WSR
WEBEQUIE
SUPPLY ROAD

WEBEQUIE SUPPLY ROAD
FINAL ENVIRONMENTAL ASSESSMENT REPORT / IMPACT STATEMENT

January 30, 2026

AtkinsRéalis Ref: 661910

SECTION 3: Evaluation of Project Alternatives

WEBEQUIE FIRST NATION

AtkinsRéalis

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3 Evaluation of Project Alternatives

The Ontario Environmental Assessment (EA) and Canada Impact Assessment (IA) process requires that two types of project alternatives be considered: “alternatives to” the Undertaking (i.e., functionally different ways of addressing an identified problem or opportunity to arrive at the preferred planning solution) and “alternative methods” of carrying out the Undertaking (options for implementing the preferred planning solution).

The federal IA process under Subsection 22 (1) of the *Impact Assessment Act* requires the Proponent to describe the following items related to the assessment of alternatives:

- Alternatives to the project, describing functionally different ways that are technically and economically feasible to meet the project need and achieve the project purpose;
- Alternative means of carrying out the project, identifying and considering the potential environmental, health, social and economic effects of alternative means of carrying out the designated project that are technically and economically feasible and through the use of best available technologies;
- Elements of each alternative means and the associated adverse and positive environmental, health, social or economic effects or impacts on rights of Indigenous Peoples, as identified by the Indigenous group(s). The application of Gender Based Analysis Plus to the effects analysis to describe disproportionate effects for diverse subgroups is required. The proponent must also consider the views or information provided by Indigenous Peoples, the public and other participants in establishing parameters to compare the alternatives means;
- The methodology and criteria used to determine the preferred alternative means and the unacceptability of excluded alternative means, including consideration of trade-offs associated with the preferred and alternative means; and
- Criteria to examine the environmental, health, social and economic effects of each remaining alternative means to identify a preferred alternative.

The Project Team, on behalf of the proponent, completed an evaluation of alternatives to identify the proposed preferred Project development area and fulfill the requirements of both the approved provincial Terms of Reference (ToR, October 2021) and Tailored Impact Statement Guidelines (TISG, February 2020) for the Webequie Supply Road (WSR) Project. Alternatives were selected based on qualitative and quantitative comparisons, professional experience, and consultation with Indigenous communities, the public, government agencies, and stakeholders. Screening criteria that were used to evaluate potential project alternatives included environmental effects, social acceptability, technical feasibility and cost.

This section of the Environmental Assessment Report/Impact Statement (EAR/IS) summarizes the following:

- Identification of candidate alternatives (including threshold criteria);
- Pre-screening assessments of alternatives;
- Alternatives characterization (including environmental, technical, economical and social considerations);
- Multiple accounts analysis (including the determination and evaluation of impacts generated by each option, with consideration of mitigation);
- Value-based decision process; and
- Sensitivity analysis.

Where practical, the proponent relied on the following to inform the alternatives to and alternative means assessments:

- Regional or strategic assessments (none were applicable to this assessment of alternatives), Note that federal and Indigenous-led Regional Assessment on the Ring of Fire Area is in the ToR phase and has not formally started (refer to Section 1.4.2.1);
- Studies and/or plans that were conducted or prepared by either a jurisdiction or an Indigenous governing body in the region related to all-season roads and regional infrastructure initiatives (refer to Section 1.3), including assessment of effects, where applicable;
- Indigenous Knowledge;
- Feedback received from Indigenous communities, the public, government agencies, and stakeholders;
- Relevant studies and/or assessments completed by proponents of other projects in the vicinity of the Project (e.g., Noront Resources Eagle's Nest Mine Access Road, 2013); and
- Studies and/or assessments completed by the Proponent of this Project.

A summary of the engagement and consultation activities and outcomes related to the evaluation of alternatives are documented in Section 2 – Engagement and Consultation.

3.1 Alternatives to the Undertaking

The range of "Alternatives to the Undertaking" (i.e., functionally different ways of approaching the opportunities identified by Webequie First Nation to improve the community's economic and social well-being) was limited by the primary objectives of the Project ("Need for the Project"), as determined by Webequie First Nation:

- Establish an all-season corridor that will facilitate the movement of materials, supplies, and people between the Webequie Airport and the mineral exploration and proposed mine development activities in the McFaulds Lake area of Northwestern Ontario (specifically, the camps, the drilling/exploration projects and, in the future, mining facilities);
- Provide enhanced employment and other economic development opportunities to Webequie community members, while also allowing them to continue to reside in or around their community's traditional territory, engage in traditional uses of the land, and preserve their language and culture; and
- Provide experience/training opportunities for youth to help encourage pursuit of additional skills through post-secondary education.

For transportation projects, "Alternatives to the Undertaking" generally include new or improved roads, new or improved rail service, air service, public transit service, alternative transportation methods for goods movement (e.g., airships and hoverbarges in this case), managing travel demand to influence how and when trips are made, modifying/reducing the need for travel by encouraging the use of alternatives to trip making (e.g., videoconferencing, providing more medical services locally, providing more electronic access to training opportunities) and the null ("Do nothing") alternative.

The assessment of "Alternatives to the Undertaking" for the Project considered the following five options:

- Do nothing;
- Upgrade the existing trail system to seasonal winter road;

- Alternative modes of transportation (hoverbarge, airship, rail);
- Manage travel demand; or
- New all-season road.

3.1.1 Method for Evaluating Alternatives to the Undertaking

The evaluation of “Alternatives to the Undertaking” was completed by screening these five alternatives using the factors summarized in **Table 3-1**.

Table 3-1: Screening Factor for Alternatives to the Undertaking

Factor	Description
Impacts to the Natural Environment	Webequie First Nation intends to develop and implement the Project in the most environmentally responsible way possible. A key consideration is maintaining the community’s (and neighbouring communities’) ability to engage in traditional uses of the land and resource base, which means minimizing potential adverse impacts to natural heritage features. Impacts to the natural environment arising primarily from construction were estimated at a screening level based on previous experience and general knowledge of the alternatives being considered. At this level of screening, impacts were considered to fall into one of two categories. The categories were the potential for general impacts to (1) the aquatic environment resulting from construction/maintenance at waterbody crossings and (2) the terrestrial environment, primarily from vegetation clearing during construction.
Social and Economic Benefits	Webequie First Nation is intent on maximizing project social and economic benefits in relation to the purposes for pursuing the Project, stated above. Although the community will realize social and economic benefits from a number of aspects of building and operating/maintaining any of the alternatives considered, for the purpose of the screening, benefits were generally considered to flow from employment. Generally, the greater the number of jobs and the more sustainable the jobs are (e.g., year-round versus seasonal employment) the greater the benefits for the community. A key social benefit of the Project would need to include the continued ability to practice traditional lade and resource use.
Reliability/Proven Technology	This screening factor was used to evaluate the extent that an alternative, particularly a technology, has been commercially proven to be feasible. Technologies that are new to the market and have not been tested to be economical and reliable at a commercial scale are evaluated as being a risky investment. Lack of reliability was generally considered to be a critical failure of the technology that eliminated an alternative outright from further consideration in the assessment of alternatives.
Capital and Operating Costs	Project costs will play a key role in determining the economic viability of the Project, consisting of costs to build and operate/maintain the alternative. Project-specific costing was not developed for this evaluation; therefore, a cost comparison was completed based on previous experience with similar alternatives. Specific cost factors included in the screening included construction (road, railway, loading/unloading facilities, etc.), operation (vehicles) and maintenance (repairs, snow clearing, etc.) costs.

The evaluation of “Alternatives to the Undertaking” was a qualitative assessment since specific scores and weights were not applied. In some cases, one or more of the screening factors were of sufficient concern to eliminate an alternative from further consideration. The alternatives were compared to the new all-season road option, relying on it to form the benchmark.

3.1.2 Evaluation of Alternatives to the Undertaking

A summary of the evaluation of “Alternatives to the Undertaking” is provided in the following subsections.

3.1.2.1 Alternative 1: Do Nothing – Null Alternative

The Null (or Do Nothing) Alternative also provided a benchmark that other alternatives were compared against, using the screening factors identified in **Table 3-1**. If the Null Alternative proved to be the preferred alternative, there would be no undertaking and environmental/impact assessment approval would not be required.

The Null Alternative would limit transportation options between Webequie First Nation and the McFaulds Lake area to the existing seasonal ground connections provided by a series of informal winter trails and air connection between the Webequie Airport and the air strip at the Wyloo Pty Ltd. (formerly Noront Resources) proposed Eagle’s Nest Mine project.

Although the Null Alternative had the lowest capital and operating costs, and the lowest impact on the natural environment of all alternatives that were considered, it does not achieve the primary purpose, which is to provide a cost-effective and sustainable means of delivering goods and services from the Webequie community/airport to support and participate in mineral exploration activities and proposed mine developments near McFaulds Lake and thereby provide economic and employment opportunities to the community. Under the Null Alternative there will be a loss of social and economic benefits to the Webequie First Nation, relative to the other alternatives. The reliability screening factor does not apply to the Null Alternative, as there is no project.

Despite the advantages of low capital and operating costs and limited environmental impacts, the Null Alternation will not provide any social and economic benefits to the community and does not meet the purpose of the undertaking. For this reason, the Null Alternative was not carried forward for further consideration in the evaluation of alternatives, except for the purposes of assessing the overall advantages and disadvantages of proceeding with the preferred method of implementing the Project.

3.1.2.2 Alternative 2: Upgrade Existing Trail System to Seasonal Winter Road

The existing informal trail system between Webequie First Nation and the McFaulds Lake area can only be travelled for the entire distance during the coldest winter months. During the other seasons of the year, the trail system is interrupted by interspersed waterbodies, watercourses and large-scale wetlands (muskeg). In addition, the existing trails are narrow and only suitable for snowmobile access. The trails would have to be upgraded to current provincial design and operational standards/specifications for winter roads to support heavy vehicle use. The seasonal lifespan of the winter road (typically February to end of March, although this duration has been observed to be shrinking due to climate change) could be marginally lengthened by the addition of permanent bridge/culvert structures across the larger watercourses that tend to open up soonest during the spring thaw.

Upgrading the existing trail system to a winter road would have the advantages of lower capital and maintenance costs and somewhat lower and less permanent environmental effects than an all-season road but would provide reduced social and economic benefits to Webequie community members, as there would not be the opportunity to provide goods and services to the camps and facilities in and around McFaulds Lake throughout the year. Other disadvantages of a winter road connection include:

- Operational period limitations (the winter road is anticipated to only be operational for 5 to 8 weeks a year, depending on weather) and uncertainties (climatic variability) resulting in lower levels of reliability and overall economic activity;
- The majority of watercourse crossings will be directly over ice and snow, resulting in environmental impacts;
- Slower travel speeds than an all-season road, resulting in higher delivery costs; and
- Restrictions on the range of vehicle types, including heavy transport trucks.

The seasonal winter road upgrade alternative requires lower capital costs than an all-season road, with relatively similar operating costs; however, the winter road upgrade would result in higher environmental impacts due to repetitive disturbance year to year, and the reliability would be lower due to the seasonality of the haul window and the uncertainty of the length of the winter season. Since the purpose of the supply road is to facilitate the safe and reliable transportation of goods and services between the Webequie Airport and existing mining exploration and future mine operations in the McFaulds Lake area, the advantages of the winter road upgrade do not offset the lack of social and economic benefits. For these reasons, the winter road upgrade alternative was not carried forward for further consideration in the evaluation of alternatives.

3.1.2.3 Alternative 3: Alternative Modes of Transportation

Three (3) alternate modes of transportation were evaluated including hoverbarge (hovercraft), heavy lift airship (dirigible), and a new rail corridor.

Hoverbarge

Hovercraft technology has a considerable and successful history in transportation, primarily in military and first response applications and is uniquely suited to accessing rugged terrain and delivering cargo and people to isolated locations, with models developed for cold weather application (refer to **Figure 3.1**).

Figure 3.1: 200t Cold Weather Heavy Lift Hoverbarge (2009)

Sources: Marinelink.com and Hover Freight Air Cushion Systems

The general advantages of the hovercraft alternative related to the screening factors include the following:

- They can either be assembled in a modular format at site or can be flown to site pre-assembled (depending on size and weight and the design characteristics of the runway);
- They operate on conventional diesel fuel; operating costs are much lower than conventional aircraft and lower than transport trucks;
- They can access all terrain types, allowing all-season operations, although it is unclear if the technology has been proven on the range of terrain found between the James Bay Lowlands and the upland areas around Webequie;
- The hovercraft landing system, with “suck down” capability, allows for multi-surface operation and load transfer on land, water, ice and snow, while roll-on-roll-off (Ro-Ro) cargo loading/unloading capability facilitates heavy load operations;
- No substantive infrastructure is required for Ro-Ro operations;
- Minimal direct impact to the environment, as they exert a ground pressure of 2.0 KPa or 0.33 pounds per square foot (less than the human foot); and
- Some hovercraft can be operated as either passenger or cargo payload, providing flexibility in application.

The general disadvantages of the hovercraft alternative related to the screening factors include the following:

- Higher payload hoverbarges (most typically with a payload of up to 50 tonnes) are rare in the marketplace and largely untested in commercial applications;
- At 50 tonnes, the payload of a hoverbarge is similar to that of a conventional 18-wheel transport truck. A comparable fleet of hoverbarges has never been commercially attempted;
- A cleared road/runway is required that must be kept clear of vegetation, although the specification and cost to maintain a corridor for hoverbarge is likely slightly less in comparison to a winter road and far less than an all-season road;
- The costs for the local people to utilize the hoverbarge may be prohibitive and travel schedules may be limited; and
- There is currently no company that is commercially manufacturing heavy lift hoverbarges; those companies that have in the past are no longer in operation.

One of the biggest advantages of this technology is that adding this option could extend the travelable time beyond that of the winter road into the warmer months of the year without having to build the road to the higher design specifications of an all-season road. Conventional transport trucks could be used to supplement the hoverbarges in the winter months (operating season of the winter road), and the hoverbarges could continue providing service during the remainder of the year. Alternatively, the conventional transport truck fleet could be entirely replaced by similar payload hoverbarges to avoid duplication and redundant operating costs. Either way, this option would likely achieve the desired level of social and economic benefits.

Despite these advantages, the lack of proven technology, particularly in terrain similar to the project area, unproven commercial scale operations and the lack of manufacturers, makes this an uncertain and unreliable choice over more conventional modes of transportation. In addition, although direct impacts would be relatively low once in operation, and operating costs are expected to be lower than conventional transport trucks and aircraft, the technology requires a cleared road equivalent to a winter road, resulting in similar environmental effects to the winter road alternative. As a result of the general unreliability and

unproven nature of the hovercraft technology at the required scale, the hovercraft alternative was not carried forward for further consideration in the evaluation of alternatives.

Heavy Lift Airship (Dirigible)

The dirigible was primarily used in the 1930s and 1940s as an alternate mode of transportation to conventional aircraft. These 'lighter than air' ships were typically filled with a combination of helium and hydrogen. The infamous Hindenburg disaster, which resulted in loss of human life when the hydrogen ignited, resulted in the demise of the airship; however, in recent years, with advanced aerospace technology, the airship has had a resurgence, with several companies taking prototypes to commercial production. Now filled primarily with helium, the risk of combustion has been eliminated. In addition, the technology has been advanced, making modern airships 'heavier than air', which means they can be loaded and unloaded at ground level, eliminating the need for specialized mooring and loading/unloading infrastructure (refer to **Figure 3.2**). In addition to reducing costs and increasing practicality, this has also extended the range of terrain that can be accessed by the airships.

Figure 3.2: Lockheed Martin LMH-1 Hybrid Heavy Lift Airship

Source: Gasworld.com and Lockheed Martin

Although prototype heavy lift airships are achieving over 1,000 tonnes of payload (making them equivalent to sea borne cargo ships), most airships that are either at or close to commercial production are capable of transporting 50 and 200 tonnes of payload. A fifty (50) tonne payload is equivalent to a conventional transport truck.

Similar to the hoverbarge, the heavy lift airship remains largely unproven commercially. Although some manufacturers report that orders have been placed, currently there are no commercially operational fleets anywhere in the world.

There are a number of advantages to heavy lift airships over other alternative modes of transportation:

- Airships are far more fuel-efficient than conventional aircraft, which must constantly burn jet fuel to stay aloft;

- Costs are 80-90% less than equivalent payload aircraft to purchase and operate; operating costs are similar to transport trucks and rail (point to point);
- 'Heavier than air' technology removes the need for mooring and loading/unloading infrastructure; and
- No formal access roads are required between loading/unloading points, resulting in very low to no negative environmental effects.

The general disadvantages of the heavy lift airships alternative related to the screening factors include the following:

- Higher payload heavy lift airships are rare in the marketplace; and
- The costs for the local people to utilize the heavy lift airships may be prohibitive and travel schedules may be limited.

Although the advantages of airships are attractive, and the desired level of social and economic benefits could potentially be achieved, the payload of models that are close to or in commercial production are too small. In addition, the lack of a proven commercial track record also remains a concern for reliability. Due to the general unreliability and unproven nature of the airship technology at the desired scale, this alternative was not carried forward for further consideration in the evaluation of alternatives.

New Rail Corridor

The evaluation of "Alternatives to the Undertaking" recognizes the results of transportation investigations conducted in relation to the feasibility of rail transport in the region, including the Cliffs Integrated Transportation System that optimized all-season road connection of the Black Thor mine assets and facilities with the provincial highway system and the CN Rail system at Highway 584 near Nakina, as summarized by the Northern Policy Institute in its "Roads, Rail and the Ring of Fire" commentary paper. In the paper, the all-season road option was preferred over a heavy rail system from a cost, constructability and First Nations community benefits perspective. Although the long-term advantages of the rail (vs road) option were recognized, rail capital costs were on the order of 50% higher than road costs, which made the rail option less feasible. These same arguments were applied to planning rail line alternatives for the WSR Project. More importantly, it should be noted that advantages of the rail options studied previously were associated with the movement of mine product, whereas the Webequie Supply Road will not be used for this purpose, and the cost of constructing and maintaining rail infrastructure is not warranted for the type and volume of traffic that is anticipated.

There is currently no rail service between Webequie and the McFaulds Lake area and, historically, private sector proposals for serving the area have focused on a north-south connection between the Ring of Fire area and the national (CN Rail) corridor at Nakina (Northern Policy Institute, 2015). Similar to the hoverbarge and new all-season road options, a new rail right-of-way would have to be cleared (and maintained) through a "greenfield" environment. Further, establishing the infrastructure for such service is:

- Not aligned with provincial development plans and policies for the area under consideration (including lack of a connection to any existing or proposed rail network);
- Not cost-effective (primarily due to the capital cost of constructing the line over steep terrain and thick peat deposits); and
- Beyond the financial means of Webequie First Nation under current and prospective funding agreements.

The general advantages of the new rail corridor alternative related to the screening factors include the following:

- Providing year-round services, resulting in more reliable passenger travel and delivery of goods and services to the mining exploration and proposed mine operators in the McFaulds Lake area;
- Resulting in less significant environmental effects to permanent watercourse crossings due to less frequent disturbance;
- Providing higher level of safety for travellers; and
- Increasing overall economic activity, resulting in greater social and economic benefits to the Webequie First Nation and others that participate in road development and the delivery of goods and services.

The general disadvantages of the new rail corridor alternative related to the screening factors include the following:

- Highest capital and operating costs; and
- Requires major planning, engineering and environmental review.

In summary, a rail line would likely achieve the desired level of social and economic benefits; however, environmental impacts would likely be similar to those caused by construction and operation of an all-season road. Rail technology is also proven and reliable, but the capital costs of this alternative would be much higher than all other alternatives with limited additional benefits over other options. For these reasons, a heavy rail alternative was not carried forward for further consideration in the evaluation of alternatives.

3.1.2.4 Alternative 4: Manage Transportation Demand

Travel demand management mechanisms, such as modifying or reducing the need for travel by encouraging the use of alternatives to trip making (e.g., videoconferencing, providing more digital access to training opportunities), are deemed to be an auxiliary benefit associated with any long-term plan for introducing a road corridor within which enhanced communications technology (broadband) can be installed. Under the correct circumstances, this alternative could be implemented in combination with a road right-of-way and within the same timeframe.

3.1.2.5 Alternative 5: New All-Season Road

An all-season road is a conventional road, similar to those within the provincial highway network, which can be designed to different specifications depending on the type and volume of traffic that will use it and the cargo to be hauled from point to point.

There are a number of advantages to an all-season road that offset the disadvantages of a seasonal winter road upgrade, including:

- Providing year-round services, resulting in more reliable passenger travel and delivery of goods and services to the mining exploration and proposed mine operators in the McFaulds Lake area;
- Having higher design standards, resulting in higher traffic speeds, accommodation of a wider range of vehicle types (including heavier trucks), and lower delivery costs;
- Resulting in less significant environmental effects to permanent watercourse crossings due to less frequent disturbance;

- Providing higher level of safety for travellers; and
- Increasing overall economic activity, resulting in greater social and economic benefits to the Webequie First Nation and others that participate in road development and the delivery of goods and services.

From a technical perspective, an all-season road between Webequie and the McFaulds Lake area would have a number of general disadvantages compared to an upgraded winter road and most other alternative modes of transportation, including:

- Significantly higher capital and operating costs; and
- Requiring major planning, engineering and environmental review.

The all-season road is a reliable mode of transportation that would achieve the desired level of social and economic benefits. Although the environmental impacts of an all-season road would be higher than some of the other alternative modes of transportation, most of these other alternatives are considered too unreliable to consider further in the evaluation of “Alternatives to the Undertaking”. Although the capital costs of an all-season road would be higher than most options other than a rail line (much higher costs), the general reliability and the potential for achieving the desired levels of social and economic benefits make this the preferred alternative.

3.1.3 Preferred “Alternative to the Undertaking”

Having considered the balance of advantages and disadvantages of each “Alternative to the Undertaking” that was evaluated in **Section 3.1.2**, the preferred “Alternative to the Undertaking” is the construction of a new all-season road between Webequie and the McFaulds Lake area.

