



- Location of any proposed infrastructure or activity(s); and,
  - Boundaries of the mineral claim block(s) where proposed activities will be undertaken.
2. Map of the project site within a regional context indicating the distance to the closest communities.  
**Please see Appendix B.**
3. Map of any camp site including locations of camp facilities.  
NA
4. Map of the project site indicating existing and/or proposed infrastructure, proximity to water bodies and proximity to wildlife and wildlife habitat.  
**Please see Appendix B**

### **Project General Information**

5. Discuss the need and purpose of the proposed project.  
**The purpose of this project is to construct a road to a new granular deposit and develop the granular deposit to provide Iqaluit with its new long term granular source.**
6. Discuss alternatives to the project and alternative methods of carrying out the project, including the no-go alternative. Provide justification for the chosen option(s).  
**In 2005, Indian and Northern Affairs of Canada (now Aboriginal and Northern Development of Canada) completed a study that identified granular deposits within a 10KM radius of Iqaluit. Two deposits were identified, one in Tarr Inlet and one Northwest of Iqaluit. The Northwest Deposit contained a much greater volume of aggregate potential compared to Tarr Inlet. It was determined that the Northwest Granular Deposit would be the next granular deposit for Iqaluit. If this project does not continue, there is not enough aggregate in the current Trail Area Deposit to supply the City of Iqaluit with adequate amount of granular material to complete high priority projects as well as maintain the current roads (summer and winter).**
7. Provide a schedule for all project activities.  
**Construction of Road to start May 2015  
Development of the Northwest Granular Deposit to start July 2015**
8. List the acts, regulations and guidelines that apply to project activities.  
**Nunavut Lands Claims Agreement  
Nunavut Waters and Nunavut Surface Rights Tribunal Act  
Nunavut Water Regulations**
9. List the approvals, permits and licenses required to conduct the project.  
**Nunavut Water Board - Water Crossings  
Community and Government Services - Transfer of Land**

### **DFO Operational Statement (OS) Conformity**

10. Indicate whether any of the following Department of Fisheries and Oceans (DFO) Operational Statement (OS) activities apply to the project proposal:
- Bridge Maintenance  
**NA**
  - Clear Span Bridge  
**NA**
  - Culvert Maintenance  
**NA**
  - Ice Bridge

NA

- Routine Maintenance Dredging

NA

- Installation of Moorings

NA

Please see DFO's OS for specific definitions of these activities available from DFO's web-site at <http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/index-eng.htm>

11. If any of the DFO's OS apply to the project proposal, does the Proponent agree to meet the conditions and incorporate the measures to protect fish and fish habitat as outlined in the applicable OS? If yes, provide a signed statement of confirmation.

NA

## Transportation

12. Describe how the project site will be accessed and how supplies will be brought to site. Provide a map showing access route(s).

**The project site will be accessed by the Municipal Road Network. Please see Appendix C for the map of the access route.**

13. If a previous airstrip is being used, provide a description of the type of airstrip (ice-strip/all-weather), including its location. Describe dust management procedures (if applicable) and provide a map showing location of airstrip.

NA

14. If an airstrip is being constructed, provide the following information: **NA**

- a. Discuss design considerations for permafrost
- b. Discuss construction techniques
- c. Describe the construction materials, type and sources, and the acid rock drainage (ARD) and metal leaching (ML) characteristics (if rock material is required for airstrip bed).
- d. Describe dust management procedures.
- e. Provide a map showing location of proposed airstrip.

15. Describe expected flight altitudes, frequency of flights and anticipated flight routes.

NA

## Camp Site - NA

16. Describe all existing and proposed camp structures and infrastructure

17. Describe the type of camp:

- a. Mobile
- b. Temporary
- c. Seasonal
- d. Permanent
- e. Other

18. Describe the maximum number of personnel expected on site, including the timing for those personnel involved with the project.

## Equipment

19. Provide a list of equipment required for the project and discuss the uses for the equipment.

Equipment type and number	Size – dimensions	Proposed use
Backhoe	PC 350, Hitachi	Moving Material
Backhoe	320, Cat	Moving Material

Loader		Moving Material
Dump Truck		Hauling Material

20. If possible, provide digital photos of equipment.

**Equipment that will be used by the contractor is currently in winter storage and not accessible for photos to be taken.**

#### **Water - NA**

21. Describe the location of water source(s), the water intake methods, and all methods employed to prevent fish entrapment. Provide a map showing the water intake locations.

22. Describe the estimated rate of water consumption (m<sup>3</sup>/day).

23. Describe how waste water will be managed. If relevant, provide detail regarding location of sumps, including capacity of sumps and monitoring.

24. If applicable, discuss how surface water and underground water will be managed and monitored.

#### **Waste Water (Grey water, Sewage, Other) - NA**

25. Describe the quantities, treatment, storage, transportation, and disposal methods for the following (where relevant):

- Sewage
- Camp grey water
- Combustible solid waste
- Non-combustible solid waste, including bulky items/scrap metal
- Hazardous waste or oil
- Contaminated soils/snow
- Empty barrels/ fuel drums
- Any other waste produced

26. If the project proposal includes a landfill or landfarm, indicate the locations on a map, provide the conceptual design parameters, and discuss waste management and contact-water management procedures.

