NIRB Application for Screening #126455
Gascoyne Inlet Geoscience Project

Application Type: New

Project Type: Scientific Research

Application Date: Tuesday, May 26, 2026

Period of operation: from 2026-07-30 to 2026-08-18

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DETAILS

Non-technical project proposal description

English: The Gascoyne Inlet Geoscience Project is a collaborative effort led by the Geological Survey of Canada in partnership with Defence Research and Development Canada (DRDC) to better understand the land, coast, and seafloor around the Gascoyne Inlet Camp (GIC) on southwest Devon Island. The project brings together three areas of research: marine seabed geology and natural underwater noise, coastal dynamics and nearshore ice, and surficial geology and permafrost conditions to support safe operations, long-term planning, and environmental awareness in this region of the Arctic.As sea ice conditions change, and the GIC considers future expansion and possible year-round use, there is a growing need for detailed information about the seabed, coastline, and surficial geology, and permafrost. The proposed research aims to answer several key questions:•What does the seabed look like in Gascoyne Inlet and in nearby bays?•How do natural geological processes create underwater noise that may affect acoustic monitoring? •How have the coastline, beaches, and nearshore ice changed over time?•How do waves and ice interact to move sediment along the coast?•What types of surficial materials and landforms exist around the camp?•How stable is the permafrost beneath these landforms? Understanding these conditions will help identify natural hazards such as erosion, underwater landslides, and ground ice that could affect infrastructure, including submarine cables and future camp facilities. The work will also improve the ability to distinguish natural underwater noise from human-made signals, supporting safer marine operations and better situational awareness. Fieldwork will take place in August 2026 and 2027 in Gascoyne Inlet and the surrounding region, including Radstock Bay, Cape Ricketts, Beechey Island, and nearby coastal and offshore areas. Each field season will last several weeks, with logistical support provided by PCSP and DRDC.Marine ResearchThe marine research will focus on creating a detailed picture of the seafloor in the study area. The research team will use sonar sensors that emit sound waves through the water to map the shape of the seabed and the uppermost geological layers just below it. The team will also collect core samples of seabed sediments to understand their composition. Instruments placed in the water will record natural underwater movements, such as shifting sediments or freezing and thawing near the seabed. Together, these tools help identify places where the seafloor may be unstable, including those that could experience underwater landslides, fast-moving sediment flows, and seasonal freezing and thawing of the seabed.Coastal ResearchThe coastal research will examine how the shoreline and nearshore ice have changed over time. Historical air photographs, modern satellite images, and drone surveys will be used to compare past and present conditions. Ground-based tools, including ground penetrating radar, timelapse cameras, and wave radar, will also be used to observe how waves and ice interact, and how these processes move sediment along the coast.Surficial Geology and Permafrost ResearchThe surficial geology and permafrost studies will be focused on the land around the GIC and in the region surrounding Gascoyne Inlet. Air photos, satellite images, and DInSAR (a remote sensing method that measures ground movement) will be used to map landforms and identify areas where the ground may be unstable. Fieldwork will include collecting soil and stream sediment samples, drilling shallow cores into the permafrost, and installing instruments that record ground temperatures. This information will help inform planning of new infrastructure. The work will also support broader studies of the region's geological history, including potential mineral occurrences, sea level changes, glacial activity, and the movement of sediments across the landscape.Together, these activities will produce detailed maps and observations that improve terrain awareness, support safe infrastructure development, and deepen scientific and geological understanding of the region. Research results will be shared with the community of Resolute Bay, and any others interested through plain-language summaries and in-person presentations. We would propose to hold in-person meetings or events in Resolute Bay to present the results to all interested people in the community.

