0 kg of CH_4/ha
E_{CH4} = *43.82 ha x 2 kg CO2/ha / 1000 kg/t = 0.087 t*

Equation 15: N_2O emissions from wetland loss $E_{N2O} = L_{WL} \times EF_{N2O}$

Where: EF_{N2O} = N_2O emission factor due to wetland loss – for boreal forest low nutrient rich = 3.2 kg of N_2O/ha
E_{N2O} = 43.82 ha *3.2 kg CO2/ha / 1000 kg/t = 0.140 t

Total GHG emissions from wetland loss: $E_{Wetland\ Loss}$ = 19.28 t + 28*0.087 t+ 265*0.14 t = 58.5 t CO_2-eq

Wetland loss emissions would be below 0.5% of total construction emissions and it is not used in assessment.

Operations Phase

A-6 Emissions from Diesel Power Generator

According to the R7 Feasibility Study (CIMA+, 2023), there will be a maximum power demand of 975 kWh and generators will consume 975,000 L/yr of diesel. Based on emission factors from **Table 2-3** and **Table A-2**, emissions from continuous power generation for 50 years were 130,197 tCO_2-eq.

A-7 Emissions from Aircraft Arrival, Departure, and Maneuvering

Several aircraft may operate at the new Nain Airport: Dash 8-100, Dash 8-300, ATR 72, ATR 42, and Boeing 737-200. Since the last has the highest emissions (and fuel consumption), it was assumed that nine Boeing 737-200 will land and depart each day - three from or to Natuashish and six from or to Goose Bay. Since the access road was designed for Average Annual Daily Traffic (AADT) of 100, it was assumed that a maximum of 612 people will use the airport daily (the capacity of a Boeing 737-200 is 136 passengers, assuming that average number of passengers will be 68 (50% of the maximum capacity). The fuel consumption was calculated using ICAO database (ICAO Aircraft Engine Emissions Databank | EASA (europa.eu)) and **Table A-3** summarizes fuel consumption.

Table A-3: Fuel Consumption Calculations for Boeing 737-200 Aircraft

Mode	Engine Thrust Setting (% of Maximum Thrust	ICAO Default Time (minutes)	Fuel Flow per Engine (kg/s)	Fuel Used by Two Engines (kg)
Take-Off	100	0.7	1.245	104.6
Climb Out	85	2.2	0.997	263.2
Approach	30	4	0.354	169.9
Idle	7	26	0.147	458.6
			TOTAL Fuel (kg)	**996.3**

Assuming 9 flights a day and 365 days annual operations, turbo fuel use will be: 996.3*9*365 = 3,273,003 kg of turbo fuel. Assuming fuel density 0.81 kg/L (AEPA, 2023), turbo fuel usage is 4,040,745 L/yr. In addition, there are fuel additives and oil, up to 0.36% of fuel volume for 2015-2019 by Canadian air carriers I to III (https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2310026701). In total, annual aviation fuel consumption was estimated as 4,055,082 L/yr. Using emission factors from **Table 2-5** and GWP from **Table A-2,** emissions were estimated as 10,458 tCO_2-eq/yr or 522,912 tCO_2-eq per 50 years of airport operations assuming no changes during the lifetime of operations.

A-8 Emissions from Aircraft In Flight

The calculations used distance-based emission factors for short and long haul taken from Table 18 in Best Practices Methodology for Quantifying Greenhouse Gas Emissions (BC MECCS, 2023). **Table A-4** summarizes emission calculation assumptions.

Table A-4: Fuel Consumption Calculations for Boeing 737-200 Aircraft

Destination	Distance (km)	Flights per Day	Flights per Year	Max. Number of Passengers / Flight	Kg CO_2-eq / Passenger / km	t CO_2-eq/yr	tCO_2-eq (50 years)
Goose Bay	367	6	2,190	68	0.1021	5,580.1	279,007
Natuashish	76	3	1,095	68	0.1300	735.7	36,783
					TOTAL Emissions	**6,316**	**315,790**

The Boeing 737-200 capacity is 136 passengers. It was assumed that with 9 flights a day in this aircraft, the maximum reasonable number of passengers per flight will be half capacity, which is 68 passengers. Total emissions were estimated as 6,316 tCO_2-eq/yr and 315,790 tCO_2-eq over 50 years.

A-9 Emissions from Airport Operations

Equipment and operations assumptions were:

1. Snow removal trucks work for 312 hours a year (considering snow fall days and amounts), consuming 6.8 L/hour of diesel (up to 2,134 L/yr)
2. Eight cars used by airport staff work 4 hours a day, consuming 5.3 L/hour of gasoline (up to 62,021 L/yr)
3. Two light trucks used by airport staff work 4 hours a day, consuming 6.8 L/hour of diesel (up to 19,973 L/yr)
4. Four forklifts each work 12 hours a day, burning 2.6 L/hour of diesel (up to 45,552 L/yr)
5. Four bobcats, each work 2 hours a week (104 hours a year) and burning in total 2,829 L/yr
6. Other equipment like tugs, tractors, refuelers, rollers, and scrapers for landing strip maintenance consume 136,656 L/yr of diesel.

Using emission factors for mobile diesel (Tier 4) and gasoline from **Table 2-5** and GWP from **Table A-2**, emissions are summarized in **Table A-5**.

Table A-5: Emissions from Equipment Working at New Nain Airport

Destination	Fuel (L/yr)	tCO_2/yr	tCH_4/yr	tN_2O/yr	tCO_2-eq/yr	tCO_2-eq (50 years)
Mobile diesel	207,144	555.25	0.015	0.047	568.1	28,407
Gasoline	62,021	143.08	0.315	0.004	153.0	7,648
TOTAL	**269,164**	**698.3**	**0.330**	**0.051**	**721**	**36,054**

A-10 Emissions from Access Road

Emissions from traffic on the access road were quantified using the emission factors from the US EPA MOVES model, with the speed in the range from 44 km/hr to 52 km/hr, as presented in **Table A-6**. The assumed average daily traffic count was 100 vehicles (36 passenger cars, 36 pick-up trucks/vans, and 28 buses or heavy delivery trucks). The total emissions from the access road are summarized in **Table A-7**.

Table A-6: Emission Factors from MOVES

Type	Quantity	Access Road (km)	Annual Total VKT (km)	CO_2 Emission Factor (g/VKT)	CH_4 Emission Factor (g/VKT)	N_2O Emission Factor (g/VKT)
Passenger Car	36	13	170,820	146.3	0.01	0.001
Pickup Truck or Van	36	13	170,820	202.9	0.01	0.007
Bus	28	13	132,860	723.7	2.04	0.05

Table A-7: Total Emissions from Access Road

Type	tCO_2/yr	tCH_4/yr	tN_2O/yr	tCO_2-eq/yr	tCO_2-eq (50 years)
Passenger Car	25.0	0.001	0.0001	25	1,253
Pickup Truck or Van	34.7	0.001	0.0013	35	1,751
Bus	96.2	0.271	0.0073	106	5,284
Total Emissions	155.8	0.273	0.0087	166	8,287

Total emissions from access road would be 0.8% of total emissions for new airport operations and they are not included in assessment.

Randy Rudolph, M.Sc.
Senior Air Quality Scientist
Randy.Rudolph@aecom.com

AECOM Canada Ltd.
48 Quarry Park Blvd. SE., Suite 300
Calgary, AB T2C 5P2
Canada

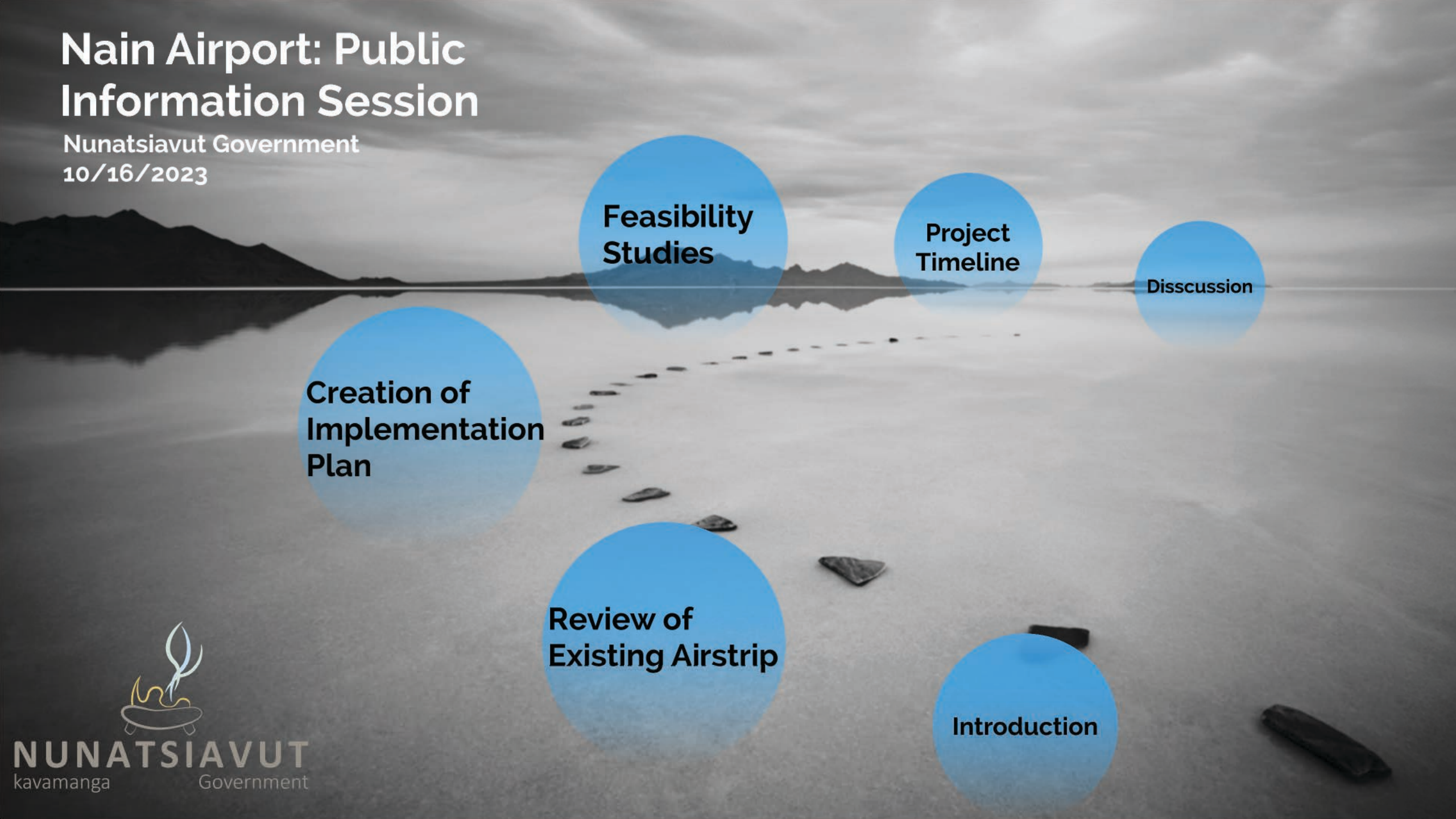
T: 403.254.3301
F: 403.351.1678
www.aecom.com

Appendix C

Consultation Materials

Nain Airport: Public Information Session

Nunatsiavut Government
10/16/2023

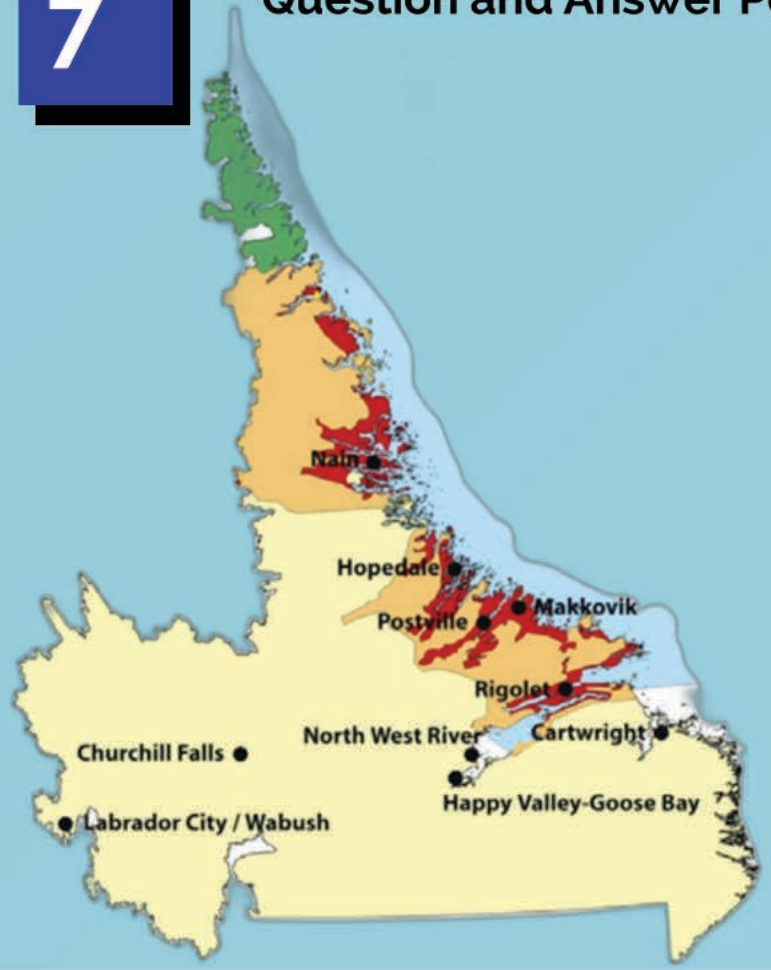


NUNATSIAVUT
kavamanga Government


Project Objectives and Approach
Project Phases
Introduction to the New Nain Airport Project
Agenda
Why?

