



NIRB Application for Screening #125696

Proposed New Power Plant at Chesterfield Inlet

Application Type: New

Project Type: Power Plant

Application Date: 5/13/2022 11:18:48 AM

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

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

Project Proponent: MFrind
QEC
243 Umiaq
Iqaluit NU X0A 0H0
Canada
Phone Number:: 8679797579, Fax Number::

DETAILS

Non-technical project proposal description

English: Qulliq Energy Corporation (QEC) is a Government of Nunavut territorial corporation. Through the operation of 25 stand-alone diesel power plants, QEC is the sole provider of electricity to approximately 15,000 customers in the territory. Qulliq Energy Corporation is proposing to construct and operate a new power plant in the Hamlet of Chesterfield Inlet. This will replace the existing power plant, which was constructed in 1975 and which has exceeded its design life. As the facility continues to age and become more outdated, it has become more difficult to maintain, and thus reliability is declining. Without reliable equipment, QEC's customers are at risk of system failure. This proposed multi-year project will include a new four-engine power generation facility with installed capacity of 1,270 kilowatts. It is designed for a lifespan exceeding 40 years, and it will incorporate new technology to improve reliability, efficiency, and safety. Construction will include a fuel-storage system consisting of two 90,000 litre horizontal fuel tanks, and fuel-pumping facilities. QEC also plans to construct a Quonset garage, as well as storage facilities for transformers, utility poles, oil, and glycol. Space will be allocated for transient staff accommodations, sea cans for storage, and a back-up emergency generator. Upgrades to the existing distribution system will also be required to connect to the new power plant. An approximately 250-metre fuel pipeline will be constructed to connect to the Petroleum Products Division (PPD) bulk fuel facility located to the southwest. The pipeline will be a combination of aboveground and underground construction. The new plant will be capable of integrating renewable energy sources. The proposed new lot is approximately 6,200 square metres located on unsurveyed, untitled municipal land off of Crescent 1A, and is located 250 metres northeast of the PPD bulk fuel facility. The area proposed for the power plant has been designated by the Hamlet for industrial land use. A QEC land application was approved by the Hamlet of Chesterfield Inlet on September 3, 2020. The Nunavut Water Board has confirmed that our plant will not affect any water bodies. There are no designated wildlife areas, marine protected areas, territorial or national parks or Inuit-owned lands in conflict with the power plant location. An archaeological impact assessment was carried out in July 2021, and 30-metre buffer zones were established. Construction fencing will be used to ensure that heavy machinery does not enter the buffer zone. The anticipated project schedule is shown below.

Task	Time
Choosing the site and doing the studies	March 2021 to March 2022 (already done)
Detailed Engineering Design	April 2023 to March 2024
We hire a Contractor	April 2024 to March 2025
Contractor builds the new plant	April 2025 to December 2026 (seasonal)
Testing the new plant	January 2027 to March 2027
Plant Handover to QEC Staff	March/April 2027
Operations (power production)	2027 to 2067 and beyond

On average, 21 workers are estimated to be required on-site for the duration of construction. This will vary based on the construction phase. The contractor awarded the construction tender will determine the required labour force to meet project requirements. Contractors will be obligated to meet mandatory Inuit labour levels for all construction work. QEC has staff in Chesterfield Inlet who take care of the daily operation of the existing power plant. This includes a full-time Plant Superintendent and two part-time Assistant Operators. Existing staff will transition over to the new power plant once it has been constructed and commissioned. No new staffing is anticipated to be required as a result of this project. The majority of construction materials for the project will be delivered by annual sealift. Some materials may be sourced locally or delivered via cargo plane depending on size and quantity. The contractor will be responsible for sourcing construction equipment. This may include subcontracting locally available equipment or bringing equipment to the community through the annual sealift. This project is anticipated to provide an overall benefit to the Hamlet of Chesterfield Inlet with more efficient use of diesel fuel and the reduction of greenhouse-gas emissions. It will also enable QEC to improve power generation infrastructure in the community, support future growth, and achieve its mandate for the provision of safe, reliable electrical power to the communities that it serves. (Note: This power plant will run for more than 40 years. However, the software that runs this NIRB website is unable to accept dates past calendar year 2049. The actual plant lifetime will extend beyond the year 2067.)

