

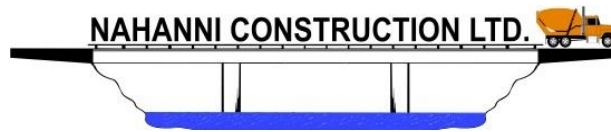
# **ENVIRONMENT & HERITAGE RESOURCES PROTECTION PLAN**

*LUPIN WINTER ACCESS*

**Lac de Gras, NWT to Lupin Mine, NU**

**September 2019**





## PLAIN LANGUAGE SUMMARY

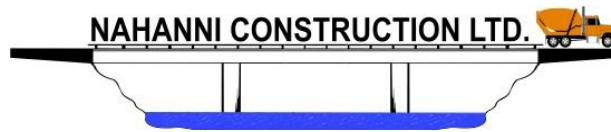
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This Plan describes what will be done to avoid damaging the land, air, water, wildlife and archaeological sites along the winter road route from Lac de Gras, Northwest Territories, to the Lupin Mine, Nunavut.

## REVISION HISTORY

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Revision #	Date	Section	Summary of Changes	Author	Approver
1	Dec 2018	All	New document	S. Hamm	K. Ruptash
2	Sept 2019	1.1, 4.5, 5.1	Revised to include staging and camps, and related activities, as part of the Program scope	S. Hamm	J. Buchko
		3.0	Added in response to NIRB party comments on Abandonment and Restoration Plan. NCL considers this plan to be more the more suitable Plan to address operational considerations.		
		4.6	Added use of sumps for wastewater disposal		
		6.0	Added buffer distances around archaeological sites		
		7.0	Removed entire section and directed reader to the Waste Management Plan		



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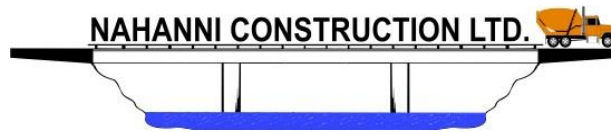
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## 1.0 INTRODUCTION

This *Environment and Heritage Resources Protection Plan* (the Plan) describes methods for protecting environmental and heritage resources that occur within the Lupin Winter Access project area, and should be read in conjunction with the documents listed in Table 1.

### 1.1 SCOPE

The purpose of the Program is to construct and operate a portion of the Tibbitt to Contwoyto Winter Road (TCWR) route from the Ekati Mine turnoff on Lac de Gras in the Northwest Territories (NT; Lac de Gras) to the Lupin Mine in Nunavut (NU; Lupin). The Program also includes use of temporary mobile camps for construction and staging of fuel and equipment to support seasonal road construction and maintenance.

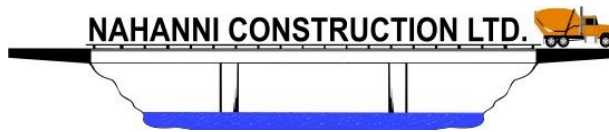
This Plan applies to consideration of and interaction with environmental and heritage resources during all activities occurring in relation to the Program.

This Plan is effective for the duration of the land use operations, commencing upon approval of this Plan and effective through winter road construction, operations and closure activities for a period of up to five (years) or as otherwise permitted.

The Plan considers all phases of the Program, including construction, operation, maintenance and seasonal closure.

Table 1 Relevant guidance documents including legislation, permits and licences.

Document	Authority
Environmental Guidelines for the Construction, Maintenance and Closure of Winter Roads in the Northwest Territories (1993)	Government of Northwest Territories
<i>Archaeological Sites Act</i>	Government of Northwest Territories
<i>Archaeological Sites Regulations</i>	Government of Northwest Territories
<i>Nunavut Act</i>	Government of Nunavut
<i>Nunavut Archaeological and Palaeontological Sites Regulations</i>	Government of Nunavut
Screening Decision Report	Nunavut Impact Review Board
Approval Without a Licence	Nunavut Water Board
Land Use Permits	Crown-Indigenous Relations and Northern Affairs Canada Government of Northwest Territories
Abandonment and Restoration Plan, Lupin Winter Access, Lac de Gras NWT to Lupin, NU (2019a)	Nahanni Construction Ltd.
Spill Contingency Plan, Lupin Winter Access, Lac de Gras to Lupin, NU (2019b)	Nahanni Construction Ltd.
Wildlife Protection Plan, Lupin Winter Access, Lac de Gras NWT to Lupin, NU (2019)	EDI Environmental Dynamics Inc.
Community Engagement Plan, Lupin Winter Access, Lac de Gras to Lupin, NU (2018)	Nahanni Construction Ltd.