French: Le projet géoscientifique de Gascoyne Inlet est une initiative conjointe de la Commission géologique du Canada, en partenariat avec Recherche et développement pour la défense Canada (RDDC), visant à mieux comprendre les terres, la côte et les fonds marins autour du camp de Gascoyne Inlet (CGI), situé au sud-ouest de l'île Devon. Le projet regroupe trois axes de recherche : la géologie des fonds marins et le bruit sous-marin naturel, la dynamique côtière et la glace littorale, ainsi que la géologie de surface et les conditions du pergélisol. Ces axes permettent d'assurer la sécurité des opérations, la planification à long terme et la sensibilisation à l'environnement dans cette région de l'Arctique. Face à l'évolution des conditions de la glace de mer et à la perspective d'une expansion future et d'une utilisation à l'année du CGI, le besoin d'informations détaillées sur les fonds marins, le littoral, la géologie de surface et le pergélisol se

fait de plus en plus sentir. Les recherches proposées visent à répondre à plusieurs questions clés : • À quoi ressemble le fond marin de Gascoyne Inlet et des baies avoisinantes ? • Comment les processus géologiques naturels créent-ils du bruit sous-marin susceptible de nuire à la surveillance acoustique ? • Comment le littoral, les plages et la banquise côtière ont-ils évolué au fil du temps ? • Comment les vagues et la glace interagissent-elles pour déplacer les sédiments le long de la côte ? • Quels types de matériaux de surface et de reliefs existent autour du camp ? • Quelle est la stabilité du pergélisol sous ces reliefs ? La compréhension de ces conditions permettra d'identifier les risques naturels tels que l'érosion, les glissements de terrain sous-marins et la présence de glace de sol qui pourraient affecter les infrastructures, notamment les câbles sous-marins et les futures installations du camp. Ces travaux permettront également d'améliorer la capacité à distinguer les bruits sous-marins naturels des signaux d'origine humaine, contribuant ainsi à des opérations maritimes plus sûres et à une meilleure connaissance de la situation. Les travaux de terrain se dérouleront en août 2026 et 2027 dans l'inlet Gascoyne et la région environnante, notamment la baie Radstock, le cap Ricketts, l'île Beechey et les zones côtières et hauturières avoisinantes. Chaque campagne de terrain durera plusieurs semaines, avec le soutien logistique du PCSP et du RDDC. Recherche marine : La recherche marine visera à dresser un portrait détaillé des fonds marins dans la zone d'étude. L'équipe de recherche utilisera des sonars, qui émettent des ondes sonores dans l'eau, pour cartographier la forme du fond marin et les couches géologiques superficielles. Elle prélèvera également des carottes de sédiments marins afin d'en déterminer la composition. Des instruments immergés enregistreront les mouvements sous-marins naturels, tels que le déplacement des sédiments ou l'alternance de gel et de dégel près du fond. Ensemble, ces outils permettront d'identifier les zones où le fond marin est potentiellement instable, notamment celles susceptibles de subir des glissements de terrain sous-marins, des courants sédimentaires rapides et des cycles saisonniers de gel et de dégel. Recherche côtière : Cette recherche étudiera l'évolution du littoral et de la banquise côtière au fil du temps. Des photographies aériennes historiques, des images satellites modernes et des relevés par drone seront utilisés pour comparer les conditions passées et présentes. Des outils terrestres, tels que le géoradar, les caméras à intervalle de temps et le radar de vagues, seront également utilisés pour observer l'interaction entre les vagues et la glace, ainsi que la manière dont ces processus déplacent les sédiments le long de la côte. Recherche sur la géologie de surface et le pergélisol : Les études sur la géologie de surface et le pergélisol se concentreront sur les terres entourant le GIC et la région de l'inlet de Gascoyne. Des photographies aériennes, des images satellitaires et le DInSAR (une méthode de télédétection mesurant les mouvements du sol) serviront à cartographier le relief et à identifier les zones d'instabilité potentielle du sol. Les travaux de terrain comprendront le prélèvement d'échantillons de sol et de sédiments fluviaux, le forage de carottes superficielles dans le pergélisol et l'installation d'instruments de mesure de la température du sol. Ces données contribueront à la planification des nouvelles infrastructures. Ces travaux appuieront également des études plus approfondies sur l’histoire géologique de la région, notamment la présence potentielle de minéraux, les variations du niveau de la mer, l’activité glaciaire et le transport des sédiments. Ensemble, ces activités permettront d’établir des cartes et des observations détaillées qui amélioreront la connaissance du terrain, favoriseront le développement sécuritaire des infrastructures et approfondiront les connaissances scientifiques et géologiques de la région. Les résultats de la recherche seront communiqués à la communauté de Resolute Bay et à toute autre personne intéressée par le biais de résumés en langage clair et de présentations en personne. Nous proposons d’organiser des réunions ou des événements à Resolute Bay afin de présenter les résultats à tous les membres de la communauté intéressés.

