

## **3.0 PROJECT DESCRIPTION**

This chapter of the environmental assessment report provides a description of the proposed P7a All-Season Road Project. The project description includes its regional context, location on the east side of Lake Winnipeg, ownership of the land, alternatives means of carrying out the project, construction stages, project components and activities, construction materials, waste products, workforce, schedule and funding. Information on the proposed P7a All-Season Road Project is described to facilitate the identification and analysis of potential environmental effects, and the identification of measures to mitigate adverse effects in subsequent chapters.

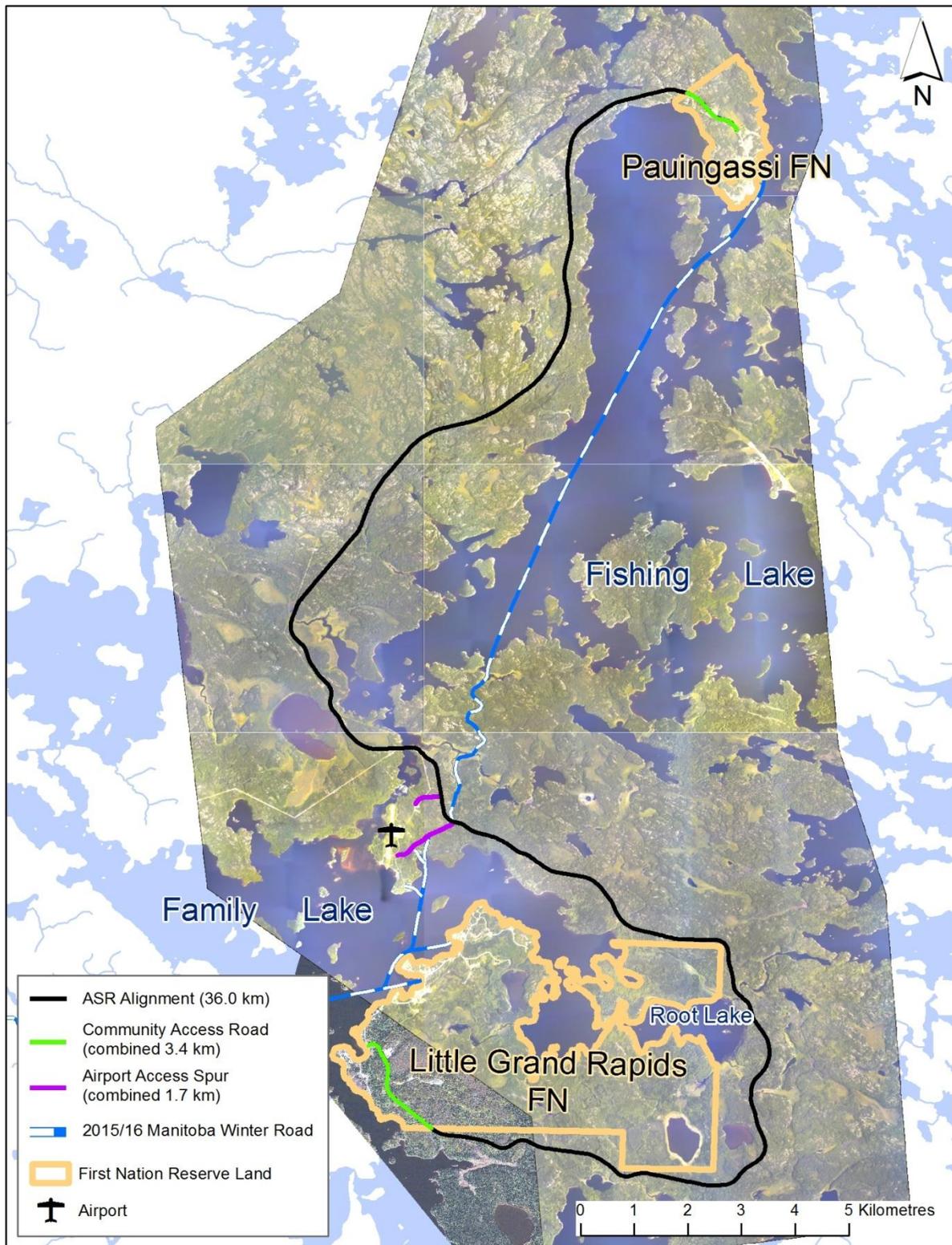
### **3.1 Project Background**

In late 2008, the Government of Manitoba announced its intention to conduct a strategic initiative to provide improved, safer and more reliable transportation services to connect the remote communities on the east side of Lake Winnipeg with the rest of the province. The Manitoba East Side Road Authority (ESRA) was established as provincial Crown Agency and has been given the mandate to manage the East Side Transportation Initiative with the intent of increasing transportation opportunities for communities on the east side of Lake Winnipeg (Figure 3-1). Currently, these communities rely primarily on winter and seasonal roads, air or ferry service to transport people and goods. ESRA's mandate includes planning, design and construction of all-season roads to improve the connectivity of First Nations and other northern communities on the east side of Lake Winnipeg to the provincial highway system. In the interim, ESRA continues to assess the feasibility of winter road enhancements to the network on the east side of Lake Winnipeg and remove major ice crossing components to increase safety factors and provide lengthened winter road service.

ESRA is proposing to construct an all-season road that will connect Little Grand Rapids First Nation and Pauingassi First Nation to the Little Grand Rapids Airport (Figure 3-2). The proposed all-season road consists of approximately 38.1 km of road on provincial Crown land, which is the subject of this project description, and about 3.4 km of Community Access Roads on Pauingassi and Little Grand Rapids First Nation Reserve lands. The Community Access Roads fall under Aboriginal Affairs and Northern Development Canada's jurisdiction. The purpose of the P7a All-Season Road Project is to provide expedited year-round vehicular access, connecting Little Grand Rapids First Nation and Pauingassi First Nation to the Little Grand Rapids Airport.



**Figure 3 - 1 Pauingassi and Little Grand Rapids First Nations Showing Existing Winter Roads**



**Figure 3 - 2 Proposed All Season Road Connecting Pauingassi and Little Grand Rapids First Nation to the Little Grand Rapids Airport**

### **3.2 Project Proponent**

The proponent of the P7a All-Season Road Project is ESRA.

### **3.3 Project Location**

The proposed P7a All-Season Road Project will extend south approximately 36.4 km from Pauingassi First Nation to Little Grand Rapids First Nation and connect both First Nations to the Little Grand Rapids Airport area via two east-west all-season access spurs of approximately 1.2 km (southern access) and 540 m (northern access) in length (Figure 3-2). Community Access Roads on First Nation Reserve lands will connect the All-Season Road to the communities of Pauingassi and Little Grand Rapids. The Community Access Road on Pauingassi Reserve land will be 1.2 km and the Community Access Road on Little Grand Rapids Reserve land will be 2.2 km.

The total distance of new road is 41.5 km and travels along the east side of Family Lake and the west side of Fishing Lake. The proposed P7a All-Season Road Project will cross two major watercourses requiring bridges; one across an unnamed watercourse between Family and Fishing lakes and the other across Root Creek on the east end of Family Lake. There are also six minor watercourses requiring culverts, and a number of low lying areas requiring equalization culverts. The province of Ontario is located about 16 km to the east of Pauingassi First Nation and about 14 km east of Little Grand Rapids First Nation.

### **3.4 Land Ownership**

The proposed P7a All-Season Road Project will be constructed on provincial Crown land. The P7a All-Season Road will be owned by the province of Manitoba and will be operated as part of the provincial all-season road network. Community Access Roads will be located on Pauingassi and Little Grand Rapids First Nation reserve lands and access roads will be owned by the respective Pauingassi and Little Grand Rapids First Nations.

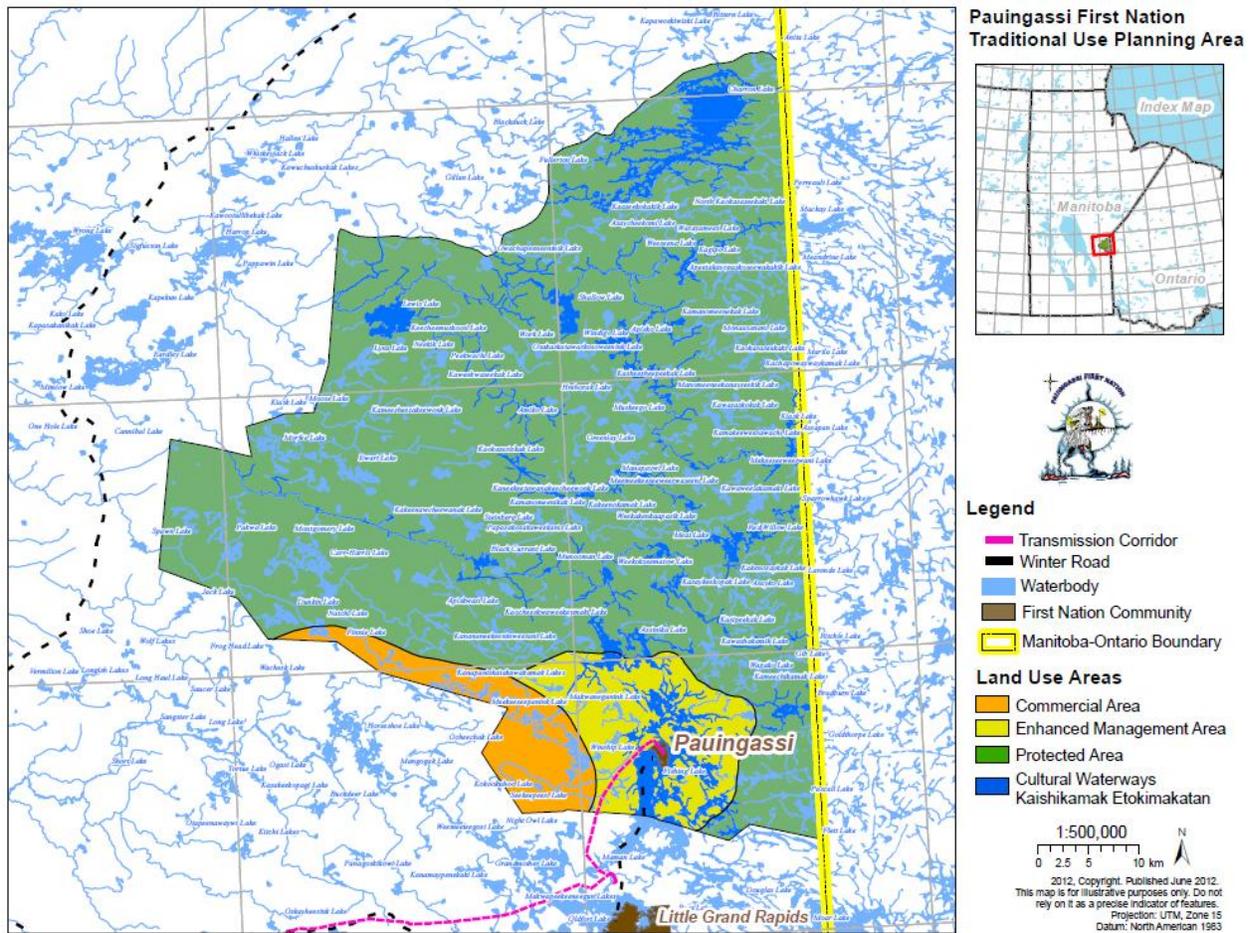
### **3.5 Land Use**

Land use in the area of the proposed P7a All-Season Road Project consists mainly of traditional activities by Pauingassi and Little Grand Rapids First Nations including hunting, trapping, fishing and berry-picking. A winter road winds west from the communities of Pauingassi and Little Grand Rapids to Bloodvein First Nation. Another all-season road (Project 1), currently under construction, will extend north from Provincial Road 304 to Berens River First Nation. The proposed P7a All-Season Road will replace the existing winter road segment connecting the two communities of Pauingassi and Little Grand Rapids First Nations to the airport and winter road network (Figure 3-2).

#### **3.5.1 Pauingassi First Nation**

Pauingassi First Nation's land use plan for the Manitoba Planning Area was developed with the Government of Manitoba (Pauingassi First Nation and Government of Manitoba 2012). The

Pauingassi-Manitoba planning area is designated as three zones: 1) Enhanced Management Area; 2) Protected Area; and 3) Commercial Area (Figure 3-3).



