



NIRB Application for Screening #125425

UnderSea Fibre Optic Cable Installation

Application Type: New

Project Type: Infrastructure

Application Date: 12/3/2018 4:37:00 PM

Period of operation: from 0001-01-01 to 0001-01-01

Proposed Authorization: from 0001-01-01 to 0001-01-01

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DETAILS

Non-technical project proposal description

English: The Department of Community and Government Services, Government of Nunavut is proposing the Undersea Fibre Optic Cable Installation Linking Greenland, Nunavut and Quebec Project. The Project will construct a submarine fiber optic system connecting Iqaluit, Kimmirut and Cape Dorset with an international connection to Nuuk, Greenland. The installation will include the future capability to connect to northern Baffin Island and the Kivalliq region. An additional component of the Project proposes to install fibre optic cable from Sanikiluaq to a similar fibre project to be installed by the Kativik Regional Government in Nunavik, Quebec. The scope of the Project comprises the submarine infrastructure and cable landing infrastructure and includes the construction, operation, maintenance, decommissioning and abandonment of a fibre optic cable system. Approximately 2,400km of fibre optic cable will be installed including all submarine and cable-landing infrastructure, the fibre optical cable, powered repeaters, and line terminating equipment, power-feeding equipment and monitoring equipment. Based on the current timeline, the Project will begin construction in the summer of 2019 for some of the terrestrial components and install the marine cable infrastructure during the open water season of 2020. It is expected that the project in-service operation will begin in the first quarter of 2021. The life expectancy of the system is expected to be over 25 years. For the marine operations, different classes of vessel and equipment may be required. The vessels are usually mid-sized and are commonly used in Canadian waters. The cable is installed using a cables ship which will operate during the open water during the August-September 2020 installation window. Depending on the operations to be undertaken, the crew of the cables ship will consist of approximately 40 to 80 personnel including the master, chief mate, chief engineer and medically trained personnel. Staff scheduling will plan for work to be carried out continuously over a 24-hour per day basis for the offshore activities. Marine and habitat observers will be on board to ensure there is no interference with fisheries or mammals. In addition, 2 or more, shallow draft vessels or barges may be required for shore-end cable installation at landing sites. The type of vessel to be used will depend on the installation methodology, which will be determined based on the results of the marine survey. On the terrestrial side, the installation of the cable at the landing sites and to the cable station will require heavy machinery. Horizontal Directional Drilling may be required to provide a trenchless method of installing the cable from shore to off-shore. For the shore-landing component, a concrete vault known as a Beach Manhole will be constructed approximately 10 to 30 m inland from the mean high water tide level. A winch of sufficient strength is securely anchored on the beach adjacent to the location of the manhole. Where a traditional landing is possible, a trench is excavated during low tide to a depth of approximately 2 to 3 m from the manhole over the exposed beach to the low tide mark. The cable is then pulled from the cables ship with floats identifying its location in the water. A small boat or divers are then used to place the cable on the seabed and beach trench. Once in place, the beach trench is backfilled to the original elevation. Cable burial to 1 to 3 m on the beach is performed with an excavator and limited to the depth of loose sediment over underlying rock. If required, horizontal directional drilling will be undertaken to connect the marine cable to the manhole. The cable installation contractor will place terrestrial markers at each landing site to remind residents and boaters of the presence of the cable. Once buried, the land in the right-of-way for the cable route will be restored to its previous condition. Human resources required for project construction are highly skilled and specialized. For the most part, workers will be existing employees of the contractors retained for project construction. Contracting opportunities exist for the supply of various materials and equipment, fuel, materials storage and inspection services. Local contractors and residents would be hired to build and install the beach manholes and backhaul tie-ins.

