Project Introduction

Qulliq Energy Corporation (QEC) is proposing to construct and operate a new power plant in the Hamlet of Gjoa Haven located in the Kitikmeot Region of Nunavut (the Project). This multi-year project will include a new four-engine power generation facility (proposed generating capacity of 3,100 kilowatts) designed for a 40-year life and incorporate new technology to improve reliability, efficiency, operation, and safety. Construction will include a fuel storage system consisting of two 90,000 litre horizontal fuel tanks with secondary containment, appropriate pumping facilities, Quonset garage, transformer storage, pole racks, oil and glycol drum storage and waste disposal area (with secondary containment berm), space for a transient staff accommodation unit, 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 50-metre fuel pipeline will be constructed to connect to the Petroleum Products Division (PPD) bulk fuel storage facility located to the east. The pipeline will be a combination of aboveground and underground construction. The new plant will be capable of integrating renewable energy sources.

Proponent Information

Qulliq Energy Corporation (QEC) is a Government of Nunavut (GN) territorial corporation. Through the operation of 25 stand-alone diesel power plants with a total installed capacity of approximately 76,000 kilowatts, QEC is the sole provider of electricity to approximately 15,000 customers in the territory. QEC provides mechanical, electrical, and line maintenance services from three regional centers: Iqaluit, Rankin Inlet and Cambridge Bay. QECs administrative activities are carried out at the Head Office in Baker Lake and the Corporate Office in Iqaluit.

QEC is committed to planning and developing cost effective and efficient ways to provide a safe, reliable and stable energy supply for all Nunavummiut.

Project Background

Gjoa Haven is a community with increasing demand for electricity, reflecting its growing population. According to the Gjoa Haven Community Plan (By-Law No. 164), the population of Gjoa Haven is estimated to reach 1,750 by 2032 based on a medium growth projection. The existing Gjoa Haven power plant was constructed in 1977. Although the power plant's capacity can adequately meet the communities current and projected capacity requirements over the next decade, the power plant is 44 years old and has exceeded its design life.

The building structure and foundation are in poor condition, having started to deteriorate. Generator set 'G1' has significantly exceeded its engine life hours and needs to be replaced to maintain reliability of service in the community. The existing switchgear is obsolete, and not Arc resistant. This increases the fire and safety risk of the facility. As the systems continue to age and become more outdated, it will become more difficult to maintain the facility, and plant reliability will become an issue. Without reliable equipment, QECs customers are at risk of system failure.

A new power plant equipped with new fuel-efficient generators and plant automation is expected to increase fuel efficiency and overall plant reliability.

Alternatives Considered

QEC recognizes the need for a long-term approach to prioritize and maximize the benefit of capital expenditures while providing safe and reliable electricity service. The existing plant deficiencies mean the "Do Nothing" option

is not a viable option. Operating assets beyond their service life also places a larger burden on QEC's maintenance and operations personnel by trying to maintain and operate assets that should be replaced.

The following two alternatives were evaluated and are described further below.

- Major plant upgrade
- Construct a new plant at a new location

Major Plant Upgrade

A major plant upgrade would include replacement of major components and systems within the existing facility, including the generators, switch gear and fuel system. This option was determined to be not technically feasible for the following reasons:

- the plant buildings have deteriorated due to age and are beyond upgrading
- the existing plant footprint is too small to accommodate the space required for the new generator sets
- upgrading the existing plant requires the installation of temporary generation equipment on the same site and sufficient space for this is not available; and
- the existing plant site does not have sufficient land space to accommodate a plant expansion.

The existing power plant is located in an area defined by the Hamlet of Gjoa Haven for commercial or community use. It is generally understood that the Hamlet of Gjoa Haven is interested in moving industrial land uses outside of the commercial or community use area where feasible.

Construct a new plant at a new location

Taking into consideration the space issues associated with upgrading the existing facility, QEC considered the construction of a new power plant at a suitable location in the community. QEC explored four different location options (Figure 1) and considered a number of criteria that are important in selection of a new power plant location including, but not limited to the following.

- Proximity to Petroleum Products Division (PPD) Tank Farm: If the power plant is located near the PPD Tank Farm then QEC may be able to have a direct pipeline connection for fuel transfers. This reduces the health and safety risks associated with trucking fuel.
- Sufficient space: QEC requires at least 8,500 m^2 for the new power plant to accommodate the power plant building, fuel system, pole storage, transient unit, Quonset garage, and waste oil containment area.
- Current land use zoning: If an area is not currently zoned for industrial development, additional time may be required for re-zoning applications prior to securing land for the power plant.
- Flat and level: If an area is flat and level this reduces the cost and time associated with earthworks that would be required to prepare the site for construction.
- Airport Restrictions: Transport Canada Airport Zoning Regulations apply to areas within 4 km of an airport. Additional permitting and approval required.
- Previous Disturbance/Development: Preference is to avoid impacts to native tundra areas. Additional cost and schedule implications if an area has not been previously disturbed or developed (e.g., survey, site investigations, earthworks).

- Proximity to Migratory Bird or Wildlife Areas or Cultural Sites: Close proximity to migratory bird sanctuary, wildlife area or cultural site may increase environmental permitting requirements and environmental monitoring during construction and operation.
- Evidence of Groundwater or Surface Drainages: If present, increases the potential need for ground or surface water management for the site (e.g., to avoid contamination). Development closer than 50 m from natural surface drainages may result in additional permitting, environmental monitoring during construction/operations.
- Prevailing wind: Wind direction affects noise, odour and snow drifting considerations depending on if the wind prevails towards or away from the community.
- Known Contamination: May impact the type and extent of site investigation required and increase environmental risk. Additional permitting may be required if located within 450 m of a waste disposal site.

QEC met with Gjoa Haven Hamlet Council on July 30, 2020. At this time, QEC presented four proposed location options for the new power plant and outlined the pros and cons of each location. Following these discussions, the Hamlet requested that QEC complete preliminary site investigations on two locations, one identified by QEC ("Option 1") and one identified by the Hamlet ("Option 5"), also shown on Figure 1. Site investigations were completed in September 2020 and included the completion of a geotechnical evaluation, Phase I and limited Phase II environmental site assessment, and topographic survey.

Figure 1: Alternative Location Options Considered for the Gjoa Haven Power Plant Project (Image Source: Google Earth)

Following completion of site investigations and subsequent discussions with Hamlet Council regarding the results, the Hamlet issued a resolution, dated January 12, 2021, approving QEC to proceed with construction of the new power plant at the proposed "Option 1" location. A copy of this motion is included as Attachment A.

