

Conceptual Closure and Reclamation Plan
for the
Tłıchọ All-Season Road Project

Prepared for the
Wek'èezhì Land and Water Board
W2016L8-0001 and W2016E0004

January 2019

Document Maintenance and Control

The North Star Infrastructure (NSI) Environmental Manager or designate is responsible for the distribution, maintenance and updating of the Conceptual Closure and Reclamation Plan (CCRP). Final plan details must be approved by the Government of the Northwest Territories Department of Infrastructure (GNWT-INF) and the Wek'èezhì Land and Water Board (WLWB).

This document will be reviewed and possibly revised as needed, but at least annually, taking into account changes in the law, environmental factors, GNWT-INF and NSI policies, and any other pertinent site-specific changes.

Changes that do not affect the intent of the document are to be made as required on a regular basis (e.g., phone numbers, names of individuals, etc.). Document updates will be issued as per the document distribution list. The document holder is responsible for adding new and/or removing obsolete pages upon receipt of updates.

Conceptual Closure and Reclamation Plan Document History

Revision #	Section(s) Revised	Description of Revision	Prepared by	Issue Date
0	N/A	First version	GNWT and NSI	January 2019

Additional copies of the CCRP can be obtained from the NSI Environmental Manager or designate and/or the GNWT-INF representative responsible for the Tłıchǫ All-Season Road.

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Definitions and Acronyms

AANDC	Aboriginal Affairs and Northern Development Canada
CCRP	Conceptual Closure and Reclamation Plan
GNWT	Government of the Northwest Territories
GNWT-INF	Government of the Northwest Territories Department of Infrastructure
GNWT-Lands	Government of the Northwest Territories, Department of Lands
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MVLWB	Mackenzie Valley Land and Water Board
NSI	North Star Infrastructure (Design-Build-Finance-Operate-Maintain Contractor)
Tłı̨chọ ASR	Tłı̨chọ All-Season Road
WLWB	Wek'èezhì Land and Water Board

1 INTRODUCTION

This Conceptual Closure and Reclamation Plan (CCRP) has been developed for use by the Government of the Northwest Territories Department of Infrastructure (GNWT-INF) and North Star Infrastructure (NSI) for the proposed Tłıchq All-Season Road (Tłıchq ASR or the Project).

The purpose of the CCRP is to describe the plans and procedures to be followed for abandonment or closure of camps, quarries and access roads that are no longer required for either construction or operation of the Tłıchq ASR. Revisions will be submitted to the WLWB for review and approval prior to those revisions becoming effective. This document considers Mackenzie Valley Environmental Impact Review Board (MVEIRB) Measures and incorporates commitments made by the GNWT during the environmental assessment of the Tłıchq ASR (Tables D-1 to D-3, MVEIRB 2018).

1.1 Objective

This plan provides information on the steps and procedures that will be taken to close and abandon areas outside of the Tłıchq ASR right-of-way. No closure planning will be undertaken for the right-of-way and roadway.

Conceptual Closure and Reclamation planning is limited to construction camps, access roads and quarries. Closure of the camps and quarries will be carried out to the satisfaction of the appropriate regulatory bodies.

The objectives of the CCRP are:

- To communicate the minimum requirements to be met at the end of construction, including any monitoring and reporting requirements.
- To provide references to other approvals, relevant standards, control plans and procedures for training, communications, investigation and corrective action, and audits that are required under the GNWT- NSI Project Agreement.
- To meet commitments made during the Wek'èezhì Land and Water Board (WLWB) preliminary screening process for the application and the Tłıchq ASR environmental assessment.
- To meet the Water Licence W2016L8-0001 Conditions under Part I.

1.2 Project Contacts

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1.3 Roles and Responsibilities

The NSI Project Manager is ultimately responsible for the success of this Plan and approves all relevant policies and documents, auditing, action planning and the verification process. The NSI Environmental Manager is responsible for the implementation of this Plan including overall management of the Plan and internal reporting.

Other relevant personnel are responsible for the effectiveness of the CCRP by completing required training, supporting implementation or and ensuring compliance to the CCRP, as appropriate to their roles, as set out by this Plan.

