NIRB Application for Screening #125779
Proposed Replacement Power Plant at Kugaaruk

Application Type:	New
Project Type:	Power Plant
Application Date:	3/10/2023 2:09:32 PM
Period of operation:	from 0001-01-01 to 0001-01-01
Proposed Authorization:	from 0001-01-01 to 0001-01-01
Project Proponent:	DAkoak QEC PO Box 250 Iqaluit Nunavut X0A 0H0 Canada Phone Number:: 8672224820, Fax Number::

DETAILS

Non-technical project proposal description

English: See documents section. Note: The personnel section above refers to the estimated number of construction workers during the construction period (which will span two summers). Once the plant has been commissioned and is operating, there will be two operators present (i.e. staff at the existing plant will simply move over to the new plant).

French: See documents section.

Inuktitut: See documents section.

Inuinnaqtun: See documents section.

Personnel

Personnel on site: 30

Days on site: 360

Total Person days: 10800

Operations Phase: from 2025-04-05 to 2026-12-12

Operations Phase: from 2027-01-01 to 2067-12-12

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
Site for replacement power plant for Kugaaruk, next to PPD tank farm.	Other	Commissioners	Site is undeveloped.	Archaeology study has confirmed that no cultural-heritage sites are present.	Power plant is near the hamlet of Kugaaruk.

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Kugaarjuk	Support letter	Hamlet of Kugaaruk	2021-03-11

Authorizations

Indicate the areas in which the project is located:

Kitikmeot

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Hamlets and Municipalities	Endorsement letter from Hamlet	Active	2021-03-11	
Transport Canada	Aeronautical assessment approval	Active	2021-03-11	

Project transportation types

Transportation Type	Proposed Use	Length of Use
Land	Road access 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
Construction Equipment	10	5	Standard pieces of construction equipment including excavators, backhoes, loaders, forklifts, boom cranes, telehandlers, graders, welders, concrete mixers, dump trucks, bulldozers, air compressors, and sundry other items.
Construction Equipment	10	5	Standard pieces of construction equipment including excavators, backhoes, loaders, forklifts, boom cranes, telehandlers, graders, welders, concrete mixers, dump trucks, bulldozers, air compressors, and sundry other items.
Construction Equipment	10	5	Standard pieces of construction equipment including excavators, backhoes, loaders, forklifts, boom cranes, telehandlers, graders, welders, concrete mixers, dump trucks, bulldozers, air compressors, and sundry other items.
Reciprocating Diesel-fueled Internal Combustion Engines, for power generation	5	8 metres	Power generation plant (once constructed). Includes four main generators and one backup generator (or black-start 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, initially to fuel construction machinery and then later to fuel the actual power plant (once construction has been concluded). The completed power plant will have two large 90-cubic-metre fuel tanks, double-walled and equipped with continuous electronic monitoring. There will also

						be small day tanks inside the power plant.
Glycol coolant	hazardous	5	205	1025	Liters	Engine coolant
Engine oil	hazardous	5	205	1025	Liters	Lubrication of engines

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	Our only water use is domestic for the bathroom for the 2 plant operators.	Municipal trucked water to domestic water tank, same as standard household water tank.

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Waste disposal	Greywater	50 litres a day	Domestic from handwashing in bathroom. Municipal pump-out from tank.	Municipal lagoon
Other	Other, Waste glycol coolant	1000	Shipping South in drums for recycling.	(These fluids are the same as in ordinary cars.)
Waste disposal	Other, Office waste paper etc	1 bag a week	Municipal landfill	Standard municipal landfill
Waste disposal	Other, Waste Engine Oil	1000 litres a year	Will be shipped south via sealift for recycling at a refinery.	Will be recycled in south.
Waste disposal	Sewage (human waste)	12 litres per day	From flushing toilet into standard sewage tank.	Standard municipal sewage lagoon

Environmental Impacts:

Please refer to the Project Description documents (provided in all four official languages) and also the Additional Information section.

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.•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 (particulate filters with 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 2022. No archaeological sites were found on the site nor within 200 metres of the site. •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. They will also be required to carry insurance in this regard.

Miscellaneous Project Information

•The old power plant will be decommissioned within one year of the commissioning of the new power plant at Kugaaruk. Decommissioning of the old power plant is a separate project.•The new site at Kugaaruk 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 Kugaaruk 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, during operation, includes two or three employees with regular hours.