Agenda

1. About the project
2. Nain Airport Project Phases
3. Review of Existing Airport
4. Implementation Plan Development
5. Feasibility Studies
6. Project Timeline
7. Question and Answer Period




Project Objectives and Approach
Project Phases
Introduction to the New Nain Airport Project
Agenda
Why?

Why is this project Required?

- Existing Airport is not addequate to provide necessary services to the community
- Construction of new airport is of critical importance and in the public interest to ensure public safety and health
- Climate Change is affecting the existing airport
- No night access due to lack of lighting system
- Poor weather conditions and lack of instrument approach facilities result in frequent flight interruptions and cancellations


Project Objectives and Approach
Project Phases
Introduction to the New Nain Airport Project
Agenda
Why?

Project Objectives

01 To build a new certified airport for Nain to replace existing infrastructure currently under stress from the effects of climate change.

02 Be able to Operate 24/7

03 Create an airport that can provide better services to the community (Food security, travel, health, Economic Development)

04 Create an airport that can land larger aircrafts to better connect Nunatsiavut to the rest of Canada and other Inuit regions

Project Approach

Project Approach

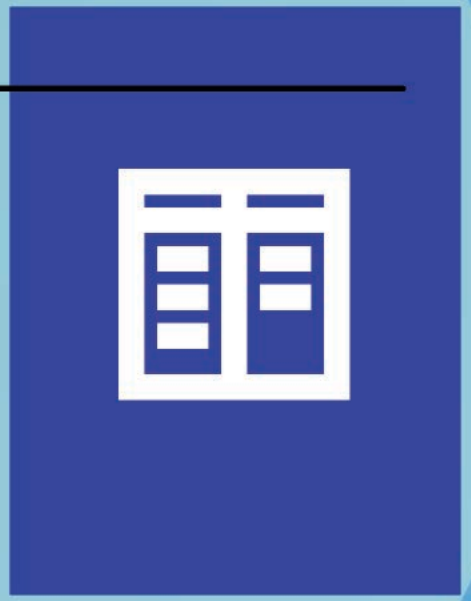
01 Construct an Airport that has the best interest of the Labrador Inuit in mind

02 Complete Detailed Feasibility Review

03 Coordinated and collaborated stakeholder engagement (Environmental Assessment)

04 Engagement with Inuit Businesses

05 Detailed Land Use Mapping and Archeology Assessments



Project Objectives

01 To build a new certified airport for Nain to replace existing infrastructure currently under stress from the effects of climate change.

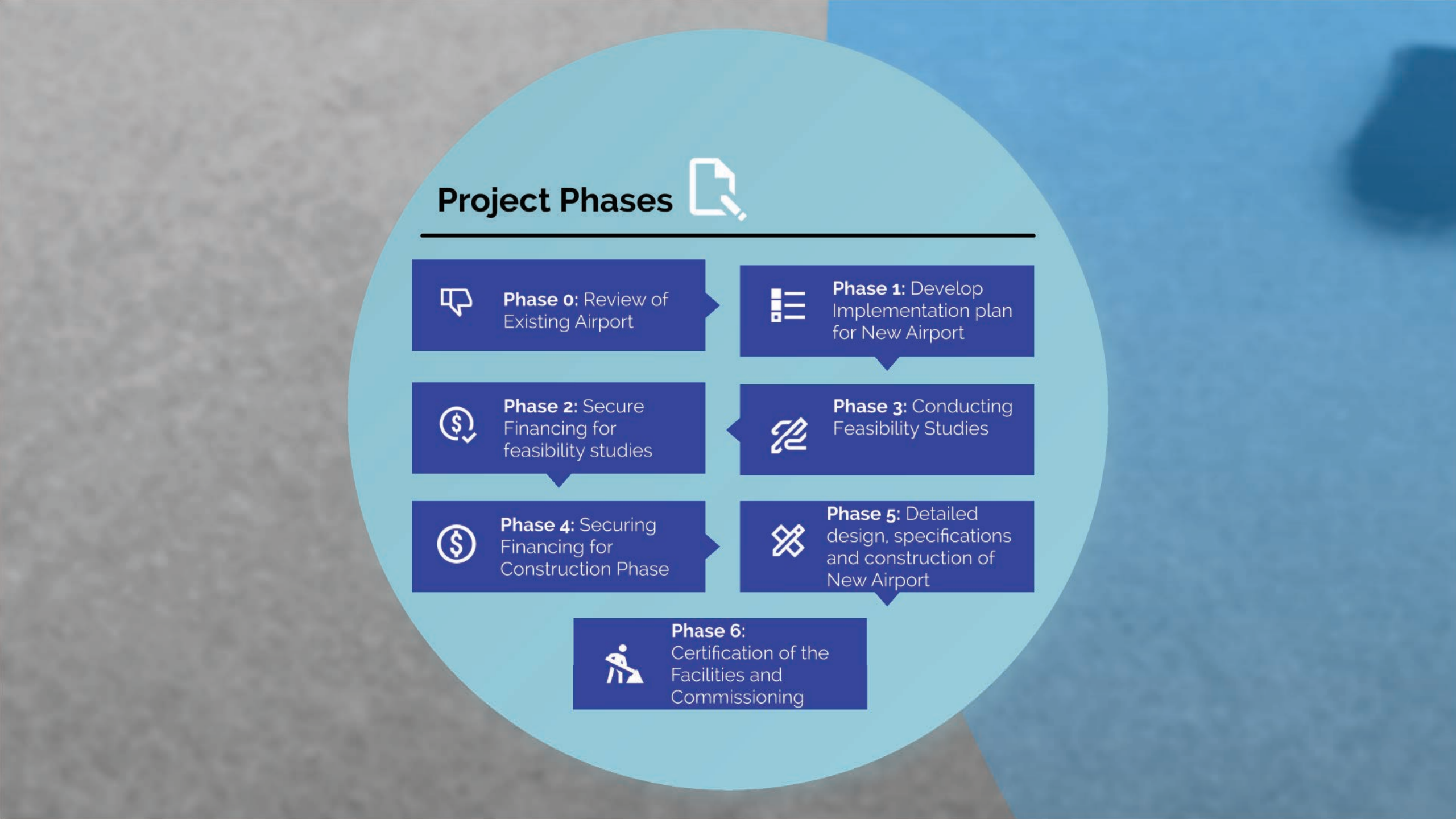
02 Be able to Operate 24/7

03 Create an airport that can provide better services to the community (Food security, travel, health, Economic Development)

04 Create an airport that can land larger aircrafts to better connect Nunatsiavut to the rest of Canada and other Inuit regions

Project Approach

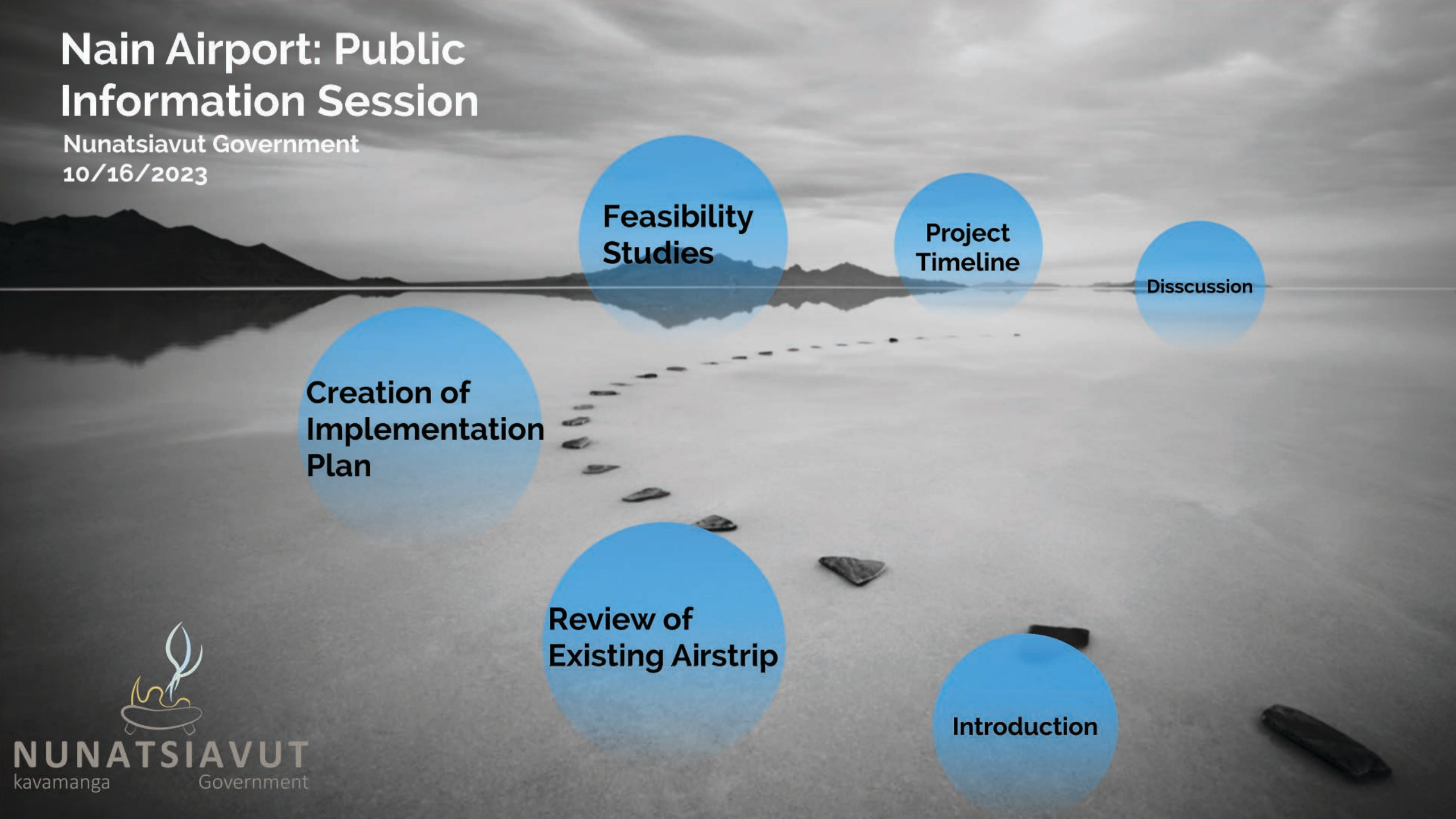

Project Objectives and Approach
Project Phases
Introduction to the New Nain Airport Project
Agenda
Why?


Project Phases
Phase 0: Review of Existing Airport
Phase 1: Develop Implementation plan for New Airport
Phase 2: Secure Financing for feasibility studies
Phase 3: Conducting Feasibility Studies
Phase 4: Securing Financing for Construction Phase
Phase 5: Detailed design, specifications and construction of New Airport
Phase 6: Certification of the Facilities and Commissioning


Project Objectives and Approach
Project Phases
Introduction to the New Nain Airport Project
Agenda
Why?

Nain Airport: Public Information Session

Nunatsiavut Government
10/16/2023



NUNATSIAVUT
kavamanga Government

Review of Existing Airport

Improve the existing airstrip to enable 24-hour operation and landing larger aircraft, even in marginal weather conditions.

Phase 0

Phase 0: Review of Existing Airport

Project Scope

- Analysis, including the evaluation of ground and flight operations
- Completion of site visits and interviews operator, airlines conducted on August 2018
- Theoretical analysis conducted
- Study to assess risks, impacts of global warming

Outcome

- No improvements can be made
- Operations restricted to day flights
- Erosion already present in the runway's safety areas will worsen, requiring increasingly significant investments
- Due to impact of climate change, Nain Airport must be considered a temporary infrastructure

Existing Airport

Alternative location required, with commissioning taking many years.