Heavy lift airships and hoverbarges are not considered to be proven technologies and costs are somewhat uncertain, although likely comparable to transport truck haul costs. Current models of both technologies have limited payloads that would necessitate having a fleet of vehicles to provide comparable payload to a fleet of transport trucks. Although the heavy lift airship has the advantage of not requiring a cleared corridor, the hoverbarge would require clearing and corridor maintenance similar to that of a winter road. Overall, these technologies are not preferred.

The other modal alternative (rail) is also not preferred, primarily due to comparatively high capital costs and lack of a connection to any existing or proposed rail network.

In comparing a winter road upgrade to an all-season road, the all-season road option is preferred. Although it will result in higher capital and operations/maintenance costs, an all-season road will provide a safer and more reliable means of transporting goods and services throughout the year. This will maximize economic development opportunities, which in turn, will maximize social and community benefits for the Webequie First Nation. There will be environmental effects resulting from the construction and operation of both types of roads. Some argue that the recurring effects of annual construction of a winter road could be cumulatively greater than the initial construction impacts of an all-season road and the lesser ongoing impacts during operations. Environmental effects of either type of road can be avoided or minimized through proper routing/alignment selection and/or can be sufficiently managed with mitigation to avoid or minimize significant effects.

One of the greater potential negative effects of an all-season road will be the development of aggregate supply sources. These impacts, and other impacts associated with construction and operation of an all-season road, have been examined in detail through the EA/IA process.

Travel demand management mechanisms, such as modifying or reducing the need for travel by encouraging the use of alternatives to trip making, are deemed to be an auxiliary benefit of any long-term plan for introducing a road corridor within which enhanced communications technology (broadband) or low voltage electrical distribution lines can be installed and can be implemented in combination with the supply road.

In addition to the foregoing rationale, developing a new all-season road between Webequie and the McFaulds Lake area is deemed to be the most reasonable alternative for the following reasons:

- It best addresses the project purpose and objectives, as stated by Webequie First Nation, including providing new and enhanced opportunities to improve Webequie's economic and social well-being; and
- Given current and projected available resources (people and financing), it is the likeliest alternative to be within Webequie's technical and economic abilities to implement. Funding sources will be further explored in subsequent stages of project development.

The preferred "Alternative to the Undertaking" is also consistent with provincial government plans and policies for growth and development in the region, including the Ring of Fire area (refer to Section 1.3.2).

In keeping with the focused approach to the EA/IA, the preferred "Alternative to the Undertaking" (developing a new all-season road) was carried forward to the evaluation of "Alternative methods of carrying out the Undertaking". The Null ("Do Nothing") Alternative was also be carried forward as a baseline condition to allow for comparison of impacts.

3.2 Identification of "Alternative Methods of Carrying Out the Undertaking"

With the all-season supply road identified as the preferred "Alternative to the Undertaking", this section evaluates alternative methods of carrying out the Project. The approach for evaluating alternative methods of carrying out the Project consisted of an analysis of historical road and transportation studies, followed by a set of comparative analyses using factors and criteria at an increasing resolution, moving from the scale of corridor to route.

3.2.1 Background Studies

As previously described in Section 1.3 (Background and Purpose of the Project) there have been various road/transportation studies that have been conducted in the Webequie First Nation/McFaulds Lake region over the years that provide background and context for the proposed development of the WSR, including:

- Winter Road Re-Alignment Study (Neegan Burnside Ltd., 2008);
- Cliffs Ferroalloys Black Thor Mine Integrated Transportation System (Northern Policy Institute, October 2015);
- Noront Resources Eagle's Nest Mine Access Road (Noront, 2013);
- All-Season Community Road Study (Webequie First Nation/Nibinamik First Nation/Neskantaga First Nation/Eabametoong First Nation, 2016); and
- All-Season Community Road Study – Phase 2 (Webequie First Nation/Nibinamik First Nation/Neskantaga First Nation/Eabametoong First Nation, 2017).

Background information from these studies are described in detail in Appendix C-1 (Background Studies) and **Table 3-2** provides a chronological summary of these studies that have supported and led to the development of the Project and served as the foundation for the identification and initial assessment of alternatives for the proposed Webequie Supply Road.

Table 3-2: Chronological Summary of Historical Studies

Activity/Date/Status	Summary of Results/Decisions
Cliffs Ferroalloys Black Thor Chromite Mine, McFaulds Lake, Ontario Ontario EA Designation (voluntary agreement): Granted Date submitted: June 2, 2011 Decision date: August 5, 2011 Terms of Reference: Submitted Date submitted: July 27, 2012 Expiry of public comment period: August 26, 2012 – Terms of Reference (amended): Submitted Date submitted: January 25, 2013 _____ Federal EA – *Canadian Environmental Assessment Act* (CEAA) Reference Number: 63927 Federal Responsible Authorities: Fisheries and Oceans Canada, Natural Resources Canada and Transport Canada Proponent: Cliffs Natural Resources Inc. Environmental Assessment Commenced: September 22, 2011 Environmental Assessment Type: Transitional Comprehensive Study Status: Environmental assessment terminated prior to completion	Cliffs started its EA in June 2011. During the engagement and consultation process, Cliffs asked Webequie First Nation if it would consider being a proponent for a "secondary winter road, possibly, a future secondary all-season road" from Webequie's airport to the proposed mine site. At the time, it was believed by Cliffs that the Winter Road from Marten Falls First Nation to the proposed mine site was "untested terrain", and that Cliffs needed a "secondary Winter Road" in the event of a winter road breakdown during the mobilization of equipment and material at the pre-construction stage over the north-south Winter Road. Cliffs was willing to pay for the construction and maintenance of the secondary winter road. Cliffs had a conceptual route for the secondary winter road and came up to Webequie First Nation in a helicopter to fly over the conceptual route with Webequie First Nation land users and council. During that visit a new conceptual route was identified. This is one of the reasons why Webequie First Nation decided to do an Airport Re-Development project, so that it could capture economic development opportunities associated with the proposed road.
Noront Eagle's Nest Nickel-Copper-Platinum Mine, McFaulds Lake, Ontario CEAA/Ontario EA Act Project Description: Submitted April 2011 Ontario Terms of Reference (amended): Submitted October 2012. The notice of approval for the ToR included the requirement that Noront re-screen four road corridors. CEAA Environmental Impact Statement (EIS) Guidelines: Issued January 2012 Draft EIS/EAR: Circulated by Noront in December 2013 with comments issued by federal agencies. Ontario did not provide comments on the draft EIS/EAR, as the document was prepared in advance of the approval of the ToR and did not have status or recognition under the EA Act. The Approved EA Terms of Reference, with amendments, that included the requirement to re-screen four road corridors was approved by the Ministry of the Environment, Conservation and Parks (MECP) in 2015.	Noront Resources (Noront) engaged Webequie First Nation to help identify a preferred alignment for an east-west transportation corridor running from Eagle's Nest Mine to the Pickle Lake area. Webequie assumed the responsibility for identifying a preferred alignment through their territory from Noront and conducted their own internal process of consulting with their community members. A preferred corridor alignment was identified and was subsequently used in the Webequie Community Supply Road Baseline Environmental and Geotechnical Studies Project (2017-18) to help form the preliminary preferred corridor for subsequent further review as part of the Webequie Supply Road EA/IA.

Activity/Date/Status	Summary of Results/Decisions
Current Status of Federal and Provincial EAs: A comprehensive environmental assessment is no longer required for the Eagle's Nest Project. The voluntary agreement has been terminated and the Terms of Reference approval revoked by the *Protect Ontario by Unleashing our Economy Act*, 2025, effective June 5, 2025. As part of the transition to the new *Impact Assessment Act* on August 28, 2019, the Impact Assessment Agency of Canada issued a Notice of Termination of the federal EA under the former CEAA for the Eagle's Nest Project.	
All-Season Community Road Study (ASCRS) 2015-16	A study was initiated by four communities in the Ring of Fire region (Eabametoong First Nation, Webequie First Nation, Nibinamik First Nation, Neskantaga First Nation) to gauge community interest and investigate route options (10 km wide corridors) for connecting the communities to the provincial road network. Nine corridor options were identified and evaluated on the basis of construction cost, ease of connection between neighbouring communities, driving distance and terrain. Two communities (Neskantaga First Nation and Eabametoong First Nation), chose not to continue with the planning process, while Webequie First Nation and Nibinamik First Nation decided to continue the process via the Nibinamik-Webequie Community Road Baseline Environmental and Geotechnical Studies.
Nibinamik-Webequie Community Road Baseline Environmental and Geotechnical Studies (2017-18)	Nibinamik First Nation and Webequie First Nation participated in baseline environmental and geotechnical studies along a preferred route linking the two communities with the provincial road network near Pickle Lake. Upon completion, Nibinamik First Nation decided it was not ready to proceed further with the planning process, while Webequie First Nation shifted its focus to baseline environmental and geotechnical studies for a supply road connecting the community to the McFaulds Lake exploration area.
Webequie Community Supply Road Baseline Environmental and Geotechnical Studies (2017-18)	The Project began with Webequie community-only meetings of various groups (i.e., youth, Elders, and land harvesters) to identify a preliminary preferred 2 km wide corridor alignment. Community members focused almost exclusively on the alignment of the north-south portion of the corridor, as they stated that they had previously identified their preferred east-west route as part of internal discussions to identify a suitable route for the Noront's Eagle's Nest transportation corridor. Once the community-preferred corridor was identified, preliminary baseline environmental and baseline studies were conducted.

3.2.2 Alternate Corridors – Screening Level Assessment

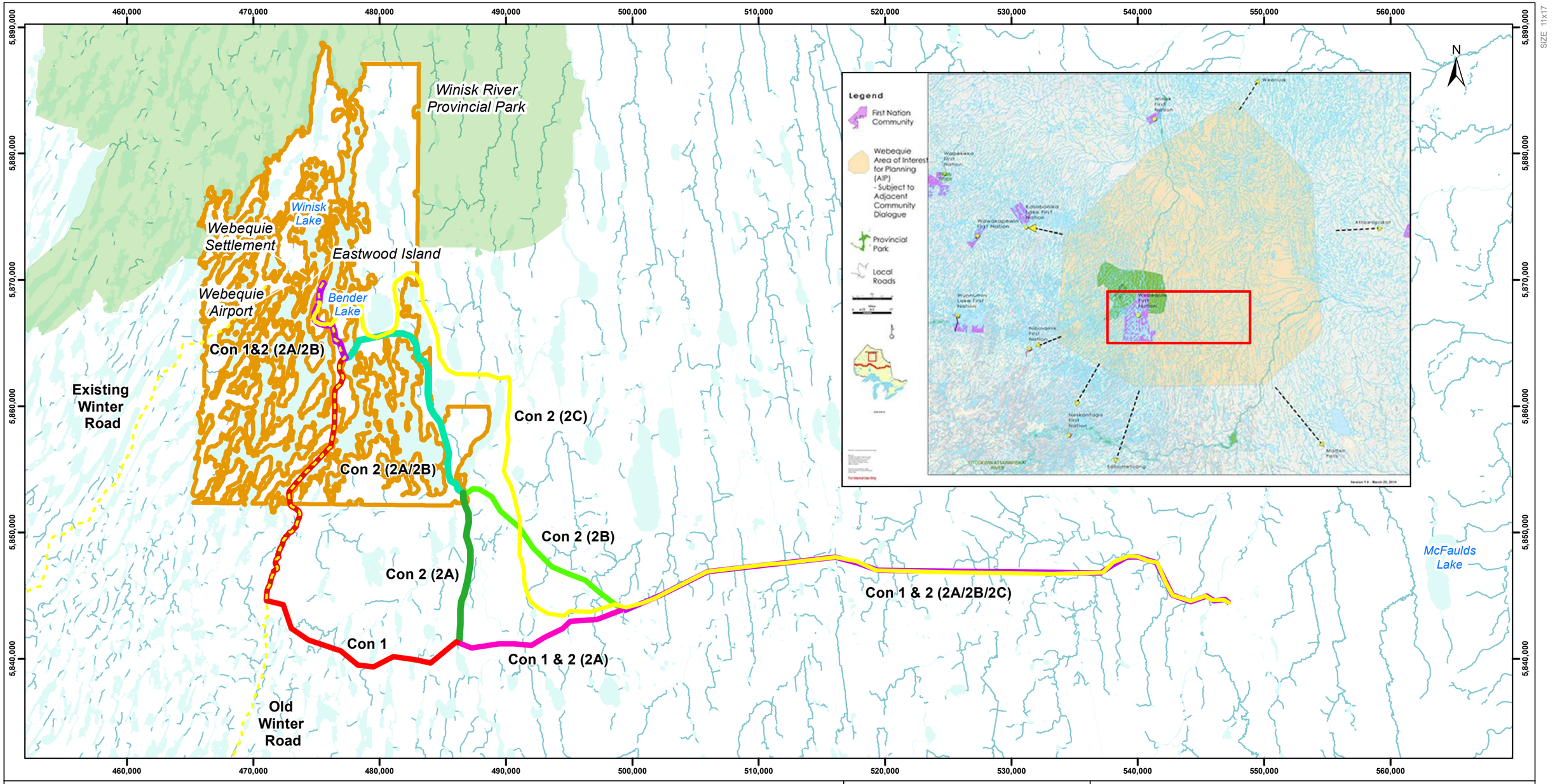
The Project Team began its investigations of the all-season supply road by examining alternative corridors. As described in the background/historical context narrative above (**Section 3.2.1** and in Appendix C-1), there has been extensive examination of alternative road corridors in and around the McFaulds Lake area, as well as alternatives for interconnecting future mine developments and remote First Nations to the provincial highway system. The alternative road corridors that are currently being evaluated are limited to those between Webequie First Nation and the McFaulds Lake area. The screening level assessment of alternative corridors was presented in the Ontario approved EA ToR (2021) and Detailed Project Description (2019) submitted to the Impact Assessment Agency of Canada and is summarized in the following subsections. This assessment resulted in the selection of the preliminary preferred development corridor that was carried forward for more detailed evaluation of routing alternatives in the EA/IA for the Project.

3.2.2.1 Identification of Alternate Concept-Level Corridors

Community-Based Land Use Plan

The initial identification of alternate concept-level corridors (Alternative Concepts 1 and 2) as presented in **Figure 3.3** is based on results from previous studies, as well as years of joint community-based land use planning work conducted by Webequie First Nation in collaboration with the now Ministry of Energy and Mines (MEM) and Ministry of Natural Resources (MNR). The land use planning process incorporated and documented land utilization patterns, sites of Indigenous cultural significance, and historical and current traditional practices to establish a Webequie Community Based Land Use Plan (in-progress/early version) (Webequie First Nation, 2019) as directed under the *Far North Act*. A CBLUP is an overarching document that represents joint intentions of the community and Ontario, and provides overall land use direction. Its relevance is to guide what activities and developments are permitted or not permitted, and where, not to assess project-level impacts. A final/completed CBLUP is a document jointly approved by Ontario and a First Nation, and a Draft CBLUP is a document that Ontario and a First Nation jointly endorse to share publicly. Its is important to note that throughout the EA/IA process the Webequie CBLUP has not progressed to either of these stages. Also, based on the Terms of Reference for the Webequie CBLUP there is acknowledged overlapping areas of customary stewardship of the land and water with other First Nations reflected in the Areas of Interest for Planning that include for example Marten Falls First Nation.

Webequie First Nation has elected to be involved in the CBLUP planning process in partnership with MNR and this process is currently on-going and used to inform the EA/IA for the Project. In the CBLUP process Webequie First Nation is bringing forward concepts of land use planning that date back several generations that involve consideration of the community. These concepts are the foundation for Webequie First Nation's current vision for planning, based on dialogue that has taken place for many generations regarding land use, opportunities and benefits, and protocols and teachings handed down from their ancestors, which has evolved into the Three-Tier planning approach.



Legend:

Road Alignment Alternatives

- Alternative Concept 1 and 2 (2A/2B)
- Alternative Concept 2 (2A/2B)
- Alternative Concept 2 (2A)
- Alternative Concept 2- Alternative 2C
- Alternative Concept 1
- Alternative Concept 1 and 2 (2A)
- Alternative Concept 2 - Corridor Alternative 2B

- Winisk River Provincial Park
- Webequie First Nation Reserve
- Winter Roads (Existing and Abandoned)

WSR
WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 10 20 Km

SCALE: 1:300,000

Webequie Supply Road (WSR)

Initial Corridor Alternative Concepts Considered by Webequie Community Members

Figure Number: 3.3		**REV:** PA	
Client: Webequie First Nation	**Project Number:** 661910	**Date:** 9/19/2024	
DSC		**DRN** TE	**CHK** RS	**APP**

SIZE 11 X 17

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SIZE 11x17

Webequie First Nation uses a three-tier framework for their approach to Indigenous consultation that is consistent with traditional cultural values, customs and beliefs. Further details on the three-tier approach are presented in Section 2.5.1 – Principles and Approaches to Engagement and Consultation.

Webequie First Nation has incorporated shared interests in the development of the in-progress Draft CBLUP. Webequie First Nation has a belief that they are, stewards of the land and have the need and the right to live off the land. The Elders and other community members realize the importance of development and protection, and that living off the land for sustenance is vital to protect cultural heritage, while understanding that resources in the planning area are valuable for the well-being and advancement of the community.

The Draft CBLUP addresses the proposed Webequie Areas of Interest for Planning, providing preliminary recommendations for land use areas, land use designations, and activities that are either permitted or not permitted in those areas. The in-progress Draft CBLUP recommends land use areas and designations. All land use designations identified in the CBLUP developed to date are 'Draft/in-progress' and subject to further revision.

The in progress/early version of the Draft CBLUP considers and identifies infrastructure needs and opportunities for the community, potential access and infrastructure corridors (e.g., transmission lines, winter road upgrades, all-weather roads, fibre-optic lines), and other possible development needs (e.g., mining camps, and airstrips) and, specifically:

- Considers interests both within and beyond the planning area (e.g., with regard to alignment of primary corridors);
- Provides zoning within the planning area that will support desired opportunities and interests, and provide strategic direction to protect values and features; and
- Includes information, direction or guidance on environmental, economic, social, and cultural interests that can inform and complement any environmental assessments for proposed undertakings within Webequie's traditional territory.

Overarching Criteria for Development of Corridor Alternatives

The Project Team considered the Ministry of the Environment, Conservation and Parks (MECP, formally Ministry of the Environment) Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario (2014) for determining a reasonable range of alternative methods for implementing the WSR, as described in **Table 3-3**.

Table 3-3: MECP Code of Practice for Determining a Reasonable Range of Alternative Methods

Questions for Consideration	Response
Do the alternatives provide a viable solution to the problem or opportunity to be addressed	YES Pursuant to the assessment of Alternatives to the Undertaking presented in **Section 3.1.3**, an all-season road constitutes the most viable solution for realizing the opportunities identified by Webequie First Nation.
Are they proven technologies?	YES Although winter roads have historically been the primary means of establishing major ground travel corridors in Ontario's Far North, they are becoming less reliable/safe due to climatic changes (i.e., they may only be operational for 2-3 weeks a year), and First Nation communities have started to participate in the planning and implementation of all-season roads (e.g., Wa-Pik-Che-Wanoog Bridge and North Caribou Lake segment of Northern Ontario Resource Trail). There are

Questions for Consideration	Response
	proven technologies for construction of all-season roads in the challenging geographical conditions that will be encountered on this project (e.g., use of geotextile/geogrid in peat/muskeg soils).
Are they technically feasible?	YES Although more costly to build and maintain, as noted above, there are various technically feasible design and construction solutions for implementing all-season roads in Canada's northern regions.
Are they consistent with other relevant planning objectives, policies and decisions?	YES In addition to the mining context and potential economic development benefits of linking the Webequie First Nation to the mineralized zone, the Webequie Supply Road is also relevant in the context of broader, long-term provincial growth, development and multimodal transportation initiatives in the region, including: the 2041 Northern Ontario Multimodal Transportation Strategy (Draft); the Growth Plan for Northern Ontario; and Ontario's Mineral Development Strategy (refer to Section 1.3.2 for further details).
Are they consistent with provincial government priority initiatives?	YES The all-season road alternatives under consideration accounted for such initiatives as source water protection, resource (mineral) development, reducing greenhouse gas emissions, protection of endangered species and their habitat, enhancing communications links and reducing reliance on fossil fuels.
Could they affect any sensitive environmental features?	YES The development and screening of alternative road concepts accounted for potential effects on natural, cultural, and socio-economic environmental features and values deemed important by Webequie and other First Nation communities in the immediate vicinity of the Project (caribou habitat, culturally important natural and built features/landforms, areas used intensively for traditional activities, fish spawning areas, seasonal hunting areas, moose mating areas, community spring water sources), as well as potential effects to the broader environment (effects on businesses, archaeological sites and areas with archaeological potential, other sensitive land uses in the context of the Webequie First Nation in-progress/early version Draft Community Based Land Use Plan, air quality and noise).
Are they practical, financially realistic and economically viable?	YES In terms of, geographical location/extent and configuration, (107 km 2-lane all surface road within a 35 m right-of-way), development of the alternative road concepts recognized and addressed existing physical constraints and opportunities, as well as financial limitations imposed by existing community resources and external public funding sources and mechanisms. In this context, they are considered practical, feasible and economically viable.
Are they within the ability of the proponent to implement?	YES Within the financial limitations imposed by existing community resources and potential external public funding sources and mechanisms, Webequie First Nation currently believes that they can implement the proposed all-season road concept. Webequie First Nation is the proponent of the WSR Environmental Assessment. The proponent of road construction will be determined later in the project development process. Webequie First Nation continues to have discussions with the province on roles and responsibilities with respect to ownership and construction of the WSR.
Can they be implemented within the defined study area?	YES The practicality of implementing the Project within its established geographic bounds is addressed above (i.e., the Project can be physically constructed within the defined study area). The study area has been defined based on the Webequie First Nation in-progress/early version of the Draft CBLUP that identifies designated

Questions for Consideration	Response
	use areas within the Areas of Interest for Planning). The proposed road corridor is compatible with the plan objectives and permitted uses for the designated areas where it is situated. There should be no conflicts in implementing the Project from an administrative perspective.
Are they appropriate to the proponent doing the study?	YES Webequie First Nation is the project proponent. Other First Nations in Ontario's Far North and in other northern regions of Canada have participated in similar all-season road initiatives, although not as the proponent. The Project is situated partially within Webequie First Nation Reserve lands and wholly within the community's Draft CBLUP Areas of Interest for Planning, although peripheral parts of the Areas of Interest for Planning constitute recognized shared territory with other First Nation communities. It is appropriate for Webequie First Nation to assume the role of proponent for the road corridor alternatives under consideration.
Are they able to meet the purpose of the *Environmental Assessment Act*?	YES The purpose of the *Environmental Assessment Act* is "the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment" (R.S.O. 1990, c. E.18, s. 2). There is a high degree of alignment between the purpose of the Act and purpose of the Project, particularly with respect to bettering the quality of life for Webequie First Nation community members by fostering employment and economic development opportunities. Development of the road alternatives is consistent with these purpose statements. The alternative road corridor concepts have been developed with a view to protecting environmental components of value to Webequie First Nation community members and other First Nations that share territory. The location of the proposed road corridor within Webequie First Nation Reserve lands and Webequie's Planning Area of Interest provides the opportunity for the community to assume and maintain a prominent role in managing the road facility in an environmentally responsible and sustainable manner.