**Figure 3 - 3 Pauingassi First Nation Traditional Use Planning Area**

### 3.5.1.1 Enhanced Management Area

The primary intent for the 25,845 ha Enhanced Management Area is careful management with an emphasis on ensuring continuation of traditional activities. Pauingassi First Nation intends to practice and protect their traditional activities in this area unless conservation measures are warranted and consultation has taken place with Pauingassi First Nation. The maintenance and construction of community hunting and trapping cabins, continuation of trapping, collection of non-timber forest products, wild rice harvesting and recreational activities continue to be supported in this area. Special historical and cultural sites are identified. Economic development is managed to reduce and mitigate damage to traplines, hunting areas, habitat, special sites, waterways, waterbodies and the environment. A development plan for resource-based tourism may be prepared in the future with consideration for the management of endangered or threatened species and other wildlife and habitat, as well as for the protection of cultural values.

This area supports the continuation of the existing winter road and a future all-season road access. The plan states that all sites associated with the construction of the all-season road be decommissioned and reclaimed once the road is built and operating. An exception would be quarry sites required for the maintenance of the all-season road in the future. This area may include a proposed airport and/or an all-season road between Pauingassi and Little Grand Rapids First Nations. Extra management precautions are to be taken to protect habitat and waterways to reduce adverse effects. Commercial forestry, mineral exploration and mining, peat extraction, exploration or development of petroleum resources, and commercial hydroelectric generation would be prohibited in the Enhanced Management Area. Customary and traditional uses are respected and shall continue.

#### 3.5.1.2 Protected Area

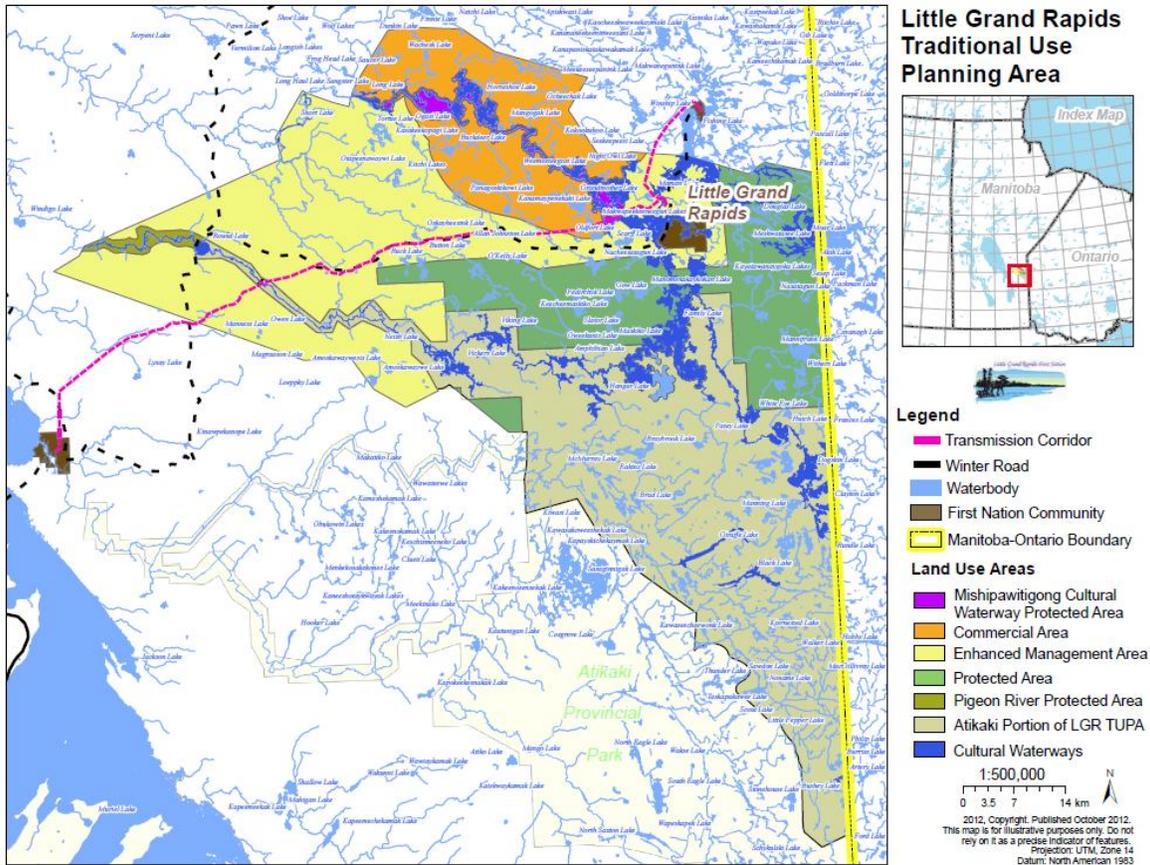
The intent for this 272,450 ha Protected Area is the careful management of traditional lands with an emphasis on ensuring continuation of traditional activities. The area is managed to maintain and enhance traditional uses and to protect natural and cultural values. Commercial forestry, mineral exploration or mining including aggregates, exploration or development of petroleum resources, hydroelectric transmission and generation, wind power installations, peat extraction, and other large-scale industrial and commercial developments are prohibited in this area. Wherever possible, roads will be restricted from the Protected Area.

#### 3.5.1.3 Commercial Area

Economic development in the 15,390 ha Commercial Area is managed to reduce and mitigate damage to traplines, hunting areas, habitat, special sites, waterways, water bodies and the environment. Land, water and habitat protection objectives such as a 50 m buffer from the Ordinary High Water Mark around waterways in this land use area are promoted. The continuation of traditional uses and existing tourism within this area is supported. Mining and mineral exploration, including metal mining, would be allowed within this area.

### 3.5.2 Little Grand Rapids First Nation

Little Grand Rapids First Nation's lands management plan was developed with the Government of Manitoba (Little Grand Rapids First Nation and Government of Manitoba 2012). The lands management plan identified six protected areas: 1) Enhanced Management Area; 2) Commercial Area; 3) Protected Area; 4) Mishipawitigong Cultural Waterway Protected Area; 5) Pigeon River; and 6) Atikaki Provincial Park portion (Figure 3-4).



**Figure 3 - 4 Little Grand Rapids First Nation Traditional Use Planning Area**

### 3.5.2.1 Enhanced Management Area

Traditional activities will continue within the Enhanced Management Area unless conservation measures are warranted and consultation has taken place with Little Grand Rapids First Nation. Mineral exploration and mining (including peat) is not permitted in this area. Mining activity, such as aggregate extraction required for road maintenance or construction, will be managed to protect wildlife, habitats and cultural values. The existing transmission line and winter road corridor pass through the Enhanced Management Area and will be maintained over time which includes upgrading the distribution lines.

Planning for an all-season road is underway and the corridor is planned through the Enhanced Management Area. Aggregate extraction will be allowed for the purpose of all-season road construction. Quarry sites that are needed for maintenance of the road will remain. If new or additional utility lines for telecommunications are needed they would be permitted preferably in the same corridor as the all-season road. Large scale commercial forestry is prohibited; however, community-based sustainable forestry may be permitted in this area.

### 3.5.2.2 Protected Area

The Protected Area is to be managed to allow and maintain traditional uses, protect cultural and natural lands and natural resources. The maintenance and construction of community hunting and trapping cabins, continuation of commercial trapping, collection of non-timber forest products, wild rice harvesting and recreational activities continue within this area. The area ensures that habitats, wildlife, waterways and cultural values are protected. Commercial forestry, mineral exploration and mining, aggregate and peat extraction, exploration or development of petroleum resources, hydroelectric generation and transmission activities would be prohibited in the area. Whenever possible, roads will also be prohibited in the Protected Area. Little Grand Rapids will provide direction to manage float-plane landing areas in the future within the Protected Area to protect natural and cultural values.

### 3.5.2.3 Commercial Area

Traditional activities will continue within the Commercial Area unless conservation measures are required and consultation has taken place with Little Grand Rapids First Nation. Mining exploration may be allowed within this area and any mining activity will be managed to protect natural and cultural values. The existing transmission line passes through this area and all required maintenance and upgrading activities will be permitted. Roads may be permitted in this area and existing corridor maintenance or new corridors will be planned to minimize the effects on natural and cultural values. Extra management precautions may be taken to protect habitat and waterways to reduce effects on all cultural values including traplines, hunting areas, cabins and special places, as well as natural values such as critical woodland caribou habitat and waterways protection.

### 3.5.2.4 Mishipawitigong Cultural Waterway Protected Area

The Little Grand Rapids Mishipawitigong Cultural Waterway Protected Area was created to provide added protection to the Berens River where it traverses the Commercial Area. The Berens River is an important cultural waterway to the people of Little Grand Rapids First Nation. A 150 m buffer has been placed on each side of the waterway to protect the socio-economic, cultural, ecological and recreational values of this river. Road and utility corridor, and/or the development of other infrastructure, will be permitted only as necessary to serve the needs of the community of Little Grand Rapids and/or adjacent land use developments.

### 3.5.2.5 Pigeon River Protected Area

The land use intent for this area is the same as for the Protected Area. All customary and traditional uses are respected and will be maintained or enhanced. Construction of the all-season road and the winter road may be permitted within the Pigeon River Protected Area. This includes activities required to develop and maintain the roads. Extra care will be taken to protect the surrounding areas during construction, maintenance and in marshalling and staging areas. Any proposed all-season road crossing of the Pigeon River Protected Area will be carefully

studied and reviewed with Little Grand Rapids First Nation and the Government of Manitoba before construction begins.

#### 3.5.2.6 Little Grand Rapids Planning Area Portion of Atikaki Provincial Park

Atikaki Provincial Park is located directly south of the Little Grand Rapids First Nation. The community and Manitoba Conservation and Water Stewardship work together on a plan for management of the Park. The intent is that the Little Grand Rapids Protected Areas and Atikaki Provincial Park will provide complimentary direction for the protection and management of natural and cultural values.

### 3.6 Project Alternatives

#### 3.6.1 Background

In 1999, Manitoba Transportation and Government Services (now Manitoba Infrastructure and Transportation – MIT) retained Dillon Consulting Limited to undertake a study to look at the feasibility of developing an all-season road system to improve access to remote communities on the east side of Lake Winnipeg. The study was to be a preliminary, cost-benefit assessment to determine if more comprehensive considerations of an all-season road development in the study area were justified.

In the report, prepared by Dillon Consulting entitled *East Side of Lake Winnipeg All Weather Road Justification and Scoping Study (2000)*, two all weather road route scenarios, with different points of origin, were evaluated. In one scenario, all east side communities would be connected from the south via Manigotagan. In the other, the northern communities would be connected from the west via Norway House/Cross Lake with a separate connection from Manigotagan serving only the southern communities. The report's general conclusion was that an all-season road in the east side of Lake Winnipeg using either route scenario could be justified for many communities on the basis of long-term transportation cost savings and other benefits.

In 2001, Dillon Consulting prepared a second report for Manitoba Transportation and Government Services entitled *Work Plan to Develop an All-Weather Road Network for the East Side of Lake Winnipeg – Final Report* (Dillon Consulting Limited and N.D. Lea 2001). It presented a planning approach and overall work plan to design and service east side of Lake Winnipeg communities with an all-season road network.

*“Promises to Keep...” Towards a Broad Area Plan for the East Side of Lake Winnipeg* (East Side Planning Initiative 2004) reported on the development of a Broad Area Plan for the east side of Lake Winnipeg. The East Side Planning Initiative arose out of the Consultation on Sustainable Development Implementation (COSDI), a multi stakeholder consultation initiative “to consider and make recommendations to government on how Manitoba can best implement Sustainable Development Principles and Guidelines into decision-making, including environmental management, licensing, land use planning, and regulatory processes” that was

undertaken between the fall of 1997 and the spring of 1999. The East Side Planning Initiative was the first large-area planning exercise since the adoption of the COSDI report.

The East Side Planning Initiative report presented a number of transportation-related recommendations. One key recommendation was that Manitoba Transportation conduct a thorough review of all-season road routes in collaboration with directly affected First Nation residents on the east side of Lake Winnipeg and the Métis. The report also advised that the final route selection should follow from results of an environmental assessment, and Manitoba Transportation should undertake an amended Regional Transportation Network Study to consider other means of access, such as rail, bridges, dirigibles, hovercraft and ferries, to communities on the east side of Lake Winnipeg in addition to an all-season road option.

In 2008, SNC-Lavalin Inc. was commissioned by the Manitoba East Side Road Authority to conduct a Large Area Transportation Network Study on the east side of Lake Winnipeg. This study combined the multi-disciplinary planning and engineering work required to identify the preferred All-Season Transportation Network to connect the East Side communities to the rest of the all season-road transportation network in Manitoba. At the outset of the study, a number of alternative surface/air transportation modes, in addition to an all-season road system, were considered to service the remote communities on the east side of Lake Winnipeg. Generally the alternative modes considered were not deemed appropriate as a permanent solution on the grounds of cost, unreliability, environmental damage, safety impairment, or lack of freedom to move. Table 3-1 summarizes the alternative modes considered, along with some of their key characteristics.