Project Location and Components

The results of the site investigations provided QEC with sufficient site specific information to confirm that "Option 1" would be technically feasible to support the construction and operation of the power plant and prepare a preliminary site layout. A land application and preliminary site layout was submitted to the Hamlet of Gjoa Haven on May 18, 2021. Subsequent to the application submission, QEC worked collaboratively with representatives of the Government of Nunavut (GN) Department of Community and Government Services (CGS) Planning and Lands Division to further refine the location. The resulting proposed location for the power plant considers the future plans of the Hamlet to resurvey the existing industrial zone to include an area for commercial development (Figure 2).

Figure 2: Location Selected for the Gjoa Haven Power Plant Project

The proposed new lot is approximately 10,110 square metres located on unsurveyed, untitled municipal land, Sketch Plan # GJOA-415(40-2)21-002 along Nuvu Road (Road R36) and is approximately 200 metres west of the PPD bulk fuel storage facility. The proposed lot was presented to and approved by the Hamlet of Gjoa Haven on June 1, 2021 (motion number pending). The GN-CGS Planning and Lands Division issued a Sketch Plan Approval Report on June 18, 2021 (Attachment B).

The power plant will include a four-engine generation facility (proposed generating capacity of 3,100 kilowatts) designed for a 40-year life and incorporate new technology to improve reliability, efficiency, operation, and safety. Construction will include a fuel storage system consisting of two 90,000 litre horizontal fuel tanks with secondary containment, an approximately 50 metre fuel pipeline to connect to the PPD bulk fuel storage facility, appropriate pumping facilities, Quonset garage, transformer storage, pole racks, oil and glycol drum storage and waste disposal area (with secondary containment berm), space for a transient staff accommodation unit, 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. The detailed design is anticipated to include the installation of industrial scrubbers and hospital grade silencers on the radiator and exhaust system to assist in the reduction of noise and exhaust emissions. The new plant will also be capable of integrating renewable energy sources. The main power plant building (40 m by 23 m) will include an office, electrical control room, mechanical room, and garage/workshop, in addition to the power generation hall. The specific location and orientation of these components within the area selected will be determined through detailed engineering; however, a preliminary site layout of the power plant is provided in Attachment C.

Schedule

The project schedule is shown in Table 1.

Table 1: Schedule for the Gjoa Haven Power Plant Project

Task	Anticipated Milestone
Secure Land and Complete Archaeological Impact Assessment	March 2021 to March 2022
Detailed engineering design	April 2022 to March 2023
Contracting and Procurement	April 2023 to March 2024
Construction	April 2024 to December 2025 (seasonal)
Testing and Commissioning	January 2026 to March 2026
Plant Handover to QEC Staff	March/April 2026

Construction Labour

Based on previous project statistics, the anticipated total number of workers during construction is shown in Table 2. The contractor awarded the construction tender will ultimately determine their required labour force to meet project requirements.

Table 2: Estimated Number of Construction Workers Required During Construction

Construction Phase	Estimated Number of Workers	Estimated Time On-Site (Days)
Foundation and Land Development	15	90
Civil Works, Building Structure, Fuel System	50	250
Mechanical and Electrical Installations	50	180
Commissioning	30	60

Construction of the Project will be completed through a request for tender (RFT) process. As per the Nunavummi Nangminiqaqtunik Ikajuuti (NNI) Regulation, contractors will be obligated to meet mandatory Inuit labour levels for all construction work.

Operations Labour

QEC has staff in the community of Gjoa Haven that are responsible for the day to day operation of the power plant. This includes a Plant Superintendent (full time), and two Assistant Operators (part time). It is expected that 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.

QEC has regionally based power line technicians and maintenance crews based in Cambridge Bay, Rankin Inlet, and Iqaluit that travel to and from communities to provide support to the operations staff in each community on an as needed basis and respond to emergencies (e.g., power outages, generator maintenance).

Construction Materials and Equipment

The majority of construction materials for the Project will be delivered to the community by sealift. Some materials may be sourced locally or delivered via cargo plane depending on size and quantity.

Equipment anticipated to be required during construction will include but is not limited to the following.

- Excavator
- Backhoe
- Bulldozer
- Grader
- Compactor machines
- Dump trucks/articulated trucks
- Tower crane
- Pile boring/driving machine
- Boom truck
- Tele-handlers
- Fork lift
- Trailer
- Concrete Mixers
- Welding/steel cutting machines
- Testing, inspection and commissioning equipment

The contractor awarded the construction tender will be responsible for sourcing the equipment. This may include a combination of sub-contracting locally available equipment or bringing equipment to the community through the annual sealift.

Water required during construction will be the responsibility of the construction contractor (e.g., sourcing and obtaining applicable permits). It is anticipated that a water use and deposit of waste licence will be required to complete a hydrostatic test on the QEC fuel system pipelines and pipeline connection between the QEC fuel tanks and the PPD bulk fuel storage facility prior to putting into service.

For operations, QEC will connect to the Hamlet's utility system for provision of water and sewer service.

Fuel Management

Fuel storage and handling during construction will be the responsibility of the contractor. Details regarding the location and volume of fuel storage or equipment refueling during construction are not known at this time. The contractor will be required to provide appropriate secondary containment for fuel storage and/or refueling location and have a refueling procedure and spill response plan in place.

During operation, QEC will store fuel in two 90,000 litre tanks on-site. The remaining fuel supply required for power plant operation will be stored at the existing PPD bulk fuel storage facility. The final design of QECs fuel system and the piping between the QEC power plant and the PPD bulk fuel storage facility will be determined as part of detailed engineering; however, the following specifications will be required.

- Two above ground, horizontal fuel storage tanks, each with a nominal capacity of 90,000 litres to operate 24 hours per day and 365 days per year with a minimum design life of 40 years.
- Fuel storage tanks will be shop fabricated as per the ULC S601 standard, will adhere to the National Fire Code of Canada (NFCC) and National Fire Protection Association (NFPA) 30 guidelines, and comply with Canadian Council of Ministers of the Environment (CCME) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products and local, territorial and federal act and regulation requirements.

- Fuel storage tanks will be double-walled with 110% containment, an interstitial space monitoring system and will be skid mounted
- Suitable leak detection monitoring system in accordance with Part 6 of the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- Applicable corrosion protection and monitoring in accordance with Section 3.8 of the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- Applicable overfill protection system with audible/visual alarm and automatic mechanism for shutting off the fuel supply such as per applicable standard.