## 1.2 OBJECTIVES

The objectives of this Plan are to:

- Ensure employees and contractors are aware of their responsibilities regarding protection of environmental and heritage resources;
- Outline appropriate mitigation measures for resource protection.

## 1.3 SITE DESCRIPTION

The Program occurs along an existing winter road route established in the 1970's and since used intermittently to service the Lupin Mine and the Jericho Mine (the Winter Road). The Winter Road route predominantly traverses lakes, with few portages where the road occurs overland. Of the 213 km, 95 km occur in Northwest Territories and 118 occur in Nunavut. Seven (7) portages occur in Northwest Territories and there is one (1) portage in Nunavut.

The Program occurs within the Southern Arctic Ecozone and the Takijuk Lake Upland Ecoregion. Much of this region is composed of unvegetated rock outcrops and vegetative cover is characterized by shrub tundra, consisting of dwarf birch, willow, northern Labrador tea, *Dryas* spp. and *Vaccinium* spp. Organic Cryosols are the dominant soils in the lowlands and permafrost is deep and continuous. The proposed winter road is located north of the treeline.

Characteristic wildlife includes caribou, muskoxen, grizzly bear, wolverine, hare, arctic fox, and wolf. Small mammals (e.g., Arctic ground squirrel, voles, and lemmings) are distributed throughout the region and provide an important food source for predators. Many species of migratory birds are present in the area during the summer season, including waterfowl, upland birds, and shorebirds, while some bird species are present year round (e.g., ptarmigan, gyrfalcon, and common raven).

The Winter Road is accessed in mid- to late-winter only. At this time, ground is frozen and snow-covered, and ice thickness on lakes is up to 2 m thick.

## 1.4 PLAN MANAGEMENT

The Plan is reviewed annually by the Project Manager and updated as needed following receipt of or amendments to licences and permits, to ensure alignment with relevant terms and conditions. When material changes occur, the updated document will be provided to parties in accordance with the *Community Engagement Plan* (NCL 2018).

## 1.5 PLAN IMPLEMENTATION

This Plan is effective upon approval and is valid throughout all phases of the Program.

The Project Manager or designate is responsible for Plan implementation.

A copy of this Plan is maintained in NCL's office in both Yellowknife and on site at Lupin.