Inuktitut: ᒫᓯᑰᐃᓐ ᑲᖏᖅᓱᖓᓂ ᑲᖏᖅᓲᒐᕐᔪᖕᒥ ᓄᓇᒥᒃ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᐱᓕᕆᐊᖅ ᑲᑐᔾᔭᐅᓪᓗᓂ ᐱᓕᕆᐊᖑᕗᖅ ᐊᐅᓚᑕᐅᓪᓗᓂ ᓄᓇᒥᒃ ᖃᐅᔨᓴᖅᑎᓄᑦ ᑲᓇᑕᒥ ᐱᓕᕆᖃᑎᖃᖅᓱᑎᒃ ᐅᓇᑕᖅᑐᒃᓴᓕᕆᔾᑯᓐᓂ ᑲᓇᑕᒥ (DRDC) ᑐᑭᓯᑎᐊᒃᑲᓐᓂᕈᒪᓪᓗᑎᒃ ᓄᓇᒥᒃ, ᓯᓪᔭᖓᓂᒃ, ᐊᒻᒪ ᐃᖅᑲᖓᓂᒃ ᒫᓯᑰᐃᓐ ᑲᖏᖅᓱᐊᑕ ᑕᖕᒫᕐᕕᖓᓂ ᑕᓪᓗᕈᑎᒥ. ᑖᓐᓇ ᐱᓕᕆᐊᖑᔪᖅ ᑲᑎᑎᑦᑎᕗᖅ ᐱᖓᓱᐃᓕᖅᑲᖓᔪᓂᒃ ᖃᐅᔨᓴᕈᑕᐅᔪᓂᒃ: ᑕᕆᐅᑉ ᐃᖅᑲᖓᓂ ᓄᓇᓕᕆᓂᖅ ᐊᒻᒪ ᐃᒪᐅᑉ ᐃᖅᑲᖓᓂ ᓂᐱᑭᔭᐅᕙᒃᑐᑦ, ᓯᒡᔭᖅᐸᓯᖕᒥ ᖃᓄᐃᓕᕙᓪᓕᐊᓂᖏᑦ ᐊᒻᒪ ᓯᒡᔭᖅᐸᓯᖕᒥ ᓯᑯᐃᑦ, ᐊᒻᒪ ᓄᓇᐅᑉ ᖄᖓᓂ ᓄᓇᓕᕆᓂᖅ ᐊᒻᒪ ᖁᐊᖑᐃᓐᓇᐅᔭᖅᑐᖅ ᓄᓇᐅᑉ ᖃᓄᐃᓕᖓᓂᖓ ᐃᑲᔪᖅᓯᐃᓂᕐᒧᑦ ᐊᑦᑕᕐᓇᙱᑦᑐᒃᑯᑦ ᐊᐅᓚᑦᑎᓂᕐᒥᒃ, ᐊᑯᓂᐅᔪᒃᑯᑦ ᐸᕐᓇᐃᓂᕐᒥᒃ, ᐊᒻᒪ ᐊᕙᑎᒥᒃ ᐅᔾᔨᕈᓯᒃᑎᑦᑎᓂᕐᒥᒃ ᑕᒫᓂ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᕙᒃᑐᖅᓯᒪᓂᐅᔪᒥᑦ.ᑕᕆᐅᑉ ᓯᑯᖓᑕ ᖃᓄᐃᓕᖓᓂᖓ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᑎᓪᓗᒍ ᑕᖕᒫᖅᓯᒪᕝᕕᒡᓗ ᐃᓱᒪᕆᔭᖃᕐᓗᑎᒃ ᓯᕗᓂᒃᓴᒥ ᐊᖏᓪᓕᕆᐊᖅᑕᐅᓇᔭᕐᓂᖓᓂᒃ ᐊᔪᕐᓇᙱᑐᐃᓐᓇᓇᐊᖃᕐᓂᖓᓂᓪᓗ ᐊᕐᕌᒍᓕᒫᒧᑦ ᐊᑐᖅᑕᐅᓇᔭᕐᓂᖓᓂᒃ, ᐱᔭᕆᐊᖅᑐᖅᐸᓪᓕᐊᑐᐃᓐᓇᖅᐳᖅ ᐃᓗᓕᖃᐅᑦᑎᐊᖅᑐᓂᒃ ᑐᓴᖅᑕᐅᕙᒃᓴᓂᒃ ᑕᕆᐅᑉ ᐃᖅᑲᖓᓂ, ᓯᒡᔭᖅᐸᓯᖓᓂ, ᖄᖓᓂᓗ ᓄᓇᐅᑉ ᖃᓄᐃᓕᖓᓂᖓᓂᒃ ᖁᐊᖑᐃᓐᓇᐅᔭᖅᑐᒥᓪᓗ ᓄᓇᐅᑉ ᖃᓄᐃᓕᖓᓂᖓᓂᒃ. ᖃᐅᔨᓴᕐᓂᖅ ᑐᕌᒐᖃᖅᐳᖅ ᑭᐅᓯᓂᕐᒥᒃ ᖃᔅᓯᑲᓪᓚᖕᓂᒃ ᐱᓪᓗᐊᑕᕐᓂᒃ ᐊᐱᖅᑯᑎᒃᓴᓂᒃ:•ᑕᕆᐅᑉ ᐃᖅᑲᖓ ᖃᓄᐃᑦᑑᕙ ᒫᓯᑰᐃᓐ ᑲᖏᖅᓱᖓᓂ ᑲᖏᖅᓲᒐᕐᔪᖕᒥ ᖃᓂᒋᔭᖏᓐᓂᓪᓗ ᑲᖏᖅᓱᐃᑦ?•ᖃᓄᖅ ᓄᓇᐅᑉ ᖃᓄᐃᓕᖓᓂᖓ ᓴᖅᑭᑎᑦᑎᔫᖑᕙ ᐃᒪᐅᑉ ᐊᑖᓂ ᓂᐱᓂᒃ ᐊᒃᑐᐃᑐᐃᓐᓇᕆᐊᓕᖕᓂᒃ ᓂᐱᓂᒃ ᓇᐅᑦᑎᖅᓱᖅᓯᓂᕐᒥᒃ?•ᖃᓄᖅ ᓯᒡᔭᖅᐸᓯᖓ, ᓯᒡᔭᖅᐸᓯᖓ, ᐊᒻᒪ ᓯᒡᔭᖅᐸᓯᖕᒥ ᓯᑯ ᐊᓯᔾᔨᖅᓯᒪᓕᖅᐸ ᖃᖓᙳᖅᐸᓪᓕᐊᑎᓪᓗᒍ?•ᖃᓄᖅ ᒪᓖᑦ ᓂᓚᐃᓪᓗ ᐊᒃᑐᐊᖃᑦᑕᐅᑎᕙᒃᐸᑦ

