



## SCREENING DECISION REPORT NIRB FILE No.: 19XN011

NPC File No.: 149022

**August 15, 2019**

Following the Nunavut Impact Review Board's (NIRB or Board) assessment of all materials provided, the NIRB is recommending that a review of Qulliq Energy Corporation's (QEC) "Kugluktuk Power Plant and Solar" project proposal is not required pursuant to Article 12, Section 12.4.4(a) of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement)* and s. 92(1)(a) of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14, s. 2 (*NuPPAA*).

Subject to the Proponent's compliance with the terms and conditions as set out in below, the NIRB is of the view that the project proposal is not likely to cause significant public concerns, and it is unlikely to result in significant adverse environmental and social impacts. The NIRB therefore recommends that the responsible Minister accepts this Screening Decision Report.

### OUTLINE OF SCREENING DECISION REPORT

- 1) REGULATORY FRAMEWORK
- 2) PROJECT REFERRAL
- 3) PROJECT OVERVIEW & THE NIRB ASSESSMENT PROCESS
- 4) ASSESSMENT OF THE PROJECT PROPOSAL IN ACCORDANCE WITH PART 3 OF *NuPPAA*
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- 6) RECOMMENDED PROJECT-SPECIFIC TERMS AND CONDITIONS
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## REGULATORY FRAMEWORK

The primary objectives of the NIRB are set out in Article 12, Section 12.2.5 of the *Nunavut Agreement* and are confirmed by s. 23 of the *NuPPAA*:

*Nunavut Agreement*, Article 12, Section 12.2.5: In carrying out its functions, the primary objectives of NIRB shall be at all times to protect and promote the existing and future well-being of the residents and communities of the Nunavut Settlement Area, and to protect the ecosystemic integrity of the Nunavut Settlement Area. NIRB shall take into account the well-being of the residents of Canada outside the Nunavut Settlement Area.

The purpose of screening is provided for under Article 12, Section 12.4.1 of the *Nunavut Agreement* and s. 88 of the *NuPPAA* which states:

*NuPPAA*, s. 88: The purpose of screening a project is to determine whether the project has the potential to result in significant ecosystemic or socio-economic impacts and, accordingly, whether it requires a review by the Board...

To determine whether a review of a project is required, the NIRB is guided by the considerations as set out under Article 12, Section 12.4.2(a) and (b) of the *Nunavut Agreement* and s. 89(1) of *NuPPAA* which states:

*NuPPAA*, s. 89(1): The Board must be guided by the following considerations when it is called on to determine, on the completion of a screening, whether a review of the project is required:

- (a) a review is required if, in the Board's opinion,
  - i. the project may have significant adverse ecosystemic or socio-economic impacts or significant adverse impacts on wildlife habitat or Inuit harvest activities,
  - ii. the project will cause significant public concern, or
  - iii. the project involves technological innovations, the effects of which are unknown; and
- (b) a review is not required if, in the Board's opinion,
  - i. the project is unlikely to cause significant public concern, and
  - ii. its adverse ecosystemic and socioeconomic impacts are unlikely to be significant, or are highly predictable and can be adequately mitigated by known technologies.

It is noted that under Article 12, Section 12.4.2(c) and s. 89(2) of the *NuPPAA* provides that the considerations set out in s.89(1)(a) prevail over the considerations set out in s. 89(1)(b) of the *NuPPAA*.

As set out under Article 12, Section 12.4.4 of the *Nunavut Agreement* and s. 92(1) of the *NuPPAA*, upon conclusion of the screening process, the Board must provide its written report the Minister. The contents of the NIRB's report are specified under *NuPPAA*:

*NuPPAA*, s. 92(1): The Board must submit a written report to the responsible Minister containing a description of the project that specifies its scope and indicating that:

- (a) a review of the project is not required;
- (b) a review of the project is required; or
- (c) the project should be modified or abandoned.

Where the NIRB determines that a project may be carried out without a review, the NIRB has the discretion to recommend specific terms and conditions to be attached to any approval of the project proposal pursuant to paragraph 92(2)(a) of *NuPPAA* as follows:

*NuPPAA*, s. 92(2) In its report, the Board may also

- (a) recommend specific terms and conditions to apply in respect of a project that it determines may be carried out without a review.

#### PROJECT REFERRAL

On January 28, 2019 the NIRB received a referral to screen Qulliq Energy Corporation's (QEC) "Kugluktuk Power Plant and Solar" project proposal from the Nunavut Planning Commission (NPC or Commission), which noted that the project proposal is outside the area of an applicable regional land use plan.

Pursuant to Article 12, Sections 12.4.1 and 12.4.4 of the *Nunavut Agreement* and s. 87 of the *NuPPAA*, the NIRB commenced screening this project proposal and assigned it file number **19XN011**.

#### PROJECT OVERVIEW & THE NIRB ASSESSMENT PROCESS

##### **1. Information Requests**

On January 28, 2019 the NIRB requested that the Proponent complete the online application form through the NIRB's public registry system and ensure, pursuant to s. 144(1) of the *NuPPAA*, that the information provided be sufficient to determine the scope of the project activities being proposed and that sufficient information has been provided to commence screening. On February 11, 2019 the NIRB received the online application. Following a preliminary completeness check of the proposal as submitted, the NIRB determined that the proposal did not contain the necessary information for the NIRB to carry out its screening and in communication with the Proponent via email requested that the Proponent provide the Board with the additional information in order to carry out the screening of the project proposal.

On February 20, 2019 the NIRB received the required additional information and commenced the screening pursuant to Part 3 of the *NuPPAA*

During a teleconference between NIRB staff and QEC on March 29, 2019 to discuss the comments received on March 20, 2019, it was determined that the application submitted to the NIRB did not reference construction of two (2) - 1.2 million litre bulk fuel storage tanks, therefore this activity had not been part of the scope previously presented to parties. Following several additional conversations to clarify necessary details related to this activity, on June 7, 2019 the additional information was received by the NIRB. Following a final completeness check of the additional materials provided, it was determined that while the NPC application included sufficient reference to the activity for the conformity determination, parties had not been provided the opportunity to adequately assess the impacts of this component and required an additional opportunity to submit comments on the updated proposal.

## **2. Project Scope**

All documents received and pertaining to this project proposal can be accessed from the NIRB's online public registry at <http://www.nirb.ca/project/125442>.

The proposed “Kugluktuk Power Plant and Solar” project is located within the Kitikmeot region, within the Hamlet of Kugluktuk. The Proponent intends to build a new power plant to replace the existing power plant in Kugluktuk for a 40-year life span. A solar array will be built adjacent to the plant to supplement electrical production. The plant will also be built to integrate sustainable technologies for future power generation. The construction program is proposed to take place from 2019 to 2021 with operations planned until 2049.