#### **Fuel**

27. Describe the types of fuel, quantities (number of containers, type of containers and capacity of containers), method of storage and containment. Indicate the location on a map where fuel is to be stored, and method of transportation of fuel to project site.

**Fuel will not be stored on site**

28. Describe any secondary containment measures to be employed, including the type of material or system used. If no secondary containment is to be employed, please provide justification.

**NA**

29. Describe the method of fuel transfer and the method of refuelling.

**A fuel truck will be used to refuel the equipment.**

30. Describe spill control measures in place.

**There is no storage of fuel on site. As noted above, refueling of site equipment will be accomplished by means of a fuel truck hauling fuel from Iqaluit to the site as needed. For the purposes of refueling on site, the spill prevention measures described in the below will be followed.**

- The transferring and dispensing of fuel will be done with pumping equipment, an approved hose and fill nozzle;
- Ensure that a spill containment kit is readily available;
- When unreeling the fuel transfer hose and nozzle, the nozzle must be in the upright position;
- Verify that there is a proper connection between the fuel fill hose and the equipment being filled;
- The transfer of fuel must be stopped prior to overflowing, leaving room for expansion;
- The operation of moving equipment in the immediate area of a fuelling operation will be suspended; and
- Maintain regular inspections of fuel systems and their components.

**In the event that a spill occurs the Spill Response and Sediment and Erosion Control Plan (See Appendix D) will be followed.**

Please refer to Environment Canada's fuel storage tank system regulations (*Storage Tank System for Petroleum and Allied Petroleum Products*) website at <http://www.ec.gc.ca/st-rs/> for details on fuel storage requirements.

#### **Chemicals and Hazardous Materials\* - NA**

*\*included but not limited to oils, greases, drill mud, antifreeze, calcium or sodium chloride salt, lead acid batteries and cleaners*

31. Describe the types, quantities (number of containers, the type of container and capacity of containers), method of storage and containment. Indicate the location on a map where material is to be stored, and method of transportation of materials to project site.
32. Describe any secondary containment measures to be employed, including the type of material or system used.
33. Describe the method of chemical transfer.
34. Describe spill control measures in place.

#### **Workforce and Human Resources/Socio-Economic Impacts**

35. Discuss opportunities for training and employment of local Inuit beneficiaries.  
**NNI policies were followed during the tendering period, the contractor is required to maintain 10% Inuit Employment for this project.**
36. Discuss workforce mobilization and schedule, including the duration of work and rotation length, and the transportation of workers to site.  
**The City of Iqaluit hired a contractor to complete the construction for this project. It is the responsibility of the contractor to mobilize and schedule workers as well as determine the rotation length and transport the workers to site.**
37. Discuss, where relevant, any specific hiring policies for Inuit beneficiaries.  
**The tendering process followed NNI Policies.**

#### **Public Involvement/ Traditional Knowledge**

38. Indicate which communities, groups, or organizations would be affected by this project proposal.  
**None**

39. Describe any consultation with interested Parties which has occurred regarding the development of the project proposal.

**None**

40. Provide a summary of public involvement measures, a summary of concerns expressed, and strategies employed to address any concerns.

**None**

41. Describe how traditional knowledge was obtained, and how it has been integrated into the project.

**None**

42. Discuss future consultation plans.

**None**

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### 3. PROJECT SPECIFIC INFORMATION

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The following table identifies the project types identified in Section 3 of the NIRB, Part 1 Form. Please complete all relevant sections.

It is the proponent's responsibility to review all sections in addition to the required sections to ensure a complete application form.

**Table 1: Project Type and Information Required**

Project Type	Type of Project Proposal	Information Request
1	All-Weather Road/Access Trail	Section A-1 and Section A-2
2	Winter Road/Winter Trail	Section A-1 and Section A-3
3	Mineral Exploration	Section B-1 through Section B-4
4	Advanced Mineral Exploration	Section B-1 through Section B-8
5	Mine Development/Bulk Sampling	Section B-1 through Section B-12
6	Pits and Quarries	Section C
7	Offshore Infrastructure(port, break water, dock)	Section D
8	Seismic Survey	Section E
9	Site Cleanup/Remediation	Section F
10	Oil and Natural Gas Exploration/Activities	Section B-3 and Section G
11	Marine Based Activities	Section H
12	Municipal and Industrial Development	Section I

## SECTION A: Roads/Trails

### A-1. Project Information

- Describe any field investigations and the results of field investigations used in selecting the proposed route (e.g. geotechnical, snow pack)  
**The proposed route will generally follow an existing ATV path. This proposed route was confirmed using existing topographical survey information.**
- Provide a conceptual plan of the road, including example road cross-sections and water crossings.  
**Please see Appendix E for the conceptual plan of the road.**
- Discuss the type and volume of traffic using the road/trail (i.e. type of vehicles and cargo and number of trips annually).  
**The road will be mainly used by tandem dump trucks with a small volume of passenger vehicles.**
- Discuss public access to the road.  
**The road will not be accessible to the public during construction. After construction is completed, the road will be accessible to the public**
- Describe maintenance procedures.  
**Maintenance of the road will be provided by the City of Iqaluit Department of Public Works. In the summer the road will be graded to provide a smooth driving surface, there will not be any maintenance in the winter as this road will only be required during summer months for gravel extraction. Culvert design has provided a configuration to allow for culverts to thaw naturally therefore there will be minimal requirement to manually thaw culverts during the spring.**
- Describe whether any portion of the road will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEAA).

