



ENGINEERING CONSULTING SERVICES

Transportation Infrastructure Program Feasibility Study, Phase I Cree Land Use Study - Waskaganish Technical Report



Consultant Reference: LGA-1-WA-S-SCL-RT-0001-01
2024-03-27



Stantec | DESFOR | SYSTRA

with subconsultant



Document History and Status

Revision	00	01
Date	2024-03-12	2024-03-27
Prepared by	MHC, EC, DL	MHC, EC, DL
Reviewed by	JM	JM
Approved by	AC	AC
Comments	Draft for revision and comments	Final

Approvals

Prepared by:



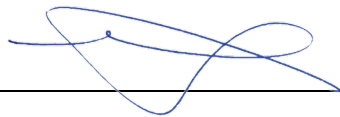
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Document Identification

Transportation Infrastructure
Program Feasibility Study, Phase I

**CREE LAND USE STUDY -
WASKAGANISH TECHNICAL REPORT**

Consultant Reference:

LGA-1-WA-S-SCL-RT-0001-01

2024-03-27

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1. INTRODUCTION

1.1 LA GRANDE ALLIANCE

La Grande Alliance (LGA) program is a plan to protect, connect and develop the Eeyou-Istchee Baie-James territory. It includes a study of a transport development that encompasses a renewal of existing Cree Community roads, the implementation of a north-south link Matagami to the James-Bay area and finally, a deep-sea port. It materialized in 2018 when the Grand Council of the Cree (GCC) and the Gouvernement du Québec (GQ) signed a memorandum of understanding for the study. The study has involved the Cree First Nations communities from the beginning of the initiative to ensure community engagement, and respect for the traditional way of life and values. The study is overseen by the Cree Development Corporation (CDC) on behalf of the Cree Nation Government (CNG).

The CDC, on behalf of the GCC/CNG and the GQ, has been mandated to oversee the study. In turn, they have assigned Vision Eeyou Istchee (VEI), a consortium formed by STANTEC, DESFOR and SYSTRA, to carry out a Feasibility Study on the technical, socio-environmental and economic components in Phase I of the LGA infrastructure program, covering years 1-5 from the beginning of construction. The CDC appointed WSP to perform a pre-feasibility study of Phases II-III of the program (covering years 6-15 and subsequently years 16-30).

Phase I of LGA includes:

- Upgrades to the access roads between the Billy-Diamond Highway (BDH) and the Cree communities of Waskaganish, Eastmain and Wemindji.
- Upgrade to the access road between the Route du Nord (RDN) and the Cree community of Nemaska.
- Construction of a new secondary access road to Mistissini via the RDN.
- A railway line following, as much as possible, the Billy-Diamond Highway between the town of Matagami and KM257 (Rupert River bridge) of the Highway.
- A return to service for the railway line between Grevet (Lebel-sur-Quévillon) and Chapais (approximate distance of 225 km).
- Trans-shipment areas along the Billy-Diamond Highway and the Grevet-Chapais railway corridors, specifically one located at KM257.

Among the tasks to achieve the stated objectives of the Feasibility Study for Phase I — Infrastructure, a socio-environmental feasibility study was conducted. This study included a Cree Land Use Study among the communities potentially impacted by the proposed infrastructures, including Waskaganish.

1.2 SOCIO-ENVIRONMENTAL FEASIBILITY STUDY

Development projects cannot be carried out without bringing changes in the environment and to the social environment. The James Bay and Northern Québec Agreement (JBNQA) was established in 1975 to ensure, among other things, that development in the Cree territory is carried out taking into account the protection of the environment and the maintenance of land use by Cree communities for the practice of their traditional activities. The JBNQA also provides a pathway for Cree in the decision-making as part of the environmental assessment process under Chapter 22 of the Agreement.

This Environmental and Social Feasibility Study is an important tool to guide future developers wishing to carry out the Phase 1 of La Grande Alliance. It is an innovative approach that plans to document, upstream of design by future proponents, the expectations and concerns of affected Cree communities, identify key potential land use conflicts and propose solutions (avoid, mitigate, offset), anticipate key potential impacts and recommend mitigation measures.

The CDC made it clear from the beginning of the LGA process that they wanted local community involvement, and environmental and social criteria evaluated at the same level as technical and financial criteria in the infrastructure design and planning. To meet these principles, VEI did the following:

- Organised internal bi-weekly meetings and direct exchanges between colleagues to share relevant land use and environmental information with the other study teams as it was collected.
- Used an online database (interactive ArcGIS map) to make land use, environmental and technical data accessible to targeted team members.
- Organized a workshop, bringing together tallymen and engineers, to review the potential Billy-Diamond Highway railway alignment, and identify main issues.
- Accommodated the tallymen's recommendations as much as possible.
- Encouraged team members to communicate with the Cree Liaison Officers (CIOs) and have ad-hoc discussions with them.
- Prioritised Cree workers and companies in the organization of field campaigns.
- Invited tallymen and land users to meet the field crews and to participate in fieldwork.
- Reviewed and included information shared by the following organizations:
 - Cree Nation Government (Land Use Planning Commission, including the Protected Areas Working Group and Environment Department);
 - Aanischaaukamikw Cree Cultural Institute;
 - Cree Outfitting and Tourism Association;
 - Cree companies, Cree communities, and the CIOs.

