



NIRB Application for Screening #126478

ICENAV

Application Type:	New
Project Type:	Scientific Research
Application Date:	Tuesday, July 28, 2026
Period of operation:	from 2026-08-20 to 2028-08-30
Project Proponent:	José Lagunas 2459 Rte de la Bravoure Québec QC G3J 1X5 Canada Phone Number:: +1 418 844 4000 ext. 4506 , Fax Number::

DETAILS

Non-technical project proposal description

- English: IceNAV is a government-led research project to improve the efficiency and safety of maritime navigation in ice-covered waters and to reduce the reliance on manned helicopter flights for ice reconnaissance. IceNAV is being conducted for the Royal Canadian Navy and Canadian Coast Guard through and is supported by various government departments. IceNAV research is being conducted from the CCGS Henry Larsen icebreaker as part of the normal Arctic resupply and icebreaking program during the late summer and early fall. The science team includes researchers from Defence Research and Development Canada (DRDC), the National Research Council of Canada (NRC), Environment and Climate Change Canada (ECCC), the Canadian Ice Service (CIS), NASA's Surface Water and Ocean Topography (SWOT) satellite program, and NATO's Centre for Maritime and Experimentation (CMRE) with support from the Canadian Coast Guard (CCG). The planned research focuses on measuring and understanding the properties of floating sea and glacial ice using sensors mounted on a ship, on a drone launched and recovered from the ship, on satellites, and on a small underwater autonomous vehicle. Sensors are used to passively measure the ice conditions around the vessel during transit operations. Additionally, the science team will disembark from the ship onto sea ice floes to manually retrieve and measure sea ice characteristics. Manual measurements include extracting sea ice cores, collecting samples of sea ice for mechanical testing, performing temperature and salinity measurements of the water near and under the targeted ice floes, and measuring ice thickness profiles using specialized sensors and subsea acoustics. The manual measurements are used to calibrate the data gathered by sensors. The research will take place in the regions surrounding the Northwest Passage intersection, including Lancaster Sound, Parry Channel, Peel Sound, M'Clintock Channel and Prince Regent Inlet, between August 20 and August 30. The science team will specifically target large, stable ice floes for manual measurements and will passively record all sea ice conditions along the voyage route. The ship may venture outside of this region to find suitable ice depending on local conditions at the time of sailing. The research will focus on drifting pack ice in navigable waterways.
- French: IceNAV est un projet de recherche dirigé par le gouvernement visant à améliorer l'efficacité et la sécurité de la navigation maritime dans les eaux couvertes de glace, tout en réduisant la dépendance aux vols de reconnaissance des glaces effectués par hélicoptères avec équipage. Le projet est mené au bénéfice de la Marine royale canadienne et de la Garde côtière canadienne, avec l'appui de plusieurs ministères et organismes gouvernementaux. Les travaux de recherche sont réalisés à bord du brise-glace NGCC Henry Larsen dans le cadre des opérations régulières de ravitaillement de l'Arctique et de déglacage menées à la fin de l'été et au début de l'automne. L'équipe scientifique regroupe des chercheurs de Recherche et développement pour la défense Canada (RDDC), du Conseil national de recherches du Canada (CNRC), d'Environnement et Changement climatique Canada (ECCC), du Service canadien des glaces (SCG), du programme satellitaire Surface Water and Ocean Topography (SWOT) de la NASA, ainsi que du Centre de recherche et d'expérimentation maritimes (CMRE) de l'OTAN, avec le soutien de la Garde côtière canadienne (GCC). Les activités de recherche prévues portent sur la mesure et la caractérisation des propriétés de la glace de mer et de la glace d'origine glaciaire flottantes au moyen de capteurs installés à bord d'un navire, sur un drone déployé et récupéré depuis le navire, sur des satellites, ainsi que sur un petit véhicule sous-marin autonome. Ces capteurs sont utilisés pour effectuer des observations passives des conditions de glace autour du navire pendant les opérations de transit. En complément, l'équipe scientifique débarquera sur des floes de glace de mer afin de réaliser des mesures in situ et de recueillir des données de référence sur les caractéristiques de la glace. Les mesures manuelles comprendront le prélèvement de carottes de glace de mer, la collecte d'échantillons destinés à des essais mécaniques, la mesure de la température et de la salinité de l'eau à proximité et sous les floes ciblés, ainsi que la détermination des profils d'épaisseur de glace au moyen de capteurs spécialisés et de techniques acoustiques sous-marines. Ces mesures de terrain serviront à l'étalonnage et à la validation des données acquises par les différents capteurs. Les travaux de recherche se dérouleront dans les régions entourant le carrefour du passage du Nord-Ouest, notamment dans le détroit de Lancaster, le chenal Parry, le détroit de Peel, le chenal M'Clintock et l'inlet du Prince-Régent, entre le 20 août et le 30 août. L'équipe scientifique ciblera principalement de grands floes stables pour la réalisation des mesures manuelles et enregistrera de façon passive les conditions de glace de mer rencontrées le long de l'itinéraire du navire. Selon les conditions locales observées au moment de la mission, le navire pourrait s'écarter de cette zone afin de repérer des