Alternate Concept Corridors

In 2017, concurrent with the All-Season Community Road Study – Phase 2 work, Webequie First Nation conducted a conceptual level examination of alternative corridors between Webequie and the McFaulds Lake area building on past studies and the in-progress Draft CBLUP. This process also considered input from Webequie First Nation provided to Noront during the EA process for the Eagle's Nest Mine from 2011 to 2014, specifically regarding the east-west corridor alternatives that would connect the mine to the provincial highway system at Pickle Lake. This input consisted of a series of meetings (East-West Group) held between the Webequie First Nation and Noront (August 2011 to September 2014) and involved a Community-Based evaluation of route alternatives guided by Webequie First Nation's Local Working Group, made up of community land users, harvesters, Elders, knowledge holders and youth representatives.

The Webequie First Nation Local Working Group identified sensitivities and features of value for protection that should be avoided, derived from Indigenous Knowledge information and mapping, such as significant hunting areas for moose and caribou and known sacred, burial or spiritual significant sites, as well as respect for land use activities that are shared with neighbouring First Nations. This evaluation allowed for a comparison of the advantages and disadvantages of each alternative corridor and the outcome was provided to Noront who combined it with input received from other communities to identify the preliminary preferred east-west corridor, as described in the 2013 Noront Draft Environmental Impact

Statement /Environmental Assessment Report (EIS/EAR) for the Eagle's Nest Mine. This process culminated in the identification of two (2) alternative all-season road concept corridors as shown in **Figure 3.3**:

- Alternative Concept 1 – running directly south from the community, following the existing winter road corridor, then east-west to the Ring of Fire area near McFaulds Lake; and
- Alternative Concept 2 – running southeast from the community, then east-west to the Ring of Fire area near McFaulds Lake.

These concept-level alternative methods of carrying out the Undertaking had limited design work conducted on them but were consistent with the preliminary recommended land use areas and designations in the in-progress Draft Webequie CBLUP. Specifically, the alternatives are located primarily in the designated "General Use Area" and "Other Areas", with a minor segment located within an "Enhanced Management Area".

Alternative Concept 1 – Directly South from Webequie and then east-west to the McFaulds Lake Area

The southern interconnection alternative from Webequie First Nation to the proposed east-west section largely follows an old winter road corridor and was developed during preparation of the Noront Project Description (federal EA) and is documented in their draft EIS/EAR, with input provided by Webequie First Nation. The north-south interconnection was proposed to traverse from the south side of the community to intersect with east-west section of the proposed al-season road at a location referred to as "Webequie Junction", when Noront was considering a combined winter road/all-season road with load-out facilities at Webequie Junction.

The Webequie Junction was an important intersection for Noront's proposed Eagle's Nest Mine project. It was at this location that Noront initially proposed to transition the east-west road from a winter road and slurry pipeline running from the mine site west to Webequie Junction, to an all-season road that would largely follow the existing winter road to an intersection with Highway 599 near Pickle Lake.

Webequie First Nation community members were engaged in the selection of the southerly link between the community and Webequie Junction, as well as the corridor for the east-west winter road from Webequie Junction into the Eagle's Nest mine site through the Noront Eagle's Nest EA process (2011 – 2013).

Ultimately, an all-season road from Eagle's Nest to the provincial highway system at Pickle Lake was selected as the preliminary preferred road option by Noront Resources in their draft EIS/EAR (2013).

Detailed field studies, including biological studies, a Stage 1 Archaeological Assessment, hydrological studies, geotechnical studies, and other investigations required to support the Noront EA process were conducted to characterize and confirm constructability and minimize environmental impacts. Indigenous Knowledge data were also provided by Webequie First Nation and incorporated into the analysis.

Three alternative corridors between Webequie Junction and Eagle's Nest were examined by Noront that relied on the evaluation and analysis by the Webequie First Nation with respect to avoidance of known features and sensitivities of value to the community, resulting in selection of a preliminary preferred east-west alignment for the all-season road.

The southerly connection between Webequie and Webequie Junction was not analyzed in the same detail as the alternative east-west corridor alignments to the east of Webequie Junction; however, the old winter road corridor was selected by members of the Webequie First Nation based on the fact that it would not result in impacts to historic sites or areas of cultural significance. It also minimized potential impacts to traditional land uses and important environmental resources.

Alternative Concept 2 – East and South of the Community and then east-west to the McFaulds Lake Area

The initial identification of the east corridor concept (Alternative Concept 2) occurred during studies conducted concurrent to the ASCRS – Phase 2 investigations. Without confidence that Noront's proposed east-west corridor would be the preferred mine access road, and uncertainty that the east-west community road had the necessary support of other First Nations, Webequie leadership chose to examine an alternative road corridor that would connect with the community on the east side of the reserve (at the Webequie Airport), and then to the corridor identified by Webequie as the preferred routing for the east-west segment of the all-season road to the Ring of Fire area near McFaulds Lake.

Webequie land use planning staff conducted engagement with community land users, Elders and community members. Beyond the input received through engagement, information from the Webequie in-progress Draft CBLUP was considered to identify a general corridor concept (initially 5 km in width) that is consistent with the land uses designations in the Draft CBLUP and to avoid lands with significant historic and cultural value, while also minimizing impacts to environmentally sensitive features, such as watercourse crossings and wildlife habitat, and maximizing constructability through proximity to well drained soils (eskers).

In August 2017, the community engagement consultant and technical consultant conducting baseline fieldwork for ASCRS – Phase 2 visited the Webequie community. Additional in-community meetings were conducted by the consultants in Webequie on October 3 and November 16, 2017 for the purposes of keeping community members aware of project activities and providing them with the technical materials to support intra-community engagement. An off-reserve meeting was also conducted by the consultants on October 26, 2017 in Thunder Bay.

Internal community discussions led by the appointed community coordinator for the project refined segments of Alternative Concept 2. No refinements to Alternative Concept 1 were made, since this option comprises the old winter road corridor. The community member discussions included various age groups (both independently and together), harvesters and land users, as well as the hereditary chiefs. In order to finalize a preferred corridor, an intense consultation process, involving one-on-one interviews with over forty community members, was conducted between September 28 and October 3, 2017. Participation in the discussion included the use of interactive mapping, with the opportunity to sketch alternatives for the supply road.

The community discussions resulted in the identification of three sub-alternatives for Alternative Concept 2 – Alternatives 2A, 2B, and 2C. The four Alternative Concepts (1, 2A, 2B, and 2C) are shown in **Figure 3.3**. Each of the corridors under consideration is approximately 2 km in width, within which the supply road (35 m right-of-way), as depicted by the respective coloured lines, is located along the centreline of the corridor. These were deemed to constitute a reasonable range of options for addressing the aforementioned project objectives identified by Webequie First Nation. The 2 km width provided flexibility in refining/developing centreline options for evaluation during the screening process.

Screening of Alternative Corridor Concepts

A screening of Corridor Alternative Concepts 1, 2A, 2B and 2C was completed to identify the preferred corridor and focus investigations during the EA/IA. The process for screening the alternatives included an assessment of the advantages and disadvantages of the alternatives against a set of factors that were identified based on discussions with community members regarding project area features and sensitivities that may be affected by the Project and valued components (VCs) identified during the community meetings in 2017 and 2018 and criteria inherent in the broader definition of the environment, as required under the *EA Act* and in accordance with MECP's Codes of Practice, and requirements under the federal *Impact Assessment Act*.

Based on the Indigenous Knowledge database prepared by Webequie First Nation, select regulatory requirements, information assembled from published sources and previously completed field investigations, the Webequie Community-Based considerations (valued components) presented in **Table 3-4** were accounted for in developing the evaluation criteria against which the alternative road corridor concepts were screened.

Table 3-4: Webequie Community-Based Considerations for Screening Alternative Corridors

Factor/Screening Criterion	Consideration
Caribou (Boreal population)	
Factor 1: Caribou habitat: Community members want to avoid fragmentation of caribou habitat potentially caused by the road corridor.	The Missisa Caribou range is considered continuous and spans the ecotone between the Ontario Shield Ecozone and Hudson Bay Lowland Ecozone. The minimum Caribou population in the Missisa Range was estimated at 745 based on winter distribution surveys completed from 2009 through 2013. A combined low mean annual survival estimate (80%) and low calf recruitment indicates the population was on a declining trend at the time of data collection. Caribou (Boreal population) is a "Threatened" species under the Ontario *Endangered Species Act* and the federal *Species at Risk Act*. Only the boreal population of Caribou is listed as a species at risk in Ontario. Caribou require large undisturbed areas of old and mature conifer upland forest and lowlands dominated by jack pine and/or black spruce. They are also found in bogs and fens. Both of these habitat types exist in proximity to the alternative road corridor concepts, as do known caribou travel corridors and nursery areas. Caribou habitat disturbance has become a systemic problem across Canada, which is a significant issue given the amount of time it takes for habitat recovery (deemed to be in excess of 100 years by some First Nation Elders).
Natural or Built Features	
Factor 2: Culturally significant features (natural or built): Community members do not wish to have these features disturbed in any way.	There are natural or built features (e.g., hill, historical campsite or cabin) situated on the lands surrounding the built-up area of Webequie community that are important to individual community members, or to the community as a whole. These features may serve as locations for ceremonial rites, storytelling, spiritual reflection, or recreational activities; they may be the site of a historically important event; or they may provide shelter during periods when individuals or groups are away from the main community area for several days at a time. Community members have assigned high cultural significance to these features.
Traditional Use Areas	
Factor 3: Areas used intensively for traditional activities: Community members wish to preserve these areas intact.	There are numerous locations in close proximity to the built-up area of Webequie that are used intensively and regularly by community members for traditional activities, such as hunting, fishing and resource harvesting/gathering. These areas are important not only because they are rich in fish, wildlife and other resources, but they require fewer costly and supply-limited resources (such as fuel) to reach because of their proximity to the community. These areas may be isolated or grouped in close proximity to each other.

Factor/Screening Criterion	Consideration
Fishing	
Factor 4: Fish spawning areas: Community members are well aware of local fish spawning areas and their associated species, and wish these areas to remain undisturbed.	The Project area is situated within tertiary watersheds of the Winisk, Ekwan and Attawapiskat Rivers. Webequie is situated on Eastwood Island, surrounded by numerous waterbodies that support fish and fish habitat, and provide subsistence and recreational fishing for the community. Fish species that inhabit the river systems include Brook Trout, Cisco, Northern Pike and Walleye (known colloquially as Pickerel). Lake species include Smallmouth Bass, Lake Whitefish, Yellow Perch, Lake Sturgeon and Common White Sucker, as well as many smaller forage fish species. Protection of areas where these fish spawn is critical to the preservation of this important resource.
Hunting	
Factor 5: Seasonal hunting areas: Community members wish these areas to be remote or buffered from the road corridor.	Wildlife in the project area comprises a number of terrestrial and waterfowl species that are hunted/trapped by members of Webequie and other communities for subsistence use. These include moose, caribou, beaver, snowshoe hare, marten, ducks and geese. Certain areas have habitat characteristics that make them popular seasonally for hunting, such as areas where waterfowl will stage during the period of early spring when open water begins to appear (e.g., north shore of Bender Lake). Webequie community members frequent these areas and have established infrastructure to facilitate hunting activities (e.g., blinds, campsites). Community members recognize that the noise and movement of vehicles during waterfowl staging periods could impact these areas significantly.
Moose	
Factor 6: Moose mating areas: In order to sustain the moose population, community members wish to ensure that the road corridor avoids these areas.	Moose are an important species for Webequie First Nation. During the moose-rutting (mating) season (September-October) moose are found in different areas than during other seasons. Before the bull moose go into rut, they are usually found in the higher elevation areas. They will seek out cooler and thicker areas of the forest, trying to escape insects and predators. Cow moose and their calves will stay in the lowlands near water. The cows seek out water for food and safety. Calves are vulnerable, especially to wolves and bears; a cow with calf will use the water as an escape when threatened by predators. The amount of daylight (or lack thereof) triggers the rut. When the moose rut begins, and likely for a few weeks before the beginning of the cow moose estrous, the bulls will move down out of the higher elevations to seek out the cows. The bulls will stay in the lower and wetter areas within proximity of the cows to engage in mating. The moose gestation period is in the order of 243 days. The rutting/mating areas are well known to Webequie community members, who understand that the areas have unique habitat characteristics and play a major role in supporting the breeding process.
Source Water	
Factor 7: Community source of spring water: It is important to community members that the corridor be a significant distance from this valuable resource.	Source water is untreated water taken from rivers, lakes or underground aquifers to supply private and public drinking water systems. The *Ontario Clean Water Act*, 2006 is part of the multi-barrier approach to ensure clean, safe and sustainable drinking water for Ontarians, by protecting sources of municipal drinking water such as surface water and groundwater. Surface water lies on the earth's surface in the form of lakes, rivers and streams. It is drawn into a drinking water system through an intake pipe. Surface water is easily contaminated by pollution flowing over the land or directly into lakes, rivers and streams. Groundwater is the water beneath the earth's surface, found in the cracks and spaces between soil, sand and rock particles. It is drawn into a drinking water system through a well. Surface water and groundwater can be interconnected, with pollutants finding their way from one to another. Groundwater can also be contaminated by pollutants that are deposited on the surface soil or underground. Groundwater contamination can be much more difficult than surface water pollution to remediate*. There is a significant community source of spring water (groundwater) located 10-15 km southeast of the community. Spring water is used by the community for ceremonial purposes, and some community members use this as a potable water source.

Factor/Screening Criterion	Consideration
	Community members recognize the importance of protecting its sources of drinking water, and the potential for the road construction and operation to adversely affect the spring water source area, either directly through excavation activities, or through connections with surface water runoff.

Notes: * CTC Source Protection Region website: https://ctcswp.ca/the-facts/source-water-protection-in-ontario, Credit Valley – Toronto and Region – Central Lake Ontario (CTC) Source Protection Committee.

In addition to the Community-Based traditional land and resource use evaluation criteria, the alternative corridors were screened against criteria inherent in the broader definition of the environment (presented in **Table 3-5**), as required under the *EA Act* and in accordance with MECP's Codes of Practice and select VCs under a federal IA. These criteria and the community's considerations were integrated for the purposes of an initial screening of the all-season road corridor alternatives.

Table 3-5: Additional Considerations Used in Screening Alternative Supply Road Corridors

Factor/Screening Criterion	Consideration
Socio-Economic Environment	
Factor 8: Business Impacts – Licensed traplines & outfitters	New or relocated roads can displace all or part of existing businesses, or otherwise affect economic viability by changing (reducing or increasing) physical access or visual exposure to passing traffic. Although Webequie First Nation holds the position that provincially registered traplines do not represent spatial limits of traditional use by their members, for the consideration of business interests, it can be stated that the project area intersects traplines registered to Webequie First Nation and Marten Falls First Nation community members. There is limited potential for other effects, since businesses outside the built-up area of Webequie are limited to outfitters' sites generally located in or near Winisk Provincial Park to the north of the Webequie, well removed from the immediate project area.
Cultural Heritage Resources/Environment	
Factor 9: Archaeological potential Built heritage resources Burial sites	To complement the value attributed to Webequie First Nation's Natural or Built Features, the following criteria were included to address the considerations that will be important to the Ontario Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI, now Ministry of Citizenship and Multiculturalism [MCM]) in assessing the effects of the Project: ▪ Effects on registered archaeological sites, and consideration of areas of archaeological potential, recognizing MHSTCI (now MCM) criteria to identify archaeological potential, where applicable (i.e., proximity to waterbodies or historical travel routes). ▪ Effects to build heritage resources (e.g., old hunting, fishing or trapping camps) and cultural heritage landscapes features (natural; built; sacred or spiritual) identified by Indigenous communities and others. ▪ Effects to recognized burial sites in the context of the *Funeral, Burial and Cremation Services Act* and possible involvement by the Registrar, Burials of the Ministry of Government and Consumer Services and as identified by Indigenous communities.

Factor/Screening Criterion	Consideration
Built Environment	
Factor 10: Draft Webequie Community-based Land Use Plan First Nation reserve land	The supply road is an infrastructure component that Webequie First Nation would like to integrate with its community land use initiatives. It will also constitute an additional use on lands administered by Canada. Important considerations in these regards are the effects on/compatibility with sensitive land uses that are being contemplated in Webequie First Nation Draft Community Based Land Use Plan developed to date, and sensitive uses on (federal) Reserve lands within the framework of the Webequie First Nation Comprehensive Community Plan being prepared under the auspices of Crown-Indigenous Relations and Northern Affairs Canada. These two plans are considered together in the context of land use planning aspirations.
Natural Environment	
Factor 11: Air Noise Waterbody crossings	To meet EA/IA legislative requirements broad effects on surface water; air quality; the acoustic environment; and the project's potential to affect/be affected by climate change, the number of waterbody crossings and potential impacts to water quality; generation of greenhouse gases; and generation of noise emissions have been included as considerations.
Technical Considerations	
Factor 12: Constructability and cost	Soil conditions in the project area comprise primarily rock and muskeg/peat, with limited workable overburden soil, and construction will require installation of numerous waterbody crossings. Constructability is related principally to how challenging it will be to construct the road in such conditions and whether there are discernible differences amongst alternatives in this regard. Another typical constructability element is how construction will be staged over time and the length of the road corridor. This consideration was excluded, since it is expected that staging will be similar for all alternatives. Capital and operating costs are considerations for how the road will be financed/funded and are expected to be directly related to the length of the road but will also include consideration of waterbody crossings and soil conditions. Construction capital costs have been estimated on a preliminary basis, but operating and maintenance costs are excluded, since the business model for that phase of the Project has not been established.

Data sources for the above factors were derived from the Indigenous Knowledge database prepared by Webequie First Nation which is confidential, review of published secondary sources and professional knowledge and experience of the Project Team regarding the technical considerations related to constructability and cost.

Table 3-6 presents a summary of the comparative analysis results identifying the advantages and disadvantages of the conceptual road corridor alternatives as previously documented in the ToR (2021) and federal Detailed Project Description (2019) for the Project.