As required under s. 86(1) of the *NuPPAA*, the Board accepts the scope of the “Kugluktuk Power Plant and Solar” project as set out by QEC in the proposal. The scope of the project proposal includes the following undertakings, works, or activities:

- Use of heavy equipment to prepare site for construction of plant and fuel tanks;
- Construction of new power plant with higher power output;
- Storage of hazardous materials;
- Construction of additional facilities to support the power plant;
- Construction of a 500 KW solar array adjacent to the new power plant;
- Installation of two (2) - 1.2 million litre bulk fuel storage tanks adjacent to the new power plant;
- Installation of a pipeline connecting the new storage tanks to the existing tank farm.
- Burning of combustible wastes using a waste oil furnace and shipment of non-combustible wastes to southern facilities for disposal; and
- Use of facilities and accommodations in Kugluktuk.

## **3. Inclusion or Exclusion to Scoping List**

The NIRB has identified no additional works or activities in relation to the project proposal. As a result, the NIRB proceeded with screening the project based on the scope as described above.

The NIRB notes that decommissioning of the existing power plant is not within the scope of the project as applied, and therefore would require a separate application and screening process.

#### 4. Key Stages of the Screening Process

The following key stages were completed:

Date	Stage
January 28, 2019	Receipt of project proposal from the NPC.
January 28, 2019, February 11, 2019	Information request(s)
February 20, 2019	Proponent responded to information request(s)
February 20, 2019	Acceptance of Online Application and scoping pursuant to s. 86(1) of the <i>NuPPAA</i>
February 27, 2019	Public engagement and comment request
March 20, 2019	Receipt of public comments
March 29, 2019	Proponent provided with an opportunity to address comments/concerns raised by public
March 28, 2019	Ministerial extension requested from the Minister of Environment and Climate Change
June 7, 2019	Proponent responded to comments/concerns raised by public and provided additional information on project proposal.
July 5, 2019	Additional public engagement and comment request
July 15, 2019	Receipt of additional public comments

#### 5. Public Comments and Concerns

Notice regarding the NIRB's screening of this project proposal was distributed on February 27, 2019 to community organizations in Kugluktuk, as well as to relevant federal and territorial government agencies, Inuit organizations and other parties. The NIRB requested that interested parties review the proposal and provide the Board with any comments or concerns by March 20, 2019 regarding:

- Whether the project proposal is likely to arouse significant public concern; and if so, why;
- Whether the project proposal is likely to cause significant adverse eco-systemic or socio-economic effects; and if so, why;
- Whether the project proposal is likely to cause significant adverse impacts on wildlife habitat or Inuit harvest activities; and if so, why;
- Whether the project proposal is of a type where the potential adverse effects are highly predictable and mitigable with known technology, (and providing any recommended mitigation measures); and
- Any matter of importance to the Party related to the project proposal.

On or before March 20, 2019 the NIRB received comments from the following interested parties (see Summary of Comments and Concerns section below):

- **Government of Nunavut (GN)**
  - **Department of Culture and Heritage (GN-CH)**
  - **Department of Environment (GN-DOE)**
- **Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)**
- **Environment and Climate Change Canada (ECCC)**
- **Kugluktuk Angoniatit Association**

On March 29, 2019, due to the concerns and questions identified in the comments received from parties, the NIRB provided an opportunity for the Proponent to respond to the concerns raised during the commenting period. During a teleconference between NIRB staff and the QEC to discuss the comments received, it was determined that the application submitted to the NIRB did not reference construction of two (2) - 1.2 million litre bulk fuel storage tanks, therefore this activity had not been part of the scope previously presented to parties. The Proponent provided a response to concerns on June 7, 2019 and on July 5, 2019, an amended notice was distributed requesting that parties review the additional items in the revised project scope and provide the Board with any comments or concerns by July 15, 2019.

On or before July 15, 2019 the NIRB received the additional comments from the following interested parties:

- **Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)**
- **Fisheries and Oceans Canada (DFO)**

*a. Summary of Public Comments and Concerns Received during the Public comment period of this file*

The following provides a summary of the comments and concerns received by the NIRB:

**Government of Nunavut - Department of Culture and Heritage**

- Noted that there are six (6) archaeological sites near the proposed project, however has no concerns as the project footprint is located on previously disturbed ground.
- Recommended the following to the Proponent to mitigate potential impacts to archaeological sites:
  - Confine activities within the proposed project footprint; and
  - Avoid conducting activities in the vicinity (50 m buffer zone) of archaeological/historical sites. If archaeological sites or features are encountered, activities should immediately be interrupted and moved away from this location.

**Government of Nunavut - Department of Environment**

- Noted that the construction and operation of the proposed project is unlikely to cause significant adverse ecosystemic or socio-economic effects after appropriately scoped mitigation plans are in place.
- Noted the project is on disturbed land and is unlikely to affect any natural wildlife habitat.
- Noted there is no information on additional power lines that may be required for construction and operation.

- Noted there is no information on any other associated facilities/activities required for the project.
- Noted no mitigation is proposed for wildlife, soils and vegetation.
- Noted lack of information on air and noise emissions.
- Noted there is no information on decommissioning of the existing power plant.
- Recommended Proponent develop and implement protection and mitigation measures to ensure that construction and operation has limited adverse effects to wildlife and wildlife habitat; and soil and vegetation.
- Recommended Proponent Provide a description of closure and remediation plans for the existing power plant site
- Recommended the following to improve the project:
  - Provide rationale for selected power output of the proposed power plant and confirm consideration of best practices for the plant design. Describe associated facilities and activities (e.g. upgrade or construction of additional power lines).
  - Describe expected emissions and confirm compliance with the applicable environmental standards or industry best practices.

#### **Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)**

- Noted lack of information on local employment and training opportunities during construction. Recommended Proponent provide additional details on employment opportunities and training efforts that would result from the proposal.
- Noted lack of information on community consultation and recommended Proponent describe the efforts made to inform the community of the proposal including the addition of the two (2) bulk fuel storage fuel tanks.
- Noted QEC committed to eliminate the risk to permafrost in the design, which contradicts the Proponent's identification of negative and non-mitigable impact to ground stability and permafrost in its application.
- Suggested clarification and updates on the overall Spill Contingency Plan and recommended terms and conditions to address potential impacts from fuel management.

#### **Environment and Climate Change Canada (ECCC)**

- Recommended updates to the Spill Contingency including removal of the Yellowknife emergency number.
- Noted lack of information on potential Species at Risk that might be encountered and related mitigation measures. Recommended monitoring for Species at Risk as the proposal falls within the range of several Species at Risk which would be encountered.