The fuel tanks will be designed to operate 24-hours per day and 365-days per year. The tanks will connect directly with the PPD bulk fuel storage facility by 4-inch diameter pipeline for fuel transfers. The fuel tanks will also connect with the day tank inside the power plant by 2-inch diameter pipeline. The day tank will supply fuel to the generators. As with the storage tanks themselves, the pipeline system will be designed to meet the federal Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, and the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. QEC will also work with PPD to confirm the pipeline connection is designed to meet facility specific requirements. This will include having a metering device to measure and record fuel delivery. Prior to operation, the QEC fuel system will be registered with the Federal Identification Registry for Storage Tank Systems.

In addition to being connected to the PPD bulk fuel storage facility, a truck refueling station will be constructed with applicable safety measures (e.g., bollards) and spill prevention. The truck refueling station will be used will the pipeline connection is constructed, and in the event pipeline maintenance is required.

Waste Management

During construction, the contractor will be responsible for appropriately handling, storing, and disposing of all construction waste, including hazardous waste such as waste oil, in accordance with municipal and territorial requirements.

QEC has a number of environmental standard operating procedures (SOPs) that provide guidance on waste management during operations. Liquid waste (e.g., waste oil, waste fuel) is stored in drums or totes within secondary containment and disposed of as part of QEC's annual waste shipment from the community. Domestic waste during operations will be disposed of in accordance with municipal and territorial requirements; this may include disposal of some waste at the community landfill with permission from the Hamlet or shipment south for disposal at an approved facility.

Anticipated Permit Requirements

The permits approvals anticipated to be required prior to starting construction of the project are listed in Table 3. Should additional permits or approvals be identified to be required throughout the process, QEC is committed to working with the applicable agency to obtain the necessary approvals in a timely manner.

Table 3: Anticipated Permit Requirements

Agency	Permit Requirement
Nunavut Planning Commission	Conformity Determination
Nunavut Impact Review Board	Screening Decision
Hamlet of Gjoa Haven	Development Permit
Government of Nunavut – Community and Government Services	Lease agreement for new lot (Planning and Lands)
	Approval Letter (Nunavut Airports)
	Building Permit (Safety Services)
NavCanada	Land Use Proposal Review
Transport Canada	Aeronautical Assessment
Nunavut Water Board	Water Use and Deposit of Waste Licence for Hydrostatic Test

Community Engagement

QEC presented four proposed location options for the new power plant during a meeting with Gjoa Haven Hamlet Council on July 30, 2020. Following completion of site investigations in the fall of 2020, representatives from QEC and Hamlet Council corresponded by telephone and email to discuss the results and confirm the most suitable location for project components. The Hamlet issued a resolution, dated January 12, 2021, approving QEC to proceed with construction of the new power plant at the proposed "Option 1" location.

To initiate the process of securing the land required for the project, a land application was submitted on May 18, 2021. Correspondence with representatives from the GN-CGS Planning and Lands Division assisted in optimizing the proposed lot location and on June 1, 2021 the proposed lot was approved by the Hamlet of Gjoa Haven.

QEC has also held conference calls and had email correspondence with the GN-CGS Planning and Lands Department and PPD to discuss plans QECs planning for the Gjoa Haven project.

Environmental Effects

Potential environmental effects resulting from the Project and the proposed mitigation that QEC will put in place is provided in Table 4.

Table 4: Potential Environmental Effects Resulting from the Gjoa Haven Power Plant Project

Activity	Potential Environmental Effect	Positive or Negative Effect	Mitigation
Construction of all components of the Project	Construction of the power plant on a new lot will result in loss of space within the community for use by community members and wildlife	Negative	• 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, which suggests the Hamlet is interested in or willing to consider development of some kind in this area • Location for the power plant is adjacent to an existing road and the PPD bulk fuel storage facility; community members or wildlife using this area will already be accustomed to some activity in the area (e.g., traffic) • A portion of the selected location is currently being used by Canadrill and XYZ Contractor as a storage location for sea cans, construction materials, unmarked drums, and drilling supplies/equipment • Surrounding development in this area is industrial in nature (e.g., PPD bulk fuel storage facility) • The location selected for the power plant is generally flat terrain covered with sparse vegetation and gravel • There are no natural drainages, or watercourses within 100 metres of the project location; Petersen Bay is approximately 450 metres west • There are no designated wildlife areas, marine protected areas, territorial or national parks or Inuit owned lands in conflict with the power plant location; however, it is acknowledged that terrestrial and marine wildlife may be observed in the surrounding area
	Construction of the power plant on a new lot may result in the disturbance or destruction of cultural or archaeological artifacts	Negative	• An archaeological impact assessment will be carried out in summer 2021 to determine if archaeological sites are in potential conflict with the project and identify any necessary avoidance or mitigation measures • In the event that cultural or archaeological artifacts are encountered, construction activity will stop and the Government of Nunavut Department of Culture and Heritage will be contacted
	Construction of all components of the Project may contribute to permafrost degradation	Negative	• Ice-poor sands with traces of gravel and fines were encountered at the surface of all borehole locations and extended to the maximum depths of drilling which ranged from 9.0 to 12.0 metres below ground surface. • Permafrost was encountered at a depth of approximately 2.25 metres • Considering the prevailing subsurface conditions encountered in the exploratory boreholes, adfreeze piles with grout in conjunction with a thermosyphon system are considered a feasible deep foundation option for this project; however, this will be confirmed during detailed design • Installing a thermosyphon system to preserve permafrost underlying the proposed building to maintain the integrity of the foundation soils in the face of warming climate trends • Protection of permafrost and stability of the foundations/structural ground floor of the power plant shall be prime structural design considerations • The foundation design for the power plant will be reviewed by a qualified professional with expertise in permafrost • Piles will be used in structural supports where possible to limit ground/permafrost disturbance (e.g., pole and transformer racks)
	Construction of all components of the Project may contribute to additional dust and noise in the community	Negative	• Contractors will be required to maintain equipment in good working order to reduce noise generation • 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; likely that community members are accustomed to some level of dust and noise in this area from existing road and industrial activity
Fuel or hydraulic oil leak from equipment during construction	Fuel or hydraulic oil could leak or spill on to the ground resulting in contaminated soil or surface water	Negative	• Contractors will be required to use equipment in good working condition • 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 • There are no natural drainages, or watercourses within 100 metres of the project location; Petersen Bay is approximately 450 metres west
Fuel leak from the Fuel System during operation	Fuel stored within the QEC fuel system could leak on to the ground resulting in contaminated soil or surface water if it is not maintained	Negative	• Fuel tanks will be shop fabricated as per the ULC S601 standard, NFCC and NFPA 30 guidelines • Fuel tanks and pipelines will be constructed and operated in compliance with Canadian Council of Ministers of the Environment (CCME) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products • Fuel storage tanks will be double-walled with 110% containment, an interstitial space monitoring system and will be skid mounted • Suitable leak detection monitoring system in accordance with Part 6 of the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. • Applicable corrosion protection and monitoring in accordance with Section 3.8 of the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. • Applicable overfill protection system with audible/visual alarm and automatic mechanism for shutting off the fuel supply such as per applicable standard.