1.3 CREE LAND USE STUDY

As part of the socio-environmental study, the mandate included a Cree land use study which covered each proposed infrastructure's study area. The Cree land use study's main goal is to document the land and resources use in the study areas, so as to better identify and understand potential risks, conflicts and opportunities related to the transportation infrastructures under study. More specific objectives of this research include:

- Collect traditional knowledge regarding the area to inform and improve the design of the potential infrastructures.
- Identify valued sites and sensitive areas to be protected from potential development.
- Gather concerns and recommendations in relation to the proposed infrastructure, as well as concerning the LGA process in general.

- Assess preliminary potential impacts from the construction and operation of the infrastructures.
- Identify any potential cumulative effects from previous project impacts as well as in light of the potential infrastructures.
- Propose solutions to potential conflicts and alternate options.

It is important to keep in mind the following limitations regarding this component of the study:

- Novelty of the Grande Alliance study and approach for land users for whom this consists of the first contact regarding the infrastructure components under study;
- Relatively short time allotted to conduct the interviews and the study;
- Difficulty to obtain data from past studies or projects (e.g. sites of special interest to the Cree identified during forestry management exercise, as per the Paix des Braves);
- Difficulty to reach and meet all the potentially affected land users;
- Reluctance from certain land users to participate in the study because they do not want their participation to be interpreted as consent to the proposed infrastructure or to LGA;
- Reluctance from certain land users to share specific information about their activities;
- “Consultation fatigue” of certain land users who have shared their knowledge repeatedly;
- Potential loss of precision due to translation (Cree-English/English-Cree).

Is should be seen as a first general picture of the land and resources use in the study areas, to be completed in future stages of the process, rather than a complete list of land use features and recommendations. Indeed, it should be noted that the approach adopted by the LGA team is very innovative in engaging land users and community members from the start of the planning process, before the final infrastructure design. If some of the proposed infrastructure works go ahead, engagement with community members will continue and data will be refined.

The present report presents the results of the Cree Land Use Study conducted in the community of Waskaganish.

2. METHODOLOGY

The approach and methodology adopted for the Cree land use study, as well as the consent forms and interview grid were reviewed by and discussed with the CIOs.

2.1 STUDY AREAS

The study areas encompassed in the community of Waskaganish are as follows (see Map 1):

- Potential BDH railway alignment: five km buffer zone on either side of the baseline BDH railway alignment, which goes from Matagami, around km 0 of the BDH, to the Rupert River, around km 257 of the BDH.
- Waskaganish access road: one km buffer zone on either side of each road’s centerline and they extend from the start of the road to its connection with the BDH.
- Route du Nord: one km buffer zone on either side of the road’s centerline and it extends from the start of the road, in Chibougamau, to its connection with the BDH, around km 275 of the BDH.

During the interviews with tallymen and land users, if land use activities or features were reported outside the study areas, they were noted as well.

The table below indicates the traplines in Waskaganish potentially touched by each infrastructure.

Table 1: Traplines in Waskaganish Potentially Touched by LGA Phase 1 Infrastructures

Infrastructure	Number of traplines	Trapline Intersected
Potential BDH Railway	1	N05
Waskaganish Access Road	3	N09
		N02
		N01
Route du Nord	1	R13

2.2 DATA ACQUISITION AND PROCESSING

2.2.1 Literature review

At the beginning of the study, a review of existing information was conducted. General search by key words was carried out as well as search in specific databases, including:

- Hydro-Québec projects that were subject to an environmental impact assessment (Cherloc);
- Projects evaluated by the COMEX;
- Québec environmental assessment registries (MELCCFP and Bureau des audiences publiques sur l’environnement);
- Canadian impact assessment registry (Government of Canada).

More than 200 documents, concerning at least 40 projects achieved between 1977 and 2021, were consulted. This literature review allowed to collect information about known valued sites and sensitive elements, mainly along the Rupert River on Waskaganish and Nemaska territories. Some information regarding Cree land use near the communities of Waswanipi and Nemaska was also available. However, the literature review also revealed that little information is available for several sectors under study, including:

- Around the community of Wemindji and along the access road;
- Along the Billy Diamond Highway between Matagami and Waskaganish;
- Along the Grevet-Chapais roadbed, except for Lake Opawica area;
- Along the Eastmain access road.

2.2.2 Land user interviews

At the beginning of the study, traplines that could potentially be touched by the proposed works and infrastructures were identified. The VEI team then asked each CIO to validate the identity of each trapline's tallyman and to identify other land users or knowledge holders who should be invited to participate in the Cree land use study. In collaboration with the CIOs, VEI organized information sessions for tallymen and land users in each community potentially affected by LGA Phase 1 infrastructures (eight communities). Tallymen were invited to bring their family members and land users with them. General information on LGA as well as more specific information about Phase 1 studies and the infrastructures that could potentially go through the local traplines were presented and discussed with the attendees.