ᓄᑎᓪᓗᑎᑦ ᖃᓄᐹᖃᖅᑐᓄᑦ ᓱᓴᐅᓄ?•ᖃᓄᐃᑦᑐᑦ ᖃᐅᔨᓕᕐᕕᒃ ᓄᓇᐅᓪᓗ ᐊᖅᑭᐅᓱᒪᓂᕐᑎᑦ ᑕᖏᒪᖅᓯᐃᐅᑦ ᖃᓄᐹᓕᓄ?•ᖃᓄᖅ ᓱᕋᓗᐊᖅᑎᑎᕐᒃ ᖃᐃᖅᔪᐊᓂᐅᕐᓚᕐᔪᐊᖅᑐᑦᖅ ᓄᓇᐅᑦ ᐊᑕᔪᑦ?ᑐᑭᓱᐅᒪᓗᑎᑦ ᑕᒪᐅᐃᐊ ᖃᓄᐃᓕᓚᖅᑎᓱᐅᑦ ᐃᑲᔪᕐᕋᖅᑐᑦ ᓄᓇᒥ ᖃᐃᖅᓴᕋᓐᓂᖅᑐᑦ ᓱᓴᓗ ᓄᓇᐅᑦ ᓄᖅᔪᑦᓴᓕᒫᓂᖅ, ᐃᒪᐅᑦ ᐃᖅᑲᖅᓱᓂ ᑎᓱᓴᓂᓂᖅ, ᒪᓂᕆᒥᓗ ᓱᐃᒥᖅ ᐊᑐᑐᑐᑕᑐᓱᒪᓂᖅ, ᐃᓕᒪᓴᐅᓪᓗᑎᑦ ᐃᒪᐅᑦ ᐊᑕᔪᑦ ᐃᓕᓴᐅᒪᔪᐃᑦ ᓱᓄᓂᐅᓓᓗ ᑕᖅᓯᒪᓕᕐᓂᖅ. ᐱᓕᓇᓂᐅᔪᖅ ᐱᐅᓱᓛᓪᓕᓂᑎᓂᓂᐊᕐᓄᖅ ᖃᐅᔨᔪᓐᓇᖅᓂᕆᑦ ᐃᒪᐅᑦ ᐃᖅᑲᖅᓱᓂ ᓂᐲᑦᓴᓂᓂᐅᑦ ᓇᓗᓇᐃᑲᔪᓂᑦ, ᐃᑲᔪᖅᑐᐃᓗᓐ ᐊᑕᑕᖅᑕᐅᓂᐊᕐᓂᖅ ᐃᒪᐅᑦ ᐃᖅᑲᖅᓱᓂ ᐊᐅᓚᐅᖅᑐᑦ ᐃᒪᐅᑦ ᐃᖅᑲᖅᓱᓂ ᑕᐅᔭᓕᖅᑎᑦ ᖃᐅᔨᓴᖅᑎᑦ ᐃᒪᐅᑦ ᐃᖅᑲᖅᓱᓂ ᐊᐅᓚᐅᖅᑐ