French: La Société d'énergie Qulliq (« la Société ») est une entreprise territoriale publique du gouvernement du Nunavut. Celle-ci opère 25 centrales électriques autonomes, ce qui fait d'elle l'unique fournisseur d'électricité pour quelque 15 000 clients dans le territoire. La Société soumet un projet pour la construction et l'exploitation d'une nouvelle centrale électrique dans le hameau de Chesterfield Inlet. Celle-ci viendrait remplacer l'actuelle centrale, qui est en service depuis sa construction en 1975, et dont la durée de vie est dépassée. En effet, la centrale actuelle est désuète et continue à prendre de l'âge, ce qui complique son entretien et diminue sa fiabilité. L'absence d'équipement fiable expose la clientèle de la Société à un risque de défaillance du système. Ce projet pluriannuel comporte une nouvelle installation à quadrimoteur pour la production d'énergie électrique puissance installée de 1 270 kilowatts. Il est conçu pour dépasser 40 années de vie, et incorpore de nouvelles technologies qui améliorent la fiabilité, l'efficacité et la sécurité. Il prévoit également la construction d'un système de stockage de carburant qui consiste en deux réservoirs horizontaux de 90 000 litres, et en installations de pompage. En outre, le projet comporte un garage préfabriqué en tôle ondulée et des espaces d'entreposage pour transformateurs, poteaux électriques, mazout et glycol. Un espace sera réservé pour l'hébergement du personnel de passage

[illegible]

Inuinnaqtun: Qulliq Alrujaqtuqtunik Ikumadjutiit(QEC) Kavamatkut Nunavunmi (GN) aviktuqhimajumi kuapaliisit. Aulapkaivaktut 25nik uqhurjuaqtuqtunik pauwaqarviinik, QEC-kut avaliittut tuniuqhaijiujut alrujaqtuutikhanik imaatut amigaittunut 15,000 atuqtiujut aviktuqhimajumi. Qulliq Auladjutiqhanut Kuapaliisinga uuktuqtut nappaqtirilutik aulapkailugitlu nutaamik pauwaqaqviaviqhamik Hamlanganni Igluligaarjukmi. Una himautiginiaqtaa atuqtaujuq pauwaqarviup, kitu havaktauhimajuq uvani 1975mi kitu idjuhia utuqanguqtuq. Igluqpak utuqanguqpaliajuq, ajungnaqhiblunilu ihuaqhaqataariami, ihuarniralu ihuiqpaliabluni. Piqangitumik ihuaqtumik tamajanik, QECkunun akiliqtuijut qajangnautiqagtut auladjutit nutqarniranun.Una tughiqtaujuq amigaitunun-ukiunun havaaghaq ilaujuq nutaq hitamanik-ingniqutiqagtut pauwaqtuut igluqpak iliuraqtauhimajuq aktilaanganik imaa 1,270 kilowattsmik. Havaktauhimajuq auladjutaa hivutuniquagtut avatqulugu 40 ukiutlt, piqarniaqturlu nutaamik ihuaqhijuumirutijuq ihuarnira qajangnautaallu. Nappaktirinirmun ilaliutihimajuq urhuqjuaqarvighaa malruk 90,000 litre urhuqjuaqarviik, urhuqjuamiklu-papautiqaghuni igluqpak. QECkut upalungaiqhimajut napaqtirilutik uuminga Quonset aghaluutiqarvingmik, tamajaqarvighallu alruyaqtuutunik, naparianik, urhuqjuamik, haffumingalu, glycolmik. Najugahait nuutiqtauhimajut havaktinun hiniktarvighait, umiakkut uhidjutit, parnallu ingniqqut. Ihuaqhaidjutit atuqtaujunun auladjutinun pijariaqarniaqtuq ataliqluni nutaamun pauwaqarvingmun. Naamavjaktuq 250-miitanik urhuqjuamun tughuanga havaktauniaqtuq ataliriangnai Urhuqjualiqlijiit Havagvianun urhuqjuamik tutquumaviinun hivuraata kivataanii. Turhuat qaanganiiniaqtut nunami ataanilu havaktaulutik. Nutaq pauwaqaqviqhaq pidjutittaaghun'nguyuq pidjutittaariami atutqitaaffaaqtunik