Sometime after the information session, the tallymen were invited to an individual land use interview in which their family members and land users were also welcomed to participate. The interviews were semi-structured, with open-ended questions, and were conducted mostly in Cree by one of VEI's Cree Liaison Officers and VEI's anthropologist. Large paper maps were used to locate land use features and information shared by the participants. Prior to starting the interview, the participants were asked if they had questions about LGA, and information about LGA and specific infrastructures was presented to those who had not assisted to the information session. The interview questions touched upon the following themes:

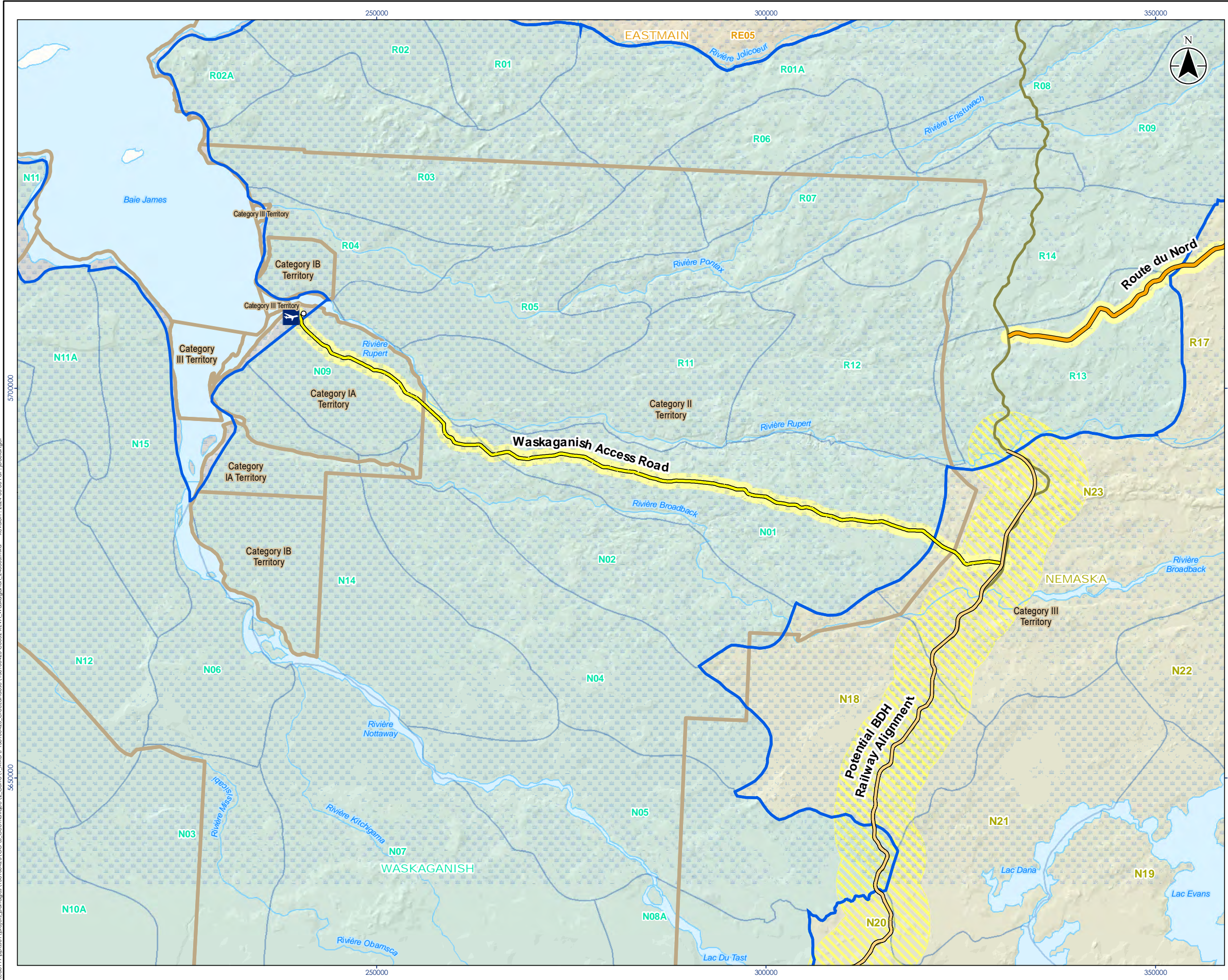
- Description of land use activities and features
 - Harvesting activities (hunting, fishing, trapping, and berries, plants and wood gathering);
 - Habitations sites (camp, cabin, seasonal campsite, tent frame, camping area, house, store, old trading post, old campsite and other building);
 - Trails and travelways (ATV/snowmobile trails, forestry roads, path, boat landing and portages);
 - Social and cultural sites (community, gathering, knowledge transfer, historical, archeological, ceremonial, burial or sacred site, picnic area, landmark).
- Environmental information concerning the study area (traditional ecological knowledge)
 - Wildlife:
 - Species present in the study area, quantity, quality, and potential issues.
 - Trails and migration routes, with special attention to roads and alignments crossings.
 - Calving/kidding areas.

