SCREENING DECISION REPORT
NIRB FILE No.: 17XN070

NPC File No.: 148652

March 21, 2018

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 "Iqaluit Power Plant Bulk Fuel Storage Upgrade" project proposal is not required pursuant to paragraph 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

REGULATORY FRAMEWORK

The primary objectives of the NIRB are set out in Section 12.2.5 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (*Nunavut Agreement*) and are confirmed by section 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 section 88 of the *NuPPAA*:

> *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 subsection 89(1) of *NuPPAA*:

> *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 subsection 89(2) of the *NuPPAA* provides that the considerations set out in paragraph 89(1)(a) prevail over those set out in paragraph 89(1)(b) of the *NuPPAA*.

As set out under subsection 92(1) of the *NuPPAA*, upon conclusion of the screening process, the Board must provide its written report the Minister:

> *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 December 11, 2017 the NIRB received a referral to screen *Qulliq Energy Corporation's (QEC; the Proponent) "Iqaluit Power Plant Bulk Fuel Storage Upgrade"* 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 section 87 of the *NuPPAA*, the NIRB commenced screening this project proposal and assigned it file number 17XN070.

PROJECT OVERVIEW & THE NIRB ASSESSMENT PROCESS

1. Project Scope

The proposed "Iqaluit Power Plant Bulk Fuel Storage Upgrade" project is located within the Qikiqtani (South Baffin) region, within the municipal boundaries of the City of Iqaluit. The Proponent intends to conduct make upgrades to the existing Iqaluit Bulk Storage Tank Farm associated with the City's main power plant to increase diesel fuel storage capacity. The program is proposed to take place from May 2018 to August 2019.

As required under subsection 86(1) of the *NuPPAA*, the Board accepts the scope of the "Iqaluit Power Plant Bulk Fuel Storage Upgrade" project as set out by QEC in the proposal. The scope of the project proposal includes the following undertakings, works, or activities:

- Expand and upgrade existing tank farm facility to increase diesel fuel storage capacity from 5.6 million litres (ML) to 11.3 ML:
    - Construction and installation of a new 5.7 ML field erected tank (Tank #2) with associated fill and supply piping;
    - Installation of remote fill for the intermediate tank and audible/visual overfill protection system on Tank #2;
- Use of heavy equipment (excavator and crane) to undertake civil and electrical works:
    - Removal of the existing berm liner for portion of berm liner being upgraded;
    - Installation and welding of new HDPE (High Density Polyethylene) liner within a portion of the secondary containment area;
    - Installation of a new tank foundation, and construction of concrete apron for truck refueling;
    - Installation of ancillary electrical components (motor operated valve control unit overfill protection control unit) and new grounding system for Tank #2;
    - Completing ultrasonic and x-ray testing, including commissioning, training, and demonstration of all components as per the specifications;
    - Use of approximately 205 L of diesel fuel to run an excavator, crane, and pump.
- Conduct hydrostatic testing on tank #2 to ensure soundness of all welds and joints, using 299 cubic metres (m^3) of water/day (5,700,000 m^3 total), drawn from two (2) nearby ponds as well as Lake Geraldine (the City's water supply); and

- Discharge test water into a stream adjacent to the power plant where it will flow out into the ocean.

Note that following comments from parties received on or before February 23, 2018 the Proponent clarified and modified the scope as follows:

- Water for hydrostatic testing will be sourced from the two nearby ponds only, and not Lake Geraldine; and
- Following hydrostatic testing, test water will be discharged back to the source ponds rather than into a stream where it would flow out into the ocean.

2. 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.

3. Key Stages of the Screening Process

The following key stages were completed:

Date	Stage
December 11, 2017	Receipt of project proposal from the NPC
December 11, 2017, January 29, 2018	Information requests
January 30, 2018	Proponent responded to information requests
January 30, 2018	Scoping pursuant to subsection 86(1) of the *NuPPAA*
January 31, 2018	Public engagement and comment request
February 21, 2018	Receipt of public comments
February 23, 2018	Proponent provided with an opportunity to address comments/concerns raised by public
March 14, 2018	Proponent responded to comments/concerns raised by public
March 14, 2018	Ministerial extension requested from the Minister of Crown – Indigenous Relations and Northern Affairs, Government of Canada

4. Public Comments and Concerns

Notice regarding the NIRB's screening of this project proposal was distributed on January 31, 2018 to community organizations in Iqaluit, 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 February 21, 2018 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.

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

Environment and Climate Change Canada (ECCC)

- Noted no concerns at this time.