1.4 Relevant Guidelines

The CCRP has been developed in consideration of the applicable Territorial legislation including the following guidelines:

- Northern Land Use Guidelines: Camp and Support Facilities (GNWT-Lands 2014a)
- Northern Land Use Guidelines: Access Roads and Trails (GNWT-Lands 2014b)
- Northern Land Use Guidelines: Pits & Quarries (GNWT-Lands 2015)
- Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories (MVLWB and AANDC 2013)

2 CLOSURE AND RECLAMATION

2.1 Camps

2.1.1 Desired Future Condition

Camps to facilitate the construction of the Tłıchq ASR are anticipated to be located either on the alignment or in select quarries adjacent to the road alignment. Once a camp is no longer necessary, all infrastructure associated with the camp is to be removed from the site. Infrastructure associated with the camp includes buildings, sheds, mobile labs, storage containers, concrete pads, foundations and debris.

The camp area including greywater sumps are to be regraded to permit drainage and limit ponded water.

All waste generated from infrastructure removal will be managed in accordance with the Waste Management Plan and where applicable, only licensed / approved contractors will be used.

2.1.2 Aesthetics

Camp areas will be cleaned and inspected for debris or garbage. Camp areas located within the alignment will be integrated into the road, whereas camp areas located within quarries will be subject to the requirements of quarry closure.

2.1.3 Wildlife Habitat

As some quarries are anticipated to remain active following camp closure, wildlife enhancement measures will be linked to the design of the alignment and closure of the quarry rather than that of the camp.

2.1.4 Water Diversion

Upon removal of camp infrastructure (including those within quarries), regrading may be necessary to maintain positive drainage.

2.2 Quarries

2.2.1 Desired Future Condition

Operation of quarries are anticipated to continue through construction and into operations either until the material is depleted, or until it is determined that the quarry is no longer required. In the initial stages, the operation will be limited to the needs of the construction of the Tłıchq ASR and subject to the operational time frames and conditions of the Land Use Permit from the WLWB. The active quarry site will be kept clean, tidy, trimmed and free of any garbage and debris during the

operational time frames of the Land Use Permit. Upon the final completion of the quarrying operation, the active quarry area will be:

- Trimmed and sloped along the active areas of the pit.
- Grubbing and top soil materials (if any) stockpiled during the development of the quarry will be placed along the pit floor in an appropriate manner to promote revegetation and positive drainage.
- All equipment, seasonal storage shed, trails, etc. will be removed.

All waste generated from decommissioning quarries will be managed in accordance with the Waste Management Plan and where applicable, only licensed and approved contractors will be used.

2.2.2 Aesthetics

The quarry site at completion of the life of the development will be reclaimed using appropriate equipment to trim, level and replace reclamation materials aesthetically correct over the required areas of the pit floor and side slopes. A buffer of natural vegetation will be maintained between the quarry and the Tłchq ASR alignment to reduce visibility of the quarry from the road.

2.2.3 Wildlife Habitat

Working in conjunction with the local Lands Inspector and the Department of Environment and Natural Resources, wildlife habitat enhancement will be considered in the restoration plan. This includes specifics related to the enhancement of revegetation using locally stored materials. The value of the closed quarries as wildlife habitat will be limited due to proximity to the highway.

2.2.4 Water Diversion or Protection

The Quarry Operations Plan specifies positive drainage for the pit floor and excavated/extraction areas. Upon completion of the operations and final clean-up of the quarry, positive drainage will be maintained or improved to enhance drainage. Disruption of drainage courses is not permitted in the development, operation and rehabilitation of the quarry.

2.2.5 Sloping/Benching

A progressive maintenance program will be maintained to ensure that the quarry is kept sloped and contoured throughout the operation. At the end of the quarry life, stripping piles and organic sources stockpiled in the pit staging area will be spread at even intervals on the pit floor and surrounding quarry perimeter. Where blasting and excavation took place, the benching design will be left.

2.2.6 Permafrost Stabilization

The alignment is within the zone of discontinuous permafrost. Permafrost was generally not encountered at the borehole locations during the geotechnical investigation along the Tłchq ASR alignment performed by Stantec (2017), although permafrost was observed or suspected in some of the quarry prospects where deeper drilling was possible (TetraTech 2017). Should permafrost be detected during quarry operations, options include removal and avoidance. At the end of the quarry life, the general appearance of the quarry will be of exposed rock or a granular deposit and not prone to movement or erosion.