Things that need to be considered:

- Investigations
- studies
- financing
- consultations
- certification
- preparation of plans and specifications
- aeronautical approaches
- construction time

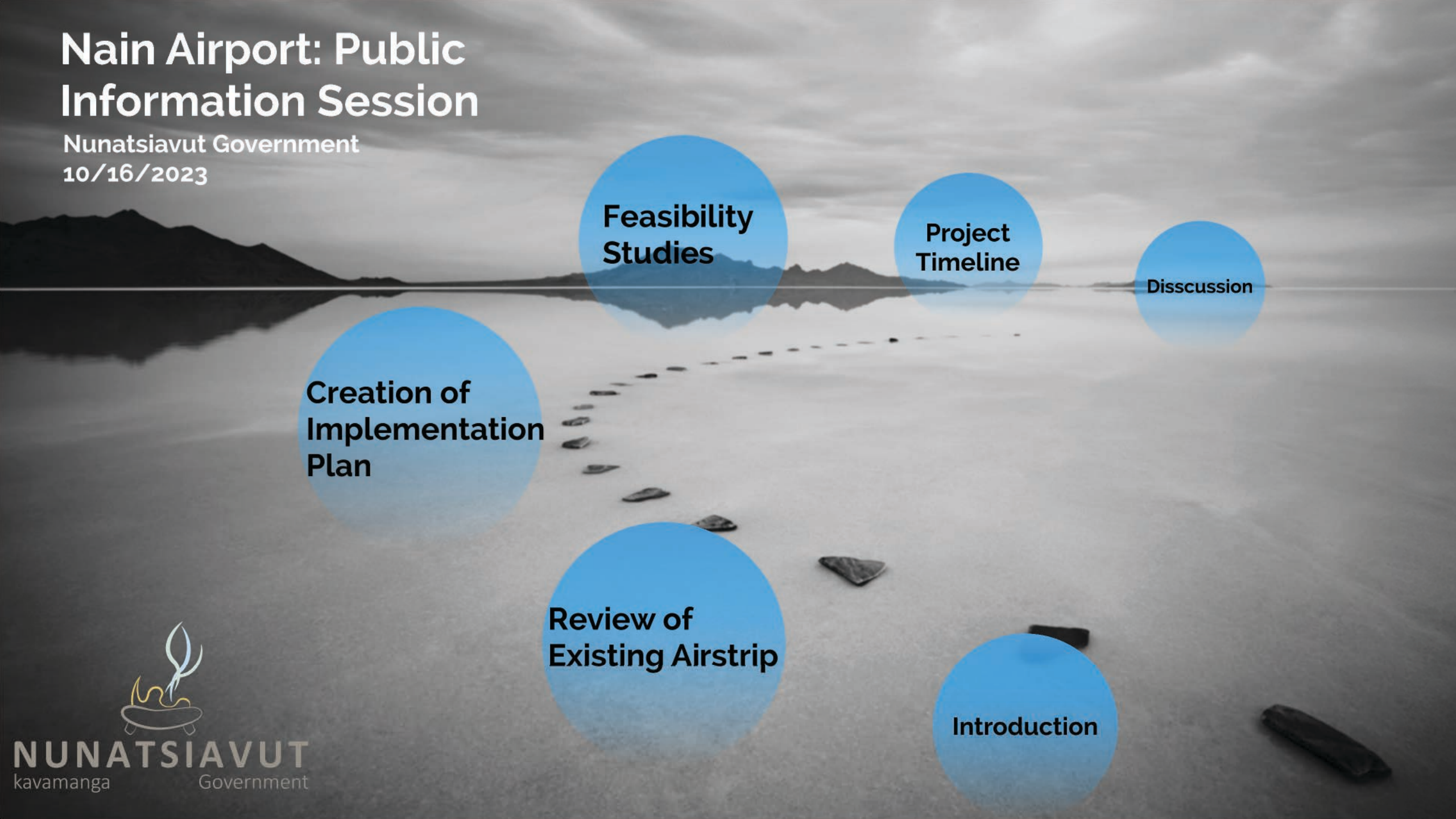
Review of Existing Airport

Improve the existing airstrip to enable 24-hour operation and landing larger aircraft, even in marginal weather conditions.

Phase 0

Nain Airport: Public Information Session

Nunatsiavut Government
10/16/2023



NUNATSIAVUT
kavamanga Government

Creation of Implementation Plan

Complete Implementation Plan to submit to governments with a solution on location of new airport, and scope the feasibility studies.

- Project Scope
- Proposed Sites
- Selection of Site

Project Scope

- **Needs Analysis:** Evaluates future needs and opportunities.
- **Selection of a New Airport Site:** provide Nain with a site for a new airport.
- **Reference Project:** Third section outlines the reference project based on the preferred site recommendation. (Details)
- **Planning of Phase 3:** feasibility Studies: Defines data that must be collected and the technical analyses to be completed.
- **Project Execution Modes:** brief discussion of the different contract execution modes available for major projects.

Creation of Implementation Plan

Complete Implementation Plan to submit to governments with a solution on location of new airport, and scope the feasibility studies.

- Project Scope
- Proposed Sites
- Selection of Site

Proposed Site #1

Site 1 is on a plateau constituted mainly of bedrock at an altitude of 900 ft, south of the community.

- The proposed area is narrow.
- Would not accommodate approach lighting system
- Does not correspond to prevailing winds

Proposed Site #2

Site 2 is on a plateau, southwest of Nain. This plateau extends in an east-west valley that is skirted on both sides by a rocky crest.

- The proposed area is narrow.
- High altitude
- Limited Space

Proposed Site #3

Site 3 lies along the shore, approximately 13 km southwest of the community of Nain, on a plateau that is 2 km wide and 10 km long.

- Uneven Terrain
- Concerns with morning/winter fog
- Remote from the Community

Creation of Implementation Plan

Complete Implementation Plan to submit to governments with a solution on location of new airport, and scope the feasibility studies.

- Project Scope
- Proposed Sites
- Selection of Site

Access Road

Selection of Best Site

We need to select a site that will improve operations.

Site 3—West of Delta: Allows a longer airstrip and instrument approaches with 24/7 all-weather operations.

This site is the optimum location, even if it requires the construction of several kilometers of access road, a challenge by itself.

Proposed Access Road for the New Airport Site

A proposed road alignment was developed. The design of this road for the transportation of passengers, cargo and medical evacuation cases is challenging.

- Mountainous Environment
- Snow accumulation
- Known Permafrost in areas
- Critical Water Crossings
- Geological Properties

Access Road

Selection of Best Site

We need to select a site that will improve operations.

Site 3—West of Delta: Allows a longer airstrip and instrument approaches with 24/7 all-weather operations.

This site is the optimum location, even if it requires the construction of several kilometers of access road, a challenge by itself.

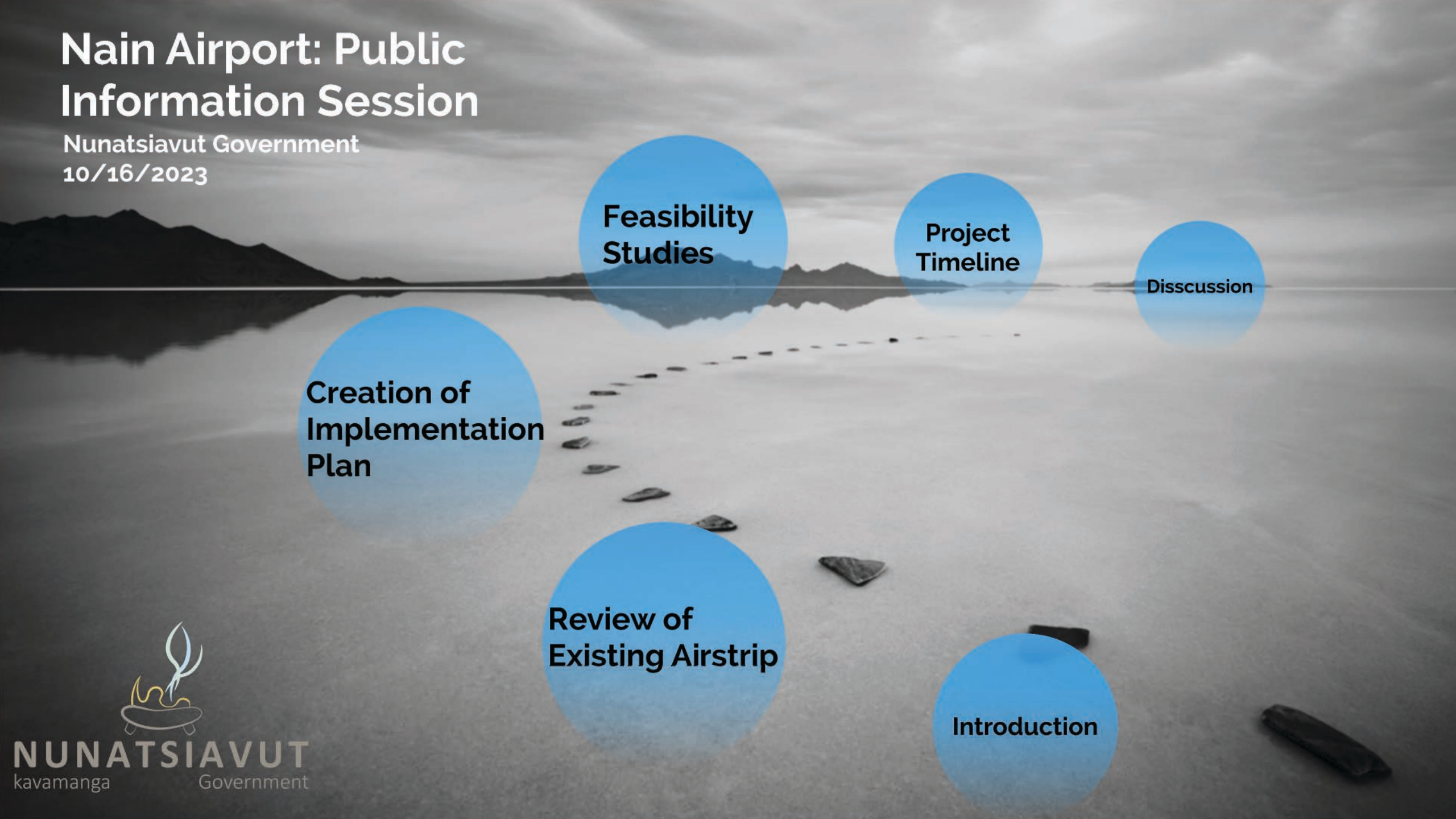
Creation of Implementation Plan

Complete Implementation Plan to submit to governments with a solution on location of new airport, and scope the feasibility studies.

- Project Scope
- Proposed Sites
- Selection of Site

Nain Airport: Public Information Session

Nunatsiavut Government
10/16/2023



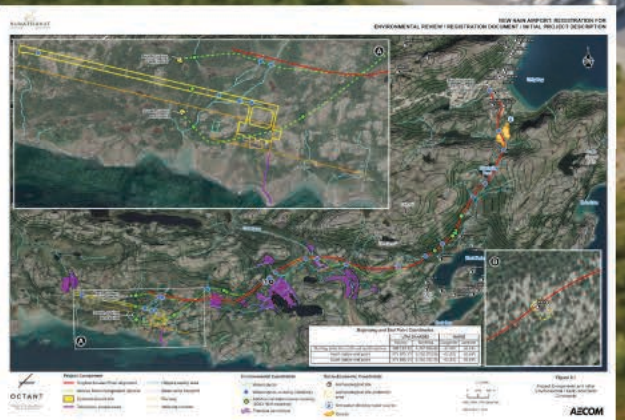
NUNATSIAVUT
kavamanga Government

Feasibility Studies

This phase will consist of collecting data and technical studies to refine the design of the airport facilities and access road.

Environmental Assessment

Project Scope



Feasibility Studies

As part of this stage, data will be collected and the following feasibility studies will be carried out:

R1 – Weather Station and collect data (phase 1) Complete
R2 – Topographic survey Complete
R3 – Environmental Review – Desktop Assessment Complete
R4 – Surficial geology, geomorphology, permafrost and hydrogeological investigations In Progress
R5 – Weather studies and report (phase 2) In Progress

Feasibility Studies

Continued

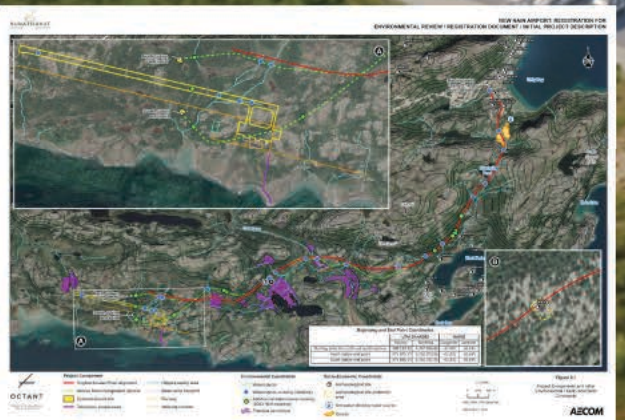
- R6 Hydrological study Complete
- R7 Electrical Power Supply Alternatives Complete
- R8 Preliminary engineering services In Progress
- R9 Preliminary architectural design services In Progress
- R10 Construction and supply strategy RFP Issued
- R11 Cost estimation RFP Issued
- R12 Environmental Impact Assessment In Progress

Feasibility Studies

This phase will consist of collecting data and technical studies to refine the design of the airport facilities and access road.