#### **Fisheries and Oceans Canada (DFO)**

- Noted a *Fisheries Act* Authorization is not required for the proposed project and recommended a link to guidance tools that can be found on DFO's website.

#### **Kugluktuk Angoniatit Association**

- Indicated support for the proposed project.

***b. Comments and Concerns with respect to Inuit Qaujimaningit, Traditional, and Community Knowledge***

No concerns or comments were received with respect to Inuit Qaujimaningit or traditional and community knowledge in relation to the proposed project.

**6. Proponent's Response to Public Comments and Concerns**

The following is a summary of the Proponent's response to concerns as received on June 7, 2019:

- In response to concerns about archaeological sites, noted the project is located on a former rock quarry, and therefore no archaeological assessment will be conducted.
- In response to concerns about other necessary infrastructure needed for plant operation, noted the plant will tie into an existing power line along the main road. Two additional feeder lines will be necessary to tie into the hamlet system and their planned locations will be mapped in the summer of 2019.
- In response to concerns about air pollution, noted the new plant will use more efficient engines with less fuel consumption, with expected savings of 164,000 litres per year and will generate less air pollution than the existing plant with industrial scrubbers incorporated in the design.
- In response to concerns about noise generated during operations, indicated the new plant will use hospital-grade silencers on the exhaust, which have been used in the last four power plants constructed by QEC.
- In response to concerns about the rationale for the design, indicated plant capacity is planned to be sufficient to meet Kugluktuk's peak load predictions for the 40 years following construction.
- In response to concerns for the lack of a plan for decommissioning the existing plant, noted QEC has a standardized plant decommissioning process which has been used in Qikiqtarjuaq and Taloyoak.

**7. Time of Report Extension**

As a result of the time required for the Proponent to respond to concerns raised during the public commenting period, the NIRB was not able to provide its screening decision report to the responsible Minister within 45 days as required by Article 12, Section 12.4.5 of the *Nunavut Agreement* and s. 92(3) of the *NuPPAA*. Therefore, on March 28, 2019 the NIRB wrote to the Minister of Environment and Climate Change, Government of Canada, seeking an extension to the 45-day timeline for the provision of the Board's Report.

**ASSESSMENT OF THE PROJECT PROPOSAL IN ACCORDANCE WITH PART 3 OF *NuPPAA***

In determining whether a review of the project is required, the Board considered whether the project proposal had potential to result in significant ecosystemic or socio-economic impacts.

Accordingly, the assessment of impact significance was based on the analysis of those factors that are set out under s. 90 of the *NuPPAA*. The Board took particular care to take into account Inuit Qaujimaningit, traditional and community knowledge in carrying out its assessment and determination of the significance of impacts.



The following is a summary of the Board's assessment of the factors that are relevant to the determination of significant impacts with respect of this project proposal:

Factor	Comment
The size of the geographic area, including the size of wildlife habitats, likely to be affected by the impacts.	<ul style="list-style-type: none"> <li>▪ The physical footprint of the proposed project components consists of two (2) industrial lots within the hamlet of Kugluktuk, with one of the locations to be located on a former rock quarry.</li> <li>▪ As noted by ECCC, the proposal falls within the range of several Species at Risk which could be encountered during the development of the power plant.</li> </ul>
The ecosystemic sensitivity of that area.	<ul style="list-style-type: none"> <li>▪ The proposed project is located on a former rock quarry, and is surrounded by the existing tank farm, airport road, and industrial lots and no specific areas of ecosystemic sensitivity have been identified.</li> </ul>
The historical, cultural and archaeological significance of that area.	<ul style="list-style-type: none"> <li>▪ No specific areas of historical, cultural and archaeological significance have been identified by the Proponent or the Government of Nunavut within the physical footprint of the proposed project. However, the Government of Nunavut noted that there are six (6) archaeological sites near the proposed project.</li> <li>▪ The nature of prior disturbance to the proposed project footprint makes the existence of any archaeological sites highly unlikely.</li> </ul>
The size of the human and the animal populations likely to be affected by the impacts.	<ul style="list-style-type: none"> <li>▪ The proposed project is unlikely to result in impacts to animal populations due to its location within an industrial area of the community.</li> <li>▪ The human population of Kugluktuk is likely to be affected given the proposed project location within the hamlet.</li> </ul>
The nature, magnitude and complexity of the impacts; the probability of the impacts occurring; the frequency and duration of the impacts; and the reversibility or irreversibility of the impacts.	<ul style="list-style-type: none"> <li>▪ A zone of influence of up to 10 km from the most potentially-disruptive project proposal activities was selected for the NIRB's assessment. With adherence to the relevant regulatory requirements and application of the mitigation measures recommended by the NIRB, no significant residual effects are expected to occur.</li> </ul>

Factor	Comment
The cumulative impacts that could result from the impacts of the project combined with those of any other project that has been carried out, is being carried out or is likely to be carried out.	<ul style="list-style-type: none"> <li>▪ The NIRB has not identified any past, present, and reasonably foreseeable projects at this time; however, the mitigation measures recommended by the NIRB have been designed to reduce cumulative effects should projects occur in the area in the future.</li> </ul>
Any other factor that the Board considers relevant to the assessment of the significance of impacts.	<ul style="list-style-type: none"> <li>▪ The proposed project would replace the current power plant, which has exceeded its design life.</li> <li>▪ The proposed new power plant would be more fuel efficient, create less exhaust and noise, be designed to incorporate renewable fuel sources, and would meet Kugluktuk's needs for forty (40) years following construction.</li> </ul>

#### VIEWS OF THE BOARD

In considering the factors as set out above in the screening of the project proposal, the NIRB has identified a number of issues below and respectfully provide the following views regarding whether or not the proposed project has the potential to result in significant impacts. In addition, the NIRB has proposed terms and conditions that would mitigate the potential adverse impacts identified.

#### **Ecosystem, wildlife habitat and Inuit harvesting activities:**

- Potential adverse impacts to migratory and non-migratory birds, terrestrial wildlife and Species of Risk from the use of heavy equipment and the construction activities for the building of the fuel tanks and power plant, including an increase in noise. As discussed above in the assessment of factors relevant to this proposed project would be limited to a small geographic area within the municipality of Kugluktuk and any resulting impacts would be expected to be reversible. It is unlikely that proposed project areas are actively used by wildlife due to the existing presence of auditory and visual disturbances, and the unfavourable nature of the proposed project areas as suitable wildlife habitat; therefore, the potential to directly adversely impact terrestrial wildlife and migratory birds is considered low. The potential adverse impacts to terrestrial wildlife and birds may be mitigated by requiring the Proponent to avoid wildlife, and wildlife habitat, and to ensure wastes and fuels are inaccessible to wildlife. The NIRB recommends the following terms and conditions: 5, 7, and 13 through 16. Terms and conditions 18 and 19 are recommended to mitigate potential impacts to wildlife from noise.