Fisheries and Oceans Canada (DFO)

- Noted that wildlife habitat could be adversely impacted by the Project.
- Noted that not enough information was provided by the Proponent to evaluate potential impacts of the project on nearby aquatic species. In particular, DFO requested further details of the waterbodies from which water would be taken, including their location, volume, fish and fish habitat.
- Recommended the Proponent provide rationale as to why water would be disposed of into the ocean instead of the original sources.
- Noted that depending on the volume of water sources and type of habitat, water-taking activities may require site-specific review and a Fisheries Act authorization.

Indigenous and Northern Affairs Canada (INAC)

- Recommended that after hydrostatic testing, water quality is tested prior to discharge to ensure compliance with the Arctic Waters Pollution Prevention Act.
- Recommended that the rate of discharge of water be managed and monitored to minimize sediment erosion, disturbance, and discharge into the ocean.
- Noted that there were no detailed records provided on community engagement/consultation activities undertaken.

5. 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 March 14, 2018:

- To address concerns regarding the potential for significant adverse impacts on wildlife habitat, the Proponent noted that the ponds from which water would be withdrawn have no significant inlet or outlet, and that the new fuel storage tank would be built on an existing pad in the existing fuel farm. The Proponent further commented that not replacing the tank would pose an environmental risk as it is over 23 years old and tanks could corrode and leak over time.
- To address concerns regarding the lack of information about the waterbodies from which water would be taken for the hydrostatic testing, the Proponent noted that the water sources are natural ponds that are not connected to rivers or lakes where aquatic species

live, but rather are that the ponds are filled by snow. The Proponent also clarified that QEC would not be using the City of Iqaluit's potable water source for hydrostatic testing.

- To address concerns about the quality and quantity of water to be discharged following hydrostatic testing, the Proponent noted that the new fuel storage tank would be made of new steel plates and structures with a primer coating and that no hazardous chemicals or debris would be inside the tank during the test. The Proponent concluded that water quality would be unchanged by the hydrostatic testing process.
- To further address concerns regarding discharge, the Proponent noted that it is now proposing to discharge water back to its original sources via a hose, with a rate of discharge set in consultation with the water expert to minimize impacts.
- To address concerns regarding limited community engagement/consultation, the Proponent noted that projects that address critical infrastructure and require a high degree of expert knowledge do not normally weight on the opinion of the general public. The Proponent added that the design has been based on all federal and territorial standards and regulations and emphasized that not having a second back-up tank to draw fuel from would be a risk to power generation.

7. Time of Report Extension

As a result of the time required to allow the Proponent to provide a response to comments on the proposal, 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 subsection 92(3) of the *NuPPAA*. Therefore, on March 14, 2018 the NIRB wrote to the Minister of Crown – Indigenous Relations and Northern Affairs, 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 section 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:

1. *The size of the geographic area, including the size of wildlife habitats, likely to be affected by the impacts.*

   The proposed project would occur within the municipal boundaries of the City of Iqaluit in a site zoned for commercial/industrial use with some existing infrastructure. Specifically, the new fuel tank would be constructed within the existing fuel tank farm on an existing tank pad. Water for hydrostatic testing would be sourced from nearby ponds. Due to the proposed project occurring in an existing industrial area, consistent interaction

with wildlife is unlikely. However, proposed activities including the withdrawal and discharge of water have the potential to interact intermittently with habitats for various wildlife species including migratory and non-migratory birds, wolves, wolverine, fox, Polar Bear and fish.

2. *The ecosystemic sensitivity of that area.*

   The proposed project would occur in an area with no particular identified ecosystemic sensitivity and is in a municipal area, in a site zoned for commercial/industrial use with some existing infrastructure.

3. *The historical, cultural and archaeological significance of that area.*

   Neither the Proponent nor any parties that submitted comments for this project identified any known areas of historical, cultural and archaeological significance associated with the project area. Further, because the proposed project would occur in a developed area within a municipality, it would not be expected to impact any areas of historical, cultural, or archaeological significance. The Proponent would be required to contact the Government of Nunavut-Department of Culture and Heritage if any sites of historical, cultural or archaeological significance are encountered.

4. *The size of the human and the animal populations likely to be affected by the impacts.*

   Although no significant public concerns were raised during the public commenting period, the NIRB notes that the close proximity of the proposed activities to the City of Iqaluit could potentially contribute to public concern developing. A term and condition has been recommended to direct engagement with the community, hunters and trappers organization and interested parties, as well as the posting of public notices to ensure residents are aware of the infrastructure activities being or to be conducted.