As a result of the above considerations, it was concluded that the most worthwhile, reliable, safe and equitable improvement to the existing east side Lake Winnipeg transportation system would be the construction of an all-season road system, supplemented during its development with, where appropriate, improved winter roads and permanent bridges. The rationale for this being, compared with either the existing system, or alternative modes such as rail, hovercraft or airships/dirigibles:

- Greater long-term reliability for safely moving people and goods during all seasons and most weather conditions;
- Greater freedom for people and goods from all east side communities, individuals and businesses to move; and
- More equitable system for travel and trade, on par with the existing all-season road system serving most communities in province.

**Table 3 - 1 Alternative Surface and Air Transportation Modes**

Mode	Characteristics
Railway	<ul style="list-style-type: none"> <li>• Construction cost on a per km basis comparable to that of an all-season road.</li> <li>• Lengthy connections needed to connect to existing railhead/rail line at Pine Falls and Wabowden, respectively, duplicate existing provincial roads (70 km of PR 304 and 131 km of PR 373).</li> <li>• Much flatter gradients required for rail versus road increases cost; may also be more difficult to maintain rideable profile over muskeg and permafrost pockets.</li> <li>• During construction phase difficult to offload/reload goods and people at continually advancing rail/winter road interface.</li> <li>• Less freedom to move than with a road system.</li> </ul>
Hovercraft	<ul style="list-style-type: none"> <li>• Suitable over large bodies of open water.</li> <li>• Would likely suffer skirt degradation over muskeg and swamp.</li> <li>• Potential damage of fragile environment over potential multiple routes.</li> <li>• May damage ice surface during freeze up, potentially breaking ice and creating hazards for snowmobilers.</li> </ul>
Airships/Dirigibles	<ul style="list-style-type: none"> <li>• Would need to be very large to haul TAC maximum highway loadings (Boeing Sky Hook HLV maximum pay load 40 tons).</li> <li>• More sensitive than fixed wing aircraft to inclement weather, potentially a significant factor east of Lake Winnipeg (Boeing HLV can only operate in winds up to 25 knots).</li> </ul>
Ferries	<ul style="list-style-type: none"> <li>• May be appropriate for summer transportation across lakes or rivers as an interim lower cost link in an all-season road system.</li> <li>• An ice bridge parallel to the ferry route could be used for winter transportation but has potential break through, with safety and environmental degradation risks.</li> <li>• Ferries may, where traffic volumes are relatively small and the cost of a bridge is high, be considered on a more permanent link.</li> </ul>
Improved Winter Roads	<ul style="list-style-type: none"> <li>• Shift existing winter road onto firmer ground along a future all-season road route.</li> <li>• Provide permanent bridges at major water crossings along future all-season road route.</li> <li>• Could be initial phases in development of an all-season road route.</li> </ul>

The East Side Large Area Transportation Network Study identified potential transportation infrastructure improvements that will provide year-round access to the communities on the east side of Lake Winnipeg. The final report of the Large Area Transportation Network Study was completed in 2010 and recommended an all-season road network for the region that is estimated at approximately 1,028 km in length and would cost approximately \$3 billion (2011\$) (SNC-Lavalin, J.D. Mollard, AECOM 2010).

The all-season road network shown in Figure 3-1 consists of the following: 1) 156 km all season road from PR 304, near Hollow Water First Nation, to Berens River First Nation along with a 95 km extension to Poplar River First Nation; 2) 131 km all season road linking Little Grand Rapids and Pauingassi First Nations to a midway point along the all season road from PR 304 to Berens River; and 3) 648 km east-west route linking the Island Lake (Garden Hill, Red Sucker Lake St. Theresa Point and Wasagamack First Nations) and northern Cree (Bunibonibee and Manto Sipi Cree Nations and God's Lake First Nation) communities to PR 373.

### 3.6.2 Need

The only permanent road designed to Manitoba's Highway Standard on the east side of Lake Winnipeg north of PR 304 is a segment of road currently being constructed between PR 304 and to Berens River First Nation under Environment Act Licence 2929. No other such permanent roads exist on the east side of Lake Winnipeg. As a result, transportation within the region is severely limited with communities depending on a combination of air, water and winter road service. All of these forms of transportation tend to have higher operational costs or are severely limited by weather, thereby resulting in increased costs for goods and services. The most widespread form of transportation throughout the region is by air. Most communities have an airport or have access to an airport in a nearby community. In many cases, including Pauingassi and Little Grand Rapids, a body of water must be crossed to access the airport. This means taking a boat ride in summer or travelling by ice road in winter to access the airport, which can be unsafe or unpredictable. In spring and fall, during ice breakup and freeze-up, these communities must rely on helicopter services to access the airport. For most local residents, air transportation is very costly and is often not an option for the mobility impaired.

During summer months, some communities are also able to utilize marine transportation such as ferries and barges. During winter months, communities are able to use winter roads to travel from one community to another or to travel to a larger centre such as Thompson or Winnipeg. It is during this time that many remote communities bring much of their supplies since road transportation is generally cheaper than air transportation. However, the period of time in which a winter road can be used varies and, with the challenges of climate change, this period is becoming shorter and shorter especially on the east side of Lake Winnipeg. Generally, the window of opportunity for using the winter road network is about eight weeks starting in late January and continuing into mid to late March. In recent years, the winter roads have frozen later or thawed earlier in the year, thereby reducing the already short window for safely using the winter road network.

The proposed P7a All-Season Road Project is expected to result in beneficial economic effects including increased employment and contract opportunities for East Side Lake Winnipeg communities in the local and regional assessment area during the construction phase. Commercial airline and air charter companies, regional hauling companies, local and regional suppliers of construction materials and supplies, goods and services, and other provisions are expected to benefit from the construction stage of the proposed P7a All-Season Road Project. During the operation and maintenance phase the local economy will benefit from the establishment of a road maintenance compound which will provide steady cash flow and

employment for the foreseeable future. Other local businesses that provide services directly or indirectly to road transportation including vehicle sales and services, overnight accommodations, restaurants, recreational equipment, fishing and hunting supplies and guiding services will also benefit from the P7a All-Season Road. The effects of road operation and maintenance on economic conditions were determined to be beneficial.

### **3.6.3 Purpose**

The purpose of the proposed P7a All-Season Road Project is to provide improved, safe and more reliable road transportation services between the First Nation communities of Pauingassi and Little Grand Rapids and the Little Grand Rapids Airport, and contribute to the social and economic well-being of these communities.

### **3.6.4 Alternatives**

#### **3.6.4.1 All-Season Road**

ESRA's process to select, design and construct an all-season road is illustrated in Figure 3-5. First, a Large Area Network Study identifies possible route corridors. Community input is obtained and a broad level (functional) engineering assessment is conducted to identify possible road alignments within the route corridors. Community input is obtained, the environmental assessment is started and a preliminary engineering analysis is initiated. The final road alignment is then selected, community input is obtained, the environmental assessment is discussed with the communities, the preliminary engineering analysis is concluded and the environmental assessment is submitted for regulatory approval. At the detailed design stage community input is obtained and the engineering design is finalized. Once the Environment Act licence is obtained, construction can then begin with implementation of mitigation measures, environmental monitoring and ongoing community input.

General criteria that were used by SNC-Lavalin Inc. to identify potential road corridors included:

- Directness of route between communities
- Smooth, firm, thaw stable road foundation
- Avoid wildlife concerns to the greatest extent possible
- Avoid protected areas where feasible
- Accessibility to road construction materials
- Gentleness of terrain
- Minimize construction and maintenance costs
- Minimize length of river crossings and avoid rapids

SNC-Lavalin Inc. determined that a route along the east side of Fishing Lake offered no advantages. It would be a substantively longer route to connect the communities to the airport and would require additional crossings. The subsequent Pimachiowin Aki study provided information that further supported the decision to route along the west side of Family Lake.

# Steps to Select, Design and Construct an All Season Road

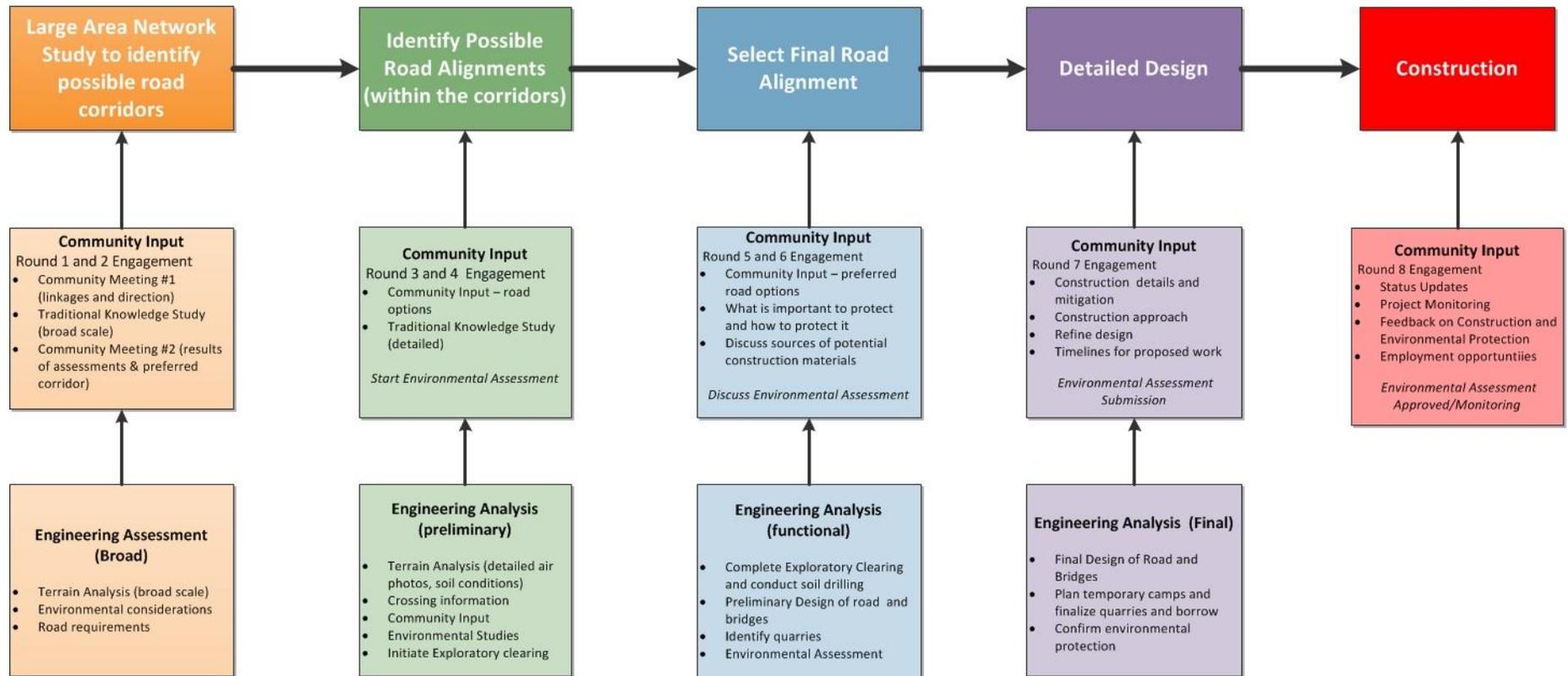
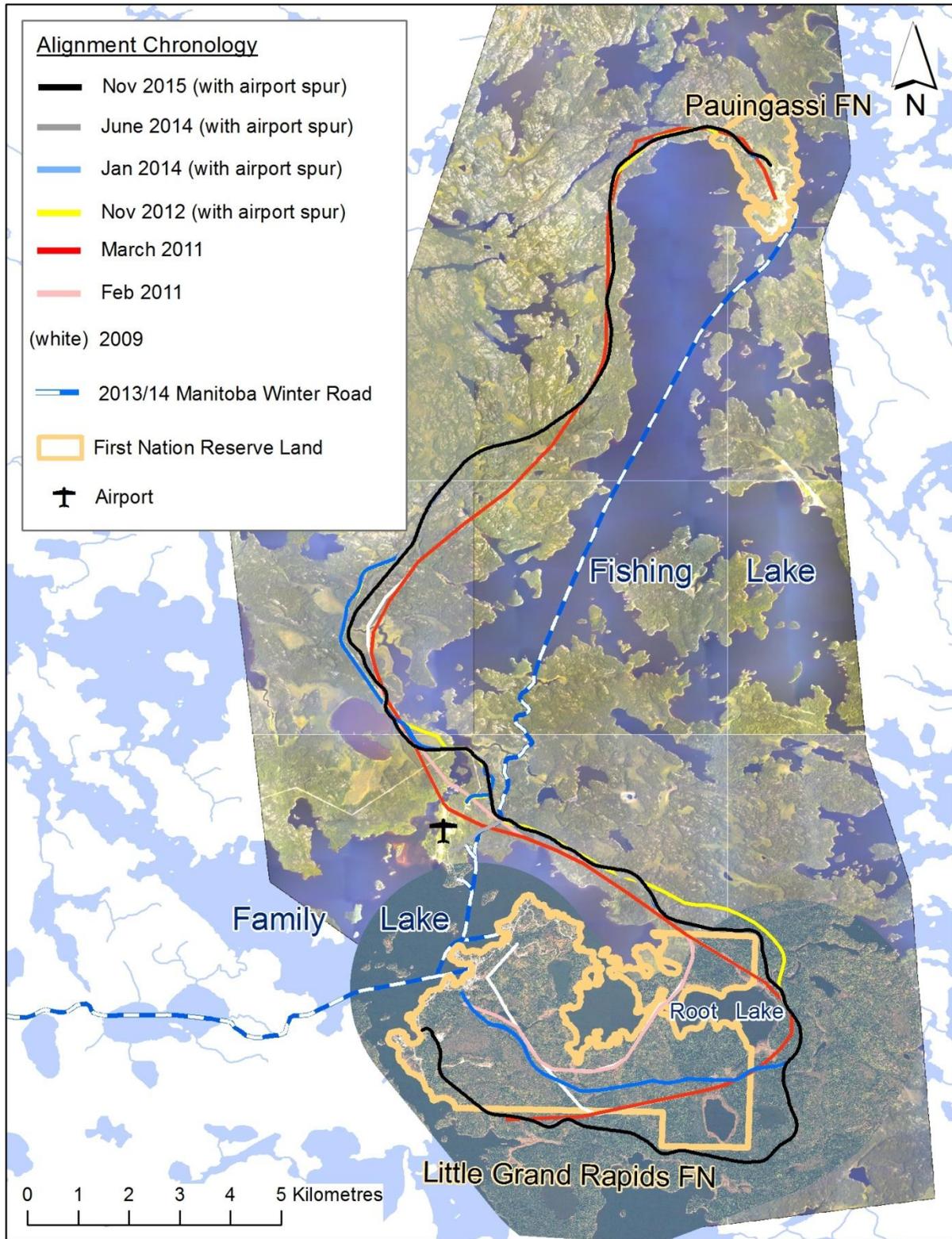