- Potential adverse impacts to surface, ground, and marine water quality, and fish habitat, from proposed construction and power plant operations, fuel storage, and use of fuel. As discussed above in the assessment of factors relevant to this project proposal, the potential for impacts is applicable to a small geographic area and is limited due to the proposal of activities occurring in an already developed area. Although the Proponent would not be expected to interact consistently with water features in the area, it has been identified that improper waste management, construction works, fuel storage and transfer operations, and the power plant facility operations could lead to primary impacts to surface and groundwater resources, and secondary impacts to adjacent marine habitats through surface water transport of contaminants. Within the proposed project application the Proponent provided a standard operating Spill Contingency Plan, as well as a site-specific Spill Contingency Plan, which included details pertaining to fuel management, storage, monitoring, spill response, training, and waste disposal measures that would be employed during construction and operations. It is recommended that potential adverse impacts to surface, ground, and marine water quality and fish habitat may be mitigated by requiring the Proponent to employ appropriate waste management measures, fuel and chemical use and storage protocols, and standard operational compliance measures. The following terms and conditions are being recommended to address the above concerns: 4, 6 through 12, and 20 through 22.
- Potential adverse impacts to soil, bedrock, and air quality from proposed construction and operations of the power plant, fuel storage, and use of fuel. It has been identified that improper waste management, construction works, fuel storage and transfer operations, and power plant facility operations could lead to impacts in the area. Within the proposed project application the Proponent provided a standard operating Spill Contingency Plan, as well as a site-specific Spill Contingency Plan, which included details pertaining to fuel management, storage, monitoring, spill response, training, and waste disposal measures that would be employed during operations. It is also noted that the proposed relocation of the facility away from the community decreases human health and safety risks from potential fuel spills. Further, it is acknowledged that the installation of a new power plant and fuel storage would replace older, less efficient and environmental stable facilities, which would provide long-term energy security for the community. It is recommended that potential adverse impacts to soil and air quality may be mitigated by requiring the Proponent to properly manage and store the fuel and chemicals, employ site restoration protocols, employ noise suppression measures, and properly manage project wastes. The following terms and conditions are being recommended to address the above concerns: 5, 6, 8 through 12, 17, and 19.
- The Proponent will be required to follow the specific Acts and Regulations as applicable for this project proposal (see Regulatory Requirements section) to mitigate the potential adverse impacts of the project proposal to the valued component as discussed above.

### **Socio-economic effects on northerners:**

- The Government of Nunavut (GN) has indicated that there are no known archaeological sites in the planned project footprint, and the nature of the area as a former rock quarry makes the existence of any archaeological sites highly unlikely. The Proponent is required to follow the *Nunavut Act* (as recommended in Regulatory Requirements section) and would be required to contact the Government of Nunavut – Department of Culture and Heritage if any historical sites are encountered. The Board also recommends term and condition 23 to ensure that available Inuit Qaujimaningit can inform project activities and reduce the potential for negative impacts occurring to any potential historical sites.
- Potential benefit to the local economy as the Proponent has committed to hiring local community members for various project tasks. Further, the construction of a new, more efficient, and environmentally secure power plant and fuel storage facility would provide safer and more stable infrastructure to meet current and future development needs. Additionally, the Proponent provided motions to approve the proposed undertaking, which detailed the Hamlet Council's support for the project and its need to meet current and future development needs essential for the community. Term and condition 23 has been recommended to ensure that the affected community and organizations are informed about the project proposal and term and condition 24 is recommended to ensure the Proponent considers hiring local residents for projects works where possible.

### **Significant public concern:**

- No significant public concern was expressed during the public commenting period for this file. Based on the motion of support as illustrated in the letters and documentation provided in the project application, it is not expected that public concern would develop from the proposed project. However, follow-up consultation and involvement of local community members is expected to mitigate any potential public concern from developing as a result of the proposed project activities. Term and condition 23 is recommended to ensure that the affected community and organizations are informed about the project proposal, and to provide the Proponent with an opportunity to proactively address and mitigate any concerns that may arise from project operations.

### **Technological innovations for which the effects are unknown:**

- No specific issues have been identified associated with this project proposal.

### **Administrative Conditions:**

To encourage compliance with applicable regulatory requirements and assist the Board and responsible authorities with compliance and effects monitoring for project activities, the following project-specific terms and conditions have been recommended: 1-3.

In considering the above factors and subject to the Proponent's compliance with the terms and conditions necessary to mitigate against the potential adverse environmental and social effects, the Board is of the view that the proposed project is unlikely to cause significant public concern and its adverse ecosystemic and socioeconomic impacts are unlikely to be significant, or are highly predictable and can be adequately mitigated by known technologies.

## RECOMMENDED PROJECT-SPECIFIC TERMS AND CONDITIONS

The Board is recommending the following specific terms and conditions to apply in respect of the project:

### **General**

1. Qulliq Energy Corporation (the Proponent) shall maintain a copy of the Project Terms and Conditions at the site of operation at all times.
2. The Proponent shall operate in accordance with all commitments stated in correspondence provided to the Nunavut Planning Commission (NPC File No.: 149022) and the NIRB (Online Application Form, February 20, 2019; Response to Comments June 7, 2019).
3. The Proponent shall operate the site in accordance with all applicable Acts, Regulations and Guidelines.

### **Water Use**

4. The Proponent shall not use water, including constructing or disturbing any stream, lakebed or the banks of any definable water course unless otherwise authorized by the Nunavut Water Board.

### **Waste Disposal/Incineration**

5. The Proponent shall keep all garbage and debris in bags placed in a covered metal container or equivalent until disposed of at an approved facility. All such wastes shall be kept inaccessible to wildlife at all times.
6. The Proponent shall incinerate all combustible wastes daily and remove the ash from incineration activities and non-combustible wastes from the project site to an approved facility for disposal.