**The entire road will be located within the Municipal Boundary of the City of Iqaluit.**

### **A-2. All-Weather Road/Access Trail**

7. Discuss road design considerations for permafrost.  
**The road was designed to limit the amount of cuts required to complete the construction of the road. This allows the road to be constructed on top of the existing ground and limits the disturbance to the permafrost.**
8. Describe the construction materials (type and sources for materials), and the acid rock drainage (ARD) and metal leaching characteristics of the construction materials.  
**The construction materials consist of culverts, filter cloth, granular material steel piles and guiderail. The granular material will be obtained from the current aggregate deposit (Trail Area Deposit). It is not anticipated that bedrock will be encountered during this project and therefore the likelihood of encountering Acid Rock is minimal.**
9. Discuss construction techniques, including timing for construction activities.  
**Construction will begin as early in May as weather allows, culverts will be installed during times of low flow to minimize impacts.**
10. Indicate on a map the locations of designated refuelling areas, water crossings, culverts, and quarries/borrow sources.  
**Please see Appendices E, F and G for all water crossings and culvert locations. Trail Area Deposit will be used as the borrow source, please see Appendix B for the location of the Trail Area Deposit. A fuel truck will be used for refueling, therefore, there will not be a designated refueling area. Refueling will occur 100m from any water course.**
11. Identify the proposed traffic speed and measures employed to ensure public safety.  
**The traffic speed will be 40KM/h and safety signs will be installed to the end of construction indicating that this road will be used by heavy truck traffic. During the construction of the road, there will be no public access.**
12. Describe dust management procedures.  
**A water truck will be used to contain dust during dry periods.**

### **A-3. Winter Road/Trail**

13. Describe the surface preparation, including the use of snow berms or compaction, and any flooding. If flooding is to be used, provide the location of the water source on a map.
14. Describe the operating time period.
15. Identify the proposed traffic speed and measures employed to ensure public safety.
16. Discuss whether the selected route traverses any fish-bearing water bodies.

## **SECTION B: Mineral Exploration /Advanced Exploration /Development**

### **B-1. Project Information**

1. Describe the type of mineral resource under exploration.

## **B-2. Exploration Activity**

2. Indicate the type of exploration activity:
  - Bulk Sampling (underground or other)
  - Stripping (mining shallow bedded mineral deposits in which the overlying material is stripped off, the mineral removed and the overburden replaced)
  - Trenching
  - Pitting
  - Delineation drilling
  - Preliminary Delineation drilling
  - Exploration drilling
  - Geophysical work (indicate ground and/or air)
  - Other
3. Describe the exploration activities associated with this project:
  - Satellite remote sensing
  - Aircraft remote sensing
  - Soil sampling
  - Sediment sampling
  - On land drilling (indicate drill type)
  - On ice drilling (indicate drill type)
  - Water based drilling (indicate drill type)
  - Overburden removal
  - Explosives transportation and storage
  - Work within navigable waters
  - On site sample processing
  - Off site sample processing
  - Waste rock storage
  - Ore storage
  - Tailings disposal
  - Portal and underground ramp construction
  - Landfilling
  - Landfarming
  - Other

## **B-3. Geosciences**

4. Indicate the geophysical operation type:
  - a. Seismic (please complete Section E)
  - b. Magnetic
  - c. Gravimetric
  - d. Electromagnetic
  - e. Other (specify)
5. Indicate the geological operation type:
  - a. Geological Mapping
  - b. Aerial Photography
  - c. Geotechnical Survey
  - d. Ground Penetrating Survey
  - e. Other (specify)
6. Indicate on a map the boundary subject to air and/or ground geophysical work.
7. Provide flight altitudes and locations where flight altitudes will be below 610m.

#### **B-4. Drilling**

8. Provide the number of drill holes and depths (provide estimates and maximums where possible).
9. Discuss any drill additives to be used.
10. Describe method for dealing with drill cuttings.
11. Describe method for dealing with drill water.
12. Describe how drill equipment will be mobilized.
13. Describe how drill holes will be abandoned.
14. If project proposal involves uranium exploration drilling, discuss the potential for radiation exposure and radiation protection measures. Please refer to the *Canadian Guidelines for Naturally Occurring Radioactive Materials* for more information.

#### **B-5. Stripping/ Trenching/ Pit Excavation**

15. Discuss methods employed. (i.e. mechanical, manual, hydraulic, blasting, other)
16. Describe expected dimensions of excavation(s) including depth(s).
17. Indicate the locations on a map.
18. Discuss the expected volume material to be removed.
19. Discuss methods used to determine acid rock drainage (ARD) and metal leaching potential and results.

#### **B-6. Underground Activities**

20. Describe underground access.
21. Describe underground workings and provide a conceptual plan.
22. Show location of underground workings on a map.
23. Describe ventilation system.
24. Describe the method for dealing with ground ice, groundwater and mine water when encountered.
25. Provide a Mine Rescue Plan.

#### **B-7. Waste Rock Storage and Tailings Disposal**

26. Indicate on a map the location and conceptual design of waste rock storage piles and tailings disposal facility.
27. Discuss the anticipated volumes of waste rock and tailings.
28. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential and results.