Inuktitut:

Inuinnaqtun:

IceNAV kavamatkut-hiviliqtuqtat qauyihaiyit havaaghat ihuaqhaalliutighat kayumingniinik ihuaqniinik amirnaiyautaitlu taryuqmi ikaaqtunik hikulingmik imaqmi naahurihuiqpalliayaamiklu inulingnik halikaaptanik hikuhiuqtunik. IceNAV havaanguliqtuq Royal Canadian Navy-mit Kanatamilu Taryuqmi Annaktit taja ikayuqtiqaqhutiklu qaffinit kavamatkut havakviinit. IceNAV qauyihaiyit taja havaanguyuuq CCGS Henry Larsen hikuhiutanik ilauplutik utiqtaqtumik Ukiuqtaqtumi agyaqtaqtut hikuhiutillu havaanginnik ukiaghannguqtinnagu ukiaghalihaaamilu. Qauyihaiyit havaqatigiingnut ilauyut talvanngat Anguniaqtiit Qauyihaiyit Hanavalliyallu Kanatami (DRDC), Kanatami Qauyihaiyit Katimayit Kanatami (NRC), Avatiliqiyit Hila Aallannguqpalliyumilu Kanata (ECCC), Kanatami Hikiuqtit Ikayuqtiit (CIS), NASA-kut Qaanganit Immap Taryuplu Qauyihaiyit (SWOT) qilannngmiittukkut ikayuutait, taapkualu NATO-kut Havakviat Taryuqmiutanik Qauyihaiyit (CMRE) ikayuqtiqaqhutik Kantami Taryuqmi Annaktinik (CCG). Parnaiyaqtauhimayuuq qauyihaiyaghat ihumalluaqpaktut qauyihainiq ilihimattiarniqlu hunaqutait puktallaaqtut taryuqmi piqaluyailu atuqhutik qauyihautinik nappaqtitauhimayut umiaqnit, tingmiannguakut aullaqtitauhimayuuq piyauvaghunilu umiaqmit, qilangmiutakut, talvuunalu mikiyukkut kivitaqtumik ilikkuuqtuq ingnqutik. Qauhitit atuqtauvaqtut qauyihariamik hikum qanurininganit umiap avatiinit ingilratillutik. Ahiagullu, qauyihaiyit havaqatigiit atqaqtirahuat umiaqmit taryum hikuanut tiguhiyaamik qauyihaiyaamik taryum hikuanik. Qauyihainahuat ikuutaqpangniat qitqanit taryum hikuanik, katitirilutik qimilruktaghat taryum hikuanit ingilrutikkut qauyihagtauuyughat, niklaumanianik taryuqarniiniklu uukturiamik imaqmit qanilrungmit ataanillu kitukiat piqaluyait, hilingnianiklu qauyihaiyaamik atuqhutik ahiittunik qauyihautinik naalautiniklu. Qauyihaiyut uukuutikkut atuqtauvangnait ilauyaamik naunaitkutainik piyauhimayut qauyihautinit. Qauyihaiyut havakpangniat aviktughimayuni avatiinit Northwest Ikaaqvaiit paaqhvianit, talvaniilu Lancaster Sound, Parry Ikirahaat, Peel Sound, M'Clintock Ikirahaat talvanilu Prince Regent Kangiqhuanit, akunnngani Niqiliqivik 20, Niqiliqivik 30-lu. Qauyihaiyit havaktiit qiniqpangniat angitqiyaniq, iluittunik piqaluyangnik hanaqiplutik qauyihaiyaamik nipiliuqniaqtullu tamangnik taryum hikua qanurininganiinik talvani ingilravianit. Umiag ahikkuuqpangniag aviktughimayumit nalvaaghiuriamik hikumik ihumaqipluqu hila