French: Le ministère des Services communautaires et gouvernementaux du Nunavut propose le projet d'installation de câbles à fibres optiques sous-marins entre le Groenland, le Nunavut et le Québec (Undersea Fibre Optic Cable Installation Linking Greenland, Nunavut and Quebec). Ce projet vise la construction d'un réseau sous-marin à fibres optiques reliant Iqaluit, Kimmirut et Cape Dorset à une connexion internationale avec Nuuk, au Groenland. L'installation serait prévue pour une connexion future avec la région du Kivalliq et le nord de l'île de Baffin. De plus, un câble à fibres optiques serait installé à partir de Sanikiluaq pour se connecter à celui d'un projet similaire de l'Administration régionale Kativik du Nunavik, au Québec. Le projet comprendrait l'infrastructure sous-marine, l'infrastructure d'atterrissage des câbles ainsi que la construction, l'exploitation, l'entretien, la mise hors service et l'abandon d'un réseau de câbles à fibres optiques. Seraient installés environ 2 400 km de câble à fibres optiques, toute l'infrastructure sous-marine et d'atterrissage, les répéteurs alimentés, les terminateurs de ligne, l'équipement d'alimentation et l'équipement de surveillance. Selon l'échéancier actuel, la construction d'une partie des éléments terrestres débiterait à l'été 2019, et l'installation de l'infrastructure sous-marine, pendant la saison des eaux libres de 2020. La mise en service serait prévue pour le premier trimestre de 2021, et le réseau demeurerait en service pendant plus de 25 ans. Pour les activités sous-marines, différents types d'embarcations et d'équipement seraient probablement nécessaires. En général, des embarcations de taille moyenne couramment employées dans les eaux canadiennes seraient utilisées. Un navire câblé servirait à installer les câbles pendant la saison des eaux libres, en août et en septembre 2020. Selon les activités, environ 40 à 80 personnes travailleraient sur le navire câblé, y compris le capitaine, le second-capitaine, le chef mécanicien et le personnel médical.

[illegible]

Post-Closure Phase: from to

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
SAN Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	NA
CAP Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	NA
KIM Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	N/A
IQA Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	N/A
CAP Trunk Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	N/A
Nuuk Trunk Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	N/A
KIM Trunk Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	N/A
CAP Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	N/A
Nuuk Trunk Segment	Equipment installation	Marine	N/A Multi beams scans shows nothing of interest	N/A Multi beams scans shows nothing of interest	N/A
Cape Dorset Landing	Equipment installation	Inuit Owned Surface Lands	The site investigation in Cape Dorset was conducted on September 24, 2016. The preferred site is located east of the hamlet in an open and flat area and was selected as it has the best potential for a conventional cable burial installation.	None identified	None Identified

Cape Dorset Landing	Equipment installation	Inuit Owned Surface Lands	NA	NA	NA
Sanikiluaq Landing Site	Equipment installation	Commissioners	NA	NA	NA
Kimmirut Landing	Equipment installation	Commissioners	NA	NA	NA
Iqaluit Landing	Equipment installation	Commissioners	NA	unknown	NA
Nuuk Landing	Equipment installation	Private	NA	NA	NA

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Iqaluit	Allain, Erik; McCaie, Tracey ; Hack, Justin; Dewar, Spencer; Rochette, David	Crown-Indigenous Relations and Northern Affairs Canada	2018-09-18
Iqaluit	Flsherty, Harry; Nimchuck, Sheldon;	Qikiqtaaluk Business Development Corporation	2018-10-26
Iqaluit	Uniuqsaraq, Hanna	Nunavut Tunngavik Incorporated	2018-10-26
Cape Dorset	D'Orazio, Rosanne; Fortier, Joel	Qikiqtani Inuit Association (QIA)	2018-11-21
Iqaluit	NA	City of Iqaluit, NTI, Government of Nunavut (CIO, Director of Planning, Comms/Policy, Project Manager, Economic Department of Transport and Telecom), Hunter & Trapper Association.	2016-09-23
Iqaluit	Calvery, Ryan	Industry Canada - Submarine Cable Licence	2018-09-12

Authorizations

Indicate the areas in which the project is located:

Transboundary
South Baffin

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Qikiqtani Inuit Association	IOL landing site for the fibre system in Cape DorsetOngoing	Not Yet Applied		
Government of Nunavut, Qulliq Energy Corporation	Backhaul Subsection extension in Sanikiluaq and Cape Dorset	Not Yet Applied		
Industry Canada	International Submarine Cable Licence - awaiting NIRB / EA	Not Yet Applied		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	Specialised worker will be flown in; some light material could also be aircargo.	
Water	THE cable installation uses cablesheets; Some material will be sealifted.	
Land	Personnel movements to site.	

Project accomodation types

Community

Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Trucks / SUV	2	small	Personnel movements to site.
Bucket Truck	2	large	Carrying dirt / excavated material
Horizontal Directional Drill Boring Machine	1	medium	at this time we have not confirmed the need to use HDD construction methods and this will not be known until the project is awarded to a supplier and that supplier finalizes the project installation plan and design.
Trencher	1	Medium	This equipment will be used to bury the Terrestrial cable at a depth of 1.5m for a short distance from the BMH to a point yet to be determined, at which point the buried cable transitions to aerial.

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Information is not available						

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:

Known impact were documented in the project description within the impacted area if any.