#### **B-8. Stockpiles**

29. Indicate on a map the location and conceptual design of all stockpiles.
30. Describe the types of material to be stockpiled. (i.e. ore, overburden)
31. Describe the anticipated volumes of each type of material to be stockpiled.
32. Describe any containment measures for stockpiled materials as well as treatment measures for runoff from the stockpile.
33. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential and results.

## **B-9. Mine Development Activities**

34. Indicate the type(s) of mine development activity(s):
- Underground
  - Open Pit
  - Strip Mining
  - Other
35. Describe mine activities.
- Mining development plan and methods
  - Site access
  - Site infrastructure (e.g. airstrip, accommodations, offshore infrastructures, mill facilities, fuel storage facilities, site service roads)
  - Milling process
  - Water source(s) for domestic and industrial uses, required volumes, distribution and management.
  - Solid waste, wastewater and sewage management
  - Water treatment systems
  - Hazardous waste management
  - Ore stockpile management
  - Tailings containment and management
  - Waste rock management
  - Site surface water management
  - Mine water management
  - Pitting and quarrying activities (please complete Section C)
  - Explosive use, supply and storage (including on site manufacturing if required)
  - Power generation, fuel requirements and storage
  - Continuing exploration
  - Other
36. Describe the explosive type(s), hazard class, volumes, uses, location of storage (show on map), and method of storage.

## **B-10. Geology and Mineralogy**

37. Describe the physical nature of the ore body, including known dimensions and approximate shape.
38. Describe the geology/ mineralogy of the ore deposit
39. Describe the host rock in the general vicinity of the ore body.
40. Discuss the predicted rate of production.
41. Describe mine rock geochemical test programs which have been or will be performed on the ore, host rock, waste rock and tailings to determine acid generation and contaminant leaching potential. Outline methods and provide results if possible.

## **B-11. Mine**

42. Discuss the expected life of the mine.
43. Describe mine equipment to be used.
44. Does the project proposal involve lake and/or pit dewatering? If so, describe the activity as well as the construction of water retention facilities if necessary.

45. Discuss the possibility of operational changes occurring during the mine life with consideration for timing. (e.g. open pit to underground)
46. If project proposal involves uranium mining, consider the potential for radiation exposure and radiation protection measures. Particular attention should be paid to *The Nuclear Safety and Control Act*.

#### **B-12. Mill**

47. If a mill will be operating on the property in conjunction with mining, indicate whether mine-water may be directed to the mill for reuse.
48. Describe the proposed capacity of the mill.
49. Describe the physical and chemical characteristics of mill waste as best as possible.
50. Will or does the mill handle custom lots of ore from other properties or mine sites?

#### **SECTION C: Pits and Quarries**

1. Describe all activities included in this project.
  - Pitting  
**The granular source will be operated as a gravel pit.**
  - Quarrying
  - Overburden removal
  - Road use and/or construction (please complete Section A)
  - Explosives transportation and storage
  - Work within navigable waters
  - Blasting
  - Stockpiling
  - Crushing
  - Washing
  - Other
2. Describe any field investigations and the results of field investigations used in determining new extraction sites.  
**Please see appendix H for the North West Iqaluit Granular Aggregate Evaluation**
3. Identify any carving stone deposits.  
**NA**
4. Provide a conceptual design including footprint.  
**Please see Appendix G**
5. Describe the type and volume of material to be extracted.  
**Pit run material, heavy in gravel will be extracted. It is not known at this time the volume to be extracted. It is expected that this will provide Iqaluit with its next long term granular source.**
6. Describe the depth of overburden.  
**It is estimated that the overburden ranges from 0mm to 600mm**
7. Describe any existing and potential for thermokarst development and any thermokarst prevention measures.  
**There is no existing or potential for thermokarst.**
8. Describe any existing or potential for flooding and any flood control measures.  
**It is not anticipated that flooding will occur as a result of this project.**
9. Describe any existing or potential for erosion and any erosion control measures.  
**During pit operations, 1:1 slopes will be required.**
10. Describe any existing or potential for sedimentation and any sedimentation control measures.

**Silt fences will be installed throughout the quarry to protect drainage paths and waterways.**

11. Describe any existing or potential for slumping and any slump control measures.  
**During pit operations, 1:1 slopes will be required.**
12. Describe the moisture content of the ground.  
**The composition of the quarry is well drained gravels and sand therefore the moisture content is assumed to be low.**
13. Describe any evidence of ice lenses.  
**Ice lenses have not been identified.**
14. If blasting, describe methods employed.  
**A blasting area has not been identified in the Northwest Granular Deposit.**
15. Describe the explosive type(s), hazard class, volumes, uses, location of storage (show on map), and method of storage.  
**NA**
16. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential and results.  
**It is not anticipated that bedrock will be encountered during this project and therefore the likelihood of encountering Acid Rock is minimal.**
17. Discuss safety measures for the workforce and the public.  
**Contractors are required to follow the regulations of the WSCC Work Place Safety and the Mine Health and Safety Act.**

## **SECTION D: Offshore Infrastructure**

### **D-1. Facility**

1. Describe any field investigations and the results of field investigations used in selecting the site (i.e. aerial surveys, bathymetric surveys, tidal processes, shoreline erosion processes, geotechnical foundation conditions)
2. Provide a conceptual plan, profile description and drawing(s) indicating shoreline, facility footprint, tidal variations, required vessel draft, keel offset, deck height freeboard
3. Discuss how anticipated loads on the seabed foundation and on the offloading platform will be incorporated into the design.
4. Describe how vessels will manoeuvre around the facility. (e.g. pull alongside or in front)
5. Discuss the anticipated life of the facility.
6. Describe whether part of the facility or project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEEA).