Activity	Potential Environmental Effect	Positive or Negative Effect	Mitigation
			• The QEC fuel system will be inspected by QEC personnel on a monthly basis • The QEC fuel system will be inspected by a qualified third-party contractor in accordance with API 653 as required • A spill contingency plan and community specific spill plan will be updated to reflect the location of the new power plant • Spill response materials will be kept on-site during operations
Fuel or oil leak from generators or other onsite activities during operation	Fuel or oil could leak or spill in the plant or on the ground resulting in contaminated soil or surface water	Negative	• There are no natural drainages, or watercourses within 100 metres of the project location; Petersen Bay is approximately 450 metres west • Surface water will be diverted around project components and towards drainage ditches established adjacent to roadways • Surface water will be collected within the secondary containment berm and will be disposed of under the direction of a local wildlife officer or conservation officer • In the event of a spill or leak, contaminated soil will be collected for disposal at an approved facility • Environmental SOPs will be followed by operations staff • A lined berm will be onsite for storage of new and waste hazardous products (e.g., fuel, oil, glycol) • A spill contingency plan and community specific spill plan will be updated to reflect the new power plant location • Spill response materials will be kept on-site during operations
Fuel spill during fuel transfer	Fuel could spill on the ground resulting in contaminated soil or surface water	Negative	• Fuel transfers will occur via pipeline connection with PPD Tank Farm (tank to tank) • A truck fill station will be constructed as a back-up fuel transfer option; an appropriate secondary containment box will be included in the design of the truck fill station • QEC Environmental SOPs will be followed for all fuel transfers; this includes visual monitoring for the duration of the transfer • There are no natural drainages, or watercourses within 100 metres of the project location; Petersen Bay is approximately 450 metres west • A spill contingency plan and community specific spill plan will be updated to reflect the new power plant location • Spillesponse materials will be kept on-site during operation and will be readily available during fuel transfers s
Operation of the Power Plant	Operation of the new power plant may contribute to additional noise or dust in the community	Negative	• The new power plant location is outside the community core; noise and dust that may be generated during operations is anticipated to have less effect on the community in comparison to the existing power plant located in the community core • Prevailing wind is from the northwest; therefore, there is limited potential for dust or noise to be directed towards the community • New, more efficient generators and equipment are anticipated to generate less noise and dust in comparison to the older equipment at the existing power plant • The exhaust system will include industrial scrubbers to remove additional pollutants and dust from the exhaust before being released from the power plant. • The design of the exhaust system will consider the use of hospital grade silencers to further reduce the noise produced during operations
	The new power plant will be designed to meet the current and future energy needs of the community which will contribute to community growth	Positive	• None proposed as this is a positive effect
Reduction in diesel fuel usage	Operation of more efficient generators will result in a reduction in the amount of fuel used during operation of the power plant.	Positive	• None proposed as this is a positive effect
	Operation of more efficient generators will reduce the amount of fuel used during operation of the power plant which will result in the reduction of greenhouse gas emissions	Positive	• None proposed as this is a positive effect

Closure

This project is anticipated to provide an overall benefit to the Hamlet of Gjoa Haven with more efficient use of diesel, a non-renewable resource, and the reduction of greenhouse gas emissions. It will also allow QEC to improve power generation infrastructure in the community, support continued community growth and achieve its mandate for the provision of safe, reliable electrical power to the communities it serves.

Should additional information be required please contact QEC's Health, Safety and Environment representative:

Megan Larose
Health, Safety, and Environment Advisor
Qulliq Energy Corporation
Phone: 867 979 7553
Email: MLarose@qec.nu.ca

References

Canadian Council of Ministers of the Environment (CCME). 2003. Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (PN 1326). ISBN 1-896997-33-3. Available at: https://www.ec.gc.ca/lcpe-cepa/61B26EE8-AFB3-47AC-91AC-12AFBB0B549B/CCME_eng.pdf

Gjoa Haven Community Plan, By-Law No. 164. March 2013. Gjoa Haven Hamlet Council and Government of Nunavut Department of Community and Government Services.

Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations. SOR/2008-197. Government of Canada. Last amended on October 26, 2020. Available at: https://laws-lois.justice.gc.ca/PDF/SOR-2008-197.pdf

Attachment A

Municipality of Gjoa Haven Motion #210112-009

HAMLET OF GJOA HAVEN

Motion #: 210112-009

Date: January 12, 2021

Moved by: Matt Gee

Seconded by: Salomie Qitsualik

Whereas the council, at a regular Council meeting called to consider the location and building of a new power plant in the Hamlet of Gjoa Haven received documents, plans and various options presented by the team from Qulliq Energy Corporation, and having reviewed in detail Qulliq Energy Corporation's plans and drawings showing the new power plant, to be built in Gjoa Haven;

Therefore, be it resolved that the Gjoa Haven Hamlet council through motion approves the Qulliq Energy Corporation to go ahead with constructing a new Power Plant on lots as indicated in option 1, in the presentation and sketch plans subsequently submitted and received by council.

Mayor

Senior Administrative Officer (Acting)

Attachment B

Government of Nunavut Department of Community and Government Services
Planning and Lands Division
Sketch Plan Approval Report

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Building Nunavut Together
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Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services Communautaires et gouvernementaux

June 17, 2021

Our File No: GJOA-415(40-2)21-002

Megan Larose, PMP
Health, Safety and Environment Advisor
Qulliq Energy Corporation
P.O. Box 250
Iqaluit, NU X0A 0H0

Preliminary Sketch Plan Approval
Untitled Municipal Land, Gjoa Haven, Nunavut.

Please be advised that a Preliminary Sketch Plan Approval for the above subdivision application has been issued by Planning and Lands Division, of the Department of Community and Government Services (CGS) subject to one (1) condition.

The Preliminary Sketch Plan Approval Report and Approved Sketch Plan are attached for your review. Should you have any questions, please contact Olivier Forbes-Bouillon, Territorial Community Planner, at (867) 982-7653 quoting the above file number.