Figure 3 - 5 Steps to Select, Design and Construct an All-Season Road

Alternate routes that were looked at for the P7a All-Season Road Project between Pauingassi and Little Grand Rapids First Nation are described in Table 3-2 and are illustrated in Figure 3-6.

**Table 3 - 2 History of Alternate Alignments for All-Season Road Connecting Pauingassi and Little Grand Rapids to Little Grand Rapids Airport**

Year(colour)	Explanation
2009 (white)	The original alignment, shown in white, was based on terrain analysis of aerial photography by JD Mollard and Associates. An alternate version of this alignment is located beneath the red line east of Little Grand Rapids First Nation.
February 2011 (pink)	This alignment represents the shorter of the two alignments proposed by Mollard. It also crosses the channel between Family and Fishing lakes at a better location. The potential existed at this crossing site to “island hop” across the water.
March 2011 (red)	For the most part, this alignment followed the same route as one of the alignments proposed by Mollard in the initial assessment. It has moved the crossing of the channel between Family and Fishing away from the rapids due to engineering, fish habitat and Traditional Knowledge considerations and as a result of a meeting with the Little Grand Rapids First Nation leadership.
November 2012 (yellow)	<p>This alignment was the result of Pauingassi and Little Grand Rapids community input in early 2012 where it was decided to:</p> <ul style="list-style-type: none"> <li>· Move the crossing north of the rapids and away from the Airport runway to a shorter crossing site</li> <li>· Shift the alignment inland between the community of Pauingassi and the large crossing: <ul style="list-style-type: none"> <li>· This land along with the west shore of Fishing Lake, north of the channel crossing is important to both of the communities as hunting grounds</li> <li>· The same land is low in elevation and wet, thereby poorly suited to construction</li> </ul> </li> <li>· Shift the alignment north of Little Grand Rapids to higher ground to serve as a superior base for road construction.</li> <li>· Remove the wide unnamed crossing located on Little Grand Rapids Reserve lands to the east to cross Root Creek on provincial Crown land.</li> <li>· Have the alignment extend from Pauingassi First Nation follow the Manitoba Hydro transmission line.</li> </ul>
November 2013 (green)	<p>The reasons for this adjustment were to:</p> <ul style="list-style-type: none"> <li>· Change the Root Creek crossing location to avoid infilling spawning areas for northern pike</li> <li>· Avoid the “mining restricted” land parcel northeast of Little Grand Rapids First Nation while ensuring there was no encroachment on Reserve lands</li> <li>· Avoid a bog area west of the large crossing</li> <li>· Move the alignment at Pauingassi First Nation just north of the transmission line rather than locating it in the Manitoba Hydro right-of-way</li> </ul>
January 2014 (blue)	The change decreased the length of the Community Access Road and reduced the number of stream crossings from 13 to eight. (The blue line on Figure 3-6 incorporates all changes between November 2012 and January 2014)
May 2014 (black)	The ASR alignment was moved upto 0.5 km east of the transmission line between kilometres 13 and 16 to avoid critical habitat.
June 2014 (black)	A southern access to the Little Grand Rapids Airport was added to provide additional access to the airport due to a boundary encroachment on the north side.



**Figure 3 - 6 History of Alternate Alignments for All-Season Road Connecting Pauingassi and Little Grand Rapids to Little Grand Rapids Airport**

#### 3.6.4.2 Acrow Panel Bridge Locations

Acrow panel bridge locations were selected based upon a variety of factors including traditional knowledge, total distance of the route between Pauingassi and Little Grand Rapids First Nations, bridge design specifications, suitable crossing locations, shore to shore distance, approach conditions and riparian characteristics. Bridge crossing locations were subject to review by archaeologists and aquatic biologists and input from First Nations was obtained during traditional knowledge studies, design workshops and community meetings.

#### 3.6.4.3 Culvert Stream Crossing Locations

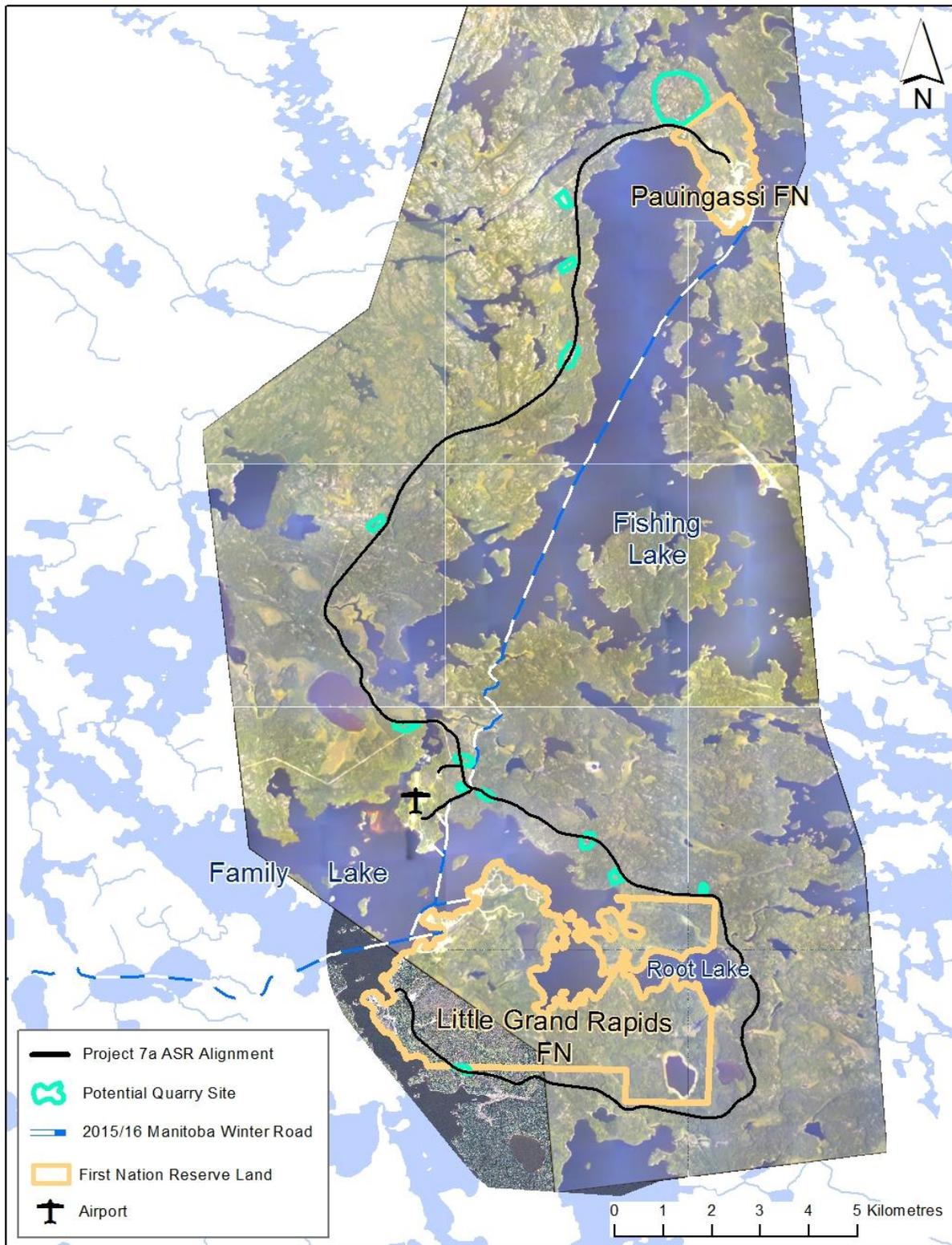
Culvert stream crossing locations were identified based upon the proximity of the proposed P7a All-Season Road Project alignment to the stream, characteristics of the particular stream, and riparian conditions using guidance in the Manitoba stream crossing guidelines (Department of Fisheries and Oceans and Manitoba Natural Resources 1996) and applicable Department of Fisheries and Oceans fact sheets. Stream crossing locations were also subject to review by aquatic biologists retained to conduct aquatic baseline studies, heritage resource impact assessments and input from First Nations was obtained from traditional knowledge studies and at design workshops and community meetings.

#### 3.6.4.4 Quarry and Borrow Locations

Potential quarry and borrow areas, illustrated in Figure 3-7, were identified based upon the availability of suitable rock and aggregate materials, degree of surface preparation, proximity to the road, bridge and other construction sites, and travel distances for equipment and workers. Quarry and borrow areas will be located within the 100 m right-of-way to the extent possible and will be subject to provincial permitting requirements. Quarry and borrow locations were discussed during the Heritage Resources Impact Assessment and with community members from Little Grand Rapids and Pauingassi First Nation at design workshops and community meetings. Traditional knowledge information was reviewed in relation to potential sites, existing quarry sites (e.g. Pauingassi First Nation) and borrow locations will be used when available and practical.

#### 3.6.4.5 Temporary Construction Staging Locations

Construction staging areas are being selected for the construction of the All-Season Road and the Acrow panel bridges based on consideration of factors including the availability of suitable level sites, degree of existing disturbance, extent of preparation work, proximity to the road and bridge construction sites, and travel distances for equipment and workers. Sensitive areas identified during biophysical field studies and traditional knowledge studies are avoided. Construction staging locations are also subject to Heritage Resources Impact Assessments and continued input from First Nations through workshops and or community meetings. Staging locations will be sited within the existing 100 m right-of-way to the extent possible.



**Figure 3 - 7 Potential Quarry Sites for Proposed All-Season Road Connecting Pauingassi and Little Grand Rapids First Nations to the Little Grand Rapids Airport**

#### 3.6.4.6 Temporary Construction Camp Locations

Construction camp locations will be selected for construction of the All-Season Road and the Acrow panel bridges based on consideration of a number of factors including the availability of suitable level sites, degree of existing disturbance, extent of preparation work, proximity to the road and bridge construction sites and travel distances for equipment and workers. Sensitive areas identified during biophysical field studies and traditional knowledge studies are avoided. Construction camp locations are also subject of a Heritage Resources Impact Assessment and input from First Nations will be obtained from workshops and or community meetings. Camp locations will be sited within the existing 100 m right-of-way to the extent possible.