5. *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.*

   As the "Iqaluit Power Plant Bulk Fuel Storage Upgrade" project is a proposed infrastructure project involving the construction of a large fuel tank and hydrostatic testing, the nature of potential impacts is considered to be well-known. Potential adverse impacts are likely to be localized to the Project footprint, of low magnitude, infrequent and short in duration (substantial construction would be completed within a few months and finalized within a year, and hydrostatic testing should take three weeks). Based on past evidence of similar scope of activities, potential adverse impacts will be reversible and mitigable with due care.

6. *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.*

The proposed project would take place at an existing development and also within a 100 kilometre radius to a number of other projects that are currently active, in addition to other projects proposed and currently undergoing assessment by the Board as listed in Table 1 below. However, it is noted that this project is not likely to result in residual or cumulative impacts. The potential for cumulative impacts to water quality, fish and fish habitat, the marine environment, migratory and non-migratory birds, and terrestrial wildlife resulting from the proposed infrastructure construction activities and other projects in the region has been identified and considered in the development of the NIRB's recommendations. Terms and conditions recommended for each of these projects are expected to reduce any residual impacts, and as such would limit or eliminate the potential for cumulative effects to occur.

Table 1: Project List

NIRB Project Number	Project Title	Project Type
Proposed Developments – undergoing assessment		
16YN010	Ancient DNA in Lake Sediment	Research
18XN001	Bridge to Nowhere - Repair to Abutments	Infrastructure
Active Projects		
17UN006	Iqaluit Airport - Approach Lighting Replacement	Other
17XN021	Iqaluit Marine Infrastructure – Deep Sea Port	Infrastructure
17XN022	Iqaluit Marine Infrastructure - Small Craft Harbour	Infrastructure
17YN019	Iqaluit MET Mast	Research
Past Projects		
16YN010	Ancient DNA in Lake Sediment	Research
16YN028	Thule Whalebone House Excavation and Replication	Research
16YN057	The Burden of Infectious Pathogens in Clams in Iqaluit, Nunavut	Research
17UN025	Former Iqaluit Metal Dump Remediation	Other
17AN031	Canada C3 led by Students on Ice Foundation	Access

7. *Any other factor that the Board considers relevant to the assessment of the significance of impacts.*

As noted above, the objective of the proposed project is to make upgrades to the existing Iqaluit Bulk Storage Tank Farm associated with the City's main power plant to increase diesel fuel storage capacity. By adhering to the NIRB's terms and conditions as well as the regulatory requirements and authorizations, it is expected that the positive long-term outcomes of the proposed project would offset any short-term negative impacts that may result from construction and hydrostatic testing of the new fuel tank.

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.

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: 1-4.

Ecosystem, wildlife habitat and Inuit harvesting activities:

Issue 1: Potential adverse impacts to migratory and non-migratory birds and terrestrial wildlife from the use of heavy equipment and the construction activities for the expansion of the fuel tank farm facility, including an increase in noise.

Board views: As discussed above in the assessment of factors relevant to this project proposal, the project would be limited to a short period and a small geographic area within the municipality of Iqaluit. The fuel tank would be constructed within an existing industrial site that is already disturbed from the previous development of the facility. It is unlikely that project areas are actively used by wildlife due to the existing presence of auditory and visual disturbances, and the unfavourable nature of the project areas as suitable wildlife habitat; therefore, the potential to directly adversely impact terrestrial wildlife and migratory birds is considered low. However, noise during construction may disturb wildlife intermittingly passing near the area, including birds, wolves, wolverine, fox, or Polar Bear. With the recommended terms and conditions in place, the potential impacts are considered to be highly mitigable.

The Proponent would be required to follow the *Migratory Birds Convention Act*, *Migratory Birds* Regulations, *Species at Risk Act*, and the *Wildlife Act (Nunavut)* (see Regulatory Requirements section).

Recommended Mitigation Measures: It is recommended that the potential adverse impacts to wildlife and birds may be mitigated by requiring the Proponent to avoid wildlife, wildlife habitat, and nesting areas, and to ensure wastes and fuels are inaccessible to wildlife. The NIRB recommends the following terms and conditions: 7, 8, and 15 through 17. Term and Condition 20 is recommended to mitigate potential impacts to wildlife from noise.

Issue 2: Potential adverse impacts to surface water quality and quantity, and fish and fish habitat from the withdrawal and eventual discharge of water to nearby ponds for hydrostatic testing, as well as from potential fuel spills during the construction activities.