Sincerely,

Robert Chapple, MCIP, RPP
Director, Planning and Lands
Department of Community and Government Services

cc: Richard Leong, A/Senior Administrative Officer, Hamlet of Gjoa Haven
Valerie Kogvik, Community Economic Development Officer, Hamlet of Gjoa Haven
Corey Dimitruk, Sr. Community Planner, CGS Cambridge Bay
Sophia Ohokanoak, Land Administrator, CGS Cambridge Bay

P.O. Box 272
Kugluktuk, Nunavut X0B 0E0

C.P. Box 272
Kugluktuk, Nunavut X0B 0E0

(867) 982-7653
(867) 982-7695
www.gov.nu.ca

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Building Nunavut Together
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Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services Communautaires et gouvernementaux

SKETCH PLAN APPROVAL REPORT

FILE NUMBER: **CGS: GJOA-415(40-2)21-002**

SKETCH PLAN: May 25, 2021
COMMUNITY: Gjoa Haven
SUBJECT SITES: Untitled Municipal Land

REQUIRED APPROVALS:
Council Approval: June 1, 2021
Motion No.: Forthcoming – Pending receipt from Hamlet

Was a Complete Planning Report Provided by the City/Region?

☒ *Yes – Proceed to Section D & see Annex*

☐ *Partial – Proceed to Section A*

☐ *No – Proceed to Section A*

A. PURPOSE OF SUBDIVISION:

See Annex: Planning Report

B. LAND TENURE ISSUES:

See Annex: Planning Report

C. PLANNING ANALYSIS:

See Annex: Planning Report

D. ANALYSIS AGAINST TERRITORIAL DIRECTIVES AND POLICIES

This subdivision supports the orderly development of this community and hence contributes to Inuuqatigiittiarniq (healthy communities).

E. DECISION:

Approval, subject to one (1) condition:

- **Signed Council minutes obtained prior to Final Survey Plan Approval.**

F. OTHER REQUIREMENTS:

1. A final survey plan must be prepared in accordance with the attached layout.

P.O. Box 272
Kugluktuk, Nunavut X0B 0E0

C.P. Box 272
Kugluktuk, Nunavut X0B 0E0

(867) 982-7653
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Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services Communautaires et gouvernementaux

F. OTHER REQUIREMENTS:

1. A final survey plan must be prepared in accordance with the attached layout.

   Please be advised that the attached layout is a conceptual sketch plan. As a result, the layout is provisional in nature. The final plan of subdivision must comply with the provisions of the current General Plan and Zoning By-law and all subsequent amendments. Consequently, if the final plan of subdivision proves that legal compliance with the various by-laws cannot be achieved, then the attached layout is deemed invalid.

   The number of lots that can be achieved in the final plan of subdivision may differ from those shown in the attached layout.

2. There is some potential for the proposed subdivision to contain archaeological sites protected by the *Archaeological and Palaeontological Sites Regulations* and *Historical Resources Act*. Please notify the Department of Culture and Heritage at (867) 934-2035 or Territorial Archaeologist at (867) 934-2040 should an archaeological site or specimen, or a Palaeontological site or fossil be encountered or disturbed by any land use activity.

3. Persons operating in and around the proposed subdivision shall comply in full with the relevant Federal, Territorial and Municipal Statutes and By-laws, Permits and Quarry Agreements.

4. Any alterations to the preliminary approval on the layout or the requirements of this letter must be confirmed in writing by the Planning and Lands Division.

5. The Sketch Plan Approval is VALID FOR ONE YEAR and the final approval of the subdivision must occur during this period. Failure to do so will result in this application being filed and a new application will be required.

SIGNATURES:

[signature]	William Patch	[signature]
Territorial Community Planner	**Manager, Community Planning**	**Director, Planning and Lands**
Date: June 17/21	**Date:** June 17, 2021	**Date:** June 18/21

P.O. Box 272
Kugluktuk, Nunavut X0B 0E0

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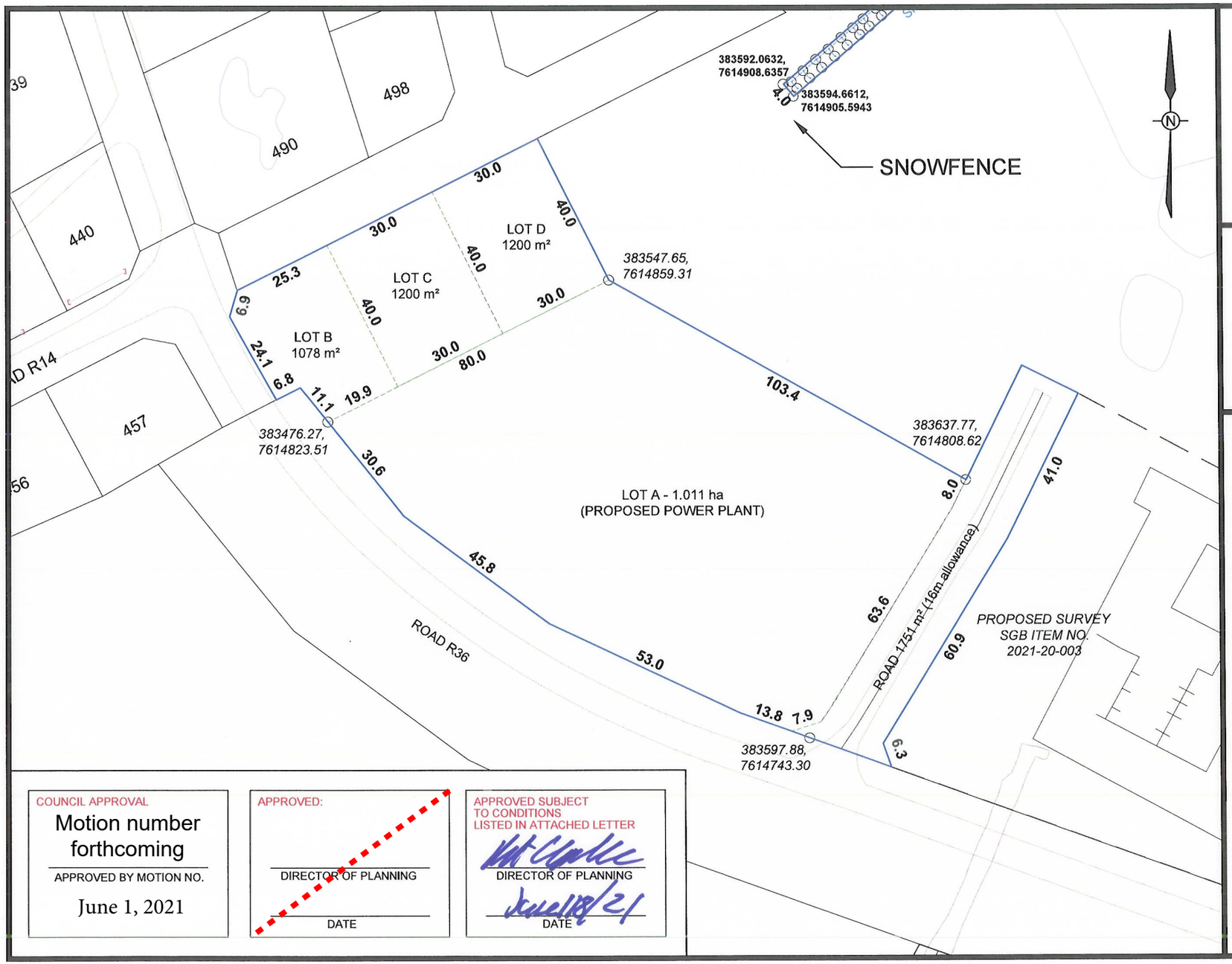

COUNCIL APPROVAL

Motion number forthcoming

APPROVED BY MOTION NO.