ikaaqtillutik. Qauyihaiyit ihumagilluaqniaqtaat piqaluyait ikaaqaqtunit umiaqtuqvingnit.

Personnel

Personnel on site: 13

Days on site: 10

Total Person days: 130

Operations Phase: from 2026-08-20 to 2028-08-30

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Sampling region III	Scientific/International Polar Year Research	Marine	The channel is heavily choked with old, multi-year pack ice for most of the year, making ship navigation very difficult.	N/A (Marine area)	This area is close to the community of Cambridge Bay. There are no National Parks nor marine protected areas in proximity.
Sampling region II	Scientific/International Polar Year Research	Marine	Serves as as the primary central route of the historic Northwest Passage.	N/A (Marine area)	This area is close to the community of Resolute Bay. It is in proximity Qausuittuq National Park. No marine protected areas in proximity.
Sampling region I	Scientific/International Polar Year Research	Marine	Ice flowing from the Queen Elizabeth Islands consists of multi-year sea ice and glacial discharge moving through inter-island channels into McClintock and Parry Channels.	N/A (Marine area)	This area is close to the community of Resolute Bay. It is in proximity Qausuittuq National Park. No marine protected areas in proximity.

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Cambridge Bay	Sandi Gillis	Qillaq Innovations	2025-06-15
Resolute Bay	Ian Dudla	Senior Administrative Officer	2026-07-23
Resolute Bay	Mark Amarualik , Nancy Amarualik	Resolute Bay Hunters and Trappers Organization	2026-07-23
Cambridge Bay	Jim MacEachern	Senior Administrative Officer	2026-07-23
Cambridge Bay	Peter Evalik	Ekaluktutiak Hunters and Trappers Organization	2026-07-23
Cambridge Bay	Beverly Maksagak	Ekaluktutiak Hunters and	2026-07-23

Authorizations

Indicate the areas in which the project is located:

Kitikmeot
North Baffin

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Planning Commission	The NPC has completed its review of the above noted project proposal. It conforms to the North Baffin Regional Land Use Plan (NBRLUP). The proponent has undertaken to comply with the applicable conformity requirements of Appendic C, H and I. See NPC letter attached in project documents	Active	2026-06-11	
Nunavut Research Institute	Scientific Research Licence from the Nunavut Research Institute (NRI)	Applied, Decision Pending		
Hunters and Trappers Associations/Organizations	Consultation with the HTOs from Cambridge Bay and Resolute Bay has been requested.	Applied, Decision Pending		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	CCGS Helicopter for reconnaissance	
Water	CCGS Henry Larsen	

Project accomodation types

Other,

Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
CCG Helicopter	1	12x10x3 [m]	Launched from CCGS Henry Larsen for ice-survey operations
FLIR Skyraanger drone	1	.45x.8.1.35 [m]	Drone to be used in sea-ice survey
DJI Matrice 350	1	.8x.7x.4 [m]	Drone to be used in sea-ice survey
CCGS Henry Larsen	1	100x20x7.2 [m]	Transportation

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Li-ion	hazardous	0	2.7	0	Kg	Drone batteries
Mix for Coring powerhead	fuel	0	4	0	Liters	Sea-ice coring powerhead
Diesel	fuel	1	220	220	Cubic Meters	CCGS Henry Larsen - the project will rely exclusively on fuel carried onboard the vessel.
Aviation fuel	fuel	1	1200	1200	Liters	CCG Helicopter - the project will rely exclusively on fuel carried onboard the vessel.