### **Fuel and Chemical Storage**

7. The Proponent shall store all fuel and chemicals in such a manner that they are inaccessible to wildlife.
8. The Proponent shall locate all hazardous materials a minimum of thirty-one (31) metres away from the high water mark of any water body and in such a manner as to prevent their release into the environment unless otherwise authorized by the Nunavut Water Board.
9. The Proponent shall use adequate secondary containment or a surface liner (e.g., self-supporting insta-berms and fold-a-tanks) when storing chemicals at all locations.
10. The Proponent shall ensure that appropriate spill response equipment and clean-up materials (e.g., shovels, pumps, barrels, drip pans, and absorbents) are readily available during any transfer of fuel or hazardous substances.
11. The Proponent shall remove and treat hydrocarbon contaminated soils on site or transport them to an approved disposal site for treatment.
12. The Proponent shall ensure that all personnel are properly trained in fuel and hazardous waste handling procedures, as well as spill response procedures. All spills of fuel or other deleterious

materials of any amount must be reported immediately to the 24 hour Spill Line at (867) 920-8130.

### **Wildlife - General**

13. The Proponent shall ensure that there is no damage to wildlife habitat in conducting this operation.
14. The Proponent shall not harass wildlife. This includes persistently circling, chasing, hovering over pursuing or in any other way harass wildlife, or disturbing large groups of animals.
15. The Proponent shall not hunt or fish, unless proper Nunavut authorizations have been acquired.
16. The Proponent shall ensure that all project personnel are made aware of the measures to protect wildlife and are provided with training and/or advice on how to implement these measures.

### **Ground Disturbance/Construction and Operation of Site**

17. The Proponent shall implement suitable dust, erosion and sediment suppression measures on all areas before, during and after conducting activities in order to prevent sediments or fugitive dust from entering any waterbody or surrounding environment.
18. All construction and road vehicles must be fitted with standard and well-maintained noise suppression devices and engine idling is to be minimized.
19. All generators must undergo regular maintenance to ensure machinery is kept working and in good condition.

### **Land Use and Restoration of Disturbed Areas**

20. The Proponent shall ensure that the land use area is kept clean and tidy at all times.
21. The Proponent shall ensure that all disturbed areas are restored to a stable state as practical upon completion of the project construction activities.
22. The Proponent shall remove all garbage, fuel and equipment upon completions of the project construction activities.

### **Other**

23. The Proponent should engage with local residents regarding planned activities in the area and should solicit available Inuit Qaujimaningit and information regarding current recreational and traditional usage of the project area which may inform project activities. Posting of translated public notices and direct engagement with potentially interested groups and individuals prior to undertaking project activities is strongly encouraged.
24. The Proponent should, to the extent possible, hire local people and access local services where possible.

In addition to the project-specific terms and conditions, the Board is recommending the following:

### **Change in Project Scope**

1. Responsible authorities or Proponent shall notify the Nunavut Planning Commission and the NIRB of any changes in operating plans or conditions, including phase advancement, associated with this project prior to any such change.

### **Copy of licences, etc. to the Board and Commission**

2. As per s. 137(4) of the *NuPPAA*, responsible authorities are required to submit a copy of each licence, permit or other authorization issued for the Project to the Nunavut Planning Commission and the NIRB. Please forward a copy of the licences, permits and/or other authorizations to the NIRB directly at [info@nirb.ca](mailto:info@nirb.ca) or upload a copy to the NIRB's online registry at [www.nirb.ca](http://www.nirb.ca).

### **Incorporation of Renewable Resources Energy Sources**

3. Given the environmental consequences of using diesel fuel for power generation, the Proponent should give careful consideration to the potential for incorporating renewable energy sources and pollution reduction technologies into the design phase of the project.

### **Bear and Carnivore Safety**

4. The Proponent should review the Government of Nunavut's booklet on Bear Safety, which can be downloaded from this link: [http://gov.nu.ca/sites/default/files/bear\\_safety\\_-\\_reducing\\_bear-people\\_conflicts\\_in\\_nunavut.pdf](http://gov.nu.ca/sites/default/files/bear_safety_-_reducing_bear-people_conflicts_in_nunavut.pdf). Further information on bear/carnivore detection and deterrent techniques can be found in the "Safety in Grizzly and Black Bear Country" pamphlet, which can be downloaded from this link: [http://www.enr.gov.nt.ca/sites/default/files/web\\_pdf\\_wd\\_bear\\_safety\\_brochure\\_1\\_may\\_2015.pdf](http://www.enr.gov.nt.ca/sites/default/files/web_pdf_wd_bear_safety_brochure_1_may_2015.pdf).
5. There are polar bear and grizzly bear safety resources available from the Bear Smart Society with videos on polar bear safety available in English, French and Inuktitut at <http://www.bearsmart.com/play/safety-in-polar-bear-country/>. Information can also be obtained from Parks Canada's website on bear safety at the following link: <http://www.pc.gc.ca/eng/pn-np/nu/quttinirpaaq/visit/visit6/d.aspx> or in reviewing the "Safety in Polar Bear Country" pamphlet, which can be downloaded from the following link: [http://www.pc.gc.ca/eng/pn-np/nu/quttinirpaaq/visit/visit6/~/\\_media/pn-np/nu/auyuittuq/pdf/shared/PolarBearSafety\\_English.ashx](http://www.pc.gc.ca/eng/pn-np/nu/quttinirpaaq/visit/visit6/~/_media/pn-np/nu/auyuittuq/pdf/shared/PolarBearSafety_English.ashx).
6. Any problem wildlife or any interaction with carnivores should be reported immediately to the local Government of Nunavut, Department of Environment Conservation Office (Conservation Officer of Kugluktuk, phone: (867) 982-7451.

### **Species at Risk**

7. The Proponent review Environment and Climate Change Canada's "Environment Assessment Best Practice Guide for Wildlife at Risk in Canada", available at the following link: [http://www.sararegistry.gc.ca/virtual\\_sara/files/policies/EA%20Best%20Practices%202004.p](http://www.sararegistry.gc.ca/virtual_sara/files/policies/EA%20Best%20Practices%202004.p)

df. The guide provides information to the Proponent on what is required when Wildlife at Risk, including *Species at Risk*, are encountered or affected by the project.

### **Transport of Dangerous Goods and Waste Management**

8. Environment and Climate Change Canada recommends that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.
9. The Proponent shall ensure that proper shipping documents (waste manifests, transportation of dangerous goods, etc.) accompany all movements of dangerous goods. Further, the Proponent shall ensure that the shipment of all dangerous goods is registered with the Government of Nunavut Department of Environment, Department of Environment Manager. Contact the Manager (867) 975-7748 to obtain a manifest if dangerous goods including hazardous wastes will be transported.