2.2.7 Access

Access roads from the Tłchq ASR right-of-way to quarries and/or water sources are to be modified to restrict vehicle access following closure. Locking gates are to be removed and boulders or other approved natural barriers are to be placed at the entrance to restrict unauthorized vehicle access.

3 SCHEDULE

NSI has developed a construction staging and sequencing strategy that considers an autumn mobilization timeframe and utilization of winter climate to assist with access at water crossings.

The proposed alignment has been strategically broken down into four segments.

- Segment 1 – 0 to 17 kilometres (km)
- Segment 2 – 17 to 40 km
- Segment 3 – 40 to 70 km
- Segment 4 – 70 to 98 km

Roadway embankment in each of the segments will be constructed independently, with start time and duration best suited to complement the uniqueness of each segment. Temporary access such as Baily bridges or engineered ice roads at water crossings will enable work to proceed during sensitive environmental work windows.

The general order of operations is as follows:

- Pioneer an access to notable locations (i.e., camps, bridges, major cuts and quarries). As much as possible this work will be completed in first fall/winter 2019-2020.
- In conjunction with pioneer work, tree clearing and topsoil stripping will start and advance from 0 to 98 km. These crews may jump ahead to clear quarries or notable areas to allow for early access to certain portions of the work.
- In the first winter, snow fills will be used to cross major wet areas in segments 1-3, allowing for the south 3 bridges and major culverts to be installed.
- Following the first winter, after spring breakup, major embankment construction will begin starting in segment 1 and working north.
- Embankment construction will continue into the fall and winter (2020-2021) until the major bridge crossing at La Martre River is reached. Winter embankment will be built of quarried rock or pit run, minimizing cuts in frozen ground.
- In the second winter, the La Martre River bridge will be built.

- Following the second spring break up (2021), the remainder of segment 4 embankment will be constructed, as well as any top up on other segments
- Road topping will be placed on each segment as they are completed during summer/fall conditions.
- Following the completed of embankment work in the second season, reclamation grading will be completed. Remaining cleanup work will be completed in the third summer/fall (2021) up to substantial completion of the work in November 2021.

Substantial completion is when construction progress has reached a point where final inspections and certifications begin. During this period any deficiencies are identified and corrected. This process continues to Final Completion in November 2022 and the Operations phase of the road begins.

4 REFERENCES

- GNWT-Lands (Government of the Northwest Territories, Department of Lands). 2014a. Northern Land Use Guidelines: Camp and Support Facilities. <https://mvlwb.com/resources/policy-and-guidelines>. Accessed March 1, 2018.
- GNWT-Lands. 2014b. Northern Land Use Guidelines: Access Roads and Trails <https://mvlwb.com/resources/policy-and-guidelines>. Accessed March 1, 2018.
- GNWT-Lands. 2015. Northern Land Use Guidelines: Pits & Quarries <https://mvlwb.com/resources/policy-and-guidelines>. Accessed March 1, 2018.
- MVEIRB (Mackenzie Valley Environmental Impact Review Board). 2018. Report of Environmental Assessment and Reasons for Decision. GNWT Tłıchǫ All-Season Road Project. EA1617-01.
- MVLWB (Mackenzie Valley Land and Water Board) and AANDC (Aboriginal Affairs and Northern Development Canada). 2013. Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories.
- Stantec (Stantec Consulting). 2017. Geotechnical Report, Road Alignment, proposed Tłıchǫ All-Season Road. http://reviewboard.ca/upload/project_document/Draft%20Road%20Alignment%20Geotechnical%20Report%202017-08-09.pdf. Accessed December 19, 2018
- TetraTech (TetraTech Canada Inc.) 2017. Tłıchǫ All-Season Road (Tłıchǫ ASR) 2017 Geotechnical Investigation of Granular & Bedrock Prospects (File: ENG.YARC03107-01). Retrieved from http://reviewboard.ca/upload/project_document/DRAFT_Tłıchǫ_ASR%20Geotech%20Investigations%20Borrow%20Sources%20DATA%20REPORT.pdf. Accessed December 19, 2018