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Gascoyne_Quaternary_AOI	Researching	Crown	Gascoyne Inlet and the broader Devon Island region have been the focus of nearshore ice and coastal dynamics research since the 1960s. Over six decades, GSC studies have documented seabed conditions, sediment transport, and coastal processes, supported by air photo, satellite, and marine datasets. This project builds directly on that long-term record to advance understanding of environmental change.	The Devon Island region, including Gascoyne Inlet, holds moderate archaeological and paleontological value, reflecting intermittent human use and well-preserved Arctic sedimentary records. Raised marine terraces and permafrost conditions enhance preservation potential for cultural materials and fossil assemblages. Previous regional studies indicate the potential for undocumented sites and stratigraphic records sensitive to environmental change.	The site is remote, with the Gascoyne Inlet Camp providing the nearest operational access point. The closest permanent community is Resolute Bay (Qausuittuq), located approximately 100 km to the southwest. The area lies within a relatively undisturbed polar desert environment but is not currently designated as a protected area, though nearby regions on Devon Island are recognized for their ecological and scientific significance.
Gascoyne Inlet Camp	Camp	Crown	Gascoyne Inlet Camp, located on Devon Island, was established in the 1970s to support Arctic research activities. It was deactivated in 1990 and later cleaned up by DRDC, before being re-established in 2007 to support the NWTDP. Since	The archaeological and paleontological value of Gascoyne Inlet Camp is considered low to moderate. While no sites are documented at the camp, the surrounding Devon Island region contains raised marine deposits and permafrost	The site is remote, with Gascoyne Inlet Camp serving as the nearest operational base. The closest permanent community is Resolute Bay (Qausuittuq), approximately 100 km to the southwest. The area lies outside designated

			2015, the camp has continued to support DRDC and partner agency research in the region.	conditions favourable for preservation. These environments may contain undocumented cultural materials or fossil records sensitive to environmental change.	protected areas, though parts of Devon Island are recognized for ecological and scientific importance.