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
Scientific/International Polar Year Research	Other, CCG waste disposal policy	N/A	Canadian Coast Guard vessels operating in the Arctic comply with the Arctic Waters Pollution Prevention Act, the Arctic Shipping Safety and Pollution Prevention Regulations, the Canada Shipping Act, 2001, and associated federal environmental management procedures. Under these authorities, ship-generated garbage, oily waste, hazardous waste, and most wastewater are retained, treated, or landed at approved facilities rather than discharged into Arctic waters.	The CCG has invested in advanced wastewater-treatment systems to reduce environmental impacts from ship operations. According to a 2023 Coast Guard announcement, residual waste from the new wastewater treatment systems is retained in onboard tanks and disposed of in environmentally responsible ways.

Environmental Impacts:

For the full analysis of the environmental impacts of the ICENAV project (risks and mitigation), please refer to the attached document: ICENAV_risk_mitigation.pdf

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

please refer to technical scientific description of the project in the attached documents

SECTION H2: Disposal At Sea

Canadian Coast Guard vessels operating in the Arctic comply with the Arctic Waters Pollution Prevention Act, the Arctic Shipping Safety and Pollution Prevention Regulations, the Canada Shipping Act, 2001, and associated federal environmental management procedures. Under these authorities, ship-generated garbage, oily waste, hazardous waste, and most wastewater are retained, treated, or landed at approved facilities rather than discharged into Arctic waters.

SECTION I1: Municipal Development

Description of Existing Environment: Physical Environment

The study area encompasses the eastern portion of Bathurst Island, Central Parry Channel, and M'Clintock Channel within the Canadian Arctic Archipelago. This region forms part of the northern route of the Northwest Passage and is characterized by a polar desert climate, extensive seasonal sea ice, deep marine channels, and relatively low levels of human activity. Parry Channel serves as one of the principal east-west marine corridors in the Canadian Arctic and is used seasonally by Canadian Coast Guard vessels, research ships, government vessels, expedition cruise ships, and occasional commercial transits. Late August coincides with the annual sea-ice minimum, when ice concentrations are typically at their lowest. Conditions generally include areas of open water interspersed with first-year ice, remnant multi-year ice floes, pressure ridges, and mobile ice features. While navigation conditions are generally most favourable during this period, sea ice remains highly variable and can present operational challenges due to the presence and movement of multi-year ice throughout the region. The marine environment supports a diverse array of Arctic wildlife and includes important migration corridors and feeding habitats for narwhal, beluga, bowhead whale, ringed seal, bearded seal, walrus, and polar bear. M'Clintock Channel supports a recognized polar bear subpopulation, while recurrent polynyas, leads, and ice-edge habitats serve as biologically productive areas that attract marine mammals, seabirds, and fish. Migratory birds, including eiders, Arctic terns, fulmars, murres, and gulls, use the region extensively during the summer and early autumn. Bathymetry within the study area is characterized by deep channels and basins separated by shallower coastal shelves and submarine ridges. These features influence ocean circulation, sea-ice movement, and habitat distribution. Oceanographic conditions are driven by semidiurnal tides, localized tidal currents, wind forcing, and seasonal freshwater inputs from melting snow and ice. The interaction of these processes with sea ice contributes to a dynamic marine environment. Ambient underwater noise levels are generally low compared to southern marine environments and are dominated by natural sources such as sea-ice movement, ice fracturing, wind, waves, and marine mammal vocalizations. Anthropogenic noise is primarily associated with seasonal vessel traffic, including icebreaking operations. When present, icebreakers are typically the dominant source of underwater noise, generating broadband low-frequency sound capable of propagating over considerable distances under Arctic conditions. Overall, the region remains one of the least acoustically disturbed marine environments in Canada due to its remoteness and relatively low vessel traffic.