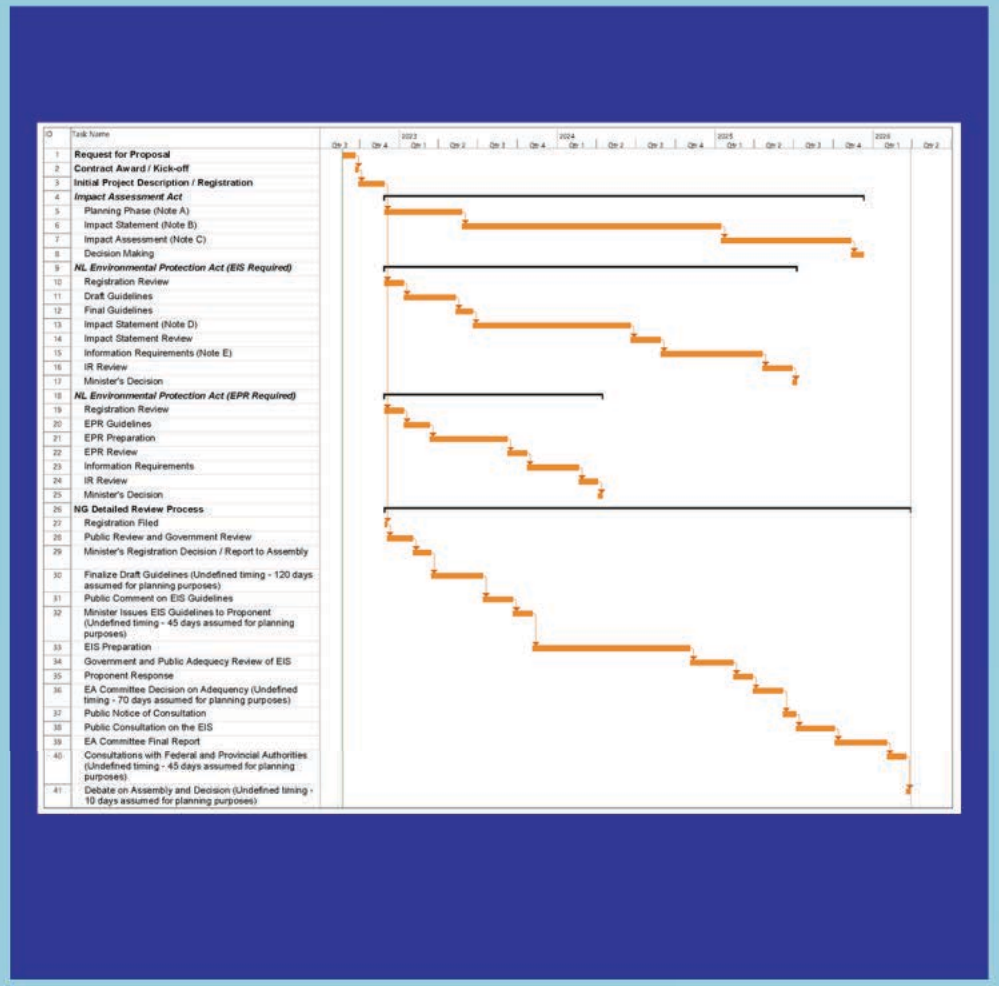
Environmental Assessment

Project Scope



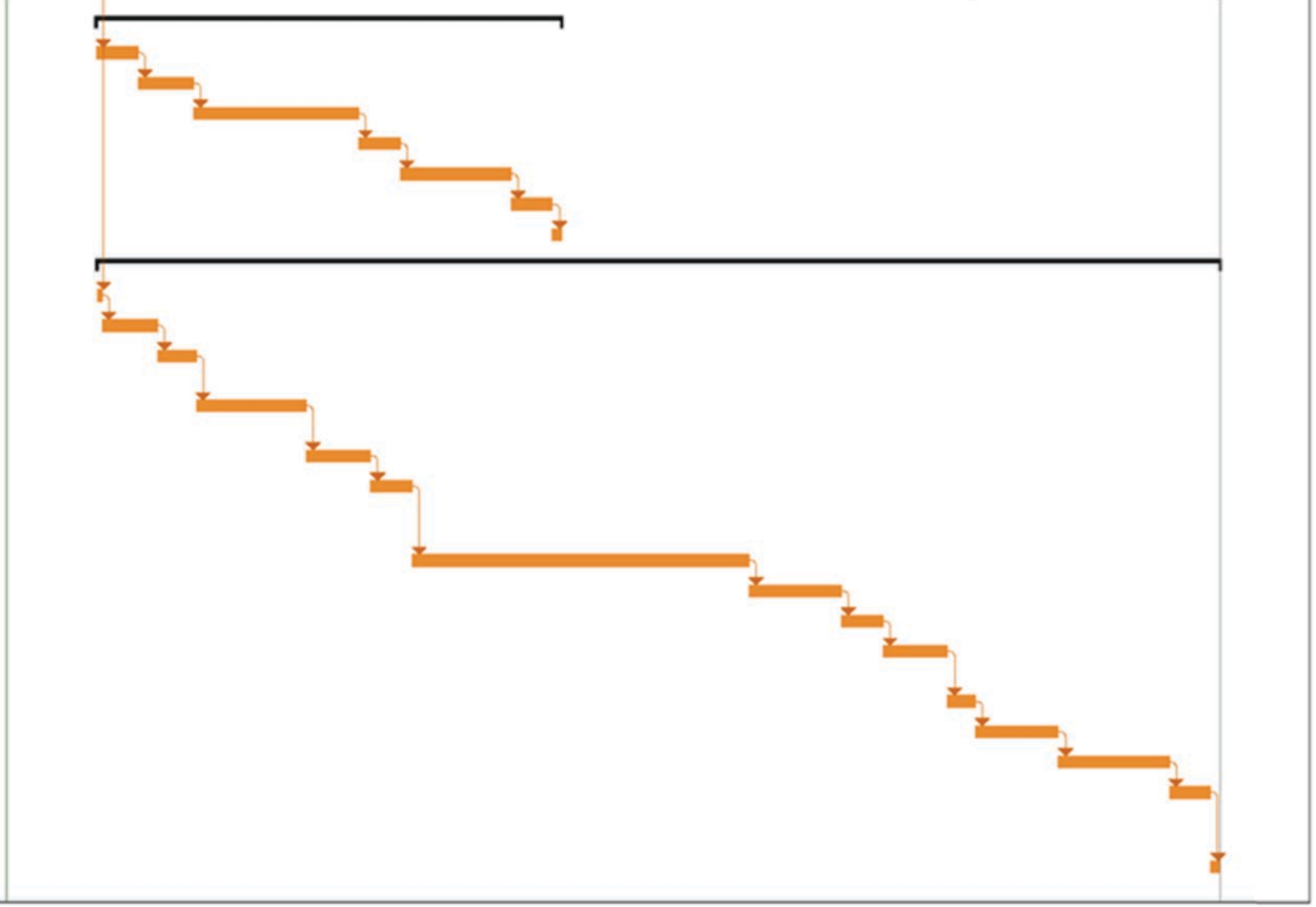
Environmental Impact Assessment

- Multiple reglatory bodies involved
- Ecological data monitoring and assessments
- Community consultations
- Detailed land use mapping
- Completion is scheduled for March 2026




ID
Task Name
2023
2024
2025
2026
Qtr 3
Qtr 4
Qtr 1
Qtr 2
Qtr 3
Qtr 4
Qtr 1
Qtr 2
Qtr 3
Qtr 4
Qtr 1
Qtr 2
Qtr 3
Qtr 4
Qtr 1
Qtr 2
1 Request for Proposal
2 Contract Award / Kick-off
3 Initial Project Description / Registration
4 Impact Assessment Act
5 Planning Phase (Note A)
6 Impact Statement (Note B)
7 Impact Assessment (Note C)
8 Decision Making
9 NL Environmental Protection Act (EIS Required)
10 Registration Review
11 Draft Guidelines
12 Final Guidelines
13 Impact Statement (Note D)
14 Impact Statement Review
15 Information Requirements (Note E)
16 IR Review
17 Minister's Decision
18 NL Environmental Protection Act (EPR Required)
19 Registration Review
20 EPR Guidelines
21 EPR Preparation
22 EPR Review
23 Information Requirements
24 IR Review
25 Minister's Decision
26 NG Detailed Review Process
27 Registration Filed
28 Public Review and Government Review
29 Minister's Registration Decision / Report to Assembly

18	***NL Environmental Protection Act (EPR Required)***
19	Registration Review
20	EPR Guidelines
21	EPR Preparation
22	EPR Review
23	Information Requirements
24	IR Review
25	Minister's Decision
26	**NG Detailed Review Process**
27	Registration Filed
28	Public Review and Government Review
29	Minister's Registration Decision / Report to Assembly
30	Finalize Draft Guidelines (Undefined timing - 120 days assumed for planning purposes)
31	Public Comment on EIS Guidelines
32	Minister Issues EIS Guidelines to Proponent (Undefined timing - 45 days assumed for planning purposes)
33	EIS Preparation
34	Government and Public Adequecy Review of EIS
35	Proponent Response
36	EA Committee Decision on Adequency (Undefined timing - 70 days assumed for planning purposes)
37	Public Notice of Consultation
38	Public Consultation on the EIS
39	EA Committee Final Report
40	Consultations with Federal and Provincial Authorities (Undefined timing - 45 days assumed for planning purposes)
41	Debate on Assembly and Decision (Undefined timing - 10 days assumed for planning purposes)

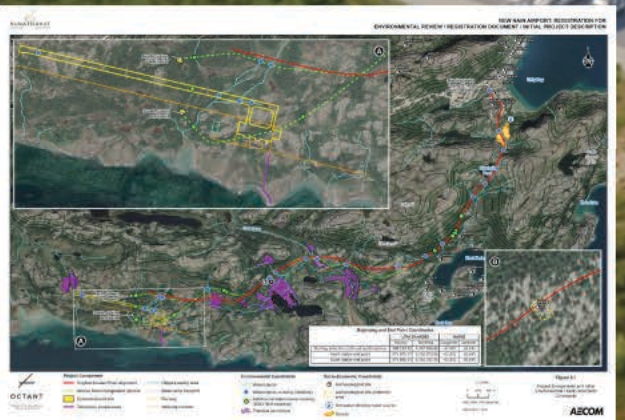


Feasibility Studies

This phase will consist of collecting data and technical studies to refine the design of the airport facilities and access road.

Environmental Assessment

Project Scope



Project Component
- Alternative airport site
- Runway
- Original Access Road alignment
- Access Road realignment options

Labrador Inuit Lands
- Labrador Inuit Settlement Area (LISA)
- Labrador Inuit Lands (LIL)
- Nain Inuit Community Government / Municipal Planning Area

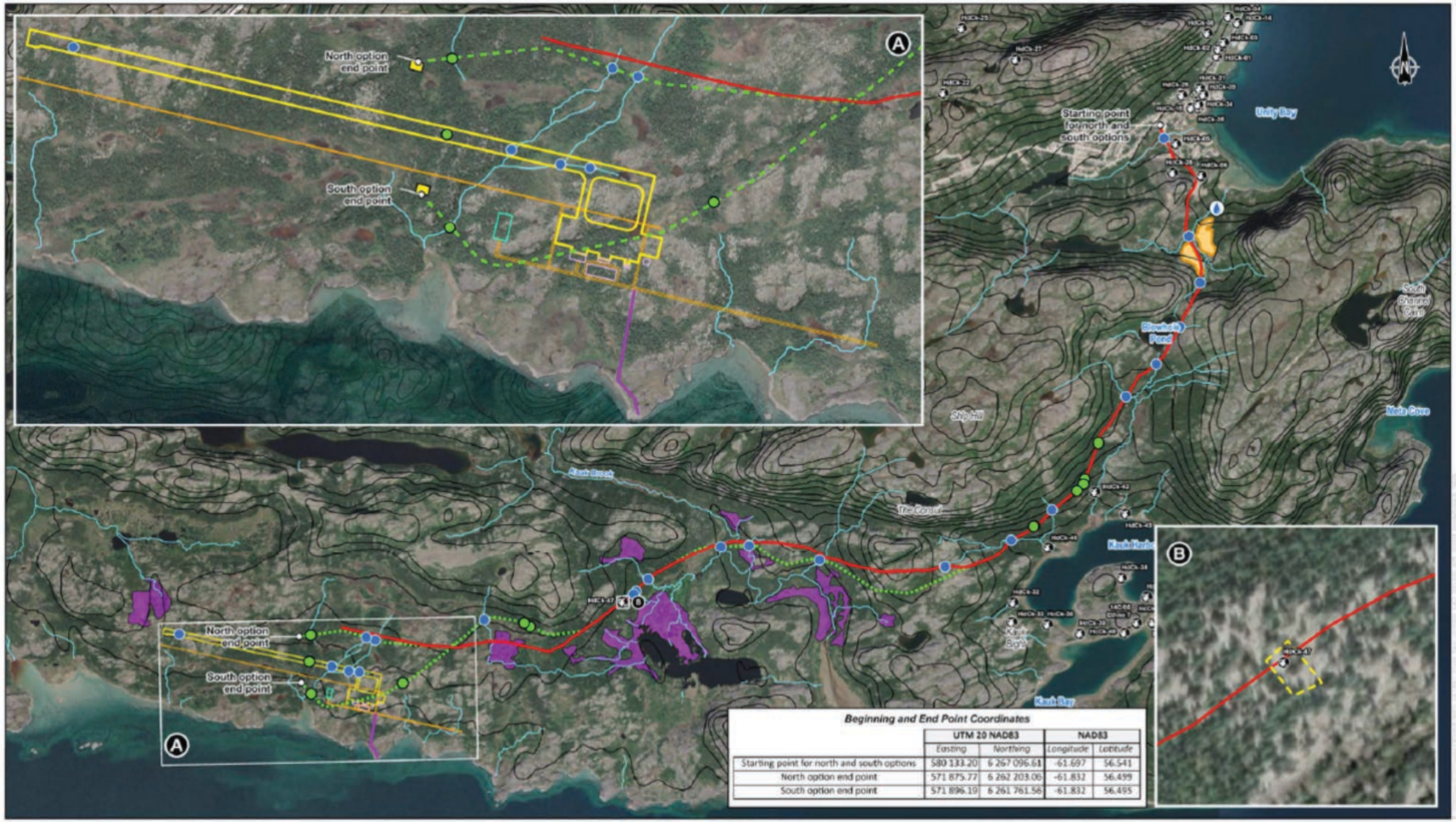
Other
- Existing airstrip

Magnetic North / True North

1:50 000
0 500 1 000 m
NAD 1983 UTM Zone 20N
2023-09-21 15:03

Figure 1.1
Project Location and Alternative Airport Sites

OCTANT
AECOM



Beginning and End Point Coordinates

	UTM 20 NAD83		NAD83	
	Easting	*Northing*	*Longitude*	*Latitude*
Starting point for north and south options	580 133.20	6 267 096.61	-61.697	56.541
North option end point	571 875.77	6 262 203.06	-61.832	56.499
South option end point	571 896.19	6 261 761.56	-61.832	56.495

Project Component

- Original Access Road alignment
- Access Road realignment options
- Optional Airport site
- Temporary access road
- Helipad safety area
- Base camp footprint
- Runway
- Vehicule corridor