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Resolute Bay	HTA Manager	Resolute Bay Hunters and Trapper Association	2026-04-15
Iqaluit	Jared Ottenhof	Qikiqtani Inuit Association	2026-04-22

Authorizations

Indicate the areas in which the project is located:

North Baffin

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Planning Commission	Proposal No. No 151156 - has been accepted for review (April 29, 2026)	Applied, Decision Pending		
Fisheries and Oceans Canada	Request for Review - Submitted	Applied, Decision Pending		
Nunavut Tunngavik Inc	Questions received from Department of Research Monitoring & Evaluation - Responses provided on May 21, 2026	Applied, Decision Pending		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	Bell 206L helicopter, coordinated through PCSP, will be used for 5 days of fieldwork, August 12-16.	
Water	The RV Nuliajuk will conduct multibeam bathymetry, sub-bottom profiling, and seabed sampling in Gascoyne Inlet and Radstock Bay (approx. Aug 1–15, 2026), departing from and returning to Resolute Bay. A DRDC zodiac, operating from Gascoyne Inlet Camp, will conduct nearshore bathymetric surveys (Aug 12-15).	

Project accomodation types

Permanent Camp

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Drone (Model TBA)	1	TBA	Capture high-resolution aerial imagery to map landforms and document terrain and coastal features, to compare past and present conditions.
Multi-beam / Single-beam Sonar	1	Transducer and console dimensions to be confirmed	An acoustic mapping system mounted on a vessel. It emits sound pulses downward, and the returning echoes reveal water depth and seabed shape. Used to create detailed seafloor maps, identify features, and support studies of sediment movement and seafloor stability.
Acoustic Doppler Current Profiler (ADCP)	1	20x30cm	An underwater instrument that emits sound beams into the water column. Changes in the returning signal show current speed and direction. Used to understand water movement, sediment transport, and processes that affect coastal and seafloor conditions.
Handheld Drill (Permafrost Cores)	1	40x20cm	A lightweight drill used to take shallow cores (<3 m) from frozen ground. It collects sediments and ice for analysis to assess ground stability, permafrost conditions, and local soil properties important for safe infrastructure planning.
Sub-bottom profiler	1	25-40cm	A low-frequency acoustic system that sends sound pulses into the seabed. The echoes reflect off sediment layers, creating profiles of shallow geology. Used to study subsurface structure, identify buried features, and assess seafloor stability and sediment behavior.
Conductivity–Temperature–Depth (CTD) Data Logger	1	30x7cm	A sensor lowered through the water that measures conductivity, temperature, and depth. These values describe water column structure and conditions that influence sediment transport, freezing and thawing near the seabed, and other marine processes.

Helicopter (Bell 206L)	1	25 Hours	5 days of helicopter use will support access to sites of interest for observations, sample collection, and ground-temperature measurements as part of Quaternary and permafrost field studies. Helicopter support will be provided by PCSP. The helicopter will be based at DRDC's Gascoyne Inlet Camp, taking daily flights out and returning to the camp at the end of each day. The helicopter will return to PCSP Resolute's base at the end of the 5 days.
Nuliajuk Research Vessel	1	64ft	The Nuliajuk vessel will be used to map the seafloor with sonar and deploy instruments to record natural seabed movements. This work will help identify unstable areas such as potential landslides, sediment flows, and freeze–thaw zones.
Ground Penetrating Radar (GPR)	1	50 lbs	Used to image shallow subsurface layers on land. Helps identify permafrost conditions, buried ice, and sediment structures, and supports studies of how coastal and terrestrial terrain is changing over time.

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Aviation fuel	fuel	22	205	4510	Liters	With PCSP Support, 22 drums of Jet-B Fuel will be transferred to and stored at the DRDC Gascoyne Inlet Camp (GIC) facility to support helicopter activity. Fuel stored at the GIC will be kept in sealed steel drums placed in accordance with CIRNAC guidelines, with

						spill response equipment readily available. All drums will be removed at the conclusion of the field program and returned to Resolute Bay for proper disposal.