#### 3.6.4.7 Airport Area Access Spurs

Two access spurs are proposed to provide all-season access to the Little Grand Rapids Airport (Figure 3-1). The south access spur will service both the airport and motorists travelling to the Northern Store and other government offices on the community side. The northern access road is required to provide access to the rapids and boat launch site located upstream for local resource users and the lodge boat traffic.

### 3.7 Project Phases

The development of the proposed P7a Project entails 5 phases (Figure 3.5), some of which are already complete. These phases are followed by Operation and Maintenance of the constructed All-Season Road.

#### 3.7.1 Phase 1: Identification of Possible Road Corridors

This stage was completed with the completion of the Large Area Transportation Network Study described in Section 4.2.7. During this stage a broad road corridor was selected and a potential road alignment identified.

#### 3.7.2 Phase 2: Identify Possible Road Alignments

Using the information from the previous phase, possible road alignments within the corridors were identified using input from community and other stakeholders. A broad engineering assessment was conducted, followed by community input. Available baseline data and community knowledge were used to inform the baseline studies including heritage resources, fisheries, soils, vegetation assessments, geophysical surveys, quarry inspections, wildlife monitoring studies that were conducted during this preliminary analysis phase. Aboriginal and public engagement, including Traditional Knowledge studies and workshops, were conducted and informed the environmental assessment that began during this phase.

#### 3.7.3 Phase 3: Select Road Alignment

The preferred road alignment was selected through consideration of detailed information from engineering assessments, community input and environmental baseline studies. Baseline environmental and engineering studies (including heritage resources, fisheries, soils, vegetation

assessments, geophysical surveys, quarry inspections, wildlife monitoring studies), Aboriginal and public engagement, and the environmental assessment were used to finalize the alignment selection.

#### 3.7.4 Phase 4: Detailed Design

During this pre-construction stage, equipment, machinery, vehicles, construction materials and supplies including fuel, generators, trailers and other provisions will be transported into the project location via the winter road from PR 304 and stockpiled at staging areas pending road construction. Centrelines of the proposed All-Season Road will be cleared and the right-of-way will be surveyed and flagged. Bridge and stream crossing locations, quarry and borrow areas, temporary access roads, construction staging areas and construction camps will also be located, surveyed and flagged. Drilling and testing will be conducted along the All-Season Road right-of-way, temporary access roads, quarry sites and borrow areas to confirm local geology.

The alignment will be divided into segments to optimize construction scheduling and resource use. Segments will undergo pre-construction and construction stages sequentially such that completion of the construction phase at one segment will initiate the pre-construction of the adjacent segment.

#### 3.7.5 Phase 5: Construction

During the construction stage, equipment marshalling and lay down areas, and construction camps will be prepared, and rock quarries and borrow areas will be cleared and made ready. Granular materials will be excavated, crushed, sorted and stockpiled. Temporary access roads will be established to connect the various project components. The proposed All-Season Road, Acrow panel bridge crossings and culvert crossings will then be constructed. Vegetation along the right-of-way will be cleared to a maximum of 60 m on tangents and potentially wider on the inside of curves for sight visibility where required. The road bed will be prepared to 18 m. Culvert stream crossings will be put in place as construction progresses along the alignment. Approaches for the Acrow panel bridges will be constructed in the dry using cofferdams as required. The Acrow panel bridge components will be hauled to the crossing locations on winter roads, assembled by construction crews and launched across the watercourses.

All facilities and work areas including quarry and borrow areas, access roads, staging areas and construction camps that will not be needed for future maintenance activities will be demobilized following construction. Gravel will be removed and used in quarry and borrow area rehabilitation. The borrow pit sites will be excavated as uniformly as possible to the depths and widths permitted. Side slopes will be maintained at a slope of 4:1 unless otherwise permitted. Borrow pits will be levelled and trimmed when the excavation is complete.

#### 3.7.6 Operation and Maintenance

ESRA will establish a maintenance compound in Little Grand Rapids Northern Affairs Community once construction of the P7a All-Season Road Project is complete. The

maintenance compound will be used as a base of operations and will contain an office and storage facility, maintenance equipment and vehicles, stockpiled materials and various supplies. Maintenance activities for the P7a All-Season Road such as routine scheduled grading, topping the road with additional aggregate and management of vegetation and culvert cleanouts will occur over the life of the road. In the winter, snow clearing activities will use ploughs, graders, loaders and dump trucks. Road salt and other ice melting and dust suppression chemicals may be used to control ice on the road surface once re-vegetation growth has been achieved. Only chemicals approved for use on similar roads in Canada will be used, the substance will be applied as specified by the manufacturer, and only if and where necessary and not beyond the road surface. Aggregate materials will be sourced from borrow areas located on provincial Crown land and will be deposited on the road surface using dump trucks, dozers and graders.

### 3.7.7 Decommissioning

There are no plans to decommission the proposed P7a All-Season Road as it will provide all-season access from Pauingassi First Nation and Little Grand Rapids First Nation to the Little Grand Rapids Airport for the foreseeable future.

After approximately 25 years of operation the Acrow panel bridges will be re-evaluated and may be decommissioned and replaced with permanent bridge structures. Structural components of the bridge including decking and superstructure will be disassembled, inspected for defects and recycled for use in other road projects along the east side of Lake Winnipeg. Piers and abutments will be demolished to grade and any required contouring and re-vegetation will be carried out at that time.

## 3.8 Project Components and Activities

### 3.8.1 Project Components

The proposed P7a All-Season Road Project has nine main project components, including:

1. All-Season Road (36.4 km) from Little Grand Rapids First Nation to Pauingassi First Nation and two access spurs (540 m northern access spur and 1.2 km southern access spur) to the Little Grand Rapids Airport area (total length of road is 38.1 km);
2. Two Acrow panel one lane bridge structures for large watercourse crossings between Grand Rapids First Nation and Pauingassi First Nation;
3. Two lane steel girder bridges or similar structures to replace the Acrow panel bridges at some future date;
4. Six (6) culvert crossings using corrugated metal culverts and a number of flow equalization culverts;
5. Temporary construction bridges;
6. Temporary construction access roads including a 2 km access trail from the winter road on Fishing Lake to the All-Season Road right-of-way;
7. Rock quarries and granular borrow areas;

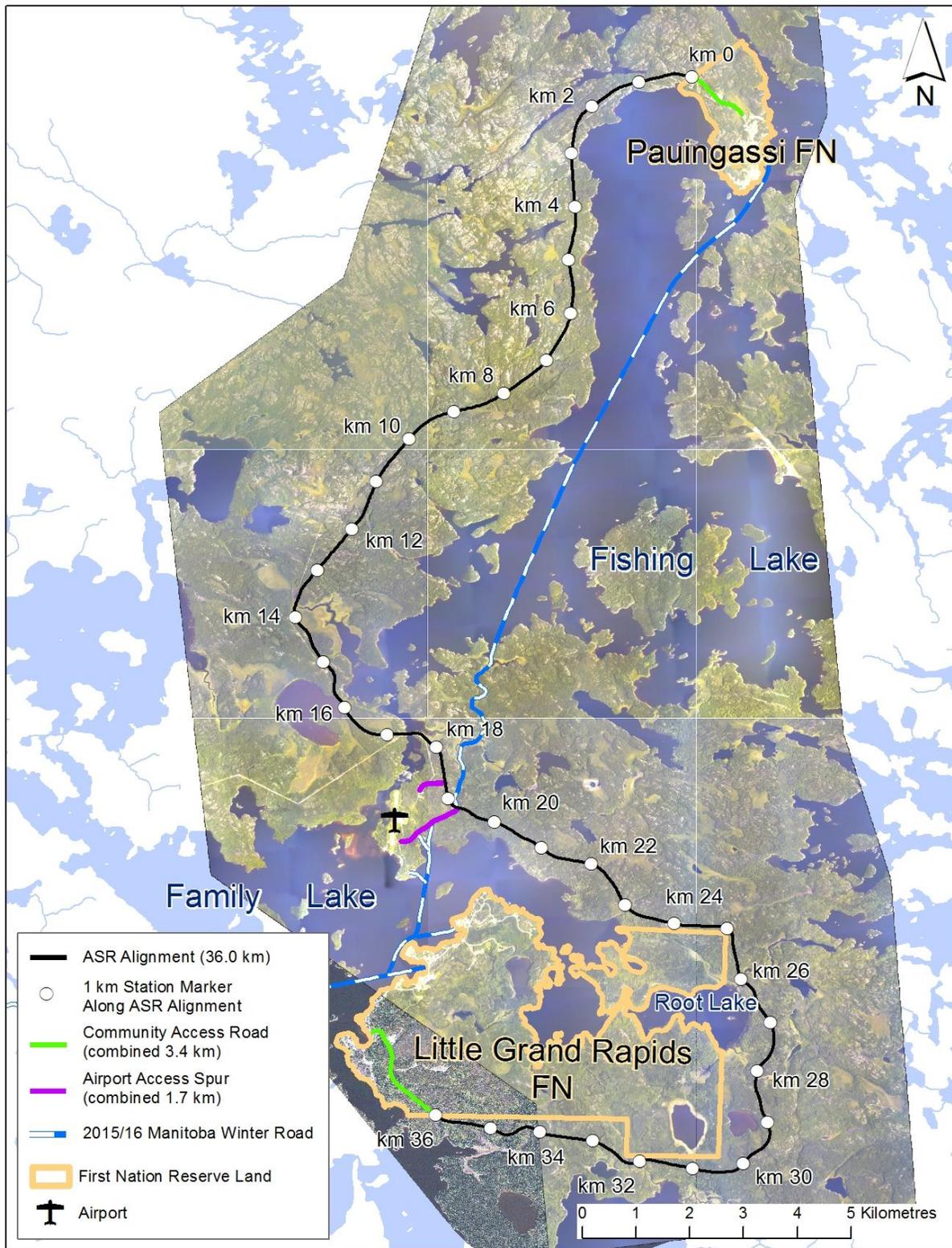
8. Temporary construction staging areas; and
9. Temporary construction camp facilities.

### **3.8.2 All-Season Road**

The proposed alignment for the P7a All-Season Road between Pauingassi and Little Grand Rapids First Nations is shown in Figure 3-8. The alignment follows or parallels an existing Manitoba Hydro transmission line at kilometres 0 to 3 and kilometres 12 to 19 from Pauingassi First Nation. The road will be centered on a 100 m right-of-way with a typical clearing width of 60 m and additional clearing as required in horizontal curves to maintain sight distances. Approximately 218 ha will be cleared for the All-Season Road on provincial Crown land. An additional 7.2 ha will be cleared on Pauingassi First Nation Reserve land and 13.2 ha will be cleared on Little Grand Rapids First Nation Reserve land for the construction of the Community Access Roads. The roadway will be constructed with a road top width of 8.4 m and a ditch width of 4 to 7 m (depending on ground conditions). The road will be designed to a speed of 80 km/hr and 70 km/hr where natural landscape features inhibit the design standard. The posted speed limit will be 60 to 70 km/hr.

The proposed P7a All-Season Road will be built to Manitoba's All-Season Road Standard. Over time, as traffic patterns increase, the road will be fully upgraded to Manitoba's All-Season Road Highway Standards. Road construction activities will consist of clearing, grubbing, contouring and blasting of rock outcrops. Organic materials will be stripped, stockpiled and used along road shoulders. Vegetation will be cut by local clearing crews using tree fellers, brush cutters and hand tools, windrowed using dozers and burned. Materials including rock fill, aggregate and composite material will be loaded, hauled, dumped, spread, graded and compacted using various pieces of heavy equipment including loaders, dump trucks, spreaders, dozers, graders, and compactors. Other activities will include placement of geotextile fabric, riprap, roadway signs, erosion and sedimentation control and seeding of ditches during the construction and operation and maintenance stages. The contractor will also install roadside traffic control signs (speed limits, curves, etc.) in accordance with the Manitoba Infrastructure and Transportation manuals.

Road construction will require specialized crews (i.e., heavy equipment operators, safety and environment officers, supervisors) and general labourers. The number of workers will vary depending upon the tasks being undertaken. The number of workers on the construction site will vary depending on the project component and the tasks being undertaken, and will typically range between 10 and 35 workers.

