WSR
WEBEQUIE
SUPPLY ROAD

WEBEQUIE SUPPLY ROAD ENVIRONMENTAL ASSESSMENT REPORT / IMPACT STATEMENT

June 9, 2025

AtkinsRéalis Ref: 661910

SECTION 4:

Project Description

WEBEQUIE FIRST NATION

AtkinsRéalis

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4. Project Description

This section provides a description of the project components and activities during the construction and operation of the proposed Webequie Supply Road ("WSR" or the "Project") at the preliminary stage of planning and design.

The evaluation of alternative routes for the WSR and alternative locations for supportive infrastructure (e.g., aggregate /rock source areas, construction camps, etc.), including the rationale for the selection, which represent the Project Footprint (or Project Development Area), are presented in Section 3 of this EAR/IS.

4.1 Project Overview and Location

The Project is located in northwestern Ontario, with Webequie First Nation being approximately 525 km northeast of Thunder Bay (refer to Figure 1.1). The Project is located on un-surveyed Ontario Crown lands and Webequie First Nation Reserve lands and is located within the Hudson Bay Lowlands. The proposed WSR will extend in a southeast direction from the community of Webequie, then easterly to a termination point near McFaulds Lake. The WSR is a proposed two-lane all-season road (approximately 12 m wide road platform) within a fully cleared right-of-way (ROW) of 35 m in width and 107 km in length, connecting Webequie First Nation and its airport to existing mineral exploration activities and proposed future mining development in the area referred to as the Ring of Fire. Approximately 17 km of the WSR is located on Webequie First Nation Reserve lands. Supportive infrastructure is required as part of the Project and includes aggregate/rock source areas (i.e., pit/quarries), temporary construction camps with storage and laydown yards, rest and maintenance areas, access roads and a permanent Maintenance and Storage Facility (MSF).

Figure 1.2 in Section 1 – Introduction of this EAR/IS illustrates the preferred route for the WSR and locations of supportive infrastructure needed for construction and operations of the Project.

4.2 Project Design and Planning

4.2.1 Road Design and Applicable Design Criteria and Standards

The Project will be designed, constructed and operated according to design codes, standards and guidelines applicable to provincial highway projects. The design standards for the WSR are consistent with those used by the Ontario Ministry of Transportation (MTO) for similarly classified roads in the northeast and northwest regions of the province and will be classified as a Rural Collector Undivided facility upon opening. Key design codes, standards and guidelines include, but are not limited to, the following:

- Design Supplement for Transportation Association of Canada Geometric Design Guide for Canadian Roads, Ontario Ministry of Transportation, April 2020;
- Preliminary Design Report Guideline, Ontario Ministry of Transportation, September 2016;
- Roadside Design Manual, Ontario Ministry of Transportation, May 2020;
- Highway Drainage Design Standards, Ontario Ministry of Transportation, January 2008;
- Pavement Design and Rehabilitation Manual, Ontario Ministry of Transportation, May 2013;
- Road Safety Audit Guidelines, University of New Brunswick, 1999;
- Structural Manual, Ontario Ministry of Transportation, August 2021;
- Canadian Highway Bridge Design Code CSA S6:19, CSA Group, 2019; and
- Maintenance Manual, Ontario Ministry of Transportation, August 2003.

The design criteria and standards applied to a road project are based on, but not limited to, the classification of the road, its purpose and anticipated traffic volume, including the mix and type of vehicles (e.g., cars, heavy and light trucks. etc.). Based on the low population density in the project study area, proposed road usage and the intended stated purpose of the WSR, an average annual daily traffic (AADT) volume of less than 500 vehicles has been projected for the Project. It is expected that traffic during the operations phase will comprise primarily of light to medium personal and commercial vehicles, with some limited heavier truck traffic carrying industrial (mining) supplies and equipment. The WSR traffic operations will not include mineral ore or mine product hauling/transport.

Design criteria were established for developing the preliminary engineering design for the WSR in context of the above primarily MTO standards and guidelines, and in some cases design standards have been exceeded to include resiliency to address the effects of climate change. **Table 4-1** summarizes the preliminary design criteria for the WSR. Further details on the design criteria for the Project are presented in the WSR Preliminary Engineering Design Report contained in Appendix D-1.

Table 4-1: Preliminary Design Criteria for the Project

Design Element	Proposed Project Standard
Road Classification (Two-lane All-Season Road)	Rural Collector Undivided 100 (RCU100)
Design Speed	100 km/h
Posted Speed Limit	80 km/h
Minimum Stopping Sight Distance Minimum Passing Sight Distance	185 m 320 m
Maximum Road Grade	6 %
Minimum Radius/Curve of Road	450 m
Travelled Lane Width	2 x 3.5 m
Road Shoulder Width	2 x 2.0 m
Road Shoulder Rounding	0.5 m
Right-of-Way Width	35 m
Road Minimum Cross-Fall Slope	4%
Minor Drainage System Design – consists of drainage features to convey runoff (e.g., roadside ditches)	Sized to convey a minimum 10-year design flow (probable rainfall event within 10-Year period)
Major Drainage System Design - provides overland flow runoff exceeding minor system	Sized to convey a minimum of 100-year design flow (probable rainfall event within 100-year period)
Culvert and Bridges (Structures) - Waterbody Crossings	All structures are sized to convey a minimum 100-year design flow (probable rainfall event within 100-year period) after accommodating for increases in rainfall intensities due to climate change*

* Standard proposed exceeds MTO Highway Drainage Design Standards and include consideration of climate change.

4.2.2 Environmental Planning

Environmental issues and the social and economic well-being of Webequie First Nation and other Indigenous communities were considered in the earliest stages of Project planning and design and is an integral part of Webequie's overall approach for developing the Project. This approach allows for potential issues and interactions to be identified early so they can be considered in a proactive manner through appropriate Project planning and design. The objectives are to avoid adverse effects where possible and, where they cannot be avoided, establish mitigation measures to reduce potential effects to acceptable levels.

As a linear development, the Project has included consideration of various alternative route options to meet Project objectives (see Section 3). These were evaluated based on several broad categories or factors that include: physical environment, biological environment, socio-economic environment, Indigenous land and resource use and interests, and technical considerations. This evaluation process also included input from Indigenous, public, regulatory agencies and stakeholder engagement.

To the extent practical, the Project design incorporated the following design considerations, while also considering technical and cost factors:

- Minimize the length of the road to the degree possible and practical;
- Avoid difficult or poor-quality terrain, where possible and/or practical;
- Minimize the requirements for access roads and other supportive infrastructure;
- Minimize waterbody crossings;
- Avoid or minimize effects to identified sensitive land and resource use areas of value or interest to Indigenous communities;
- Avoid interactions with designated environmentally sensitive areas or critical habitats for wildlife, where practical; and
- Avoid and/or minimize effects to areas and sites of known archaeological and/or cultural heritage importance.

After completion of the EA/IA, the Detail Design Phase for the Project will commence and the construction execution approach will be finalized for the WSR, including incorporation of potential route refinements, siting of supportive infrastructure (e.g., construction camps), mitigation, and monitoring, as identified in this EAR/IS.

4.3 Project Components

The proposed Project will encompass several components that comprise the new all-season road. The Project components will be located within a typical 35 m wide ROW, approximately 107 km in length. The following key components, and associated ancillary works include:

- Roadway:
  - Road geometric design - vertical and horizontal alignment;
  - Road cross-section and cross-fall for drainage;
  - Road foundation;
  - Roadside safety;
  - Maintenance Turnaround Areas for equipment/vehicles to safely turn around and Rest/Maintenance Areas;
  - Illumination (where required);
  - Intersections; and
  - Fencing and signage.

- Drainage and Stormwater Management:
  - Roadside ditches and other stormwater quality and quantity measures as required; and
  - Waterbody crossings (bridges and culverts).
- Development of temporary and permanent supportive infrastructure associated with construction, including:
  - Aggregate/rock source areas (pits/quarries);
  - Access roads;
  - Construction camps with laydown and storage areas, temporary sewage management including storage of fuels, explosives and wastes;
  - Power supply and communications; and
  - Maintenance and Storage Facility (MSF).

Following construction phase, specific component infrastructure will be maintained to support operation and maintenance activities of the Project. The permanent Project support infrastructure components include: the MSF, aggregate pit/quarry, power supply and communications, and storage areas for fuels, explosives, equipment, aggregate and wastes. These infrastructure features will also include roads between the component and the roadway for worker access. A description of the Project components, including temporary and permanent supporting infrastructure, are included in **subsections 4.3.1** to **4.3.3** of **Section 4.3** and are shown on Figure 1.2 in Section 1 – Introduction of this document.

4.3.1 Roadway

The proposed WSR consists of a permanent two-lane all-season road within a typical 35 m wide ROW. The WSR is classified by the provincial road authority (i.e., MTO) as Rural Collector Undivided Road with a design speed of 100 kilometres per hour (km/h) and posted speed limit of 80 km/h. A description of the design features that comprise the roadway are provided in the following subsections.

4.3.1.1 Road Geometric Design

The road geometric design includes the horizontal alignment (direction) and vertical alignment (profile) of the preferred route for the WSR.

4.3.1.1.1 Horizontal Alignment

The preferred route for the WSR generally follows a west to east direction, starting from Webequie First Nation in the vicinity of the Webequie Airport on Eastwood Island, then crossing Winisk Lake, then around the south end of Bender Lake, then northward above Manson Bay. From there, the route will proceed in a southerly direction before bearing eastward to its terminus near the McFaulds Lake area and the existing mineral exploration camp owned and operated by Ring of Fire Metals (formerly Noront Resources Inc) that is associated with Eagle's Nest Project. Refer to Figure 1.2 in Section 1 for the recommended preferred route for the WSR. The first 3 km of the WSR will follow an existing gravel roadway (Eastwood Island Road), which provides access to the Webequie Frist Nation's landfill site and adjacent bush areas used for resource use (e.g., hunting, firewood collection). There are no existing other roadways within the project study areas for the remainder of the preferred route for the WSR.

The horizontal alignment for the WSR is fully compliant with the design standards applicable to the roadway classification, such as radius of curves in the road for safety.

4.3.1.1.2 Vertical Alignment

The western half of the WSR, which is approximately 51 km in length and runs southeasterly from Webequie First Nation, is located in mildly rolling terrain on mineral soils that require development of a vertical alignment/road profile involving either minor lowering (cut) or raising (fill) of existing grades by approximately 3 m. Based on land survey data (LiDAR) there are no significant changes in existing land elevation that would require major earth grading works (cut or fill) for the Project.

The eastern half of the WSR is approximately 56 km in length and runs in a west to east direction that terminates in the McFaulds Lake area. This section of the WSR is located in wetland/muskeg terrain that requires development of a road profile that is generally flat based on existing land survey data. To accommodate the road design, an average increase to existing grades of approximately 1.2 m in height is required in these lowland areas, with exception of the watercourse crossing of the Muketei River, at the east end of the road, where an earth cut or lowering of existing grades by approximately 5 m is needed to allow for the crossing of the floodplain and river.

The vertical alignment for the WSR is fully compliant with the design standards applicable to its roadway classification, such as the permitted maximum (6-8%) and minimum (0.1% - 0.5%) grade/profile for the road.

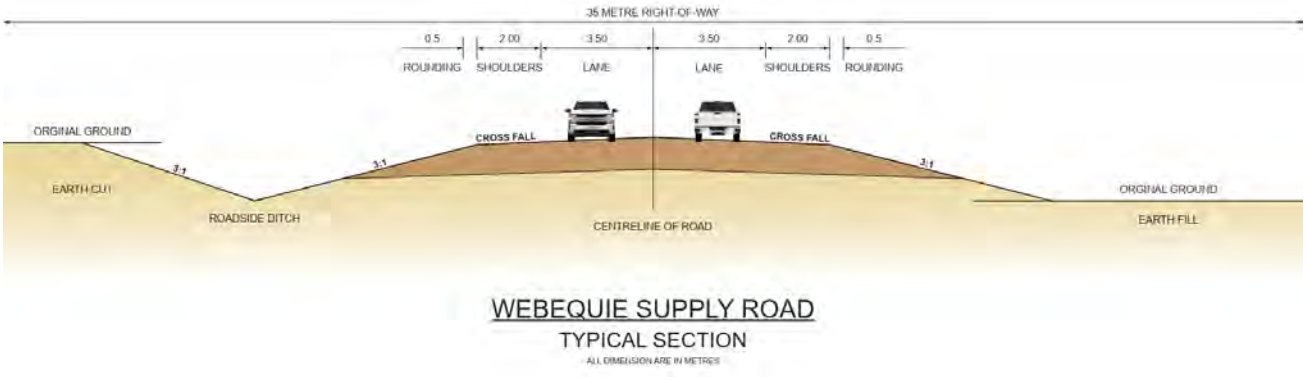
Detailed information on the horizontal and vertical alignments for the WSR are presented in the data sheets and plan and profile design drawings contained in Appendix D-1 – WSR Preliminary Engineering Design Report.

4.3.1.2 Road Cross-Section and Cross-Fall

To accommodate the anticipated two-way traffic, including heavier industrial/commercial transport trucks, the cross-section for the WSR will consist of two travelled lanes of 3.5 m in width (2 x 3.50 m) with shoulders of 2.0 m in width for each lane (2 x 2.00 m) for a total roadway width of 11 m, excluding rounding of the shoulders (2 x 0.5 m) to the roadside ditches.

A typical cross-section for the proposed WSR is provided in **Figure 4.1**.

Figure 4.1: Typical Cross-Section for the Webequie Supply Road



For the purposes of drainage and safety of road users, the surface of the road will have a cross-fall of 4%. The cross-fall allows for draining of water off the surface of the roadway.

4.3.1.3 Road Foundation and Driving Surface

The design of the underlying subgrade material for the road foundation and its depth considered the typical vehicle types (e.g., light pick-up trucks, heavy industrial/commercial transport trucks and trailers, etc.) that are envisioned to use the WSR, including their weight/load (maximum 18-ton truck). The specific traffic mix for the WSR has been assumed as less than 25% heavy vehicles with the majority of traffic being light vehicles.

The WSR foundation consist of two different types of granular aggregate material referred to as Granular 'A' (base layer) and Granular 'B' (sub-base layer) which vary due to the gradation of material. From the assessment of soils and terrain the road alignment can be divided into two sections. The west half of the WSR in a north-south direction (upland area) exhibits "fair to good soil conditions" and east half of the road in a west to east direction (lowland/peatland area) can be characterized as "poor to very poor conditions" for building a road. For the west half of the WSR in stable soil conditions, the surface layer of the road that represents the driving surface for vehicles will be a chip seal treatment, which is similar to asphalt pavement, and consists of a tar slurry and gravel. For the east half of the road in the peatlands with poor soil conditions it is proposed the driving surface be initially gravel. During the operations phase, monitoring of the east half of the WSR in the peatlands will be conducted to assess performance/settlement, serviceability, and safety issues/concerns related to dust along the roadway. Depending on the outcome of this monitoring, the gravel driving surface may be replaced in a timeframe of approximately 3 to 5 years with a surface treatment such as chip seal treatment, or asphalt pavement. Based on the assessment completed the recommended road foundation design for the WSR, consists of the following:

West Half of Road (Upland Area):

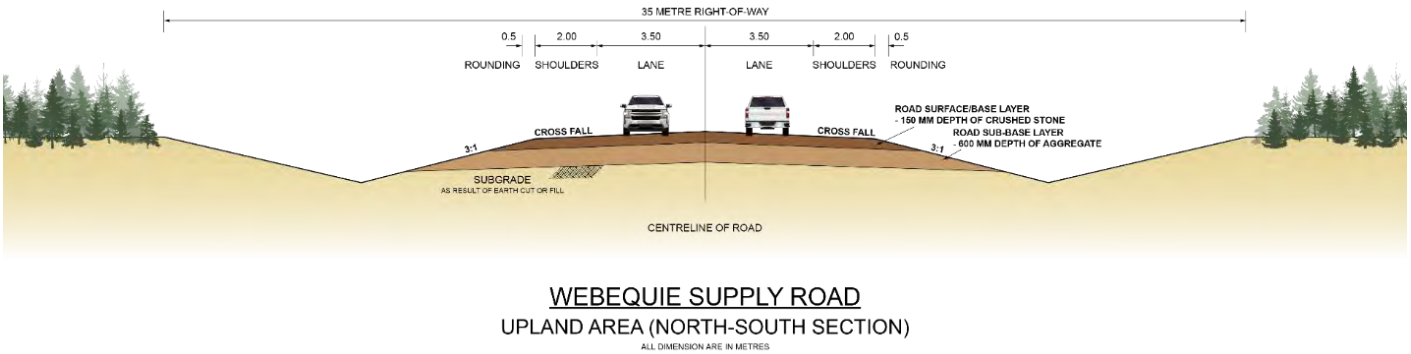
- Base/Surface Layer – Asphalt or chip seal treatment (50 - 90 mm) with underlying Granular A: 150 mm depth
- Sub-base or Underlying Layer – Granular B: 600 mm depth
- Combined Road Cover Thickness: 750 mm

East Half of Road (Lowland Area):

- Base/Surface Layer – Granular A: 200 mm depth
- Sub-base or Underlying Layer – Granular B: 800 mm depth
- Combined Road Cover Thickness: 1000 mm

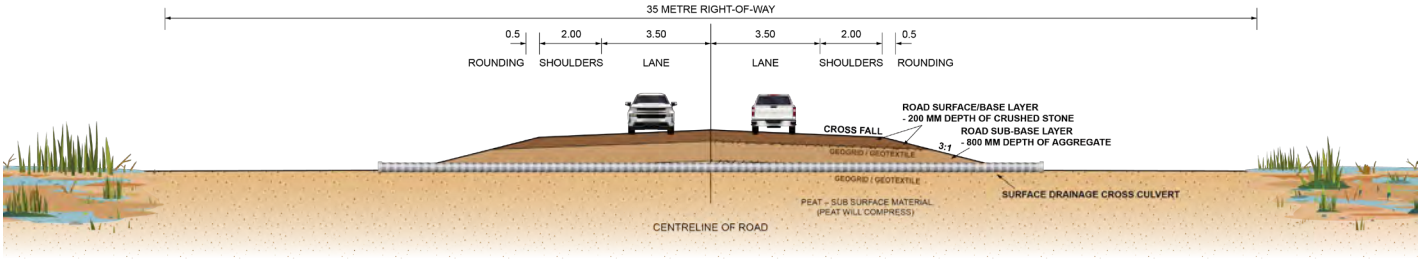
Figure 4.2 and **Figure 4.3** provide a cross-sectional view of the proposed foundation for the road.

Figure 4.2: Road Foundation in Upland Area



WEBEQUIE SUPPLY ROAD
UPLAND AREA (NORTH-SOUTH SECTION)
ALL DIMENSION ARE IN METRES

Figure 4.3: Road Foundation in Lowland Area (Peatlands)



WEBEQUIE SUPPLY ROAD
LOWLAND AREA (EAST-WEST SECTION)
ALL DIMENSION ARE IN METRES

4.3.1.3.1 Road Design in Peatlands

Peatlands (or muskeg) store large amounts of organic matter in their soils and by their nature are very weak material to build a road. Generally, peat holds water in adsorbed state and has high compressibility and low strength, and therefore the potential to cause excessive deformations and stability problems to roads. In addition to these immediate road design and construction challenges, the organic material decays over time and may result in maintenance issues. Project experience in Canada and around the world have demonstrated success in building roads in peatlands through carefully loading of materials over peat, allowing time for it to consolidate and increase in strength, and by doing so transform it into a very useable road foundation.

Building roads on peat is often referred to as building a “floating road”. A floating road in its simplest terms is a road that is constructed directly on top of the peat relying on the strength of existing peat for its support. The road does not actually “float” on the peat but rather an equilibrium builds up between the weight of the road and the strength of peat whereby the combined system comes into balance (Scottish Natural Heritage and Forestry Commission Scotland, 2010). A typical practice for engineering a floating road uses a geotextile fabric and/or geogrid layer (geosynthetics) placed on the surface of the peat before the road is constructed to give it a working platform to evenly distributed the weight/load of the material placed and provide a separation layer between the road and the peat below. However, this engineered layer does not support the road, but it does help to create the conditions to allow for the road to be supported by the peat.

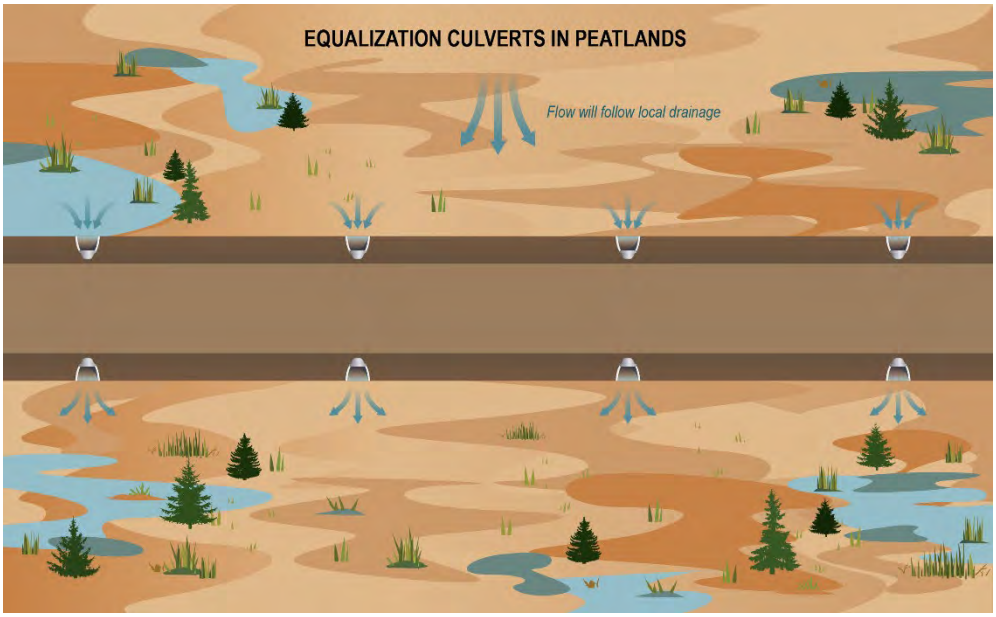
The thickness of the peat along the east half of the WSR ranges from 2 m to 4 m in depth. As the entire east half of the WSR is situated within the James Bay Lowland, the construction of the road in peatland is unavoidable, and it is not economically viable nor environmentally desirable to excavate the peat and replace it with suitable fill material. Therefore, adopting a floating road design for the Project is preferred.