### **D-2. Facility Construction**

7. Describe the types of material used for construction (i.e. granular or rock, steel piling or sheet piling, concrete). If material is granular, consider acid rock drainage potential, metal leaching potential, percentage of fines, size.
8. Describe dredging activities.
9. Indicate source of granular or rock material used in construction.
10. List quantities of the various types of material used in construction.
11. Describe construction method(s).

12. Indicate whether a site engineer will be on-site to inspect construction.
13. If proposed construction method involves dumping of fill into water, discuss measures for mitigating the release of suspended solids.

### **D-3. Facility Operation**

14. Describe maintenance activities associated with the facility (e.g. dredging, maintenance to account for potential settlement of facility,)
15. Discuss whether the public will have access to the facility(s) and describe public safety measures.
16. Describe cargo and container handling, transfer and storage facilities.
17. Indicate whether fuel will be transferred from barges at this site and describe the method of that fuel transfer.
18. Discuss frequency of use.

### **D-4. Vessel Use in Offshore Infrastructure**

19. Please complete Section H

## **SECTION E: Seismic Survey**

### **E-1. Offshore Seismic Survey**

1. Indicate whether the survey is 2D or 3D at each site.
2. Describe the type of equipment used, including:
  - Type and number of vessels including length, beam, draft, motors, accommodation capacity, operational speeds when towing and when not towing
  - Sound source (type and number of airguns)
  - Type and number of hydrophones
  - Number, length, and spacing of cables/ streamers
3. On a map, indicate the grid, number of lines and total distance covered by each line, the distance to nearby community/communities and sensitive areas (e.g., National Parks, National Wildlife Areas, Migratory Bird Sanctuaries, recognized breeding grounds or migratory routes).
4. Indicate the discharge volume of the airguns, the depth of airgun discharge, the noise levels of acoustic signal at various distances from the source (e.g., 500 metres, 1000 metres), and the frequency and duration of airgun operation at each site.
5. Discuss the potential for dielectric oil to be released from the streamer array, and describe proposed mitigation measures.
6. Indicate whether additional seismic operations are required for start-up of operations, equipment testing, repeat coverage of areas.
7. Indicate whether air gun procedures will include a “ramping up” period and, if so, the proposed rate of ramping up.
8. Indicate whether the measures described in the *Statement of Canadian Practice for Mitigation of Noise in the Marine Environment* will be adhered to for this project.
9. Describe whether any part of the project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEAA).

### **E-2. Nearshore/Onshore Seismic Survey**

10. For each site, indicate whether nearshore and onshore surveys will be conducted during the ice season or once the ice has melted
11. Describe how nearshore and onshore areas will be accessed.
12. Describe the survey methods to be used (e.g. explosive charge, vibration, air or water gun, other)
13. Describe equipment to be used
14. If applicable, indicate number, depth and spacing of shot holes
15. Describe explosive wastes including characteristics, quantities, treatment, storage, handling, transportation and disposal methods.

### **E-3. Vessel Use in Seismic Survey**

16. Please complete Section H.

## **SECTION F: Site Cleanup/Remediation**

1. Describe the location, content, and condition of any existing landfills and dumps (indicate locations on a map).
2. Identify salvageable equipment, infrastructure and/or supplies.
3. Provide a list of all contaminants to be cleaned up, anticipated volumes and a map delineating contaminated areas. This includes buildings, equipment, scrap metal and debris, and barrels as well as soil, water (surface and groundwater) and sediment.
4. Describe the degree of pollution/contamination, and list the contaminants and toxicity.
5. Describe technologies used for clean-up and/or disposal of contaminated materials. Include a list of all the physical, chemical and biological cleanup/ remediation methods, operational procedures, and the dosage/frequency of reagents and bacterial medium.
6. Identify and describe all materials to be disposed of off site, including the proposed off site facilities, method of transport and containment measures.
7. Discuss the viability of landfarming, given site specific climate and geographic conditions.
8. Describe the explosive types, hazard classes, volumes, uses, location of storage (indicate on a map), and method of storage (if applicable).
9. If blasting, describe the methods employed.
10. Describe all methods of erosion control, dust suppression, and contouring and re-vegetation of lands.
11. Describe **all** activities included in this project.
  - Excavation (please complete Section B-5)
  - Road use and/or construction (please complete Section A)
  - Airstrip use and/or construction
  - Camp use and/or construction
  - Stockpiling of contaminated material
  - Pit and/or quarry (please complete Section C)
  - Work within navigable waters (please complete Section H)
  - Barrel crushing
  - Building Demolition
  - Other