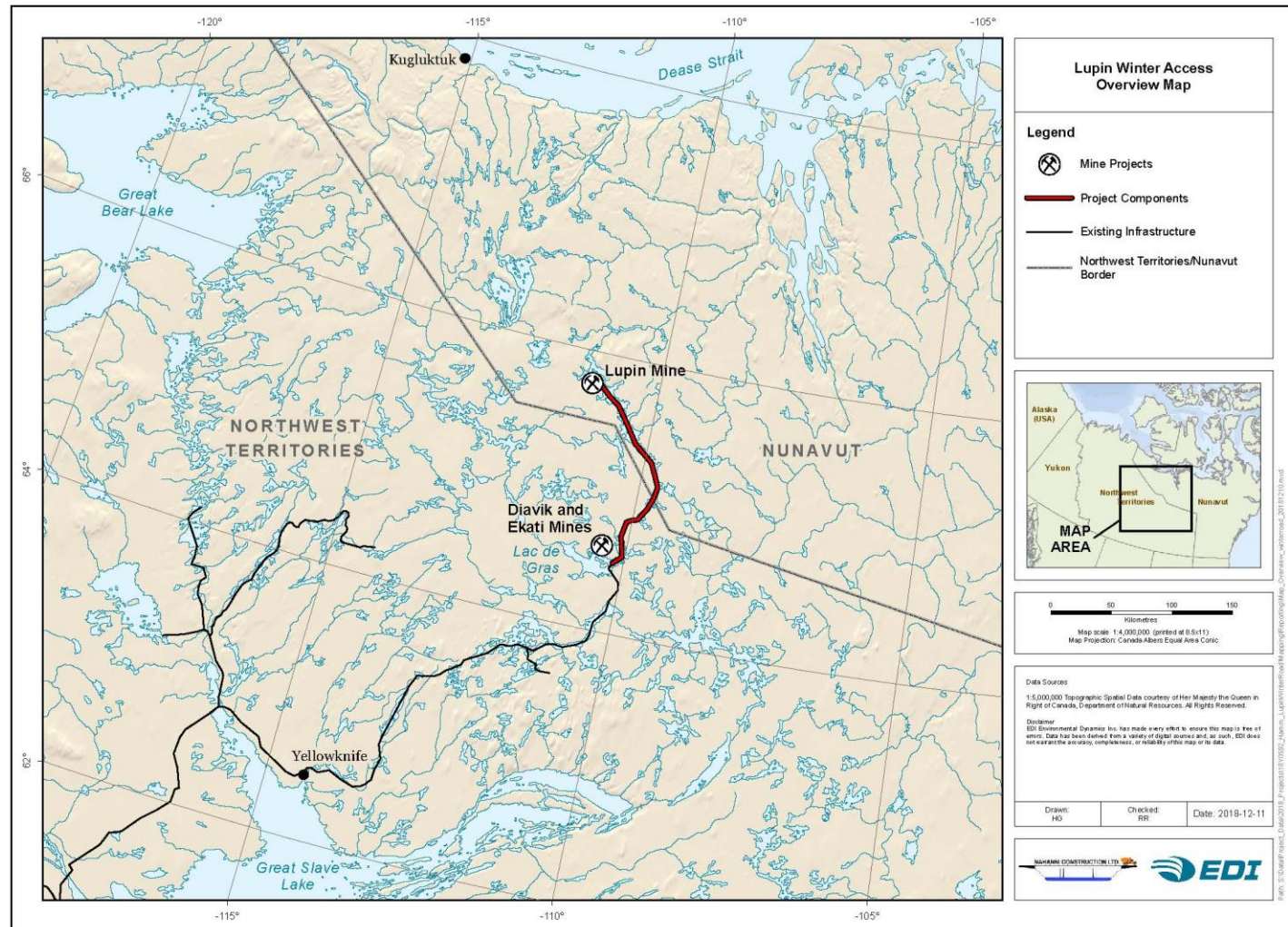
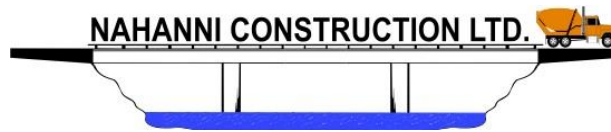


Figure 1 Lupin Mine Winter Access Program location.





## 2.0 ROLES AND RESPONSIBILITIES

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NCL is responsible for activities associated with Lupin winter access, including implementation and management of this Plan. NCL's contact information is provided below.

### **Nahanni Construction Ltd.**

P.O. Box 2076  
100 Nahanni Drive  
Yellowknife, NT  
X1A 2P6  
Phone: 867-873-2975  
Fax: 867-873-9620

### 2.1 STAFF, CONTRACTORS, SUPPLIERS AND VISITORS

All personnel conducting activities on site, including staff, contractors, suppliers and visitors, are required to implement this Plan as it pertains to their activities on site. Specifically, these responsibilities include:

- Taking all necessary steps to minimize negative effects to water, land and air;
- Cooperating fully with your supervisor and/or NCL management to implement an environmental protection program;
- Carrying out only those duties and tasks that you are experienced at and trained to perform;
- Where there is uncertainty, asking questions and bring concerns to the attention of your supervisor when working with products or conducting tasks that may pose potential environmental risks;
- Maintaining confidential the location of found archaeological sites;
- Ensuring found archaeological sites remain undisturbed;
- Reporting wildlife observations, archaeological finds, spills and emergency situations in accordance with relevant management plans.

### 2.2 MANAGERS AND SUPERVISORS

Managers and supervisors have a responsibility to ensure that staff, contractors, consultants and visitors have been trained in NCL environmental and heritage resource protection expectations and procedures. Additional supervisor and manager responsibilities include:

- Maintaining a no blame work environment in implementing mitigation measures and follow-up actions;
- Ensuring site-, task- and material-specific training is provided to all departments and staff;
- Ensuring there are appropriate and sufficient supplies on site to support implementing mitigation measures and follow-up actions;
- Providing assistance in responding to environmental hazards;
- Maintaining confidential the location of known and found archaeological sites;
- Engaging the project archaeologist in accordance with this Plan;
- Maintaining records regarding inspections, personnel training, equipment testing and maintenance; and
- Engaging with relevant parties in a timely and transparent manner, where appropriate.