The east half of the WSR (56 km in length) is typically 1.2 m in height and is to be constructed over the peatland. Based on the characterization of the peatland, aggregate material placed will compress the peat, resulting in settlement or consolidation. In this context, it is predicted that material placed may result in up to 40 +/- -% of the peat thickness compressing and having to place compensation fill to maintain the existing road grade. Studies of floating roads have found that compression percentages can be significantly reduced by use of geogrids and create a more stable road, resulting in a reduction in the amount of fill needed and transported during construction and operations. It is therefore recommended that the east half of the WSR includes the use of a geosynthetic layer (geotextile fabric and/or geogrid) as shown in **Figure 4.3**. The use of geosynthetics will not eliminate settlement, however it will result in a road that is thinner, lighter and settlement will be less than a road without geosynthetics. The proposed design will also support continuous movement of groundwater which will ensure that the hydrology characteristics of the peatlands continues to function through the use of a permeable layer of rock or select coarse aggregate that permit groundwater flow to continue. Preliminary estimates suggest that the use of geosynthetics in the road design may result in 40%+/- of the

peat thickness compressing and having to place fill to achieve the final required grade, as compared to 50% plus settlement and greater instability for a road without a geosynthetic layer. In addition, the installation of 900 mm diameter equalization culverts at intervals of 100 m to 250 m (distance to be confirmed during detail design) are recommended to support the continued movement of surface and groundwater in the peatlands as shown in **Figure 4.4**. The installation of geosynthetics is also expected to reduce potential differential settlement through spreading the aggregate load and creating a more even distribution of pressure on the peat surface, and by doing so provide improved road performance, including long term maintenance. In addition, other benefits of adopting a floating road include:

- Resulting in less compression of the underlying peat and thus have a lesser effect on local hydrology or movement of water through of the road;
- By maintaining the surface layer of vegetation, and fact that no excavation is planned, it is likely the basic ecology of the area will not be affected to the same degree as would occur if traditional construction excavation methods were adopted;
- Reduction of the environmental effect of construction activities and haulage of material by truck (e.g., dust, usage, noise) to the greatest extent possible due to the lower quantities of aggregate required; and
- Lower greenhouse gas emissions than an equivalent excavated road, where carbon and methane is released through excavation of existing peat.

Figure 4.4: Equalization Culverts in Peatlands



The floating road design for the east half of the WSR in peatlands will be further examined in the Detail Design Phase of the Project. In accordance with good design practices for floating roads further investigations and assessment will be conducted that include, but not limited to, the following:

- Soil, groundwater and ground surveys, sampling and testing (e.g., drilling, monitoring wells) to further characterize the peat, local hydrology and groundwater flow;
- Identifying appropriate value for the in-situ peat strength;
- Selection of specific type(s) and distribution of geosynthetics (e.g., 1 or 2 geogrids) that allow for effective interlock with aggregate size and shape and that produce a stiff road structure;
- Estimates of traffic loading during construction and operations;

- Confirmation of the appropriate distancing for equalization culverts;
- Development of appropriate construction sequencing and production rates for construction (i.e., methods and speed). Ideally peat should be loaded slowly to allow for the underlying peat to respond to the increasing load and be given sufficient time to consolidate and gain strength rather than cause shear/weakness. If a floated road is placed too quickly so as to approach, or exceed, the strength of the underlying peat then failure can occur; and
- Development of engineering controls and monitoring program to verify that consolidation is occurring as predicted, including risk management strategies to reduce potential for fill to cause shear stress.

4.3.1.4 Roadside Safety

The preliminary engineering design for the WSR has considered appropriate roadside safety treatments and design elements as specified in the MTO Roadside Design Manual (May 2020). The emphasis on roadside safety design emerged in North America during the 1960s and all new roads or expansion of existing roads carefully consider the safety treatments and road geometric design to maximize safety to road users. Past studies have found that collisions that occur within the roadside environment typically involve a vehicle departing the roadway and subsequently impacting a stationary obstacle (e.g., tree, utility pole, embankment, bridge, etc.), or encountering a situation (e.g., wildlife - moose) or feature that result in a vehicle losing control or rolling over.

Based on the road classification of the WSR and MTO design standards, roadside safety elements have been integrated into the design, with specific focus on the roadside geometry and cross-section for the road. This includes consideration of such aspects as the horizontal alignment at road curves; vertical alignment at road dips; slopes at roadside ditches; barriers systems (e.g., guiderail); and sight distance along the road to provide drivers with sufficient time to identify and appropriately react to all elements of the road environment. It is proposed that all vegetation (trees) be cleared within the 35 m wide ROW, with the exception of the peatland area (56 km length), to accommodate a “Clear Zone” for use by errant vehicles. A Clear Zone is an unobstructed, traversable area beyond the road that allows a driver to stop safely or regain control of a vehicle that has left the roadway. The clear zone would be accommodated within the 35 m wide ROW for the WSR and its ultimate width for the WSR will be determined in the future design phase of the Project. The clear zone will be maintained during operations of the road.

All roadside safety features and design elements are to be further considered and confirmed in the detail design phase of the Project and will comply with the MTO Roadside Design Manual.

4.3.1.5 Maintenance Turnaround Areas and Maintenance/Rest Areas

Maintenance turnaround areas are proposed along the WSR to allow for maintenance equipment/vehicles during the operations phase of the Project to safely turn around and proceed in the opposite direction in which they came on the roadway. For example, during operations this will include the use of large grading equipment (i.e., graders) to allow for resurfacing and repair of the road, operation of equipment (i.e., large trucks) for ploughing of snow or spreading of sand as part of winter maintenance activities. Maintenance turnaround areas are recommended to be located along the WSR at alternating directional intervals of every 25 km (total of approximately 4) as shown on the preliminary design drawings contained in Appendix D-1 – WSR Preliminary Engineering Design Report. Maintenance turnaround areas are intended solely for the use by operations and maintenance staff and equipment and entrances will be gated with a lock to prevent unauthorized access.

Due to the length and remote nature of the WSR, it is also proposed that “rest areas”, or respite areas, be constructed along the road. The purpose of rest areas is to enhance safe travel and provide more comfort for road users who may want to pull-off to allow for other vehicles to pass, or to stop due to inclement weather, vehicles issues or to rest. Rest areas are also proposed to include a maintenance area for storage of mobile equipment and spill management materials. These rest/maintenance areas are recommended to be located along the WSR at alternating directional intervals of every 50 km (total of approximately 2) as shown on Figure 1.2 in the Section 1 – Introduction of this

document and in the preliminary design drawings contained in Appendix D-1 – WSR Preliminary Engineering Design Report. Where feasible, rest areas have been selected to coincide with the footprint of temporary construction camp locations that are to be decommissioned in order to minimize environmental effects. Signage to advise road users of upcoming rest areas and how to access them will be included in the road design. In general, the conceptual design of rest areas has followed the guidance in the MTO *Northern Ontario Rest Areas Design and Implementation Guidance* document (2018).

Figure 4.5 shows a typical design layout for rest and maintenance areas proposed for the WSR. The design of the rest/maintenance areas are configured to allow for road user vehicles to safely enter and exit the areas, provide a location for parking and also space for storage of equipment and materials for use by operation and maintenance staff only.

Figure 4.5: Typical Rest/Maintenance Area – Aerial View

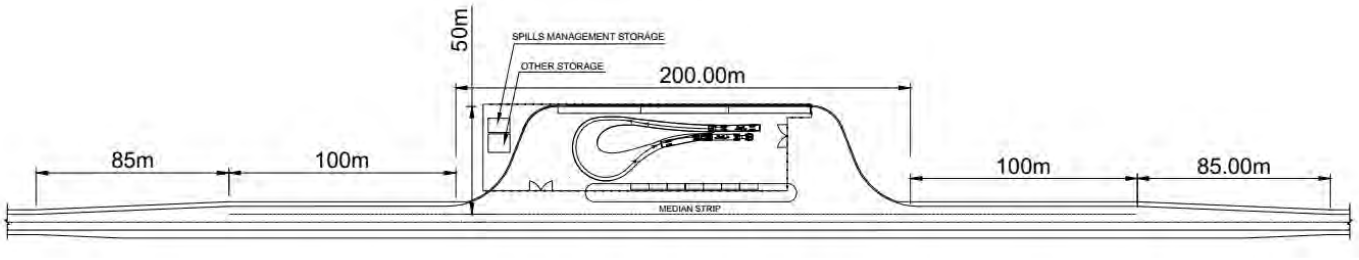
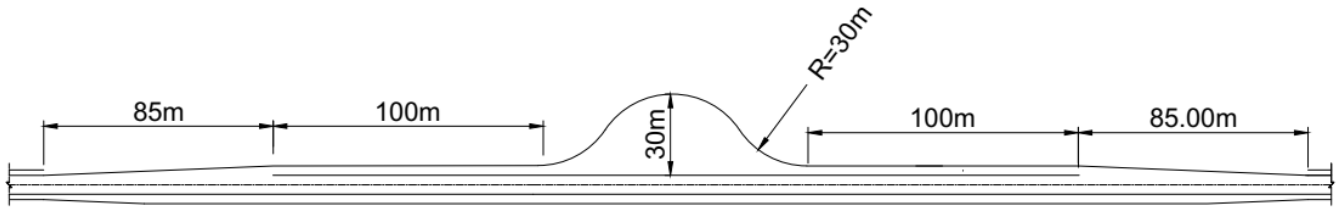


Figure 4.6 shows a typical design layout for a maintenance turnaround area proposed for the WSR. The design of maintenance turnaround areas is configured to allow for maintenance equipment and vehicles to safely enter, exit and turnaround.

Figure 4.6: Typical Maintenance Turnaround Area – Aerial View



To accommodate rest/maintenance areas and maintenance turnaround the ROW for the road will need to be expanded to a maximum width of 77 m, as opposed to the typical ROW width of 35 m. The maximum ROW width will be at the centre of the areas and then tapered to the standard 35 m ROW width over a distance of approximately 470 m.

The ultimate location and configuration of the rest/maintenance areas and maintenance turnarounds for the WSR will be determined in the future Detail Design Phase of the Project, with input from Webequie First Nation and other Indigenous communities.

4.3.1.6 Illumination

No continuous full illumination (i.e., light poles) along the WSR is proposed due to anticipated traffic volumes (< 500 vehicles per day on average) and practicality and/or availability of a stable power source and connection. In addition, at this time, the WSR does not meet the warrant (need) for illumination in accordance with MTO design standards (MTO Directive PLNG-B-05).

Illumination is expected to be limited to low level light fixtures at temporary construction camps, permanent maintenance and rest areas, aggregate pits/quarries and at the MSF for the purposes of safety and security. There may be illumination at intersections if warranted and this will be confirmed in the future during detail design phase of the Project.

4.3.1.7 Intersections

No road intersections are currently proposed for the WSR and therefore are excluded from the EA/IA. However, the need for road intersections for example at the east and west terminus of the road will be assessed further in the future Detail Design Phase of the Project with consideration of mineral exploration and mine development and connection to other planned roads (i.e., Northern Road Link). Where road intersections are needed, they will be designed in accordance with Transportation Association of Canada (TAC) Geometric Design Standards and the MTO/TAC supplemental standards used for municipal roads and provincial highways.

4.3.1.8 Fencing and Signage

Based on the remote nature of the Project no fencing is proposed along the ROW limits of the WSR to control or restrict access to the corridor. The need and location of signage (e.g., weather conditions, posted speed limit, awareness of wildlife habitat or crossing, upcoming rest areas, etc.) will be determined in the Detail Design Phase of the Project.

4.3.2 Drainage and Stormwater Management

Drainage and stormwater management control are the means by which water resource concerns (e.g., flooding, water quality and erosion, etc.) from the Project can be addressed. Through hydrological and hydraulic modelling and analysis, the drainage design for the WSR includes the following objectives:

- Water quality is to be protected;
- Water crossings (i.e., watercourses, lakes) will not result in adverse physical change (e.g., erosion);
- There will not be any increase in potential flooding (water quantity/flow conveyance); and
- Diversity of aquatic life and opportunities for land and resource users will be maintained.

The WSR includes the following drainage and stormwater management elements:

- Roadside Ditches;
- Waterbody Crossings; and
- Cross-culverts in Peatlands (refer to **Section 4.3.1.3.1**).

The design of the water management infrastructure to divert, control, collect, maintain and/or discharge surface drainage have taken into account the remote nature of the Project, the site-specific drainage conditions, wetland functions and water balance in the project study areas and MTO Drainage Design Standards for designing drainage systems for provincial highways.

4.3.2.1 Roadside Ditches

Roadside ditches are used to convey drainage from the roadway and outlet to a drainage feature (e.g., waterbody).

The west half of the WSR is located in an upland area with mineral soils and will include roadside ditches that are sized to convey a minimum 10-year Minor System Design Flow (i.e., probable rainfall event within a 10-year period). The Minor System consists of the components of the drainage system that are designed to carry runoff generated by the more frequent storm events and include such elements as swales, ditches, and inlets. In general, the roadside ditches are designed to carry runoff from the ROW as well as from local external catchment areas that naturally drain to the ROW. To meet water quality objectives Low Impact Development techniques will be considered in the Detail Design Phase of the Project, such as Enhanced Grass Swales/Ditches that are designed to convey, treat and attenuate stormwater runoff. Simple grass channels or ditches have long been used for stormwater conveyance, particularly for road drainage. Enhanced grass swales incorporate design features such as modified geometry and check dams that improve the contaminant removal and runoff reduction functions of simple grass channel and roadside ditch designs.

The east half of the WSR is located in a lowland area (peatland/muskeg) of very low differential in grade with shallow depth to waterlogged soils, and therefore no roadside ditches are proposed to be constructed in this area. Instead, it is proposed that runoff from the road and adjacent peatland follow the natural existing drainage path and be conveyed through a series of cross-culverts so that surface water drainage is equalized on both sides of the road, and thereby minimize any change to the water table. Further detail on the cross-culverts to maintain local hydrology are described in **Section 4.3.1.3.1**.

The Major (Drainage) System provides an overland flow route for external runoff exceeding the capacity of the Minor System. The Major System excludes watercourse flow that is conveyed across the WSR. In the context of the WSR, the Major System includes the portion of the roadway that carries the flow in excess of the capacity of the Minor System and is designed to convey a minimum 100-year Major System Design Flow (i.e., probable rainfall event within a 100-year period) in accordance with MTO Drainage Design Standards. As desirable standard water will not extend beyond the road ROW, and as minimum standard any flow beyond ROW will not increase the existing extent of flooding.

4.3.2.2 Waterbody Crossings – Bridges and Culverts

The proposed WSR will require 31 waterbody crossings, which include 30 watercourses and 1 lake. To cross the waterbodies, 6 bridges are proposed to be constructed over major waterbodies and 25 culverts of various types (e.g., open bottom arch culverts and corrugated steel pipes) are proposed to be placed at minor waterbodies. No permanent watercourse realignments are proposed at this time, however temporary flow diversions will be required to accommodate construction of bridges and culverts. The proposed locations of water crossings are shown in Figure 1.2 in Section 1 – Introduction and Figure 7.2 in Section 7 – Surface Water. The locations (UTM coordinates) of each water crossing and the proposed type of structure to be installed are summarized in **Table 4-2**. Additional descriptions and characteristics of these water crossings are provided in Section 7 – Surface Water, Section 10 – Fish and Fish Habitat and Appendix F – Natural Environment Existing Conditions Report. Preliminary engineering design drawings for the bridges and culverts proposed at water crossings are provided in Appendix D-1 – WSR Preliminary Engineering Design Report.

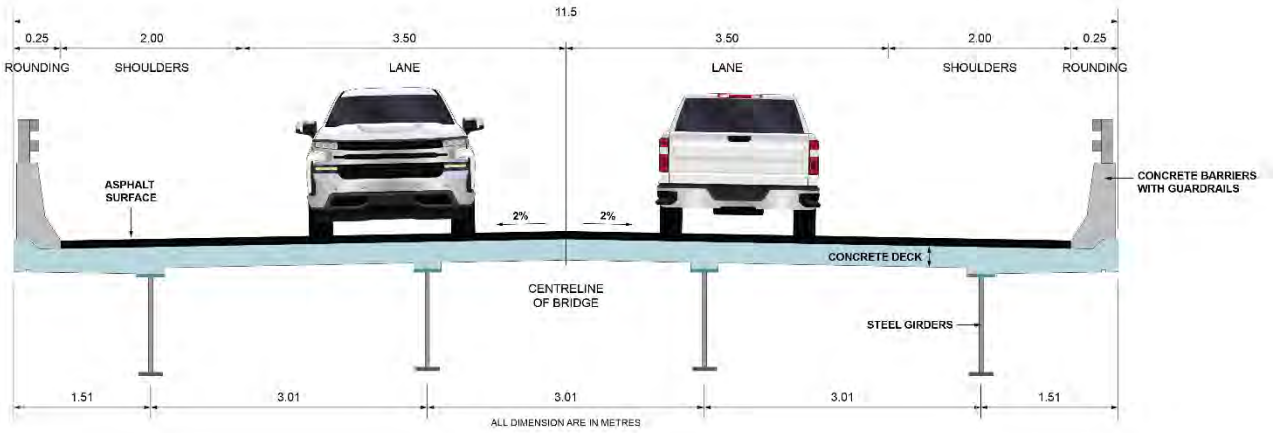
Table 4-2: Waterbody Crossings and Proposed Structure Type for the Webequie Supply Road

Water Crossing Identification (ID)	Watercourse Name	Location (NAD 1983 UTM Zone 16N Coordinates)		Proposed Structure Type	Width/Span of Waterbody Crossing (m)
		Northing (m)	Easting (m)		
WB-1	Winisk Lake	5868060.3029	477463.9021	Six (6)-Span Composite Steel-Concrete Bridge with Integral Abutments	253.5
WC-1A	n/a	5870366.0984	482107.6100	Corrugated Steel Pipe	1.3
WC-1B	n/a	5869578.7250	483200.6741	Corrugated Steel Pipe	1.3
WC-2	n/a	5862519.2334	487910.4355	Open Bottom Steel Arch (box) Culvert	12.9
WC-2A	n/a	5862875.1050	489366.7643	Corrugated Steel Pipe	1.3
WC-3	Winiskisis Channel	5862106.7629	490278.5072	Twin-Span Composite Steel-Concrete Bridge with integral abutments	48
WC-4	n/a	5856906.7001	489137.6952	Corrugated Steel Pipe	1.3
WC-5	n/a	5844977.6237	495689.7159	Steel Arch Culvert	3.4
WC-6	n/a	5844532.1314	496845.2743	Open Bottom Steel Arch (box) Culvert	10.0
WC-6A	n/a	5844434.2978	497188.3770	Corrugated Steel Pipe	1.3
WC-7	n/a	5844001.4729	499121.1426	Open Bottom Steel Arch (box) Culvert	12.0
WC-8	n/a	5844468.8032	502602.3194	Open Bottom Steel Arch (box) Culvert	3.7
WC-9	Tributary of the Ekwan River	5846808.7648	506056.0277	Corrugated Steel Pipe	1.9
WC-10	Ekwan River	5847188.3708	508108.9108	Single-Span Composite Steel-Concrete Bridge with integral abutments	18
WC-11	Tributary of the Ekwan River	5847269.6357	508773.2384	Open Bottom Steel Arch (box) Culvert	3.7
WC-12	Tributary of the Ekwan River	5847456.4262	512119.8216	Open Bottom Steel Arch (box) Culvert	3.4
WC-13	Tributary of the Ekwan River	5848262.9427	516056.1776	Single-Span Composite Steel-Concrete Bridge with integral abutments	22.8
WC-14	n/a	5846905.8266	519434.2835	Open Bottom Steel Arch (box) Culvert	10.0

Water Crossing Identification (ID)	Watercourse Name	Location (NAD 1983 UTM Zone 16N Coordinates)		Proposed Structure Type	Width/Span of Waterbody Crossing (m)
		Northing (m)	Easting (m)		
WC-15	Tributary of the Ekwan River	5846681.8101	520718.0804	Open Bottom Steel Arch (box) Culvert	4.0
WC-16	Tributary of the Ekwan River	5846570.6143	521781.7578	Open Bottom Steel Arch (box) Culvert	3.4
WC-17	Tributary of the Muketei River	5845450.8902	526263.6573	Open Bottom Steel Arch (box) Culvert	3.0
WC-18	Tributary of the Muketei River	5845114.5974	528328.3791	Open Bottom Steel Arch (box) Culvert	3.4
WC-19	Muketei River	5844835.6356	529811.5942	Open Bottom Steel Arch (box) Culvert	16 m
WC-20	Tributary of the Muketei River	5844813.3203	531692.1877	Open Bottom Steel Arch (box) Culvert	3.7
WC-21	Muketei River	5846491.4554	536650.8388	Open Bottom Steel Arch (box) Culvert	19.5
WC-22	Tributary of the Muketei River	5846652.5107	537088.0225	Steel Arch Culvert	3.7
WC-23	Tributary of the Muketei River	5847141.8954	540433.1266	Open Bottom Steel Arch (box) Culvert	3.0
WC-24	Tributary of the Muketei River	5844953.2996	542305.0391	Open Bottom Steel Arch (box) Culvert	4.0
WC-25	Tributary of the Muketei River	5844279.6078	543342.3615	Open Bottom Steel Arch (box) Culvert	3.7
WC-26	Muketei River	5844019.7787	545629.1865	Single-Span Composite Steel-Concrete Bridge with integral abutments	32.9
WC-27	Tributary of the Ekwan River	486997.8163	5852551.6266	Single-Span Composite Steel-Concrete Bridge with integral abutments	40.0

The bridge type recommended at six of the water crossings for the WSR is a “Composite Steel-Concrete Bridge”. It consists of a substructure comprised of the foundations, abutments and piers, all supporting the superstructure, which consists of the steel plate girders, the deck and the side barriers with railings. The deck supports the roadway surface and will be constructed with reinforced concrete. The steel plate girders will support the deck spans between abutments and piers. The use of steel allows for longer spans in comparison to precast concrete girders and have the advantage of being transported to site in short sections and the spliced together as necessary. **Figure 4.7** and **Photograph 4-1** illustrate examples of this type of bridge structure.

Figure 4.7: Typical Composite Bridge Cross-Section



Photograph 4-1: View of Typical Composite Steel-Concrete Bridge

At 17 of the waterbody crossings for the WSR, it is recommended that an “Open Bottom Steel Box Culvert” be constructed. Open bottom steel box culverts, herein referred to as Open Bottom Steel Arch Culverts, consist of corrugated steel and can be fabricated for a full arch width over a waterbody or can be assembled and bolted together with plate sections at time of construction. The open bottom arch structure provides high compression, by transferring the road load to the surrounding soil along the circumference of the structure. **Photograph 4-2** illustrates the construction of an open bottom steel arch culvert complete with footings. **Photograph 4-3** illustrates a completed open bottom steel arch culvert in service.

Photograph 4-2: Open Bottom Steel Arch Culvert Under Construction

Photograph 4-3: Completed Open Bottom Steel Arch Culvert

At eight of the waterbody crossings for the WSR, it is recommended that Corrugated Steel Pipe (CSP) or Steel Arch Culvert be constructed, where watercourses are minor and are less than 4 m in width. CSPs are commonly used in road infrastructure projects and combine strength, lightweight, flexibility, and adaptability. Steel arch culverts are elliptical in sharp and consist of corrugated steel similar to a CSP. Both CSPs and steel arch culverts can be bolted and assembled at site based on the required water crossing length and width. As well, both CSPs and steel arch culverts will be embedded, or counter sunken, below the existing stream bed on fish bearing streams in order to maintain fish passage in accordance with agency requirements (e.g., Department of Fisheries and Oceans Canada) and MTO Drainage Design Standards (WC -12 Fish Passage through Culverts). **Photograph 4-4** illustrates a typical CSP and **Photograph 4-5** illustrates a typical steel arch culvert in service.