## **SECTION G: Oil and Natural Gas Exploration/Activities**

### **G-1. Well Authorization**

1. Identify the location(s) of the well centre(s) by latitude and longitude. Attach a map drawn to scale showing locations of existing and proposed wells.
2. Indicate if the site contains any known former well sites.
3. Include the following information for each well:
  - a. Well name
  - b. Surface location
  - c. Proposed bottomhole location
  - d. Ground elevation (in metres)
  - e. Spacing area (in units)
  - f. Identify the well type:
    - i. Production
    - ii. Injection
    - iii. Disposal
    - iv. Observation
    - v. Storage
    - vi. Experimental
    - vii. Other (specify)
  - g. Identify the well classification:
    - i. Exploratory wildcat
    - ii. Exploratory outpost
    - iii. Development
  - h. Drilling operation (deviation):
    - i. Vertical
    - ii. Directional
    - iii. Horizontal
    - iv. Slant
  - i. Objective Zones (copy chart style below)

Objective Formation	Fluid (oil/gas/water)	Depth (mTVD)	Core (Y/N)

- j. Proposed Total Depth in mTDV and mMD.
- k. Formation of Total Depth
- l. Sour well? (yes or no)
  - i. If Yes: Maximum H<sub>2</sub>S concentration in mol/kmol  
Emergency planning zone radius in km
- m. Blowout Prevention (Well Class I – VI)
- n. Deviation Surveys
  - i. Will be run at intervals less than 150m? (yes or no)
- o. Wireline logs
  - i. Will run logs in hole for surface casing? (yes or no)
  - ii. Will run a minimum of 2 porosity measuring logs? (yes or no)

## G-2. On-Land Exploration

4. Indicate if the site contains any known:
  - a. Waste Dumps
  - b. Fuel and Chemical Storage Areas
  - c. Sump Areas

- d. Waste Water Discharge Locations
- 5. Attach maps drawn to scale showing locations of existing and proposed items identified in (2) above, as well as all proposed:
  - a. Sumps
  - b. Water sources
  - c. Fuel and chemical storage facilities
  - d. Drilling mud storage areas
  - e. Transportation routes
- 6. If utilizing *fresh water*, estimate maximum drawdown and recharge capability of the river or lake from which water will be drawn.
- 7. Indicate if permafrost is expected to be encountered under:
  - a. Camp Facilities
  - b. Well Site
  - c. Access Routes
  - d. Sumps
  - e. Other: \_\_\_\_\_
- 8. Indicate any potential for encountering artesian aquifers or lost circulation within the surface hole (to casing depth).
- 9. Will drilling wastes contain detrimental substances (including, but not limited to, oil-based or invert mud and high salinity fluids)? If yes, indicate the substances and estimated volumes.
- 10. Indicate methods for disposal of drilling wastes:
  - a. Sump
  - b. Down Hole (requires NEB approval)
  - c. On-Site Treatment (provide plan)
  - d. Off-Site (give location and method of disposal)
- 11. If a sump is being used, attach the following information:
  - a. scale drawings and design of sumps
  - b. capacity in cubic metres
  - c. berm erosion protection
  - d. soil permeability and type
  - e. recycling/reclaiming waters
  - f. surface drainage controls
  - g. abandonment procedures
- 12. Attach the proposed or existing contingency plan which describes the course of action, mitigative measures and equipment available for use in the event of system failures and spills of hazardous materials.
- 13. Attach an outline of planned abandonment and restoration procedures.

### **G-3. Off-Shore Exploration**

- 14. Will drilling wastes contain detrimental substances (including, but not limited to, oil-based or invert mud and high salinity fluids)? If yes, indicate the substances and estimated volumes.
- 15. Attach the proposed or existing contingency plan which describes the course of action, mitigative measures and equipment available for use in the event of system failures and spills of hazardous materials.
- 16. Attach an outline of planned abandonment and restoration procedures.
- 17. Please complete Section H.

### **G-4. Rig**

18. Type of Rig. Draw works, make and model
19. Derrick/Mast make and model
20. H.P. available to draw-works

## **SECTION H: Marine Based Activities**

### **H-1. Vessel Use**

1. Describe the purpose of vessel operations.
2. List classes and sizes of vessels to be used.
3. Indicate crew size.
4. Indicate operating schedule.
5. Provide a description of route to be traveled (include map).
6. Indicate whether the vessel will call at any ports. If so, where and why?
7. Describe wastes produced or carried onboard including the quantities, storage, treatment, handling and disposal methods for the following:
  - a. Ballast water
  - b. Bilge water
  - c. Deck drainage
  - d. Grey and black water
  - e. Solid waste
  - f. Waste oil
  - g. Hazardous or toxic waste
8. List all applicable regulations concerning management of wastes and discharges of materials into the marine environment
9. Provide detailed Waste Management, Emergency Response and Spill Contingency Plans
10. Does the vessel(s) possess an Arctic Pollution Prevention Certificate? If yes, indicate the date of issue and the name of the classification society.
11. Describe the source of fresh water and potable water
12. Indicate whether ice-breaking will be required, and if so, approximately where and when? Discuss any possible impacts to caribou migration, Inuit harvesting or travel routes, and outline proposed mitigation measures.
13. Indicate whether the operation will be conducted within the Outer Land Fast Ice Zone of the East Baffin Coast. For more information on the Outer Land Fast Ice Zone, please see the Nunavut Land Claims Agreement (NLCA), Articles 1 and 16.
14. Indicate whether Fisheries or Environmental Observers or any other *Qualified Marine Observer* will be onboard during the proposed project activities. If yes, describe their function and responsibilities.
15. Describe all proposed measures for reducing impacts to marine habitat and marine wildlife (including mammals, birds, reptiles, fish, and invertebrates).
16. Describe whether any part of the project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEAA).