- Other areas used by moose or caribou.
- Beaver lodges/ponds.
- Goose hunting ponds.
- Fish:
 - Species present in the study area, quantity, quality, and potential issues.
 - Presence of fish, and species, in each watercourse along the alignments.
 - Spawning and rearing areas.
- Water Resources
- Wetlands, bogs, swamp areas
- Invasive species and changes observed in the last 25 years.
- Condition of the existing infrastructures
- Potential effects and recommendations.

Once the interviews notes were compiled, the information collected was integrated into a GIS database specifically created for Phase 1 feasibility study, so it could be shared with the technical and the archaeological teams (note that access was limited to a small number of people).

Validation interviews were organized with the study participants, so they can review the data collected, verify its accuracy, and add precisions if required. The georeferenced database was also used during the validation process, to make sure the land use information was properly located. The interview notes were also read with the participants to validate the accuracy and clarify some information, if needed. The validation process also offered the land users an opportunity to share additional data or express additional concerns and recommendations.

It is important to note that some of the information collected is not presented in this report or is mentioned with very few details to preserve confidentiality and respect its sensitive nature. However, it will be provided to the CDC along with relevant non-disclosure agreements.

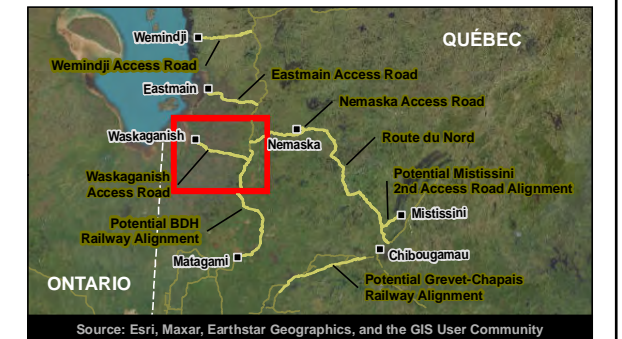


Map No. **1**
 Title **Cree Land Use Study Areas in Waskaganish**

Client/Project
 Cree Development Corporation
 La Grande Alliance – Feasibility Study
 Phase 1

Project Location 158100425-C0052 REVA
 Eeyou Istchee, Québec Prepared by Johanne Boulanger on 2024-03-06
 Verified by Marie-Hélène Côté on 2024-03-06
 Independent Review by Julie Massicotte on 2024-03-06

- Human Environment Components**
- Cree Village
 - Locality
 - ✈ Airport
 - ▭ Category I, II or III Territory
- Study Component**
- Potential BDH Railway Alignment
 - Route du Nord
 - Access Road
 - ▭ Study Area – 1 km Buffer on Each Side of the Waskaganish Access Road and Route du Nord
 - ▭ Study Area – 5 km Buffer on Each Side of the Potential Railway
- Trapline Limit and Community Name**
- ▭ Trapline Limit
 - ▭ Eastmain
 - ▭ Nemaska
 - ▭ Waskaganish
- Hydrography**
- ▭ Body of Water
 - Watercourse
- Wetland**
- ▭ Potential Wetland
- Road Network**
- Road Network



Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Geotechnical Investigation: Stantec, 2023
3. Road Network: Adresses Québec, 2021
4. Hydrography: GRHQ, 2017
5. Orthoimagery: ESRI-World Imagery, 2017

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3. COMMUNITY PROFILE

Waskaganish was the first Cree community to be involved in fur trading, at the Rupert House trading post. In 1968, the settlement established at the confluence of the Rupert Bay and the Rupert River changed its name for Waskaganish. Waskaganish's territory is divided into 36 traplines covering 29,711 km² (CMEB, 2022). Many rivers cross Waskaganish lands and were used as transportation routes by the Crees, such as the Harricana, Nottaway, Broadback, Rupert and Pontax rivers. The community is accessible by the Billy Diamond Highway and then using the Waskaganish Road on approximately 100 km. As of August 2022, the Cree Nation of Waskaganish (CNWa) had a total registered population of 2,894, with 2,293 members living on reserve, 468 living off reserve and 133 living on other reserves or Crown land (CIRNAC, 2022).

The LGA Phase 1 infrastructures located on Waskaganish territory are:

- The middle section of the potential BDH railway alignment (note that the northern section of the Phase I BDH railway ends at the Rupert River but is found on Nemaska traplines);
- The entire Waskaganish access road;
- The western end of the Route du Nord.

The Rupert River played a central role in the CNWa's history and is still highly valued by CNWa members. Moreover, during the Eastmain-1-A/Rupert project's environmental impact assessment process, the GCC (EI)/CRA have reiterated that the Rupert River is, and will always be, an essential part of Cree culture and of the Cree way of life, used by generations of Cree people (HQ, 2004c). The Waskaganish access road parallels that river and connects with several paths leading to valued sites along the Rupert River, including: Gravel Pit, Smokey Hill, Bay of Kapeshi Epetupeyach, the Oatmeal Rapids (near the BDH) and the Peat Island sector. Each of these valued sites are briefly described below.