June 1, 2021

APPROVED:

DIRECTOR OF PLANNING

DATE

APPROVED SUBJECT TO CONDITIONS LISTED IN ATTACHED LETTER

DIRECTOR OF PLANNING

June 18/21

DATE

Nunavut

LEGEND

- EXISTING LEGAL SURVEY
- SURVEY BOUNDARY
- LINES TO BE SURVEYED
- LINES TO BE REMOVED

SKETCH SHOWING PROPOSED SUBDIVISION

PROPOSED POWER PLANT AND SURROUNDING LANDS GJOA HAVEN, NU

NOTE:

- SURVEY CONSISTS OF THREE LOTS AND ONE ROAD
- SURVEY TO BE TIED TO ALL CONTROL POINTS IN THE VICINITY
- TIES ARE REQUIRED TO ALL BUILDINGS AND IMPROVEMENTS, INCLUDING ROADS, LAKES, AND PONDS
- LANDS INVOLVED IN SURVEY ARE UNTITLED MUNICIPAL LANDS
- ALL SPLAYS ARE 5m
- FIT TO EXISTING ROADS

DATE: MAY 25, 2021

SCALE 1:1,250

INITIALS

GJOA-415(40-2)21-002

SKETCH NUMBER

Annex:
PLANNING REPORT

FILE NUMBER:	CGS: GJOA-415(40-2)21-002
SKETCH PLAN:	May 25, 2021
COMMUNITY:	Gjoa Haven
SUBJECT SITES:	Untitled municipal land
REQUIRED APPROVALS:	
Approval:	June 1, 2021
Motion No.:	Pending Receipt from Hamlet

A. PURPOSE OF SUBDIVISION:

The purpose of the subdivision is to provide a 1 hectare parcel of Industrial land for a new Qulliq Energy Corporation (QEC) power plant.

B. LAND TENURE ISSUES:

This survey consists of unsurveyed, untitled municipal land. There are 4 sketches within the survey boundary: 503-SK-079, 503-SK-093, 503-SK-094, and 503-SK-096. Sketches are lots created using the mapping program AutoCAD but are not surveyed. The ability to create sketches is unique to the Commissioner of Nunavut because the Commissioner's office is both an administrator of untitled municipal land and land registry. This means the Commissioner can create sketches and register land documents against the sketch.

All the above-mentioned sketches do not have active land leases. Therefore, once surveyed, fee simple title will be issued for LOTS A, B, C, D and ROAD to The Municipal Corporation of the Hamlet of Gjoa Haven.

-Randy Mercer, Manager, Land Administration.

C. PLANNING ANALYSIS:

Within the existing Community Plan By-Law the area immediately west of, and including the existing tank farm, has been designated Industrial for the past 10 years preparing for a future power plant.

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Figure 1: excerpt from draft poster plan showing the purple industrial and nearby snow fence, the orange community commercial and yellow residential land uses. (GN-CGS, 2021)

During these 10 years the residential land use has grown eastwardly to R17 Plan 3813 which is the eastern edge of the Residential zone and the western edge of the existing Industrial zone. During this time many of the development related expenses in this area, such as roads and power, have been installed.

The Hamlet and CGS are presently conducting the 5-year statutory plan review and have an active land development request from QEC which signals it is appropriate to develop the proposed Industrial phase of the existing Community Poster Plan (Schedule 2A of By-Laws 164 & 165).

As part of the proposed survey 40m deep commercial lots (lots B,C&D) are proposed on the immediate east side of R17 Plan 3813. Combined with a 16m Road ROW, provides 56m between residential (Lot 498) and Industrial (Lot A) land use boundaries. (See figure 2 below). The existing snow fence constraint requires a, 100 m south and 50 m north, no development buffer which is respected by the proposed sketch plan.

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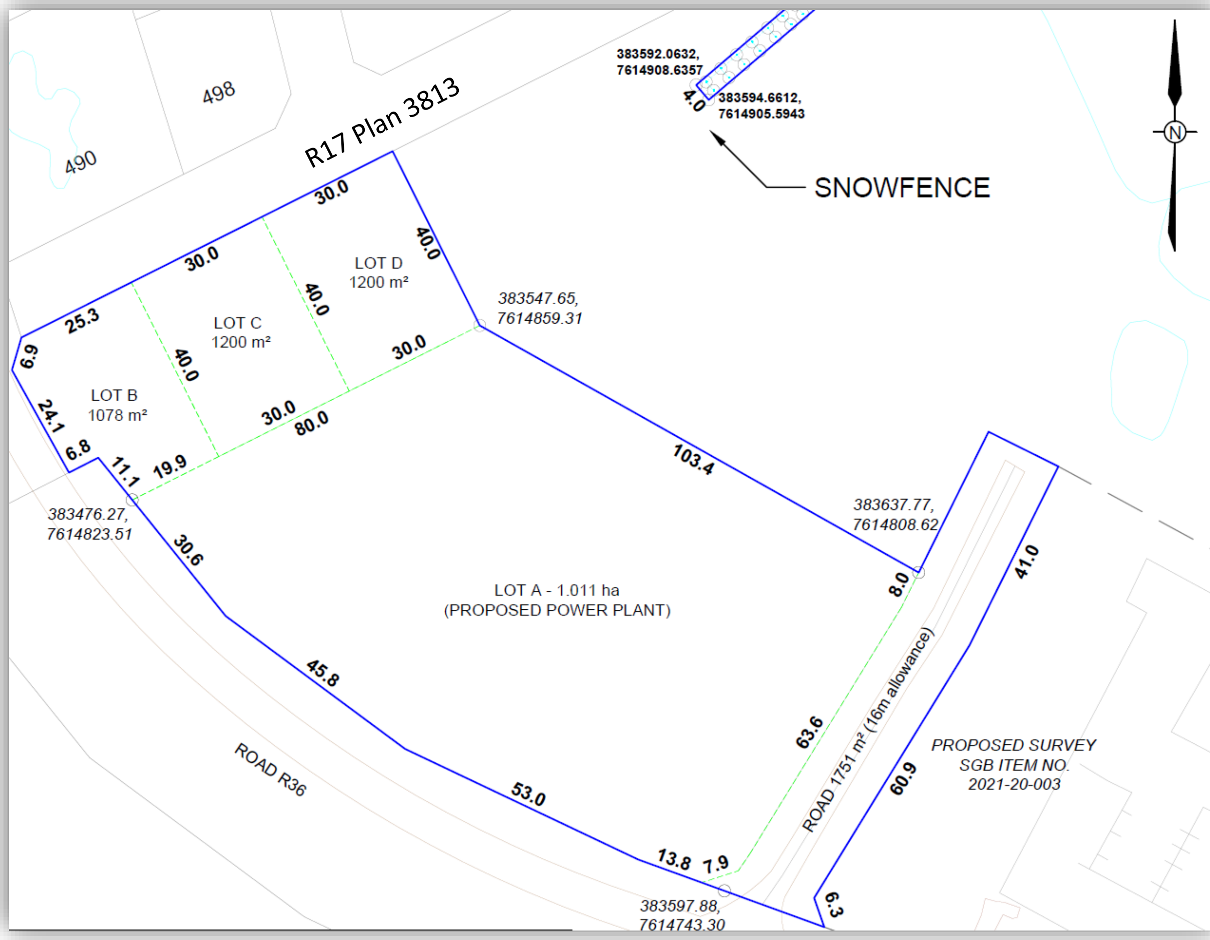