Description of Existing Environment: Biological Environment

The biological environment of the Central Parry Channel, M'Clintock Channel, and eastern Bathurst Island region is characteristic of the High Arctic, supporting relatively low biodiversity but highly productive seasonal ecosystems that are closely linked to sea-ice dynamics. Biological activity is concentrated during the short summer open-water period and around recurring polynyas, leads, and ice-edge habitats that provide important feeding and migration areas for marine species. Vegetation is sparse and typical of Arctic tundra and polar desert environments. Plant communities are generally limited to mosses, lichens, sedges, grasses, and low-growing flowering plants that occur in sheltered valleys, moist depressions, and coastal areas. Vegetation cover is patchy and constrained by low temperatures, limited precipitation, and a short growing season. The region supports important populations of migratory birds during the summer months, including northern fulmar, black-legged kittiwake, thick-billed murre, Arctic tern, glaucous gull, snow goose, king eider, and common eider. Coastal areas, islands, cliffs, and wetlands provide nesting, staging, and feeding habitat. Bird abundance peaks during the breeding season and southward migration in late summer and early autumn. Marine ecosystems are dominated by ice-associated species. Key aquatic resources include Arctic cod, a critical forage species linking lower trophic levels to marine mammals and seabirds, as well as Arctic char in nearshore waters and a variety of benthic invertebrates including crustaceans, molluscs, polychaetes, and echinoderms. Marine productivity is enhanced in areas of open water and seasonal ice margins where phytoplankton and zooplankton production is concentrated. The study area forms part of important migration and movement corridors for marine mammals including narwhal, beluga whale, bowhead whale, ringed seal, bearded seal, and walrus. Seasonal movements are strongly influenced by sea-ice conditions, with marine mammals using leads, polynyas, and ice-edge habitats for migration, feeding, breeding, and access to overwintering areas. Polar bears are widely distributed throughout the region and depend on sea ice as a platform for hunting seals and seasonal movements. Several Species at Risk may occur within the area. These include the Bowhead Whale (*Balaena mysticetus*), Narwhal (*Monodon monoceros*), Peary Caribou (*Rangifer tarandus pearyi*), Ivory Gull (*Pagophila eburnea*), and several populations of Polar Bear (*Ursus maritimus*). Critical habitats for these species are associated with sea-ice environments, marine migration corridors, coastal nesting areas, and Arctic tundra habitats. Consequently, biologically sensitive areas within the region include polynyas, recurring leads, seabird nesting sites, marine mammal migration routes, and important polar bear and Peary caribou habitat. Overall, the biological environment is characterized by seasonal productivity, strong dependence on sea-ice processes, and the presence of ecologically and culturally important wildlife species that are adapted to one of the most extreme environments in Canada.