## **REGULATORY REQUIREMENTS**

The Proponent is also advised that the following legislation may apply to the project:

### **Acts and Regulations**

1. The *Fisheries Act* (<http://laws-lois.justice.gc.ca/eng/acts/F-14/index.html>).
2. The *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (<http://laws-lois.justice.gc.ca/eng/acts/n-28.8/>).
3. The *Migratory Birds Convention Act* and *Migratory Birds Regulations* (<http://laws-lois.justice.gc.ca/eng/acts/M-7.01/>).
4. The *Species at Risk Act* (<http://laws-lois.justice.gc.ca/eng/acts/S-15.3/index.html>). Attached in **Appendix A** is a list of Species at Risk in Nunavut.
5. The *Wildlife Act* (Nunavut) and its corresponding regulations (<http://www.canlii.org/en/nu/laws/stat/snu-2003-c-26/latest/snu-2003-c-26.html>).
6. The *Nunavut Act* (<http://laws-lois.justice.gc.ca/eng/acts/N-28.6/>). The Proponent must comply with the proposed terms and conditions listed in the attached **Appendix B**.
7. The *Transportation of Dangerous Goods Regulations* (<http://www.tc.gc.ca/eng/tdg/clear-tofc-211.htm>), *Transportation of Dangerous Goods Act* (<http://laws-lois.justice.gc.ca/eng/acts/t-19.01/>), and the *Canadian Environmental Protection Act* (<http://laws-lois.justice.gc.ca/eng/acts/C-15.31/>).
8. The *Storage Tank System for Petroleum Products and Allied Petroleum Products Regulations* (<http://laws-lois.justice.gc.ca/eng/regulations/SOR-2008-197/FullText.html>). The Proponent must identify their tank system to Environment and Climate Change Canada and installation of new systems must comply with the regulations' design requirements.

### **Other Applicable Guidelines**

9. Environmental Guideline for the General Management of Hazardous Waste, Government of Nunavut, Revised October 2010 (<https://www.gov.nu.ca/sites/default/files/Guideline%20>



## CONCLUSION

The foregoing constitutes the Board's screening decision with respect to Qulliq Energy Corporation's "Kugluktuk Power Plant and Solar" project proposal. The NIRB remains available for consultation with the Minister regarding this report as necessary.

Dated August 15, 2019 at Baker Lake, NU.



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Kaviq Kaluraq, A/Chairperson

Attachments:   Appendix A: Species at Risk in Nunavut  
                    Appendix B: Archaeological and Palaeontological Resources Terms and Conditions for Land Use  
                                    Permit Holders

## APPENDIX A: SPECIES AT RISK IN NUNAVUT

Due to the requirements of Section 79(2) of the Species at Risk Act (SARA), and the potential for project-specific adverse effects on listed wildlife species and its critical habitat, measures should be taken as appropriate to avoid or lessen those effects, and the effects need to be monitored. Project effects could include species disturbance, attraction to operations and destruction of habitat. This section applies to all species listed on Schedule 1 of SARA, as listed in the table below, or have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which may be encountered in the project area. This list may not include all species identified as at risk by the Territorial Government. The following points provide clarification on the applicability of the species outlined in the table.

- Schedule 1 is the official legal list of Species at Risk for SARA. SARA applies to all species on Schedule 1. The term “listed” species refers to species on Schedule 1.
- Schedule 2 and 3 of SARA identify species that were designated at risk by the COSEWIC prior to October 1999 and must be reassessed using revised criteria before they can be considered for addition to Schedule 1.
- Some species identified at risk by COSEWIC are “pending” addition to Schedule 1 of SARA. These species are under consideration for addition to Schedule 1, subject to further consultation or assessment.

If species at risk are encountered or affected, the primary mitigation measure should be avoidance. The Proponent should avoid contact with or disturbance to each species, its habitat and/or its residence. All direct, indirect, and cumulative effects should be considered. Refer to species status reports and other information on the species at risk Registry at <http://www.sararegistry.gc.ca> for information on specific species.

Monitoring should be undertaken by the Proponent to determine the effectiveness of mitigation and/or identify where further mitigation is required. As a minimum, this monitoring should include recording the locations and dates of any observations of species at risk, behaviour or actions taken by the animals when project activities were encountered, and any actions taken by the proponent to avoid contact or disturbance to the species, its habitat, and/or its residence. This information should be submitted to the appropriate regulators and organizations with management responsibility for that species, as requested.

For species primarily managed by the Territorial Government, the Territorial Government should be consulted to identify other appropriate mitigation and/or monitoring measures to minimize effects to these species from the project.

Mitigation and monitoring measures must be undertaken in a way that is consistent with applicable recovery strategies and action/management plans.

Schedules of SARA are amended on a regular basis so it is important to check the SARA registry ([www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)) to get the current status of a species.

Updated: November 2018

<b>Terrestrial Species at Risk<sup>1</sup></b>	<b>COSEWIC Designation</b>	<b>Schedule of SARA</b>	<b>Government Organization with Primary Management Responsibility<sup>2</sup></b>
<b>Migratory Birds</b>			
Buff-breasted Sandpiper	Special Concern	Schedule 1	Environment and Climate Change Canada (ECCC)
Common Nighthawk	Threatened	Schedule 1	ECCC
Eskimo Curlew	Endangered	Schedule 1	ECCC
Harlequin Duck	Special Concern	Schedule 1	ECCC
Harris's Sparrow	Special Concern	Schedule 1	ECCC
Horned Grebe	Special Concern	Schedule 1	ECCC
Ivory Gull	Endangered	Schedule 1	ECCC
Olive-sided Flycatcher	Special Concern	Schedule 1	ECCC
Red Knot Islandica Subspecies	Special Concern	Schedule 1	ECCC
Red-necked Phalarope	Special Concern	No Schedule	ECCC
Ross's Gull	Threatened	Schedule 1	ECCC
Rusty Blackbird	Special Concern	Schedule 1	ECCC
Short-eared Owl	Special Concern	Schedule 1	ECCC
<b>Vegetation</b>			
Porsild's Bryum	Threatened	Schedule 1	Government of Nunavut (GN)
<b>Arthropods</b>			
Transverse Lady Beetle	Special Concern	No Schedule	GN
<b>Terrestrial Wildlife</b>			
Caribou (Dolphin and Union Population)	Endangered	Schedule 1	GN
Caribou (Barren-ground Population)	Threatened	No Schedule	GN
Caribou (Torngat Mountains Population)	Endangered	No Schedule	GN
Grizzly Bear (Western Population)	Special Concern	Schedule 1	GN
Peary Caribou	Threatened	Schedule 1	GN
Polar Bear	Special Concern	Schedule 1	GN
Wolverine	Special Concern	Schedule 1	GN
<b>Marine Wildlife</b>			
Atlantic Walrus (High Arctic Population)	Special Concern	No Schedule	Fisheries and Oceans Canada (DFO)
Atlantic Walrus (Central/Low Arctic Population)	Special Concern	No Schedule	DFO
Beluga Whale (Cumberland Sound Population)	Threatened	Schedule 1	DFO
Beluga Whale (Eastern Hudson Bay Population)	Endangered	No Schedule	DFO
Beluga Whale (Eastern High Arctic-Baffin Bay Population)	Special Concern	No Schedule	DFO

<sup>1</sup> The Department of Fisheries and Oceans has responsibility for aquatic species.