Figure 2: Proposed Sketch Plan - Site Plan depicting the survey boundary (GN-CGS, 2021)

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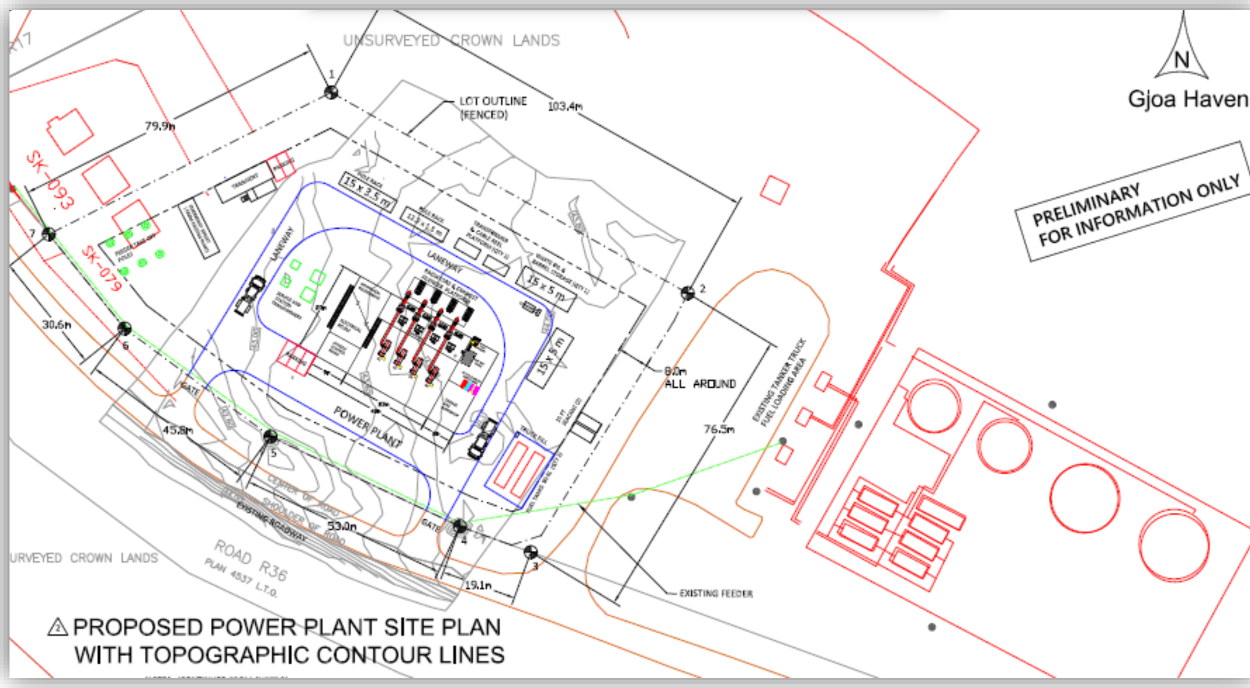

Figure 3: Site Plan depicting final orientation of the QEC Power Plant (GN-CGS, 2021)

Hamlet Approval

Council approved the sketch plan (Figure 2 previous page) on June 1, 2021 [motion number pending], ahead of second read of the provisional by-laws 224 and 225 (replacement Community Plan and Zoning By-laws). The proposed subdivision is supported by the replacement Community Plan, and these by-laws are expected to soon replace By-laws 164 & 165. Because of Council's support of the sketch plan and their support of the replacement Community Plan, no separate by-law amendment for this proposed subdivision is being sought and no issues are expected.

External Agency Approvals

- GN Building Official Department will review plans leading to a building permit once the development permit is approved by the Hamlet.
- Nunavut Airports approval – "may be required". Smoke stack height and visual obstructions from emissions are things that Nunavut Airports should be consulted on.
- Environmental Health – "may be required". Smoke stack height and air quality impacts from emissions are things that the Department of Health should be consulted on.
- NIRB/NWB – QEC's Megan LaRose has already mentioned that she is in the process of obtaining a NIRB screening which is required under the zoning bylaw (section 4.4), which may trigger an NPC review.

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- A council consultation was previously conducted in a special meeting of council 7pm to 9pm Tuesday August 21, 2020 to present the new power plant project funding and to look for location potentials. Hamlet Council has since approved the location as confirmed June 1, 2021.

Access to Sketch Plan Area: Legal Road Access to the Community Commercial lots occur from R17 Plan 3813 and legal road access to the Industrial Lot occurs from R36 CLSR 104189.

Site Conditions

Drainage: at present is naturally occurring and follows to the pond behind the tank farm in a NE direction as seen in Figure 1 on second page of this report. Where development is introduced, the Hamlet will direct water over and through subdivision by designing swales and culverts into their choice of engineered solutions.

Blasting required: - no bedrock material requiring blasting. Site is majority sand with low volume streams of pit run and gravel throughout.

Wind patterns: NW

Snowdrifting: Occurs at SE end of buildings.

D. ANALYSIS AGAINST TERRITORIAL DIRECTIVES AND POLICIES

This subdivision supports the orderly development of this community and hence contributes to Inuuqatigiittiarniq (healthy communities).