Environmental Constraints

- Watercourse
- Watercourse crossing (desktop)
- Additionnal watercourse crossing (2023 field mapping)
- Potential permafrost

Socio-Economic Constraints

- Archaeological site
- Archaeological site protection area
- Untreated drinking water source
- Quarry

1:35 000
0 250 500 m
NAD 1983 UTM Zone 20N
2023-09-21 15:41

Figure 2.1

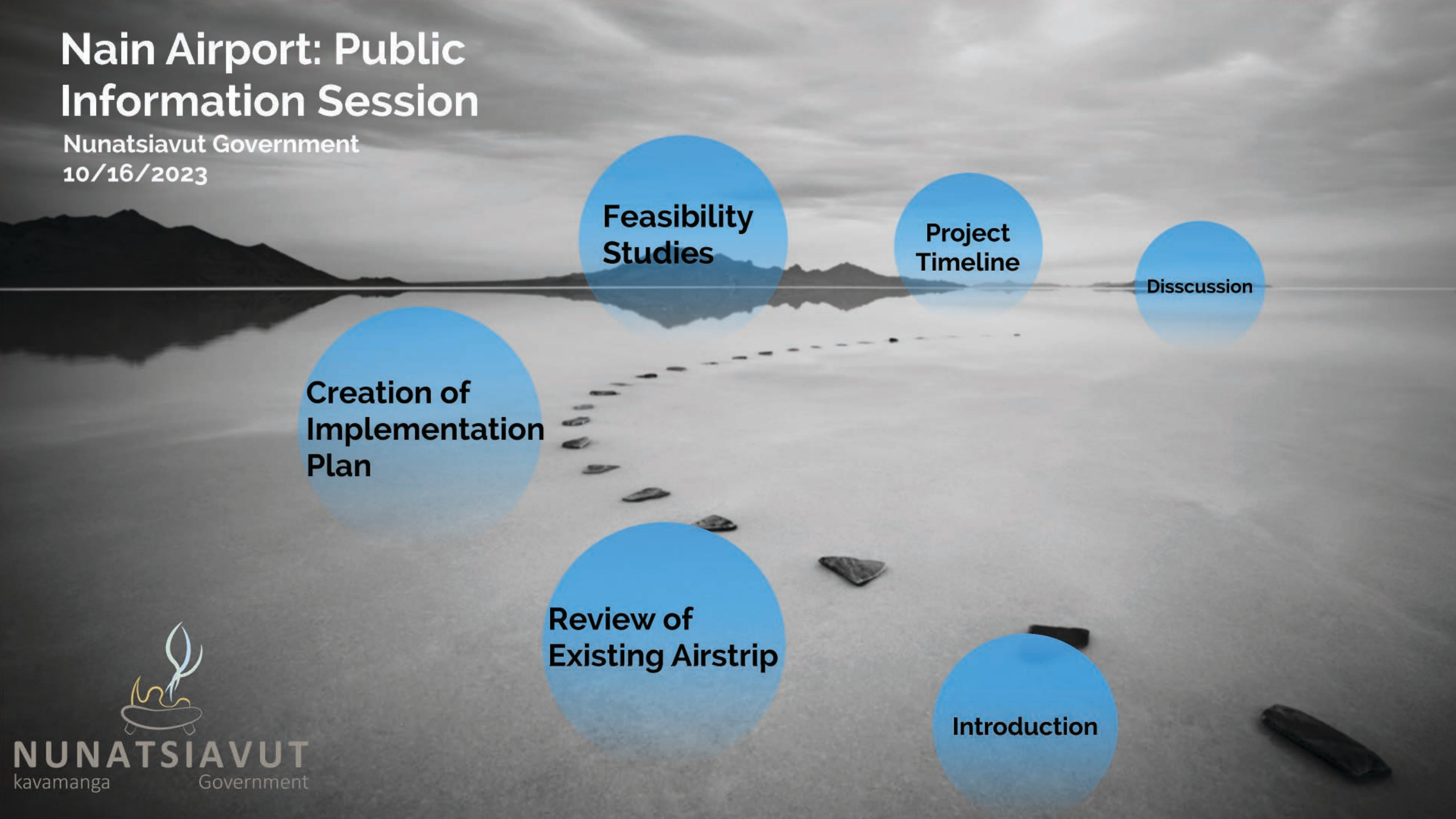
Project Components and Initial Environmental / Socio-economic Constraints

OCTANT
EXPERTS EN SOLUTIONS POUR L'AVIATION

AECOM

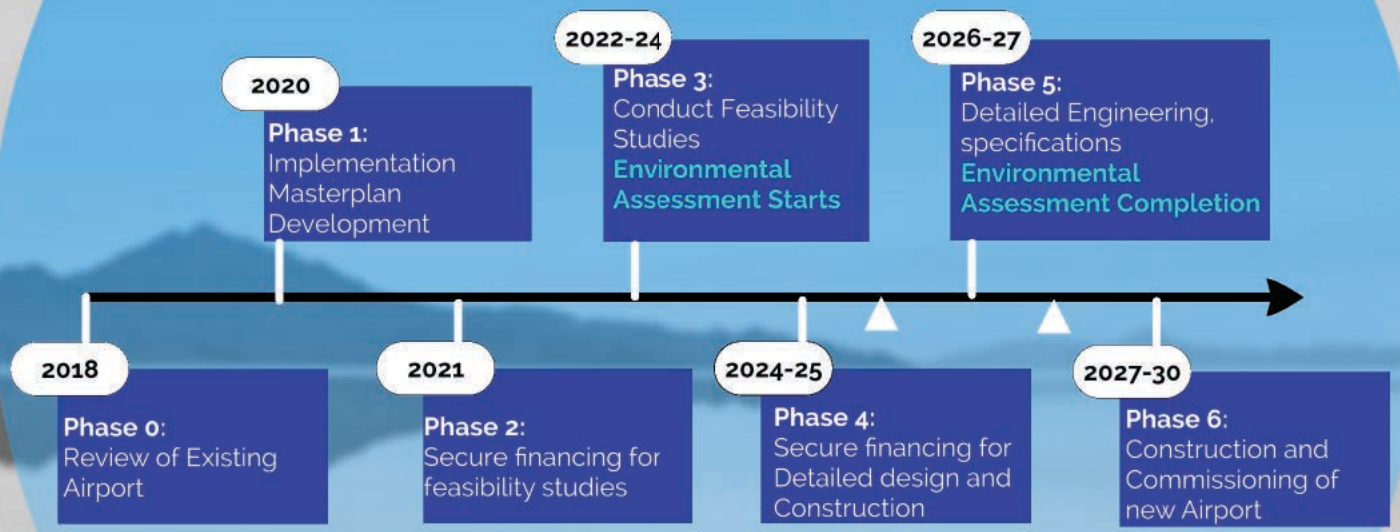
Nain Airport: Public Information Session

Nunatsiavut Government
10/16/2023



NUNATSIAVUT
kavamanga Government

Timeline


2018
Phase 0:
Review of Existing Airport
2020
Phase 1:
Implementation Masterplan Development
2021
Phase 2:
Secure financing for feasibility studies
2022-24
Phase 3:
Conduct Feasibility Studies
Environmental Assessment Starts
2024-25
Phase 4:
Secure financing for Detailed design and Construction
2026-27
Phase 5:
Detailed Engineering, specifications
Environmental Assessment Completion
2027-30
Phase 6:
Construction and Commissioning of new Airport


2018
Phase 0:
Review of Existing
Airport

2020

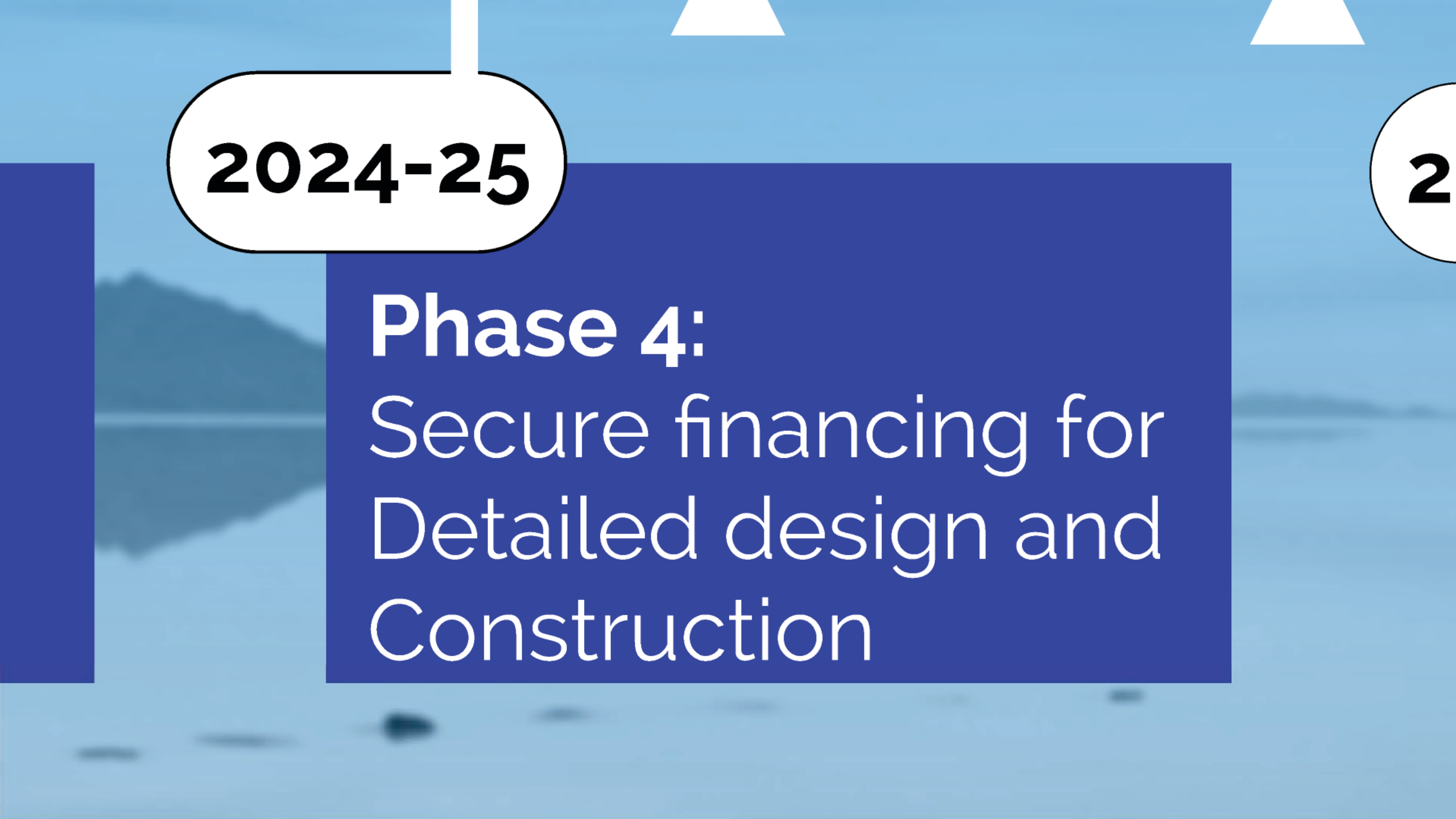
Phase 1: Implementation Masterplan Development

2021

Phase 2: Secure financing for feasibility studies

2022-24

Phase 3:
Conduct Feasibility Studies
Environmental Assessment Starts


2024-25
Phase 4:
Secure financing for
Detailed design and
Construction

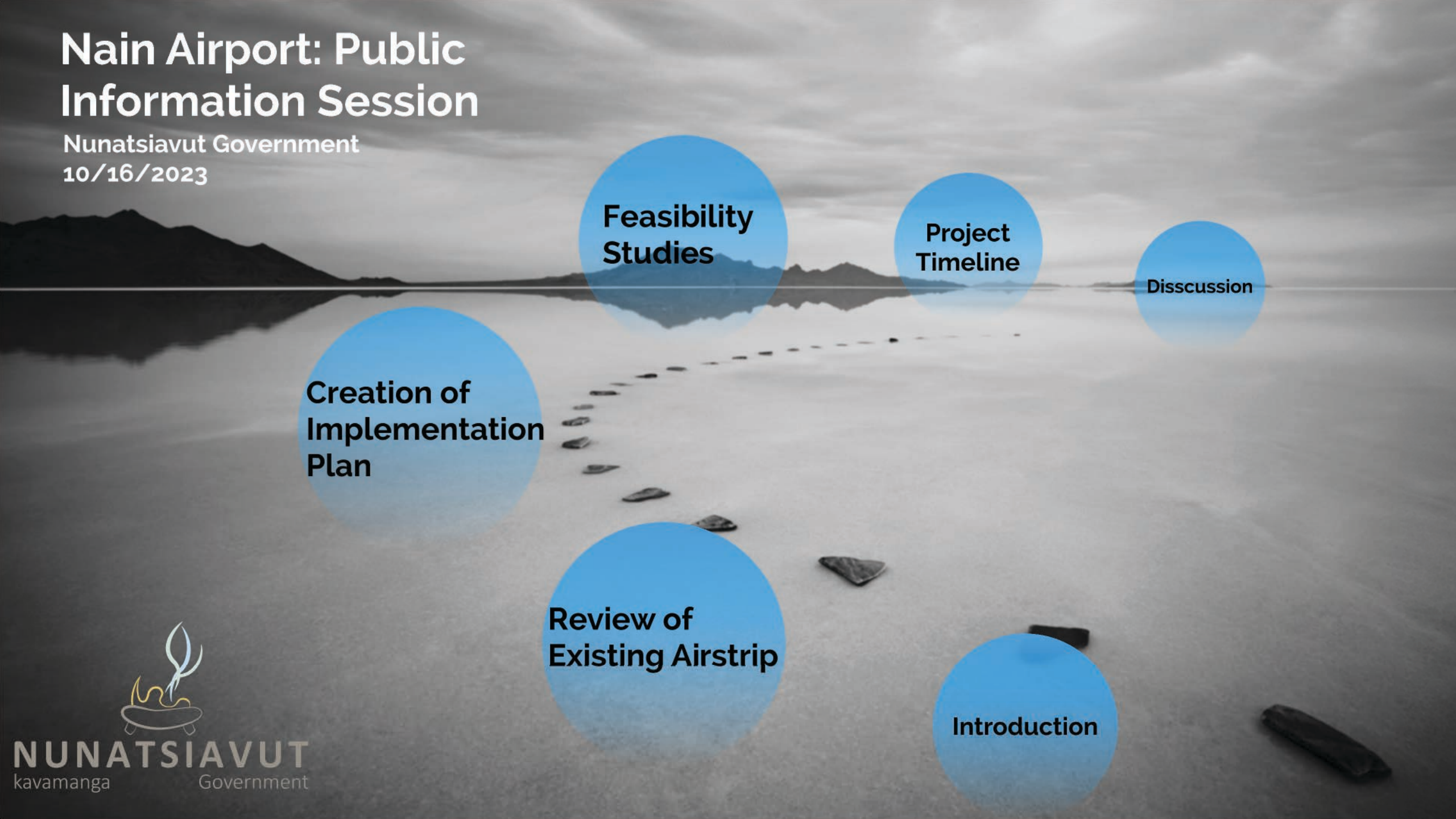
2026-27

Phase 5:
Detailed Engineering, specifications
Environmental Assessment Completion