### 3.0 OPERATIONAL CONSIDERATIONS

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Operational considerations such as proactive traffic management and road maintenance ensure safety and environmental protection. It is reasonable to expect that traffic will occur over 6 weeks following construction. These considerations include the following:

- Maintaining a minimum depth of 10 cm of snow on portages and in staging areas;
- Maintaining low angle snow banks (not vertical) with a height of up to 2 m, with breaks employed where necessary.
- Maintaining an operational road width, on average of, 50 m when traversing ice surfaces;
- Responding to wildlife presence on the road in a timely manner, in accordance with the *Wildlife Protection Plan* (EDI 2019);
- Timing of traffic will depend on weather and road conditions as well as caribou and other wildlife present along the road;
- Presence of security team on the road 24 hours per day to monitor wildlife, safety and compliance;
- Traffic adherence to the following speed limits, which are consistent with those in place for the current operating year for Tibbitt to Contwoyto Winter Road. 2019 limits are:
  - All trucks
    - Driving on Lakes:
      - Loaded 25 km/hr.
      - Empty 35 km/hr.
    - Driving on portages;
      - All 30 km/hr.
    - Travelling through flood zones 10 km/hr;
    - Travelling on and off lakes;
      - Loaded 10 km/hr.
      - Empty 25 km/hr.
    - Passing another truck 10 km/hr;
  - Pick up trucks only:
    - Maximum speed is 80 km/hr.

The winter road is private and only Project-related traffic will be permitted to travel north beyond the Ekati turnoff. To the extent possible, land users accessing the road by snow machine will be intercepted by the security team and asked to travel overland instead.

Records of all traffic using the road are maintained by the Proponent, using GPS, radio and required check-ins and inspections.

### 4.0 PHYSICAL RESOURCES

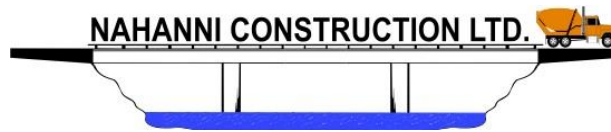
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Protection measures pertaining to the physical environment are outlined below.

#### 4.1 AIR QUALITY

Air quality can be affected through emissions from equipment operation. Negative effects to air quality arising from project activities can be mitigated by conducting routine preventative maintenance on generators and engines.





## 4.2 GROUND STABILITY

Ground stability can be affected through excavating, rutting or otherwise disrupting the tundra and permafrost. Negative effects to ground stability arising from project activities can be mitigated by moving equipment overland only when conditions are such that rutting or gouging will not occur and snow cover is sufficient to prevent interaction with surface materials.

## 4.3 HYDROLOGY

Hydrology can be affected through unapproved water use that may occur in relation to camp operation, or winter trail construction, or flow disruption during freshet due to snow fill and ice bridge remnants. Hydrologic effects are mitigated through compliant water use, in accordance with Nunavut Water Board approvals and licences, and abandoning portages in accordance with the *Abandonment and Restoration Plan* (NCL 2019a).

## 4.4 NOISE

Ambient noise levels can be affected by operation of Project equipment. Negative effects to noise levels can be mitigated by:

- Conducting routine preventative maintenance on generators and engines;
- Ensuring mufflers are in use, as required by manufacturers; and
- Adhering to the *Wildlife Protection Plan* (EDI 2019).

## 4.5 WATER QUALITY

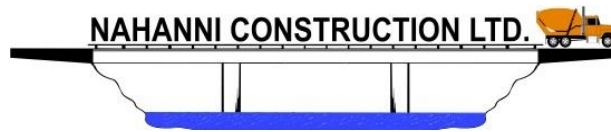
Water quality can be affected by unplanned or non-compliant discharges to the aquatic environment. Negative effects to water quality can be mitigated by adhering to the *Spill Contingency Plan* (NCL 2019b) where required and disposing of wastewater in a properly constructed sump >100 m above the ordinary high water mark.

## 5.0 BIOLOGICAL RESOURCES

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Protection measures pertaining to vegetation are outlined below.