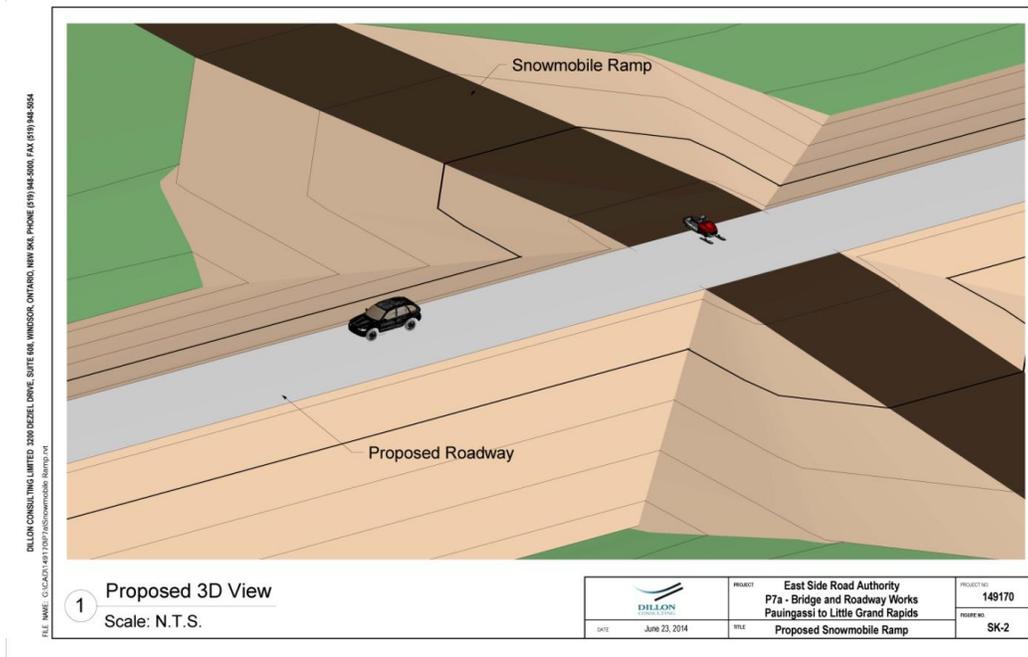


**Figure 3 - 8 Proposed All-Season Road Connecting Pauingassi and Little Grand Rapids First Nations to the Little Grand Rapids Airport Showing Kilometre Stations**

Typical steps leading to construction of an all-season road on the east side of Lake Winnipeg are summarized as follows:

1. Clearing a 60 m right-of-way.
2. Stripping overburden from 60 m right-of-way and stockpiling for used in shaping ditches.
3. Placing geotextile in wet areas to strengthen the integrity of the road.
4. Placing blast rock as the first layer and shaping to grade.
5. Placing a lift of 15 cm material.
6. Grading 15 cm material to specification and packing in place.
7. Placing a lift of 10 cm material and shaping material to specifications.
8. Checking and re-checking elevations by professional surveyors.
9. Installing culverts to allow for surface water drainage.
10. Installing erosion protection at culvert locations.
11. Placing 5 cm material, shaping to grade, packing and compacting.
12. Placing final lift of traffic gravel, compacting and checking.
13. Final grading, packing and testing.
14. Shaping of ditches for safety and drainage.
15. Installing ditch checks around waterbodies to reduce flow and minimize erosion.
16. Installing straw, ditch checks, riprap, silt fences and silt curtains around bridge crossings.
17. Re-vegetating disturbed areas as required.
18. Final inspecting by multiple agencies and opened for public use.

The proposed P7a All-Season Road Project will also include ramps at key locations where the road crosses existing snowmobile trails. An illustration of a snowmobile crossing ramp is provided in Figure 3-9.



**Figure 3 - 9 Illustration of Proposed Snowmobile Crossing Ramp**

### 3.8.3 Acrow Panel Bridges

Two large waterways located between the communities of Little Grand Rapids First Nation and Pauingassi First Nation will be spanned by Acrow panel bridges. The locations of the bridges between Douglas and Root lakes and between Family and Fishing lakes are shown in Figure 3-9 and crossing information is provided in Table 3-3.

**Table 3 - 3 Crossing Locations and Structure Type**

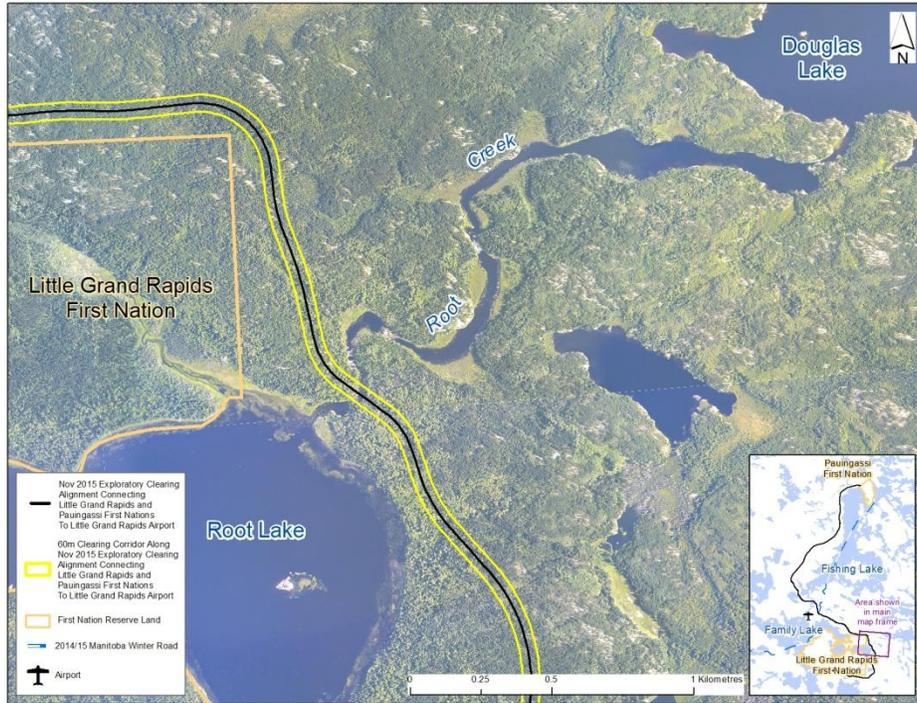
Crossing No.	Waterbody Name	Crossing Structure
1	Unnamed Fishing Lake Tributary	Culvert
2	Unnamed Fishing Lake Tributary	Culvert
3	Unnamed Fishing Lake Tributary	Culvert
7	Fishing to Family Lake Channel	Three Span Bridge
8	Unnamed Fishing Lake Tributary	Culvert
9	Root Creek	Single Span Bridge
10	Unnamed Root Lake Tributary	Culvert
12	Unnamed Creek	Culvert

\* Crossing Numbers 4, 5, 6, 11, 13 represent known drainages that lack a defined channel; equalization culverts will be used at these locations.

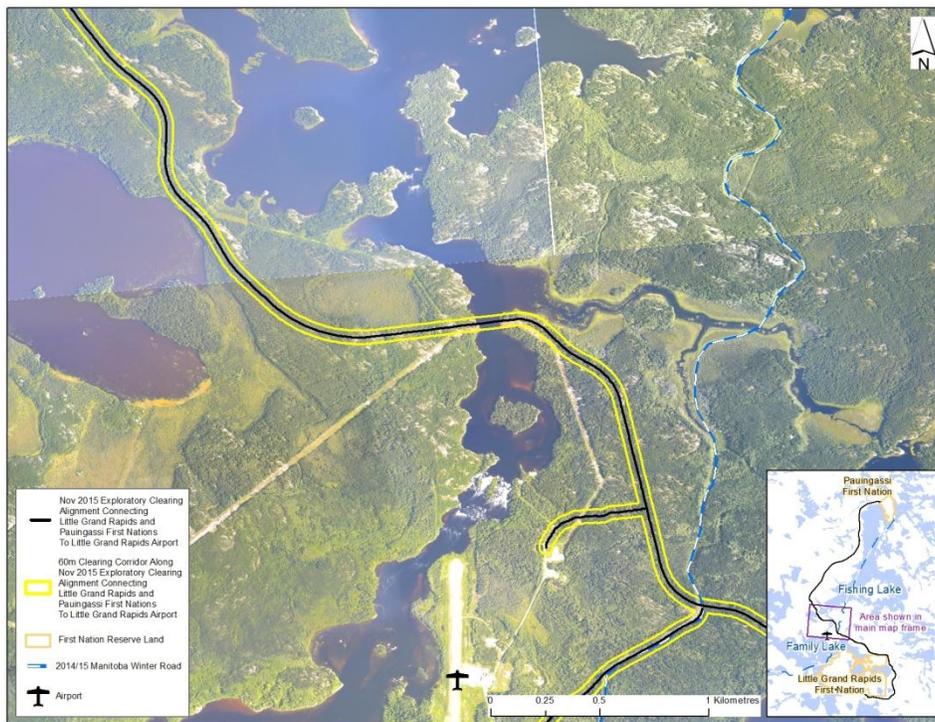
The bridge crossing between Douglas and Root lakes (Root Creek), located east of the community of Little Grand Rapids, is 20 m wide and it will be crossed by a single span Acrow panel bridge (Figure 3-10). The crossing between Family and Fishing lakes, located north of Little Grand Rapids, is 101 m wide and it will be crossed by a three span Acrow panel bridge (Figure 3-11).

The 700XS Acrow panel bridges are prefabricated structures that can be shipped in sections along the winter road to remote locations where they are assembled and launched in place. The single span bridge will span the waterway such that no in-water work will be required as illustrated in Figure 3-12. The three span bridge will require two piers in the waterway as illustrated in Figure 3-13. The bridges will have steel side trusses and timber decking, and have been designed for loading as per the Canadian Highway Bridge Design Code. A typical single span Acrow panel bridge that clears the waterway is shown in. Concrete abutments will be constructed in place and anchored to bedrock. The approach ramps linking the bridge to the winter/seasonal road will be granular obtained from nearby sources.

Site preparation will include clearing vegetation, stripping soils, and contouring. Bedrock will be drilled and blasted, where necessary, to reach design elevations required for the construction of the bridge abutments and piers. Bridge construction activities will consist of installing geotextile fabric, erosion protection and sediment control measures, placing, grading and compacting granular materials, erecting concrete forms, pouring concrete, assembling bridge components and launching, and installing timber decking and metal guardrails. A possible mobile concrete batch plant will be established in close proximity to each bridge crossing to produce concrete for the bridge abutments and piers. Heavy equipment required for the bridge construction activities will include various loaders, excavators, dump trucks, dozers, hoisting equipment, pump trucks, concrete trucks and compactors. Erosion protection and sediment control measures, including placement of riprap, will be provided around abutments and piers. Temporary erosion protection



**Figure 3 - 10 Proposed Bridge Location between Douglas and Root Lakes (Root Creek)**



**Figure 3 - 11 Proposed Bridge Location between Fishing and Family Lakes (Unnamed Channel)**



**Figure 3 - 12 Illustration of Proposed P7a All-Season Road Clear Span Acrow Bridge Crossing Root Creek**



**Figure 3 - 13 Illustration of Proposed Three Span Acrow Bridge Crossing the Channel between Fishing and Family Lakes**

and sediment control measures including the installation and removal of cofferdams will be utilized where required, and the bridge sites will be restored by encouraging natural re-vegetation and seeding and/or planting as required.

### 3.8.4 Steel Girder Bridges

After about 25 years, the Acrow panel bridges will be re-evaluated, and depending on traffic conditions, will either be refitted to extend their design life or replaced by steel girder bridges. The new steel girder bridges would be two-lane “steel girder” structures. The bridge crossing at Root Creek will be one span while the crossing between Family and Fishing lakes will be three spans. The steel girder bridges will be similar to the proposed Bradbury River Bridge for PR 304 (ESRA 2010). A typical steel girder clear span bridge is shown in Figure 3-14. The vertical alignment for the steel girder bridges would be horizontal with approach grades parallel to the road grade. Navigation requirements would be 3.05 m clearance from normal summer water levels. The overall width of the structures would be 10.8 m with 9.6 m of clear roadway. The two traffic lanes would be 3.7 m.



**Figure 3 – 14 Photograph of a Typical Steel Girder Clear Span Bridge**

Structural materials will consist of concrete, reinforcing steel and concrete cover. Bridge abutments will be semi-integral reinforced concrete with wing walls perpendicular to the abutment. The footings and back wall will be cast-in-place concrete pile cap on steel H piles or PPC piles. Approach slabs will be 0.3 m thick and slope protection will be 0.5 m thick class 350 stone riprap. The abutment seat will be sloped to accommodate cross fall and bearing installations. Piers will be solid shaft with rock-socketed caissons. Steel girders will be welded flat, straight with nominal web depth of 1,600 mm. Nelson shear studs are to be provided for composite action with the concrete deck. The bridge deck will be cast-in-place concrete conventional reinforced concrete with fibres. The structural thickness of the bridge deck will be 0.225 m plus a 0.025 m wearing layer, wet cured and tined finish. Curbs on both sides will be 0.6 m wide and 0.34 m high concrete barrier with a top steel railing. No deck drains will be provided. Utilities/lighting will consist of 1-100 mm and 1-50 mm diameter PVC ducts complete with pull wires in each curb.