2027-30
Phase 6:
Construction and
Commissioning of
new Airport

Nain Airport: Public Information Session

Nunatsiavut Government
10/16/2023



NUNATSIAVUT
kavamanga Government

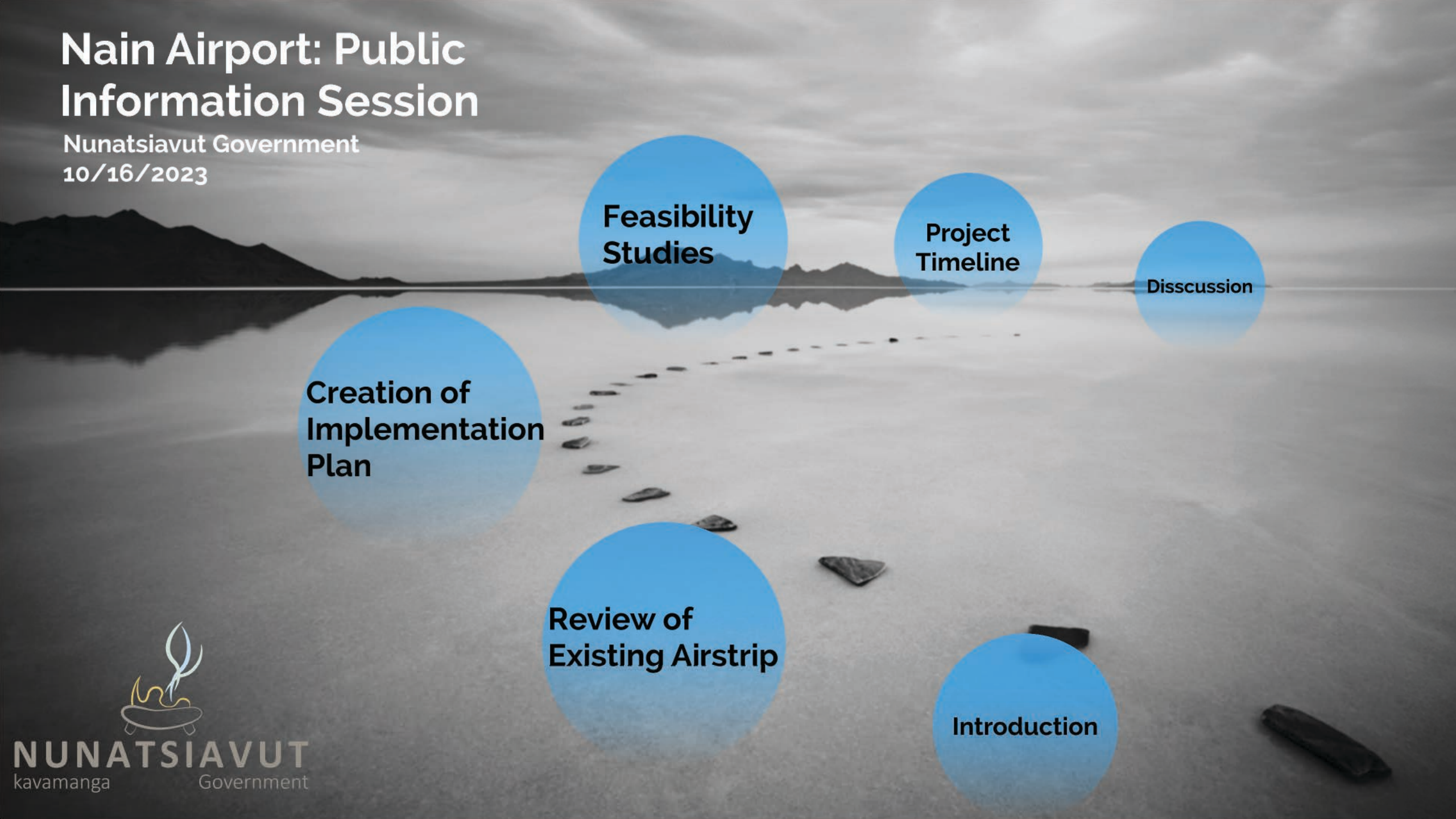
Thanks!

Discussion Topics?

Contact Information:
Colin Gilbride
Director of Infrastructure and Planning
colin.gilbride@nunatsiavut.com
(709) 923-2007

Nain Airport: Public Information Session

Nunatsiavut Government
10/16/2023



NUNATSIAVUT
kavamanga Government

Record of Questions and Answers

Nain New Airport Public Information Session Oct 16 2023

Question of Comment	Response Provided	Opportunity for Additional Follow-up
On the map, that when constructed, the road will go through the Blowhole area?	Confirmed the proposed alignment does go through the mountain pass towards Blowhole Pond. There are significant risks of avalanches and steep terrain. The R8 feasibility study is underway, and engineers are reviewing design options for protecting the public from any risk of avalanche along that road. There have been roads developed in mountainous terrain like through the Rocky Mountains and the Alps, and there are different options to consider for cutting slopes back or creating avalanche protection structures. The pass would be monitored for avalanches during operation, and snowpack management (i.e., setting off controlled avalanche) would be considered for public safety as well.	FAQs Future Consultation Meetings
Have you looked at an alternate road alignment?	Yes, this alignment route was considered, but it had more water crossings and more potential for snow accumulation, so it was ruled out based on those factors.	Information Sheet
Who will take ownership of the new airport?	Not decided yet, because right now all the airports are provincially owned and operated. The size of the new airport and length of the road make it significant operation. There's a lot of job opportunities for snow clearing and maintenance on the road. Ownership may be decided when the funding model is developed, and later during the construction phase.	FAQs
Does that mean we will be looking for an owner of the project after it's built, to keep it going? Currently difficult to get roads cleared within Nain. Icy roads through the mountains.	It's on the project team's mind to consider the type of ownership/operational structure, e.g., hiring a company full time to maintain operate to the road.	FAQs
A question was asked about Dash 8 planes.	It's large enough to land Dash.	FAQs
A question was asked about de-icing larger aircraft.	Right now, do have any plans for constructing de-icing, but that doesn't mean it can't be a future project.	Future Consultation Meetings
A question was asked about length of runway.	The runway is proposed to be 6000 feet with extension of 1000 feet for larger aircrafts; lots of room in this location for expansion and development	FAQs
Bigger airport and Dash-8s – this is the only community so far? Are you looking further into	It is proposed to look at extending the other communities' runways to be able to land larger aircrafts. This runway could install appropriate equipment to land	Future Consultation Meetings

other communities along northwest? There's an issue everywhere for flights in and out no matter what; bigger flights which can land more traffic, more people – is this proposed down the line for other communities as well?	in very harsh weather. Will be GPS units – different instruments etc. The other communities we are looking at expanding the runways but again, it's going to be a feasibility study reviewing to see what options we have because it will become an issue that every other Community will be landing to twin otter still, and here has the Dash-8.	
Comment about access to things like healthcare. More traffic, more people and, you know, yeah, just the time moving forward, just the future.	This is something we have raised with the province as well. They are responsible for the airport, so they are moving forward with the airport, but they need to think about their other duties as well.	Future Consultation Meetings
Have you guys considered possibilities and infrastructure that's going to come from this? Because all of a sudden, the airport may open up some opportunities? With bigger airport in North. Housing more people? Hotels?	I don't know the answer to that one because right now, like if the focus has been on just the airport, we haven't looked at the possibility of expansion along that and it is on Labrador Inuit land.	Future Consultation Meetings
Question about airport impact on hydro and if need to upgrade.	The airport is self-sufficient, so taking the existing airport off will alleviate some of the stress on the existing plant. Right now, we're conducting a feasibility study on how we're going to power this. Potentially will have own diesel generator or use solar power. An operational plan will have to be developed for this project (not there yet) but will need it for snow clearing, how we will access, how people will get back and forth from site because it's a long way to go. That will have to come once if we determine it's feasible and/or if we get the funding	FAQs
A question was asked about offloading fuel.	How to offload fuel is part of the current environmental assessment. There will be fuel tanks over there. Future expansion may involve a wharf of some sort, but right now it's going to be like how they fill up fuel here in the harbor	FAQs
A question was asked about water and sewage.	It's all going to be self-sufficient so there's different options e.g., sea can units. Sewage water will be from a supply in the near area.	FAQs
If something goes wrong, you will need someone to come in, if you make it too complicated.	Agreed.	Future Consultation Meetings

This airport here has problems. Question about crosswinds in this new location.	General direction of the prevailing winds in the selected Site area is from the west (almost standard in Canada), orientation of the new runway is 300 degrees west/west north and opposite 120 degrees east / east east south. The actual runway in Nain is 22, and it is tail crosswind and tail front wind, and this is why the twin otters when they take off towards the mountains are turning over Nain so they can get into the upwind position of 270. This new plateau, the orientation is very important – all information about winds has been confirmed with a weather station we installed and have been monitoring winds every hour for 2 years. We have a lot of information on this, it is part of the feasibility study. You can see the existing strip [orientation], and here is the new proposal.	Information Sheet FAQs
What if feasibility study says site is a no?	If this site is not deemed reasonable, we start process again and find a new site, potentially further away from community. Something may come up in the environmental assessment or something that we hear, or through some of these other geotech investigations that say it's not feasible. We must wait for all these studies to be done to determine whether it can proceed.	FAQs
A question was asked about plowing the road and where snow will go.	With this airport and once deemed feasible, will be operational plan. Plowing road not ideal for Nain e.g. where does snow go, where to truck it? We may a parking area for parking skidoo, then get on bus or other transportation. Will not know until we develop operational plan.	FAQs
Who chose the site?	The project team are aviation experts. These were the only three sites with possibility of 24-hr access for landing – that is main goal to connect the community to Goose Bay etc. This [selected] site was only option that allowed that and was in predominant wind direction, so we did not have cross wind and had favourable weather conditions as well.	Information Sheet FAQs
What would hinder it (24-hour access to the site)?	The main reason Sites 1 and 2 could not allow 24-hour access was because the elevation of these other plateaus is around 900 feet. The issue we have with this is not only the prevailing winds but that they are very narrow. The other point that was very important is, in Nain you can have weather with low ceiling which can often be around 400 feet. So, if we picked a plateau at 900 feet, they would have been in bad weather, they would have been in the clouds. The capacity of landing in that situation with the commercial aircraft in areas like that, is not possible. Also, the alignment and the plateau were too narrow for construction of the infrastructure and construction of the operational buildings, etc.	FAQs Future Consultation Meetings

	There were prior studies done around 2008 of different areas – most looking at plateau and altitude. The site we have picked now is confirming that in Nain there is low altitude clouds; what we wanted to give you as a good performance is to be able to have approaches to the airport that the aircraft can come down to 200-250 feet and ½ mile visibility. You will be well equipped with this type of airport – no comparison with current airport. To find a place like that, needed to have long plateau at lower altitude than 900 ft; elevation of the plateau at this site is 195 ft – these are reasons that are very important for implementation of an airport.	
As long as ½ mile on both ends, should be good. Landed once in small town called Sandpoint Alaska with a big hill beside it. Is that possible in this case?	I don't have an answer for that. There were more than just these three sites through the evaluation and these ones had the best opportunity. So, I don't know if there just wasn't that type of opportunity to develop an airport in the area that allowed that type of access that was in the correct direction.	FAQs Future Consultation Meetings
Pointed at different area on the map - a northern shoreline. Closer to community, which still has to get to airport. They are currently walking to airport. Not everyone has means to get there. Why was that coastal area north of selected site was not explored?	At the beginning, we looked at the northern shoreline. There were some elevation circles at lower levels that were unacceptable. That area is not a plateau, it is steep with angled walls. First thing for Nain, we can't be in plateau that is elevated (due to weather). Second, we cannot build a runway on the side of a big slope like on that shore. Aircraft need a long time to start descending and stabilize for landing; these surfaces we need to calculate can't have obstructions in it. In existing runway in Nain, aircraft are unable to come down lower than 800ft – that's why they cannot get to Nain in bad weather. Airplanes need lot of space on each side to protect the aircraft and manoeuvre at low altitude.	Information Sheet FAQs Future Consultation Meetings
Comment: Not saying it's a bad idea; wonderful idea that should've been done 50 years ago.		Future Consultation Meetings
Comment: Traveling the road in the winter is trek in itself. Concern with road winter – keep road running – money and operations more than just airport forever.		Future Consultation Meetings
Will road be paved or gravel?	The roadway will be gravel; the runway – looking at different options. Maybe not concrete, there are new technologies and surfaces we can put on. If gravel runway will limit types of aircrafts.	FAQs