3.1 GRAVEL PIT (SMOKEY HILL LANDING)

Location and infrastructures

Gravel Pit is located some 20 km from the village of Waskaganish and can be accessed by Waskaganish Road. Gravel Pit is a popular community site located on the left bank of the Rupert River, slightly downstream from Smokey Hill. The camp counts about thirty buildings (cabins), more than half of which are located along the river, the others being near the borrow pit along the access road. Gravel Pit is also considered a cultural camp where traditional structures, such as the miichiwaahp and the shaapuhtuwaan, are used for community and religious gatherings. There are also two docks for boats and seaplanes as well as a boat launch (HQ, 2004c, HQ, 2005)

Cree land use

The river is wide at this site and has a rather calm flow (HQ, 2004c). Presence of small shallow pools on the south and the north shores surrounded by wooden platforms are attached to the bank by wooden walkways. Traditional community anadromous cisco fishing is done at this site and fish nets are used around the Gravel Pit settlement. There is a valued cisco spawning ground at this site. The stretch of the Rupert River from Gravel Pit to Smokey Hill also represents a community area for goose-hunting. In winter, the snowmobile trail crosses both banks of the river at this site (HQ, 2004b, c).

Mitigation measure

A rock blanket, built by Hydro-Québec, helps maintain water levels, protects the Gravel Pit wharf at KP 21.3 from centennial flooding, ensures navigation and the free movement of fish at KP 20.4, to maintain the river scenery in this sector and to reduce the risk of freezing in the spawning ponds in winter (HQ, 2004a, b).

Landscape and archaeology

There are many viewpoints towards the river due to the sparse vegetation cover and the location of the buildings very close to the shore (HQ, 2004c). Due to the abundant wetlands around Waskaganish, archaeological sites occur often in and around gravel pits, exposing them to potential damage.

3.2 RAPIDS OF SMOKEY HILL (NOODAMESSEAN)

Location and infrastructures

Smokey Hill is a traditional Cree fishing site established on both sides of the same-named rapids, on the Rupert River, some 22 km from the village of Waskaganish. It can be accessed by the Waskaganish Road, and then using the small access road towards the river. Smokey Hill (Nootamessanaan), a main spawning ground for the anadromous cisco, has been frequented by the Crees of Waskaganish for many generations, over centuries. This site is one of the oldest community gathering places in use on the river and is therefore highly valued by CNWa members. The site includes a cultural camp where traditional structures, such as the miichiwaahp and the shaapuhtuwaan, are set up (HQ, 2004c).

According to interview participants for the Land Commission Report (EPC, 2017a): “Smokey Hill is a big part of what makes Waskaganish”.

Cree land use

A portage allows bypassing the rapids and accessing navigable areas suitable for fishing upstream on the river. The site is frequented mainly in summer and fall for fishing and for educational, recreational, or traditional purposes. Indeed, the Smokey Hill rapids are a community and traditional fishing ground that is frequented from the end of August until the end of September to catch cisco with a dip net (also called scoop-net fishing or scooping) (HQ, 2004a, b). An important proportion of the harvested fish is smoked onsite.

Mitigation measure

A rock blanket, built by Hydro-Québec, helps to maintain water levels (HQ, 2004a) in order to preserve traditional dip net fishing activities at Smokey Hill, as much as possible, to ensure navigation and the free passage of fish at KP 20.4, to maintain the visual aspect of the river in this sector, and to reduce the risk of freezing of the spawning ponds in winter. The cisco population was also monitored between 2009 and 2015.

Landscape and archaeology

There are traditional structures and temporary shelters, but the vegetation filters the views of the rapids. On the edge of the river, from the traditional dip net fishing site, the view is however direct on the rapids of Smokey Hill, both upstream and downstream.

At least four burial sites are identified in the area, on both banks of the Rupert River.

3.3 BAY OF KAPESHI EPUTUPEYACH

Located at KP 47.8 of the Rupert River, Bay of Kapeshi Eputupeyachis is one of the four main areas used for fishing, but also for goose hunting. Community members travel to the bay by seaplane or by snowmobile (HQ, 2004c). A structure was built at KP 33 of the river to restore the summer water levels in the bay (HQ, 2004b). A burial site was identified on the shore of the bay (HQ, 2004c).

3.4 OATMEAL RAPIDS

Located at the intersection with the BDH, the Oatmeal Rapids are one of the largest rapids on the Rupert River. A rest area was developed on the south shore of the Rupert River, and a lookout was built on the northern shore. The Crees use a boat launch built by the municipality of Baie-James (MBJ) on the south bank, immediately upstream of the rapids. A docking area is also present on the northern bank. Downstream of the Oatmeal Rapids, the Cree land users use an access located behind the km 257 roadhouse to get to the river (HQ, 2004c).

The beauty of the rapids in winter was mentioned repeatedly by participants in the July 2003 landscape survey (HQ, 2004c).

3.5 PEAT ISLAND SECTOR

The Peat Island sector is one of the four main harvesting areas along the Rupert River. Used for fishing, as well as for goose, moose and caribou hunting this sector is a valued harvesting area. Birth sites were also identified in the area (HQ, 2004c).