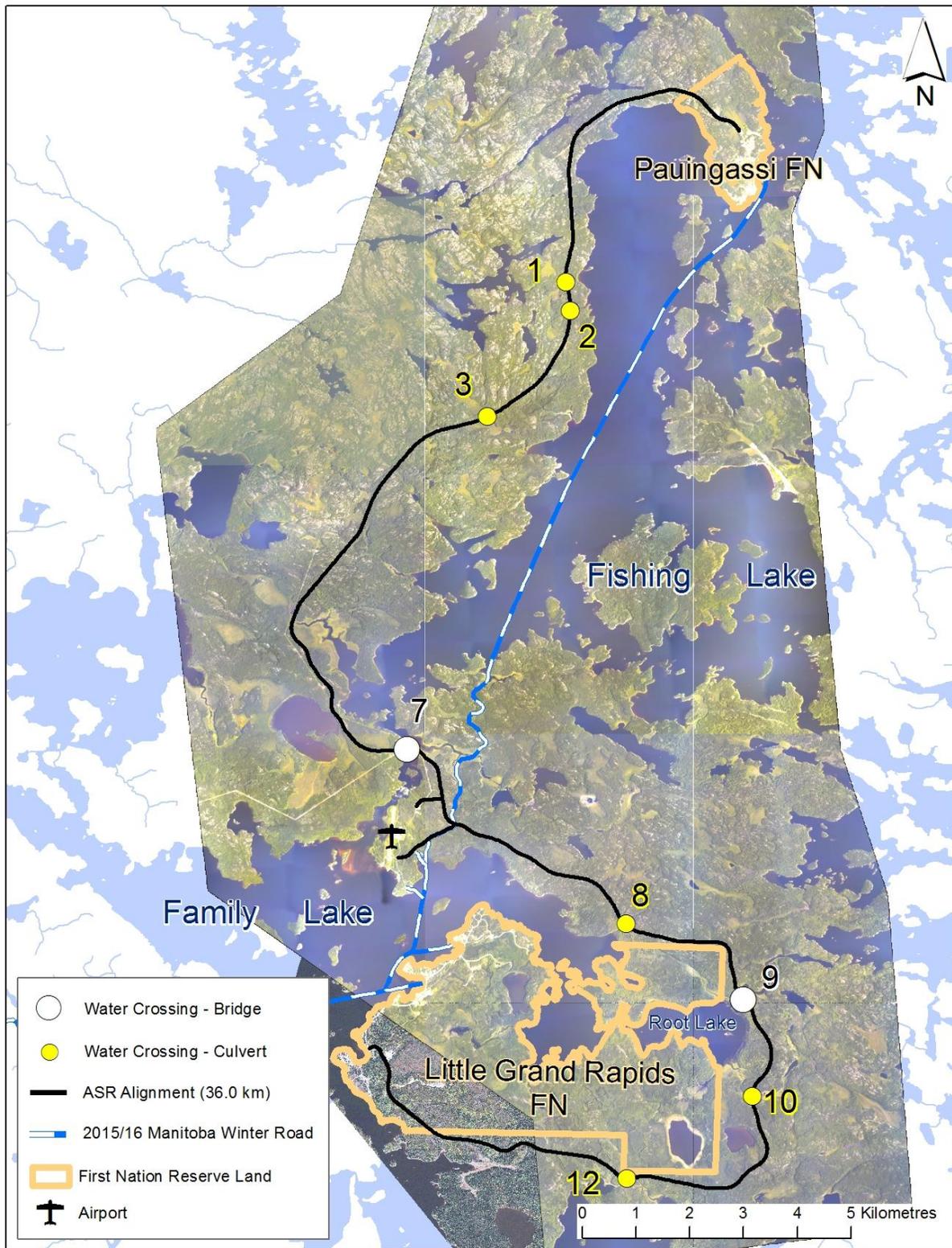
The new bridges may be located at the same location or immediately adjacent to the Acrow panel bridges. Site preparation will include clearing vegetation, stripping soils, contouring. Bedrock will be drilled and blasted, where necessary, to reach design elevations required for the construction of the bridge abutments and piers. Bridge construction activities will consist of installing geotextile fabric, installing erosion protection and sediment control measures, placing, grading and compacting granular materials, erecting concrete forms, pouring concrete, assembling bridge components and hoisting them into place. A concrete batch plant will be established in close proximity to each bridge crossing to produce concrete for the bridge abutments and piers. Heavy equipment required for the bridge construction activities will include various loaders, excavators, dump trucks, dozers, hoisting equipment, pump trucks, concrete trucks and compactors. Erosion protection and sediment control measures, including placement of riprap, will be provided around abutments and piers. Temporary erosion protection and sediment control measures including the installation and removal of cofferdams will be utilized and the bridge sites will be restored by encouraging natural revegetation and seeding and/or planting as required.

### **3.8.5 Culvert Stream Crossings**

The proposed All-Season Road will include six culvert crossings and a number of equalization culverts to preserve the natural landscape hydraulics. Locations of the culverts along the road alignment between Pauingassi and Little Grand Rapids are shown in Figure 3-15 and information on fish habitat is provided in Table 3-3. Culvert installation activities will include placing silt fencing and silt curtains, excavating the stream bottom, laying the geotextile material, installing the culvert, and placing and compacting granular fill and road toping. Riprap will be placed at the entrance and exit of the culverts, and the sites to control erosion. Temporary erosion protection and sediment control measures including the installation and removal of cofferdams will be utilized and the culvert sites will be restored by encouraging natural revegetation and seeding and/or planting as required.

### **3.8.6 Temporary Construction Bridges**

Temporary construction bridges (i.e., snow fills, ice bridges or engineered structures) may be required to transport heavy equipment, materials and labour across waterways to facilitate crossing construction. These bridges may include temporary in water works such as piers and cribbing, and may not allow for navigation for the duration of pier installation. Site preparation may include clearing vegetation, stripping soils and contouring. Bridge construction activities may consist of flooding winter ice and packing clean snow to create an ice bridge or installing geotextile fabric, erosion protection and sediment control measures, placing, grading and compacting granular materials, assembling bridge components (if required), launching the bridge, and installing timber decking and metal guardrails. Heavy equipment required for the bridge construction activities may include various loaders, excavators, dump trucks, dozers, hoisting equipment, pump trucks, concrete trucks and compactors. Erosion protection and sediment control measures will be provided around abutments.



**Figure 3 - 15 Locations of Bridge and Culvert Crossings along Proposed All Season Road between Pauingassi and Little Grand Rapids First Nations**

Temporary erosion protection and sediment control measures including the installation and removal of cofferdams will be utilized where necessary and the sites will be restored by encouraging natural re-vegetation and seeding and/or planting as required. The temporary construction bridges will be decommissioned when they are no longer needed. Aggregate will be salvaged and used in borrow area reclamation. Bridge parts will be recycled to other projects. Disturbed areas will be restored by spreading stockpiled topsoil and encouraging natural re-vegetation and seeding and/or planting as required.

### **3.8.7 Temporary Access Roads and Trails**

Temporary access roads will be required to access quarry and borrow areas, staging areas, construction camps and other areas required for road construction purposes. These access roads will be cleared, grubbed, gravelled, graded and compacted as required. Erosion protection and sediment control measures will be provided and drainage will be managed. Access roads will be required for the duration of the proposed P7a All-Season Road Project and will be decommissioned when they are no longer needed. Aggregate material will be salvaged and used in borrow area reclamation. The access roads will be levelled and trimmed when they are no longer required to promote natural revegetation.

A temporary access trail is also required to access the All-Season Road right-of-way from the winter road on Fishing Lake. The access trail is 2.0 km long with 1.5 km on land and is located at km 9 from Pauingassi First Nation. This trail will be cleared for winter access. It will not be actively decommissioned.

### **3.8.8 Quarries and Borrow Areas**

New rock quarries and borrow areas will be developed to provide crushed rock and granular materials for the proposed P7a All-Season Road Project. The road design will be based on cut and fill requirements to the extent possible, with additional fill to be provided from quarried sources. The quarry and borrow sites will be located on provincial Crown land within 500 m of the centerline for the P7a All-Season Road right-of-way (Figure 3-7). The estimated total area for quarries and borrow areas is 165.2 ha.

Crushed rock and granular materials is required for construction of the P7a All-Season Road, Acrow panel bridge abutments, culvert stream crossings, temporary access roads, construction staging areas and construction camps. Riprap is also required for erosion control around bridge abutments and at stream crossings. Vegetation at quarry and borrow sites will be cleared, windrowed and burned. Any organic soils will be stripped and stockpiled for subsequent site reclamation. Rock from quarries will be drilled, blasted, excavated, crushed and stockpiled. Explosives and a blasting crew will be required at quarry sites. Granular materials from borrow areas will be excavated, separated and stockpiled. The work will require the use of drill rigs, excavators, rock crushers, sorters, loaders, dump trucks and a variety of construction equipment. Rock will also be sourced from an existing quarry located outside Pauingassi First Nation for road construction near that community. Quarry sites will be decommissioned once the

All-Season Road is built with the exception of those required for maintenance of the All-Season Road.

### **3.8.9 Temporary Construction Staging Areas**

Temporary construction staging areas will be established by the road construction contractor at various locations along the proposed P7a All-Season Road right-of-way to store construction vehicles, equipment and machinery, construction materials and supplies, petroleum products, Portland cement, Acrow panel and temporary construction bridge components, geotextile rolls, culverts and other construction materials for the P7a All-Season Road and Acrow panel bridges.

Vegetation will be cleared, windrowed and burned. It is estimated that four staging areas will be established. Organic matter will be scraped from the surface and stockpiled for use on road shoulders. The area will be contoured and levelled using dozers and graders, and provided with drainage control and erosion protection. An aggregate base may be established depending on the time of year and ground conditions. Construction vehicles, equipment and machinery will include brush cutters, hand clearing tools, excavators, loaders, dump trucks, graders and dozers. Buildings and other structures used for equipment maintenance and materials storage will be skidded in or constructed on site. Staging areas may be fenced and site security may be provided where required. Sanitary, hazardous and solid waste storage will be provided at staging areas. Wastes will be collected and transported to licenced or approved waste storage, disposal and treatment facilities. During winter road season, the landfill at the Northern Affairs Community will be used for domestic and other solid waste. During other seasons, waste not requiring immediate disposal will stockpiled for disposal during the winter road season when there is access. Only small quantities of domestic waste requiring immediate disposal will be taken to the Little Grand Rapids First Nation landfill during the remainder of the year. The small quantities of sewage generated will be disposed at the on-reserve treatment facility. Petroleum products (diesel fuel and gasoline) will be stored on provincial Crown land in double walled tanks in accordance with the National Fire Code of Canada and *The Dangerous Goods Handling and Transportation Act, Storage and Handling of Petroleum Products and Allied Products Regulation*.

### **3.8.10 Temporary Construction Camps**

Temporary construction camp facilities will be established by the road construction contractor at various locations along the proposed P7a All-Season Road right-of-way to support crews constructing the P7a All-Season Road and Acrow panel bridges. It is estimated that two or more construction camps will be established.

Vegetation will be cleared, windrowed and burned. Organic matter will be scraped from the surface and stockpiled for use on road shoulders. The area will be contoured and levelled using dozers and graders, and provided with drainage control and erosion protection. An aggregate base may be established depending on the time of year and ground conditions. Construction vehicles and equipment will include brush cutters, hand clearing tools, excavators, loaders, dump trucks, graders and dozers. Sleeping, dining and office trailers will be brought on site and

various storage buildings will be skidded in or constructed on site. Construction camps will be fenced and site security may be provided where required. Potable water, sanitary waste and solid waste storage will be provided. Sanitary and solid waste will be collected and transported to licenced or approved waste disposal and treatment facilities. During winter road season, the landfill at the Northern Affairs Community will be used for domestic and other solid waste. During other seasons, waste not requiring immediate disposal will stockpiled for disposal during the winter road season when there is access. Only small quantities of domestic waste requiring immediate disposal will be taken to the Little Grand Rapids First Nation landfill during the remainder of the year. The small quantities of sewage generated will be disposed at the on-reserve treatment facility.