Table 3-6: Summary Comparative Analysis of Supply Road Corridor Alternative Concepts – Screening Level Assessment

Factor	Alternative Concept 1		Alternative Concept 2A		Alternative Concept 2B		Alternative Concept 2C		Results of Comparison
	Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages	
Socio-Economic Environment									
Business impacts – Licensed traplines & outfitters	All of the alternative concepts intersect licensed traplines; however, Alternative 2C is considered to have a minor advantage, as it intersects fewer known traplines in comparison with the other alternatives. Local outfitters (i.e., escorted fishing and hunting tours) are active on lands to the west of Webequie First Nation and are not known to utilize those lands occupied by the subject alternatives; therefore, all the alternatives are considered equal in that no effects to outfitters are anticipated.								
Areas used intensively for traditional activities (socio-economic and cultural*)*	-	Alternative runs through traditional use area for 10-20 km	-	Alternative runs through traditional use area for 10-20 km	-	Alternative runs through traditional use area for 10-20 km	Alternative runs through traditional use area for 10-20 km, but these areas are generally less intensively used due to their further proximity from the community of Webequie	-	Alternative 2C offers minor advantage for this factor in comparison to Alternatives 1, 2A and 2B
Seasonal hunting areas	-	Alternative runs very close to significant hunting areas (e.g., waterfowl, moose, etc.) well known to community members	-	Route runs very close to significant hunting areas (e.g., waterfowl, moose, etc.) well known to community members	-	Route runs very close to significant hunting areas (e.g., waterfowl, moose, etc.) well known to community members	Route is further east and away from significant hunting areas (e.g., waterfowl, moose, etc.) well known and used by community members	-	Alternative 2C offers an advantage for this factor in comparison to Alternatives 1, 2A and 2B
Cultural Heritage Resources/Environment									
Archaeological potential	All of the alternative concepts exhibit archaeological potential using the Checklist Criteria for Evaluating Archaeological Potential, Ontario Ministry of Heritage, Sport, Tourism and Culture Industries (2015)1. Therefore, no one alternative is considered to have a comparative advantage or disadvantage for this factor. To assess potential effects to archaeological resources, it is proposed that a Stage 1 Archaeological Assessment be undertaken, which will involve consultation with Indigenous communities, review of existing published data sources and information obtained from stakeholders and agencies.								
Burial sites	-	In close proximity to known burial sites	No known burial sites are present	-	No known burial sites are present	-	No known burial sites are present	-	Alternatives 2A, 2B and 2C are similar for this factor and have a comparative advantage over Alternative 1
Built heritage resources (e.g., old hunting, fishing or trapping camps) / Cultural heritage landscapes (natural; built; sacred, or spiritual sites)	-	Land user's cabin and hunting blinds are along proposed route	-	In close proximity to known spiritual significant site (Sacred Hill) Land user's cabin is directly along proposed route	-	Land user's cabin is directly along proposed route	Avoids land user's cabin	-	Alternative 2C is preferred, as it minimizes effects to known built heritage resources/cultural heritage landscapes (i.e., cabins, hunting blinds, sacred sites) in comparison to Alternatives 1, 2A and 2B
Built Environment									
Webequie Draft Community Based Land Use Plan/CCP	All of the alternative concepts are consistent with the recommended land use areas and designations in the Webequie In-Progress Draft CBLUP/CCP; therefore, no one alternative is considered to have a comparative advantage or disadvantage for this factor.								
First Nation reserve land	-	Approx. 37 km of the concept route is within Webequie First Nation Reserve lands	-	Approx. 27 km of the concept route is within Webequie First Nation Reserve lands	Approx. 21 km of the concept route is within Webequie First Nation Reserve lands	-	Approx. 17 km of the concept route is within Webequie First Nation Reserve lands	-	Alternative 2C is considered to a have comparative advantage to the other alternatives for this factor

Factor	Alternative Concept 1		Alternative Concept 2A		Alternative Concept 2B		Alternative Concept 2C		Results of Comparison
	Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages	
Natural Environment									
Air	The effects of all alternatives on the potential to contribute to adverse climate change (through greenhouse gas emissions), or be affected by climate change (e.g., exposure to flooding), are relatively similar due to their proximity to each other for a component that is assessed at a regional or sub-regional level. Based on the project schedule (a 6-month Site Preparation period would be followed by a 33-month Construction Period, with Operations commencing immediately after commissioning), the preliminary estimate of greenhouse gas emissions attributable to the Project during construction is 73.2 kilotons of CO2eq, and during the operations phase the annual contribution would be 11.8 kilotons of CO2eq. These contributions in relation to Ontario and Canada-wide totals and future targets are below 0.05%.								
Noise	All of the alternatives have similar potential effects with to respect noise level and spatial extent as a result of equipment and vehicle emissions during site preparation, construction and operation phases of the Project. Therefore, no one alternative is considered to have a significant comparative advantage or disadvantage for this factor. However, Alternative Concept 2C may offer a slight advantage as it has the lowest length of km on reserve land where community members may be present and subject to noise related disturbances. Noise levels will be managed using Best Management Practices, such as use of proper equipment and adherence to manufacturers' specified maintenance frequencies.								
Caribou (Boreal population) – Species at Risk *Range Condition (includes cumulative disturbance, alignment with existing or proposed disturbance)*	Utilizes currently disturbed / regenerating lands instead of intact forest Passes through both Ozhiski and Misissa Ranges, reducing cumulative effects to Misissa range compared to other alternatives	Longest alternative and, thus, greatest total contribution to permanent infrastructure and cumulative disturbance to range condition	Passes through lands currently disturbed by human presence along shores of Winisk Lake and cabins present, instead of intact forest, reducing cumulative effect	Entire alternative occurs within Misissa Caribou Range	Passes through lands currently disturbed by human presence along shores of Winisk Lake and cabins present, instead of intact forest, reducing cumulative effects Shortest alternative and, thus, lowest total contribution to permanent infrastructure and cumulative disturbance to range condition	Southernmost portion of road runs through known caribou habitat	-	Alignment has the lowest degree of existing disturbance Represents the greatest cumulative disturbance effect to Misissa Caribou Range	Alternative 1 is considered to a have comparative advantage relative to the other alternatives
Caribou *Habitat protection (area, arrangement, and condition)* *Category 1 habitat – Nursery, winter use and travel corridors* *Category 2 habitat – Seasonal range* *Category 3 habitat – Remaining areas in* range	Avoids possible barrier effect between Winisk Lake and lands to the east Minimizes footprint within Category 2 habitat	Longest project alternative (112.9 km), resulting in greatest overall removal of Caribou habitat	Route skirts western edge of Category 2 habitat areas and minimizes severity of fragmentation Less barrier effect between Winisk Lake and lands to the east, compared to 2B	Contributes to barrier effect between Winisk Lake and lands to the east	Shortest project alternative (95.2 km), resulting in lowest overall removal of Caribou habitat Minimizes footprint within Category 2 habitat Route skirts western edge of Category 2 habitat areas and minimizes severity of fragmentation	Contributes to barrier effect between Winisk Lake and lands to the east	Avoids possible barrier effect between Winisk Lake and lands to the east	Arrangement results in greatest vegetation clearing within undisturbed upland habitat in Category 2 habitat	Alternative 1 is considered to a have comparative advantage relative to the other alternatives
Caribou habitat protection (direct impact to Category 1, 2, and 3 habitats)	No direct impacts to Category 1 habitat (General Habitat Description – General Habitat Description [GHD] mapping) Comparable (72.7 km) to the shortest length through Category 2 habitat Likely lowest immediate impact to Caribou habitat	Minimizes effects to Category 1 and 2 habitats, but does not fully avoid Category 2 habitat 40.2 km of this alternative passes through Category 3 habitat (GHD mapping), contributing the longest total alternative (112.9 km)	No direct impacts to Category 1 habitat (GHD mapping) The shortest length passing through of Category 2 habitat (71.9 km; GHD mapping)	Minimizes effects to known caribou habitat areas, but does not fully avoid 32.6 km passes through a single Category 3 habitat area (GHD mapping)	No direct impacts to Category 1 habitat (GHD mapping) GHD mapping indicates that 19.2 km of this alternative passes through Category 3 habitat Shortest total alternative (95.2 km; GHD mapping)	Moderate length of impact to Category 2 habitat (76.0 km), but does not fully avoid	No direct impacts to Category 1 habitat (GHD mapping) GHD mapping indicates that this alternative passes through 21.4 km of Category 3 habitat	Greatest length of impact to Category 2 habitat (85.9 km; GHD mapping) Second-longest alternative (107 km) Likely greatest immediate impact to Caribou habitat	Alternative 1 is considered to a have comparative advantage relative to the other alternatives

Factor	Alternative Concept 1		Alternative Concept 2A		Alternative Concept 2B		Alternative Concept 2C		Results of Comparison
	Advantages	**Disadvantages**	**Advantages**	**Disadvantages**	**Advantages**	**Disadvantages**	**Advantages**	**Disadvantages**	
Caribou species protection (direct mortality due to anthropogenic impacts, and indirect impacts)	Shorter total length through Category 2 habitat may lower risk of vehicular collisions, limit Moose and Wolf dispersion and limit risk of predation, spread of disease and sensory disturbance in areas of greater Caribou occurrence	Route advantages are short-term and longer total length may create greater lasting risks to Caribou Improves species protection compared to other alternatives, but does not fully avoid adverse effects	Route skirts eastern shore of Winisk Lake through area already disturbed by humans Caribou occurrence may be lower in this area, reducing risk of collisions compared to 2B and 2C Winisk Lake provides easy movement to these areas for predatory species (i.e., Wolf) that may impose increased risk of direct mortality of Caribou	Improves species protection compared to other alternatives, but does not fully avoid adverse effects	Route skirts eastern shore of Winisk Lake through area already disturbed by humans. Caribou occurrence may be lower in this area, reducing risk of collisions compared to 2C Winisk Lake provides easy movement to this area for predatory species (i.e., Wolf) that impose increased risk of direct mortality of Caribou	Alignment of 2B may allow for greater ease of access for predators and hunters into undisturbed woodlands and peatlands, compared to 1 and 2A	-	Does not align with existing disturbance to the extent of other alternatives Alignment of 2C may allow for greatest ease of access for predators and hunters into undisturbed woodlands and peatlands, which offer seasonal refuge to caribou	Alternative 1 is considered to a have comparative advantage relative to the other alternatives
Other Species at Risk from preliminary determination of presence (Bald Eagle; Barn Swallow; Bank Swallow; Evening Grosbeak, Canada Warbler; Common Nighthawk; Rusty Blackbird; Olive-sided Flycatcher; Wolverine; Little Brown Myotis and Lake *Sturgeon)*		Longest total length of road, resulting in greater removal of habitat Represents loss of a portion of diverse upland habitat and associated significant wildlife habitat (Bat roosting habitat)	Minimizes total length of the road through Olive-sided Flycatcher habitat and passes through areas already disturbed by human presence near Winisk Lake (cabins)	Represents loss of a portion of diverse upland habitat and associated significant Species at Risk (SAR) habitat (Bat roosting habitat)	Minimizes total length of the road through Olive-sided Flycatcher habitat and passes through areas already disturbed by human presence near Winisk Lake (cabins)	Represents loss of significant SAR habitat (Rusty Blackbird and Olive-sided Flycatcher)	Minimizes total length of the road through Olive-sided Flycatcher habitat and passes through areas already disturbed by human presence near Winisk Lake (cabins)	Represents loss of significant SAR habitat (Rusty Blackbird and Olive-sided Flycatcher)	Alternatives 2A, 2B and 2C are similar with respect to potential effects to species and habitat and have a comparative advantage relative to Alternative 1
Moose mating areas	-	Intersects broad moose mating area south of community	-	Intersects broad moose mating area south of community, but to a lesser extent than Alternative 1	-	Intersects moose mating area south of community	Minimizes the intersect with moose mating area south of the community	-	Alternative 2C has a comparative advantage to Alternatives 1, 2A and 2B, as it intersects moose mating areas to a lesser degree
Fish and fish habitat	-	Alternative runs very close to significant fish spawning areas well known to community members Alternative has high potential effect to fish spawning areas, as it has highest number of waterbody crossings and route length where structures are required to cross waterbodies	-	Alternative runs very close to significant fish spawning areas well known to community members	-	Alternative runs very close to significant fish spawning areas well known to community members	Alternative minimizes potential effects to fish and fish habitat (spawning areas), as it has fewer waterbody crossings and shortest route length where structures are required to cross waterbodies	Alternative runs very close to significant fish spawning areas well known to community members	Alternative 2C is considered to a have comparative advantage relative to the other alternatives

Factor	Alternative Concept 1		Alternative Concept 2A		Alternative Concept 2B		Alternative Concept 2C		Results of Comparison
	Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages	Advantages	Disadvantages	
Waterbody crossings (lakes and rivers)	-	Alternative 1 has 49) waterbody crossings Approx. 7.7 km of alternative route length will require structures to cross waterbodies	Alternative 2A has 36 waterbody crossings Approx. 1.42 km of alternative route length will require structures to cross waterbodies	-	Alternative 2B has 31 waterbody crossings Approx. 1.40 km of alternative route length will require structures to cross waterbodies	-	Alternative 2C has 26 waterbody crossings Approx.0.56 km of alternative route length will require structures to cross waterbodies	-	Alternative 1 has the longest route length crossing over waterbodies and requires a greater number and/or span length for structures in comparison to Alternatives 2A, 2B and 2C. The route length requiring structures to cross waterbodies is considered similar for Alternatives 2A and 2B Alternative 2C is preferred for this factor, as it has the lowest number of waterbody crossings and shortest length that requires structures (i.e., culverts, bridges) to cross waterbodies
Community source of spring water	Distant from community source of spring water	-	-	Close to community source of spring water	-	Close to community source of spring water	-	Close to community source of spring water	Alternative 1 is preferred for this factor
Technical Considerations									
Constructability	-	North-south section (old winter road) of Alternative 1 has constructability issues due to extensive length of waterbody crossings and poor soil and terrain conditions	-	Conditions in this alternative route include extensive organic terrain of bogs and fens that represent a constructability challenge	-	Conditions in this alternative route include extensive organic terrain of bogs and fens that represent a constructability challenge	-	-	Alternative 1 has the greatest constructability challenges in comparison to Alternatives 2A, 2B and 2C due to length of waterbody crossings All Alternatives share poor soil and terrain conditions (bogs and fens) where there is a common east-west routing direction Alternatives 2A, 2B and 2C have similar constructability issues with respect to soil and terrain; therefore, no one alternative is considered have a comparative advantage
Cost	Alternative 1 is 113 km in length Preliminary estimated capital cost is $238.75 million dollars		Alternative 2A is 104 km in length Preliminary estimated capital cost is $106.40 million dollars		Alternative 2B is 95 km in length Preliminary estimated capital cost is $99.25 million dollars		Alternative 2C is 107 km in length Preliminary estimated capital cost is $91.45 million dollars		Alternative 1 has the highest preliminary capital cost Alternative 2C has a lower cost in comparison to Alternatives 1, 2A and 2B Alternative 2C is preferred for this factor, as it has the lowest preliminary cost

3.2.3 Conclusion and Rationale for Selection of the Preferred Corridor – Screening Level Assessment

The screening of alternative corridor concepts concluded that an easterly corridor (Alternative Corridor Concept 2C) is more preferrable than Alternative Corridor Concepts 1, 2A and 2B. The preliminary preferred corridor (Alternative Corridor Concept 2C) is shown in **Figure 3.4**.

In summary, the rationale for selection of the Webequie community's preliminary preferred corridor (Alternative Corridor Concept 2C) include:

- Intersecting fewer known traplines;
- Route is further east and away from significant hunting areas (e.g., waterfowl, moose, etc.) well used by community members;
- Runs east of areas used most intensively for traditional activities south of the community;
- Minimizes intersecting significant moose mating areas located south of the community and north of the proposed east-west section of corridor;
- Minimizes effects to known built heritage resources/cultural heritage landscapes (i.e., cabins, hunting blinds, sacred site);
- Minimizes impacts to Webequie First Nation Reserve lands;
- Minimizes the number of waterbody crossings required;
- Minimizes potential effects to fish and fish habitat, as it has fewer waterbody crossings and shortest route length where structures are required to cross waterbodies; and
- Has the lowest estimated capital cost for construction.

3.2.4 Alternate Routes Identified for Assessment

Having identified the preliminary preferred corridor for the WSR (Alternative 2C), the Project Team moved to the next step of identifying route alternatives within the approximately 2 km wide corridor for further evaluation in the EA/IA with consideration and input from stakeholders and Indigenous communities.

The alternate routes within the preferred corridor that were identified for evaluation included the Webequie First Nation community's preferred route, the optimal geotechnical route, and the optimal engineering route shown on **Figure 3.5**. All three of these potential routes were standardized to a 35 m right-of way to allow for a fair comparison. The potential routes were given numeric identifiers as follows:

- Alternative 1 = Webequie First Nation community's preferred route;
- Alternative 2 = optimal geotechnical route; and
- Alternative 3 = optimal engineering route.

The process to identify each of the alternative routes are presented in the following subsections.

SIZE 11x17

460,000 470,000 480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000

5,880,000 5,870,000 5,860,000 5,850,000 5,840,000

N

Winisk River

Lastcedar Lake

Winisk River Provincial Park

Eastwood Island

Webequie Settlement

Webequie Airport

Bender Lake

Garrioch Lake

Plant Lake

Stockman Lake

McMurdo Lake

Elwyan River

Clancy Lake

Gre Lak

Billinger Lake

Leaver Lake

Winisk Lake

Morrison Bay

Prime Lake

Deugo Lake

Mukutei River

Farrow Lake

Newstead Lake

Elwyan River

Proposed Mining Development

460,000 470,000 480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000

Legend

- Preliminary Preferred Corridor for Webequie Supply Road
- Webequie First Nation Reserve
- Winisk River Provincial Park
- Waterbody
- Watercourse

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 10 20 Km

Webequie Supply Road (WSR)

Preliminary Preferred Corridor - Alternative Corridor 2C

Figure Number:		REV:
3.4		PA

Client:	Project Number:	Date:
Webequie First Nation	661910	8/2/2024

DSC	DRN	CHK	APP
	TE	RS	

SIZE 11 X 17 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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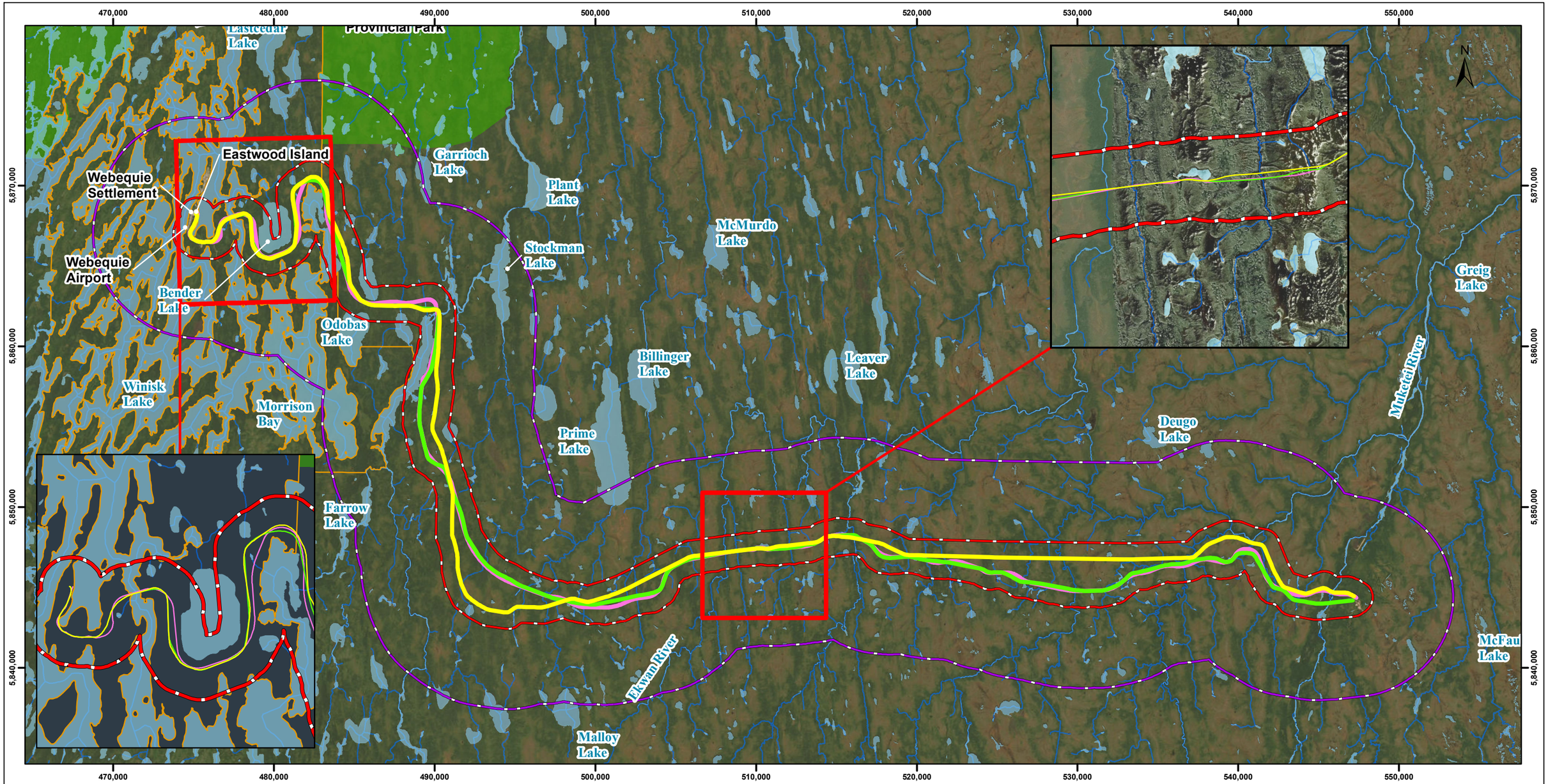

Legend

- Alternative 1
- Alternative 2
- Alternative 3
- Local Study Area (LSA 1km from Centreline of Route Alternative 1, Alternative 2, and Alternative 3)
- Regional Study Area (RSA 5km from either side of LSA Boundary)
- Webequie First Nation Reserve
- Waterbody
- Watercourse
- Winisk River Provincial Park

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 5 10 Km

Webequie Supply Road (WSR)

Alternative Routes in the Preferred Corridor

Figure Number: 3.5		REV: PA
Client: Webequie First Nation	Project Number: 661910	Date: 9/19/2024

DSC	DRN	CHK	APP
	TE	RS	

SIZE 11 X 17 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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SIZE 11x17

3.2.4.1 Alternative 1

The process for selecting Alternative 1 included an assessment of the advantages and disadvantages of the alternatives against a set of factors that were identified based on discussions with Webequie community members regarding project area features and sensitivities that may be affected by the Project and VCs identified during past community meetings in 2017, 2018 and 2019 and engagement during the current EA/IA process, and criteria inherent in the broader definition of the environment, as required under the *EA Act* and in accordance with MECP's Codes of Practice. Alternative 1 was identified and documented in the approved ToR and federal Detailed Project Description for further evaluation in the EA/IA and follows the centreline of the preferred Corridor Concept 2C.

3.2.4.2 Alternative 2

Geotechnical stability of the road was further considered to be critical to development, assessment and selection of the preferred route for the WSR. During the winter of 2018-19, terrain mapping and related opportunities and constraints were overlain on an approximately 2-km wide preferred corridor to identify a set of sub-alternative routes using the Alternative 1 alignment as the basis. Details of the preliminary terrain analysis and route assessment, identifying the optimal geotechnical route are summarized in the Webequie Supply Road: Terrain Analysis, Potential Aggregate Sources & Identification of Route Alternatives, Draft Report (J.D. Mollard and Associates (2010) Limited, March 29, 2019).

Various data sources were compiled to interpret and map the terrain conditions within the preferred corridor to identify reasonable route sub-alternatives from a geotechnical perspective. Terrain mapping involved the interpretation of remotely sensed imagery and elevation data, supplemented with existing surficial geology maps, to characterize the landforms, surficial materials, topography, and hydrology.

Based on the terrain mapping, general geotechnical conditions and potential construction issues and risks were identified and assessed, including the characteristics of surficial materials that will form the roadbed foundation (including groundwater and permafrost conditions), availability of borrow and aggregates for construction, and topographic considerations to optimize vertical alignment and reduce cut/fill volumes. At the planning stage, this information was used to help locate an optimal geotechnical route centreline within the preferred corridor that respects engineering, environmental and socio-economic considerations.

In the context of establishing Alternative 2, an assessment of alternate geotechnical routes was undertaken by the Project Team using the following evaluation criteria:

- Route length;
- Surficial material (mineral vs organic soils);
- Presence of bogs and fens, including ice-rich peat bogs and fens;
- Topographic relief and slopes;
- Availability of bedrock borrow (i.e., lack of borrow in some locations);
- Extensive wetland and thermokarst-affected terrain;
- Wide river crossings; and
- Proximity to potential aggregate sources.