Photograph 4-4: Typical Corrugated Steel Pipe

Photograph 4-5: Typical Steel Arch Culvert

4.3.2.2.1 Structure Foundations

The design and selection of the foundation for bridges and culverts was determined based on existing terrain and soils conditions, and results of the geotechnical investigations completed to date. Where dense till or bedrock or dense till over bedrock is encountered at shallow depths, shallow foundations for structures at waterbody crossings may be used, which involve placing structures directly on the dense till, bedrock or dense till over bed rock, or on engineered fill over the ground conditions. For major waterbody crossings where peat or soft soils are present, driven steel piles, concrete piles, or bored piles may be preferred for construct the supportive foundations for structures. Bored piles may also be used for supports over larger waterbody crossings, such as the Winisk Lake and Muketei River. At minor watercourse crossings where there is either peat or soft soils over dense till, these materials may be replaced with suitable engineered fill to place the culverts over the prepared ground.

To construct foundations for bridges and culvert groundwater dewatering may be required at select waterbody crossings, including temporary diversion of flow using cofferdams, temporary watercourse realignments or dam and pump method. Where surface runoff is managed or groundwater dewatering occurs at waterbody crossing sites, erosion and control measures (e.g., distilling basins, geotextile filter bags) will be used for treatment prior to discharge to the environment. Further details on water management during the construction phase are described in **Section 4.3.2**.

Further details on the proposed conceptual preliminary foundation design for bridges and culverts are presented in Appendix D-1 – WSR Preliminary Engineering Design Report. The ultimate selection of the foundation for structures will be determined in the Detail Design Phase of the Project and results of future geotechnical investigations to characterize subsoil surface conditions at each waterbody crossing.

4.3.2.2.2 Structural Considerations and Enhanced Drainage Design Standards for Water Crossings

In order to optimize the categorization of waterbody crossings and select the proposed crossing structure type, the Project Team considered numerous factors such as constructability and remoteness of location, maintenance life cycle of structure types, hydrology, biophysical characteristics of waterbodies (e.g., soil conditions, width of waterbody, fish/fish habitat sensitivity) and navigation of waterways by vessels/boats. In addition, this considered feedback received from consultation with Indigenous communities, the public, government agencies, and stakeholders.

All culverts and bridges for the WSR have been sized with a hydraulic opening that exceeds the minimum MTO Drainage Design Standards (WC-1 Design Flows – Bridges and Culverts). The reason for exceeding the standards for sizing of structures is to mitigate the risk of potential failure from extreme weather events (e.g., flooding), that could lead to the closure of the road and associated significant time period to allow for repairs to be completed to re-open the road, based on its remote location. Minimizing the potential risk of disrupting access to external community services (e.g., health) and supplies are considered an important decision-making factor based on the remote location of Webequie First Nation and expected reliance on the road, particularly in the potential future scenario where other road projects proceed (i.e., Northern Road Link and Marten Falls Community Access Road) and connect the WSR to the provincial highway network. Therefore, all water crossings are to be sized to convey the 100-year design flow (probable rainfall event within 100-year period). In addition, the sizing of structures has included consideration of the potential effects of climate change on the Project projected over a 75-year life cycle (2100), which from the review of Ontario and Canada specific climate models could result in an increase in precipitation of up to 40% beyond current metrological conditions.

In accordance with MTO Drainage Design Standards (WC-7 Culvert Crossings on a Watercourse) a minimum Freeboard for culverts and bridges of greater or equal to 1 m has been applied. Freeboard is a factor of safety used in the design of bridges and culverts that represents the vertical distance between the High-Water Level and the lowest point of the road profile at the edge of the travelled lane.

Structures over Navigable Waterways

A navigable water is a body water that is used, or where there is a reasonable likelihood that it will be used by vessels, for any part of the year as a means of transport or travel for commercial or recreational purposes, or as a means of transport or travel for Indigenous Peoples of Canada exercising their rights recognized and affirmed by section 35 of the *Constitution Act*, 1982. There are no navigable waterways as defined in the Schedule under the *Canadian Navigable Waters Act* in the project study areas. However, from engagement with Indigenous communities and stakeholders (e.g., tourism outfitters) and Indigenous Knowledge information received to date, several waterbodies in the project study areas are considered navigable waterways as identified by Webequie First Nation and other Indigenous communities who either historically or currently use these waters to exercise their rights.

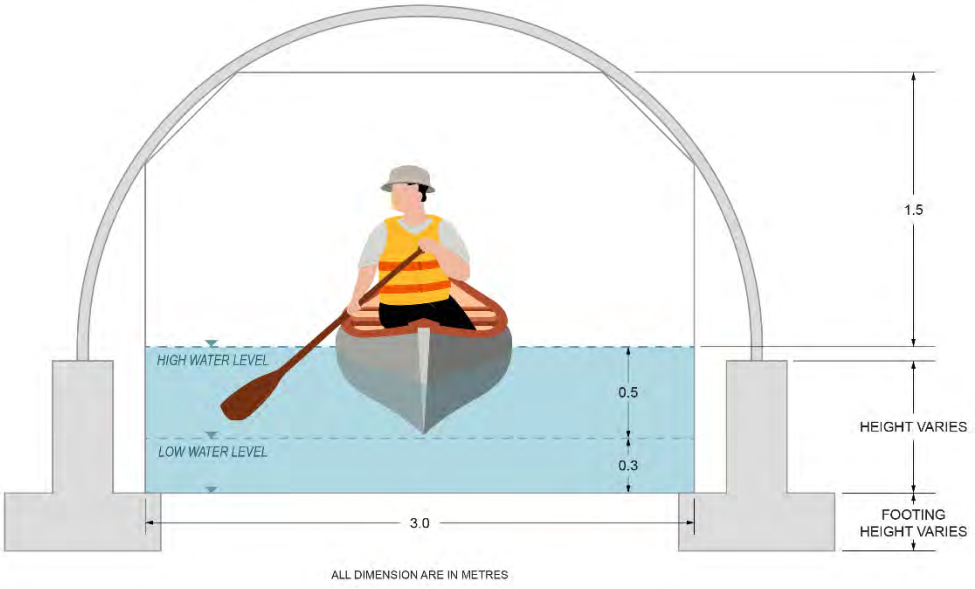
The navigable waterways currently identified to cross the WSR are presented in **Table 4-3** and shows their locations.

Table 4-3: Crossings of Navigable Waterways

Waterbody Identification	Waterbody Name	Navigational Clearance Horizonal (span) and Vertical (height) Opening
WB-1	Winisk Lake	253.5 m horizontal span and 3 m vertical clearance
WC-3	Winiskisis Channel	48 m horizontal span and 3.9 m vertical clearance
WC-8	Unnamed Watercourse	3.3 m horizontal span and 1.7 m vertical clearance
WC-11	Tributary of Ekwan River	3.3 m horizontal span and 1.7 m vertical clearance
WC-13	Tributary of Ekwan River	22.8 m horizontal span and 1.5 m vertical clearance
WC-21	Tributary of Muketei River	19.5 m horizontal span and 4.0 m vertical clearance
WC-26	Muketei River	32.9 m horizontal span and 3.0 m vertical clearance
WC-27	Tributary of the Ekwan River	40.0 m horizontal span and 3.0 m vertical clearance

To accommodate potential use of navigable waterways, the design of culverts and bridges has made allowance for a minimum navigational clearance, or opening, for small motorized and unmotorized watercraft passage. The minimum navigational opening to accommodate small vessels is a 3.0 m horizontal distance and 1.5 m vertical clearance from the assumed variation of the high and low surface water levels and is illustrated in **Figure 4.8**. The design of all bridges and culverts on navigable waterways exceed the minimum navigational horizontal and vertical clearance requirements for small vessels as shown in **Table 4-3**. For other waterbody crossings currently not identified as navigable waterways a precautionary approach to potential future use has been considered and applies the minimum navigational clearance to the design of culverts and bridges, where practical.

Figure 4.8: Navigational Clearance at Culverts for Small Vessels



4.3.3 Temporary and Permanent Supporting Infrastructure

Temporary and permanent supportive infrastructure is required for the construction and operation and maintenance activities of the Project. These infrastructure components are summarized in **Table 4-4** and are presented by project phase to differentiate between temporary and permanent features.

Table 4-4: Temporary and Permanent Support Infrastructure

Support Infrastructure Components	Construction (Temporary)	Operations * (Permanent)
Aggregate/Rock Source Areas (Pits and Quarries)	✓	✓
Access Roads	✓	✓
Construction Camps with Laydown/Storage Areas for Equipment, Materials and Maintenance	✓	
Power Supply and Communications	✓	✓
Maintenance and Storage Facility		✓
Storage of Fuels, Explosives and Wastes	✓	✓

*Includes the access road between the support infrastructure component and the roadway.

A description of the supportive infrastructure is presented in the following subsections.

4.3.3.1 Aggregate/Rock Source Areas (Pits and Quarries)

The WSR is proposed to be built as close as possible to the natural terrain contours to limit the movement and volume of earthworks and aggregate material required for the Project. In addition, temporary supportive infrastructure such as construction camps with laydown/storage areas and access roads will also be graded in a manner to minimize the volume of material needed during construction. Naturally occurring earth or till deposits in the project study areas (sandy to sandy silt material) are to be used as engineered fill for the subgrade of the road. Aggregate, or sand and gravel, will be required for the construction of the road surface and to maintain and operate the WSR on an annual basis for the assumed 75-year life cycle maintenance period. As well, rock is required for erosion protection at waterbody crossings and at select other areas of the road drainage system.

The total estimated volume by type of material needed for construction and operations and maintenance of the WSR is presented in **Table 4-5**.

Table 4-5: Aggregate/Rock/Fill Requirements

Project Phase	Material Type			Total Volume of Material (m^3)
	Aggregate (m^3)	Fill (m^3)	Rock (m^3)	
Construction	1,297,000	1,551,000	1,500	2,849,500
Operation and Maintenance	2,000,000	-	5,000	2,005,000
Project Total				**4,854,500**

As part of the evaluation of alternative locations for supportive infrastructure, a number of potential aggregate/rock source areas in the project study areas were examined. Details of the evaluation of alternative aggregate sources and rationale for selection of the sites for development are presented in Section 3. Based on this evaluation two aggregate sources areas, referred to as ARA-2 and ARA-4, are recommended for development of pits and/or quarries. The locations of ARA-2 and ARA-4 are presented in **Figure 4.9** and **Figure 4.10**. The following is a summary of the physical site characteristics at ARA-2 and ARA-4 with regards to the quality and volume of material to be extracted for the Project. Further details for these sites are presented in the WSR Exploration of Potential Aggregate Development Sites Report (July 2020) contained in Appendix D-2 – WSR Exploration of Potential Aggregate Development Sites Report.

4.3.3.1.1 Aggregate Source Area ARA-2

ARA-2 is situated and intersects the north to south section of the preferred route for the WSR and is adjacent to a north-northeast trending unnamed lake. The site is located on Crown land and there are no existing human-made features or building/structures on or near the site. Vegetation at the site is primarily coniferous forest with swamp thicket located at the shoreline area of the unnamed lake. The site consists of an elevated large landform area (refer to cross-sections E to I, **Figure 4.9** and several small hills isolated along a north-trending ridge (refer to cross-sections A, B, C and D, **Figure 4.10)**. The isolated smaller areas within the ARA-2 site were found to contain sand and/or gravel present, as well as bedrock beneath. However, these areas are not considered collectively to represent a significant volume of material for extraction and would require a network of access roads to connect the areas, and as such are excluded at this time as potential sources within the ARA-2 site. Access to ARA-2 will be from the preferred route for the WSR as it is developed, and therefore there is no temporary access road required from the road corridor to the site.

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WC-2A

Camp 2A

WC - 3

Section A

Section B

Section C

Section D

Section E

Section F

Section G

Section H

Section I

Webequie First Nation

Legend

- Preliminary Recommended Preferred Route
- Cross Section
- Recommended Aggregate/Rock Source Area
- Local Study Area (LSA is 500 m from Aggregate/Rock Source Area and 1 km from Preferred Route)
- Waterbody Crossing
- Recommended Construction Camps
  *Camp 2-A is proposed to include permanent Maintenance and Storage Facility (MSF) for operations of the WSR.
- Webequie First Nation Reserve
- Provincial Park

WSR WEBEQUIE SUPPLY ROAD

0 0.325 0.65 Km

Webequie Supply Road (WSR)

Location of Aggregate Source Area ARA-2

Figure Number:	REV:
4.9	PA

Client:	Project Number:	Date:
Webequie First Nation	661910	2/27/2024

DSC	DRN	CHK	APP
	AD	CW	CW

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

SIZE 11X17

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

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In the elevated large landform proposed for development, cross-section E is through a sand ridge standing up to 4.5 m above the surrounding terrain. Sand was observed in several locations along the length of this ridge. Terrain and soil investigations in this area revealed fine to very coarse sand with trace fine gravel. Sections F and G extend through the central part of the deposit and found bedrock was exposed along the northwest edge of the complex as well as in a local topographic high northwest of the complex. Section F is taken as indicating depth to bedrock in that location and found clayey silt and very fine sand grading down to fine to medium sand with some silt. Many locations in the south half of the complex show boulders at the surface. Overall, the terrain and soil investigations (cross-sections E to I, **Figure 4.9**) revealed a mixture of materials that include bedrock, sand, sand and boulders, gravel, till, and marine sandy mud.

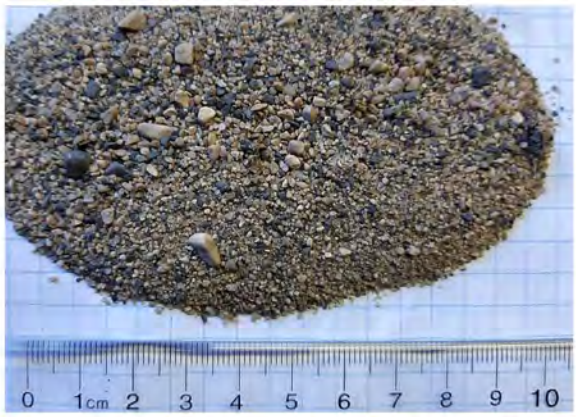
The volume of material available at the elevated large landform within ARA-2 is presented in **Table 4-6**. In this table, volumes are presented as a function of the depth to which mining, or extraction of material, is completed. The unnamed lake in this area had a water level in the range of 191.0 m to 191.6 m elevation at the time of the LiDAR survey in 2019. Given these water surface elevations, a conservative estimate of available material has been made by assuming that no mining would be done below the lake water level elevation of 193 m in order to mitigate against potential flooding into the aggregate pit/quarry. In addition, the development of this aggregate/rock source area will include retaining an existing vegetation buffer zone of a minimum of 100 m in width from the unnamed lake. Although it may be possible to mine below that lake water level with special drainage provisions, a more detailed study in the Detail Design Phase of the Project is recommended to confirm and assess feasibility. Also included in **Table 4-6** are reduced volumes based on assumed percentages of spoil within the complex. It is assumed that the marine sandy muds and perhaps some of the till will represent spoil, and spoil volumes may exceed those presented in the table. In addition, organic material would also contribute to the percentage of spoil within the complex.

Table 4-6: Volume of Aggregate Material at ARA-2

Lower-Bound Elevation Defining Volume (m)	Volume Reduced Based on Percentage of Spoil Within Complex							
	Volume (m^3)	Surface Area (m^2)	5%	10%	15%	20%	25%	30%
192	1,764,947	519,714	1,676,700	1,588,452	1,500,205	1,411,958	1,323,710	1,235,463
193	1,276,375	454,126	1,212,556	1,148,738	1,084,919	1,021,100	957,281	893,463
194	857,139	368,261	814,282	771,425	728,569	685,712	642,855	599,998
195	527,977	287,628	501,578	475,179	448,780	422,381	395,983	369,584
196	271,906	203,413	258,311	244,716	231,120	217,525	203,930	190,334
197	101,302	123,408	96,237	91,172	86,107	81,042	75,977	70,912
198	21,519	32,308	20,443	19,367	18,291	17,215	16,139	15,063
199	4,298	6,535	4,083	3,868	3,653	3,438	3,223	3,008
200	462	1,080	439	416	393	370	347	323

Based on potential spoil of material, documented groundwater level at the site and approach of no mining below the elevation of 193 m, the volume of aggregate and bedrock aggregate expected to be feasible to extract at ARA-2 is estimated to be approximately between 893,463 m^3 to 1,276,375 m^3. Based on this assumption the total surface area proposed for development at ARA-2 is approximately 45.41 hectares (ha).

Visual examples of sand samples obtained within the ARA-2 complex are shown for reference in the photograph exhibits below.



Sand and Fine Gravels at ARA-2

Fine to Medium Sand

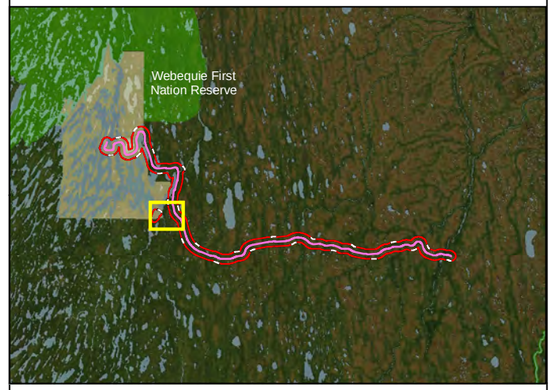
4.3.3.1.2 Aggregate Source Area - ARA-4

ARA-4 is a large ridge located southeast of Winisk Lake and is approximately 5 km west of the WSR (refer to **Figure 4.10**. ARA-4 is located on Crown land and on Webequie First Nation Reserve lands under federal jurisdiction. Vegetation at the site is primarily coniferous forest with some areas of coniferous swamp and there are no existing human-made features or building/structures on or near the site. ARA-4 is among the largest glaciofluvial landforms mapped in the area and offers one of the largest potential sources of sand and gravel material. From the air, the landform appears heavily covered with forest, and the types of trees present indicate a thin layer of organics over mineral soils and sediment are present at the site. Based on the available topographic data, the central part of the ridge stands in the order of 25 m high above the surrounding low-relief.

From the soil and terrain investigations completed, ARA-4 is considered a significant reserve of sand and gravel. Groundwater monitoring wells drilled at site were observed to be dry during the 2020 and 2021 monitoring period, suggesting the management of groundwater is unlikely to be a concern during the mining/extraction of materials at the site.

Legend

- Preliminary Recommended Preferred Route
- Permanent Access Road to Preferred Route (approx. 5.5 km)
- Recommended Aggregate Source Area
- Local Study Area (LSA is 500 m from the Aggregate Source Area and 1 km from Preferred Route)
- Waterbody Crossing
- Webequie First Nation Reserve



Webequie Supply Road (WSR)

Location of Aggregate Source Area ARA-4

Figure Number:	REV
4.10	PA

Client:	Project Number:	Date:
Webequie First Nation	661910	2/27/2024

DSC	DRN	CHK	APP
	AD	CW	CW

0 10 20 40 Km

SCALE: 1:22,000

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

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

Path: \\cor01\PROJECTS\E&W\Projects\661910 - Webequie First Nation Supply Rd\40_Execution\45_GIS_Dwgs\MXD\EARIS\Project_Description\661910_WSR_ALT_ARA4Deposit_0001_0002.mxd

The volume of potential material available at ARA-4 is presented in **Table 4-7**. In this table, volumes are presented as a function of the depth to which mining, or extraction of material, is completed. Similar to ARA-2, the volume reductions are included in the table to provide a possible range of volumes that account for various percentages of spoil within the complex. The volume data were computed based on the assumption that the landform is predominantly composed of sand and gravel with no more than 30% being composed of spoil.

Table 4-7: Volume of Aggregate Material at ARA-4

Lower-Bound Elevation Defining Volume (m)	Volume (m^3)	Surface Area (m^2)	Volume Reduced Based on Percentage of Spoil Within Complex					
			5%	10%	15%	20%	25%	30%
196	12,626,167	923,005	11,994,859	11,363,550	10,732,242	10,100,934	9,469,625	8,838,317
198	10,783,714	921,620	10,244,528	9,705,343	9,166,157	8,626,971	8,087,786	7,548,600
200	8,946,810	913,839	8,499,470	8,052,129	7,604,789	7,157,448	6,710,108	6,262,767
202	7,142,285	891,465	6,785,171	6,428,057	6,070,942	5,713,828	5,356,714	4,999,600
204	5,404,120	842,448	5,133,914	4,863,708	4,593,502	4,323,296	4,053,090	3,782,884
206	3,813,600	736,784	3,622,920	3,432,240	3,241,560	3,050,880	2,860,200	2,669,520
208	2,469,039	605,057	2,345,587	2,222,135	2,098,683	1,975,231	1,851,779	1,728,327
210	1,434,406	414,878	1,362,686	1,290,965	1,219,245	1,147,525	1,075,805	1,004,084
212	801,360	245,580	761,292	721,224	681,156	641,088	601,020	560,952
214	410,275	155,452	389,761	369,248	348,734	328,220	307,706	287,193
216	176,443	83,850	167,621	158,799	149,977	141,154	132,332	123,510

Mining to an elevation of 206 m at ARA-4 would yield 3,813,600 m^3 of material, and with the assumed volume available at ARA-2 would be adequate to meet the required total volume of material (4,854,500 m^3) needed for construction and operations of the Project. However, regional elevation data were used for volume calculations at ARA-4, which includes a larger margin of error as compared to the calculations made using LiDAR data at ARA-2. To account for a potential greater margin of error in the volume estimate at ARA-4, it is proposed that mining to elevation of 204 m be carried forward for the purposes of the effect assessment. Therefore, the volume of sand and gravel expected to be feasible to mine at ARA-4 based on mining to elevation of 204 m is approximately 3,782,884 m^3 to 5,404,120 m^3. Based on this assumption the total surface area proposed for development at ARA-4 is approximately 84.24 ha.

ARA-4 will provide a source of aggregate/rock material for construction of the road as well as a source of material for the assumed 75-year operation and maintenance life cycle for the Project. An access road from the preferred route is required for the development of ARA-4 during construction phase and this road would also serve as permanent access to transport of aggregate to the road during the operations phase. The access road to ARA-4 site is approximately 5.5 km in length and would require a waterbody crossing with a bridge.

Physical Activities at ARA-2 and ARA-4 and Permitting Requirements

A description of the physical activities (i.e., extraction and crushing/screening), associated with development and operation of ARA-2 and ARA-4, including types of extraction and processing equipment to be utilized are presented in **Section 4.4**. It is intended that the aggregate material at ARA-2 will be fully used for construction of the Project over a five to six year period, and that the site will be progressively rehabilitated during the construction phase. ARA-4 will be developed to provide material for construction of the road and will also serve as the permanent aggregate pit/rock quarry facility during the assumed 75-year operation and maintenance life cycle for the Project. Both pits and quarries at ARA-2 will be progressively rehabilitated, as well as be decommissioned for a final rehabilitated state. Typical progressive rehabilitation measures include establishing adequate vegetation to control erosion of any topsoil or overburden replaced at the site; implementing measures for adequate drainage at the site; and ensuring excavated pit and quarry slopes are stable.

The development of the aggregate resources at ARA-2 and ARA-4 on Crown land is subject to the requirements under the Ontario *Aggregate Resources Act* (1990) and associated regulations. To develop ARA-2 and ARA-4 on Crown land, the Proponent will require an aggregate permit. The application to obtain an aggregate permit will be initiated in the Detail Design phase of the Project and will include further supportive technical studies, information and plans to meet the requirements as stated in the *Aggregate Resources of Ontario: Technical Reports and Information Standards* (August 2020) and *Aggregate Resources of Ontario: Site Plan Standards* (August 2020). In general, this will include information such as describing existing features and environmental sensitivities, mitigation measures (e.g., noise, dust, drainage management), monitoring programs and progressive and final rehabilitation of the land.