### **H-2. Disposal at Sea**

17. Provide confirmation you have applied for a *Disposal at Sea* permit with Environment Canada.
18. Provide a justification for the disposal at sea.
19. Describe the substance to be disposed of, including chemical and physical properties.
20. Indicate the location where the disposal is to take place.
21. Describe the frequency of disposals (disposals per day/week or month).
22. Describe the route to be followed during disposal and indicate on a map.
23. Indicate any previous disposal methods and locations.
24. Provide an assessment of the potential effects of the disposal substance on living marine resources.
25. Provide an assessment of the potential of the disposal substance, once disposed of at sea, to cause long-term physical effects.
26. Describe all mitigation measures to be employed to minimize the environmental, health, navigational and aesthetic impacts during loading, transport and disposal.

## **SECTION I: Municipal and Industrial Development**

1. Describe the business type, including public, private, limited, unlimited or other.
2. Describe the activity (e.g. development of quarry, development of hydroelectric facility, bulk fuel storage, power generation with nuclear fuels or hydro, tannery operations, meat processing and packing, etc.).
3. Describe the production process or service provision procedures.
4. Describe the raw materials used in this activity, the storage and transportation methods. If hazardous materials are included in raw materials, products or by-products; include safety regulations methodology.
5. Provide detailed information about the structure and/or building in which the activity will be conducted.
6. List the PPE (personal protective equipment) and tools to be used to protect personal health and safety.
7. Describe the firefighting equipment that are or will be installed.
8. Describe the noise sources, noise level in work area, technical measurements that will be adopted to abate the noise levels and regulatory requirements for noise abatement and noise levels.
9. Describe the type of gaseous emission that will be produced during this activity. Include the allowable thresholds and mitigation measures.
10. Describe odours that the activity might release and include corresponding allowable threshold. Describe mitigation measures if thresholds are exceeded.
11. Describe radiation sources that might be emitted during the activity. Include type and source and include mitigation measures. Also describe preventative measures for human exposure (i.e. PPE).
12. Discuss the employee safety and environment protection training program.
13. If the activity involves a bulk fuel storage facility, include drawings showing the bulk fuel storage facility location in proximity to natural water courses, high water marks, etc.
14. If the activity involves the development of a new quarry or expansion of an existing quarry, complete Section C.

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## **4. DESCRIPTION OF THE EXISTING ENVIRONMENT**

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Describe the existing environment, including physical, biological and socioeconomic aspects. Where appropriate, identify local study areas (LSA) and regional study areas (RSA).

Please note that the detail provided in the description of the existing environment should be appropriate for the type of project proposal and its scope.

The following is intended as a guide only.

## Physical Environment

*Please note that a description of the physical environment is intended to cover all components of a project, including roads/trails, marine routes, etc. that are in existence at present time.*

- Proximity to protected areas, including:
  - i. designated environmental areas, including parks;  
**The Northwest Granular Deposit is located 4KM northeast of the Sylvia Grinnell Park.**
  - ii. heritage sites;
  - iii. sensitive areas, including all sensitive marine habitat areas;
  - iv. recreational areas;
  - v. sport and commercial fishing areas;
  - vi. breeding, spawning and nursery areas;
  - vii. known migration routes of terrestrial and marine species;
  - viii. marine resources;
  - ix. areas of natural beauty, cultural or historical history;
  - x. protected wildlife areas; and
  - xi. other protected areas.  
**The Northwest Granular Deposit is adjacent to the Apex River Watershed.**
- Eskers and other unique landscapes (e.g. sand hills, marshes, wetlands, floodplains).
- Evidence of ground, slope or rock instability, seismicity.  
**There is no evidence of slope or rock instability**
- Evidence of thermokarsts.  
**There is no evidence of thermokarsts**
- Evidence of ice lenses.  
**There is no evidence of ice lenses**
- Surface and bedrock geology.  
**Iqaluit generally consists of glacially scoured igneous/metamorphic terrain; in some locations a thin layer of organic material is found.**
- Topography.  
**Iqaluit is located above the tree line and is comprised of gently rolling hills. The elevation of the road and quarry will be between 45 and 190 meters above sea level.**
- Permafrost (e.g. stability, depth, thickness, continuity, taliks).  
**Iqaluit is located within the continuous permafrost zone of Canada. It is estimated that permafrost can be found between 1m to 2m below ground level.**
- Sediment and soil quality.  
**Well graded sand and gravel.**

- Hydrology/ limnology (e.g. watershed boundaries, lakes, streams, sediment geochemistry, surface water flow, groundwater flow, flood zones).
- Tidal processes and bathymetry in the project area (if applicable).
- Water quality and quantity.
- Air quality.
- Climate conditions and predicted future climate trends.
- Noise levels.
- Other physical Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.