<sup>2</sup> Environment and Climate Change Canada (ECCC) has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the Migratory Birds Convention Act (MBCA). Day-to-day management of terrestrial species not covered in the MBCA is the responsibility of the Territorial Government. Populations that exist in National Parks are also managed under the authority of the Parks Canada Agency.

<b>Terrestrial Species at Risk<sup>1</sup></b>	<b>COSEWIC Designation</b>	<b>Schedule of SARA</b>	<b>Government Organization with Primary Management Responsibility<sup>2</sup></b>
Beluga Whale (Western Hudson Bay Population)	Special Concern	No Schedule	DFO
<b>Fish</b>			
Atlantic Cod (Arctic Lakes Population)	Special Concern	No Schedule	DFO
Fourhorn Sculpin (Freshwater Form)	Data Deficient	Schedule 3	DFO
Lumpfish	Threatened	No Schedule	DFO
Thorny Skate	Special Concern	No Schedule	DFO

## APPENDIX B: ARCHAEOLOGICAL AND PALAEOONTOLOGICAL RESOURCES TERMS AND CONDITIONS FOR LAND USE PERMIT HOLDERS



### INTRODUCTION

The Department of Culture and Heritage (CH) routinely reviews land use applications sent to the Nunavut Water Board, Nunavut Impact Review Board and the Indigenous and Northern Affairs Canada. These terms and conditions provide general direction to the permittee/proponent regarding the appropriate actions to be taken to ensure the permittee/proponent carries out its role in the protection of Nunavut's archaeological and palaeontological resources.

### TERMS AND CONDITIONS

- 1) The permittee/proponent shall have a professional archaeologist and/or palaeontologist perform the following **Functions** associated with the **Types of Development** listed below or similar development activities:

	<b>Types of Development</b> (See Guidelines below)	<b>Function</b> (See Guidelines below)
a)	Large scale prospecting	Archaeological/Palaeontological Overview Assessment
b)	Diamond drilling for exploration or geotechnical purpose or planning of linear disturbances	Archaeological/ Palaeontological Inventory
c)	Construction of linear disturbances, Extractive disturbances, Impounding disturbances and other land disturbance activities	Archaeological/ Palaeontological Inventory or Assessment or Mitigation

Note that the above-mentioned functions require either a Nunavut Archaeologist Permit or a Nunavut Palaeontologist Permit. CH is authorized by way of the *Nunavut and Archaeological and Palaeontological Site Regulations*<sup>3</sup> to issue such permits.

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<sup>3</sup> P.C. 2001-1111 14 June, 2001

- 2) The permittee/proponent shall not operate any vehicle over a known or suspected archaeological or palaeontological site.
- 3) The permittee/proponent shall not remove, disturb, or displace any archaeological artifact or site, or any fossil or palaeontological site.
- 4) The permittee/proponent shall immediately contact CH at (867) 934-2046 or (867) 975-5500 should an archaeological site or specimen, or a palaeontological site or fossil, be encountered or disturbed by any land use activity.
- 5) The permittee/proponent shall immediately cease any activity that disturbs an archaeological or palaeontological site encountered during the course of a land use operation until permitted to proceed with the authorization of CH.
- 6) The permittee/proponent shall follow the direction of CH in restoring disturbed archaeological or palaeontological sites to an acceptable condition. If these conditions are attached to either a Class A or B Permit under the Territorial Lands Act Indigenous and Northern Affairs Canada directions will also be followed.
- 7) The permittee/proponent shall provide all information requested by CH concerning all archaeological sites or artifacts and all palaeontological sites and fossils encountered in the course of any land use activity.
- 8) The permittee/proponent shall make best efforts to ensure that all persons working under its authority are aware of these conditions concerning archaeological sites and artifacts and palaeontological sites and fossils.
- 9) If a list of recorded archaeological and/or palaeontological sites is provided to the permittee/proponent by CH as part of the review of the land use application the permittee/proponent shall avoid the archaeological and/or palaeontological sites listed.
- 10) Should a list of recorded sites be provided to the permittee/proponent, the information is provided solely for the purpose of the proponent's land use activities as described in the land use application, and must otherwise be treated confidentially by the proponent.

### **Legal Framework**

As stated in Article 33 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement)*:

*Where an application is made for a land use permit in the Nunavut Settlement Area, and there are reasonable grounds to believe that there could be sites of archaeological importance on the lands affected, no land use permit shall be issued without written consent of the Designated Agency. Such consent shall not be unreasonably withheld. [33.5.12]*

*Each land use permit referred to in Section 33.5.12 shall specify the plans and methods of archeological site protection and restoration to be followed by the permit holder, and any other conditions the Designated Agency may deem fit. [33.5.13]*

### **Palaeontology and Archaeology**

Under the *Nunavut Act*<sup>4</sup>, the federal government can make regulations for the protection, care and preservation of palaeontological and archaeological sites and specimens in Nunavut. Under the *Nunavut Archaeological and Palaeontological Sites Regulations*<sup>5</sup>, it is illegal to alter or disturb any palaeontological or archaeological site in Nunavut unless permission is first granted through the permitting process.

## Definitions

As defined in the *Nunavut Archaeological and Palaeontological Sites Regulations*, the following definitions apply:

*“archaeological site” means a place where an archaeological artifact is found.*

*“archaeological artifact” means any tangible evidence of human activity that is more than 50 years old and in respect of which an unbroken chain of possession or regular pattern of usage cannot be demonstrated, and includes a Denesuline archaeological specimen referred to in section 40.4.9 of the Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement).*

*“palaeontological site” means a site where a fossil is found.*

*“fossil” includes:*

*Fossil means the hardened or preserved remains or impression of previously living organisms or vegetation and includes:*

- (a) natural casts;*
- (b) preserved tracks, coprolites and plant remains; and*
- (c) the preserved shells and exoskeletons of invertebrates and the preserved eggs, teeth and bones of vertebrates.*

## *Guidelines for Developers for the Protection of Archaeological Resources in the Nunavut Territory*

(Note: Partial document only, complete document at: [www.ch.gov.nu.ca/en/Archaeology.aspx](http://www.ch.gov.nu.ca/en/Archaeology.aspx))

## Introduction

The following guidelines have been formulated to ensure that the impacts of proposed developments upon heritage resources are assessed and mitigated before ground surface altering activities occur. Heritage resources are defined as, but not limited to, archaeological and historical sites, burial grounds, palaeontological sites, historic buildings and cairns. Effective collaboration between the developer, the Department of Culture, and Heritage (CH), and the contract archaeologist(s) will ensure proper preservation of heritage resources in the Nunavut Territory. The roles of each are briefly described.