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 Kugaaruk.

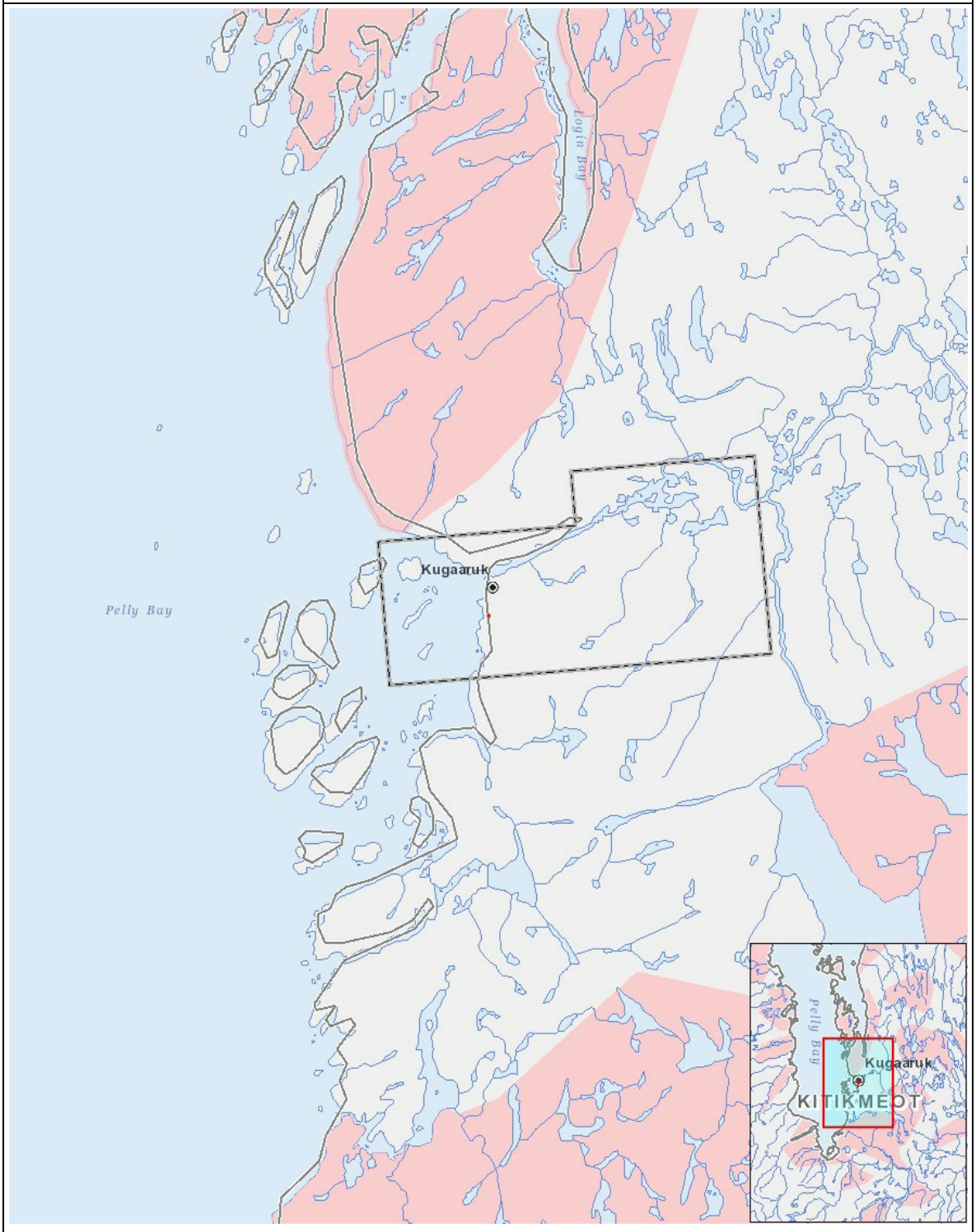
Impacts

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																									
Other		N	N	N	-	N	N	N	N	N	N	P	P		N	N	N	N	N		N	P	N	N	N
Operation																									
Other		N	N	N	-	N	N	N	N	N	N	P	P		N	N	N	N	N		N	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	Site for replacement power plant for Kugaaruk, next to PPD tank farm.