Description of Existing Environment: Socio-economic Environment

The socioeconomic environment of the Central Parry Channel, M'Clintock Channel, and eastern Bathurst Island region is characterized by a very low permanent human presence, limited infrastructure, and seasonal use associated with community harvesting, scientific research, government operations, and Arctic tourism. The study area is remote from permanent communities; the nearest communities include Resolute (Qausuittuq), approximately 250 km east of eastern Bathurst Island, and Gjoa Haven, Taloyoak, and Cambridge Bay farther to the south and southwest. These communities maintain cultural, subsistence, and travel connections to portions of the broader region. The area contains numerous archaeological and culturally significant sites associated with Inuit land use and travel, as well as historic European exploration routes related to the search for the Northwest Passage and the Franklin Expedition. Cultural heritage resources may occur along coastlines, former campsites, travel corridors, and hunting areas, and may not always be formally documented. Land and resource use is primarily associated with Inuit traditional activities, including harvesting of marine mammals, polar bear, caribou, fish, and migratory birds. Seasonal harvesting occurs throughout the broader region, particularly along marine travel routes, sea-ice corridors, coastal areas, and biologically productive polynyas. Commercial resource development is limited, and no major industrial activities occur within the immediate study area. Tourism activity is generally low but has increased in recent years due to expedition cruise vessels, adventure tourism, and visits associated with Arctic wildlife viewing and historical sites. Local guiding and outfitting activities occur periodically and may support hunting, cultural tourism, and wildlife observation. Marine traffic is highly seasonal and concentrated during the late summer open-water period. Vessel movements primarily consist of Canadian Coast Guard operations, government and defence vessels, scientific research vessels, expedition cruise ships, community resupply traffic, and occasional commercial transits through the Northwest Passage. Overall vessel density remains low relative to southern Canadian waters. Human health considerations in the region are largely related to the remote operating environment. Risks include limited access to emergency services, challenging weather and sea-ice conditions, long medical evacuation times, and potential encounters with wildlife such as polar bears. Community health and well-being are closely tied to the continued availability of traditional harvesting resources and the protection of culturally important marine and terrestrial environments. Overall, the socioeconomic environment is defined by its remoteness,

cultural importance to Inuit communities, reliance on traditional land and marine resource use, limited seasonal tourism and shipping activity, and strong connections between environmental conditions and community well-being.

Miscellaneous Project Information

For a Wildlife Interaction Protocol and a spill prevention and response plan for the ICENAV project, please refer to Annex A and Annex B of the attached document: ICENAV_risk_mitigation.pdf

Identification of Impacts and Proposed Mitigation Measures

For the full analysis of the environmental impacts of the ICENAV project (risks and mitigation), please refer to the attached document: ICENAV_risk_mitigation.pdf

Cumulative Effects

The area of operations chosen for the ICENAV project is already subject to seasonal vessel traffic, scientific research, marine monitoring programs, and government operations. Existing and reasonably foreseeable activities in the region include Canadian Coast Guard operations, Arctic shipping through portions of the Northwest Passage, scientific surveys, environmental monitoring programs, community resupply voyages, defence-related activities, and expedition tourism. In a regional context, the ice characterization activity would be short in duration, localized in extent, and non-intrusive in nature. The activity would primarily involve the collection of sea-ice observations and measurements to support navigation safety and operational planning. As a result, interactions with other past, present, and foreseeable projects are expected to be limited and primarily cumulative in relation to vessel presence and associated noise. The activity would not result in habitat alteration, resource extraction, long-term infrastructure development, or permanent changes to the physical environment. Potential cumulative effects may include minor and temporary increases in vessel traffic, underwater noise, and wildlife disturbance when combined with other marine operations occurring during the late summer navigation season. However, these effects are expected to be negligible at the regional scale given the low intensity and short duration of the activity, the relatively low level of overall marine traffic in the area, and the large spatial extent of available wildlife habitat. The activity is not expected to adversely affect Indigenous land use, harvesting activities, cultural resources, tourism operations, or access to marine resources. By improving situational awareness of sea-ice conditions, the activity may contribute positively to navigational safety and support the safe conduct of scientific, government, and marine transportation activities within the broader region. Overall, considering the limited footprint of the proposed activity and the low level of concurrent development in the High Arctic, interactions with the effects of past, present, and reasonably foreseeable projects are expected to be minor, temporary, and not significant at the regional scale.

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																									
Scientific/International Polar Year Research		-	-	-	-	-	-	-	-	-	-	-	-	M	-	-	M	M	-	-	-	P	-	P	-
Decommissioning																									
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Project Location



List of Project Geometries

1	polyline	Sampling region I
2	polyline	Sampling region II
3	polyline	Sampling region III