Will the road have lighting? Running fuel or off energy supplied to airport?	Yes. Different options for lighting; some solar technologies for street lighting.	FAQs
What about access in/out of town? Maybe if feasible something built on edge of town for people to access e.g., a shuttle to get them rest of the way to airport? Or is it only trucks and cars that go through?	Will need to figure out in operational plan if this is feasible location. Know road is going to be challenge for everyone; big concern of us; distance of road, where it's going to go and how people will access the airstrip; we're thinking about e.g., a bus service, shuttle service that goes back and forth between certain locations. We know a lot of people do not have access and we need to provide some way for people to get back and forth. Will be figured out after we know this site/airport is feasible	Information Sheet FAQs Future Consultation Meetings
Will the road be kept clear for emergency situations?	The road – we have team of engineers finalizing road design. When you look at area, it looks up and down/curving, but engineers done lots of work. Other roads in other provinces in same type of area as Nain – those are wide enough, large curves, speed limit of 70 km/hr. In our recommendation, that road will be open year-round. Snow will have to be plowed. It is not a difficulty. Could look at small bus to transport to and out of the airport. People will be working at airport their homes will be in Nain. Road is connection. It will be important for road to be maintained for emergency. To offer you airport with capacity you need. Need to be confident that what we are doing is to high standards.	FAQs Future Consultation Meetings
Have you asked community members if there is hunting or fishing in that area?	Starting at end of month, part of impact assessment is the consultation with public on land use, mapping, cultural activities along the axis road	Future Consultation Meetings Land Use Study
What happens to existing airport?	Do not know yet.	FAQs Future Consultation Meetings
Question about how often planes is not able to land in existing airport or there are disruptions to landing.	For existing airport, almost 50% of cancelations due to weather, fog. At night (no possible evacuation from Nain). New airport provides 24hour service. Approach/design for new one – same design as Halifax/St John.	FAQs Future Consultation Meetings
Would the airport have airport check? Go 1.5 hr beforehand etc.	Unlikely.	FAQs Future Consultation Meetings
What kind of infrastructure buildings are you planning to build? How many?	There will be a terminal to accommodate certain # of passengers – 40-50 people at same time. In main terminal, you will have the notification area (not security but option if expanded). Main terminal will have electricity controls for the airport, place for luggage,	FAQs Future Consultation Meetings

	communication systems, washrooms. The other building that will be in the infrastructure is the operations/maintenance building for the airport operation, meaning you can enter snowplough equipment (for maintenance of airport). Building for generators at the airport – plan is to have 3 generators – 2 for operations and other as back up. Other building eventually (but not likely constructed in first phase) is cold storage and food fridge – for goods coming in for transfer to Nain or transfer to other places from Nain. Eventually another building for aircraft flight maintenance. Also predicting for future – what can happen? Mining industry in area is growing. Possible that even own transporters might be talking to them – could leave aircraft at airport and leaving with smaller aircraft to another destination. Will have parking, including for skidoos, trucks, cars, pickups. Working on this in feasibility study right now.	
Need to add a freight shed and fridge/freezer needs to open together with airport and not phased approach. Times when the weather is bad, freight builds up and passengers cannot fit into the building. Frozen meat fits in the airstrip and gets spoiled because and people who ordered those items have gone out of town and do not get anyone else to pick up food – food gets spoiled.	Yes, agree should be part of initial phase. Working closely with food security staff – acknowledged we need to have reefer storage (frozen and full storage) as well as for all the parcels that come in as well. ***Note: Following this comment, in response to community input, the proponent has changed the Project design to include the fridge and freezer structure at initial commissioning, rather than future phases.***	FAQs Future Consultation Meetings
Question about land use mapping. If land use and harvesting impacts are identified, will there be compensation for those users?	Will have to wait until land use studies come back and say and what potential impacts are.	Land Use Study
Comment: Looking at pictures, that is a big area where wildlife is. Wildlife will move elsewhere and start cycle over. Question about fencing the entire area.	There will be around terminal and airstrip/runway to keep wildlife off, too dangerous for your own safety.	FAQs
Open to possibility for Air Borealis to make a hanger for equipment to be left 24/7?	This area (Site 3) allows a lot of opportunity for expansion; biggest benefit over other two sites. Other two we could barely get runway in. This site big plateau, it is flat, a lot of room for expansion in future.	FAQs

Question about possibility of leasing land.	Labrador Inuit land and need to follow protocol to acquire land.	
What year do you think, if this feasibility passes, when will first plane land?	If we hit all the timelines, 2030. Environmental assessment to be completed by 2026. At that point, will make decision to go/not go on this airport.	FAQs
You've done some work but blowhole issue, road issue – what do you perceive as major drawbacks?	That is the whole point of the feasibility study and pulling it all together. We did the geotechnical investigation last year; results favourable all the way through. Toughest spots will be section of the road as it will be heavily engineered and built for all the avalanche events and steepness of it, that will create potential impacts.	Information Sheet FAQs Future Consultation Meetings
Comment about another area for consideration – side of hill? Nice and level.	They did evaluate going that route, I cannot speak to the exact reason, but it was to do with the amount of river crossings in that area. For the development of the runway, there is a significant amount of rock, so the selected Site 3 alignment allows for better opportunities. I can talk to the project team and get a better response to exactly why they turned down going that way.	FAQs
This is why information to the public is so important; we haven't heard this – important to inform people.	Agree. Exploring having a Facebook page for updates, upcoming events, whatever is going on with the airstrip project.	Proponent is exploring options for Facebook page for project updates.
Proponent Asked Questions of Participants		
What is the best way for us to get the information about this project and upcoming sessions to the public?	Understanding harvest population, important, it is a vibrant area, creating rules for those knowledge holders and traditional knowledge. They will need to be compensated for that invaluable knowledge. Being able to identify area of common use, and hunting area – not use the area anymore. There could be another area where harvesting can happen. Around or near in replacement of that. Lots of harvester here tonight – create a key group.	Future Consultation Meetings
We, the infrastructure team, has developed a public engagement portal for other projects and we're launching soon. Trying to get here as a group was difficulty. Could do smaller sessions with myself and project team on mapping.	Facebook page just for the new airport, allows people to add comments and questions. Opportunity for project updates and upcoming events. ***Note: Following this feedback at the Information session, the proponent is exploring options for setting up a Facebook page for project updates.***	Future Consultation Meetings

How often do you want information session on whole project and status?	Right now would prefer more information and to improve understanding	Information Sheet FAQs Future Consultation Meetings Land Use Study

NEW NAIN AIRPORT PROJECT

INFORMATION SHEET

PROJECT OVERVIEW

The current Nain airport falls short of meeting the transportation needs of the local community. The current airport is operated by the Newfoundland and Labrador Government, who is leading the project to create the New Nain Airport. The current airstrip alignment causes frequent delays or cancellations for nearly half of all regular flights, hampering essential services and goods delivery. Sea level changes due to climate change have led to flooding the airstrip, which could cause damage and impact its load-bearing capacity. Furthermore, takeoff and landing at the current airport are not authorized at night because of the surrounding mountains, worsening the existing transportation issues. The current airport is unfit for upgrades due to worsening climate change impacts on the airstrip. To secure current and future generations' access to goods and services, constructing a new airport is essential.

PROJECT DESCRIPTION

The Nain Airport Project, led by the Nunatsiavut Government, aims to build a new airport to replace the existing one, stressed by climate change. This project comprises three main components:

(1) The Airport: Includes the terminal, equipment maintenance hangar, cargo terminal (frozen, cooled, regular), apron, groundside parking, and related facilities. The airport will also serve as the emergency response centre for Nain.

(2) The Runway: A new airstrip approximately 1,830 m in length and 40 m in width.

(3) The Access Road: A new road approximately 12 km in length joining the Airport to Nain.

The core objective is to enhance transportation, health, and wellness needs in the Nain community by increasing reliability, maintaining round-the-clock operation, and enabling larger aircraft landings. This can improve connections with Inuit regions and Canada.

Improving air travel reliability facilitates the arrival of essential goods, bolstering food security. In emergencies, faster access to healthcare can enhance regional health outcomes. Additionally, enhanced transportation reliability may increase the availability of previously inaccessible economic development opportunities outside of the community.

PROJECT PHASES

The Nain Airport Project is currently in **Phase 3 of 6**, of which are summarized below:

Phase 0: Review of Existing Airport (2018) ☑

After assessing the current airport, it was deemed unsuitable for upgrades due to climate change effects on infrastructure, rising sea levels, its proximity to water, suboptimal site selection regarding weather, and limited available space for upgrades.

Phase 1: Implementation Plan for New Airport (2020) ☑

The Nunatsiavut Government engaged consulting firms to conduct a site evaluation for new airport infrastructure. Considerations included weather and wind patterns, environmental and terrain features, accessibility to residents, ability to construct in the area, and other key considerations. Three potential sites were selected:

Site 1: The first identified site was west of Meta Cove (N 56°31'9.02", W 61°40'59.10"). The site was identified as inadequate due to the available width, which would result in a lack of night access. Additionally, the access road would require steep grading creating problems in the winter.

Site 2: The second identified site was southeast of Trouser Lake (N 56°31'42.06", W 61°44'23.28"). Site 2 presented similar challenges to Site 1, resulting in the site being deemed as inadequate for development.

Site 3: The third identified site is west of Delta approximately 13 km southwest of Nain, bound by seashore surrounding the area to the south. This site was identified as the most favourable location. Although the access road is the most limiting factor, the proximity to a marine site for barge landing would alleviate some construction concerns. Site 3 was the only site identified which can accommodate 24-hour flights 7 days per week and does not have space as a limiting factor.

Phase 2: Secure Financing for Feasibility Studies (2021) ☑

Phase 2 fundraising for the feasibility study began in 2019. Funding from the National Trade Corridor Fund-Transport Canada (NTCF) fund was authorized in September 2021. The financial contribution is divided equally between the Government of Canada and the Government of Newfoundland and Labrador.

The feasibility study comprises 12 separate studies, collectively referred to as New Nain Airport Feasibility Studies (NNAFS).

These studies include surveys of site meteorology, topography, hydrology, permafrost, surface water. Analyses were also completed of various engineering specialties, meteorology, hydrology, electricity, architecture and environment.

Phase 3 *(Present):* Conducting Feasibility Studies (2022-2024)

The Nunatsiavut Government is currently in Phase 3, conducting feasibility studies related to project development. Site 3 has been identified as the likely site for the Proposed New Nain Airport. The access road is the primary constraint at Proposed Site 3. Its alignment is challenging due to the mountainous terrain, snow accumulation, permafrost, critical water crossings, and geological characteristics. Nevertheless, it offers the best access under diverse weather conditions.

Phase 3 involves various studies to understand the feasibility of undertaking this project, including an Environmental Assessment of the area which will be completed by AECOM Canada. Environmental field studies were conducted in summer 2023 and the final NNAFS report is scheduled for late summer 2024. The project is required to adhere to regulations from the Nunatsiavut Government, Newfoundland and Labrador Government, and Government of Canada. Approvals from the three governments is anticipated by March 2026.

Future Project Phases Include:

- Phase 4: Securing Financing for Construction Phase (2024-2026)
- Phase 5: Detailed Design, Specifications, and Construction, of New Airport (2026-2027)
- Phase 6: Certification of the Facilities and Commissioning (2027-2030)

Stay Involved:

The Nunatsiavut Government and AECOM will be undertaking various consultation activities in the next year. As part of those consultation efforts, you can expect to receive project updates by email, community consultation meetings, or invitation to discuss your thoughts on the project in a phone or virtual interview with the NNAFS AECOM Consultation team.

Questions, Comments, or Concerns:

If you have questions or comments please contact Colin Gilbride (Nunatsiavut Government) at colin.gilbride@nunatsiavut.com or NNAFSProjectFeedback@aecom.com.