4.3.3.2 Access Roads

Temporary and permanent access roads will be required for the construction and operations phases of the Project. During construction, a temporary access road/trail will be constructed within the ROW for WSR, along its length, to allow for vegetation clearing; and to advance construction of culverts and bridges at select water crossings and earth movement/haulage. For most part this access road will coincide with the footprint of the ultimate preferred route for the WSR, or in some cases may be located outside the road footprint but within the 35 m wide ROW. A temporary access road of approximately 5.5 km in length is also required for development of the ARA-4 aggregate source area and for hauling of material to the road ROW during the construction phase. It is also proposed that this access road be retained as a permanent access road for the operation phase of the Project to allow for aggregate material at the ARA-4 site to be used for on-going maintenance activities (e.g., gravel resurfacing of road). No temporary access roads are required for development and use of construction camps, as the camp sites are located abutting the ROW of the WSR. In addition, no access road is required for development of the ARA-2 aggregate source area, as the preferred route intersects this site. The location of the access road to the ARA-4 site is shown on **Figure 4.10**.

Access roads for construction and operations will be approximately 8 m wide as travelled surface, within a vegetation clearing zone of up to 15 m to accommodate variable topography, road grade and drainage ditches, where applicable.

Vehicle traffic and heavy equipment will be restricted to the WSR corridor and associated access routes required for the Project. Existing trails, portages and other travel routes adjacent to the Project Footprint area will not be altered. Where temporary access routes are accessible by the public, access will be blocked or gated when not in use.

The need and location for temporary and permanent access roads for the construction and operations phase will be refined through the detailed planning and design work for Project, including consultation with Indigenous communities, government authorities and interested persons and organizations.

4.3.3.3 Construction Camps with Laydown/Storage Areas

A preliminary construction execution strategy has been developed for the Project to define a list of critical components both physical and management-based to be considered in the construction of the WSR and supportive infrastructure. From an execution perspective, it has been determined that construction of the WSR will need to be initiated from the community of Webequie being the only source of both existing human-supports and transportation connection (i.e., airport and winter road connection to provincial highway network).

As part of the construction execution strategy for the Project, accommodation for the construction workforce will be provided using temporary construction camps (average workforce of 50 to 70 people). It is proposed that a total of four temporary construction camps be established at relatively uniform intervals, or distance, along the preferred route to support the overall construction staging of the road and development of key supportive infrastructure such as the aggregate source areas. As part of the evaluation of alternatives, a number of construction camp locations were examined and evaluated using a multi-factor analysis. Details of the evaluation of alternative construction camp locations and rationale for the selection of the preferred sites for the camps are presented in Section 3. The recommended proposed locations for the temporary construction camps (Camp 1A, Camp 2A, Camp 3A and Camp 4B) are shown in Figure 1.2 in Section 1 – Introduction.

The proposed area for each construction camp is approximately 8 ha and will be comprised of modular structures for sleeping, dining and offices, as well, to maximize space and minimize project environmental impacts, each camp will include a designated laydown/storage area for equipment and materials. In general, it is anticipated that each camp will typically include the following key elements:

- Accommodations (bunkhouse) for workers;
- Construction Office(s);
- Kitchen and dining hall;
- First aid station, and helicopter-pad location complete with lighting and windsocks for response to emergency events;
- Communications system;
- Wastewater treatment holding tank and/or treatment system;
- Groundwater water supply well;
- Solid waste (hazardous and non-hazardous) handling and storage facility, including a designated waste recycling area;
- Electricity supply from diesel generators;
- Above ground fuel storage tanks and refueling area; and
- Laydown/Storage area for equipment and materials.

Equipment and material laydown areas within construction camps will be required to receive and distribute material and support construction activities. Materials stored at the laydown areas will typically include girders, rebar, culverts, wood and/or steel forms, heavy equipment, portable pumps and diesel generators. It is anticipated that construction material and equipment from the laydown areas will be transported by truck to specific locations along the road ROW.

A typical temporary camp is shown in **Photograph 4-6**. Specific features and/or layout will vary due to site conditions.

Photograph 4-6: Typical Layout of Temporary Construction Camp and Laydown/Storage Area

There are no proposed temporary access roads associated with the construction camps as all camps are located abutting the ROW for the WSR. Camps may be fenced and include other site security measures, such as lighting, where required.

Construction camp facilities will comply with the Ontario *Occupational Health and Safety Act* and required permits, authorizations, and approvals will be acquired prior to their construction. In particular:

- It is anticipated that potable/drinking water for construction camps will be obtained from groundwater wells drilled on-site. Permits to Take Water (PTTW) (taking > 400,000 L/day) or Environmental Activity and Sector Registry (EASR) (taking > 50,000 L/day but < 400,000 L/day) will be required prior to taking of groundwater and may include use of an on-site portable water treatment system to comply with Ontario drinking water standards.
- Where Crown land is needed for construction camps, permits and authorizations under the *Public Lands Act* from the Ministry of Natural Resources will be secured, as required.
- Sewage disposal options at the camps include on-site portable treatment facility or trucking off-site to the sewage treatment plant in the community of Webequie. The appropriate approvals (e.g., environmental compliance approvals, federal approvals, etc.) will be acquired, as needed.
- Grey water will be discharged according to permit and/or authorization requirements.
- Electricity will be supplied through the use of temporary diesel generators.

The Proponent will progressively restore temporary construction camp sites as the project construction progresses and they are no longer needed. To minimize environmental effects, it is proposed that Construction Camp 2A be the permanent MSF for operations of the WSR (refer to **Section 4.3.3.5**).

Webequie First Nation, and other First Nations, have expressed sensitivity and concern related to temporary construction camps where workers are brought temporarily to the area to support construction. To address these concerns, the Proponent for construction of the Project will include a strong health and safety management system that will implement the following policies related to the operation of the construction camps:

- The Project contractor will maintain a Substance Abuse program, which is a term and condition of employment for their employees. Impaired individuals will not be tolerated on worksites. Individuals suspected to be under the influence of alcohol and/or drugs will be escorted out of the work area immediately and be dealt with as dictated by the contractor's Substance Abuse Program.
- All full-time Project workers will be required to complete cultural awareness training.
- All workers will be required to follow the Project contractor's Harassment/Bullying Policy and Substance Abuse Policy.
- Transport to the construction camp and site will generally be completed using multi-passenger vehicles.
- The contractor will prohibit non-Project personnel from riding in company vehicles.
- The contractor will maintain a set of camp rules that describes what is and is not acceptable practice in camp, including a curfew and prohibited items, actions or practices.
- Only authorized individuals will be allowed within the construction camp and all visitors are required to check in with security upon arrival. Bringing an unauthorized individual onto site will be a violation of the terms and conditions of employment.
- Any incidents that violate the contractor policies or rules and require immediate attention or action will be appropriately addressed by project leadership, which may include termination.

4.3.3.4 Power Supply and Communications

Power in the form of electricity will be provided by portable and stationary diesel generators sized appropriately for the project construction and operational needs. Diesel generators will be used as power sources at the construction camps, waterbody crossing sites to operate hand equipment (drills, pumps, etc.) for construction and maintenance/repairs of bridges and culverts, and at the permanent MSF during the during the operations phase of the Project.

During the construction and operations phases for the Project, it is expected that satellite communication infrastructure will be needed for routine ongoing communications with external parties, including use of satellite phones for construction and operation staff to communicate on-site, as cell phone coverage is not available in the project study area. As the site is remote and the workforce will eventually be distributed over the entire 107 km length of the roadway, an effective communication system and protocols are critical to the overall health and safety program for the Project, including responding to emergency situations.

4.3.3.5 Maintenance and Storage Facility

A permanent MSF, or maintenance yard, is required to support the operations of the Project. The MSF for the WSR is proposed to be approximately 4 ha in size and to minimize environment effects its proposed that Construction Camp 2A located about 30 km east of the community of Webequie, be repurposed to serve as the area for the facility. The intended purpose of the MSF is for the storage of equipment and materials to allow for maintenance and repair activities to be undertaken for the WSR. The MSF layout will be determined in the Detail Design Phase of the Project and it is assumed the facility would include some or all of the following:

- An office, with lunchroom, washroom and utilities;
- Water well supply and sanitary septic system;
- Parking area for staff vehicles and maintenance equipment;
- A vehicle maintenance garage;
- First aid station, and helicopter-pad location, complete with lighting and windsocks for response to emergency events;
- Winter materials storage facilities;
- Indoor vehicle washing area;
- Garage and/or shed for maintenance equipment and materials;

- Outside material storage area (e.g., gravel, sand, etc.);
- Fuel storage and refueling area; and
- Domestic solid waste (hazardous and non-hazardous) area, including for oil and lubricate waste products.

4.3.3.6 Storage of Fuels, Explosives and Wastes

During construction and operations of the Project, fuel (diesel and gasoline) will be transported by tanker trucks, in drums, or other approved containers. Fuel storage areas will be established at temporary construction camps and permanent MSF, with barricaded double-walled above-ground storage tanks (ASTs) or other suitable fuel tanks with secondary containment measures (e.g., berm system) for safety. A fuelling truck may also be used for refuelling vehicles and equipment and filling fuel tanks in temporary construction camps. All ASTs will be registered under, and in compliance with, applicable federal and provincial legislation. Aboveground storage tanks will meet the Canadian Council of Ministers of the Environment (CCME) *Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products* (CCME, 1994). The transportation, storage and handling of fuels will be in compliance with the Ontario *Technical Standards and Safety Act* and Canada's *Transportation of Dangerous Goods Act*. The transport vehicles will be licensed and maintained according to safety requirements. The details of how fuel is stored and eventually distributed along the road ROW to support construction and operation activities will be an important planning and allocation exercise. An overall fuel-consumption and storage plan will be developed in the future planning and development stages of the Project.

Fuelling and storage areas at temporary construction camps with laydown/storage areas and at the permanent MSF will include appropriate drainage controls including secondary containment with a storage capacity of at least 110% of the fuel tank. Drainage will be retained in a sump where hydrocarbons can be captured and separated prior to the release of any rainwater run-off, as appropriate. Equipment with reduced mobility, such as heavy lift cranes and excavators, will have fuel delivered by a mobile tank and re-fuelling will take place on site. All fuel transfers will follow safety procedures to prevent leaks and drips, and spill response kits will be available on all vehicles used to transport fuel. Generally, vehicles will be fuelled at the camps; however, if fuelling of vehicles and other mobile or heavy equipment is required at the site then fuelling will not be permitted within 50 m of a permanent waterbody, unless a spill prevention plan is in place.

Explosives will be used at aggregate source areas (i.e., ARA-2 and ARA-4) as part of the extraction/mining of bedrock rock material needed for the construction and operation phases. Explosives to be used for blasting activities will be stored in a secured container. Siting of these storage areas will meet the provincial standards and licensing requirements as specified in the *Mines and Mining Plants Regulation* of the Ontario *Occupational Health and Safety Act*. Storage areas for explosives will be situated in reasonably close proximity to blasting sites at aggregate source areas to minimize transportation distance. Areas used for the storage of explosives will meet the federal standards and licensing requirements as specified in the *Explosives Regulations* of the federal *Explosives Act*.

Based on the relatively low volumes of rock needed for the Project (refer to **Table 4-5** - 5,500 m^3) the drilling and blasting of rock requiring the use of explosives during construction and operation activities is expected to occur on an infrequent basis when aggregate and/or rock materials are required for construction and maintenance activities. Blast operations, where applicable, will be carried out in accordance with Department of Fisheries and Oceans (DFO) guidelines and Ontario Provincial Standard Specification 120 General Specification for the Use of Explosives. Under the federal *Explosives Regulations*, 2013, a license, certificate or permit will be obtained for any activities where explosives and blasting are used for extraction of rock at the aggregate sources.

Solid waste (hazardous and non-hazardous) and liquid waste (oils, lubricants) generated during the construction phase will be stored at temporary construction camps, and during the operations phase at the permanent MSF. Solid waste handling and storage areas at camps and the MSF may include a waste recycling area to reduce the amount of solid waste generated. Liquid industrial waste such a waste oils, lubricants and other used oil will be stored in drums at camps and the MSF and will be regularly shipped for disposal. It is proposed that the disposal of non-hazardous waste be transported to the landfill site in Webequie and that hazardous waste be shipped/transported off-site to a licenced waste facility. Organic solid waste at the camps and MSF will be temporarily stored in bear-proof containers before being transported to a waste disposal site. Where landfill capacity concerns are expressed for receiving project generated domestic waste in Webequie, the Proponent may consider the use of on-site waste incinerators at construction camps and MSF. Where waste incinerations are proposed, appropriate approvals will be obtained, including a provincial Environmental Compliance Approval, prior to the use of any waste incinerators.

In general, all waste will be appropriately stored, transported and disposed of according to applicable provincial and federal laws and regulations. Further details on potential emissions, discharges and waste are described in **Section 4.4.2.8**.

4.4 Project Phases and Activities

4.4.1 Project Phases and Schedule

Implementation of the Project will occur in phases, which are temporal boundaries that establish a timeframe for consideration of potential effects of the Project. The potential interactions and effects to environmental, health, social and economic conditions in the project study areas are anticipated to be different in each phase. The Project is planned to occur in two main phases as described below:

- **Construction Phase:** All the activities associated with the initial development of the road and supportive infrastructure from the start of construction to the start of operations and maintenance of the WSR. Decommissioning of temporary supportive infrastructure (e.g., construction camps, aggregate source areas) and reclamation/restoration of disturbed areas are included in the construction phase. The construction phase is anticipated to take approximately 5 to 6 years to complete.
- **Operations Phase:** All activities associated with operations and maintenance of the road and other permanent supportive infrastructure (e.g., MSF, pits/quarries) that will start after construction and will continue for the life of the Project. The operations phase of the Project is considered to be 75-years based on the expected timeframe when major refurbishment of the road components (e.g., bridges, culverts) are anticipated.

There are currently no plans or need to decommission the WSR and the Project is proposed to be operated for an indeterminate time period. Therefore, future suspension, decommissioning and eventual abandonment will not be considered in the EA/IA. Should a decision be made to decommission the Project in the future, a detailed review of the potential effects and mitigation measures will be completed. Decommissioning will be planned and conducted in accordance with the relevant standards and regulatory requirements in effect at that time. Activities that would typically be completed to facilitate the decommissioning of a project of this type would include removing the road and supportive infrastructure, followed by ground reclamation. The potential effects and mitigation measures to be identified during the EA/IA for the construction of the Project will likely equally apply to the potential removal of the Project at a future point in time, should it ever be required.

4.4.2 Construction Phase Activities

The constructor, or Proponent, for the construction phase of the WSR is not known at this time and is part of future discussions and agreement between Webequie First Nation and the Government of Ontario. Similarly, activities that may be undertaken by a third party have not been identified. The construction and commissioning of the WSR is expected to take approximately 5 to 6 years, after securing all the necessary approvals, permits, licences, authorizations and clearances to construct. Pre-construction activities will include mobilization and transport of equipment, materials and supplies to the project site using the winter road located approximately 100 km northeast of the Town of Pickle Lake off Highway 808 (currently named Northern Ontario Resource Trail, or NORT Road) to the community of Webequie and/or delivery using air transport to the airport located in Webequie. Early pre-construction activities will also include field delineation of vegetation buffers and known nearby features of cultural or environmental importance that may require specialized application of mitigation measures or monitoring during construction. Construction activities will be undertaken on a year-round basis, with some activities being staged and implemented to avoid or minimize potential effects to Indigenous land and resource uses (e.g., hunting areas) and/or culturally sensitive areas/uses, and life cycle periods of wildlife, such as avoiding the clearing of vegetation during the migratory bird nesting period (e.g., spring and summer months) and any specific species at risk constraints (e.g., caribou).

The detailed staging and sequencing of construction will be determined in the future Detail Design phase of the Project with input from Indigenous communities and the construction contractor. In general, it has been determined that construction of the WSR will need to be initiated from the community of Webequie being the only source of both existing human-supports and transportation connection (i.e., airport and winter road connection to provincial highway network). With significant impedance to flow of personnel and construction resources due to topography, soil conditions (i.e., peatlands), high water levels and required waterbody crossings, the approach to establishing the road will, for the most part, be linear in nature, and as such the road is proposed to be developed working west to east, eventually ending at the east side of the Muketei River crossing in the McFaulds Lake area.

Construction activities will typically occur during the working hours of 07:00 to 19:00 from Monday to Sunday. However, regularly scheduled extended hours of work during any given week may be required to address schedule delays caused by weather or other unexpected conditions. Commissioning of the road for operations will occur shortly after construction is deemed substantially complete.

The activities that are expected to be carried out during the construction phase of the Project are summarized below and described in **Sections 4.4.2.1** to **4.4.2.8**.

- Field surveys, staking and layout;
- Vegetation clearing and grubbing;
- Construction and use of supportive infrastructure:
  - Construction camps with laydown/storage yards;
  - Access roads and temporary waterbody crossings;
  - Pits/Quarries - aggregate extraction and processing, including blasting; and
  - Maintenance and Storage Facility (establishment only, not used).
- Construction of road, including earth excavation, grading and hauling operations;
- Construction of permanent waterbody crossings;
- Emissions, discharges and waste; and
- Clean-up and site restoration, including the decommissioning and removal of temporary infrastructure (e.g., construction camps), excluding those which may be formalized and used for the operations phase of the Project.

4.4.2.1 Surveying and Staking

A light detection and ranging (LiDAR) survey was completed as part of the EA/IA to create a topographical map of the ROW for the WSR and supportive infrastructure sites (e.g., construction camps, aggregate sources areas) with information on land features and elevations. From this survey, the preliminary conceptual engineering design was completed to identify the road alignment, structures at water crossings, and location of access roads, construction camps, and aggregate source areas.

Ground survey, or global positioning system (GPS) equipment machinery, will be used to accurately delineate the road ROW limits, supportive infrastructure (e.g., camps, access roads) and sensitive features during the Detail Design phase of the Project. Following the clearing of vegetation within the road ROW, field surveys will physically mark (i.e., stake) the specific locations such as the centreline of the road ROW, structures at waterbody crossings and supportive infrastructure using GPS technology, data from the LiDAR surveys and the detail design drawings.

4.4.2.2 Vegetation Clearing and Grubbing

Vegetation clearing of the road ROW, temporary/permanent access roads, construction camps with laydown/storage areas and aggregate sources areas (i.e., ARA-2 and ARA-4) will be completed. Clearing involves the removal of vegetation that may prohibit the construction and/or the safe operation of road within the ROW. Vegetation clearing will consist of cutting tree trunks parallel to, and within 15 cm of the ground or lower, as well as the removal of all shrubs, debris, and other such materials. Grubbing is required at construction camp locations, aggregate source areas, access roads and along the road ROW, with the exception of west to east section (56 km) in the lowlands/peatlands where no grubbing is proposed and where no vegetation clearing outside the road footprint will be conducted. Vegetation will be largely removed by mechanical means, except within 10 m of a waterbody. In these areas, vegetation will be removed manually, using chain saws and other hand-held equipment, while leaving the under growth and duff layer undisturbed to prevent erosion, until such time as construction of foundations for bridges and culverts is initiated.

Clearing and grubbing of vegetation (forest), including removal, disposal and/or chipping will be conducted in accordance with regulatory requirements and applicable forest management practices. Materials such as logs or timber suitable for manufacturing forest products will be salvaged for community use by Webequie First Nation, where feasible, or in accordance with Ministry of Natural Resources (MNR[1]) permits for forest removals on Crown land. Where required, stumps and roots will be grubbed out and separated from the soil. Areas of non-merchantable vegetation that must be cleared will be piled and burned or mulched. Where piling and burning is prescribed, it will be conducted on-site in accordance with the Ontario *Forest Fires Prevention Act* and *Regulation 207/96 Outdoor Fires* under this Act.

4.4.2.3 Construction and Use of Supportive Infrastructure

- Construction and use of supportive infrastructure is required for the Project and includes:
- Four (4) temporary construction camps with laydown area, and storage of equipment, fuel and waste;
- Pits/quarries at aggregate source areas referred to as sites ARA-2 (temporary) and ARA-4 (permanent), with storage area for explosives;
- Temporary access roads with waterbody crossings; and
- Permanent MSF.

The above project components are described in **Section 4.3** and their locations are presented in Figure 1.2 in Section – Introduction.

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[1] Formerly known as Ministry of Natural Resources and Forestry (MNRF)

Construction of supportive infrastructure will involve clearing, grading and placement of earth and aggregate materials and includes implementation of sediment and erosion control measures for protection of the environment.

Temporary supportive infrastructure will be decommissioned, including the restoration of all disturbed areas, following construction. A summary of the construction and use of supportive infrastructure for the Project is provided in the following subsections.

4.4.2.3.1 Temporary Construction Camps with Laydown/Storage Areas

As described in **Section 4.3.3.3**, accommodation for the construction workforce will be provided using four temporary construction camps, to be established at relatively uniform intervals along the preferred route for the WSR. Construction camps will include an area for laydowns/storage of equipment and materials. Each camp will accommodate around 50 to 70 workers and will be approximately 8 ha in area. The components in a construction camp (e.g., bunkhouse, kitchen/dining hall, wastewater treatment system, etc.) and its final layout will be determined in the future Detail Design Phase of the Project with input from the construction contractor.

The construction camps with laydown/storage areas will be cleared of vegetation, grubbed, and levelled, as required. Vegetation will generally be cleared using mechanical harvesters to remove trees and bulldozers to remove the remaining woody vegetation.

To support the initial construction and to minimize the impacts on the community of Webequie, the first construction camp will be established at the west-end of the Winisk Lake crossing (refer to Figure 1.2 in Section 1 – Introduction). Once the bridge crossing of Winisk Lake is passable, the other construction camps will be established along the corridor as construction progresses. To establish camps the goal is to have at least a safe 1-lane construction access road established within the footprint of the ultimate route for WSR with bearing strength to afford the mobilization of equipment and materials to allow for set-up and commissioning of camps. It is anticipated construction camps may be comprised of “skid-able” modular units that can be procured as a complete system, including dorms, kitchen/dining/ /recreation, power, water and sewage processing units. Some units are “skid-able” with all connections for utilities included as “quick-connect” established on the surface of the ground. The “skid-able” type units with surface utility runs can be established on less developed ground as they are easily corrected for ground settlement and the surface utilities are all “flex” type with positive pressure for any fluids.

Equipment in construction camps that presents risk of leaks or spill will be protected using appropriate methods (e.g., spill containment systems for oils, fuels and chemical storage and transfer areas, and spill containment systems under stationary equipment, such as generators, pumps and compressors) as outlined in **Section 4.3.3.6**.

In summary, activities at construction camps are anticipated to include:

- Vegetation clearing and grubbing; (see above)
- Installing sediment and erosion control measures;
- Operating equipment;
- Transporting of construction equipment, materials and workers to site via trucks;
- Operating portable and stationery generators;
- Housing workers;
- Drilling and pumping associated with well for water;
- Storing of equipment, supplies and food;
- Storing, handling and disposing of solid and liquid waste;
- Storage and handling of fuel for equipment/vehicle use and power generation
- Testing for contamination; and
- Dismantling, demobilizing, clean-up and restoring site.