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 location at Apex is the preferred site. The site is southeast of the main town, along reasonable gravel/old paved roads and avoid sealift and other vessel anchorages. (see figure 5 in the Project Description document) The landing site has an extensive tidal flat, comprised of coarse sand and cobbles. Granite rock outcrops are seen either side of the beach, indicating that rock might sit under the sediment, within the burial depth. Permafrost sits at about 2m depth. Kimmirut's site visits were conducted on September 23, 2016. The proposed landing site is on a beach situated at the head of Glasgow Bay. The site has limitations from a landing perspective due to the short distance between low water and the road (~50m). The beach has extensive granite outcrop with a thin cobbly/gravelly sediment cover in places. There is a shoal off the beach, which then drops off quite quickly. Cape Dorset's landing site investigation was conducted on September 24, 2016 and three potential sites were reviewed. The preferred site is located east of the hamlet and was selected as it has the best potential for a conventional burial operation. (Refer to Figure 8: Cape Dorset Landing Site of the Project Description document) Sealift vessels and barges come in near the hamlet and small vessels anchor diffusely and moor to buoys in the bay. Fuel barges anchor closer to the tank farm, which is east of the hamlet. Fishing and harvesting are subsistence only, with no bottom trawling. Sea ice will affect the landing. The beach has a low gradient, and is comprised of coarse sand and cobbles, with rock outcrop either side of the beach. There appears to be good sediment cover, which is likely a result of the protected nature of the small cove in which it sits. There is a children's playground above the beach and a picnic area. The Sanikiluaq sites investigation was conducted on October 1, 2016. Two potential sites were identified from satellite imagery and the preferred site situated closest to the Hamlet was selected during the site visit. The site visits were limited to the west portion of the island but had to be relatively close to town due to the hostile terrain for backhaul. There is a small marina/harbor area. Sealift barges, fuel supply and other vessels anchor inside the enclosed bay north of the town and sealift. Scallop fishing occurs on the northeast portion of the island, to an estimated water depth of 50m and clam digging occurs on the west coast beaches. Fishing occurs to the northeast tip of the island. The west coast is considered the safest area from a cable protection standpoint due to these fishing and shipping activities. The rock types in this area are basalt, greywacke and veins of quartz and iron rich material. Underwater cliffs are reported related to the general rock structure of north-south aligned ridges.

Description of Existing Environment: Biological Environment

Unknown

Description of Existing Environment: Socio-economic Environment

Nunavut is the only jurisdiction in Canada that does not have a fibre optic backbone. The territory is 100% satellite dependent. Connectivity and bandwidth issues continue to negatively affect the delivery of services within GN departments and in communities across the territory. The current landscape of telecommunications in Nunavut means that network capacity is costly, service quality is low and the GN has little influence on pricing and availability. The Undersea Fibre Optic Cable Installation project will address these significant concerns.

Miscellaneous Project Information

Identification of Impacts and Proposed Mitigation Measures

Cumulative Effects

Impacts

Identification of Environmental Impacts

	P H Y S I C A L															B I O L O G I C A L															S O C I O - E C O N O M I C				
	Designated environmental areas															Vegetation															Archaeological and cultural historic sites				
	Ground stability															Wildlife, including habitat and migration patterns															Employment				
	Permafrost															Birds, including habitat and migration patterns															Community wellness				
	Hydrology / Limnology															Aquatic species, incl. habitat and migration/spawning															Community infrastructure				
	Water quality															Wildlife protected areas															Human health				
	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																																		
	Vegetation																																		
	Wildlife, including habitat and migration patterns																																		
	Birds, including habitat and migration patterns																																		
	Aquatic species, incl. habitat and migration/spawning																																		
	Wildlife protected areas																																		
	S O C I O - E C O N O M I C																																		
	Archaeological and cultural historic sites																																		
	Employment																																		
	Community wellness																																		
	Community infrastructure																																		
	Human health																																		
Construction																																			
Equipment installation		N	U	U	-	N	-	-	-	-	-	-	-		U	U	U	N	U		U	-	-	-	-										
Operation																																			
Equipment installation		-	-	N	-	-	-	-	-	-	-	-	-		-	N	-	N	-		P	-	-	-	-										
Decommissioning																																			
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-										

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

Project Location



List of Project Geometries

1	polyline	SAN Segment
2	polyline	CAP Segment
3	polyline	Cape Dorset Landing
4	polyline	KIM Segment
5	polyline	IQA Segment
6	polyline	CAP Trunk Segment
7	polyline	Nuuk Trunk Segment
8	polyline	KIM Trunk Segment
9	point	Sanikiluaq Landing Site
10	point	Cape Dorset Landing
11	point	CAP Segment
12	point	Kimmirut Landing

13	point	Iqaluit Landing
14	point	Nuuk Landing
15	point	Nuuk Trunk Segment