3.6 ISSUES AND VISION

In 2017, the Eeyou Planning Commission undertook a consultation process with Waskaganish community members. The results are presented in the “Report on Community Input on Land Use Planning Goals” (EPC, 2017b) and included information on the community’s values, issues and vision for the future. Some of it is summarized below:

Issues that Waskaganish faces:

- State of Cree occupation of the territory;
- State of Cree knowledge;
- Overharvesting;
- Challenges of making an income from life on the land;
- Access to the land;
- Waste management (Crees);
- Waste management (non-Crees/proponents);
- Impacts of hydroelectric development;
- Impacts of mining and forestry;
- Climate and other environmental change;
- Gravel – lack of material near community;
- Population growth.

Elements of a Waskaganish vision for the future:

- Enhance Cree occupation of the land;
- Protect the land, the animals and the sensitive areas for animal;
- Enhance Cree knowledge and culture;
- Create development opportunities that sustain Cree lands and culture;
- Play a bigger role in governance of territory.

4. RESULTS

The interviews provided a general idea of the land use taking place along the Billy-Diamond Highway, the Waskaganish access road and the Route du Nord as well as their surrounding areas, rather than a complete picture. The number of land users of the study areas, the frequency of their visits and quantity of resources harvested were not estimated since it was not in the scope of the Cree land use study carried out as part of the LGA Phase 1 Feasibility Study. It is worth noting that such an estimation exercise would be a big undertaking since various community members use the lands in proximity to their community's access road.

The land and resources in the study areas are used not only by the tallymen, their family members and land users, but also by other Cree land users. Additionally, various non-Cree activities were reported along the BDH. Since the BDH provides easy access to the territory, recreative anglers and hunters, as well as cottage owners and tourists also frequent the study area.

While being relatively recent on the territory, modern roads are widely used by the Cree population. In terms of transportation routes, they have overtaken rivers. The communities' access roads and Route du Nord are not only important to connect with other communities and with "the south", but also to facilitate land use and harvesting activities, and access to the southeastern part of Eeyou Istchee Baie-James, and potentially to the Saguenay-Lac-Saint-Jean region, by members of other Cree communities.

The fact that most land users do not live from the land anymore and occupy paid jobs partly explains the growth in importance of modern roads, as they provide faster access. Major changes in important rivers' hydrology and ice cover, following hydroelectric development in the last decades or due to climate change, also contributed to the increase in use of modern roads. Since it is now more dangerous, complicated, or sometimes impossible to navigate on some watercourses as well as to travel by snowmobile, roads offer interesting alternate options.

4.1 CREE LAND USE

The potential BDH Railway will be located along the Billy-Diamond Highway between Matagami and Waskaganish (KM257 of the highway at Rupert River bridge). It crosses 13 traplines belonging to the following Cree communities: Washaw Sibi, Waswanipi, Waskaganish, Oujé-Bougoumou and Nemaska. As shown on Map 1, the potential BDH railway crosses one trapline in Waskaganish, namely N05. VEI conducted land use interview with the tallyman on November 11, 2021.

The construction of the actual Waskaganish access road was completed in 2002 (Jacques Whitford, 2009). The road has a total length of 102 km, from the outskirts of the community to its connection with the BDH, around km 237. Starting west, the first 28 km are already paved. Between km 0 and km 22, the road runs on category I land. It continues on category II lands up to km 94, and on category III lands for the rest of its alignment (approximately 8 km). As shown on Map 1, the road crosses four traplines, namely N09, N02, N01 and N23. All those traplines are on Waskaganish territory, except trapline N23 which is located on Nemaska territory. On November 9 and 10, 2021, VEI conducted land use interviews with a total of four participants which included the tallymen of the three Waskaganish traplines intersected by the access road and a family member. Validation interviews took place on April 11 and 12, 2022.

The Route du Nord is a 407-kilometer, gravel road connecting Route 167 in Chibougamau to the Billy-Diamond Highway. The road has opened access to the Nemaska community and the forestry industry. It is crossing 22 traplines across the territory of four Cree communities (Mistissini, Nemaska, Oujé-Bougoumou and Waskaganish). RND crosses one trapline in Waskaganish, namely R13. VEI was not able to meet with the tallyman of trapline R13.

4.1.1 Trapline N05

LGA infrastructure component in trapline N05 is the proposed BDH Railway.

The tallyman reported several hunting activities in the study area. He mentioned trapping marten and other small fur-bearing animals all around the Lake Rodayer. Geese are also hunted in that area during spring, around the flying corridor located west of km 186 to km 190. The whole Lake Rodayer is a fishing area used in summer and winter.

The tallyman's main camp is located in the study area, around km 188 of the BDH, and is composed of various structures. However, he indicated that if the railway is constructed, he would relocate his camp near km 190, north of the existing access to the Lake Rodayer (boat ramp). That location is also where most of his harvesting activities are concentrated. Finally, the tallyman's mother used to camp near the Rodayer stream, approximately eight km west from the baseline BDH railway alignment.

In addition, the participant shared the location of a grave where a family member, a 4-months old child, is buried.