4.4.2.3.2 Temporary Access Roads and Waterbody Crossings

As described in **Section 4.3.3.2**, a temporary access road will be constructed within the ROW for WSR, along its length, to allow for vegetation clearing; to advance construction of culverts and bridges at select water crossings and for earth movement/haulage. For most part this access road will coincide with the footprint of the ultimate preferred route for the WSR, or just be outside the footprint but within the 35 m ROW. A temporary access road of approximately 5.5 km in length is also required for development of the ARA-4 aggregate source area and for hauling of material to the road ROW during the construction phase. It is also proposed this access road be retained as a permanent access road for the operations phase of the Project to allow for aggregate material at the ARA-4 site to be used for on-going maintenance activities.

The physical activities to allow for construction and use of access roads include:

- Clearing and grubbing of vegetation;
- Grading and contouring of earth;
- Placement and compaction of aggregate/gravel material to support heavy construction vehicle movement;
- Application of water as dust suppressant on a periodic, and as required basis; and
- Snow removal, where winter use occurs.

Temporary access roads will be progressively restored where they are located outside the footprint of the ultimate preferred route of the WSR, and within the 35 m ROW. The access road to ARA-4 will be left permanently to support long term maintenance activities and as such will not be restored during the construction phase.

The temporary access road within the ROW for the WSR will include the construction of temporary waterbody crossings. Where temporary waterbody crossings are required, these will be minimized to the extent where appropriate. The waterbody crossings will involve temporary bridges (i.e., clear span bridges, rig mats), ice bridges/snow fills (for winter construction); and may potentially include culverts. When installing waterbody crossings, ford crossings of waterbodies (1 time crossing only) may be required for clearing and access equipment. Crossing locations will be identified in accordance with best management practices. As appropriate, some waterbody crossings may use a very short-term rig mat to facilitate clearing and access equipment, before being immediately replaced with a temporary bridge. Water extraction will be required for ice bridges and some snowfills to create ice and snow if none is present at the crossing site. Permits will be obtained to take water from different locations for snowfills if none is available at the crossing site.

Where temporary waterbody crossing structures are proposed, the primary preferred structures to be used are clear-span bridges, ice bridges/snow fills (for winter construction), culverts, and rig mats.

Clear-span bridges and rig mats will be placed above the high-water mark (i.e., no work will occur below the high-water mark during construction). A rig mat is a rigid portable platform used to support equipment in construction and other resource-based activities. It will function as a clear-span bridge over small waterbodies (i.e., bank-full width less than 2 m). For clear-span bridges and rig mats, it is expected that no new temporary or permanent fill would be placed below the high-water mark.

Where in-water work is required to install a temporary waterbody crossing structure, such as a culvert, water management may include the use of cofferdams, diversion channels or by-pass pumps to isolate the work zone. Fish within the isolated work zone will be rescued (i.e., safely relocated) by qualified professionals prior to construction under the conditions of a MNR Licence to Collect Fish for Scientific Purposes.

The Proponent for the construction of the WSR will incorporate best management practices within the MNR *Environmental Guidelines for Access Roads and Water Crossings* (MNR 1990), MNRF and DFO protocol for the review and approval of forestry water crossings (MNRF and DFO 2020), DFO's *Measures to Protect Fish and Fish Habitat* (DFO 2022) and applicable *Codes of Practice* (DFO 2024) for access road construction and temporary waterbody crossing during construction to the extent practicable. If there is any circumstance where this cannot be met, DFO and MNR will be contacted to discuss any permits and approvals required.

Clearing of riparian vegetation will be limited to the extent necessary, and to the requirement of the access road width only. Clearing at waterbody crossings along the road corridor and within ROW will generally be limited to a 6 m-wide for equipment access to waterbody crossing structures (e.g., temporary bridges).

Culvert selection will consider site-specific conditions such as the width of the waterbody crossing, fish habitat characteristics, substrate type, and hydrologic characteristics of the waterbody. Culverts will be sized to handle peak flow and aligned parallel to the waterbody channel on a straight section of uniform gradient. Installation and removal practices will follow MNR and DFO's advice on erosion and sediment control to avoid causing death of fish and/or the harmful alteration, disruption or destruction of fish habitat (MNR 1990, 2010a, 2010b; DFO 2022; *Fisheries Act*, Canada 1985).

Temporary crossing materials, if used, will be removed immediately following the completion of construction activities. Sediment and erosion control measures will be installed prior to commencing construction activities. Upon removal of the crossing materials, the waterbody bed and banks will be returned to their original conditions if needed and disturbed areas will be stabilized, as necessary, to prevent soil erosion.

4.4.2.3.3 Aggregate Extraction and Processing Activities at Pits/Quarries

As described in **Section 4.3.3.1** two aggregate source areas, referred to as sites ARA-2 and ARA-4, are to be developed as pits and quarries that will extract and process suitable sand, gravel and rock for the Project. The deposit at site ARA-2 will be fully utilized as a pit and quarry during the construction phase and will be progressively rehabilitated. The deposit at ARA-4 will be used for construction phase and will also serve as the permanent aggregate pit to produce materials needed to support maintenance activities during the operations phase. As noted in **Section 4.4.2.2**, clearing and grubbing of vegetation at sites ARA-2 and ARA-4 is required for development of pits and quarries. In addition, the organic top layer of soil (topsoil) will be removed and stockpiled at the sites for use in the progressive rehabilitation of pits and quarries.

Extraction of aggregate materials will be accomplished using heavy equipment such as excavators, trucks and front-end loaders. Explosives will be used at the pit/quarry (ARA-2) as part of the extraction/mining of bedrock material needed for the construction and operations phases. Contractors will be required to store, handle and transport explosives in compliance with relevant provincial and federal legislation, best practices and guidelines for safety and environmental protection. To the extent possible, the timing of blasting activities will consider area-specific environmental sensitivities (such as critical life stages of local fish, birds, and wildlife, or periods of traditional land use) identified from the ongoing engagement and consultation with Indigenous communities and regulators. Explosives to be used for blasting activities will be stored in a secured container on-site and will meet the federal standards and licensing requirements as specified in the *Explosives Regulations* of the federal *Explosives Act*. All blast operations will be carried out in accordance with DFO guidelines (Wright and Hopky 1998) and *Ontario Provincial Standard Specification 120 General Specification for the Use of Explosives*.

The frequency of blasts will ultimately be at the discretion of the contractor based on construction timelines, aggregate requirements, physical conditions of the geography, availability of supplies, and in compliance with timing restrictions imposed by regulatory agencies. The community of Webequie will be informed (through local radio and or posted material in the community) by the contractor prior to carrying out quarry operations in areas where they are likely to be present or to collect country foods or medicinal plants.

Blasting and quarrying is a highly regulated activity requiring authorization and / or certification from a number of government agencies to minimize effects to people and the environment. Environmental procedures relating to blasting and quarrying will be included in the construction contractor's Explosive and Blasting Management Plan and the Construction Environmental Management Plan (CEMP) that will be developed prior to commencement of the Project construction.

To process the required granular base, sub-base, rock and asphalt/chip seal product required to develop the roadway, portable rock crushing equipment/plant and asphalt batch plant will be required and operated at sites ARA-2 and ARA-4. Depending on the peak aggregate demand and production capability, multiple units may have to be used and, where bedrock is to be extracted (ARA-2), supportive drilling and blasting equipment will be required. The crushing equipment will be modular, with capability to self-erect where possible. Each unit will be complete with diesel power generator and control centre. A typical crushing set-up to be operated at ARA-2 and ARA-4 will include a primary crusher, secondary crusher, screening plant, diesel generator, conveyors, control tower and supporting mobile loaders. The selection and employment of equipment for crushing and screening will vary depending on the application, whether for granular, stone (e.g., rip-rap), concrete or asphalt production. A typical portable crushing plant is shown in **Photograph 4-7**.

Photograph 4-7: Typical Potable Crushing Plant

Aggregate material extracted and processed at pits and quarries will be stockpiled within the site and transferred to haul trucks for transport to the road corridor.

A drainage management system, consisting of ditches, erosion and sediment control measures and settlement basins for capturing and treating runoff at pit/quarry sites, will be designed and implemented.

Where the extraction of groundwater and/or surface water from a waterbody is needed for processing of aggregate, a Permit to Take Water (PTTW) or Environmental Activity and Sector Registration (EASR) under the *Ontario Water Resources Act* (1990) will be secured.

In summary, activities at pits and quarries are anticipated to include:

- Clearing and grubbing of vegetation;
- Excavating;
- Blasting;
- Stockpiling;
- Management and treatment of surface drainage;
- Operating equipment/machinery;
- Producing/processing of aggregate, including extraction of water where required;
- Refuelling and equipment maintenance;
- Geochemical testing to assess potential for metal leaching and acid generation from quarried rock; and
- Closure, rehabilitation restoring sites (for temporary pits/quarries).

4.4.2.3.4 Maintenance and Storage Facility

As described in **Section 4.3.3.5**, a permanent MSF is required to support the operations of the Project. The MSF for the WSR is proposed to be approximately 4 ha in size and to limit environment effects, it is proposed that Construction Camp 2A, be repurposed to serve as the area for the facility. A summary of the physical activities during the construction phase that will be undertaken to establish the MSF for the operations phase include:

- Recontouring/grading and site drainage works at Camp 2A to accommodate layout of MSF components;
- Relocating modular unit components in Camp 2A, where applicable, to allow for their use at MSF (e.g., water and sewage treatment plants, administrative offices, etc.);
- Decommissioning and/or removal of components at Camp 2A that are not required for operation of MSF (e.g., bunkhouse/accommodations);
- Modification to existing, or construction of new: equipment and maintenance building (s); fuel, equipment and waste storage and handling areas; and
- Final reclamation and restoration of disturbed areas at Camp 2A that is not required for MSF use.

Physical activities to be undertaken at the MSF during the operations phase are described in **Section 4.4.3.1.9**.

4.4.2.4 Construction of Proposed Road

The proposed WSR at its west terminus will connect to an existing Webequie First Nation on-reserve road near the airport in the community of Webequie. The road at the east terminus near McFaulds Lake may connect to an access road within the existing mineral exploration camp for the Eagle's Nest Mine Project and/or connect to the proposed Northern Road Link. Linked roadways will meet provincial intersection design standards and may require separate approvals by appropriate regulatory authorities.

Construction of the proposed WSR and supportive drainage system within a 35 m ROW over a distance of 107 km will include the following physical activities:

- Mechanical clearing and grubbing of vegetation using heavy equipment, chainsaws, and brush-saws;
- Installing and maintaining temporary erosion and sediment control measures;
- Topsoil stripping and stockpiling within ROW at designated areas, where applicable;
- Earth cut and fill operations and grading;

- Hauling of gravel, sand, rock and asphalt from aggregate source areas (Sites ARA-2 and ARA-4) to and along the road corridor;
- Fill and gravel placement and compaction, including asphalt pavement or chip seal surface treatment for west half of the WSR (approx. 55 km length);
- Installing cross-culverts in the west-to east section of the road within the lowlands/peatlands;
- Placing rock for erosion protection at road drainage inlets/outlets and at bridge and culvert waterbody crossings, where appropriate;
- Final grading and trimming of road embankment/slopes, ditches and disturbed areas within the ROW; and
- Stabilization of disturbed areas, including site restoration and clean up within the road ROW.

Stockpiles of earth and aggregate material are to be stored a minimum of 30 m from a waterbody or watercourse. Stockpile sites will be located within cleared road ROW or at laydowns/storage areas within construction camps where vegetation clearing has been removed to accommodate construction of the WSR.

It is expected that unsuitable excavated materials or excess fill will be used for grading of disturbed areas, contouring of disturbed slopes to a stable profile, and restoring natural drainage patterns where necessary.

Earth cut and fill activities will be undertaken as part of the road grading operations to establish the subgrade profile for the road. The Contractor will be responsible for developing a plan for the hauling operations, which will involve the transport of sand, gravel and rock by truck from sites ARA-2 and ARA-4 to the road corridor, and along its length. All vehicles used to haul material along access roads to the WSR corridor, and along the corridor itself, will have the load covered with a tarpaulin during transport.

Given the proposed road crosses the Hudson Bay Lowlands (wetland/peatland), the design, construction and operations of drainage along the road will take into account drainage requirements associated with this sensitive and unique feature. Key activities to be undertaken during construction that form part of the road design and as mitigation features to minimize impacts to the peatland include:

- Installing cross-culverts at regular intervals along the road (non-waterbody areas) within the lowlands/peatlands to convey surface drainage and movement subsurface groundwater flow through the road; and
- Installing geotechnical materials (e.g., geotextile fabric, geogrids, etc.) on the surface of the peat before the road is constructed to give it a working platform to evenly distributed the weight/load of the material placed.

Further details of the road design components within the peatland are described in **Sections 4.3.1.2** and **4.3.1.3**.

As the construction of the WSR progresses from west to east, there may be a requirement to provide maintenance of partially or fully completed sections of the road during the construction phase to allow for the movement of equipment and workers to the next road sections. This progressive and staged development of the WSR is required for the construction to be completed efficiently. Routine and on-going maintenance activities during construction may include:

- Road surface re-grading and dust suppression;
- Snow removal from access roads; and
- Maintenance of environmental protection measures (e.g., erosion and sediment control measures), including management of temporary drainage features (i.e., ditches) and/or temporary waterbody crossing structures (culverts, ice bridges/snow fills, etc.), on access roads.

During construction, water will be applied via trucks to access/haul roads to control dust with the objective to improve visibility and reduce potential health and environmental concerns. Where the extraction of surface water from a waterbody is needed for dust suppression, a Permit to Take Water (PTTW) or Environmental Activity and Sector Registration (EASR) under the *Ontario Water Resources Act* (1990) will be secured.

4.4.2.5 Permanent Waterbody Crossing Structures

As described in **Section 4.3.2.2**, the proposed WSR will require 31 permanent waterbody crossings, which include 30 watercourses and 1 lake. To cross the waterbodies, six bridges are proposed to be constructed over major waterbodies and 25 culverts of various types (e.g., open bottom arch culverts and corrugated steel pipes) are proposed to be placed at minor waterbodies. Each waterbody crossing location with significant labour requirements, such as bridges and open bottom arch culverts with multi-plates on strip footings, will require adjacent storage/laydowns areas for equipment and material within the road ROW, as well as area for a job trailer, and temporary waste disposal bins. For large waterbody crossings, such as Winisk Lake (WB-1), which is a six-span bridge (250 m span over water), additional areas beyond the ROW limit of up 40 m may be required to accommodate the storage and laydown of equipment and materials. In addition, the Winisk Lake crossing will require the use a floating barge to install bridge piers within the lake.

Typical environmental protection activities related to both the construction of a bridge or culvert at waterbody crossings include:

- Placing and installing environmental protection measures such as silt control fencing, silt turbidity curtain, or distilling basin/trap/filter bag for the treatment of effluent from groundwater dewatering operations. Where groundwater dewatering is applicable for construction of structure foundations a PTTW or EASR under the *Ontario Water Resources Act* (1990) will be secured.
- Installing cofferdams, diversion channels or by-pass pumps as water management methods to isolate the work zone from the waterbody.
- Completing fish rescue by transferring fish within an isolated zone area, where applicable, using qualified professionals under the conditions of a MNR Licence to Collect Fish for Scientific Purposes.
- Applying industry best management practices and procedures, including mitigation identified in this EAR/IS (refer to Appendix E – Mitigation Measures), for the handling, storage and stockpiling of equipment and materials near waterbodies and operations and refueling of equipment.
- Site clean-up and restoration of disturbed areas (seeding/plantings), including where applicable measures to restore fish habitat (e.g., watercourse bed or banks).

Typical construction activities specifically related to installing a culvert at a waterbody crossing include:

- Excavating earth for foundation;
- Placing and compacting fill/aggregate or driving steel piles for foundation;
- Production and pouring of concrete for foundation (open bottom arch culvert only);
- Assembly of steel arch plates; and
- Earth backfilling, compaction and granular fill to create road base.

Culverts will be embedded to allow for fish passage in accordance with MTO Drainage Design Standards (WC-12 Fish Passage through Culverts), including accounting for post-construction settlement of fill. This MTO standard identifies requirements to facilitate fish passage through culverts on fish bearing streams and may include placement of suitable substrate (e.g., gravel) to create and shape a low flow channel within the culvert. Rip rap, or quarried rock, will be placed at the entrance and exit of the culverts to control erosion and provide habitat diversity for fish and aquatic invertebrates.

There are six composite steel-concrete bridges proposed for the WSR. Each bridge consists of a substructure comprised of the foundations, abutments and piers, all supporting the superstructure, which consists of the steel plate girders, the deck and the side barriers with railings. The primary activities associated with bridge construction include:

- Excavation and construction of land-based footings for abutments and where applicable for multi-span bridges the drilling for piers located in-water;
- Placement of reinforced rebar for abutments and piers;
- Production and pouring of concrete for abutments and piers;
- Placement of steel girders to support bridge deck;
- Construction of bridge deck using reinforced concrete;
- Installing/forming side concrete barrier walls and railing on bridge deck; and
- Earth backfilling and compaction at bridge site to establish road.

To construct the required cast-in-place structural concrete elements of a bridge or open box arch culvert, there will be a requirement for an on-site concrete batch plant to produce concrete. A concrete batch plant will be established in close proximity to each bridge crossing location to produce concrete for the bridge abutments, piers and deck. A concrete batch plant may also be established at aggregate/quarry sites (ARA2 and ARA-4) where concrete will be trucked to open bottom arch culvert sites for construction of foundations. Concrete batch plant facilities can be procured as portable/modular units but will require water source and cement powder storage. A typical plant will include aggregate bins for both fine and coarse aggregate, a portable diesel generator/control unit, a powder silo, and mobile equipment (concrete mixer trucks and wheeled loaders) to support production of concrete. Concrete production will be carried out in accordance with the mitigation measures outlined in this EAR/IS. Water for concrete may be sourced from nearby lakes/rivers or from a groundwater well. In accordance with the *Ontario Water Resources Act*, Permit(s) to Take Water or Environmental Activity and Sector Registry will be obtained, where applicable, prior to any water taking.

Construction of permanent waterbody crossings may require removing beaver dams and impoundments. Beaver dam removal or dewatering will be completed in consideration of best management practices, in consultation with MNR and environmental approval conditions to avoid or reduce effects on fish and fish habitat, and DFO's C*ode of Practice: Beaver Dam Breaching and Removal* (DFO, 2024) and *Measures to protect fish and fish habitat* (DFO, 2022).

The use of heavy equipment will be required for construction of bridges and culverts and may include front-end loaders, excavators, dump trucks, dozers, hoisting equipment, pumps, concrete trucks and compactors.

4.4.2.6 Decommissioning and Site Restoration/Reclamation

Temporary supportive facilities and work areas that will not be required for operations of the Project will be decommissioned upon completion of construction. This will include decommissioning and rehabilitation of temporary construction camps, temporary access roads and waterbody crossings, the aggregate pit/quarry at site ARA-2 and construction staging areas within the road ROW. Stockpiles of organic soils and other material on-site will be used for rehabilitation and restoration of disturbed areas. As an overall guiding practice, the decommissioning and restoration/reclamation activities at all temporary construction work areas will involve grading and decompaction to encourage natural re-vegetation and drainage. Organic materials stripped from the areas will be redistributed to encourage natural regeneration of the area. As required, disturbed areas will be stabilized using an appropriate native groundcover seed mix in accordance with Ontario Provincial Standard Specification (OPSS) 803 – Construction Specifications for Vegetative Cover.

The pit and quarry at site ARA-2 will be progressively rehabilitated, and also be decommissioned for a final rehabilitated state as part of the completion of the construction phase. The pit at site ARA-4 will also be progressively rehabilitated during construction but will be retained as the aggregate source area to support maintenance activities during operation of the Project. The rehabilitation of the ARA-2 site will include the following activities:

- Site cleanup, including the removal of waste, all portable extraction and processing equipment, offices, fuel storage area, etc.;
- Completing site drainage and grading at the site; including ensuring the excavated pit and quarry slopes are stable;
- Revegetation/restoration to return the area to a natural state; and
- Any additional rehabilitation measures as identified in the required aggregate permit under the Ontario *Aggregate Resources Act* (1990) and associated regulations to be obtained during the Detail Design Phase of the Project.

Access roads not required for on-going operations and maintenance of the WSR will be decommissioned and rehabilitated using applicable and appropriate methods and standards. Where a temporary waterbody crossing structure (e.g., CSP, clear-span bridge) associated with an access road is present, the structure will be removed, and the waterbody bed and banks will be returned to their original conditions and disturbed areas will be stabilized to prevent soil erosion.

Construction Camp 1A will be fully decommissioned. This will involve site clean-up and removal of all portable module units and components (e.g., offices, bunkhouse, septic tank, water treatment plant), as described in **Section 4.3.3.3**, including grading to allow for restoration/reclamation of all areas. Areas with low risk of erosion will be left to naturally revegetate following grading activities. Any areas that demonstrate or pose high risk to erosion will require additional mitigative measures, including soil stabilization and seeding as appropriate. Camp 2A is proposed to repurposed to serve as the area for the permanent MSF for the operation phase of the Project. Approximately 50% of the area of Camp 2A (4.0 ha) will remain to accommodate the facility as described in **Section 4.3.3.5**. Camps 3A and 4B will also be decommissioned with same reclamation/restoration activities to those described for Camp 1A, however a small area of each site (approximately 0.7 ha) will be retained and repurposed as a permanent maintenance area or rest area, as described in **Section 4.3.1.5**.

The decommissioning and restoration/reclamation of temporary construction areas will occur as soon as practicable, following ceased use of the location. Clean-up and rehabilitation will be conducted after temporary construction infrastructure has been decommissioned and removed. In summary, these activities will include, but not be limited to removing refuse, grading disturbed areas, contouring disturbed slopes to a stable profile, and re-establishing natural drainage patterns. Unless prompt revegetation is required for erosion control, most areas will be left to naturally revegetate following grading and stabilizing activities. However, rehabilitation will also include site-specific measures to promote the natural revegetation of disturbed areas, as appropriate. Erosion and sediment control measures during construction will be maintained until the disturbed ground has been adequately stabilized with vegetation. All waste disposal, including hazardous and excavated materials, will comply with applicable regulations and disposed of at authorized facilities.

4.4.2.7 Materials and Equipment Delivery

The types of materials anticipated for construction of the Project include: concrete and steel rebars for foundations of structures (i.e., bridges/culvert); steel plates and steel girders for structures, aggregate (sand, gravel and rock); wood frames for concrete forming at structures; signage, geotextiles; and fencing. In addition to these materials, equipment and supplies required to construct the WSR will include, but not limited to, heavy and light equipment; fuel (gas and diesel); industrial lubricants; and food and medical supplies.

The quantities of materials required for the Project will be confirmed during the future Detail Design Phase for the Project. The suppliers of materials will be determined during the procurement stage of the Project and it is anticipated that all materials, with the exception of nearby aggregate (ARA-2 and ARA-4 source areas), will be provided by manufacturers located within northern Ontario with strong supply experience.