Geotechnical route options were selected to minimize total route length, maximize terrain units of favorable constructability (e.g., glacial till), minimize traverse of units of poor constructability (e.g., fens), minimize the number and widths of stream crossings, and minimize aggregate haul distances. While a shorter

route is typically preferred, all other things being equal, there can be environmental, engineering, and economic advantages of an overall longer route that follows favorable terrain units and minimizes stream crossings. Terrain units with mineral soils were considered favorable for route construction, while those units with organic soils were considered unfavorable. Bogs were preferred over fens because bogs typically have a lower water table and thinner organic soil.

A total of six (6) alternate geotechnical routes were identified and mapped within the preferred corridor (**Figure 3.6**), which makes up Alternative 2. The alternate geotechnical routes share common segments and differ along other segments that offer varying advantages and disadvantages. Three (3) of the alternate geotechnical routes differed only in the westernmost segments of the preferred corridor around Winisk Lake and Bender Lake on the eastern approach to Webequie. Alternate geotechnical routes 1 and 2 diverge around Bender Lake, with Geotechnical Route 1 following a longer path around the south side of the lake and Geotechnical Route 2 taking the shorter path to the north that requires a small watercourse crossing. East of Bender Lake, these routes both pass around the northern end of a long embayment of Winisk Lake. Geotechnical Route 3 traverses a narrow portion of this embayment in Winisk Lake and passes to the south of Bender Lake, which results in a much shorter route, but requires a watercourse crossing over the embayment.

Alternate Geotechnical Routes 4, 5, and 6 share the same path east from Webequie and along the main north-south segment. These geotechnical routes differ along the west-east segment that crosses organic terrains and at the point of crossing the Muketei River. The primary challenge for selecting a geotechnical route along this portion of the preferred corridor is avoiding the extensive number of fens and watercourse crossings.

The optimal geotechnical route **(Figure 3.7**) was selected by picking segments from the six alternative geotechnical routes that best met the major criteria of route length, terrain conditions, watercourse crossings, and proximity to aggregate sources. The optimal geotechnical route minimized total length in two main locations. The first location was in the area southwest of Prime Lake, where the corridor transitions from north-south to east-west at nearly a right angle. By crossing outside of the community's preferred corridor to the north, the optimal geotechnical route cuts the overall length without adding additional water crossings. The second key location was around Bender Lake, where the optimal route crosses the shorter path northward around the lake. The second location (north around Bender Lake) was ultimately discounted in the optimal geotechnical route because it does not stand the test of avoiding the sensitive waterfowl staging area at this location.

The optimal geotechnical route was selected to minimize the length of route crossing terrain units considered to have a poor constructability ranking, in particular the various types of fens that feature organic soils and a water table at surface. Overall, this results in a geotechnical route that is south of the community's preferred corridor (Alternative 1) along the east-west extent and that lies outside of the corridor along a small portion of the route.

3.2.4.3 Alternative 3

Alternative 3 from an engineering perspective (**Figure 3.8**) was identified by adding engineering considerations such as road geometry, complexity of watercourse crossing structures and elevation changes, to geotechnical and environmental, social, economic, and heritage information available and was identified during the EA/IA process by the Project Team.

480,000 490,000 500,000 510,000 520,000 530,000 540,000

5,870,000 5,860,000 5,850,000 5,840,000

Webequie Settlement
Eastwood Island
Winisk River Provincial Park
Garrioch Lake
Plant Lake
Bender Lake
McMurdo Lake
Clancy Lake
Ekwan River
Stockman Lake
Webequie Airport
Billinger Lake
Leaver Lake
Morrison Bay
Prime Lake
Deugo Lake
Farrow Lake
Newstead Lake
Ekwan River
Noront Exploration Camp

N

SIZE 11x17

Legend

- Geotechnical Alternative 1
- Geotechnical Alternative 2
- Geotechnical Alternative 3
- Geotechnical Alternative 4
- Geotechnical Alternative 5
- Geotechnical Alternative 6
- Webequie First Nation Reserve
- Winisk River Provincial Park
- Waterbody
- Watercourse

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 5 10 Km

Webequie Supply Road (WSR)

Route Alternatives for Geotechnical Assessment

Figure Number:		REV:
3.6		PA
Client:	**Project Number:**	**Date:**
Webequie First Nation	661910	8/1/2024

DSC	DRN	CHK	APP
	TE	RS	

SIZE 11 X 17 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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SIZE 11x17

460,000 470,000 480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000

5,880,000 5,870,000 5,860,000 5,850,000 5,840,000

N

Winisk River

Lastcedar Lake

Winisk River Provincial Park

Eastwood Island

Webequie Settlement

Webequie Airport

Garrioch Lake

Bender Lake

Plant Lake

Stockman Lake

McMurdo Lake

Elwyan River

Clancy Lake

Gre Lak

Billinger Lake

Leaver Lake

Winisk Lake

Morrison Bay

Prime Lake

Deugo Lake

Mukutei River

Farrow Lake

Newstead Lake

Elwyan River

Noront Exploration Camp

460,000 470,000 480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000

Legend

- Alternative 2
- Webequie First Nation Reserve
- Winisk River Provincial Park
- Waterbody
- Watercourse

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 10 20 Km

Webequie Supply Road (WSR)

Alternative 2

Figure Number:		REV:
3.7		PA

Client:	Project Number:	Date:
Webequie First Nation	661910	8/27/2024

DSC	DRN	CHK	APP
	TE	RS	

SIZE 11 X 17 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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SIZE 11x17

460,000 470,000 480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000

5,880,000 5,870,000 5,860,000 5,850,000 5,840,000

N

Winisk River

Lastcedar Lake

Winisk River Provincial Park

Eastwood Island

Webequie Settlement

Webequie Airport

Garrioch Lake

Bender Lake

Plant Lake

Stockman Lake

McMurdo Lake

Elwyan River

Clancy Lake

Gre Lak

Billinger Lake

Leaver Lake

Winisk Lake

Morrison Bay

Prime Lake

Deugo Lake

Mukutei River

Farrow Lake

Newstead Lake

Elwyan River

Noront Exploration Camp

460,000 470,000 480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000

Legend

- Alternative 3
- Webequie First Nation Reserve
- Winisk River Provincial Park
- Waterbody
- Watercourse

WSR WEBEQUIE SUPPLY ROAD

0 10 20 Km

Webequie Supply Road (WSR)

Alternative 3

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

Figure Number: 3.8			**REV:** PA
Client: Webequie First Nation	**Project Number:** 661910	**Date:** 8/27/2024	
DSC		**DRN**	**CHK**	**APP**
		TE	RS	

SIZE 11 X 17 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Document Path: \\tor01\PROJECTS\E&W\Projects\661910 - Webequie First Nation Supply Rd\40_Execution\45_GIS_Dwgs\MXD\Alternatives_Evaluation\661910_WSR_ALT_GeotechRoute3.10_0001_0002.mxd

3.2.5 Method for Selection of Preferred Route Within the Preferred Corridor

The evaluation of the alternative routes within the preferred corridor for WSR was structured on the basis of Factors, Disciplines, Criteria and Indicators as defined below with consideration of feedback received from Indigenous communities, the public, government agencies, and stakeholders. The factors and indicators for the route selection are anchored in the draft Factors presented in the ToR and the VC as identified for the EA/IA. Route selection Indicators were selected by subject matter experts considering their value/ability to discern meaningful differences between the route alternatives and enable comparison and route selection decisions. The full list of Factors, Disciplines, Criteria and Indicators used for the evaluation of the route alternatives are presented **Appendix C-2**.

It is important to note that the factors and indicators for the route selection are distinct from the VC's and indicators to be used in the effects assessment of the Project. Although they are rooted in one another, they are tailored for two different processes / outcomes.

- Factors, Disciplines, Criteria and Indicators are used to comparatively evaluate the route alternatives or other alternatives (e.g., location of aggregate source areas or construction camps). They consider their value/ability to discern meaningful differences between the route options for each segment and enable comparison and route selection decisions.
- VCs and their associated indicators will be used for the effects assessment of the preferred route and other key project components. They will determine the overall Project level effects, which can be compared to a "no project" scenario or "do nothing" as well as to aid in the development of mitigation/impact management recommendations.

Factors are the broad environmental aspects or categories that were considered in the route selection. The broad Factors for evaluation of route alternatives were:

- Indigenous Land Use and Interests;
- Biological Environment;
- Physical Environment;
- Socio-Economic Environment; and
- Technical Considerations (cost, constructability, safety, etc.)

Within each Factor there are several Disciplines and Criteria which are derived from the VCs and represent specific aspects of the environment deemed significant or important, and technical and cost considerations.

Indicators detail what is being measured for each Factor, Discipline and Criterion. Similar Indicators are used in the assessment of effects including Indicators related to technical and economic feasibility (e.g., construction complexity and cost), operational performance (e.g., long-term maintenance), and safety. A measure was used to define the magnitude of change in each Indicator and was generally expressed in terms of impact (low to high impact) or in some cases the measures were expressed using areas (ha) or number (e.g., number of water crossings),

In context of the above methodology, Alternative Routes 1, 2 and 3 within the preferred corridor for the WSR were assessed by the Project Team using a geospatial software tool called Pangea that is designed for the assessment of routes or site alternatives for complex projects with multiple Factors, Disciplines, Criteria, Indicators, different perspectives, trade-off, and mix of quantitative and qualitative data. Using

Pangea software, the Project Team conducted a quantitative comparison of the three alternative routes using a Multiple Accounts Assessment (MAA) methodology. The key steps that were followed to conduct the MAA included:

- Step 1: Data collection;
- Step 2: Select and weight the Factors, Disciplines, and Criteria;
- Step 3: Select and apply score to the indicators;
- Step 4: Build and validate baseline model;
- Step 5: Run the model and standardize scores; and
- Step 6: Review results and select preferred route with consideration mitigation measures and feedback from Indigenous communities, the public, government agencies, and stakeholders.

As part of Step 6, the Project Team considered how the Gender Based Analysis Plus (GBA +) for the Project may influence the evaluation of alternatives. GBA + is an analytical process that provides a method for the assessment of systemic inequalities and a means to assess how diverse or vulnerable groups of people may experience policies, programs and initiatives. Applying a GBA + lens to the evaluation of alternative routes and locations for supportive infrastructure (camps, aggregate source areas) in a remote setting with minor spatial variations of the project components did not result in any one alternative having an advantage over another. For example, opportunities for Indigenous Peoples to obtain employment or to adversely affect their safety, health and well being did not differ for the alternatives considered. As part of a broader mitigation strategy, the proponent commits to implement a Gender Equity and Diversity Policy and Plan in future development phases of the Project to increase opportunities for Indigenous Peoples to obtain and retain employment with the Project and report on how the GBA + has been integrated into the Project's delivery.

3.2.5.1 Data Collection

The Pangea software model incorporated a large volume of mainly geographic information system (GIS) data including publicly available open-source data, supplemented by project-specific field data collected for the EA/IA. Specific efforts were made to include Indigenous Knowledge and land and resource use values and information in the MAA. Where this information was provided by Indigenous communities, it was digitized (and masked to maintain confidentiality as appropriate in respect of the ownership, control, access, and possession principle) and added to the spatial data layers in the Pangea model. Where specific locations were not provided, for areas of traditional and current land and resource use, existing data layers were used as proxies to represent those values and interests in the dataset for analysis. Where there were multiple datasets representing the same features, the team selected the dataset that best represented that feature.

All data were pre-processed prior to inclusion in the model, including removal of any topological errors, clipped to an area buffered by 5 km from the centerlines of the combined alternative routes under consideration. An inventory of datasets used in the route comparisons, including meta data, are presented in **Appendix C-3**.

3.2.5.2 Select and Weight the Factors, Disciplines, and Criteria

The spatial data in the Pangea model under the five broad Factors included a set of eleven (11) Disciplines, and thirty-three (33) Criteria, which are a subset of the Factors, to compare the route alternatives in the MAA. The Disciplines that were used in the MAA generally align with the VCs that were selected for the subsequent EA/IA completed to assess project effects.

A weighting system was applied to the Factors, Disciplines and Criteria in the MAA to compare the three alternatives. For the purpose of the assessment an equal weighting across the five Factors, eleven Disciplines and thirty-three Criteria was used as shown in **Table 3-7**. This approach was selected for the base case to minimize the inherent subjectivity of weighting process, relying on subsequent sensitivity analyses to validate the results of the MAA.

3.2.5.3 Select and Score Indicators

Within the 33 selected Criteria, a total of 168 Indicators were identified that represent a measurable (i.e., quantifiable) aspect of the criteria to be used to evaluate potential impacts of each alternative route. Since alternative routes 1, 2 and 3 are all located in close geographical proximity to each other with a very similar landscape, standard mitigation measures to minimize and/or control adverse effects are assumed to be applicable and can be uniformly applied to each route; therefore, no specific route offered a discernable specific advantage regarding application of standard and/or site-specific mitigation to address potential effects.

The process of assigning a score to each Indicator allowed for some subjectivity to be introduced into the MAA to appropriately reflect the values identified through engagement and consultation with Indigenous communities, professional opinions of the Project Team subject matter experts, and feedback from regulatory agencies and other stakeholders. In order to limit the degree of potential bias, when the subject matter experts were assigning scores to indicators, they were allotted a total score of 100 points to distribute between all of the indicators that form a subset of each criterion. The scores that were assigned to indicators are presented in **Appendix C-2**.

Table 3-7: Factors, Disciplines, and Criteria

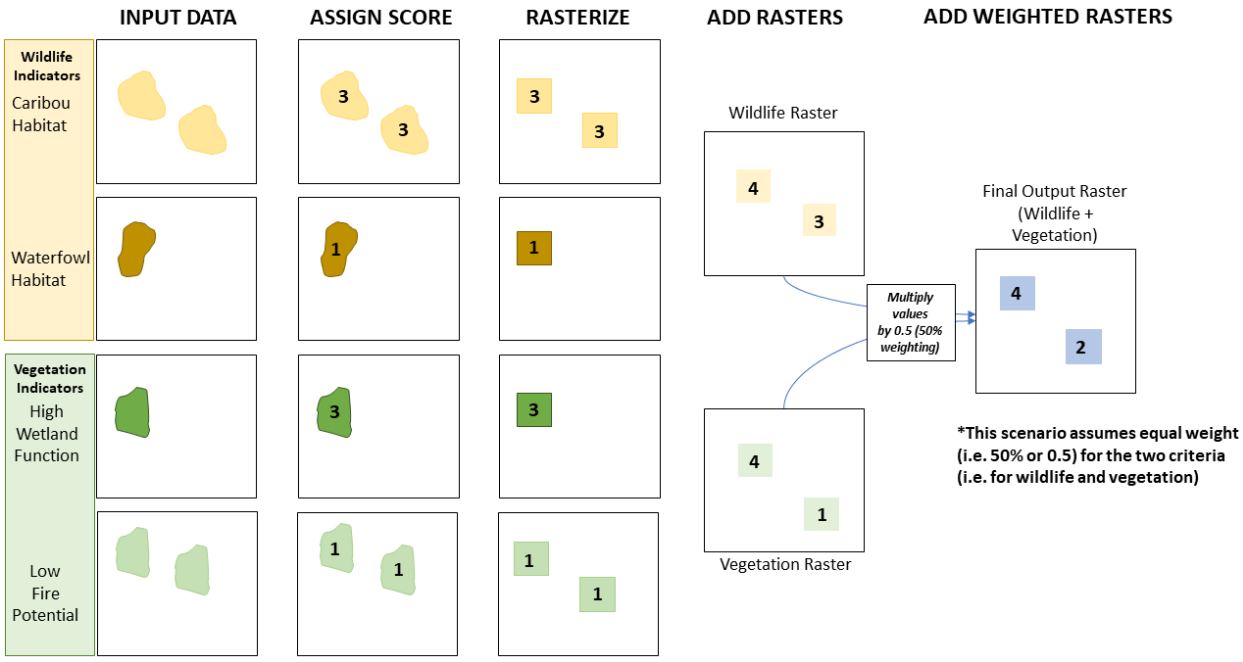
Factor	Factor Weight	Discipline	Discipline Weight	Criteria	Criteria Weight	Pangea Weight (Factor Weight x Criteria Weight)
Indigenous Land Use and Interests	20%	Indigenous Peoples Land Use and Interests	100%	Cultural Continuity (ability to practice and transmit cultural traditions including historical disruptions where Indigenous Peoples have a desire to reinvigorate a cultural tradition)	50%	10.0%
				Indigenous Current and Historical Use of Lands and Resources for Traditional Purposes	50%	10.0%
Biological Environment	20%	Fish and Fish Habitat	33%	Fish and Fish Habitat (Non-SAR Fish)	50%	3.3%
				Fish and Fish Habitat (SAR Fish – Lake Sturgeon)	50%	3.3%
		Vegetation	33%	Designated Areas (Areas of Natural and Scientific Interest [ANSI], ESA, PSW, Rare Communities, etc.)	17%	1.1%
				Fire Potential	17%	1.1%
				Plants of significance or importance; and designated Species at Risk plant populations (including species with special conservation status, rarity, or cultural significance)	17%	1.1%
				Riparian Ecosystem	17%	1.1%
				Upland Ecosystem	17%	1.1%
				Wetland Ecosystem	17%	1.1%
		Wildlife	33%	Amphibians (Frogs)	8%	0.5%
				Bats (including SAR Bats)	8%	0.5%
				Bog/Fen Birds and Other Wetland Birds (including SAR-birds)	8%	0.5%
				Caribou (Boreal population and Eastern Migratory population), Species at Risk	8%	0.5%
				Designated Significant Wildlife Habitat	8%	0.5%
				Forest Birds (including SAR birds)	8%	0.5%

Factor	Factor Weight	Discipline	Discipline Weight	Criteria	Criteria Weight	Pangea Weight (Factor Weight x Criteria Weight)
				Furbearers – Excluding SAR (Wolverine)	8%	0.5%
				Moose	8%	0.5%
				Raptors (including SAR birds)	8%	0.5%
				Shorebirds	8%	0.5%
				Waterfowl	8%	0.5%
				Wolverine, Species at Risk	8%	0.5%
Physical Environment	20%	Groundwater	50%	Groundwater	100%	10.0%
		Surface Water	50%	Surface Water	100%	10.0%
Socio-Economic Environment	20%	Archaeology	25%	Archaeological Sites and Resources	100%	5.0%
		Cultural Heritage	25%	Built Heritage Resources and Cultural Heritage Landscapes	100%	5.0%
		Land and Resource Use (non-Indigenous)	25%	Mineral and Aggregate Resources	33%	1.7%
				Provincial Parks, ANSI or Conservation Reserves	33%	1.7%
				Recreational Activities (camps, trails, outfitters, movement of small watercraft)	33%	1.7%
		Visual Aesthetics	25%	Visual Character and Sensitivity	100%	5.0%
Technical Considerations	20%	Technical	100%	Constructability and Design	33%	6.6%
				Cost	33%	6.6%
				Location of Supportive Infrastructure (aggregate/rock extraction areas, construction camps, laydown/storage yards, access roads)	33%	6.6%

3.2.5.4 Build and Validate Baseline Model

The Pangea baseline spatial model used a one (1) square metre (m^2) 'raster' grid, clipped to a 5 km offset from the centerline of the preferred corridor. The spatial dataset was classified to visualise and validate data relevant to each Category, Factor Criteria and Indicator. Data were 'rasterized' (i.e., converted from vector points, polylines, and polygons' in to a 'raster' grid format), and scores that were defined in the previous step were applied to each indicator as an attribute for each data point. An example of how this rasterization would be done in the Pangea spatial data using hypothetical wildlife and vegetation indicators is shown in **Figure 3.9**.

Figure 3.9: Hypothetical Rasterization used in Pangea



A baseline 'heat map' (preferred and less preferred areas) was generated showing the cumulative score of all Indicator scores in each 1 m^2 rasterized points in the area, limited to the area defined by a 5 km offset from the centerline of the preferred corridor (**Figure 3.10**). Validation runs were carried out on the model and the results were reviewed against the original input data and aerial imagery to validate the model performance and identify inconsistencies between the data layers and the Pangea output.

3.2.5.5 Run the Model and Standardize Scores

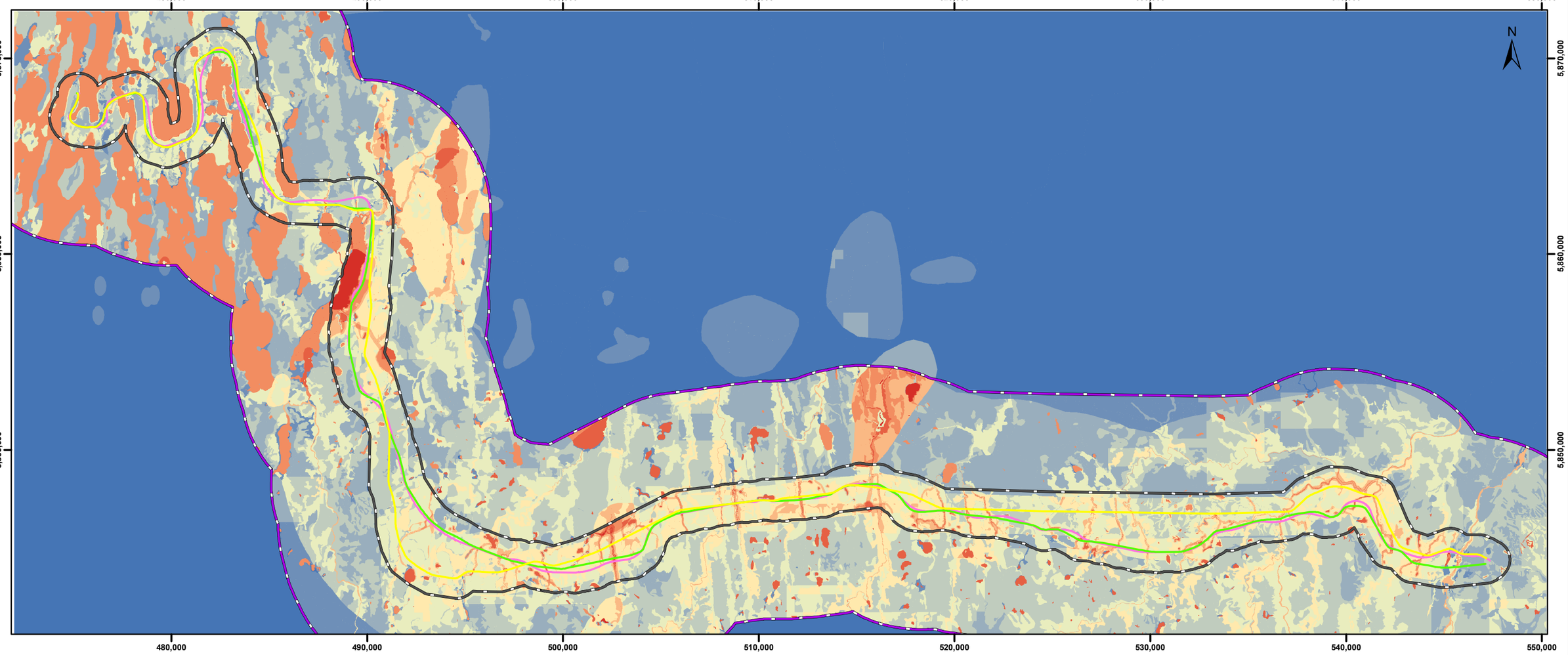
The Pangea model was run for each of the three alternative routes utilizing a 35 m width (i.e., 17.5 m on each side of the centreline). Pangea output raw indicator scores from the rasterized data present within each of the routes. The raw indicator scores were discretized to the criteria level and then standardized across the three route alternatives. The standardization was accomplished by dividing the criteria's raw score for each route by the maximum raw score for the three routes and multiplying it by the criteria's Pangea weight. Under the framework of the MAA, the lowest standardized score represents the most preferred alternative allowing routes to be compared and rated as preferred, less preferred, or least preferred for each Factor and overall score.