auladjutihatigut. Tughiqtaujuq nutaaq najugahaa naamavjaktut 6200 kikariktut metresmik najugaqatut naunaijaqtauhimangitumi, atiqangitut haamlatkut nunaa hamani Crescent 1A, najugaa 250 metres tunungani hivuraani PPDkut urhuqjuaqarviani. Najugaa tughiqtaujuq pauwaqarvighamun tikuaqtauhimajuq haamlatkunin havagvikjuanun nuna atugahaq. QECkut nunamik uuktuutaat angiqtauhimajuq Haamlanganin Igluligaarjungmi uvani Apatilirvia 3, 2020. Nunavut Imalirinirmut Katimayiit tutqighaqhimajaat tamna pauwaqavik hulaqutilimaitut aujaginarman imaqarnirmun. Piqangittut huradjaat najugaanik, imakullu munarijaujunik najugaani, aviktuqhimaup kanadamiluuniin min'nguiqhiviinun Inuit-nanminirijainunluuniin nunat ihuiguuutiqangitut pauwaqarvighap najugahaani. Ingilgaarnitiqinirmun hulaqutait havaktauhimajut uvani Taaqhivalirvia 2021, unalu 30-metremik kiklighait havaktauhimajut. Havaktauhimajut happutighaq atuqtauniaqtut uqangijut aghaluutit itilimaitaangini kiklinun. Niriuktaujuq havaaghaq naunaitkutaa takunaqtut ataani. Naunaitkutaa haffuma Igluligaarjuup Pauwaqarvighaanun Havaaghaq Havaktakhaq Upluqhiutaa Naunaijaqlugit najugahait ihivriuglugillu Qiqailruq 2021 hamunga Qiqailruq 2022 (iniriqtut) Naunaijattiaqhimaajuq titiraujakhimajut Idjuhighaa Qitiqqautijut 2023 talvunga Qiqailruq 2024 Havaktitluta Katulaaqaqtunik Qitiqqautijut 2024 hamunga Qiqailruq 2025 Katulaaktup napaqtigliuglu nutaaq pauwaqarvighaq Qitiqqautijut 2025 talvunga Ubluirvia 2026 (ukiumi ilangani) Uuktuutait nutaap pauwaqarviup Ubluqtuhivia 2027 talvunga Qiqailruq 2027 Pauwaqarviqhaq tunijauniaqtut QECkut havaktiinnut Qiqailruq/Qitiqqautijut 2027 Auladjutit (aulaliqluni) 2027 hamunga 2067 hivumut Qaffiuniit, 21 havaktit tiqungniaqtut ihariagijauniaqtut najugaani napaqtitirilugit. Una aalanganiaqtut pihimalugu napaqtitirnimun hivitunianun. Katulaangmik tunijauniaqtut naunaitkutatigut ihumaliuqlutik pijaghat havaktut havagianganin havaaghamun pijaghat. Katulaaktut pijaghaqarniaqtut pitqujaunirmun Inuinnarnik havaktitlutik tamainun napaqtitirnimun havaaghamun. QECkut havaktiit Igluligaarjungmi kitut munaqhijut ubluni auldjutainik atuqtaujumun pauwaqarvingmik. Una ilaujuq havagaanginaqtughaq Pauwaqarvingmun Atangujaq malruklu havakaffuktuk Ikajuqtik Auladjutinun. Havaktut hadja nuutiqhun'nguyut nutaamun pauwaqarviannut iniktiqqat. Nutaanik havaktiqalimaitut haffumunga havaaghamun. Amigaingniatigut nappaktirinirmun tamajait Havaaqhamut agjaqtauniaqtut umiakkut. Ilangit tamajait niuviktauniaqtun nunanganit agjaqtaulutikluunniit tingmitikkut naunairutilugit aktilaangit kaffiutilangillu. Kantraaktitaujuq munarijaqarniaqtut atuqtitlutik nappaqtirutikhanik ingilrutinik. Una ilauniaqtut aalamik katulaaqaqtumik nunamingnik piinarialingmik tamajanik agidjijughamikluuniin nunallaamun umiakkut. Una havaaghaq niriuktaujuq tunihiluni tamainun ikajuutinik Haamlanganun Igluligaarjuk ihuatqiamik atungniranun urhuqjuanik mighijuumiqrutijuqlu pujuqmik tingivralaaqtumik. Pipkainiaqtut QECkunun ihuaqhijuumirnimun auladjutinun igluqpak nunallaami, ikajuqlutiklu hivnuniptingni angiklijuuminirmik, pilugulu pitqujaujuq iluani qajangnaitkutit, ihuaqtut alrujaqtuutit nunallaamun kivgaqtutqamingnun.