A variety of rubber-tired and tracked equipment and vehicles will be used during construction of the road, development of aggregate pits/quarries and other Project components. The equipment type, make, model and numbers of equipment and vehicles to be used during the construction is based on the assumptions and experience of SNC-Lavalin and its construction subcontractor retained to support the EA/IA process, and is a conservative estimate. The actual type and quantity of equipment and vehicles will ultimately depend on the final construction staging and execution plan to be developed during the future Detail Design Phase of the Project and by the construction contractor retained to build the WSR.

Based on the isolated nature of the Project, there are opportunities for pre-assembly of select equipment, or use of modular units, restricted only by the maximum shipping envelope size and weight. These opportunities will lower site person-hours and accelerate the Project schedule.

The following is a preliminary list of pre-assembled types of equipment that the Project could employ:

- Pre-engineered camp and office complex modules/units;
- Modularized power centre (s) in weather-proof/sound-attenuated type enclosures for generation;
- Modular batch plants with focus on portability;
- Modular crushing plants with self-contained power generation;
- Modular sewage treatment plants;
- Pre-engineered double-wall fuels dispensing and storage systems;
- Temporary “Bailey-Bridge”/clear span structures for waterbody crossings with pre-cast foundations; and
- Modular or raft-type floating type platforms/structures (rig mats) at waterbody crossings or at select peatland area with poor subsoil conditions, if feasible.

All equipment and materials will be transported to the construction site via the winter road that begins off Highway 808 (NORT Road) approximately 100 km northeast of the Town of Pickle Lake to the community of Webequie, and/or delivered by air transport to the airport in Webequie. The winter road located northeast of Pickle Lake to Webequie is approximately 200 km long and is actively used by Webequie First Nation members to seasonally move supplies and materials during the winter period when conditions are safe for travel, which is typically 5-6 weeks from February to end of March. Parts of the winter road are also used by members of Eabametoong First Nation, Neskantaga First Nation and Nibinamik First Nation. The delivery of equipment and materials for the Project using the winter road will be coordinated with Webequie First Nation, and other Indigenous communities, and will involve the development of a Traffic Management Plan to ensure safe use of the winter road by all users. No upgrades or improvements to the winter road from Pickle Lake to Webequie are proposed to accommodate the transport and delivery of equipment and materials for construction of the WSR.

All materials, equipment and supplies which are purchased for the Project and shipped to the site, will be inspected upon arrival for overages, shortages and damage. For advancing and securing materials and equipment, a comprehensive logistics and storage plan will be developed during the future Detail Design phase for the Project.

The types and approximate numbers of equipment and vehicles that are anticipated to be used during construction are summarized in **Table 4-8**.

Table 4-8: Summary of Expected Equipment and Vehicles Used for Project Construction

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #1 (November to April)		
1-Ton Crew Truck	2	Crew Support
1/2 Ton Pick Up	6	Crew Support
300 Size Excavator	1	Clearing/Grubbing
400 Size Excavator	1	Clearing/Grubbing
40T ART Rock Truck	1	Clearing/Grubbing
5 Kw Generator Portable	1	Crew Support
50 Kw Generator	7	Crew Support
50,000 L Enviro Tank	40	All Activities
650/D5K Size Dozer LGP	1	Clearing/Grubbing
850/D6R Size Dozer	3	Clearing/Grubbing
CAT 140 Grader	1	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Chain Saw	1	Clearing/Grubbing
Crew Van	3	Crew Support
Crew Van/Stretcher Van	1	Crew Support/Health & Safety
D7 Size Dozer	2	Clearing/Grubbing
D8 Size Dozer	1	Clearing/Grubbing
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Base, Rover, DC, etc.	1	All Activities
Herman Nelson Heater	2	Crew Support
Incinerator	1	Camp Support
KG Blade For Clearing	2	Clearing/Grubbing
Light Plant	5	Crew Support
Lowbed Truck & Trailer	1	Crew Support
Mechanic's Truck	2	Crew Support
Office Trailer	2	Camp Support
Service Truck	2	Crew Support
Side Dump Hwy Truck	2	Aggregate Haul
Site Paramedic	1	Health & Safety

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #1 (November to April) (Cont'd)		
Storage Trailers	3	Camp Support
Used Oil Storage	1	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	1	Crew Support
Winch for Dozer	1	Access Construction
Feller Buncher	3	Clearing/Grubbing
Skidder	3	Clearing/Grubbing
Summer #1 (May to October)		
1-Ton Crew Truck	3	Crew Support
1/2 Ton Pick Up	18	Crew Support
1000lb Plate Compactor	1	Culvert Installation
200 Size Excavator	1	Ditching/Culvert Installation
220 Size Excavator	1	Geotextile Installation
300 Size Excavator	2	Grading/Aggregate Production/Hauling
400 Size Excavator	1	Culvert Installation
40T ART Rock Truck	3	Aggregate Hauling
5 Kw Generator Portable	1	Crew Support
50 Kw Generator	6	Crew Support
50,000 L Enviro Tank	40	All Activities
650/D5K Size Dozer LGP	1	Ditching
750/D6N Size Dozer LGP	2	Grading
80-ton rough terrain crane 850/	2	Culvert Installation
850/D6R Size Dozer	5	Placing Aggregate
950 Size Loader	1	Culvert Installation
966 Size Loader	1	Culvert Installation
980 Size Loader	1	Aggregate Production
988 Size Loader	1	Aggregate Production
CAT 140 Grader	2	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Crew Van	5	Crew Support
Crew Van/Stretcher Van	1	Crew Support/Health & Safety

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Summer #1 (May to October) (Cont'd)		
Crusher Power Van 600Kw	1	Aggregate Production
Crusher Tool Van	1	Aggregate Production
D8 Size Dozer	2	Placing Aggregate
ELRUSS 30X54 Jaw (Black RK)	1	Aggregate Production
ELRUSS Feeder	2	Aggregate Production
ELRUSS H6000 Cone (Black RK)	1	Aggregate Production
ELRUSS Single Deck Screen	1	Aggregate Production
ELRUSS Stacking Conveyor	1	Aggregate Production
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	4	All Activities
GPS Base, Rover, DC, Etc.	2	All Activities
Hwy Tractor & 5000 GAL Tank	3	Placing Aggregate
3-4" Rock Drill	2	Drill/Blast Quarry
Incinerator	1	Camp Support
Powder/Cap Magazine	4	Drill/Blast Quarry
IR SD150 Smoothdrum Padfoot	3	Placing Aggregate
JD8760 & Disc	1	Seeding
Jumping Jack Compactor	1	Culvert Installation
Lowbed Truck & Trailer	2	Crew Support
Mechanic's Truck	4	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support
Scissor Lift 35' Rough Terrain	2	Aggregate Production
Service Truck	4	Crew Support
Side Dump Hwy Truck	20	Aggregate Hauling
Storage Trailers	3	Camp Support
Batch Plant	1	Bridge Construction
Used Oil Storage	2	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	4	Crew Support
Water Pumps 6"	2	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #2 (November to April)		
1-Ton Crew Truck	4	Crew Support
1/2 Ton Pick Up	10	Crew Support
1000lb Plate Compactor	1	Culvert Installation
200 Size Excavator	1	Ditching/Culvert Installation
300 Size Excavator	1	Camp Setup/Clearing
400 Size Excavator	1	Culvert Installation
5 Kw Generator Portable	1	Crew Support
50 Kw Generator	5	Crew Support
50,000 L Enviro Tank	40	All Activities
650/D5K Size Dozer LGP	1	Clearing/Grubbing
750/D6N Size Dozer LGP	1	Clearing/Grubbing
80-ton rough terrain crane	1	Culvert Installation
850/D6R Size Dozer	2	Clearing/Grubbing
950 Size Loader	1	Culvert Installation
966 Size Loader	1	Culvert Installation
980 Size Loader	4	Aggregate Production
988 Size Loader	4	Aggregate Production
CAT 140 Grader	2	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Chain Saw	1	Clearing/Grubbing
Crew Van	3	Crew Support
Crew Van/Stretcher Van 600Kw	1	Crew Support
Crusher Power Van	2	Aggregate Production
Crusher Tool Van	2	Aggregate Production
D7 Size Dozer	1	Clearing/Grubbing
ELRUSS 30X54 Jaw (Black RK)	2	Aggregate Production
ELRUSS Feeder	4	Aggregate Production
ELRUSS H6000 Cone (Black RK)	2	Aggregate Production
ELRUSS Single Deck Screen	2	Aggregate Production
ELRUSS Stacking Conveyor	2	Aggregate Production
Fuel Truck	2	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #2 (November to April) (Cont'd)		
Gasoline Storage	6	All Activities
GPS Base, Rover, DC, Etc.	2	Crew Support
Herman Nelson Heater	5	Crew Support
Hwy Tractor & Tandem Trailer	1	Aggregate Hauling
Incinerator	1	Camp Support
IRSD100 Smoothdrum/Padfoot	1	Aggregate Placement
Jumping Jack Compactor	1	Culvert Installation
KG Blade For Clearing	1	Clearing/Grubbing
Light Plant	5	Crew Support
Lowbed Truck & Trailer	1	Crew Support
Mechanic's Truck	2	Crew Support
Office Trailer	2	Crew Support
Batch Plant	1	Bridge Construction
Scissor Lift 35' Rough Terrain	2	Aggregate Production
Service Truck	2	Crew Support
Side Dump Hwy Truck	2	Aggregate Hauling
Storage Trailers	3	Crew Support
Used Oil Storage	1	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	2	Crew Support
Water Pumps 6"	1	Crew Support
Winch for Dozer	1	Access Construction
Winter Road Hauling	1	
Summer #2 (May to October)		
1-Ton Crew Truck	4	Crew Support
1/2 Ton Pick Up	21	Crew Support
1000lb Plate Compactor	1	Culvert Installation
200 Size Excavator	1	Ditching/Culvert Installation
220 Size Excavator	2	Geotextile Installation
300 Size Excavator	3	Grading/Aggregate Production/
400 Size Excavator	1	Culvert Installation

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Summer #2 (May to October) (Cont'd)		
40t ART Rock Truck	8	Aggregate Hauling
5 Kw Generator Portable	1	Crew Support
50 Kw Generator	4	Crew Support
50,000 L Enviro Tank	40	All Activities
650/D5K Size Dozer LGP	1	Ditching/Culvert Installation
750/D6N Size Dozer LGP	2	Clearing/Grubbing
80-Ton Rough Terrain Crane	2	Culvert Installation
850/D6R Size Dozer	4	Placing Aggregate
950 Size Loader	1	Culvert Installation
966 Size Loader	1	Culvert Installation
CAT 140 Grader	1	Crew Support
CAT 14G Grader	1	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Crew Van	5	Crew Support
Crew Van/Stretcher Van	1	Crew Support
D8 Size Dozer	1	Placing Aggregate
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	5	All Activities
GPS Base, Rover, DC, Etc.	2	All Activities
Herman Nelson Heater	5	Crew Support
Hwy Tractor & 5000 GAL Tank	2	Placing Aggregate
Hwy Tractor & Tandem Trailer	1	Placing Aggregate
Incinerator	1	Camp Support
IR SD150 Smoothdrum/Padfoot	2	Placing Aggregate
Jumping Jack Compactor	1	Culvert Installation
Light Plant	5	Crew Support
Lowbed Truck & Trailer	2	Crew Support
Mechanic's Truck	4	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Summer #2 (May to October) (Cont'd)		
Scissor Lift35' Rough Terrain	1	Aggregate Production
Service Truck	4	Crew Support
Side Dump Hwy Truck	25	Aggregate Hauling
Storage Trailers	3	Camp Support
Batch Plant	1	Bridge Construction
Used Oil Storage	2	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	4	Crew Support
Water Pumps 6"	2	Crew Support
980 Size Loader	1	Aggregate Production
988 Size Loader	1	Aggregate Production
Crusher Power Van 600KW	1	Aggregate Production
Crusher Tool Van	1	Aggregate Production
ELRUSS 30X54 Jaw (Black RK)	1	Aggregate Production
ELRUSS Feeder	2	Aggregate Production
ELRUSS H6000 Cone (Black RK)	1	Aggregate Production
ELRUSS Single Deck Screen	1	Aggregate Production
ELRUSS Stacking Conveyor	1	Aggregate Production
Winter #3 (November to April)		
1 Ton Crew Truck	3	Crew Support
1/2 Ton Pick Up	12	Crew Support
1000lb Plate Compactor	1	Culvert Installation
200 Size Excavator	1	Ditching/Culvert Installation
220 Size Excavator	1	Geotextile Installation
300 Size Excavator	1	Aggregate Hauling
400 Size Excavator	1	Culvert Installation
5 KW Generator Portable	1	Crew Support
50 KW Generator	4	Crew Support
50,000 L Enviro Tank	40	All Activities
80 ton Rough Terrain Crane	2	Culvert Installation
850/D6R Size Dozer	1	Aggregate Placement

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #3 (November to April) (Cont'd)		
950 Size Loader	1	Culvert Installation
966 Size Loader	1	Culvert Installation
CAT 140 Grader	1	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Chain Saw	1	Clearing/Grubbing
Crew Van	5	Crew Support
Crew Van/Stretcher Van	1	Crew Support
D8 Size Dozer	1	Placing Aggregate
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	3	All Activities
GPS Base, Rover, DC, Etc.	2	All Activities
Incinerator	1	Camp Support
IR SD150 Smoothdrum/Padfoot	1	Placing Aggregate
Jumping Jack Compactor	1	Culvert Installation
Light Plant	5	Crew Support
Lowbed Truck & Trailer	2	Crew Support
Mechanic's Truck	2	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support
Scissor Lift 35' Rough Terrain	1	Aggregate Production
Service Truck	2	Crew Support
Side Dump Hwy Truck	25	Aggregate Hauling
Storage Trailers	3	Camp Support
Batch Plant	1	Bridge Construction
Used Oil Storage	1	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	2	Crew Support
Water Pumps 6"	1	Crew Support
Winch for Dozer	1	Access Construction
980 Size Loader	1	Aggregate Production

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #3 (November to April) (Cont'd)		
988 Size Loader	1	Aggregate Production
Crusher Power Van 600Kw	1	Aggregate Production
Crusher Tool Van	1	Aggregate Production
ELRUSS 30X54 Jaw (Black RK)	1	Aggregate Production
ELRUSS Feeder	2	Aggregate Production
ELRUSS H6000 Cone (Black RK)	1	Aggregate Production
ELRUSS Single Deck Screen	1	Aggregate Production
ELRUSS Stacking Conveyor	1	Aggregate Production
Summer #3 (May to October)		
1 Ton Crew Truck	2	Crew Support
1/2 Ton Pick Up	17	Crew Support
1000lb Plate Compactor	1	Culvert Installation
200 Size Excavator	1	Ditching/Culvert Installation
220 Size Excavator	2	Geotextile Installation
300 Size Excavator	2	Grading/Aggregate Production/Hauling
400 Size Excavator	1	Culvert Installation
5 Kw Generator Portable	1	Crew Support
50 Kw Generator	4	Crew Support
50,000 L Enviro Tank	40	All Activities
80 Ton Rough Terrain Crane	2	Culvert Installation
850/D6R Size Dozer	4	Placing Aggregate
950 Size Loader	1	Culvert Installation
966 Size Loader	1	Culvert Installation
CAT 140 Grader	2	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Crew Van	5	Crew Support
Crew Van/Stretcher Van	1	Crew Support
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	3	Crew Support
GPS Base, Rover, DC, Etc.	2	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Summer #3 (May to October) (Cont'd)		
Hwy Tractor & 5000 GAL Tank	3	Placing Aggregate
Incinerator	1	Camp Support
IR SD150 Smoothdrum/Padfoot	2	Aggregate Production
Jumping Jack Compactor	1	Culvert Installation
Light Plant	5	Crew Support
Lowbed Truck & Trailer	2	Aggregate Hauling
Mechanic's Truck	4	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support
Batch Plant	1	Bridge Construction
Scissor Lift 35' Rough Terrain	1	Aggregate Production
Service Truck	4	Crew Support
Side Dump Hwy Truck	25	Aggregate Hauling
Storage Trailers	3	Camp Support
Tandem Water Truck	3	Placing Aggregate
Used Oil Storage	2	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	4	Crew Support
Water Pumps 6"	2	Crew Support
980 Size Loader	1	Aggregate Production
988 Size Loader	1	Aggregate Production
Crusher Power Van 600kw	1	Aggregate Production
Crusher Tool Van	1	Aggregate Production
ELRUSS 30x54 Jaw (Black RK)	1	Aggregate Production
ELRUSS Feeder		Aggregate Production
ELRUSS H6000 Cone (Black RK)	1	Aggregate Production
ELRUSS Single Deck Screen	1	Aggregate Production
ELRUSS Stacking Conveyor	1	Aggregate Production

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #4 (November to April)		
1 Ton Crew Truck	2	Crew Support
1/2 Ton Pick Up	10	Crew Support
300 Size Excavator	2	Grading/Aggregate/Production/Hauling
5 KW Generator Portable	1	Crew Support
50 KW Generator	4	Crew Support
50,000 L Enviro Tank	40	All Activities
850/D6R Size Dozer	2	Placing Aggregate
CAT 140 Grader	2	Crew Support
Crew Van	5	Crew Support
Crew Van/Stretcher Van	1	Crew Support
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	3	All Activities
GPS Base, Rover, DC, Etc.	2	All Activities
Hwy Tractor & 5000 GAL Tank	3	Placing Aggregate
Incinerator	1	Camp Support
IR SD150 Smoothdrum/Padfoot	2	Placing Aggregate
Jumping Jack Compactor	1	Culvert Installation
Light Plant	5	Crew Support
Lowbed Truck & Trailer	2	Crew Support
Mechanic's Truck	4	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support
Scissor Lift 35' Rough Terrain	1	Aggregate Production
Service Truck	4	Crew Support
Side Dump Hwy Truck	25	Aggregate Hauling
Storage Trailers	3	Camp Support
Used Oil Storage	2	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	4	Crew Support
Water Pumps 6"	2	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Summer #4 (May to October)		
1 Ton Crew Truck	2	Crew Support
1/2 Ton Pick Up	10	Crew Support
300 Size Excavator	1	Grading/Aggregate Production/Hauling
5 Kw Generator Portable	1	Crew Support
50 Kw Generator	4	Crew Support
50,000 L Enviro Tank	40	All Activities
850/D6R Size Dozer	2	Placing Aggregate
CAT 140 Grader	2	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Crew Van	5	Crew Support
Crew Van/Stretcher Van	1	Crew Support
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	3	All Activities
GPS Base, Rover, DC, Etc.	2	All Activities
Hwy Tractor & 5000 GAL Tank	3	Placing Aggregate
Incinerator	1	Camp Support
IRSD150 Smoothdrum/Padfoot	2	Placing Aggregate
Light Plant	5	Crew Support
Lowbed Truck & Trailer	2	Crew Support
Mechanic's Truck	4	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support
Scissor Lift 35' Rough Terrain	1	Aggregate Production
Service Truck	4	Crew Support
Side Dump Hwy Truck	25	Aggregate Hauling
Storage Trailers	3	Camp Support
Tandem Water Truck	2	Placing Aggregate
Used Oil Storage	2	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	4	Crew Support
Water Pumps 6"	2	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Winter #5 (November to April)		
1 Ton Crew Truck	2	Crew Support
1/2 Ton Pick Up	10	Crew Support
1000lb Plate Compactor	1	Culvert Installation
200 Size Excavator	1	Ditching/Culvert Installation
400 Size Excavator	1	Culvert Installation
5 Kw Generator Portable	1	Crew Support
50 Kw Generator	4	Crew Support
50,000 L Enviro Tank	40	All Activities
80 Ton Rough Terrain Crane	2	Culvert Installation
950 Size Loader	1	Culvert Installation
966 Size Loader	1	Culvert Installation
CAT 140 Grader	2	Crew Support
CAT TH 83 Zoom Boom	1	Crew Support
Crew Van	5	Crew Support
Crew Van/ Stretcher Van	1	Crew Support
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	3	All Activities
GPS Base, Rover, DC, Etc.	2	All Activities
Incinerator	1	Camp Support
Jumping Jack Compactor	1	Culvert Installation
Light Plant	5	Crew Support
Lowbed Truck & Trailer	2	Crew Support
Mechanic's Truck	4	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support
Service Truck	4	Crew Support
Storage Trailers	3	Camp Support
Used Oil Storage	2	Crew Support
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	4	Crew Support
Water Pumps 6"	2	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Summer #5 (May to October)		
1 Ton Crew Truck	2	Crew Support
1/2 Ton Pick Up	10	Crew Support
1000lb Plate Compactor	1	Culvert Installation
200 Size Excavator	1	Ditching/Culvert Installation
300 Size Excavator	2	Grading/Aggregate Production/Hauling
5 KW Generator Portable	1	Crew Support
50 KW Generator	4	Crew Support
50,000 L Enviro Tank	40	All Activities
850/D6R Size Dozer	3	Placing Aggregate
CAT 140 Grader	2	Crew Support
Crew Van	5	Crew Support
Crew Van/Stretcher Van	1	Crew Support
Fuel Truck	2	Crew Support
Gasoline Storage	6	All Activities
GPS Allowance for Equipment	3	All Activities
GPS Base, Rover, DC, etc.	2	All Activities
Hwy Tractor & 5000 GAL Tank	2	Placing Aggregate
Incinerator	1	Camp Support
IRSD150 Smoothdrum/Padfoot	2	Placing Aggregate
Jumping Jack Compactor	1	Culvert Installation
Light Plant	5	Crew Support
Lowbed Truck & Trailer	2	Crew Support
Mechanic's Truck	4	Crew Support
Office Trailer	2	Camp Support
POLARIS Site Ranger	3	Crew Support
Scissor Lift 35' Rough Terrain	1	Aggregate Production
Service Truck	4	Crew Support
Side Dump Hwy Truck	25	Aggregate Hauling
Storage Trailers	3	Camp Support
Used Oil Storage	2	Crew Support

Equipment Type	Number of Equipment	Equipment Use and/or Activity
Summer #5 (May to October) (Cont'd)		
Wastewater Treatment & Water Treatment Plants	1	Camp Support
Water Pumps 3" & Down	4	Crew Support
Water Pumps 6"	2	Crew Support

Source: Sigfusson Northern Limited (2023)

4.4.2.8 Potential Emissions, Discharges, and Wastes

The following are the potential emissions, discharges and waste anticipated at various points (as specified) during the construction phase of the Project. Also included are anticipated management practices.

