EMRIRB/NMRIRB Information Request:

Keewaytinook Okimakanak Bathymetric Marine Fibre Optic Cable Survey

Response July 28, 2023

1. Project Description	The project description should include a description of what the activities are for the project. Revise the description to briefly mention how the equipment will be used in the survey, mention there are no new landings being built in Whapmagoostui/Kuujjuarapik, and that it will link to the existing KRG Marine Fibre. Please keep in mind that the project summary is intended to provide members of the public with sufficient information to understand what is being proposed and determine whether they might wish to further review the full project application and supporting information.	Applicable to EMRIRB. On the NMRIRB application the proponent has 4 activities (marine based) that correspond to the geometry (landing sites and proposed survey route)
Response		
	Updated : Details Section Keewaytinook Okimakanak has contracted Seaforth Geological Surveys and the Arctic Research Foundation's vessel the William Kennedy to complete a bathymetric (sonar) survey during September and October 2023 between Kuujjuaraapik, Peawanuck and Fort Severn. The survey, vessel with a crew of 14, will be completing the survey in 45 days. The purpose of this marine survey phase is to determine a route for a marine fibre optic cable between Kuujjuaraapik and the two Ontario Cree Nations. The survey incudes the use of sonar equipment to map the sea bottom to determine the best route (swath bathymetry (MBES), sidescan sonar (SSS) and subbottom profiler (SBP). A magnometer will be used to magnetically locate the crossing point of the Eastern Arctic Undersea Fibre Optic Network cable. Vibracore or Grab Sampler will be used to collect samples of the sea bottom every 5 kilometers up to a water depth of 25 meters to determine how the cable can be buried and protected as it comes to the shore landings. If the marine survey route phase and all other future construction permitting is approved, the fibre optic cable could be installed in the summer of 2026. The construction phase in 2026 would include (1) new shore landing at Peawanuck, (2) new shore landing at Fort Severn, (3) fibre optic cable being laid on the sea bottom from Kuujjuarapik to Peawanuck and Fort Severn, (4)	

	connecting to existing Kuujjuarapik shore landing and Kativik Regional Government existing fibre optic network. No new shore landing will be built in Whapmagoostui and Kuujjuarapik. The remote Cree Nations of Peawanuck and Fort Severn require long-term fibre optic broadband (internet) connection for access to critical health, education, and administrative services, and community-led environmental monitoring.	
2. Waste	The application lists zero waste produced. Please clarify. Will you be removing all garbage, keeping it on-board for the entirety of the trip, and/or incinerating all combustible wastes? What about greywater and sewage (treatment methods, etc)?	Applicable to both the EMRIRB / NMRIRB
Response		
	Updated: Waste Section All generated waste will be stored on board and unloaded at the Nain NL port upon completion. Waste Disposal Type (Grey Water, Combustibles, Human Waste, Hazardous, etc.) Projected amount Method of Disposal Treatment Procedures All solid waste is held on board and disposed of at an approved facility in port. Estimated 600Kg Waste oil is stored onboard and delivered to approved disposal facility in port. Estimated 360L Grey water is stored in a tank prior to discharge. Estimated 8000L Back water (sewage) is treated via the vessels two (2) Managerm sewage treatment systems. Managerm systems meet USCG Certified Type II Marine Sanitation Devicealso and is compliant with IMO Resolution MEPC2(VI). Estimated 4200L	
3. Impacts	There are no impacts listed – please discuss the following and any mitigation measure that will be put in place: underwater noise displacement of soil/sediment disturbance surface/bedrock geology	Applicable to both the EMRIRB / NMRIRB.

	sediment and soil quality water quality benthic fauna marine mammal disturbance ex. DFO has provided a letter of advice listing the following, which will be adhered to: While sailing, cetacean monitoring will be completed by visual observation post.	
Response		
	Updated: Impacts Section – Also See Attachments underwater noise - Noise from engines – engines and mufflers will be maintained in good working order to reduce underwater noise. Bathymetric equipment emits acoustic pulses (up to 221dB) that are temporary during the period of the survey and localized to an area surrounding the vessel as it travels along the survey route. Survey equipment will be turned off if mammals are observed and powered back up gradually after mammals are clear of the survey area. displacement of soil/sediment disturbance - One 3m long, 3" diameter cylindrical vibracore sample is the maximum expected recovery at any one site. One 12L grab sample is the maximum expected recovery at any one site. The total sea bottom sampling is up to a total 11meters squared at up to a total of 11 sites. surface/bedrock geology - The bathymetric survey does not impact the geology. The seabed samples will affect a total of less than 1m squared at any one site. - sediment and soil quality - The seabed samples will affect a total of less than 1m squared at any one site. Sediment will settle following the sampling. Sediment and soil quality will not be impacted by the sampling process. No oils / drilling muds or other fluids will be released into the water column or soils during the sampling process.	