Board views: 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 infrequent and short duration of the activities. The Proponent has noted that the waterbodies from which water will be withdrawn for hydrostatic testing are not known to contain fish or other wildlife and are not connected to nearby streams and rivers nor connected to the City's potable water source. The Proponent further noted that the potential water sources hold well beyond the volume required for testing purposes. The Proponent also clarified that the tank would not contain hazardous chemicals or debris and that the water quality would be unchanged. The Proponent highlighted that the fuel tanks will be lined and bermed, has committed to safe fuel handling and storage practices and has provided a spill contingency plan.

The Proponent would require a water licence from the Nunavut Water Board for the water usage activities and fuel storage. In addition, the Proponent would also be required to follow the *Fisheries Act*, *Transportation of Dangerous Goods Act*, *Transportation of Dangerous Goods Regulations*, the *Canadian Environmental Protection Act*, and the *Storage Tank System for Petroleum Products and Allied Petroleum Products Regulations* (see Regulatory Requirements section).

Recommended Mitigation Measures: It is recommended that the potential adverse impacts to be mitigated by requiring the Proponent to ensure fuels are used, stored, and transported safely and securely; by ensuring activities do not result in ground disturbance and erosion; and by requiring the Proponent to restore any disturbed areas upon completion of the project. The following terms and conditions are recommended: 6, 8 through 14, and 18 through 22.

Issue 3: Potential adverse impacts to public and traditional land use activities in the area due to the removal of water from nearby ponds for hydrostatic testing.

Board Views: It is understood that the withdrawal of water would occur infrequently (i.e., only once if the testing shows the tank has no leaks) over a short period of time and would occur within a limited geographic area. The Proponent has indicated that the waterbodies from which water would be sourced for hydrostatic testing do not substantially contribute to community social, sporting, or recreational activities. Therefore adverse impacts from the withdrawal of water on public and traditional land use activities are unlikely.

Recommended Mitigation Measures: Term and condition 23 is recommended to ensure that the affected communities and organizations are informed about the project proposal and term and condition 24 has been recommended to ensure that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities in the area.

Socio-economic effects on northerners:

Issue 4: Potential adverse impacts to historical, cultural and archaeological sites from research activities.

Board Views: The Proponent is proposing to work within the municipality of Iqaluit in an area of no known historical significance. Therefore, the probability of significant impacts occurring to historical, cultural, and archaeological sites is considered to be low. As mentioned above, the Proponent would be required to contact the Culture and Heritage Department when encountering historical sites to follow the *Nunavut Act* (as recommended in Regulatory Requirements section).

Recommended Mitigation Measures: Term and condition 23 is recommended to ensure that available Inuit Qaujimaningit can inform project activities, and reduce the potential for adverse impacts occurring to any additional historical sites.

Issue 5: Potential positive impacts to the local community from employment of local workers/contractors, as well as from the increase in available energy for the City of Iqaluit.

Board Views: It is noted that the population of Iqaluit will continue to grow and additional fuel storage capacity will be required to supply the City's power plant. The Proponent has indicated that the additional capacity would ultimately save time, money and reduce electricity costs for the City. Qulliq Energy Corporation is owned by the Government of Nunavut and has offices and employees in each community in Nunavut, including Iqaluit, while Inukshuk Construction Ltd., the contracting company, is a registered Inuit firm.

Recommended Mitigation Measures: Terms and condition 25 has been recommended to encourage local hiring and accessing of local services.

Significant public concern:

Issue 6: No significant public concern was expressed during the public commenting period for this file.

Board Views: Engagement with the local community regarding the proposed project is expected to mitigate any potential for public concern resulting from project activities.

Recommended Mitigation Measures: Term and condition 24 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 or mitigate any concerns that may arise from the project activities findings.

Technological innovations for which the effects are unknown:

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

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 forward copies of all permits obtained and required for this project to the Nunavut Impact Review Board (NIRB) prior to the commencement of the project.
3. The Proponent shall operate in accordance with all commitments stated in correspondence provided to the Nunavut Planning Commission (NPC File No.: 148652), and the NIRB (Online Application Form, January 29, 2018; additional information, March 14, 2018).
4. The Proponent shall operate the site in accordance with all applicable Acts, Regulations and Guidelines.