- **Waste oil from heavy equipment**. Maintenance of heavy equipment would occur at specific temporary and secure locations prior to management or disposal at a licensed facility and/or through on-site incineration facility.
- **Solid waste** generated at temporary construction camps/work sites and during operations and maintenance activities (e.g., construction waste, domestic waste, wood, cardboard, plastics, foods, metals, etc.). Reduce, reuse and recycle materials and recover resources in all aspects of the Project, prior to disposal into the solid waste stream (i.e., at existing landfill site), including appropriate separation, storage, transport and disposal in accordance with applicable provincial and federal laws and regulations, and with respect for First Nations' traditional use of the Project lands and surrounding environment.
- **Equipment and vehicle noise emissions**. These will be managed using best management practices, such as use of proper equipment and adherence to manufacturer's specified maintenance frequencies. Noise control using current best management practices includes: using newer, well-maintained equipment; using boring/auguring equipment instead of pile drivers; and quieter diesel generators (power source), as well as exhaust and intake muffling.
- **Domestic wastewater and sewage, both hazardous and non-hazardous**, in the form of liquid effluent generated by the temporary workforce/construction camps, including from portable treatment facilities. Depending on available facilities, these may be treated on site using portable facilities or transported offsite by tanker truck for treatment at approved disposal facilities.
- **Air emissions from exhaust of vehicles and equipment**. These will be managed by applying best management practices, including but not limited to: minimizing idling time by shutting equipment off when not in use, or reducing idling times, as well as maintaining construction equipment in proper working condition according to manufacturer's specifications.
- **Greenhouse gas (GHG) emissions** will occur as result of the construction of the Project. GHG, as expressed in carbon dioxide equivalent units ($ktCO_2eq$), contribute to climate change and are a concern to federal and provincial agencies and the public. Climate change has the potential to affect the Project due to more frequent or severe weather events. The primary sources of GHG emissions during the construction stage of the Project are land clearing and associated biomass burning, emissions from construction camp areas, as well as exhaust emissions from construction vehicles and equipment. This will include examining the effect on peatlands and resulting greenhouse gas emissions from changes to peatlands' ability to store and sequester carbon. Potential effects associated with construction are anticipated to be minimal due to their short duration and intermittent frequency.
- Dust emissions originating from cleared areas, earth stockpiles and equipment/vehicle operation on the WSR, access roads and other exposed earth surfaces. These will be managed by applying best management practices, including barriers/enclosures around storage piles, wetting storage piles, covers and limiting the number and height of storage

piles. Other control measures could include wetting road surfaces during dry periods, regular cleaning of trucks and covers, providing adequate freeboard space for truck loads and controlling vehicle speeds through the corridor.

- **Erosion and sedimentation on cleared areas, earth stockpiles and other exposed earth surfaces**. These will be managed by best erosion and sediment control management practices, including but not limited to: sediment fences, sediment ponds, check dams and erosion control fabric.
- **Slash and root waste from clearing and grubbing operations** will be managed using best management practices, including but not limited to: chipping, leaving in place, small wood scattering, and burning.
- **Unsuitable construction materials generated during roadbed construction,** such as poor soils. Where possible, these will be used in preliminary site grading.
- **Aggregate or quarry materials testing for acid rock drainage/metal leaching potential** prior to use in construction. At this time based on the preliminary analysis of rock and soil samples there are no identified concerns with potential acid rock drainage or metal leaching.

4.4.2.9 Environmental Monitoring

An objective of construction monitoring is to ensure avoidance of direct impacts on traditional activities and will include a presence of relevant Indigenous community members (e.g., Webequie First Nation) to ensure at local level that no traditional sites of value and/or interest are adversely affected during construction. Monitoring of erosion and sediment control measures, groundwater, surface water, wildlife, noise, emissions/discharges and waste will be conducted during construction. Post-construction vegetation restoration and rehabilitation will be implemented where required.

The Proponent for the construction phase of the Project will develop a Construction Environmental Management Plan (CEMP) that will consist of environmental protection measures and monitoring requirements to be undertaken as stipulated in this EAR/IS and conditions of other permits/approvals for the Project. Environmental Monitor(s) (EMs) will be tasked with monitoring construction activities and the effectiveness of environmental mitigation measures during construction. The EMs will assess compliance with federal and provincial laws, project permit conditions, and the CEMP. Environmental protection measures and monitoring requirements for the operations phase of the Project will be developed and documented in an Operation Environmental Management Plan (OEMP). **Section 4.6** outlines the CEMP and OEMP framework. Additional details of the proposed framework for developing the CEMP and the OEMP are provided in Appendix E – Mitigation Measures.

4.4.2.10 Environmental Protection and Controls

Sections 6 to 20, Appendix E of the EAR/IS, and the CEMP describe the environmental protection measures to be implemented during the construction of the Project to eliminate or reduce the potential adverse effects on valued components (VCs) and to ensure that commitments made to regulators, Indigenous communities, and stakeholders are communicated to the Contractor. The EMs will have the right to stop construction activities on-site in the case of non-compliance or failure to implement corrective actions and remediation measures.

Quality control and quality assurance responsibilities will be established among various trade contractors and the WSR Project Team. The Proponent will consider retaining quality assurance services from an independent Service Contractor who has experience working in similar locations and environmental conditions across Canada's northern regions. The quality assurance trade contractor's responsibility will be to perform third party checks for the following activities:

- Compaction and soil testing;
- Concrete testing;
- Layout and positioning;
- Water quality testing for concrete; and
- Aggregate property testing.

4.4.3 Operations Phase

As described in **Section 4.4.1**, the operations phase of the Project is considered to be 75-years based on the expected timeframe when major refurbishment of the road components are anticipated and will start after completion of construction. Maintenance and repair activities for the proposed WSR, such as routine scheduled grading and re-surfacing of the road, asphalt road surface repairs (e.g., potholes), management of vegetation and rehabilitation/repair of bridges and culverts will occur over the 75-year operation and maintenance phase.

The operator of the WSR is not known at this time and is part of future discussions and agreement between Webequie First Nation and the Government of Ontario. Similarly, activities that may be undertaken by a third party have not been identified. However, it is expected that the designated operator of the Webequie Supply Road will develop specific operational and maintenance procedures and standards for the road that will be consistent with municipal and/or provincial guidelines for level of service. Specifically, this will include the maintenance quality standards for winter operations and other operations, as described in the MTO Maintenance Manual (2003) for a Class 4 type classification of a provincial highway. During the operations phase of the Project, activities such as the assessment of the condition and operating performance of the road surface, drainage system and structures at waterbody crossings will be conducted regularly along the road corridor. The objective of these routine inspections will be to ensure the road meets the minimum standards for roadside safety and is a reliable connection to allow for the movement of materials, supplies and people from Webequie to the McFaulds Lake area to support mineral exploration activities and mining developments.

At this time there are no proposed access controls for road users of the WSR, however the topic of controls is subject to further discussion and agreement between Webequie First Nation and the Province of Ontario in future development phases of the Project. How, and if, access controls will be executed and enforced will be a function of road ownership and jurisdictional aspects of road operations. It will be particularly important to clarify this for the portion of the roadway that will cross Webequie First Nation Reserve lands, which fall under federal jurisdiction and are controlled by Webequie. Some of the road control elements to be discussed may include:

- Road access (who will be allowed to use the road and under what conditions);
- Access to and use of adjacent lands for traditional uses or other activities (e.g., mineral exploration, outfitters);
- Vehicle and operator licensing requirements;
- Insurance coverage requirements and general liability; and
- Enforcement/policing responsibility.

In the event the WSR is constructed prior to any future connection from the McFaulds Lake area to the provincial road network, it is likely that there would be few access restrictions associated with the road. However, in the potential scenario where there is a full connection from Webequie to the provincial road network, this would present access opportunities for a larger group of people.

Traffic during the operations phase will be comprised primarily of light to medium personal and commercial vehicles, and heavier trucks carrying industrial (mining) supplies and equipment. An average annual daily traffic (AADT) volume of less than 500 vehicles has been projected for the WSR. The design of the underlying subgrade material for the road foundation has considered typical vehicle types (e.g., light pick-up trucks, heavy industrial/commercial transport trucks and trailers, etc.) that are envisioned to use the WSR, including their weight/load (maximum 18-ton truck). The specific traffic mix for the WSR has been assumed as less than 25% heavy vehicles with the majority of traffic being light vehicles.

In the scenario where the WSR is constructed prior to any future connection from the McFaulds Lake area to the provincial road network, it is anticipated that the existing winter road located northeast of the Town of Pickle Lake (refer to **Section 4.4.2**) to Webequie will be utilized on annual basis to transport and deliver equipment, materials and supplies during the operations phase of the Project. In addition, the delivery of equipment, materials and supplies may involve use of air transport to the airport located in Webequie.

4.4.3.1 Maintenance and Operation Activities

The anticipated operations and maintenance activities, of variable frequency, to be conducted for the Project include:

- Visual patrols and inspections of the road;
- Vegetation management;
- Repair and/or rehabilitation of culverts and bridges at waterbody crossings;
- Resurfacing and repair to road surface and shoulders;
- Aggregate and rock extraction and processing, including asphalt/chip seal production at ARA-4 site;
- Dust control;
- Road drainage system maintenance and repairs – drainage cross-culverts, ditches and inlet/outlet areas;
- Access road maintenance;
- Winter maintenance – snow clearing;
- Spills and emergency response; and
- Waste and excess materials management.

The following subsections describe in more detail the typical operations and maintenance activities that will be undertaken for the Project.

4.4.3.1.1 Visual Patrols and Inspections of Road

Routine road patrols will be conducted as an inspection to identify conditions which may adversely affect the road, adjacent lands and/or environment in order to ensure compliance with the quality standards and/or protection measures in the OEMP established for the Project. Observations during road patrols allow for the proper management and scheduling of the work to satisfy the maintenance quality standards and to extend the life of the infrastructure. In accordance with the Maintenance Quality Standard for road patrols in the MTO Maintenance Manual (MQS-395) and classification of the WSR, it is proposed that road patrols be carried out a minimum of 2 times per week. In addition, road patrols and their frequency may require adjustment to address specific situations, such as during spring break-up, during and after heavy wind or rain events, and emergencies (e.g., accidents, fires, stranded motorists, wildlife mortality from collision with vehicle).

All road patrols, observations and actions taken will be documented.

4.4.3.1.2 Vegetation Management

Vegetation management will be conducted along the road within the ROW, at rest areas and maintenance areas, access road to the ARA-4 aggregate site, and at the MSF. Vegetation control will involve cutting, trimming or removal of trees, brush/shrubs and/or groundcover (grass) during the late fall to improve visibility for driver safety or minimize risk of hazard trees falling onto the roadway or supportive facilities. Various types of cutting and mowing equipment will be used including chainsaws, riding mowers and weed-eaters.

The removal of brush and small trees growing in the road ROW and other select areas will be managed and disposed of using the same measures (e.g., chipping, spreading, burning) used during the construction phase as described in **Section 4.4.2.2** – Vegetation Clearing and Grubbing.

Approved native seed mixes, or approach to allow for natural regeneration of desirable groundcover, will be used to stabilize disturbed soils and minimize erosion potential within the road ROW, where applicable. Where tree and/or shrub planting is required to adequately rehabilitate temporarily disturbed sites in sensitive areas (e.g., peatlands), appropriate native species will be used.

Inspection to assess the need for vegetation control will be conducted through drive-by inspections and detailed inspection in the active growing season to identify actions items and work plan for implementation in the fall or winter.

4.4.3.1.3 Repair and Rehabilitation of Culverts and Bridges

During the operations phase, repairs and/or scheduled rehabilitation of structures will be required. The nature of the work at bridges could include repairs to the concrete deck surface, abutments and/or pier; and at culverts, potential repairs to structural steel plates, erosion protection at inlet and outlet areas or foundation related work.

The typical activities and environmental protection measures for repair of culverts and/or bridges during operations are anticipated to be similar to those described in **Section 4.4.2.5** for construction of structures at waterbodies.

In addition to repair and rehabilitation of structures, routine maintenance activities may include:

- *Bridge cleaning* – Cleaning involves the removal of dirt and debris with water from a structure. Cleaning may include bridge deck and expansion joints, barrier walls, abutments or pier columns. In accordance with the Ontario *Water Resources Act*, Permit(s) to Take Water or Environmental Activity and Sector Registry will be obtained, where applicable, prior to any water taking required for cleaning of bridges.
- *Removal of obstructions to waterflow at bridges and culverts* at waterbodies carrying logs, trees, ice or other debris obstructing flow at bridge and culvert crossings. Where flooding and/or erosion are evident from the obstruction of flow and causing issues of concern, mechanical and/or hand-held equipment will be used to remove the obstruction. In addition, beaver dams in a watercourse near a structure may also result in localized flooding and erosion and require removal.
- *Erosion control at bridges and culverts* – Erosion control at bridges/culverts may be required to address the loss of soil around structures overtime due to runoff conditions or removal of soil caused by flood. Measures to address erosion or washouts at structures may involve regrading, and placement of fill and/or rock.

The above-described maintenance activities will be conducted in accordance with the Maintenance Quality Standards in the MTO Maintenance Manual for provincial highways. In addition, the maintenance activities will be completed in consideration of best management practices, in consultation with MNRF, DFO *Measures to protect fish and fish habitat* (DFO, 2022), DFO's *Code of Practice: Beaver Dam Breaching and Removal* (DFO, 2024) and in general the environmental protection requirements described in the EAR/IS and OEMP.

Routine drive-by inspections during road patrols will be undertaken at culvert and bridges to identify issues of concern. This will include a walk-about inspection in the spring and fall to identify erosion problems, obstruction to waterflow, and any other general defects. In addition, a qualified structural engineer will conduct annual inspection of each structure to identify any defects and action plan, where applicable. Additional inspections of a structure may also occur under the following conditions: accident or vehicle collision structure; unusual/severe weather conditions or natural disasters; where a structural integrity or safety issue is suspected; and/or flooding/ice jams. Inspections, including their frequency, will be carried out in accordance MTO Maintenance Quality Standards and will include use of standardized inspection forms to maintain a documented record of the site conditions and completed maintenance activities.

4.4.3.1.4 Resurfacing and Repair to Road Surface and Shoulders

Grading and resurfacing of the finished road surface will be a routine on-going maintenance activity to promote a safe and reliable all-season road. As necessary, repairs and resurfacing to the road will be conducted to address potholes or dents in the road surface, distortion (e.g., bump or depression) of the road surface from its original profile/grade, washboarding that appears as ripples across the road surface, soft areas that lack stability and crossfall that traverses the slope of the roadway to ensure proper drainage. In general, road surface repairs will be conducted in accordance MTO Maintenance Quality Standard 104 – Gravel Surface; and 102 – Asphalt Pavement Surfaces.

Shoulders from the travelled portion of the roadway accommodate runoff of surface water and provide an area for traffic to pull off the travelled portion. Gravel shoulders, similar to the road surface, will be routinely inspected by road patrols and will require routine maintenance and repairs to address washouts of granular material, ruts, drop-off of grades, soft/wet areas, and windrow/berms at outside edge of shoulders.

Equipment to complete the resurfacing and repairs to the road surface and shoulders are expected to include: graders, compactors, excavators and pavers. Where applicable, aggregate or asphalt material will be delivered by truck from the aggregate pit at site ARA-4 to the road segment requiring work. Traffic controls, such as temporary lane restrictions or closures, may be required to provide safe travel for users and onsite equipment and operation staff until repairs are completed.

4.4.3.1.5 Aggregate Extraction and Processing

Aggregate (sand, gravel) and rock material will be required for road maintenance and repair activities such as those described in **Section 4.4.3.1**, as well as repairs to structures. As described in **Section 4.3.3.1**, the two aggregate source areas, referred to as sites ARA-2 and ARA-4, are to be developed as pits and quarries that will extract and process suitable sand, gravel and rock for the Project. The deposit at ARA-4 will be used for construction phase and will also serve as the permanent aggregate pit to produce materials needed to support maintenance and repair activities during the operations phase. The deposit at site ARA-4 has limited rock material and therefore surplus rock available at site ARA-2 is intended to provide the estimated quantity required for operations of the Project. Surplus rock extracted at ARA-2 during the construction phase will be stockpiled at the permanent MSF and/or site ARA-4 for use during operation and maintenance phase of the Project.

Aggregate material at site ARA-4 will be routinely extracted and processed to meet the annual anticipated volume of gravel/sand (26,750 m3) and/or asphalt required to maintain and repair the roadway and other areas (access road, maintenance areas and rest areas).

Extraction of aggregate materials at site ARA-4 will involve the use of heavy equipment such as excavators, trucks and front-end loaders. To process the required granular material for the maintenance and repair activities, portable crushing equipment/plant will be required and operated, as well as asphalt batch plant. The crushing equipment will be modular, with capability to self-erect where possible and overall will utilize existing equipment and overall site layout plan for the aggregate pit as established during the construction phase. A typical crushing set-up to be operated at ARA-4 will include a primary crusher, secondary crusher, screening plant, diesel generator, conveyors, control tower and supporting mobile loaders.

Aggregate material extracted and processed at the ARA-4 site will be stockpiled within the site and transferred to haul trucks for transport to the road corridor. A drainage management system, consisting of ditches, erosion and sediment control measures and settlement basins for capturing and treating runoff at the site, used during the construction phase will continue to be implemented and modified as required during operations.

Activities at the pit at ARA-4 during the operations phase are anticipated to be similar to those during the construction phase and will include:

- Select vegetation and clearing as expansion of pit occurs;
- Excavating;
- Stockpiling;
- Management and treatment of surface drainage;
- Operating equipment/machinery;
- Processing of aggregate, including taking of water where required;

- Geochemical testing, if required, to assess the potential for metal leaching and acid generation from aggregate and quarried rock;
- Refuelling and equipment maintenance; and
- Progressive rehabilitation of site.

4.4.3.1.6 Dust Control

During operations, it is proposed that water from trucks be applied to the gravel road surface along the east half of WSR in the peatlands to control dust for safety of road users and to minimize potential impacts to the environment from the dispersal of air borne dust particles to adjacent natural areas. Water will be obtained from lakes and rivers that cross the road. Permits to Take Water (PTTW) (taking > 400,000 L/day) or Environmental Activity and Sector Registry (EASR) (taking > 50,000 L/day but < 400,000 L/day) will be secured prior to taking of water.

During operations air quality monitoring is proposed (refer to Section 22) to assess the effectiveness of dust control measures and potential adverse effects to the environment. Where, effects are considered unacceptable and do not meet the established air quality levels, and/or based on concerns raised by road users or adjacent land users (e.g., hunters, trappers, etc.), further mitigation options will be considered by the road operator in consultation with Indigenous communities and stakeholders. This may include use of chemical dust suppressants, such as magnesium chloride, or replacement of the gravel driving surface in the east half of the road in the peatlands with a surface treatment such as use of chip seal or asphalt pavement. Where chemical dust suppressants are proposed they will not be applied within 100 m of a water crossing or beyond the road footprint and are not expected to have any adverse effects on soils, surface water, vegetation, wildlife health, or human health. In general, the use and application of dust suppressants, where applicable, will be conducted in accordance with MTO OPSS – Construction Specification for Dust Suppressants.

4.4.3.1.7 Road Drainage System Maintenance

Road drainage features, such as ditches, cross-culverts in peatlands, and ditch inlets and outlets, will be inspected on a routine basis. Where required, maintenance and repair activities will be completed to restore the drainage system to its original design standards. The purpose of the maintenance and repair works are to ensure the free movement of surface flow to prevent obstructions or hazards that may result in localized flooding and/or erosion.

Activities associated with the maintenance and repair of the road drainage system will consist of earth excavation, rock placement at culvert inlets and outlets, removal of obstructions/debris/sediment, replacement and/or repair of drainage cross-culverts and grading and shaping of roadside ditches to address erosion and maintain to profile and ditch slopes. Work will typically occur in summer or fall. To conduct maintenance activities, water management may be required such as temporary pumping of water around the work area for environmental protection.

4.4.3.1.8 Access Road Maintenance

During operations, a permanent access road of approximately 5.5 km from the roadway to the aggregate pit (ARA-4) is required. Activities to maintain and repair this road during operations will include:

- Vegetation management;
- Road maintenance/repair and dust control;
- Snow removal; and
- Maintenance and repair of drainage features, such as diches and structures (culverts and bridge at WC-27).

4.4.3.1.9 Maintenance and Storage Facility

As noted in **Section 4.3.3.5**, a permanent MSF, or maintenance yard, is required to support the operations of the Project. The MSF and its components (e.g., offices, parking, areas for equipment and material storage, etc.), will be established during the construction phase of the Project (refer to **Section 4.4.2.3.4**).

Typical activities at the MSF during operations of the Project will include following:

- Equipment and vehicle maintenance, cleaning and repairs;
- Refueling of equipment and vehicles;
- Storage and handling of fuel (diesel, gas) and other petrochemicals (lubricants, solvents, hydraulic fluid, etc.), including secondary containment system;
- Repair and maintenance of water well, including pumping and distribution system;
- Repair and maintenance of septic system or wastewater treatment plant;
- Repair and maintenance diesel power generator, including electrical distribution system;
- Repair and maintenance of buildings, parking area, security fencing, lighting;
- Storage, handling and disposal of non-hazardous and hazardous (waste oils, batteries, antifreeze, paints etc.), including potential maintenance/repair of on-site waste incinerator;
- Receiving deliveries of equipment, materials and supplies;
- Maintenance of site drainage systems (i.e., ditches, culverts); and
- Snow removal.

Routine and annual inspections will be conducted to assess conditions of the components at the MSF as generally identified above. A record of inspections and repair and maintenance activities completed will be kept on site.

4.4.3.1.10 Winter Maintenance

Winter maintenance operations will be provided to maintain a level of service for the WSR that is consistent with a Class 4 provincial highway in northwest Ontario, as per the MTO Maintenance Manual (Maintenance Quality Standard 701). All highways in Ontario have been divided into five service classes: Class 1, 2, 3, 4, and 5 with Class 1 being the highest level of service and Class 5 being the lowest. The defined level of service for Class 4 is to essentially reach the bare travelled surface within 24 hours after a snow fall event has ended or abated.

Mobilization of snow removal operations for the WSR will start with the call-out of maintenance staff when it becomes evident that the use of winter equipment, such as graders or truck plows, are needed to remove snow for safety reasons, and/or to attain the specified level of service. In general, equipment operators and vehicles will begin work within 30 minutes from the time of the call-out. To meet the winter maintenance level of service requirements it is anticipated that grading operation to remove snow from the roadway will start once accumulation reaches 10 cm. Equipment and vehicles used for winter maintenance will be operated with warning lights in compliance with the Ontario *Highway Traffic Act*.

During the winter season, road patrols will be conducted at least once per day, or more frequently during unfavorable weather conditions, and patrollers will communicate road and weather conditions to maintenance staff at the MSF.

No application of sand or salt is proposed for de-icing of the WSR during the winter season based on MTO specifications for similar types of roads in northwest Ontario that are considered Class 4 provincial highways.

4.4.3.1.11 Spills and Emergency Response

During the operations phase for the Project, maintenance staff, and where applicable subcontractors, will respond to spills and emergency situations. All spills will be managed in accordance with applicable federal and provincial legislation, mitigation identified in this EAR/IS (refer to Appendix E) and the *Spill Prevention and Emergency Response Management Plan* within the OEMP to be developed for the Project. The objective of the Spill Prevention and Emergency Response Management Plan is to provide procedures for the safety and protection of life, environment and property, identifying a predetermined course of actions and responsible personnel for emergency situations arising from incidents, release of hazardous materials, or other emergency situations during the operations phase of the Project. The plan will be structured to provide clear and easily accessible information and will define:

- Roles and responsibilities of response personnel and organizations;
- Internal and external communication structure;
- Mandatory response actions and procedures to be executed;
- Reporting protocols to be followed; and
- Follow-up actions to be taken.

The plan will cover various emergency response situations that are most likely to occur such as personal injury, fire, explosions and hazardous material spills.

4.4.3.1.12 Potential Emissions, Discharges, and Wastes

During operations, localized atmospheric emissions can be expected due to similar combustion emissions from vehicle traffic, road maintenance and aggregate extraction activities as well as generation of airborne dust by traffic. The amount of combustion emissions due to road traffic will increase from the current situation. During the operations phase of the Project, an estimated 8,882 tonnes of CO_2 eq (carbon dioxide equivalent, which quantifies GHG emissions in terms of their total global warming potential relative to that of CO_2) will be emitted. Details of atmospheric emissions are further described in Section 9.