Personnel

Personnel on site: 30

Days on site: 200

Total Person days: 6000

Operations Phase: from 2025-04-04 to 2026-12-12

Operations Phase: from 2027-01-01 to 2049-12-12

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
New project geometry	Equipment installation	Commissioners	Undeveloped land, designed as industrial by the municipality	None	Over 1 kilometres

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Chesterfield Inlet	Hamlet of Chesterfield Inlet, Douglas Aggark (letter of approval)	Qulliq Energy Corporation	2020-09-03

Authorizations

Indicate the areas in which the project is located:

Kivalliq

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Information is not available				

Project transportation types

Transportation Type	Proposed Use	Length of Use
Water	Sealift of materials for building new power plant	
Land	Trucks from sealift area to the power plant site	

Project accomodation types

Community

Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Construction equipment	10	5 metres	Standard construction equipment pieces including backhoes, excavations, loaders, forklifts, boom cranes, graders, tele-handlers, welders, concrete mixers, dump trucks, bulldozers.
Diesel generators for power generation	5	8 metres	Power generation plant (once constructed). Includes four main generators and one backup generator.

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Diesel	fuel	2	90	180	Cubic Meters	Diesel fuel for construction purposes, will be kept in double-walled portable tank. This is for the construction of the power plant itself. The completed power plant will have two large 90-cubic-metre fuel tanks, double-walled and with continuous electronic monitoring. There will also be small day tanks inside the power plant.

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	Because this plant uses radiators for cooling, the only use of water is for domestic use of employees on site. Estimated at 0.1 cubic metres per day. No water license required.	Tanked municipal water supply, with tanked sewage (honey truck, standard in communities throughout Nunavut).

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Equipment installation	Sewage (human waste)	100 litres per day	Standard sewage tank on site, with regular pump-outs via honey wagon.	Standard municipal lagoon, as used for serving everyone else in Nunavut.

Environmental Impacts:

- Noise and dust during construction will be mitigated by contractor keeping equipment in good working condition, by using water spray to control dust, and by working during normal daytime hours only. - Spill-capture equipment and double-walled fuel tanks will be in use, both during construction and operation. - Tanked water will be used at the plant, and sewage will be tanked. - Power plant will use the most modern engines for lowest emissions, and emissions controls will be included. This power plant will bring a net positive benefit to the community by ensuring less pollution than the old power plant that it replaces. Noise will also be greatly reduced, both because the engines are newer and because the plant is no longer downtown. Power supply will be more reliable as well.

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 area proposed for the power plant has been designated by the Hamlet as industrial land use and was the location previously identified by the Hamlet for the power plant. This implies that the Hamlet is interested in or is willing to consider some form of development in this area. •Surrounding development in this area is industrial in nature (e.g., PPD bulk fuel facility). •Given that the proposed power plant will be on an existing road and in close proximity to the PPD bulk fuel facility, community members or wildlife using this area will already be accustomed to traffic activity in the area. •The location selected for the power plant is generally flat terrain and is geologically amenable to construction. •Regarding a small creek that is located about 50 metres from our site, we have received confirmation from the Nunavut Water Board that no special procedures are required, given that our plant does not entail any water-takings, nor in-stream works, nor any discharge of waste to these small water features. We note that our use of diesel generators uses radiators to air for cooling. Our domestic water usage the plant will entail a freshwater tank along with a sewage tank, both serviced via truck. Construction activities will also entail tanked water, with portable toilets for employees. The contractor will also be required to ensure that surface disturbance (e.g. disrupted soils) are not able to run off the site. For this purpose, standard silt fences are anticipated to be used. •There are no designated wildlife areas, marine protected areas, territorial or national parks or Inuit owned lands in conflict with the power plant location.

Description of Existing Environment: Biological Environment

•There are no designated wildlife areas, marine protected areas, territorial or national parks or Inuit owned lands in conflict with the power plant location. The land is designated industrial and does not constitute special-value habitat for birds or other wildlife. That being said, it is acknowledged that terrestrial and marine wildlife may be observed in the general surrounding area, especially by observers equipped with tripod-mounted spotting scopes, high-powered telephoto lenses, and high-resolution digital single-lens-reflex cameras, or with other sophisticated optical imaging devices.