## Biological Environment

- Vegetation (terrestrial as well as freshwater and marine where applicable).  
**The vegetation consists of tundra and flowers. The construction of the road and the development of the quarry will harm the vegetation in the area.**
- Wildlife, including habitat and migration patterns.  
**Local terrestrial wildlife is typical of the region and includes arctic hares, brown lemmings, arctic foxes, red foxes, short-tailed weasels, with rare appearances of arctic wolves. All except the wolf have localized home ranges.**
- Birds, including habitat and migration patterns.  
**Local year-round resident bird populations include ptarmigans and common ravens. Typical home ranges for these birds are localized. Migratory birds that breed in the area include Canada Geese, Snow Buntings, Loons, and occasionally snowy owls.**
- Species of concern as identified by federal or territorial agencies, including any wildlife species listed under the *Species at Risk Act (SARA)*, its critical habitat or the residences of individuals of the species.  
**None**
- Aquatic (freshwater and marine) species, including habitat and migration/spawning patterns.  
**None**
- Other biological Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.  
**None**

## Socioeconomic Environment

- Proximity to communities.  
**The Northwest Granular Deposit is located within the municipal boundary of Iqaluit and is 6.7km from the nearest residential location.**
- Archaeological and culturally significant sites (e.g. pingos, soap stone quarries) in the project (Local Study Area) and adjacent area (Regional Study Area).  
**None**
- Palaeontological component of surface and bedrock geology.  
**None**
- Land and resource use in the area, including subsistence harvesting, tourism, trapping and guiding operations.  
**None**
- Local and regional traffic patterns.

**Travel route for hunters to access areas further inland**

- Human Health, broadly defined as a complete state of wellbeing (including physical, social, psychological, and spiritual aspects).
- Other Valued Socioeconomic Components (VSEC) as determined through community consultation and/or literature review.

**None**

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## **5. IDENTIFICATION OF IMPACTS AND PROPOSED MITIGATION MEASURES**

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1. Please complete the attached Table 1 – Identification of Environmental Impacts, taking into consideration the components/activities and project phase(s) identified in Section 4 of this document. Identify impacts in Table 1 as either positive (P), negative and mitigable (M), negative and non-mitigable (N), or unknown (U).
2. Discuss the impacts identified in the above table.

**The nature of this project will have negative but mitigable consequences. Ground stability and permafrost will be affected during the construction of the road but by using proper construction methods (e.g. keeping equipment within the construction boundary, limiting the amount of cuts required to complete the road, and compacting the granular material to the accepted level of compaction) the negative impacts will be limited. The ground stability and permafrost will also be affected during pit operations, by using proper excavation and extraction methods (e.g. maintaining 1:1 slopes) the consequences will be limited. The eskers that will be developed as borrow sources will be excavated at proper slopes to mitigate the impact to the surrounding environment. Vegetation will be impacted during the construction of the road and the development of the borrow pit but measures will be put in place to ensure that vegetation outside of the road and extracting areas in the quarry is not impacted.**

**The construction of the road and the development of the quarry have negative impacts but the quarry is crucial to allowing Iqaluit to continue to grow as a City.**

3. Discuss potential socioeconomic impacts, including human health.  
**The construction of the road and the development will have a positive socio-economic benefits. This project will provide jobs during construction as well once the borrow pit is operational it will provide jobs to extract granular material for future projects. Also, this project will aid greatly in the development of Iqaluit, without a source of granular material to aid in the new construction of required infrastructure as well as fix and maintain current infrastructure, Iqaluit will be unable to grow as a community. The construction of the road will also facilitate access to the land for residents to go camping or hunting.**
4. Discuss potential for transboundary effects related to the project.  
**The Northwest Granular Deposit is located adjacent to the Apex River Watershed. This watershed is protected as a future water source for the City of Iqaluit. Control measures in the form of setbacks and silt fences will be implemented to ensure that pit operations do not affect the Apex River Watershed.**
5. Identify any potentially adverse effects of the project proposal on species listed under the *Species at Risk Act (SARA)* and their critical habitats or residences, what measures will be taken to avoid or lessen those effects and how the effects will be monitored.
6. Discuss proposed measures to mitigate all identified negative impacts.

Please see Section 5, number 2.

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## 6. CUMULATIVE EFFECTS

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A cumulative impact (or effect) can be defined as the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time.

Discuss how the effects of this project interact with the effects of relevant past, present and reasonably foreseeable projects in a regional context.

**There has been no past projects or current projects located in proximity to the construction of the road and the development of the quarry. In 2014, City of Iqaluit Council approved the City's new Solid Waste Management Plan, the new location to the Solid Waste Management Site will be located along the proposed road. The design of the road was completed to ensure that this road could also be used as an access to the new solid waste management site.**

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## 7. SUPPORTING DOCUMENTS

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Where relevant, provide the following supporting documents:

- Abandonment and Decommissioning Plan  
**An abandonment and decommissioning plan cannot be developed at this time. Once this plan is developed it will be submitted.**
- Existing site photos with descriptions
- Emergency Response Plan
- Comprehensive Spill Prevention/Plan (must consider hazardous waste and fuel handling, storage, disposal, spill prevention measures, staff training and emergency contacts)
- Waste Management Plan/Program
- Monitoring and Management Plans (e.g. water quality, air pollution, noise control and wildlife protection etc.)
- If project activities are located within Caribou Protection Areas or Schedule 1 Species at Risk known locations, please provide a Wildlife Mitigation and Monitoring Plan

In addition, for Project Type 9 (Site Cleanup/Remediation), please provide the following additional supporting documents:

- Remediation Plan including cleanup criteria and how the criteria were derived.
- Human Health Risk Assessment of the contaminants at the site.