Water Use

5. The Proponent shall not extract water from any fish-bearing waterbody unless the water intake hose is equipped with a screen of appropriate mesh size to ensure that there is no entrapment of fish. Small lakes or streams should not be used for water withdrawal unless approved by the Nunavut Water Board.
6. The Proponent shall not use water, including constructing or disturbing any stream, lakebed or the banks of any definable water course unless approved by the Nunavut Water Board.

Waste Disposal

7. 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.

Fuel and Chemical Storage

8. The Proponent shall store all fuel and chemicals in such a manner that they are inaccessible to wildlife.
9. Unless otherwise authorized by the Nunavut Water Board, the Proponent shall locate all fuel and other 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.
10. The Proponent shall ensure that re-fueling of all equipment occurs a minimum of thirty-one (31) metres away from the high water mark of any water body, unless otherwise authorized by the Nunavut Water Board.

11. The Proponent shall use adequate secondary containment or a surface liner (e.g., self-supporting insta-berms and fold-a-tanks) when storing barreled fuel and chemicals at all locations.

12. 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, at all fuel storage sites, at all refuelling stations, at vehicle maintenance areas and at drill sites.

13. The Proponent shall remove and treat hydrocarbon contaminated soils on site or transport them to an approved disposal site for treatment.

14. 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

15. The Proponent shall ensure that there is no damage to wildlife habitat in conducting this operation.

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.

Migratory Birds and Raptors Disturbance

17. The Proponent shall not disturb or destroy the nests or eggs of any birds. If nests are encountered and/or identified, the Proponent shall take precaution to avoid further interaction and or disturbance (e.g., a 100 metres buffer around the nests). If active nests of any birds are discovered (i.e., with eggs or young), the Proponent shall avoid these areas until nesting is complete and the young have left the nest.

Ground Disturbance

18. The Proponent shall not move any equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel of equipment or vehicles must be suspended if rutting occurs.

19. The Proponent shall implement suitable erosion and sediment suppression measures on all areas before, during and after conducting activities in order to prevent sediment from entering any waterbody.

20. All construction and road vehicles must be fitted with standard and well-maintained noise suppression devices and engine idling is to be minimized.

Restoration of Disturbed Areas

21. The Proponent shall remove all garbage, fuel and equipment upon abandonment.

22. The Proponent shall ensure that all disturbed areas are restored to a stable or pre-disturbed state as practical as possible upon completion of field work.

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 shall ensure that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities.
25. The Proponent should, to the extent possible, hire local people and access local services where possible.

MONITORING AND REPORTING REQUIREMENTS

In addition, the Board is recommending the following:

Spill Contingency Plan

1. The Proponent shall update its Spill Contingency Plan to include up to date emergency contact numbers for the Government of Nunavut-Department of Environment, Manager of Environmental Protection (867-975-7748) and Environment and Climate Change Canada, Enforcement Branch (867-975-4644).
2. The Proponent shall implement the recommendations found in the 2003 CCME Guidance Document PN 1326 entitled "Environmental Code of Practice for Above Ground and Underground Storage Tank Systems containing Petroleum Product and Allied Petroleum Products".

OTHER NIRB CONCERNS AND RECOMMENDATIONS

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.

Bear and Carnivore Safety

2. 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. 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.
3. 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*.

4. 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 Iqaluit, phone: 867-924-6235).

Species at Risk

5. 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.pdf. 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.

Migratory Birds

6. The Proponent review Canadian Wildlife Services' "Key migratory bird terrestrial habitat sites in the Northwest Territories and Nunavut", available at the following link: http://publications.gc.ca/site/eng/317630/publication.html and "Key marine habitat sites for migratory birds in Nunavut and the Northwest Territories", available at the following link: http://publications.gc.ca/site/eng/392824/publication.html. The guide provides information to the Proponent on key terrestrial and marine habitat areas that are essential to the welfare of various migratory bird species in Canada.

7. For further information on how to protect migratory birds, their nests and eggs when planning or carrying out project activities, consult Environment and Climate Change Canada's Incidental Take web page and the fact sheet "Planning Ahead to Reduce the Risk of Detrimental Effects to Migratory Birds, and their Nests and Eggs" available at http://www.ec.gc.ca/paom-itmb/.

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.

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) contains provisions to protect and conserve wildlife and wildlife habitat, including specific protection measures for wildlife habitat and species at risk.
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.

CONCLUSION

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

Dated March 22, 2018 at Whale Cove, NU.

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Elizabeth Copland, 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) to get the current status of a species.