CH is the Nunavut Government agency which oversees the protection and management of heritage resources in Nunavut, in partnership with land claim authorities, regulatory agencies, and the federal government. Its role in mitigating impacts of developments on heritage resources is as

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<sup>4</sup> s. 51(1)

<sup>5</sup> P.C. 2001-1111 14 June, 2001

follows: to identify the need for an impact assessment and make recommendations to the appropriate regulatory agency; set the terms of reference for the study depending upon the scope of the development; suggest the names of qualified individuals prepared to undertake the study to the developer; issue an archaeologist or palaeontologist permit authorizing field work; assess the completeness of the study and its recommendations; and ensure that the developer complies with the recommendations.

The primary regulatory agencies that CH provides information and assistance to are the Nunavut Impact Review Board, for development activities proposed for Inuit Owned Lands (as defined in Section 1.1.1 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement)*), and the Indigenous and Northern Affairs Canada, for development activities proposed for federal Crown Lands.

A developer is the initiator of a land use activity. It is the obligation of the developer to ensure that a qualified archaeologist or palaeontologist is hired to perform the required study and that provisions of the contract with the archaeologist or palaeontologist allow permit requirements to be met; i.e. fieldwork, collections management, artifact and specimen conservation, and report preparation. On the recommendation of the contract archaeologist or palaeontologist in the field and the Government of Nunavut, the developer shall implement avoidance or mitigative measures to protect heritage resources or to salvage the information they contain through excavation, analysis, and report writing. The developer assumes all costs associated with the study in its entirety.

Through his or her active participation and supervision of the study, the contract archaeologist or palaeontologist is accountable for the quality of work undertaken and the quality of the report produced. Facilities to conduct fieldwork, analysis, and report preparation should be available to this individual through institutional, agency, or company affiliations. Responsibility for the curation of objects recovered during field work while under study and for documents generated in the course of the study as well as remittance of artifacts, specimens and documents to the repository specified on the permit accrue to the contract archaeologist or palaeontologist. This individual is also bound by the legal requirements of the *Nunavut Archaeological and Palaeontological Sites Regulations*.

### **Types of Development**

In general, those developments that cause concern for the safety of heritage resources will include one or more of the following kinds of surface disturbances. These categories, in combination, are comprehensive of the major kinds of developments commonly proposed in Nunavut. For any single development proposal, several kinds of these disturbances may be involved

- *Linear disturbances: including the construction of highways, roads, winter roads, transmission lines, and pipelines;*
- *Extractive disturbances: including mining, gravel removal, quarrying, and land filling;*
- *Impoundment disturbances: including dams, reservoirs, and tailings ponds;*



- *Intensive land use disturbances: including industrial, residential, commercial, recreational, and land reclamation work, and use of heritage resources as tourist developments.*
- *Mineral, oil and gas exploration: establishment of camps, temporary airstrips, access routes, well sites, or quarries all have potential for impacting heritage resources.*

### **Types of Studies Undertaken to Preserve Heritage Resources**

**Overview:** An overview study of heritage resources should be conducted at the same time as the development project is being designed or its feasibility addressed. They usually lack specificity with regard to the exact location(s) and form(s) of impact and involve limited, if any, field surveys. Their main aim is to accumulate, evaluate, and synthesize the existing knowledge of the heritage of the known area of impact. The overview study provides managers with baseline data from which recommendations for future research and forecasts of potential impacts can be made. A Class I Permit is required for this type of study if field surveys are undertaken.

**Reconnaissance:** This is done to provide a judgmental appraisal of a region sufficient to provide the developer, the consultant, and government managers with recommendations for further development planning. This study may be implemented as a preliminary step to inventory and assessment investigations except in cases where a reconnaissance may indicate a very low or negligible heritage resource potential. Alternately, in the case of small-scale or linear developments, an inventory study may be recommended and obviate the need for a reconnaissance.

The main goal of a reconnaissance study is to provide baseline data for the verification of the presence of potential heritage resources, the determination of impacts to these resources, the generation of terms of reference for further studies and, if required, the advancement of preliminary mitigative and compensatory plans. The results of reconnaissance studies are primarily useful for the selection of alternatives and secondarily as a means of identifying impacts that must be mitigated after the final siting and design of the development project. Depending on the scope of the study, a Class 1 or Class 2 Permit is required for this type of investigation.

**Inventory:** A resource inventory is generally conducted at that stage in a project's development at which the geographical area(s) likely to sustain direct, indirect, and perceived impacts can be well defined. This requires systematic and intensive fieldwork to ascertain the effects of all possible and alternate construction components on heritage resources. All heritage sites must be recorded on Government of Nunavut Site Survey forms. Sufficient information must be amassed from field, library and archival components of the study to generate a predictive model of the heritage resource base that will:

- allow the identification of research and conservation opportunities;
- enable the developer to make planning decisions and recognize their likely effects on the known or predicted resources; and
- make the developer aware of the expenditures, which may be required for subsequent studies and mitigation. A Class 1 or 2 permit is required.

**Assessment:** At this stage, sufficient information concerning the numbers and locations of heritage resources will be available, as well as data to predict the forms and magnitude of impacts. Assessments provide information on the size, volume, complexity and content of a heritage resource, which is used to rank the values of different sites or site types given current archaeological knowledge. As this information will shape subsequent mitigation program(s), great care is necessary during this phase.

**Mitigation:** This refers to the amelioration of adverse impacts to heritage resources and involves the avoidance of impact through the redesign or relocation of a development or its components; the protection of the resource by constructing physical facilities; or, the scientific investigation and recovery of information from the resource by excavation or other method. The type(s) of appropriate mitigative measures are dictated by their viability in the context of the development project. Mitigation strategies must be developed in consultation with, and approved by, the Department of Culture and Heritage. It is important to note that mitigation activities should be initiated as far in advance of the construction of the development as possible.

**Surveillance and monitoring:** These may be required as part of the mitigation program.

*Surveillance* may be conducted during the construction phase of a project to ensure that the developer has complied with the recommendations.

*Monitoring* involves identification and inspection of residual and long-term impacts of a development (i.e. shoreline stability of a reservoir); or the use of impacts to disclose the presence of heritage resources, for example, the uncovering of buried sites during the construction of a pipeline.