SIZE 11x17

480,000 490,000 500,000 510,000 520,000 530,000 540,000 550,000

5,870,000 5,860,000 5,850,000

N



Text

Legend

- Alternative 1
- Alternative 2
- Alternative 3
- Local Study Area (LSA 1km from Centreline of Route Alternatives)
- Regional Study Area (RSA 5km from either side of LSA Boundary)

Score

Less Preferred — Preferred

18.6 13.9 9.3 4.6 0

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 5 10 Km

Webequie Supply Road (WSR)

Baseline Heat Map of Raster Values for All Indicators

Figure Number:		REV:
3.10		PA
Client:	**Project Number:**	**Date:**
Webequie First Nation	661910	9/19/2024

DSC	DRN	CHK	APP
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SIZE 11 X 17 Service Layer Credits:

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3.2.5.6 Review Results and Select Preferred Route

The results of the Pangea model run for the three potential routes is summarized in **Table 3-8** and **Table 3-9**.

Table 3-8: Comparison of Route Alternatives at the Category Level and Overall

Category	Alternative 1	Alternative 2	Alternative 3
Indigenous Land Use and Interests	Less Preferred	Least Preferred	Preferred
Biological Environment	Least Preferred	Preferred	Less Preferred
Physical Environment	Least Preferred	Preferred	Less Preferred
Socio-Economic Environment	Preferred	Least Preferred	Less Preferred
Technical Considerations	Least Preferred	Less Preferred	Preferred
Overall	***Least Preferred Option***	***Less Preferred Option***	***Preferred Option***

The results of the MAA indicated that Alternative 3 (shown on **Figure 3.11**) is the preferred route option that will be carried forward into the EA/IA.

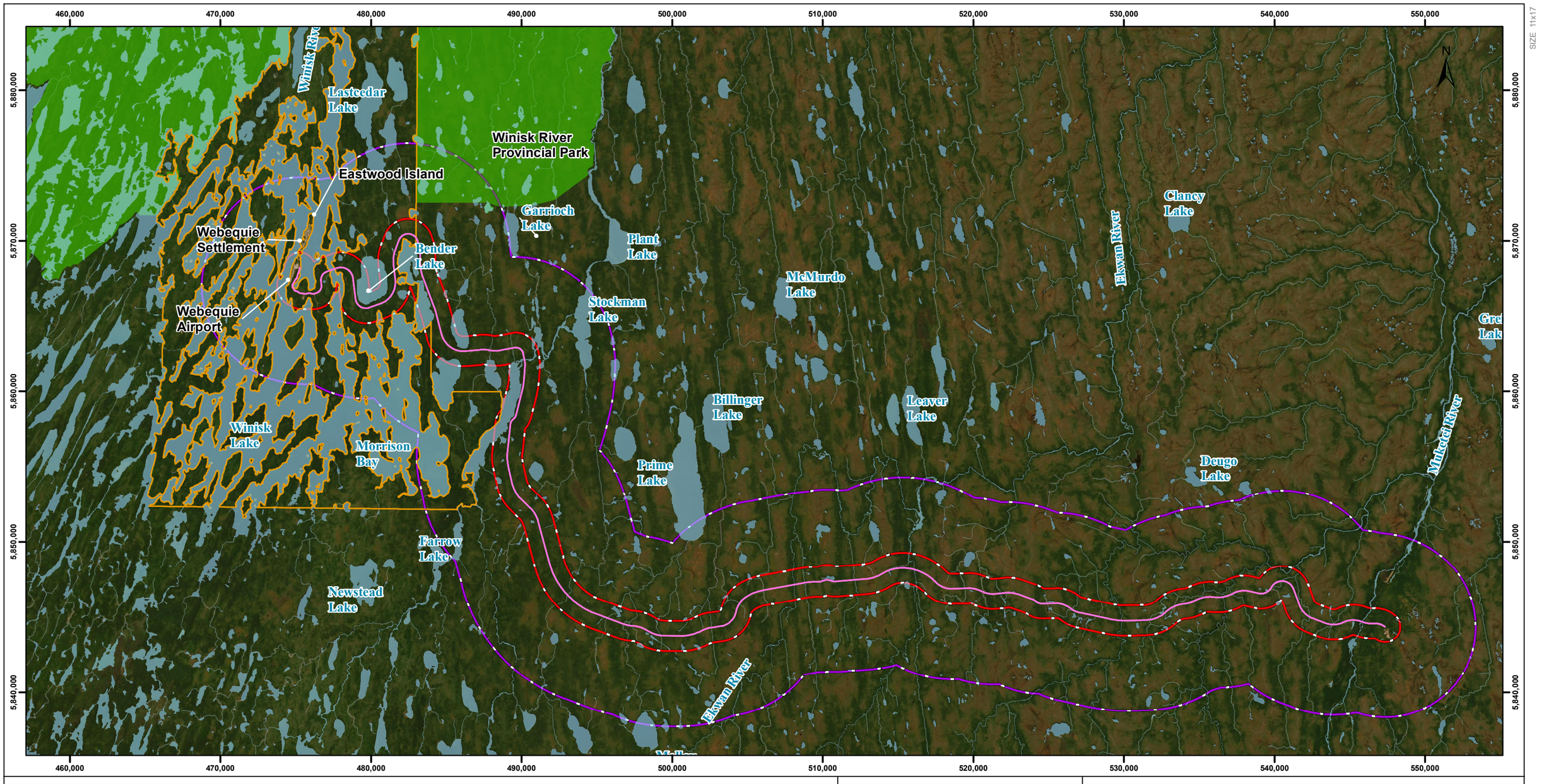
Table 3-9: Comparison of Route Alternatives at the Criteria Level

Category	Criteria	Alternative 1 (Raw Score)	Alternative 1 (Standardized Score)	Alternative 2 (Raw Score)	Alternative 2 (Standardized Score)	Alternative 3 (Raw Score)	Alternative 3 (Standardized Score)
Indigenous Land Use and Interests	Cultural Continuity	340.0	9.82	346.3	10.00	337.5	9.75
	Indigenous Land Use	0.0	0.00	0.0	0.00	0.0	0.00
	IE Subtotal		*9.82*		*10.00*		*9.75*
Biological Environment	Amphibian	23284.3	0.53	18606.2	0.42	13923.9	0.32
	Bats	398051.4	0.43	492441.3	0.53	493504.8	0.53
	Bog/Fen Birds	15406939.2	0.53	14884173.4	0.51	15071926.8	0.52
	Caribou	51667429.7	0.52	51699379.2	0.52	52006390.4	0.53
	Fish – NonSAR[1]	8536.8	3.30	6401.7	2.47	6902.0	2.67
	Fish – SAR[1]	46315.5	3.30	43830.6	3.12	41487.6	2.96
	Forest Bird	143114.0	0.49	151351.0	0.51	155587.0	0.53
	Furbearer	550706.3	0.48	605242.2	0.53	606651.8	0.53
	Moose	49732943.7	0.53	49913191.6	0.53	49912952.8	0.53
	Significant Plants	1361890.0	1.12	1336300.0	1.10	1363310.0	1.12
	Raptor	2560295.7	0.52	2581559.4	0.53	2586454.8	0.53
	Riparian	25477.1	0.98	28780.3	1.10	29234.1	1.12
	Shorebird	247526.1	0.47	276735.9	0.52	280408.7	0.53
	Upland	108291.8	1.08	108644.6	1.08	112939.5	1.12
	Waterfowl	5096286.4	0.53	5007058.8	0.52	5041935.1	0.52
	Wetland	733309.7	1.05	781897.8	1.12	774933.3	1.11
	Wolverine	26667283.9	0.53	26290149.8	0.52	26568883.5	0.53
	Fire Potential	41054051.8	1.12	40709672.2	1.11	40700934.1	1.11

Category	Criteria	Alternative 1 (Raw Score)	Alternative 1 (Standardized Score)	Alternative 2 (Raw Score)	Alternative 2 (Standardized Score)	Alternative 3 (Raw Score)	Alternative 3 (Standardized Score)
	Designated Areas (Vegetation)	0.0	0.00	0.0	0.00	0	0.00
	Designated SWH[2]	0.0	0.00	0.0	0.00	0	0.00
	LE Subtotal		*17.49*		*16.76*		*16.79*
Physical Environment	Surface Water	161800.0	10.00	147760.0	9.13	146720.0	9.07
	Groundwater	9188712.5	10.00	9074200.0	9.88	9173082.5	9.98
	PE Subtotal		*20.00*		*19.01*		*19.05*
Socio-Economic Environment	Archaeology	364645.0	3.93	463982.5	5.00	440957.5	4.75
	Built Heritage Resources/CHL[3]	0.0	0.00	0.0	0.00	0.0	0.00
	Minerals	1233136.9	1.40	1411195.0	1.60	1456627.0	1.65
	Parks	0.0	0.00	0.0	0.00	0.0	0.00
	Recreation	0.0	0.00	0.0	0.00	0.0	0.00
	Visual	587.7	4.90	599.4	5.00	596.1	4.97
	SEE Subtotal		*10.23*		*11.60*		*11.37*
Technical Considerations	Cost	371634027.0	6.60	340493562.0	6.05	305637233	5.43
	Constructability/Design	2868319.9	6.60	2566087.0	5.90	2556823.7	5.88
	Supportive Infrastructure	37804.8	6.60	37468.2	6.54	36597.0	6.39
	TC Subtotal		*19.80*		*18.49*		*17.70*
	Total		**77.34**		**75.85**		**74.66**

Notes:

[1] SAR = Specie At Risk
[2] SWH = Significant Wildlife Habitat
[3] CHL = Cultural Heritage Landscape
0.00 indicates that either these criteria were avoided by the route or data layer is a null
#.## Preferred
#.## Less Preferred
#.## Least Preferred



Legend

- Preliminary Recommended Preferred Route
- Local Study Area (LSA 1km from the Preferred Route)
- Regional Study Area (RSA 5km from either side of LSA Boundary)
- Webequie First Nation Reserve
- Provincial Park
- Waterbody
- Watercourse

WSR
WEBEQUIE SUPPLY ROAD

NOTES

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3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 10 20 Km

Webequie Supply Road (WSR)

Preferred Route Alternative Carried Forward into the Environmental Assessment / Impact Assessment

Figure Number:		REV:
3.11		PA

Client:	Project Number:	Date:
Webequie First Nation	661910	8/28/2024

DSC	DRN	CHK	APP
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SIZE 11 X 17 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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SIZE 11x17

3.3 Sensitivity Analyses

To provide transparency and identify potential bias in the alternatives assessment, sensitivity analyses were conducted to demonstrate the reliability and reasonableness of the decisions made through that process. The equally weighted comparisons presented above were shared with Indigenous communities, the public, government agencies, and stakeholders through consultation and engagement activities and events.

The two sensitivity analysis scenarios that were selected to demonstrate how altering the weighting at the factor-level would influence the outcomes of decision-making process, focusing on those Factors that could have perceived disparities.

During the alternatives assessment, two sensitivity analyses were completed to test the robustness of the methodology and results against changes in the weighting of Factors, Disciplines, and Criteria. Two sensitivity analyses were conducted based on the following Factor weighting:

- Sensitivity Run 1:
  - Indigenous Land Use and Interests (25%);
  - Biological Environment (16.7%);
  - Physical Environment (16.7%);
  - Socio-Economic Environment (25%); and
  - Technical Considerations (16.7%).
- Sensitivity Run 2:
  - Indigenous Land Use and Interests (16.7%);
  - Biological Environment (25%);
  - Physical Environment (25%);
  - Socio-Economic Environment (16.7%); and
  - Technical Considerations (16.7%).

The results of the sensitivity analyses for Runs 1 and 2 are presented in **Table 3-10** and **Table 3-11**, respectively. These sensitivity analyses were developed to demonstrate the preferred routes under scenarios where Indigenous and Socio-economic Environments are weighted to represent 50% of the total (Run 1) and Biological and Physical Environments are weighted to represent 50% of the total. Increasing the weighing of Indigenous and Socio-economic Environments to 50% in Run 1 did not change the order of preference of the three alternative routes, although the difference in total scores was reduced. Increasing the weighing Biological and Physical Environments to 50% in Run 2 did change the order of preference of the three alternative routes, identifying that Alternative Route 2 is preferred since it is aligned to better avoid criteria including bog/fen birds, caribou, moose, raptor, and wolverine.

Table 3-10: Sensitivity Run 1

Category	Criteria	Alternative 1 (Raw Score)	Alternative 1 (Standardized Score)	Alternative 2 (Raw Score)	Alternative 2 (Standardized Score)	Alternative 3 (Raw Score)	Alternative 3 (Standardized Score)
Indigenous Land Use and Interests	Cultural Continuity	340	12.27	346	12.50	338	12.18
	Indigenous Land Use	0	0	0	0	0	0
	IE Subtotal		*12.27*		*12.50*		*12.18*
Biological Environment	Amphibian	23284	0.44	18606	0.35	13924	0.26
	Bats	398051	0.28	492441	0.35	617343	0.44
	Bog/Fen Birds	15406939	0.01	14884173	0.01	483853141	0.44
	Caribou	51667430	0.01	51699379	0.01	1825110179	0.44
	Fish – NonSAR[1]	8537	2.76	6402	2.07	6902	2.23
	Fish – SAR[1]	46316	2.76	43831	2.61	41488	2.47
	Forest Bird	143114	0.41	151351	0.43	155587	0.44
	Furbearer	550706	0.40	605242	0.44	606652	0.44
	Moose	49732944	0.02	49913192	0.02	1339507998	0.44
	Significant Plants	1361890	0.94	1336300	0.92	1363310	0.94
	Raptor	2560296	0.01	2581559	0.01	78421881	0.44
	Riparian	25477	0.82	28780	0.92	29234	0.94
	Shorebird	247526	0.39	276736	0.44	280409	0.44
	Upland	108292	0.90	108645	0.90	112940	0.94
	Waterfowl	5096286	0.01	5007059	0.01	383517790	0.44
	Wetland	733310	0.88	781898	0.94	774933	0.93
	Wolverine	26667284	0.11	26290150	0.10	111081505	0.44
	Fire Potential	41054052	0.42	40709672	0.42	91631968	0.94

Category	Criteria	Alternative 1 (Raw Score)	Alternative 1 (Standardized Score)	Alternative 2 (Raw Score)	Alternative 2 (Standardized Score)	Alternative 3 (Raw Score)	Alternative 3 (Standardized Score)
	Designated Areas (Vegetation)	0	0.00	0	0.00	0	0.00
	Designated SWH[2]	0	0.00	0	0.00	0	0.00
	LE Subtotal		*11.55*		*10.94*		*14.04*
Physical Environment	Surface Water	161800	8.35	147760	7.63	146720	7.57
	Groundwater	9188713	8.35	9074200	8.25	9173069	8.34
	PE Subtotal		*16.70*		*15.87*		*15.91*
Socio-Economic Environment	Archaeology	364645	4.91	463983	6.25	440958	5.94
	Built Heritage Resources/CHL[3]	0	0.00	0	0.00	0	0.00
	Minerals	1233137	1.75	1411195	2.00	1456627	2.06
	Parks	0	0.00	0	0.00	0	0.00
	Recreation	0	0.00	0	0.00	0	0.00
	Visual	588	6.13	599	6.25	596	6.22
	SEE Subtotal		*12.79*		*14.50*		*14.22*
Technical Considerations	Cost	70455	3.65	69352	3.60	106287	5.51
	Constructability/Design	2868320	5.51	2566087	4.93	2556824	4.91
	Supportive Infrastructure	37805	5.51	37468	5.46	5545	0.81
	TC Subtotal		*14.68*		*13.99*		*11.23*
	Total		**67.99**		**67.80**		**67.59**

Notes:
[1] SAR = Specie At Risk
[2] SWH = Significant Wildlife Habitat
[3] CHL = Cultural Heritage Landscape
0.00 indicates that either these criteria were avoided by the route or data layer is a null
#.## Preferred
#.## Less Preferred
#.## Least Preferred

Table 3-11: Sensitivity Run 2

Category	Criteria	Alternative 1 (Raw Score)	Alternative 1 (Standardized Score)	Alternative 2 (Raw Score)	Alternative 2 (Standardized Score)	Alternative 3 (Raw Score)	Alternative 3 (Standardized Score)
Indigenous Land Use and Interests	Cultural Continuity	340	8.20	346	8.35	338	8.14
	Indigenous Land Use	0	0.00	0	0.00	0	0.00
	IE Subtotal		*8.20*		*8.35*		*8.14*
Biological Environment	Amphibian	23284	0.66	18606	0.53	13924	0.39
	Bats	398051	0.43	492441	0.53	617343	0.66
	Bog/Fen Birds	15406939	0.02	14884173	0.02	483853141	0.66
	Caribou	51667430	0.02	51699379	0.02	1825110179	0.66
	Fish – NonSAR[1]	8537	4.13	6402	3.09	6902	3.34
	Fish – SAR[1]	46316	4.13	43831	3.90	41488	3.70
	Forest Bird	143114	0.61	151351	0.64	155587	0.66
	Furbearer	550706	0.60	605242	0.66	606652	0.66
	Moose	49732944	0.02	49913192	0.02	1339507998	0.66
	Significant Plants	1361890	1.40	1336300	1.37	1363310	1.40
	Raptor	2560296	0.02	2581559	0.02	78421881	0.66
	Riparian	25477	1.22	28780	1.38	29234	1.40
	Shorebird	247526	0.58	276736	0.65	280409	0.66
	Upland	108292	1.34	108645	1.35	112940	1.40
	Waterfowl	5096286	0.01	5007059	0.01	383517790	0.66
	Wetland	733310	1.32	781898	1.40	774933	1.39
	Wolverine	26667284	0.16	26290150	0.16	111081505	0.66
	Fire Potential	41054052	0.63	40709672	0.62	91631968	1.40
	Designated Areas (Vegetation)	0	0.00	0	0.00	0	0.00
	Designated SWH[2]	0	0.00	0	0.00	0	0.00
	LE Subtotal		*17.29*		*16.38*		*21.02*

Category	Criteria	Alternative 1 (Raw Score)	Alternative 1 (Standardized Score)	Alternative 2 (Raw Score)	Alternative 2 (Standardized Score)	Alternative 3 (Raw Score)	Alternative 3 (Standardized Score)
Physical Environment	Surface Water	161800	12.50	147760	11.42	146720	11.33
	Groundwater	9188713	12.50	9074200	12.34	9173069	12.48
	PE Subtotal		*25.00*		*23.76*		*23.81*
Socio-Economic Environment	Archaeology	364645	3.28	463983	4.18	440958	3.97
	Built Heritage Resources/CHL[3]	0	0.00	0	0.00	0	0.00
	Minerals	1233137	1.17	1411195	1.33	1456627	1.38
	Parks	0	0.00	0	0.00	0	0.00
	Recreation	0	0.00	0	0.00	0	0.00
	Visual	588	4.09	599	4.18	596	4.15
	SEE Subtotal		*8.54*		*9.68*		*9.50*
Technical Considerations	Cost	70455	3.65	69352	3.60	106287	5.51
	Constructability/Design	2868320	5.51	2566087	4.93	2556824	4.91
	Supportive Infrastructure	37805	5.51	37468	5.46	5545	0.81
	TC Subtotal		*14.68*		*13.99*		*11.23*
	Total		**73.70**		**72.17**		**73.71**

Notes:
[1] SAR = Specie At Risk
[2] SWH = Significant Wildlife Habitat
[3] CHL = Cultural Heritage Landscape
0.00 indicates that either these criteria were avoided by the route or data layer is a null
#.## Preferred
#.## Less Preferred
#.## Least Preferred

3.4 Project Supportive Infrastructure Alternatives

The Project Team also evaluated alternative methods related to supportive infrastructure including:

- Alternative sites for temporary and/or permanent aggregate extraction areas (pits/quarries) and production facilities needed for construction and operation of the road, including access roads to these sites; and
- Alternative sites for temporary construction camps, including laydown and storage areas.

3.4.1 Alternate Aggregate Sources – Screening Level Assessment

The Project Team began its investigations into potential aggregate sources by examining alternatives at a screening level to eliminate alternatives with fatal flaws (i.e., presence of VCs that would preclude development of the aggregate resource) before completing a full evaluation to select the preferred aggregate source(s).