The potential emissions, discharges and waste during the operations phase of the Project are anticipated to be similar to those described for construction (refer to **Section 4.4.2.8**). In summary, these will include:

- **Waste oils, solvents, lubricants, filters, etc.,** generated from maintenance, repair and cleaning of equipment and vehicles. Maintenance of equipment and vehicles will occur at the MSF. Best management practices and operational procedures for storage, handling and disposal will be implemented as previously described.
- **Solid waste** generated at Maintenance and Storage Facility, aggregate extraction and processing at site ARA-4, and at site along road where repair/maintenance work are conducted (bridges, culverts, debris at rest areas, etc.). This could include domestic waste, wood, cardboard, plastics, foods, metals, etc. All efforts will be made to reduce, reuse and recycle materials and recover resources, where practicable, prior to disposal, including appropriate separation, storage, transport and disposal in accordance with applicable provincial and federal laws and regulations.
- **Equipment and vehicle noise emissions**. These will be managed using best management practices, such as use of proper equipment and adherence to manufacturer's specified maintenance frequencies and noise emission standards. Noise control using current best management practices will be implemented, such as well-maintained equipment (e.g., exhaust system/mufflers) and use of quieter rated diesel generators.
- **Domestic wastewater and sewage** in the form of liquid effluent generated at the MSF, including from portable sewage treatment facilities. Depending on available facilities, these may be treated on site using portable facilities or transported offsite by tanker truck for treatment at approved disposal facilities.

- **Air emissions from exhaust of vehicles and equipment**. These will be managed by applying best management practices, including but not limited to: minimizing idling time by shutting equipment off when not in use, or reducing idling times, as well as maintaining operations equipment and vehicles in proper working condition according to manufacturer's specifications. It is anticipated that sources of GHG during the operations phase of the Project will include exhaust emissions from maintenance equipment and vehicles, and from light and heavy vehicles users of the road.

4.4.3.2 Equipment Requirements

Equipment and vehicles that will typically be required during operations and maintenance activities include excavators, road graders, front-end loaders, dozers, tanker trucks, pick-up trucks, aggregate extraction and processing equipment (e.g., crushing, screening), equipment for vegetation control (e.g., chain saws, weed-eaters) and diesel generators. Equipment and vehicles likely to be used during operations of the Project are summarized in **Table 4-9**.

Table 4-9: Summary of Expected Equipment and Vehicles Used for Project Operations Activities

Proposed Project Operations Activity	Equipment Type	Number of Equipment
Visual Patrols and Inspection	▪ Light Pick-up Truck	2
Vegetation Management	▪ Chain Saw ▪ Weed Wacker/Eater ▪ Farm Tractor ▪ PTO Driven Brush ▪ Wood Chipper	2 2 2 2 2
Repair and Rehabilitation of Structures	▪ Highway Truck and Trailer ▪ Excavator ▪ Crane ▪ Compactor ▪ Front-end Loader	2 1 1 1 1
Repair and Resurfacing of Road and Shoulders	▪ Highway Truck and Trailer ▪ Grader	1 2
Aggregate Extracting and Processing	▪ Front-end Loader ▪ Excavator ▪ Jaw Crusher ▪ Cone Crusher ▪ Powervan ▪ Screen ▪ Feeder ▪ Stacker Conveyor	2 1 1 1 1 1 1 1
Dust Control	▪ Water Truck	2
Road Drainage System Maintenance	▪ Excavator ▪ Dozer ▪ Haul Truck	1 1 1

Proposed Project Operations Activity	Equipment Type	Number of Equipment
Access Road Maintenance	▪ Excavator ▪ Dozer ▪ Haul Truck	1 1 1
Maintenance and Storage Facility	▪ Water Treatment Plant ▪ Waste Incinerator ▪ Compressors ▪ Diesel Generator ▪ Communications ▪ Front-End Loader ▪ Light Pick-up Truck ▪ Grader	1 1 3 1 1 1 2 1
Winter Maintenance	▪ Grader	3
Spills and Emergency Response	▪ Excavator ▪ Haul Truck	1 2

Source: Sigfusson Northern Limited (2023)

4.4.3.3 Environmental Monitoring

An ongoing follow-up monitoring program (post-construction) will be implemented during the operations phase of the Project for many valued components (e.g., wildlife, wetlands/peatlands, fish/fish habitat, etc.) and are detailed in Section 22. The purpose of the follow-up monitoring will be to assess the effectiveness of mitigation and predicted effects in the EAR/IS and to document compliance with commitments and obligations in the approved provincial ToR and federal TISG. This monitoring will be in addition to the routine monitoring and inspections of the road components (bridges, culverts, etc.), conducted by the road operator.

The road operator of the WSR will develop an OEMP that will describe the environmental monitoring requirements and protocols, compliance management and environmental auditing to be undertaken during the operations phase of the Project. This will include the use of qualified Environmental Monitor(s) and/or Subject Matter Experts tasked with implementing and documenting the required follow-up monitoring programs (e.g., surface water, peatlands, wildlife, etc.) and assessing compliance with federal and provincial laws, project permit conditions, and the mitigation measures identified in this EAR/IS (refer to Appendix E) including the environmental protection measures and best management practices contained in the OEMP. **Section 4.6.2** outlines the OEMP framework. Additional details of the proposed framework for developing the OEMP are provided in Appendix E.

4.4.3.4 Environmental Protection and Controls

Sections 6 to 20, Appendix E of the EAR/IS, and the OEMP describes environmental protection measures to be implemented during the operations of the Project to eliminate or reduce the potential adverse effects on valued components (VCs) and to ensure that commitments made to regulators, Indigenous communities, and stakeholders are communicated to the operations and maintenance staff and subcontractors. The delegated Environmental Manager for the road operator will have the right to stop operations activities in the case of non-compliance or failure to implement corrective actions and remediation measures.

4.5 Project Workforce Requirements

The Project will utilize a combination of union and non-union contractors, with a significant focus on utilizing local (Indigenous) labour to complete the work. Qualified trade contractors and their retained workforces will be utilized throughout the construction and operations phases. It is anticipated that much of the labour force may come from outside the community of Webequie First Nation (e.g., from elsewhere in Ontario or out-of-province) and could be non-unionized. To maximize the economic and social benefits of the Project to Indigenous communities, and particularly Webequie First Nation, it is anticipated that the designated constructor and operator of the WSR will identify the needs, capacity and certifications necessary, and share this information with Indigenous communities and individuals through meaningful engagement activities, as well as implement a human capital development approach where training, internship, certification resources will be dedicated. The constructor and operator will also implement preferential hiring, training and certification of tradespeople and contractual terms, that will favour Indigenous participation, contracting or subcontracting. Part of this task would involve a due diligence exercise in future development stages of the Project to identify work that could be delivered by Indigenous communities, businesses and individuals, including developing hiring policies and training programs that take into consideration vulnerable or underrepresented groups, or other community relevant subgroups (e.g., women, youth), based on the Gender Based Analysis Plus completed for the project. In a broader context, it is also expected that the Proponent for the construction and operations phase will develop workplace policies and programs and initiatives specific for the Project that may include, but not limited to:

- Codes of Conduct Policy;
- Drug and Alcohol Policy;
- Gender Equity and Diversity Policy and Plan that focuses on employment from underrepresented populations (e.g., women, youth, Indigenous community members);
- Equal employment opportunity;
- Indigenous employment;
- Workplace safety programs;
- Respectful Workplace Policy;
- Cultural training and awareness programs;
- Investment in training opportunities; and
- Employee assistance programs and benefits, including career planning, employee counselling, and family support.

Expected workforce requirements during the construction and operations phases of the Project based on the National Occupational Classification system are summarized in **Table 4-10** and **Table 4-11**.

4.5.1 Construction Workforce

The construction and commissioning of the WSR is expected to occur within an approximately 5-to-6-year period, after securing all the necessary approvals, permits, licences, authorizations and clearances to construct.

The direct and indirect workforce requirement for the Project construction phase is anticipated to range from 114 workers in year 4 of construction and peaking at approximately 243 workers in year 2 of construction. Direct workforce will account for most of the Project construction workforce requirement and their work will be based at the Project site. To support the safe, timely and controlled execution of the Project, indirect employment will be required for a project office, supporting Information Technology, communication services, survey and control, quality control/quality assurance service laboratories, document control, engineering supports, material monitoring and control, emergency response, health and safety resources, environmental monitoring systems/equipment and security.

Table 4-10 summarizes the estimates of employment for the construction phase for the Project.

Table 4-10: Summary of Estimated Employment for Project Construction

Project Construction Phase[3]	Broad Occupational Category from National Occupational Classification[1]	Position/Skill Requirement	Employment (Approximate FTEs)[2]	Anticipated Workforce Region of Origin
Direct Employment				
Construction Winter Season #1	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	35	Local, regional, out-of-province
Construction Summer Season #1	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	87	Local, regional, out-of-province

Project Construction Phase[3]	Broad Occupational Category from National Occupational Classification[1]	Position/Skill Requirement	Employment (Approximate FTEs)[2]	Anticipated Workforce Region of Origin
Direct Employment (Cont'd)				
Construction Winter Season #2	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	89	Local, regional, out-of-province
Construction Season Summer #2	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	112	Local, regional, out-of-province

Project Construction Phase[3]	Broad Occupational Category from National Occupational Classification[1]	Position/Skill Requirement	Employment (Approximate FTEs)[2]	Anticipated Workforce Region of Origin
Direct Employment (Cont'd)				
Construction Winter Season #3	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	75	Local, regional, out-of-province
Construction Season Summer #3	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	114	Local, regional, out-of-province

Project Construction Phase[3]	Broad Occupational Category from National Occupational Classification[1]	Position/Skill Requirement	Employment (Approximate FTEs)[2]	Anticipated Workforce Region of Origin
Direct Employment (Cont'd)				
Construction Winter Season #4	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	48	Local, regional, out-of-province
Construction Season Summer #4	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	48	Local, regional, out-of-province

Project Construction Phase[3]	Broad Occupational Category from National Occupational Classification[1]	Position/Skill Requirement	Employment (Approximate FTEs)[2]	Anticipated Workforce Region of Origin
Direct Employment (Cont'd)				
Construction Winter Season #5	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	38	Local, regional, out-of-province
Construction Season Summer #5	▪ Trades, transport and equipment operators and related occupations ▪ Health	▪ Structures and Grading Superintendents ▪ Foremen ▪ Project Manager ▪ Project Coordinator ▪ Clerk/Administrator ▪ Surveyors & Drafting ▪ Quality Control (internal & 3rd party) ▪ Safety/Environmental Monitors ▪ Equipment Operators ▪ Laborers ▪ Camp Staff ▪ Mechanics/Service Staff	62	Local, regional, out-of-province

Project Construction Phase[3]	Broad Occupational Category from National Occupational Classification[1]	Position/Skill Requirement	Employment (Approximate FTEs)[2]	Anticipated Workforce Region of Origin
Indirect Employment				
Construction Year #1	▪ Business, finance and administration ▪ Health	▪ General Manager ▪ Warehouse Manager ▪ Warehouse Clerk ▪ Accountant ▪ Accountant Clerk ▪ Information Technology Technician ▪ Health and Safety ▪ Security personnel ▪ Nurse	57	Regional, out-of-province
Construction Year #2	▪ Business, finance and administration ▪ Health	▪ General Manager ▪ Warehouse Manager ▪ Warehouse Clerk ▪ Accountant ▪ Accountant Clerk ▪ Information Technology Technician ▪ Health and Safety ▪ Security personnel ▪ Nurse	42	Regional, out-of-province
Construction Year #3	▪ Business, finance and administration ▪ Health	▪ General Manager ▪ Warehouse Manager ▪ Warehouse Clerk ▪ Accountant ▪ Accountant Clerk ▪ Information Technology Technician ▪ Health and Safety ▪ Security personnel ▪ Nurse	28	Regional, out-of-province

Project Construction Phase[3]	Broad Occupational Category from National Occupational Classification[1]	Position/Skill Requirement	Employment (Approximate FTEs)[2]	Anticipated Workforce Region of Origin
Indirect Employment (Cont'd)				
Construction Year #4	▪ Business, finance and administration ▪ Health	▪ General Manager ▪ Warehouse Manager ▪ Warehouse Clerk ▪ Accountant ▪ Accountant Clerk ▪ Information Technology Technician ▪ Health and Safety ▪ Security personnel ▪ Nurse	18	Regional, out-of-province
Construction Year #5	▪ Business, finance and administration ▪ Health	▪ General Manager ▪ Warehouse Manager ▪ Warehouse Clerk ▪ Accountant ▪ Accountant Clerk ▪ Information Technology Technician ▪ Health and Safety ▪ Security personnel ▪ Nurse	15	Regional, out-of-province

Notes:

[1] Government of Canada (2021).

[2] FTEs = Full-time equivalents, a unit that is used to measure the workload of an employed person. An FTE of 1.0 means the person is equivalent to one full-time worker. Source of direct FTE estimates were provided from Sigfusson Northern Limited acting as construction planning support for the Project. Details on estimates of indirect employment are sourced from Section 15 – Assessment of Effects on Economic Environment.

[3] Assumes 5-year construction phase for workforce projections

Construction activities will typically occur during the working hours of 07:00 to 19:00 from Monday to Sunday. However, regularly scheduled extended hours of work may be required to address schedule delays caused by weather or other unexpected conditions.

The following activities will be considered for the Project to maintain a source of construction labour to minimize impact of labour shortages:

- Contracting strategy will be developed so that trade contractors can plan the activities to maximize the labour effectiveness on site and, with larger packages, trade contractors can offer long-term employment, which should attract labourers to the Project;
- The Project will prioritize local hiring and training of labour, especially for members of Indigenous communities, where possible opportunities for joint-venture partnerships should be explored;

- The construction sequence may be repetitive, as the road will be developed in a linear/series format; this should afford utilizing the trades sequentially and take advantage of the up-to-date project-specific lessons learned as the work progresses; and
- Any fly-in/fly-out labour should be limited to 14 days in and 7 days out to prevent fatigue and encourage retention. Local contributors will be encouraged to take the scheduled breaks.

4.5.2 Operations Workforce

The Project will be operated for an indeterminate time period. During the operations phase of the Project, activities such as the assessment of the condition and operating performance of the road surface, drainage system and structures at waterbody crossings will be conducted regularly along the road corridor, in addition to other maintenance activities as described in **Section 4.4.3.1**.

Table 4-11 summarizes the estimates of employment per year during the operations phase for the Project.

Table 4-11: Summary of Estimated Employment Per Year for Project Operations

Proposed Project Operations and Maintenance Activities	Broad Occupational Category from National Occupational Classification[1]	Role/Skill Requirement	Employment (Approximate FTEs per Year)[2]	Anticipated Workforce Region of Origin
Direct Employment				
▪ Visual Patrols and Inspections of road ▪ Vegetation Management ▪ Repair and rehabilitation of structures ▪ Repair and resurfacing of road and shoulders ▪ Aggregate extraction and processing ▪ Dust Control ▪ Road drainage system maintenance ▪ Access road maintenance ▪ Maintenance and Storage Facility Upkeep ▪ Winter maintenance ▪ Spills and emergency response ▪ Environmental Monitoring ▪ Environmental Protection, Controls and Health and Safety	▪ Trades, transport and equipment operators and related occupations ▪ Health ▪ Natural and applied sciences and related occupations	▪ Project Engineer ▪ Contractors ▪ Construction trades ▪ Health and Safety	16	Local, regional, out-of-province

Proposed Project Operations and Maintenance Activities	Broad Occupational Category from National Occupational Classification[1]	Role/Skill Requirement	Employment (Approximate FTEs per Year)[2]	Anticipated Workforce Region of Origin
Indirect Employment				
• Supporting Information Technology • Document control • Communication services	• Business, finance and administration	▪ Clerk ▪ Information Technology Technician	1.1	Regional, out-of-province

Notes:

[1] Government of Canada (2021).

[2] FTEs = Full-time equivalents, a unit that is used to measure the workload of an employed person. An FTE of 1.0 means the person is equivalent to one full-time worker. Details on estimates of employment are provided in Section 15 – Assessment of Effects on Economic Environment.

4.5.3 Training

The goal of the Project is to provide employment, training and economic development opportunities to Webequie First Nation by facilitating the movement of people and goods between Webequie and proposed mine developments and mineral exploration activities in the McFaulds Lake area. Creating economic activity will increase skill levels and employment opportunities for Webequie community members, businesses and neighboring Indigenous communities.

The Project will have beneficial effects on new employment, training, and business contracting opportunities from use of goods and services during construction and operations, including:

- Opportunity for Webequie First Nation and other First Nations to own and/or construct and operate the road, including potential for subsequent investment in economic development opportunities;
- Opportunities for capacity building and business training;
- Opportunities for youth-employment and training; and
- Possible higher overall educational levels and capacity.

As part of maximizing local community participation, Webequie community members are currently in BEAHR (Building Environmental Aboriginal Human Resources) training so that they may work on the Project. The goal of training is to allow for Webequie community members and neighboring Indigenous communities to fully capture the employment and economic benefits from the construction and operations of the WSR.

The Proponent of the construction and/or operation of the Project will develop and implement an Environmental, Health, and Safety Training Program so that all individuals involved in the construction and operations of the Project are informed of, and understand, the project-specific environmental requirements and sensitivities, and their responsibilities with regard to meeting those requirements. The Environmental, Health, and Safety Training Program will be provided to all Project construction and operations personnel and visitors prior to accessing the construction site. Records of training provided to workers and visitors will be maintained.

4.6 Management Plans

Management plans will be developed for the construction and operation phases of the Project. **Sections 4.6.1** and **4.6.2** outline the content of the Construction Environmental Management Plan (CEMP) and the Operation Environmental Management Plan (OEMP), respectively. Additional details of the proposed framework for developing the CEMP and the OEMP are provided in Appendix E. The purpose of the CEMP and OEMP are to guide the Proponent and its contractors in complying with applicable environmental legislation by providing criteria, standard protocols, and mitigation measures to eliminate, reduce, and/or offset potential adverse effects identified in the EAR/IS. Each management plan will be developed and implemented prior to the start of each Project phase. For example, the CEMP and component management plans will be developed and implemented before the start of Project construction activities. The OEMP will be developed during the construction phase and implemented immediately prior to the start of project operations. The OEMP will include component management plans to address potential adverse effects of operation and maintenance activities.

The environmental management plans are intended to provide clear direction to the Proponent and its contractors on managing the potential environmental, social, heath and cultural risks during construction and operations of the Project. The CEMP and/or OEMP may specify the need for activities such as monitoring, documenting and reporting. Follow-up monitoring will be developed separately from the component management plans but will be reference or included as appendices in the CEMP or OEMP for context. Section 22 (Follow-up and Monitoring) describes the follow-up and monitoring programs that will be conducted for the Project.

The CEMP and OEMP, and their component management plans, will draw from environmental guidance, best practice and standards, and factor in the requirements from current Canadian laws and regulations.

4.6.1 Construction Environmental Management Plan Framework

The CEMP will provide guidance on mitigation measures that will be implemented prior to and throughout the construction phase of the Project to either avoid or minimize the potential for adverse environmental effects. The component management plans that will be included as part of the CEMP are:

- Air Quality and Dust Control Management Plan;
- Archaeological Resources Management Plan;
- Construction Blasting Management Plan;
- Construction Traffic Management Plan;
- Construction Waste Management Plan (including Hazardous, Contaminated and Controlled Materials);
- Employment and Procurement Plan;
- Environmental and Cultural Awareness and Education Plan;
- Erosion and Sediment Control Plan;
- Fish and Fish Habitat Management Plan;
- Groundwater Management Plan;
- Health and Safety Management Plan;
- Noise and Vibration Management Plan;
- Fuel Storage and Handling Plan;
- Site Restoration and Monitoring Plan;
- Spill Prevention and Emergency Response Management Plan;
- Surface Water and Storm Water Management and Monitoring Plan;

- Soil Management Plan;
- Vegetation and Invasive Species Management Plan; and
- Wildlife Management Plan (includes species at risk).

The CEMP and its component management plans may be updated throughout the construction phase in the event of changes in environmental best practice or standards.

4.6.1.1 Content of the CEMP

The main body of the CEMP document will include detailed information on the following topics:

- **Project Description:** Project overview, scope of construction works, construction disturbance footprint, laydown and storage areas, schedule of works, maps/site plans.
- **Project Roles and Responsibilities:** a description of the type of positions, their responsibilities, reporting structure, and organizational structure. A description of roles will include the Proponent key personnel, the Primary Contractor, Environmental Manager, and key members of the Environmental team including the Environmental Monitor.
- **Project Contacts:** contact information for the personnel on the organizational structure, government authorizing agencies and emergency response organizations.
- **Environmental Awareness and Education:** a description of the Proponent's Environmental Policy and overview of educational awareness training, with reference to the detailed subcomponent plan.
- **Health and Safety:** a description of the Proponent's Health and Safety policy and overview of health and safety awareness training, with reference to the Construction Health and Safety Plan.
- **Environmental Protection and Controls:** summary of topic-specific environmental risks and protections, plus heritage and social risks and protections to be in place for the construction phase. Cross-reference to component management plans.
- **Component Management Plans:** detailed description of topic-specific component management plans, or Environmental Protection Plans, to address environmental, social, and cultural heritage risks identified within the main body of the CEMP and in the EAR/IS.

4.6.1.2 Contents of Component Management Plans

The component management plans of the CEMP will generally include the following format:

- Management Plan Objective(s);
- Management Strategy(ies);
- Guiding Documents (e.g., relevant legislation, guidance, policies, best practice, standards);
- Environmental Protection Measures, Specifications and/or Controls;
- Schedule/Timing of Implementation;
- Delegation of Project Role and Responsibility;
- Performance Indicator(s);
- Monitoring Requirements;
- Reporting Requirements;
- Corrective Actions; and
- Maps and Site Plans, as required.

4.6.2 Operation Environmental Management Plan Framework

The OEMP will also have component management plans, similar to the CEMP. The component management plans within the OEMP are expected to include:

- Air Quality and Dust Control Plan;
- Erosion and Sediment Control Plan;
- Energy Management Plan;
- Health and Safety Management Plan;
- Noise Management Plan;
- Fuel Storage and Handling Plan;
- Inspection, Maintenance and Repair/Rehabilitation of Road and Supportive Infrastructure;
- Spill Prevention and Emergency Response Management Plan;
- Surface Water and Storm Water Management and Monitoring Plan;
- Vegetation and Invasive Species Management Plan; and
- Wildlife Management Plan (including species at risk).

4.7 Summary of Project Changes

Two alternative routes for the WSR were presented in the approved provincial EA Terms of Reference (ToR) and federal Detailed Project Description (DPD) for the Project. The two route alternatives included the Community Preferred Route (referred to as route Alternative 1) and the Optimal Geotechnical Route (referred to as route Alternative 2), which were selected based on different priorities as documented in the preliminary evaluation of alternatives in the ToR and DPD.

As the assessment of alternative methods of carrying out the Project progressed during the EA/IA process the Project Team identified a third alternative route (referred to as route Alternative 3) that blended the priorities of route Alternative 1 and Alternative 2 and carried this alternative forward in the analysis of alternatives (refer to Section 3).

4.8 References

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