Updated: September 2017

Terrestrial Species at Risk [1]	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility [2]
Migratory Birds			
Buff-breasted Sandpiper	Special concern	Schedule 1	ECCC
Eskimo Curlew	Endangered	Schedule 1	ECCC
Harlequin Duck (Eastern population)	Special Concern	Schedule 1	ECCC
Harris's Sparrow	Special Concern	Pending	ECCC
Horned Grebe (Western population)	Special Concern	Schedule 1	ECCC
Ivory Gull	Endangered	Schedule 1	ECCC
Peregrine Falcon	Special Concern (*anatum-tundrius* complex[3])	Schedule 1 - Schedule 3	ECCC
Red Knot (*islandica* subspecies)	Special Concern	Schedule 1	ECCC
Red Knot (*rufa* subspecies)	Endangered	Schedule 1	ECCC
Red-necked Phalarope	Special concern	Pending	ECCC
Ross's Gull	Threatened	Schedule 1	ECCC
Rusty Blackbird	Special Concern	Schedule 1	ECCC
Short-eared Owl	Special Concern	Schedule 1	ECCC
Vegetation			
Blanket-leaved Willow	Special Concern	Schedule 1	Government of Nunavut
Felt-leaf Willow	Special Concern	Schedule 1	Government of Nunavut
Porsild's Bryum (Moss)	Threatened	Schedule 1	Government of Nunavut
Arthropods			
Traverse Lady Beetle	Special Concern	Pending	Government of Nunavut
Terrestrial Wildlife			
Caribou (Barren-Ground population)	Threatened	Pending	Government of Nunavut
Dolphin and Union Caribou	Special Concern	Schedule 1	Government of Nunavut
Grizzly Bear (Western Population)	Special Concern	Pending	Government of Nunavut
Peary Caribou	Endangered	Schedule 1	Government of Nunavut
Peary Caribou (High Arctic Population)	Endangered	Schedule 2	Government of Nunavut
Peary Caribou (Low Arctic Population)	Threatened	Schedule 2	Government of Nunavut
Wolverine	Special Concern	Pending	Government of Nunavut
Wolverine (Western population)	Non-active	Pending	Government of Nunavut
Marine Wildlife			
Atlantic Walrus	Special Concern	Pending	DFO
Beluga Whale (Cumberland Sound population)	Endangered	Schedule 2	DFO
Beluga Whale (Eastern High Arctic – Baffin Bay population)	Special Concern	Pending	DFO
Beluga Whale (Eastern Hudson Bay population)	Endangered	Pending	DFO

Beluga Whale (Southeast Baffin Island – Cumberland Sound population)	Endangered	Schedule 2	DFO
Beluga Whale (Western Hudson Bay population)	Special Concern	Pending	DFO
Bowhead Whale (Eastern Arctic population	Endangered	Schedule 2	DFO
Bowhead Whale (Eastern Canada – West Greenland population)	Special Concern	Pending	DFO
Killer Whale (Northwest Atlantic / Eastern Arctic populations)	Special Concern	Pending	DFO
Narwhal	Special Concern	Pending	DFO
Polar Bear	Special Concern	Schedule 1	Government of Nunavut/DFO
Fish			
Atlantic Cod, Arctic Lakes	Special Concern	Pending	DFO
Atlantic Wolffish	Special Concern	Schedule 1	DFO
Bering Wolffish	Special Concern	Schedule 3	DFO
Blackline Prickleback	Special Concern	Schedule 3	DFO
Fourhorn Sculpin	Special Concern	Schedule 3	DFO
Fourhorn Sculpin (Freshwater form)	Data Deficient	Schedule 3	DFO
Northern Wolffish	Threatened	Schedule 1	DFO
Roundnose Grenadier	Endangered	Pending	DFO
Spotted Whitefish	Threatened	Schedule 1	DFO
Thorny Skate	Special Concern	Pending	DFO

[1] The Department of Fisheries and Oceans has responsibility for aquatic species.

[2] Environment Canada (EC) 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.

Appendix B
Archaeological and Palaeontological 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:

	Types of Development (See Guidelines below)	**Function** (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*[1] to issue such permits.

2) The permittee/proponent shall not operate any vehicle over a known or suspected archaeological or palaeontological site.

[1] P.C. 2001-1111 14 June, 2001

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*[2], the federal government can make regulations for the protection, care and preservation of palaeontological and archaeological sites and specimens in Nunavut. Under

[2] s. 51(1)

the *Nunavut Archaeological and Palaeontological Sites Regulations*[3], 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)

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 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

[3] P.C. 2001-1111 14 June, 2001

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.