3.4.1.1 Alternate Aggregate Sources

Potential aggregate sources for WSR were identified through reviews of existing surficial geology mapping completed by the Ontario Geological Survey and supplementary terrain analysis using digital imagery and light detection and ranging (LiDAR) completed adjacent to and within the preferred corridor. Limited occurrences of ice-contact glaciofluvial landforms and bedrock outcrops were present as potential aggregate sources. Among the aggregate source alternatives were ice-contact glaciofluvial landforms created by meltwater processes during deglaciation that were typically composed of sorted granular material. The characteristics of these granular deposits (overburden thickness, stratigraphy, gradation, etc.) were evaluated from shallow test holes dug with either a mini-excavator or manually with a shovel.

Bedrock outcrops identified and mapped as potential quarry sites were visited in the field to describe the lithology and structural elements (fractures, bedding, foliation, etc.) visible at surface to make an initial assessment of bedrock suitability for aggregate production.

The potential aggregate sources that were identified included six (6) ice-contact glaciofluvial landforms and five (5) bedrock locations, summarized in **Table 3-12** and shown on **Figure 3.12**.

Table 3-12: Locations of Alternate Aggregate Sources

ID	Easting	Northing	Mapped Unit	Observed Material
TP19-01	482271	5867792	Glaciofluvial Deposits	Sand and Gravel
TP19-02	490185	5862355	Glaciofluvial Deposits	Sand and Bedrock
TP19-03*	485425	5840765	Glaciofluvial	N/A
TP19-04	507989	5845403	Bedrock	Till
TP19-05	508128	5847803	Bedrock	Till and Bedrock
TP19-06	537987	5848399	Glaciofluvial Deposits + bedrock	Silt

ID	Easting	Northing	Mapped Unit	Observed Material
TP19-07	541253	5847878	Bedrock	N/A
TP19-08*	513429	5841840	Bedrock	Bedrock
TP19-09	489236	5857600	Glaciofluvial Deposits	Sand
TP19-10	485640	5853170	Glaciofluvial Deposits	Sand and Gravel
TP19-11	514998	5847294	Bedrock	Gravel

3.4.1.2 Screening of Alternate Aggregate Sources

The screening of aggregate source alternatives was completed to eliminate less suitable alternatives and focus the subsequent evaluation and selection of the preferred aggregate source to the most favorable locations. The process for screening the alternatives included an assessment of the advantages and disadvantages of the alternatives against a set of technical factors that included type of material available, quantity of material available, distance from the preferred road corridor and accessibility. If the potential aggregate source was not accessible by truck for hauling, did not have suitable material of sufficient quantity and/or was located too far from the preferred corridor, that alternative was screened out from further consideration.

Aggregate Source Alternative TP19-01

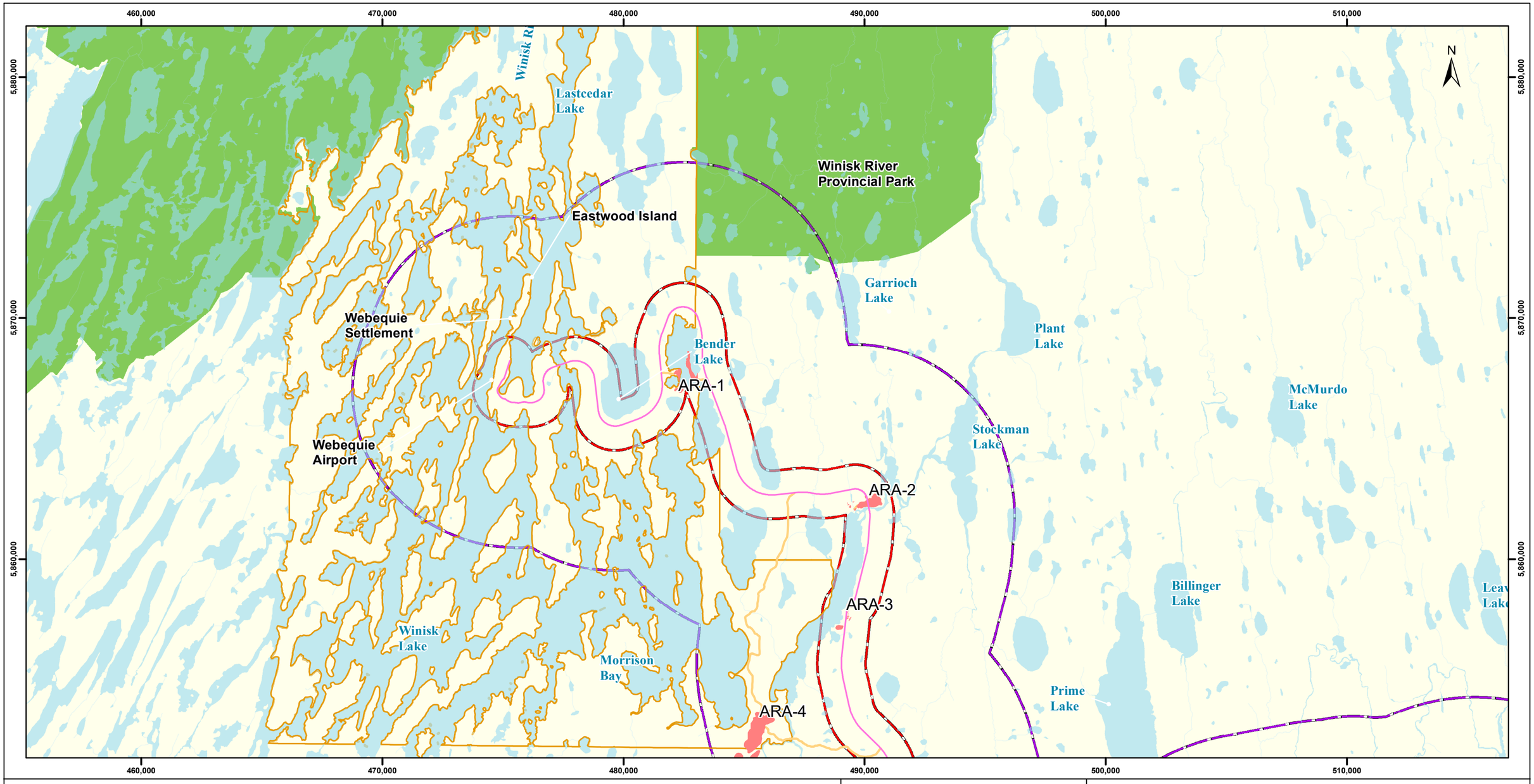
TP19-01 is located at the existing/abandoned gravel pit located east of Webequie. The deposit occurs as a discreet landform that is part of the discontinuous esker running north-south along the side of Manson Bay. There is an access road that is currently overgrown with vegetation, which could provide ready access to the proposed all-season road (located about 600 m to the west) where it wraps around the south end of Bender Lake. **This alternative was screened out from further consideration as the deposit did not offer a suitable quantity of material that would be feasible to mine.**

Aggregate Source Alternative TP19-02

TP19-02 is located north of the stream crossing between Webequie and Stockman Lake. Aggregate sources mapped by the Ontario Geological Survey include both ice-contact glaciofluvial deposits and bedrock at this location, which are within 100 m from the proposed all-season road and offer short haul distances. Bedrock exposures (490178 E, 5862361 N) were observed from the air and were accessed from the stream channel. Crystalline igneous outcrop composed of granitic to pegmatitic composition, massive and unfractured. Ice-contact glaciofluvial deposits of sand surround the bedrock outcrop. The combined volume of borrow and bedrock aggregate expected to be feasible to mine at this location is estimated as 500,000 to 1,000,000 m^3. **This alternative was carried forward for further consideration under the identifier ARA-2.**

Aggregate Source Alternative TP19-04

TP19-04 targeted bedrock mapped by the Ontario Geological Survey. Despite being mapped as a bedrock feature, no bedrock was encountered along a transect across the feature. In several places where tree cover thinned, the ground was covered with white moss that gives the appearance of bedrock in the imagery and in the air from the helicopter. **This alternative was screened out from further consideration as the deposit did not offer a suitable quantity of material.**



Legend

- Preliminary Recommended Preferred Route
- Local Study Area (LSA 1km from the Preferred Route)
- Regional Study Area (RSA 5km from either side of LSA Boundary)
- Webequie First Nation Reserve
- Provincial Park
- Waterbody
- Proposed Access Road
- Watercourse
- Potential Aggregate/Rock Source
- Small Deposit/Bedrock Outcrop - Unable to show based on map scale

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 5 10 Km

Webequie Supply Road (WSR)

Locations of Alternate Aggregate Sources
Page # 1

Figure Number:		REV:
3.12		PA

Client:	Project Number:	Date:
Webequie First Nation	661910	9/19/2024

DSC	DRN	CHK	APP
	TE	RS	

SIZE 11 X 17 Service Layer Credits:

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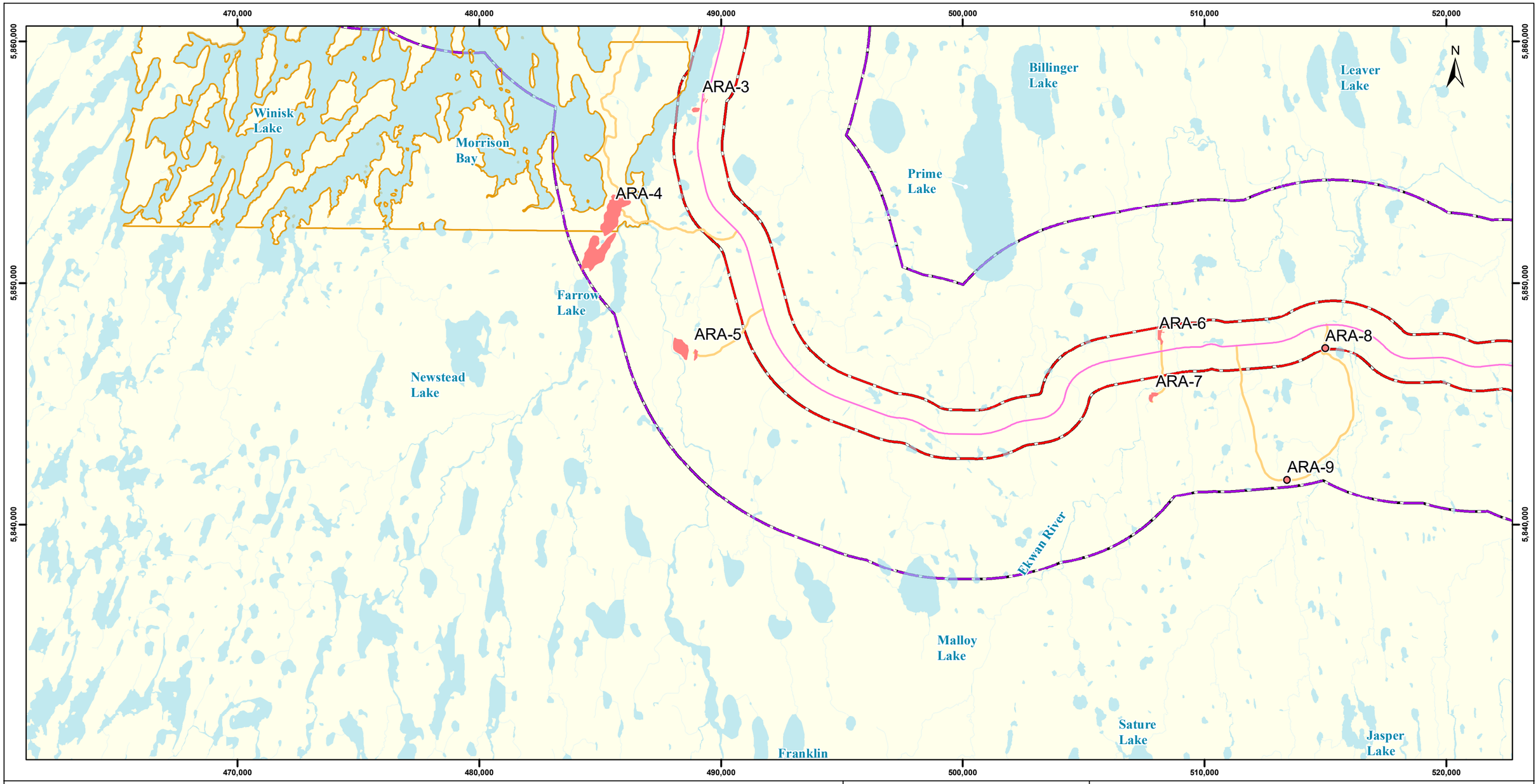

Legend

- Preliminary Recommended Preferred Route
- Local Study Area (LSA 1km from the Preferred Route)
- Regional Study Area (RSA 5km from either side of LSA Boundary)
- Webequie First Nation Reserve
- Provincial Park
- Waterbody
- Proposed Access Road
- Watercourse
- Potential Aggregate/Rock Source
- Small Deposit/Bedrock Outcrop - Unable to show based on map scale

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 5 10 Km

Webequie Supply Road (WSR)

Locations of Alternate Aggregate Sources
Page # 2

Figure Number:		REV:
3.12		PA
Client:	**Project Number:**	**Date:**
Webequie First Nation	661910	9/19/2024

DSC	DRN	CHK	APP
	TE	RS	

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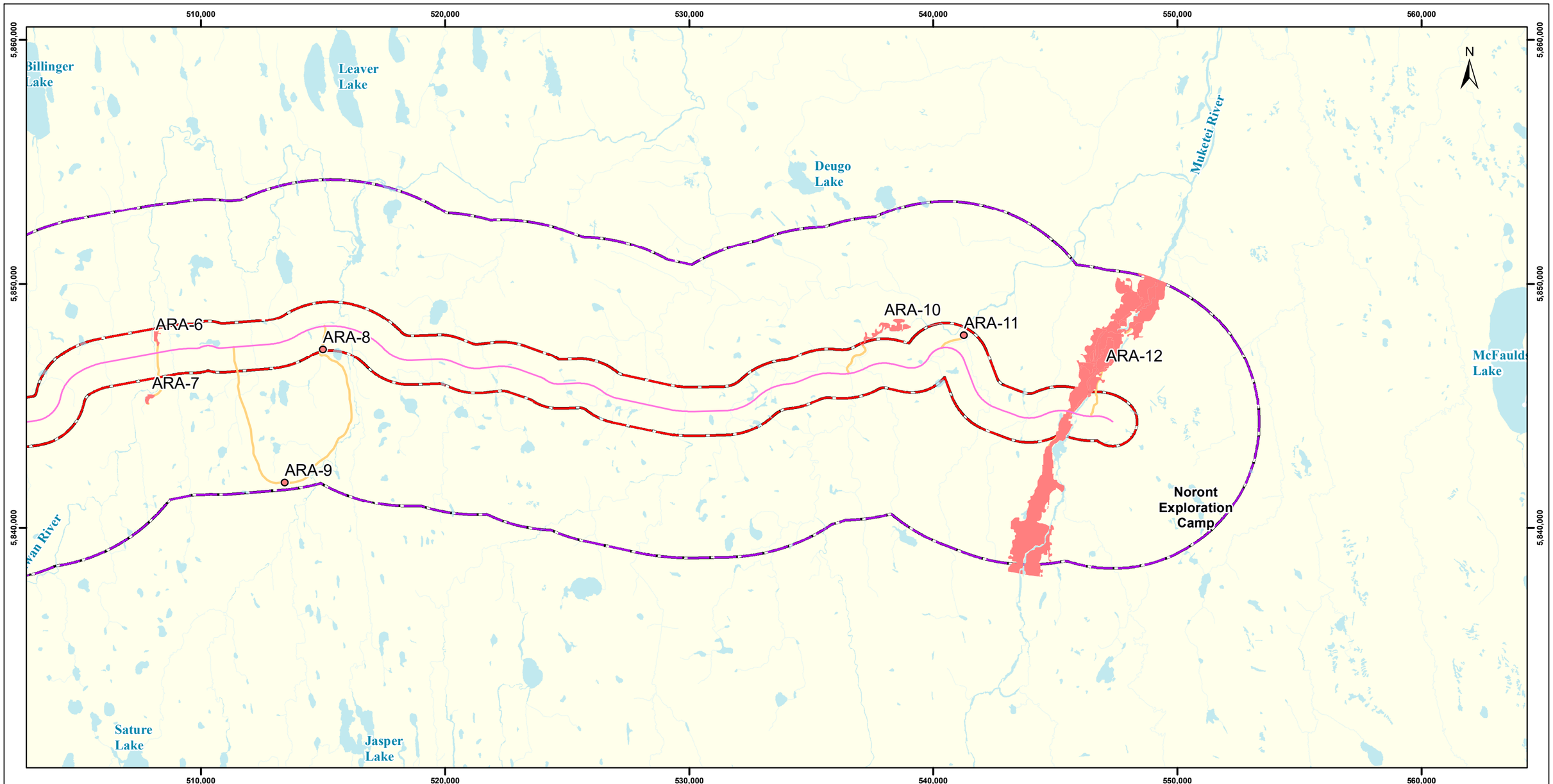
SIZE 11x17



Legend

- Preliminary Recommended Preferred Route
- Local Study Area (LSA 1km from the Preferred Route)
- Regional Study Area (RSA 5km from either side of LSA Boundary)
- Webequie First Nation Reserve
- Provincial Park
- Waterbody
- Proposed Access Road
- Watercourse
- Potential Aggregate/Rock Source
- Small Deposit/Bedrock Outcrop - Unable to show based on map scale

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 5 10 Km

Webequie Supply Road (WSR)

Locations of Alternate Aggregate Sources
Page # 3

Figure Number:		REV:
	3.12	PA

Client:	Project Number:	Date:
Webequie First Nation	661910	9/19/2024

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	TE	RS	

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SIZE 11x17

Aggregate Source Alternative TP19-05

TP19-05 is located on an area mapped as bedrock by the Ontario Geological Survey. The feature occurs as a small hill or upland along the eastern side of a small stream and is entirely covered with trees. Access to the site is from the banks of the small stream. Along the western side of the feature, leading down toward the stream, there is an accumulation of large boulders up to several metres in diameter. From the imagery and from the helicopter, these boulders appear as bedrock, but they are not when observed in situ and are not embedded in a fine-grained matrix. Based on their large size and angular shape, these boulders were likely transported very short distances from their source and suggest in situ bedrock in close proximity. Adjacent to the boulders, the area is covered by clay till. **This alternative was screened out from further consideration as the deposit did not offer a suitable quantity of material.**

Aggregate Source Alternative TP19-06

TP19-06 is located on an area mapped as a unit of glacial deposits and bedrock by the Ontario Geological Survey. Along the eroding banks of the adjacent stream channel to the south, mineral soils are observed from the air. Access to the site was from the bog to the north. **This alternative was screened out from further consideration as the deposit did not offer a suitable quantity of material.**

Aggregate Source Alternative TP19-07

TP9-07 targeted an area mapped as bedrock by the Ontario Geological Survey. The area was visited only from the air and not on the ground. Visual inspection from the helicopter did not identify bedrock outcrops; rather, most of the area is covered with thin tree cover and white moss that mimics bedrock in the imagery. Although no outcrops of bedrock were observed, it is possible that there is bedrock along the margins of the nearby streams where tree cover may obscure exposure. Along the banks of the nearby stream to the north, eroding mineral soil was exposed but no bedrock was observed. **This alternative was screened out from further consideration as the deposit did not offer a suitable quantity of material.**

Aggregate Source Alternative TP19-08

TP19-08 is located south of the preferred corridor and near an area of bedrock exposure described previously as bedrock. The site was visited from the air only. Visual inspections from the helicopter reveal a relatively large hill covered with trees that include stands of aspen that are often associated with glacial sediments or areas of bedrock. Much of the area appears to have white moss on the surface that obscure the identification of surficial materials; however, exposures of bedrock were observed in the general area, including areas to the west and east. The large fen to the west also exhibits large boulders in the centre and along the margins. **This alternative was screened out from further consideration as the deposit did not offer a suitable quantity of material.**

Aggregate Source Alternative TP19-09

TP19-09 was selected to test an area mapped as an ice-contact glaciofluvial deposit by the Ontario Geological Survey. Access to the site was from the east shore of lake to the west. This alternative is approximately 1 km from the preferred corridor, which limits the haul distance for construction. The sand and gravel reserve expected to be feasible to mine at this site is estimated as 150,000 to 500,000 m^3. **This alternative was carried forward for further consideration under the identifier ARA-3.**

Aggregate Source Alternative TP19-10

TP19-10 targeted a large ice-contact glaciofluvial landform mapped by the Ontario Geological Survey that is located southeast of Winisk Lake and on the west side of the preferred corridor. The feature is among the largest glaciofluvial landforms mapped in the area and offers one of the largest potential sources of granular material, but it is approximately 4 km from the proposed route and would require a considerable watercourse crossing to access the location. From the air, the landform appears heavily covered with trees, including aspen trees that are quite distinct and indicate thin organics over mineral soils and sediment. The volume of sand and gravel expected to be feasible to mine at this site, based on regional elevation data, is in the order of 4,000,000 to 8,000,000 m^3, assuming that the entire ridge consists of sand and gravel with some accounting for varying percentages of spoil. **This alternative was carried forward for further consideration under the identifier ARA-4.**

Aggregate Source Alternative TP19-11

TP19-11 is located roughly half-way along the west-east section of the preferred corridor and was selected on a prominent hill. Access to the site is from the fen adjacent to a small lake. The hill appears to be composed of granular material deposited by ice-contact glaciofluvial and surrounded by organic soils. Although small in scale, extending roughly 75 m long by 40 m wide and 3 m high, the granular material observed in this landform appears to be the coarsest material encountered in the investigation. Based on the approximate dimensions of the landform and the observed material, this feature offers a potential volume of roughly 10,000 m^3, with limited haul distance to the proposed corridor. **This alternative was screened out from further consideration as the deposit did not offer a suitable quantity of material that would be feasible to mine.**

3.4.2 Aggregate Source Locations and Access Roads

Table 3-13 Identifies the estimated aggregate types and quantities required by phase to construct and operate the Project.