Refer the *Wildlife Protection Plan* (EDI 2019) for general and species-specific wildlife protection measures.



## 5.1 VEGETATION

Vegetation can be affected by on land activities such as portage use. Negative effects to vegetation can be mitigated by:

- Moving equipment overland only when conditions are such that rutting or gouging will not occur;
- Utilizing existing trails and portages where possible; and
- Adhering to the *Spill Contingency Plan* (NCL 2019b) where required.

## 6.0 HERITAGE RESOURCES

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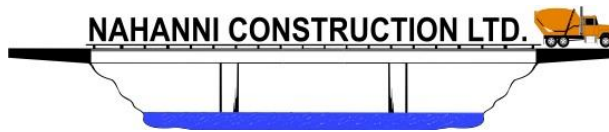
Heritage resources, such as archeological sites, can be affected by on land activities such as site access. Heritage resources such as archaeological sites, have previously been characterized along the entire TCWR route. Potential negative effects to heritage resources arising from Program activities can be mitigated by:

- Minimizing land disturbance outside of existing winter road corridor;
- Avoiding construction of new inukshuks or rock piles unless otherwise approved;
- Where possible, avoiding interaction with and disturbance of known or suspected archaeological sites, including rocks that may appear to be in some formation by 30 m in NWT and 50 m in NU;
- Where not possible to avoid interaction with known archaeological sites, proceeding with direction from the project archaeologist and Territorial Archaeologist;
- If a suspected archaeological site or human remains (structures, artifacts or bones) are encountered during the Program, immediately stopping work in the vicinity and notifying the Project Manager who will notify the Territorial Archaeologist and project archaeologist; and
- Keeping confidential the location of known and found archaeological sites.

## 7.0 WASTE MANAGEMENT

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Refer to the *Waste Management Plan* (NCL 2019c) for waste generation and related management measures.



## 8.0 TRAINING

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All attendees to site participate in a site orientation which outlines environmental and heritage resources that may be encountered over the course of the Program, and identifies personnel roles and responsibilities regarding protection of these resources.

Wildlife-specific roles and responsibilities are outlined in the *Wildlife Protection Plan* (EDI 2019).

Any activities undertaken on site in relation to archaeological surveys, finds or mitigations are done so by or under the direction of the project archaeologist.

## 9.0 REPORTING AND DOCUMENTATION

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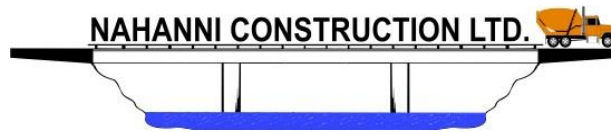
### 9.1 REPORTING

Reporting will occur in accordance with regulatory requirements and the *Community Engagement Plan* (NCL 2018).

### 9.2 DOCUMENTATION

Documentation supporting protection of environmental and heritage resources includes:

- Maintaining equipment preventative maintenance logs and required follow-up actions;
- Documenting water use in accordance with the water use authorizations;
- Logging wildlife observations.



## 10.0 REFERENCES

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*Archaeological Sites Act*, S.N.W.T. 2014,c.9

*Archaeological Sites Regulations*, R-024-2014

*Nunavut Act* S.C. 1993, c.28

*Nunavut Archaeological and Palaeontological Sites Regulations* SOR/2001-220

Government of Northwest Territories. 1993. Environmental Guidelines for the Construction, Maintenance and Closure of Winter Roads in the Northwest Territories.

Environmental Dynamics Inc. (EDI). 2019. Wildlife Protection Plan, Lupin Winter Access, Lac de Gras, NWT to Lupin Mine, Nunavut.

Nahanni Construction Ltd. (NCL). 2019a. Abandonment and Restoration Plan, Lupin Winter Access, Lac de Gras, NWT to Lupin Mine, Nunavut.

NCL. 2019b. Spill Contingency Plan Response Plan, Lupin Winter Access, Lac de Gras, NWT to Lupin Mine, Nunavut.

NCL. 2019c. Waste Management Plan, Lupin Winter Access, Lac de Gras, NWT to Lupin Mine, Nunavut.

NCL. 2018. Community Engagement Plan, Lupin Winter Access, Lac de Gras, NWT to Lupin Mine, Nunavut.