The tallyman indicated the caribou migration route located on the western side of Lake Rodayer. Caribou cross the BDH around Lake Rodayer.

4.1.2 Trapline N09

LGA infrastructure component in trapline N09 is the upgrade of the Waskaganish access road.

The tallyman of trapline N09 reported during the land use interviews that his main camp is located in the study area, some 200 m from the road, and is composed of various structures: one cabin, one teepee, one shed, and one tent frame used as a cabin. He mentioned another camp within the study area which is used as a spring hunt cabin for the locals. The access to "Gravel Pit" cultural site as well as the access road to the landfill site were the main transportation routes mentioned in the study area.

The tallyman indicated that he harvests beaver, grouse, and ptarmigan for consumption. Additionally, there are various goose blinds or goose ponds on trapline N09. Some of them were abandoned because they dried up since the construction of the Waskaganish road. According to the tallyman, it may be due to the growth of vegetation (type of grass). The vegetation along the road has changed after construction of the road, and the type of vegetation now present attracts beavers to go there.

There is beaver activity in the first creek (Jimansibish). It will sometimes block the culverts, the water will go up, but not on the road. This is a recurring issue. It will take 4-5 days to undo the beaver lodge. A machine needs to be brought by the Band Maintenance team (since it is on category I lands) to break the beaver lodge.

Moose, bears, wolves, and foxes cross the road between km 4 and km 11 of the road, approximately. There are lots of cranberries in that area. Bears also cross the road around the dumpsite (km 19-20). Small birds, grouse, porcupine, rabbit, fox, snakes, frogs, and squirrels get hit on the road in the area between km 8 and km 12.

4.1.3 Trapline N02

LGA infrastructure component in trapline N02 is the upgrade of the Waskaganish access road.

Four camps located within the study area were mentioned by the tallyman of trapline N02 during the interviews. Three of those belong to family members and friends, and the other one is a cultural camp used by the Cree School Board. A trail starting at km 23 of the road and leading to the communications tower, as well as the access road to Smokey Hill were the main transportation routes mentioned in the study area.

The tallyman goes goose hunting and beaver trapping within the study area. He reported several goose hunting blinds on his trapline. He indicated that all along the Waskaganish access road, it is considered a community goose hunting area. However, fur-bearing animals (beaver, bear and moose) are mostly harvested by the tallyman and his sons.

The tallyman mentioned beaver activity on the creek around km 30 of the road and indicated the presence of trout in one of the creeks intersected by the road. Rabbit, fox, bear, sharp-tailed grouse are also observed in proximity to Waskaganish Access Road. Collisions with bears occur around km 28-29 of the road because there are a lot of blueberries in that area. The tallyman also sees a lot of rabbit and fox that get struck on the road.

An important archeological site was encountered around km 29 of the road, where the littoral or the shore drift line was in the past (the Rupert River was larger back then). An arrowhead, a knife made of rock and a skull (unidentified species) were found there. The archaeological site has been documented by Jim Chism.

4.1.4 Trapline N01

LGA infrastructure component in trapline N01 is the upgrade of the Waskaganish access road.

The tallyman of trapline N01 indicated during the interviews that he was already the tallyman when the Waskaganish access road was first built. He acted as an advisor and consultant: he determined where the road would pass on his trapline. The tallyman chose an alignment that would go close to certain types of woods that he would later harvest to make different types of tools, like snowshoes and birch toboggan, but that he would also protect. Indeed, some tree stands that he protected are still present along the road.

Before construction of the Waskaganish access road started, the tallyman was already aware of the potential impacts of a new road. One of the main issues that he anticipated was the ease of access to his hunting ground for other parties. Among other resources, the tallyman was hunting caribou, moose, bear, and ptarmigan. Nonetheless, he was “ok” with the idea of building the road. It turned out that what he was thinking happened. Nowadays, people from the community, mostly “day hunters”, go hunting on trapline N01: goose hunting in the spring and moose hunting along the road, since it is far enough from the community and close to areas of moose traffic.

The tallyman’s main camp is located within the study area, some 400 m from the Waskaganish access road. During the interviews, he mentioned three (3) other camps which belong to his family members and friends, or which are used during hunting activities

The tallyman harvests caribou “every few seasons”, depending on their migratory route. Woodland caribou live permanently in the area, but “we don’t see them”. In the 1950s and 1960s was the last time the tallyman had observed migratory caribou in the area, but recently, for three consecutive years, he saw them on his trapline. According to the tallyman, this is related to the powerline that was built approximately six years ago: caribou follows the corridor that was clear-cut.

At the time of the interview, family members had just observed beaver activity up one of the creeks that are intersected by the road and informed the tallyman. So, he was planning to go trap them soon. The tallyman indicated that, since the Rupert River diversion, he relies more on the beaver found away from the Rupert River area.

There are beavers blocking culverts along the road, but not on trapline N01, as the tallyman traps them and allow other land users to trap them too. “I am an active tallyman. When I die, that’s when the beavers will come and block the culverts. People will say: it was nice and dry when the tallyman was around.”.