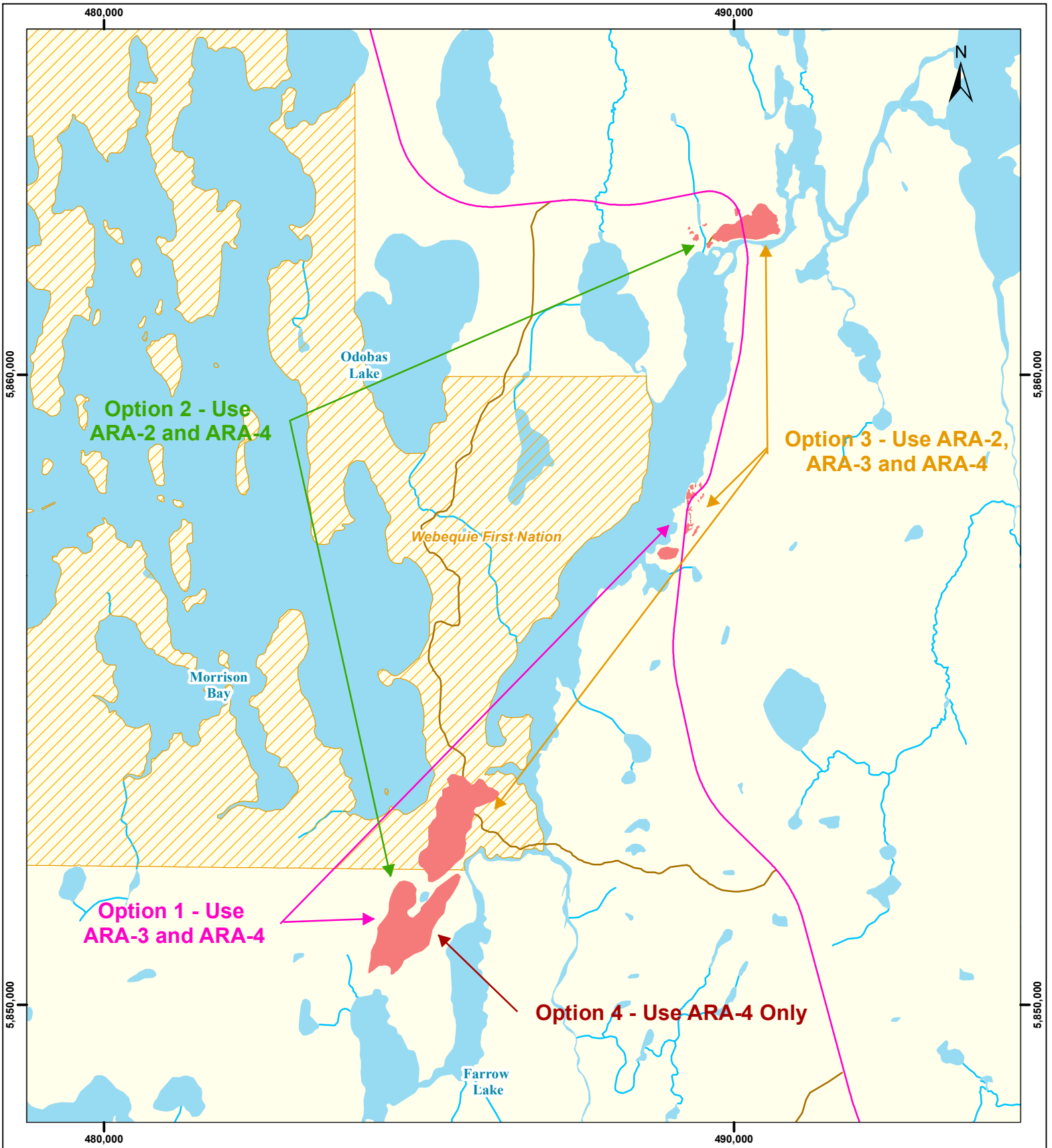
Table 3-13: Summary of Aggregate Requirements

Phase	Earth Fill (m^3)	Gravel (m^3)	Rock (m^3)	Total (m^3)
Construction	1,551,000	1,297,000	1,500	2,849,500
Operations and Maintenance	-	2,000,000	5,000	2,005,000

Of the potentially viable alternatives that were carried forward, the following four options were able to provide the aggregate types and quantities required by phase:

- **Option 1** – ARA-3 and ARA-4;
- **Option 2** – ARA-2 and ARA-4;
- **Option 3** – ARA-2, ARA-3 and ARA-4; and
- **Option 4** – ARA-4 Only.

Figure 3.13 shows the relative locations of the potential aggregate sources.



Legend

- Preferred Route
- Aggregate Source
- Access Road
- Webequie First Nation Reserve
- Waterbody
- Watercourse

WSR WEBEQUIE SUPPLY ROAD

0 2.25 4.5 Km

Webequie Supply Road (WSR)

Locations of Options for Supplying Aggregate

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

Figure Number: 3.13			REV: PA
Client: Webequie First Nation	Project Number: 661910	Date: 10/9/2024	
DSC		DRN: TE	CHK: RS / APP:

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The steps that were followed to identify the preferred option for supplying aggregate included the following, which are summarized on **Table 3-14**:

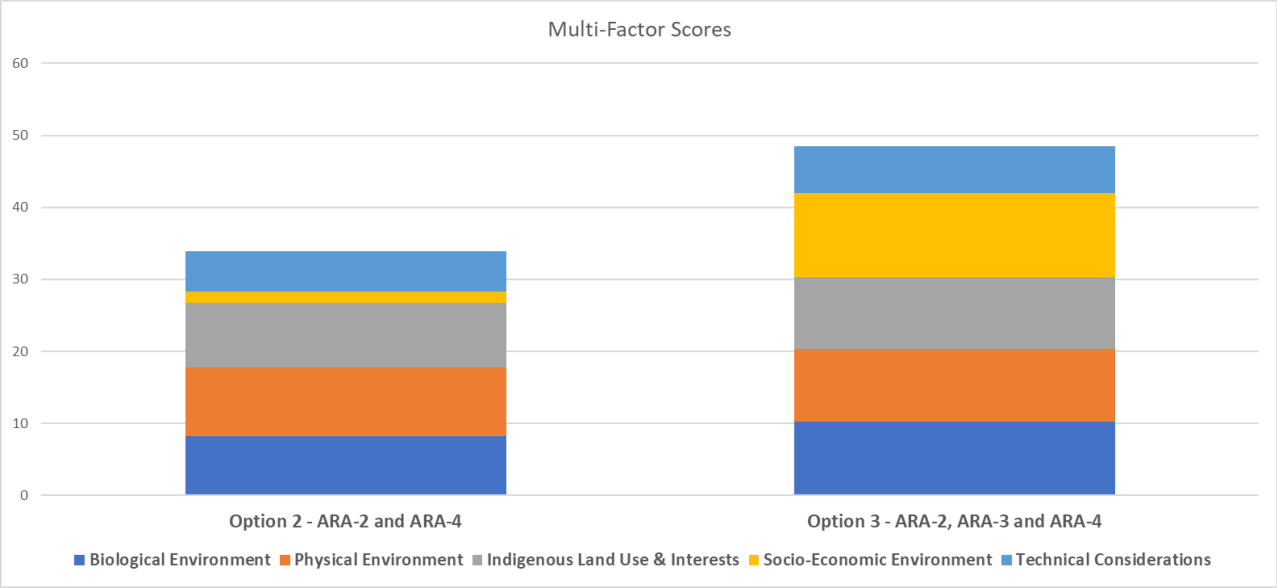
- Does it meet the quantities required?
- Is there an ability to access the aggregate?
- Is it located in proximity to the start of construction at Webequie?
- Does it provide a long-term source of aggregate for the community?
- What is the multi-factor score ranking?

Table 3-14: Alternate Aggregate Source Screening Criteria

Option	Meets Quantity	Ability to Access	Proximity to Start of Construction (Webequie)	Long-term Source of Aggregates	Multi-Factor Score Ranking
Option 1 – ARA-3 and ARA-4	YES 4.15M to 8.5 M m^3	ARA-3 requires minimal access ARA-4 requires significant access road/bridge	NO	Screened out because too far from Webequie community (construction start)	-
Option 2 – ARA-2 and ARA-4	YES 4.5M to 9 M m^3	ARA-2 requires minimal access ARA-4 requires significant access road/bridge	YES – ARA-2	YES – ARA-4	Lower Score – Preferred Option
Option 3 – ARA-2, ARA-3 and ARA-4	YES 4.65M to 9.5 M m^3	ARA-2 and ARA-3 requires minimal access ARA-4 requires significant access road/bridge	YES – ARA-2	YES – ARA-4	Higher Score – Less Preferred Option
Option 4 – ARA-4 only	YES 4 M to 8 M m^3	ARA-4 requires significant access road/bridge	NO	Screened out because too far from Webequie community (construction start)	-

Using the same MAA methodology and Pangea software tool as utilized for the evaluation of alternative routes, the factor-level results for the two potential aggregate supply options 2 and 3 are shown on **Figure 3.14**. Based on this comparison, Option 2 consisting of ARA-2 and ARA-4 was identified as the preferred source of aggregate for the Project.

Figure 3.14: Multi-Factor Score Comparison of Options for Supplying Aggregate



After identifying the preferred source for aggregate to supply the Project, the Project Team was tasked with identifying the preferred access route to the aggregate deposits. The ARA-2 aggregate source is located directly adjacent to the footprint of the preferred route for the WSR so the only access roads that were assessed were those for the ARA-4 aggregate source. Based on the physical location of the ARA-4 aggregate source there were only two practical access road alternatives that could be identified by the engineering, environmental and construction teams. The two access road alternatives examined are shown on **Figure 3.15** and included:

- Access Road Option – 1 (R-1) is 10 km in length with no watercourse crossings; and
- Access Road Option – 2 (R-2) is 3.5 km in length with one major watercourse crossing.

The factor-level results of the Pangea model run for the two road options are shown on **Figure 3.16**. Based on this comparison, Option 2 consisting of 3.5 km of road with one major watercourse crossing was identified as the preferred road option to access aggregate from ARA-4.

490,000

5,860,000

N

ARA-2

ARA-3

ARA-4

490,000

5,860,000

Legend

- Alternative 3
- Local Study Area
- Regional Study Area
- Potential Aggregate/Rock Source Areas
- Access Road

Score

18.6 13.9 9.3 4.6 0

0 1.25 2.5 Km

WSR WEBEQUIE SUPPLY ROAD

Webequie Supply Road (WSR)

Road Options for Accessing ARA-4

Figure Number:	REV:
3.15	PA

Client:	Project Number:	Date:
Webequie First Nation	661910	8/28/2024

DSC	DRN	CHK	APP
	TE	RS	

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

SIZE 11X17 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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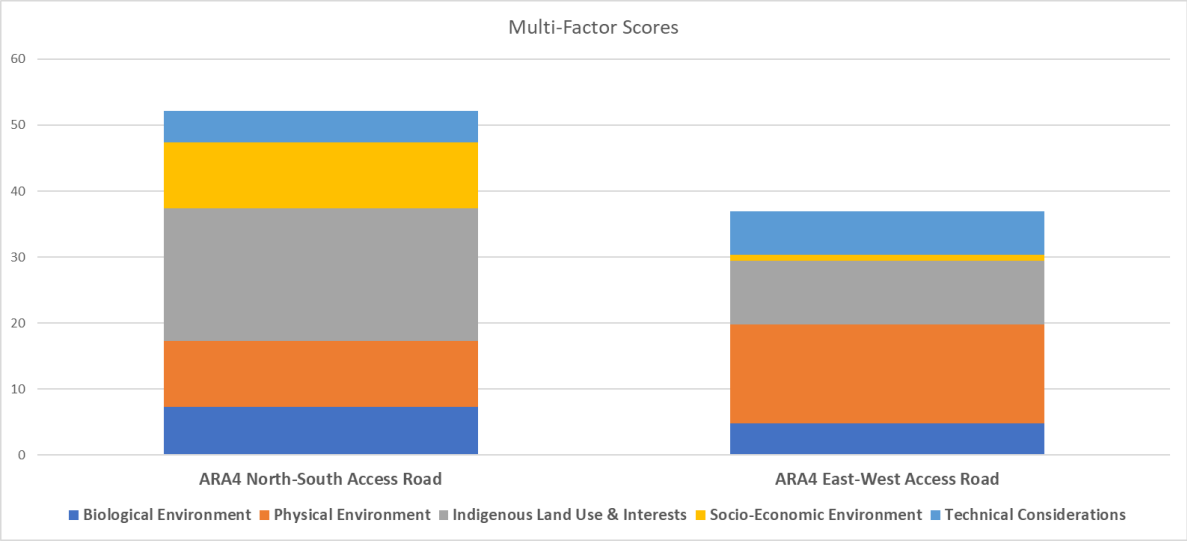
Figure 3.16: Multi-Factor Score Comparison of Road Options for ARA-4



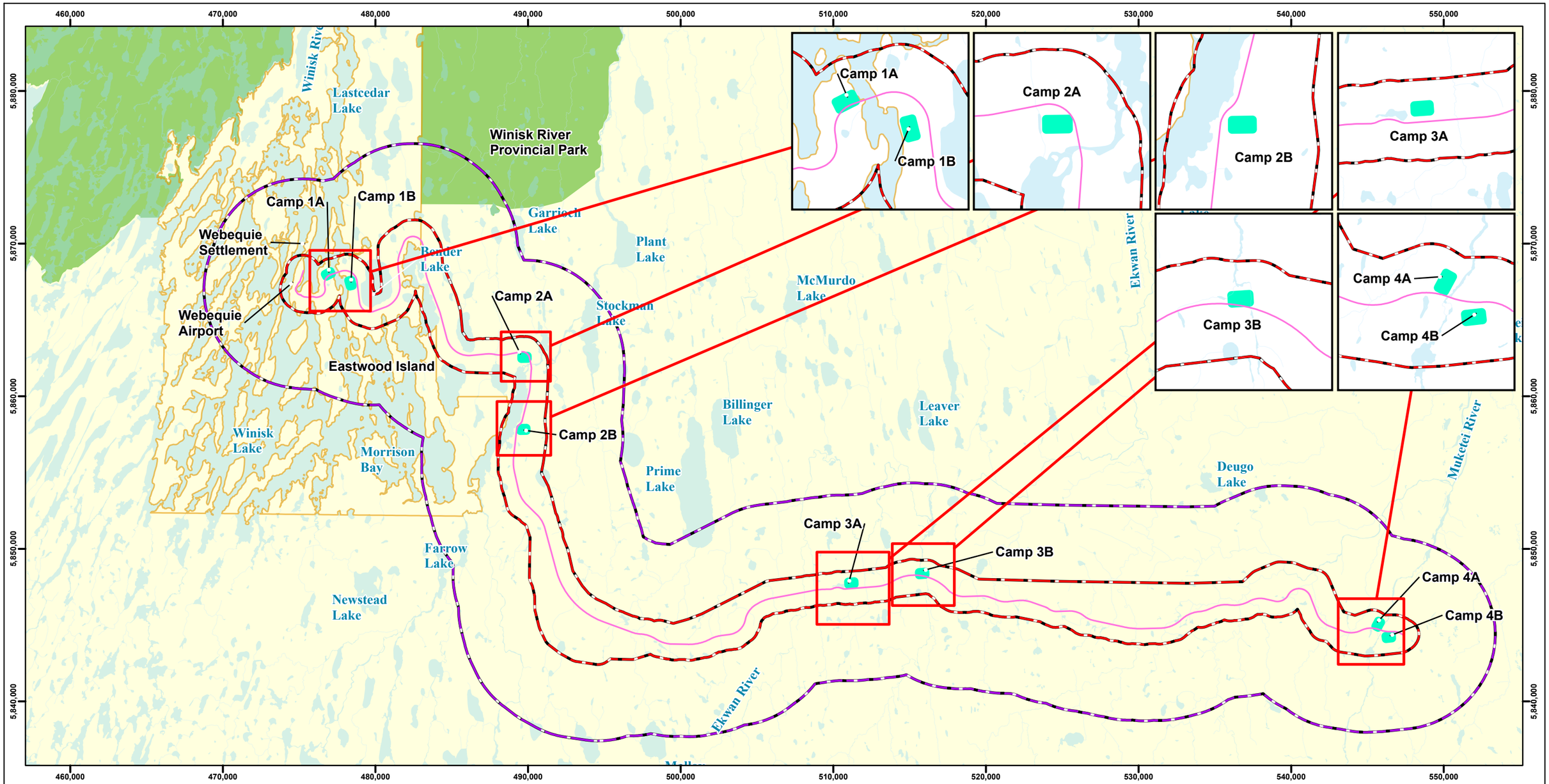
3.4.3 Construction Camps

Accommodation for the construction workforce for the Project will be provided through use of small, temporary construction camps (average workforce accommodation – 100 workers). Construction camps need to be in close proximity to the proposed road route to maximize construction efficiency. These camps would also be used for other supportive site facilities (i.e., laydown areas for materials and equipment storage/maintenance) to maximize use of space and minimize environmental impacts. In order to develop a uniform area for comparison purposes, the Project Team assumed that the following components would be required at each camp:

- Accommodations (bunkhouse) for workers;
- Construction office(s);
- Kitchen and dining hall;
- First aid station, and helicopter-pad location;
- Communications system;
- Wastewater treatment system;
- Groundwater water supply well;
- Waste handling and storage facility area;
- Electricity supply from diesel generators;
- Above ground fuel storage tanks and refueling area; and
- Laydown/storage areas for equipment and materials.

To allow for safety of workers and productive construction of the road, four (4) construction camps are needed along the length of the route – two (2) in north to south section and two (2) in west to east section. Two camp options were identified for each of the four required locations along the route (shown on **Figure 3.17**) and then the preferred option between each pair was selected based on a comparison of factor-level results of the Pangea model run under the MAA methodology for each pairing of camp options (shown on **Figure 3.18**). The camp locations that were selected included Camp 1A, Camp 2A, Camp 3A and Camp 4B.

SIZE 11x17



Legend

- Preferred Route
- Local Study Area (LSA 1km from Centreline of Route Alternatives)
- Regional Study Area (RSA 5km from either side of LSA Boundary)
- Potential Construction Camps and/or Laydown Areas (specific location to be determined based on selection of preferred route)
- Webequie First Nation Reserve
- Winisk River Provincial Park
- Waterbody

WSR WEBEQUIE SUPPLY ROAD

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

DISCLAIMER

0 10 20 Km

Webequie Supply Road (WSR)

Construction Camp Options

Figure Number:		REV:
	3.17	PA

Client:	Project Number:	Date:
Webequie First Nation	661910	12/9/2025

DSC	DRN	CHK	APP
	TE	RS	

SIZE 11 X 17 Service Layer Credits:

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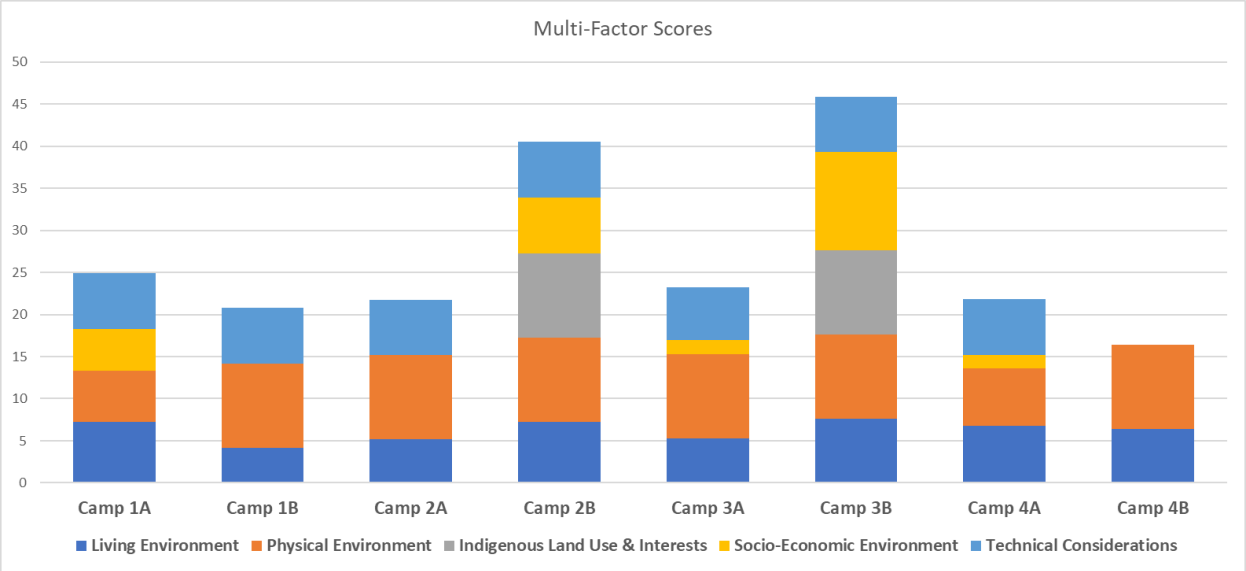
Figure 3.18: Multi-Factor Score Comparison of Construction Camp Options



Note; Due to the scale of **Figure 3.18** in some instances the Indigenous Land Use and Interest and Socio- Economic factors do not appear as the score for these factors were very low.

The following is an overview of the results for the comparison of the construction camp options. Although Camp 1A reflected a higher multi-factor score in comparison to Camp 1B, it was selected as the preferred camp due to its location that better serves the current construction execution approach which is to start construction from Webequie and progressively move easterly with significant time, materials and equipment needed to construct the multi-span bridge crossing at Winisk Lake. Camp 2A was selected as preferred option over Camp 2B due to lower multi-factor scores and associated potential impacts to the living and socio-economic environments and Indigenous land use and interest factors. Camp 3A was preferred as it scored lower in all factors in comparison with the Camp 3B option, with exception of the physical environment and technical consideration where the scores were similar. Finally, Camp 4B was the preferred option the analysis concluded it has higher technical advantages and lower potential impacts to the socio-economic environment in comparison to Camp 4A.

3.5 References

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Webequie First Nation/Nibinamik First Nation/Neskantaga First Nation/Eabametoong First Nation. 2016. All-Season Community Road Study.

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APPENDIX C-1

Background Studies

APPENDIX C-2

Factors, Disciplines, Criteria, and Indicators

APPENDIX C-3

Multiple Accounts Assessment Datasets

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