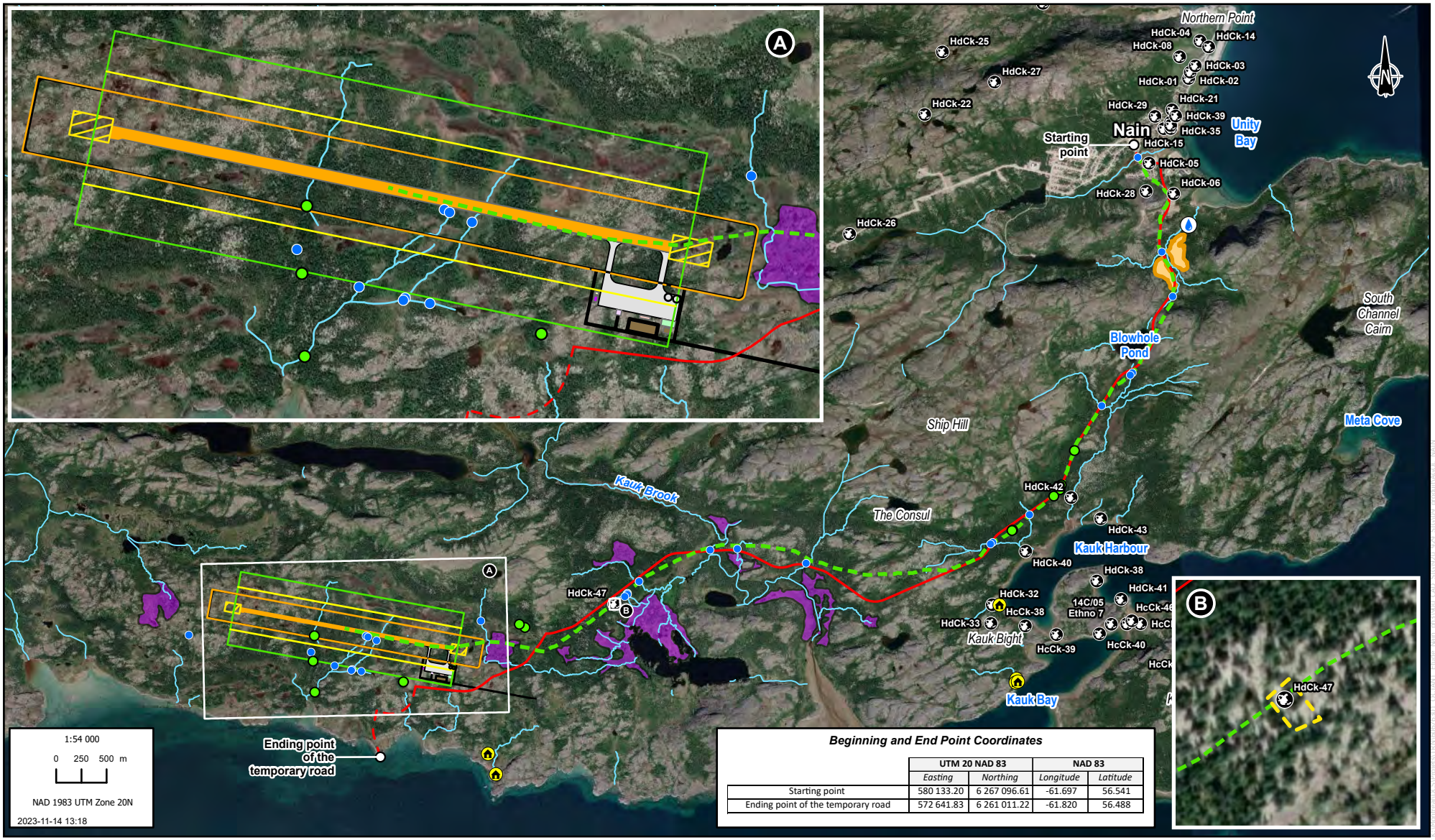
NUNATSIAVUT kavamanga Government

OCTANT

AECOM

NUNATSIAVUT
kavamanga government

Figure #1: Proposed Project Site 3 and Proposed Access Road



Beginning and End Point Coordinates

	UTM 20 NAD 83		NAD 83	
	Easting	*Northing*	*Longitude*	*Latitude*
Starting point	580 133.20	6 267 096.61	-61.697	56.541
Ending point of the temporary road	572 641.83	6 261 011.22	-61.820	56.488

Project Component

- Original access road alignment
- Access road
- Proposed temporary road
- Fence
- Transitional surface (23 m)
- Transitional surface (45 m)
- Helicopter helipad
- Runway safety area
- ATB
- Aircraft hangar
- Airport access and service road
- De-icing fluid
- Fuel
- Maintenance building
- Parking
- Runway
- Taxiway

Environmental Constraints

- Watercourse
- Watercourse crossing (desktop)
- Additionnal watercourse crossing (2023 field mapping)
- Potential permafrost

Socio-Economic Constraints

- Cabin
- Archaeological site
- Archaeological site protection area
- Untreated drinking water source
- Quarry

Project Components and Initial Environmental / Socio-economic Constraints

OCTANT
EXPERTS EN SOLUTIONS POUR L'AVIATION

AECOM

Figure #2: Proposed New Airport Project Rendering

Recipients of the Information Sheet

New Nain Airport

Organization	Title/Position	Name
Sheshatshiu Innu First Nation	Chief	Chief Etienne Rich
Mushuau Innu First Nation	Chief	Chief John Nui
Innu Business Development Centre	Business Manager	Josie Dubberke
Nain Inuit Community Government	AngajukKâk (Mayor)	Julius "Joe" Dicker
	Clerk	Karen Dicker
Hopedale Inuit Community Government	AngajukKâk (Mayor)	Marjorie Flowers
Inuit Tapiriit Kanatami	Senior Advisor	Pauley Tedoff
The Innu Nation of Matimekush-Lac John (Quebec)	Chief	Réal McKenzie
The Naskapi Nation of Kawachikamach (Quebec)	Director General	Stella Pien
Nunatsiavut Government	Deputy Minister	Isabella Pain
	Director of Environment, Department of Lands and Natural Resources	Rodd Laing
	Environmental Assessment Manager, Department of Lands and Natural Resources	Frederic Dwyer-Samuel
	Department of Lands and Natural Resources	Mary Denniston
	Director of Non-Renewable Resources, Department of Lands and Natural Resources	Claude Sheppard
	Youth Program Services Coordinator, Department of Health and Social Development	Cassie Jararuse
	Archaeologist, Department of Language, Culture and Tourism	Lena Onalik
Government of NL	Director, Environmental Assessment, Department of Environment and Climate Change	Joanne Sweeney
	Senior Environmental Scientist, Department of Environment and Climate Change	Paul A. Carter
	Manager of Environmental Assessment, Department of Environment and Climate Change	Vicki Ficzere

Organization	Title/Position	Name
	Senior Engineer, Water Resources Division, Department of Environment and Climate Change	Mohammad Khayer
	GIS Wildlife Habitat Biologist, Wildlife Division, Department of Fisheries, Forestry and Agriculture	Jana Fenske
	Planner, Department of Municipal and Provincial Affairs	Sean McGrath
	Land Claim Negotiator, Department of Indigenous Affairs and Reconciliation	Mark Bugden
Government of Canada	Head, Environmental Assessment, Environment and Climate Change Canada	Michael Hingston
	Environmental Assessment Analyst, Environment and Climate Change Canada	Jerry Pulchan
	Regional Senior Environmental Supervisor, Transport Canada	Jason Flanagan
	Environmental Health Program, Health Canada	Lachlan Maclean
	Environmental Officer, Health Canada	Kevin Ferris
	Impact Assessment Specialist, Health Canada	Jeremie Allain
	Fisheries Protection Biologist, Fisheries and Oceans Canada	Kimberley Keats
	Employment and Social Development Canada	Jason Maurice
	Impact Assessment Officer, Natural Resources Canada	Sophia St. Lawrence
	Impact Assessment Officer, Natural Resources Canada	Clarisse Fiset
	Junior Analyst, Women and Gender Equity Canada	Megan Kirby
	Policy Analyst, Indigenous Services Canada	Julia Gregory
	Economic Policy Officer, Crown Indigenous Relations and Northern Affairs Canada	Jessica Steffano
Northern Coalition Corporation	Executive Director	Alastair O'Rielly
Atsanik Lodge		
Torngait Ujaganniavingit Corporation (T.U.C)	General Manager	B.Vincent
Community Youth Network – Nain	N/A	Bradley Lampe
Labrador Ferry (freight)	Operations Manager	Dwayne Canning
AnanauKatiget Tumingit Regional Inuit Women's Association (ATRIWA)		

Organization	Title/Position	Name
Tasiujak Lake Fishing Lodge		
Innu Development		
Nipavut (Our Voices) – Nain		
Nunatsiavut Group of Companies		
Labrador Hunting and Fishing Association Inc.		
Kangidluasuk Student Program Inc.	Executive Director and Program Coordinator	Mandy Arnold
Torngat Fish Producers Cooperative		
Nain Safe House		
OKâlaKatiget Society		
TaKuaKautik-Nain Food Bank	Food Bank Committee Chair	Brenda Jararuse
Torngat Arts and Crafts		
Parks Canada/Torngat Mountains National Park		
Tourism Nunatsiavut		

Appendix D

NLNR Land Use Study

From: Rodd Laing <rodd.laing@nunatsiavut.com>
Sent: Wednesday, November 29, 2023 11:58 AM
To: Marie-Helene Simard
Cc: Colin Gilbride; Aignel, Rozenn; Tremblay, Valerie; Nancy Griffiths; Manon Barrette; Frederic Dwyer-Samuel
Subject: RE: URGENT REQUEST Land Use

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Marie-Helene,

As discussed on previous calls, the Final Land Use Study report will not be complete until March 2025. This study is being led by the Nunatsiavut Government, through the support of the Polynya Consulting Group. The Land Use Study focuses on a specific area of use, no the airport specifically, but does cover off the entirety of the impacted area. The responses to your specific points are as follows:

1. **R12:** The Land Use Study being conducted is substantially more detailed than what was being proposed through R12 and the consultant. It will follow the methodology used in previous land use studies and will have Inuit conducting and participating in the documentation of Inuit Knowledge through established ethical mechanisms and procedures that have been approved by the Nunatsiavut Government Research Advisory Committee. By the Nunatsiavut Government leading the study, it will ensure it meets the requirements of the Environmental Review process. If the Land Use Study was conducted as originally proposed, and it didn't meet our requirements, it could have led to substantial delays (a year or two) until those requirements were met. This will be avoided by having the NG lead this study. In the registration, you can mention that the NG is leading a land use study that will meet the requirements of their Environmental Review process for this project.
2. **Reception of the Land Use Study:** As indicated in previous calls, a draft report by August 2024 and a Final report by October 2024 is not possible. In order to follow the appropriate and ethical processes for the documentation, collection, verification and analyses of Inuit Knowledge, and then report writing, appropriate time must be given for each of those steps. Data collection is taking place this winter, with verification taking place in the spring and analyses taking place in late-spring and summer, and report writing to follow. The final report will be completed by March 2025.
3. **Land Use Study Updates:** There will be regular updates provided on the progress of the land use study and we will set up meetings every 2 or 3 months to provide space for discussion and updates on the land use study. We will set these up starting in the new year.

Thanks for your time, we look forward to reviewing your final Registration document.

-Rodd

Rodd Laing
Director of Environment
Nunatsiavut Government
P.O. Box 70
Nain, NL A0P 1L0
Phone <Personal information removed> or 709-922-2380 (Research Centre)
Fax: 709-922-2931

From: Marie-Helene Simard <mhsimard@octantaviation.ca>
Sent: November 27, 2023 6:07 PM
To: Rodd Laing <rodd.laing@nunatsiavut.com>
Cc: <Email addresses removed>

Subject: URGENT REQUEST Land Use
Importance: High

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good day Rodd,

As we don't want to delay the environmental study schedule and ensure that deliverables are met, **we will need to receive information from the Land Use study before it is completed in 2025**.
We had already discussed this at our meetings. We have reviewed the timetable for the R12 study, and the Land Use results will have to be provided to us in 2024. At specific dates so as not to alter the timetable for the entire feasibility study, which ends in December 2024.
Here is a brief description of the various deliverables:

1) Reception of Land use mapping data to deliver to R12 (requested already as *interim* data): Proposed date: end of March 2024. In order to have this realistic, we can request to have Sebastien Boudreau prior to their land use mapping of January – to have him show them what we have in the NNAFS project (Arc GIS Online)- to see if import from their mapping system could be eased.
2) Reception of Land Use study :
    a. Date of Draft Report requested by NG to the Consultant Polynomia . This needs to be PRIOR to August 2024
    b. Date of Final Report requested by NG to the Consultant Polynomia. This needs to be PRIOR to October 2024. **If not granted, NG has to provide a letter to NG Infra saying that all 3 regulators will accept the EIS without the final report on Land Use.**

We need an urgent response by the end of the day tomorrow, November 28, in order to adjust the registration document on this subject.

I hope you will cooperate as soon as possible, as we have to submit the documents on Monday, December 4, 2023.

MH

Marie-Helene Simard
NNAFS Project Manager for NG
C- 514 237-3015
Email : mhsimard@octantaviation.ca

OCTANT

MARIE-HÉLÈNE SIMARD / mhsimard@octantaviation.ca / **C** 514 237-3015
Conseillère principale stratégie et règlementation
Senior Consultant Strategy and Regulation

4501, rue Bishop, bureau 202, Longueuil (Québec) J3Y 9E1
T 450 678-4884 **OCTANTAVIATION.CA**

EXPERTS EN SOLUTIONS POUR L'AVIATION / *EXPERTS IN AVIATION SOLUTIONS*

OCTANT

MARIE-HÉLÈNE SIMARD / mhsimard@octantaviation.ca / C 514 237-3015
Conseillère principale stratégie et règlementation
Senior Consultant Strategy and Regulation
4501, rue Bishop, bureau 202, Longueuil (Québec) J3Y 9E1
T 450 678-4884 OCTANTAVIATION.CA

EXPERTS EN SOLUTIONS POUR L'AVIATION / ***EXPERTS IN AVIATION SOLUTIONS***

Avis : Ce message est confidentiel et protégé par le secret professionnel. Si vous n'êtes pas le destinataire, veuillez informer l'expéditeur par courriel immédiatement et effacer ce message et en détruire toute copie.
Notice: This message is confidential and privileged. If you are not the addressee, please inform the sender by return e-mail immediately and delete this message and destroy all copies.

ghd.com

→ The Power of Commitment