Several locations of valued fauna and flora species, such as brook trout, moose, beaver, and birch tree, were shared by the tallyman. Berries can be found all over trapline N01, on each side of the road: blueberries are the most common but cranberries, swamp berries, moose berries and raspberries are also present. The tallyman consumes those berries, but he washes them before to remove dust from the road. Several community members go pick berries on trapline N01 and they park roadside.

4.2 COMMENTS, CONCERNS AND RECOMMENDATIONS

4.2.1 Billy-Diamond Highway Railway

The Cree land use study participant shared information regarding the Billy Diamond Highway Railway. Comments, concerns and recommendations concerning its potential upgrade and paving are presented in the table below:

Table 2: Comments, Concerns and Recommendations – Billy Diamond Highway Railway

Alignment / Conception
<ul style="list-style-type: none"> Concerns regarding potential contamination to the creeks intersected by the railway during the railway construction, operation of the train and potential spills. Contamination of fish that are used for consumption. Concern regarding changes in the geese flight pattern due to the proximity of the flying corridor to the potential railway.
Others
<ul style="list-style-type: none"> Camp to be relocated as per tallymen’s preference. A railway offering passenger service could be interesting as the hunters could get on the train, but that it is not the first purpose of the railway. Presence of caribou crossing the BDH in the area of Lake Rodayer.

4.2.2 Waskaganish Access Road

The Cree land use study participants shared a wealth of information regarding the Waskaganish access road and made interesting recommendations concerning its potential upgrade and paving. Their comments, concerns and recommendations are presented in the table below.

Table 3: Comments, Concerns and Recommendations – Upgrade and Paving of Waskaganish Access Road

Alignment / Conception

- When the Waskaganish road was first built, a tallyman had proposed that a rest area be developed. Currently, there is only one place where transport trucks can stop and park along the road. There is also a small parking area (for only one pick-up truck) along the road, but it was made specifically for someone. Several community members go pick berries, gather wood or hunt along the road, so there is still a need for some parking spots, rest areas and places to stop.
- There is a dangerous curve, around km 48-49 of the road. When coming from Waskaganish, it drops (coming downhill from a ridge) and there is a curve. A guard rail should be installed.
- The turn is too sharp, around km 68 of the road.
- It would be a good idea to pave and widen the Waskaganish road. The shoulders should allow to circulate in ATV, at least on one side.
- Turn-off at Smokey Hill Road should be widened; only one vehicle can pass at time. Shoulders should be widened to park roadside and parking should be enlarged. Sometimes, even buses use that access to get to Smokey Hill.
- Certain curves are dangerous as they do not have markers. The guard rails should be more visible at night and during winter. Guard rails should be installed on both sides of the Waskaganish road for the first 4 km from the community, as people use the road for fitness, for walking or bicycling, since it has been paved.
- The first 4 to 6 km of the road should be enlarged to accommodate pedestrians and bikers. There are more ATVs on the roadside to get to Gravel Pit.
- Dangerous sharp turn where the transmission line crosses the road, around km 9. People use the transmission line right-of-way to travel in snowmobile and they cross the road there. It is dangerous because it is in a curve and also because there are trees on the west side
- Illumination at night: perhaps the first 4 km of the road should be illuminated (at least up to the community's welcome sign).

Operation and Maintenance

- Around km 70-71, there is water accumulation, and it looks wet (the road looks dark). It gets like a pool during spring runoff. The tallyman recommends installing a culvert or something else (there is no culvert at the moment).
- The section of the Waskaganish road around km 88 gets slushy on top of the icy surface of the gravel road. "It seems like mud". The road surface seems to be made from blasted rock.
- There are beavers blocking culverts along the road, but not everywhere.
- Beaver activity on the creek around km 30 of the road. They block the culvert and create flood.
- The turn-off from Waskaganish access road towards the Cultural Camp is eroded due to beaver activity. It is "washed-out" because of flooding.
- There are snow drifts on the road around km 42. It would be a good idea to put plastic fences to prevent that.
- Barriers (guard rails) should be installed in the area of km 42.

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- A culvert should be put at km 12 of the Waskaganish access road.
 - There is beaver activity in the first creek (parallel to the road between km 0 and km 1). It will sometimes block the culverts, the water will go up, but not on the road. This is a recurring issue. It will take 4-5 days to undo the beaver lodge. A machine needs to be brought by the Band Maintenance team (since it is on category I lands) to break the beaver lodge.
 - The vegetation along the road has changed after construction of the road, and the type of vegetation actually present attracts beavers to go there.
 - Between km 8 and 16, south of the road, all creeks want to empty in the Rupert River, but there is only one culvert. So, during spring run-off, it turns into a bay. That could become an issue with the washouts if there is a lot of snow.

Safety

- Collisions with bears occur in the area of km 28-29 because there are a lot of blueberries.
 - When travelling on the road, heading to the community (going west) around sunset, there is a visibility issue due to the dust, because they are always facing the sun.
 - The paving of the Waskaganish access road is positively seen because it would limit the dust issues. The downside of the paving is that the vehicles' speed will increase.
 - The garbage dump area is dangerous.
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