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0		

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Information is not available				

Environmental Impacts:

The proposed project is expected to result in minor, short-term, and localized environmental impacts. Negative but mitigable effects include temporary disturbance to wildlife, birds, and aquatic species from helicopter operations, vessel activity, and human presence, as well as localized impacts to vegetation, soils, and permafrost from limited foot traffic. Minor effects to water quality, hydrology, air quality, and noise levels may also occur. There is low potential to encounter undocumented archaeological or culturally sensitive sites. All impacts will be mitigated through established best practices, including maintaining helicopter altitudes above 1,000 ft, avoiding wildlife during landings, minimizing vessel speeds and noise, restricting ground disturbance, and adhering to spill prevention and waste management protocols. Engagement with the Resolute Bay community will guide avoidance of culturally sensitive areas, and any discoveries will be reported immediately. A positive socioeconomic impact includes the planned hiring of up to two local wildlife monitors (pending availability), supporting local knowledge integration and community involvement. With mitigation measures in place, all negative impacts are expected to be low in magnitude, reversible, and limited to the project duration.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

Description of Existing Environment: Physical Environment

The project area on Devon Island is characterized by a polar desert environment with continuous permafrost, sparse vegetation, and gently undulating terrain underlain by sedimentary bedrock and unconsolidated coastal sediments. Raised marine terraces, ice-rich soils, and localized thermokarst features occur. The region includes shallow coastal waters with strong seasonal ice influence, tidal processes, and variable bathymetry. No designated protected areas occur at the site, though ecologically sensitive marine and wildlife habitats are present.

Description of Existing Environment: Biological Environment

The project area supports sparse High Arctic vegetation, including mosses, lichens, and low-lying vascular plants. Wildlife includes Arctic fox, polar bear, and muskox, with seasonal use by caribou. The region supports migratory birds and coastal nesting habitat. Marine waters provide habitat for seals and other Arctic species. Species at risk may occur seasonally. Sensitive habitats and migration routes are present but spatially variable and influenced by sea ice conditions.

Description of Existing Environment: Socio-economic Environment

The project area is remote, with the nearest community being Resolute Bay (Qausuittuq), approximately 100 km away. The region has low direct human use but is part of Inuit Nunangat, with cultural and archaeological potential in coastal areas. Land use includes subsistence harvesting and occasional travel. Marine and terrestrial resources support traditional activities. No significant local traffic routes occur, and human health impacts are expected to be minimal given the short duration and remote setting.

Miscellaneous Project Information

Comprehensive mitigation measures will be implemented to avoid and reduce disturbance. Through engagement with the Resolute Bay community, culturally sensitive areas will be identified and avoided, and any newly encountered sites will result in immediate cessation of work, documentation, and reporting. To minimize wildlife disturbance, helicopters will maintain altitudes above 1,000 ft and avoid landing in the presence of wildlife. Vessel operations will follow marine wildlife best practices, including reduced speeds, avoidance of sensitive areas, and minimizing noise.On land, crews will limit travel to small areas, avoid fragile terrain, and document wildlife observations. All waste will be collected and returned to Gascoyne Inlet Camp, and fuels will be stored and handled in accordance with CIRNAC guidelines, with spill response equipment available.

Identification of Impacts and Proposed Mitigation Measures

The project is expected to result in minor, short-term, and site-specific impacts. Potential negative but mitigable (M) impacts include temporary disturbance to wildlife from helicopter overflights, vessel noise, and human presence; localized vegetation disturbance from foot traffic; and low risk of fuel handling incidents at Gascoyne Inlet Camp. Socioeconomic impacts are minimal, with no anticipated disruption to community activities, though there is low potential to encounter undocumented cultural sites.

Cumulative Effects

The project will contribute minimally to cumulative effects in the region. Activities are short-term, localized, and of low intensity, and will occur within an area that has experienced intermittent research and logistical use over several decades. When considered alongside past, present, and foreseeable activities (e.g., research programs, limited vessel traffic), incremental effects are negligible. Existing mitigation measures further reduce the potential for additive impacts on wildlife, habitats, and cultural resources.