	water quality - The seabed samples will affect a total of less than 1m squared at any one site and surrounding water quality. Sediment will settle following the sampling. No oils / drilling muds or other fluids will be released into the water column or soils during the sampling process Water quality will be affected by the passing ship temporarily. All procedures will be adhered to ensuring minimal disturbance with spill response enacted. benthic fauna - The seabed samples will affect a total of less than 1m squared at any one site. Benthic fauna will be harmed with the removal of seabed samples. Sediment will settle following the sampling. The total sea bottom sampling is up to a total 11meters squared at up to a total of 11 sites. If any known sensitive sites are within the route, a route deviation will be made. marine mammal disturbance DFO has provided a letter of advice listing the following, which will be adhered to: While sailing, cetacean monitoring will be completed by visual observation post. Mitigation is included in the mitigation section. Also See Attachments	
4. Material Use	The material use section should be more detailed, provide further specs of each equipment if possible. ex. Multi-beam echo sounder: at what frequency? Sound level produced? Vibracore: describe; depth of penetration? Amount of sediment disturbed at each sampling site? Grab sampler: describe use	Applicable to EMRIRB/NMRIRB. On the NMRIRB application the information provided describes all uses, however additional information on depth penetration / bottom disturbance would be

<table>
<tr><td></td><td></td><td>valuable information to have on the application</td></tr>
<tr><td>Response</td><td></td><td></td></tr>
<tr><td></td><td>Updated: Material Use

Pole-mounted and towed geophysical survey equipment including swath bathymetry (MBES), sidescan sonar (SSS) and subbottom profiler (SBP) will be used to obtain a 500m wide survey corridor in water depths >50m, and 250m wide survey corridor in water depths <50m.

A magnetometer will be used to locate the existing KRG EAUFON cable crossing point. The magnetometer is a passive instrument which does not emit acoustic energy. It detects disturbances in the magnetic field near its sensors as it is towed through the water.

The sonar equipment sound levels and nominal frequency are listed below:

<table>
<tr><th>System</th><th>Freq.</th><th>Sound Level</th></tr>
<tr><td>Swath Bathymetry R2Sonic 2024/2026</td><td>200-400kHz</td><td>191dB - 221dB</td></tr>
<tr><td>Sub-bottom Profiler Knudsen 3260</td><td>3.5kHz</td><td>206dB</td></tr>
<tr><td>Sidescan Sonar Edgetech 4205</td><td>230, 540 or 850kHz</td><td>205dB</td></tr>
<tr><td>Underwater Positioning System: IXBlue GAPS USBL</td><td>22 – 30kHz</td><td>191dB</td></tr>
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Vibracore: The maximum depth of penetration will be 3m, Amount of sediment disturbed at each sampling site will be in total of less than 1m squared at any one site, estimated number of sampling sites is up to 5 samples at both Fort Severn & Peawanuck and 1 sample site at Kuujjuarapik.</td><td></td></tr>
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	Grab sampler: One 12L grab sample is the maximum expected recovery at any one site. Depth of penetration is 25-35cm. Amount of sediment disturbed at each sampling site will be in total of less than 1m squared at any one site. Potentially up to 5 sample locations at both Fort Severn & Peawanuck, and 1 sample site at Kuujjuarapik if sampling with the vibracore fails. A vibracore sampling will be completed at 5km intervals (with additional sample sites if required, as dictated by observed geology) within water depths <25m at the Fort Severn and Peawanuck shore landing corridors to determine geotechnical properties of the soil. If upon three (3) failed vibracore attempts a surficial grab sample will be taken.	
Results	Bathymetry maps produced – will they be shared with CNG? Makivvik?	
Response		
	Yes, summary bathymetry maps can be shared with interested organizations upon request. More detailed data can also be shared upon request and with the permission of the First Nations and project team.	
Clarification	"A launch vessel will be used to survey shore landings from sea" Will this be another vessel? Will a smaller ship/tender be used for mapping shallower area (shore landing at Whapmagoostui/Kuujuarapik)? "Ramp up procedure will be completed with gradual increase in power of survey equipment to reduce impact on aquatic life" What does this mean exactly? (after stating "use of minimum gear power level")	
Response		
	Updated: Additional Information – Vessel Use "A launch vessel will be used to survey shore landings from sea" Will this be another vessel? Will a smaller ship/tender be used for mapping shallower area (shore landing at Whapmagoostui/Kuujuarapik)?	

	A 20-foot aluminum survey vessel with outboard engines will be used for shore landings at Whapmagoostui/Kuujuarapik, Peawanuck and Fort Severn. The small vessel will conduct swath bathymetry, sidescan and subbottom sonar surveys into shallow water (1-2meters) where the primary survey vessel – RV William Kennedy – cannot safely travel. The small vessel will survey as close to the high-water mark as safely possible. Peawanuck and Fort Severn have provided direction on the shore landing locations. Updated: Impacts Section "Ramp up procedure will be completed with gradual increase in power of survey equipment to reduce impact on aquatic life" What does this mean exactly? (after stating "use of minimum gear power level") The bathymetric survey will be operating 24/7 and equipment will be operating at power levels required to achieve suitable survey data, which is not necessarily be the maximum power level the systems are capable of. If marine mammals/aquatic life are observed and survey operations are required to stop, upon resuming survey operations the survey equipment will turned on at the lowest possible power setting (noise level) and be incrementally enabled (ramped up) to the higher power settings required to obtain quality survey data. The ramp up to higher power and acoustic output levels is over a period of 30 minutes to ensure aquatic life has time to leave the survey area.	
Community consultations	"A community consultation in person visit was completed July 8-14, 2023 that included complete community meetings, open houses, interviews, youth engagement, travel on the land, posters, Q&A, and meetings with the leadership, Lands and Resources teams, land users, and IT Managers." Is there any documentation available from this? See KO Marine Fibre Consultation Summary	