E. RECOMMENDATION:

APPROVAL, with conditions.

- June 1, 2021 Signed Council Minutes confirming sketch plan approval and motion number; and
- June 1, 2021 Second Read approval and motion number for the passing of Gjoa Haven By-laws 224 & 225 prior to final survey plan approval.

SIGNATURES:

Community Planner	**Manager, Land Administration**
Date: June 16,2021	**Date: June 16,2021**

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Attachment C

Preliminary Site Layout of the Proposed Power Plant

SAVE DATE: May/26/2021 4:37:58 PM

FILENAME: C:\USERS\BLOCKWOOD\DOCUMENTS\NEW PLANT LOT OUTLINES\GJOA HAVEN\GH-SK-01_REV 3.DWG

N

Gjoa Haven

PROPOSED LOCATION OF NEW QEC POWER PLANT. SEE SHEET 2 FOR DETAIL. SEE SHEET 3 FOR DETAIL WITH TOPOGRAPHIC CONTOUR LINES.

EXISTING FEEDER

PPD TANK FARM

PRELIMINARY FOR INFORMATION ONLY

REVISION LETTER	REVISION	PROJECT NUMBER	NAME	DATE	CHECKED BY	DESIGNED BY	STATUS OF DRAWING	DATE
3	LOT SIZE ENLARGED ACCORDING TO INFO FROM HAMLET.		BL	MAY 26/21			FOR REVIEW	MAY 26/21
2	LOT COORDINATES CHANGED ACCORDING TO HAMLET REVIEW. LOT ROTATED BACK 90 CW.		BL	MAY 25/21			FOR REVIEW	MAY 25/21
1	LOT SIZE ENLARGED AND ROTATED 90° CCW.		BL	MAY 12/21			FOR REVIEW	MAY 12/21
0	ORIGINAL		BL	FEB/21			FOR REVIEW	FEB/21

DRAWING NUMBER | DRAWING TITLE | REFERENCE DRAWINGS | DRAWN BY

PROFESSIONAL STAMP

PERMIT STAMP

Qulliq Energy Corporation
Société d'énergie Qulliq
Qulliq Aliruyaktuqtunik Ikumatjutiit

LOCATION
GJOA HAVEN
NUNAVUT

TITLE
PROPOSED NEW POWER PLANT
SITE PLAN

SCALE	SHEET	DRAWING NO.	REV.	REV. DATE
NTS	1 OF 3	GH-SK-01	3	MAY 26/21

COORDINATES FOR PROPOSED POWER PLANT SITE (1)

CORNER	'X' DIRECTION	'Y' DIRECTION
1	383547.65 m	7614859.31 m
2	383637.77 m	7614808.61 m
3	383598.10 m	7614743.21 m
4	383580.17 m	7614749.71 m
5	383532.29 m	7614772.41m
6	383495.44 m	7614799.70 m
7	383476.27 m	7614823.50m

NOTES: (CONTINUED ON SHEET 3)

(1) COORDINATES ARE TAKEN FROM EXISTING AUTOCAD BASE MAP. FINAL COORDINATES TO BE VERIFIED BY AN ONSITE SURVEY.

REVISION LETTER	REVISION	PROJECT NUMBER	DRAWN BY NAME	DRAWN BY DATE	CHECKED BY	DESIGNED BY	STATUS OF DRAWING	DATE
3	LOT SIZE ENLARGED ACCORDING TO INFO FROM HAMLET.		BL	MAY 26/21			FOR REVIEW	MAY 26/21
2	LOT COORDINATES CHANGED ACCORDING TO HAMLET REVIEW. LOT ROTATED BACK 90 CW.		BL	MAY 25/21			FOR REVIEW	MAY 25/21
1	LOT SIZE ENLARGED AND ROTATED 90° CCW.		BL	MAY 12/21			FOR REVIEW	MAY 12/21
0	ORIGINAL		BL	FEB/21			FOR REVIEW	FEB/21

DRAWING NUMBER	DRAWING TITLE
REFERENCE DRAWINGS	

PROFESSIONAL STAMP

PERMIT STAMP

Qulliq Energy Corporation
Société d'énergie Qulliq
Qulliq Alruyaktuqtunik Ikumatjutiit

LOCATION: GJOA HAVEN, NUNAVUT

TITLE: PROPOSED NEW POWER PLANT SITE PLAN

SCALE	SHEET	DRAWING NO.	REV.	REV. DATE
NTS	2 OF 3	GH-SK-01	3	MAY 26/21

SAVE DATE: May/26/2021 4:37:58 PM
FILENAME: C:\USERS\BLOCKWOOD\DOCUMENTS\NEW PLANT LOT OUTLINES\GJOA HAVEN\GH-SK-01_REV 3.DWG

2 PROPOSED POWER PLANT SITE PLAN WITH TOPOGRAPHIC CONTOUR LINES

NOTES: (CONTINUED FROM SHEET 2)

2. CONTOUR LINE ARE TAKEN FROM CONSULTANT (ENGLOBE CORP.)
   DRAWING NO: 80591-TOPO-OC26-REV 1.
   DETAILED CONTOUR LINE INFORMATION IS NOT AVAILABLE FROM THIS AUTOCAD BASE MAP.

3. REFER TO ATTACHED GOOGLE EARTH AERIAL VIEW FOR ADDITIONAL VISUAL INFORMATION.

REVISION LETTER	REVISION	PROJECT NUMBER	DRAWN BY NAME	DRAWN BY DATE	CHECKED BY	DESIGNED BY	STATUS OF DRAWING	DATE
3	LOT SIZE ENLARGED ACCORDING TO INFO FROM HAMLET.		BL	MAY 26/21			FOR REVIEW	MAY 26/21
2	LOT COORDINATES CHANGED ACCORDING TO HAMLET REVIEW. LOT ROTATED BACK 90 CW.		BL	MAY 25/21			FOR REVIEW	MAY 25/21
1	LOT SIZE ENLARGED AND ROTATED 90° CCW.		BL	MAY 12/21			FOR REVIEW	MAY 12/21
0	ORIGINAL		BL	FEB/21			FOR REVIEW	FEB/21

DRAWING NUMBER | DRAWING TITLE
REFERENCE DRAWINGS

PROFESSIONAL STAMP

PERMIT STAMP

Qulliq Energy Corporation
Société d'énergie Qulliq
Qulliq Alruyaktuqtunik Ikumatjutiit

LOCATION: GJOA HAVEN NUNAVUT

TITLE: PROPOSED NEW POWER PLANT SITE PLAN

SCALE	SHEET	DRAWING NO.	REV.	REV. DATE
NTS	3 OF 3	GH-SK-01	3	MAY 26/21

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