Description of Existing Environment: Socio-economic Environment

•The proposed power plant will be located about 1 kilometre from the centre of the hamlet, and it will also be downwind of the hamlet. This alleviates concerns regarding noise and emissions. Also, the design of the plant incorporates the latest emissions-control technology (dry oxidation catalysts) with modern diesel technology that minimizes fuel consumption and minimizes emissions. The exhaust systems will include mufflers (also known as silencers) that are of “hospital-grade” for the greatest possible attenuation of sound throughout the frequency range typical of reciprocating internal combustion engines of the compression-ignition type. •An archaeological impact assessment was carried out in the summer of 2021 in order to determine if archaeological sites are in potential conflict with the project and identify any necessary avoidance or mitigation measures. Several graves were found near (but not on) the proposed power-plant site. We have planned the property boundaries of the proposed Chesterfield Inlet power plant in order to satisfy the 30-metre buffer zone requirement (i.e. 30 metres from the property boundary). To ensure that construction equipment remains well away from the grave sites, well-marked physical barriers will be erected and flagged, and the construction crew will be notified and all equipment operators will be briefed on these aspects. •In the event that latent cultural or archaeological artifacts are encountered during the construction at the site, construction activity will stop and the

Government of Nunavut Department of Culture and Heritage will be contacted. •During the construction work (estimated to take place over two summers), the contractors will be required to maintain equipment in good working order to reduce noise generation, and to avoid spills of fluids. •Construction will occur during typical working hours (e.g., 10 to 12-hour shift). •Dust suppression (e.g., water) will be used on-site during construction as required. •Other development in the surrounding area is industrial in nature. With this in mind, it is likely that community members nearby are already accustomed to some level of dust and noise emanating from this general area, due to the combination of the existing gravel roads and the general industrial and other activities that take place here. •Contractors will be required to have a spill response plan as well as spill response equipment and materials available in the event of a leak or spill. •In the event of a spill or leak, contaminated soil will be collected for disposal at an approved facility. •Contractors will be required to have a fuel management plan in place that includes refueling procedures and proper bulk storage if applicable.

Miscellaneous Project Information

•The old power plant will be decommissioned within one year of the commissioning of the new power plant at Chesterfield Inlet. Decommissioning of the old power plant is a separate project. •The new site at Chesterfield Inlet is an open lot and is readily viewable in Google Maps. •For emergencies pertaining to spills of fuels and other liquids, QEC has site-specific spill response plans for each of our 25 power plants. We will be preparing such a plan for the Chesterfield Inlet new power plant when construction of the new plant has been completed. •During the construction work, the construction firm will follow its own environmental management plan. This will include features such as double-walled fuel tanks for storing equipment for construction equipment, as well as having spill-clean-up equipment readily available. •All of QEC's power plants in this size range have dual-walled fuel tanks that have leak-detection monitoring via interstitial vacuums. Additional electronic leak-detection systems are present throughout the fuel system, thereby providing coverage of the tanks outside the building as well as the day tanks inside the building. These systems also interface electronically with the engines, which themselves keeping a running log of the fuel that they have consumed. Therefore, our operators are kept up-to-date on the remaining fuel levels in the tanks, as a function of fuel fillings and daily consumption. •Filling of the tanks can be done via tanker truck or by pipeline direct from the PPD tank farm. Various spill-containment and monitoring devices are present throughout the entire process. •Waste fluids are stored in drums that will be kept in sea-cans with their own built-in containment linings and berms. •The entire plant will be surrounded by a chain-link fence with a gate, to provide physical security. The plant itself will also have its own electronic security, in addition to a variety of security features including sensors and cameras with remote monitoring and automatic summoning of emergency response. •This comprehensive approach to security is to ensure reliable power and to defend against intrusions via physical and non-physical means. •Staff on site includes three employees on rotating shifts.

Identification of Impacts and Proposed Mitigation Measures

•During the construction phase, contractors will be required to have a spill response plan as well as spill response equipment and materials available in the event of a leak or spill. •In the event of a spill or leak, contaminated soil will be collected for disposal at an approved facility. •Contractors will be required to have a fuel management plan in place that includes refueling procedures and proper bulk storage if applicable. •During the operation phase, •In the event of a spill or leak, contaminated soil will be collected for disposal at an approved facility. •Contractors will be required to have a fuel management plan in place that includes refueling procedures and proper bulk storage if applicable.

Cumulative Effects

For all of the reasons described in the preceding sections, the cumulative effects of this power plant are expected to be smaller than those of the existing in-town power plant at Chesterfield Inlet.