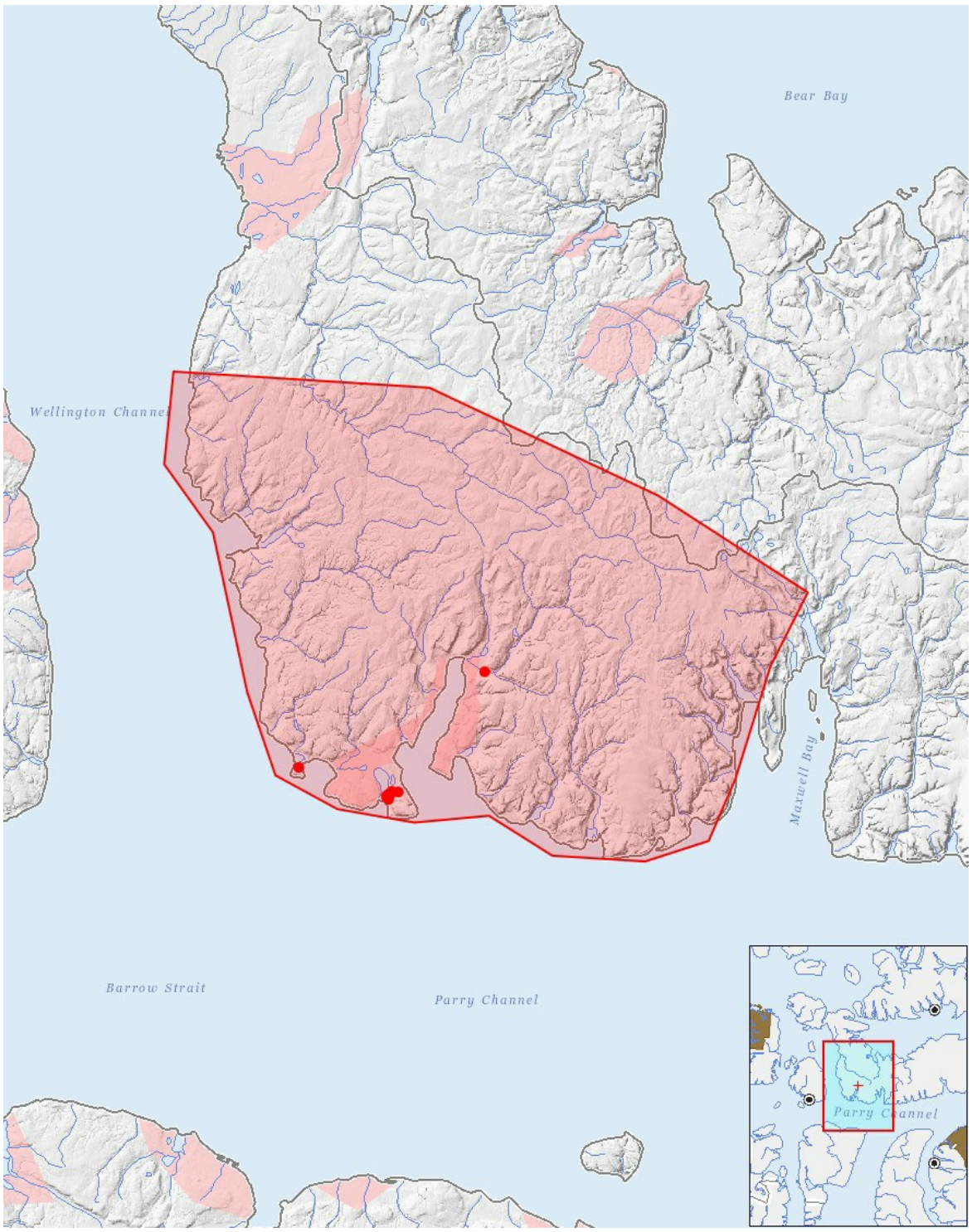
Impacts

Identification of Environmental Impacts

	PHYSICAL	Designated environmental areas	Ground stability	Permafrost	Hydrology / Limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health
Construction																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
Operation																									
Camp		-	M	M	-	M	-	M	M	M	-	M	M		M	M	M	M	-		-	-	-	-	M
Researching		-	M	M	-	M	-	M	M	M	M	M	M		M	M	M	M	M		M	P	-	-	M
Decommissioning																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

1	polygon	Gascoyne_Quaternary_AOI
2	point	Gascoyne Inlet Camp
3	point	Beechey Island
4	point	GIC-Wedge 1
5	point	GIC-Wedge 2
6	point	GIC-Wedge3
7	point	GIC-Wedge4
8	point	GIC-Wedge5
9	point	GIC-Wedge6
10	point	GIC-Wedge7

11	point	GIC-Wedge8
12	point	Wedge terrace