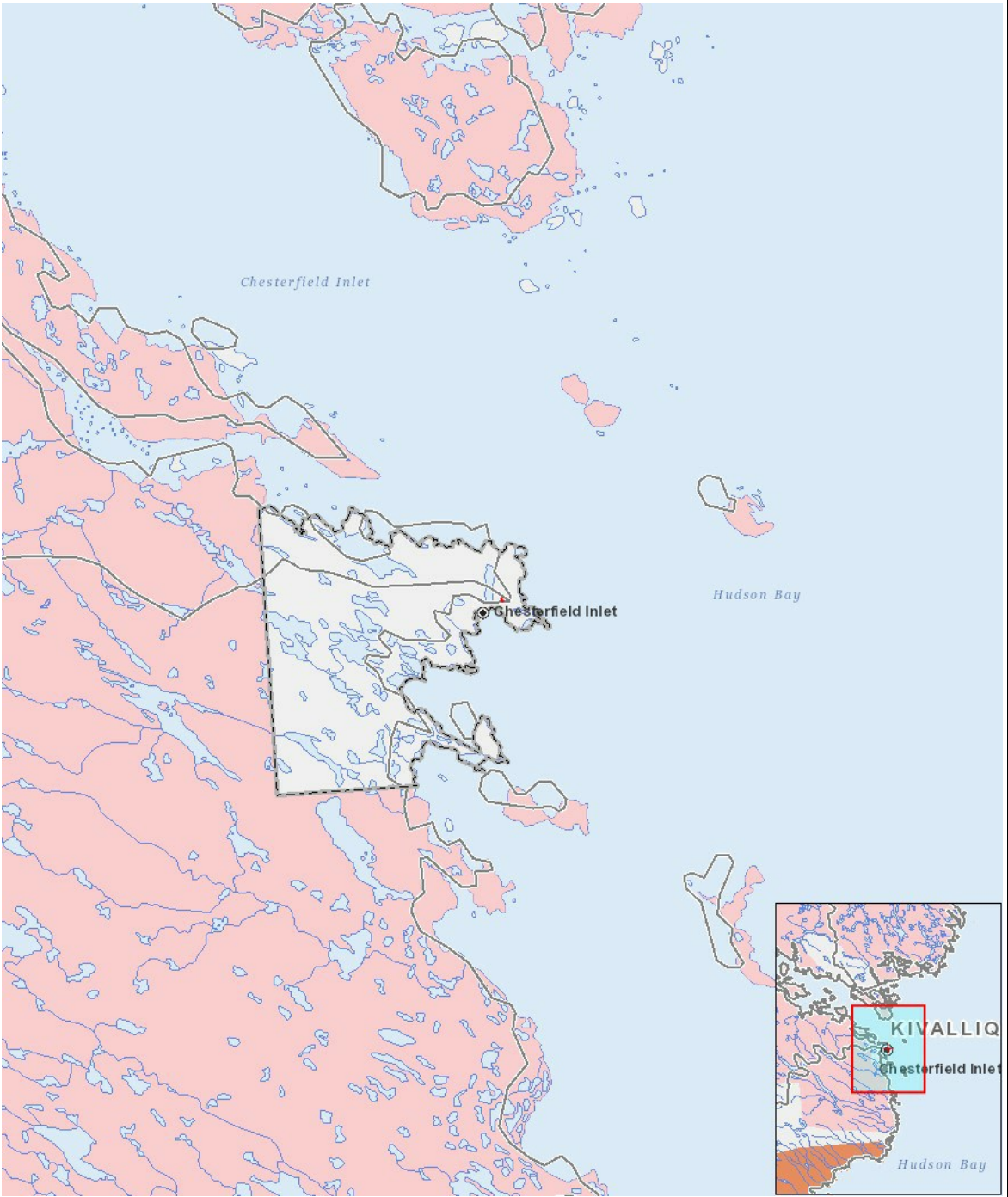
Impacts

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																									
Equipment installation		-	-	-	-	-	M	-	-	-	-	M	M		-	-	-	-	-		M	P	P	P	P
Operation																									
Equipment installation		-	-	-	-	-	M	-	-	-	-	M	M		-	-	-	-	-		M	P	P	P	P
Decommissioning																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

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

Project Location



List of Project Geometries

1	polyline	New project geometry
---	----------	----------------------