### **3.9 Project Activities**

#### **3.9.1 Exploratory Clearing**

Exploratory clearing will be conducted to assist road engineers and surveyors to access remote locations to evaluate the potential for locating the P7a All-Season Road in specific areas. Clearing a 10 m wide path with 10 by 20 m push-outs will allow specialized equipment space to test soil to see if it is suitable. This work will involve flagging trees or shrubs 5 m from each side of the centerline every 10 m. The clearing will be carried out by:

- Removing and disposing of all trees, shrubs and fallen timber;
- Establishing 10 by 20 m push-outs at 200 m intervals to allow geotechnical drill rigs to take soil samples;
- Stockpiling salvageable timber for community use; and
- Piling and burning or burying brush, tree limbs, fallen trees and damaged trees.

Clearing will be carried out using a number of methods including:

- Hand clearing using chainsaws and hand tools;
- Bulldozers;
- Mulching with hydro-axes or other approved mechanical methods; and
- Combination of above methods.

#### **3.9.2 Right-of-Way Clearing**

Clearing rights-of-way consists of the removal and disposal of all trees, shrubs, fallen timber and surface litter from the right-of-way and other areas such as borrow pits, prior to grading. Organic materials stripped from the surface will be stockpiled for use on road shoulders. Materials such as logs or timber suitable for manufacturing forest products will be salvaged. Where required, stumps and roots will be grubbed out and separated from the soil. The non-salvageable material such as brush, roots and limbs will be piled and burned or buried.

### **3.9.3 Mechanical Brushing**

Mechanical brushing is the removal of brush and small trees growing in the right-of-way. This is done to improve or maintain driver site distances. It also helps to ensure proper drainage and to reduce the cost of snow removal. The majority of mechanical brushing takes place in the heavily wooded areas or where conventional mowing equipment cannot access ditch slopes due to rock outcrops or wetland areas.

### **3.9.4 Establishing Rock Quarries**

Quarries will be established in the vicinity of the P7a proposed All-Season Road Project alignment. They will provide the gravel and granular material required to construct the road and other project components. Blasting of rock and gravel crushing usually takes place in the quarries. Quarries are generally established close to the road alignment or project location to reduce transportation costs.

### **3.9.5 Establishing Borrow Pits**

Borrow pits or borrow areas are sites where the existing soil/earth has been tested and determined suitable for road embankment construction. These borrow pits or areas may be on site within the right-of-way or they may be off-site at locations chosen during the survey and design stage of the project. Borrow pits are often required when the existing soil/earth at the road construction site is unsuitable for road embankment construction or the design work has determined that there is insufficient quantity. Designed borrow pits are generally located close enough to the right-of-way so the earth can be hauled by heavy construction equipment such as motor scrapers.

### **3.9.6 Grading Road**

Grading involves using earth on a construction site to prepare the roadbed of a roadway. It consists of four sub-activities: 1) stripping the top soil; 2) earth removal; 3) placement and compaction of rock; and 4) trimming and shaping.

### **3.9.7 Grading and Graveling**

Grade and gravel consists of the construction of a road grade embankment plus the application of traffic gravel on the finish grade surface. Traffic gravel may be a permanent surface treatment or a temporary treatment until a different type of surface treatment is applied. Traffic gravel provides an all-season traction surface for traffic and enables maintenance crews to maintain a smooth riding surface.

### **3.9.8 Installing Culverts**

New culverts are installed along new road embankments wherever it is determined that spring melt or storm run-off needs to pass from one side of the road to the other to maintain natural landscape hydraulics and to prevent flooding and erosion damage; they are also used to cross

smaller order creeks and streams. Culverts are installed by excavating a trench to the required elevation through the road embankment. The trench is then backfilled and compacted to the culvert grade elevation with a granular bedding material. The new culvert may be pre-assembled and lowered into the trench or pieces placed and assembled in situ. The pipe is backfilled with granular material to support the pipe adequately and reduce settlement in the road embankment. Equalization culverts will also be installed at a number of locations along the P7a All-Season Road as required.

### **3.9.9 Constructing Bridges**

Bridge construction is a major component of the proposed P7a All-Season Road Project. There are six basic activities associated with bridge construction:

1. Constructing footings, piers and abutments;
2. Inserting casing and pouring concrete in to the shafts which are the foundation for the columns that support the bridge;
3. Constructing the abutment wall;
4. Girder placement across the span of the bridge;
5. Bridge deck construction and re-bar installation; and
6. Providing a deck surface.

### **3.9.10 Installing Acrow Panel Bridges**

Acrow panel bridges are being used at a number of locations for the All-Season Road Network on the east side of Lake Winnipeg. These bridges are prefabricated and shipped by truck in pieces for on-site installation. Shipping a bridge in pieces means that it can be transported to remote locations using existing winter roads and installed before the all-season road links to the regional network. Acrow panel bridges can be taken apart and moved to a new site at a later date, if required.

### **3.9.11 Maintaining the Road**

Mowing of vegetation on road sides is an annual activity that occurs during the summer months. It is done to improve visibility for driver safety and to limit attraction to wildlife and control noxious weeds. Generally, mowing is undertaken between 4.5 to 9 m in width. Various types of mowing equipment may be used including tractors, riding mowers and weed-eaters.

Washout repair is required when the road sub-grade, surface, shoulders and culverts are damaged by washouts. These repairs are undertaken as soon as possible and as soon as conditions permit. Traffic control devices may be used and if immediate repairs are not practical, traffic may be detoured or diverted in a manner that provides a safe alternative.

Drainage preservation is carried out to restore drainage to its original designs so as to prevent sub-grade saturation and erosion. It consists of excavating, filling, trimming and shaping to maintain required roadside ditch profiles. It also includes ditch slopes, off takes and riprap areas

as well as removal of sediment and debris from culverts. Plowing snow on roadways is done with motor graders, truck plows or rotary plows. Sanding, spreading ice control and dust control are undertaken to increase traction or, in the case of dust control, to minimize the amount of dust that is created while driving on a gravel road.

### 3.9.12 Project Activities Summary

Project activities that are expected to be carried out during the above-referenced project components for the pre-construction, construction, and operation and maintenance stages of the proposed P7a All-Season Road Project are provided in Table 3-4.

**Table 3 - 4 Project Activities for Stages of the Proposed P7a All-Season Road Project by Project Component**

Project Component	Project Activities		
	Pre-Construction	Construction	Operation and Maintenance
All-Season Road	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> <li>• Flagging</li> <li>• Clearing centreline</li> <li>• Exploratory drilling</li> <li>• Testing soils</li> <li>• Operating ATVs</li> <li>• Operating snowmobiles</li> <li>• Operating boats</li> </ul>	<ul style="list-style-type: none"> <li>• Clearing right-of-way</li> <li>• Grubbing</li> <li>• Salvaging</li> <li>• Grubbing</li> <li>• Windrowing</li> <li>• Burning</li> <li>• Drilling</li> <li>• Blasting</li> <li>• Excavating</li> <li>• Stockpiling</li> <li>• Grading</li> <li>• Contouring</li> <li>• Filling</li> <li>• Controlling erosion</li> <li>• Producing aggregate</li> <li>• Transporting equipment</li> <li>• Operating equipment</li> <li>• Operating machinery</li> <li>• Operating vehicles</li> <li>• Signing</li> </ul>	<ul style="list-style-type: none"> <li>• Grading</li> <li>• Operating equipment</li> <li>• Operating vehicles</li> <li>• Maintaining</li> <li>• Producing aggregate</li> <li>• Stockpiling</li> <li>• Controlling vegetation</li> <li>• Controlling dust</li> <li>• Clearing snow</li> <li>• Inspecting</li> </ul>
Acrow Panel Bridges	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> <li>• Flagging</li> <li>• Minor clearing</li> <li>• Exploratory drilling</li> <li>• Testing bedrock</li> </ul>	<ul style="list-style-type: none"> <li>• Minor clearing</li> <li>• Excavating</li> <li>• Filling</li> <li>• Drilling: testing</li> <li>• Blasting</li> <li>• Contouring</li> <li>• Cofferdamming</li> <li>• Controlling erosion</li> <li>• Operating equipment</li> <li>• Transp. bridge materials</li> <li>• Batching concrete</li> </ul>	<ul style="list-style-type: none"> <li>• Maintaining</li> <li>• Inspecting</li> <li>• Testing for contamination</li> </ul>

Project Component	Project Activities		
	Pre-Construction	Construction	Operation and Maintenance
		<ul style="list-style-type: none"> <li>• Pouring concrete</li> <li>• Acrow panel bridge decommissioning</li> </ul>	
Steel Girder Bridges	<ul style="list-style-type: none"> <li>• NA</li> </ul>	<ul style="list-style-type: none"> <li>• Minor clearing</li> <li>• Housing workers - camp</li> <li>• Staging equipment</li> <li>• Excavating</li> <li>• Filling</li> <li>• Drilling: testing</li> <li>• Blasting</li> <li>• Contouring</li> <li>• Cofferdamming</li> <li>• Controlling erosion</li> <li>• Operating equipment</li> <li>• Transp. bridge materials</li> <li>• Batching concrete</li> <li>• Pouring concrete</li> </ul>	<ul style="list-style-type: none"> <li>• Maintaining</li> <li>• Inspecting</li> </ul>
Culvert Stream Crossings	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> <li>• Flagging</li> </ul>	<ul style="list-style-type: none"> <li>• Excavating</li> <li>• Filling</li> <li>• Contouring</li> <li>• Controlling erosion</li> <li>• Restoring</li> </ul>	<ul style="list-style-type: none"> <li>• Maintaining</li> <li>• Inspecting</li> <li>• Steaming</li> <li>• Cleaning</li> </ul>
Temporary Construction Bridges	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> <li>• Flagging</li> <li>• Minor clearing</li> </ul>	<ul style="list-style-type: none"> <li>• Minor clearing</li> <li>• Excavating</li> <li>• Filling</li> <li>• Contouring</li> <li>• Cofferdamming</li> <li>• Controlling erosion</li> <li>• Crossing stream</li> <li>• Operating equipment</li> <li>• Transporting materials</li> <li>• Dismantling</li> <li>• Recycling materials</li> <li>• Removing abutments</li> <li>• Contouring</li> <li>• Controlling erosion</li> <li>• Restoring</li> </ul>	<ul style="list-style-type: none"> <li>• Contamination testing</li> <li>• Inspecting</li> </ul>
Temporary Access Roads	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> <li>• Flagging</li> <li>• Minor clearing</li> </ul>	<ul style="list-style-type: none"> <li>• Clearing</li> <li>• Grubbing</li> <li>• Grading</li> <li>• Graveling</li> <li>• Closing</li> <li>• Restoring</li> </ul>	<ul style="list-style-type: none"> <li>• Testing for contamination</li> <li>• Inspecting</li> </ul>
Quarries and Borrow Areas	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> </ul>	<ul style="list-style-type: none"> <li>• Clearing</li> <li>• Grubbing</li> </ul>	<ul style="list-style-type: none"> <li>• Testing for contamination</li> </ul>

Project Component	Project Activities		
	Pre-Construction	Construction	Operation and Maintenance
	<ul style="list-style-type: none"> <li>• Flagging</li> <li>• Minor clearing</li> <li>• Drilling: testing</li> <li>• Preparing sites</li> </ul>	<ul style="list-style-type: none"> <li>• Excavating</li> <li>• Stockpiling soils</li> <li>• Blasting</li> <li>• Crushing rock</li> <li>• Stockpiling</li> <li>• Operating equipment</li> <li>• Transporting materials</li> <li>• Closing</li> <li>• Restoring</li> </ul>	<ul style="list-style-type: none"> <li>• Inspecting</li> </ul>
Temporary Staging Areas	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> <li>• Flagging</li> <li>• Minor clearing</li> <li>• Disposing brush</li> <li>• Grubbing</li> <li>• Preparing sites</li> </ul>	<ul style="list-style-type: none"> <li>• Clearing</li> <li>• Stockpiling materials</li> <li>• Operating equipment</li> <li>• Drilling: utility poles</li> <li>• Installing utility poles</li> <li>• Operating generator</li> <li>• Storing fuels</li> <li>• Dispensing fuels</li> <li>• Demobilizing</li> <li>• Restoring</li> </ul>	<ul style="list-style-type: none"> <li>• Testing for contamination</li> <li>• Inspecting</li> </ul>
Temporary Construction Camps	<ul style="list-style-type: none"> <li>• Accessing</li> <li>• Surveying</li> <li>• Flagging</li> <li>• Minor clearing</li> <li>• Disposing brush</li> <li>• Grubbing</li> <li>• Preparing sites</li> </ul>	<ul style="list-style-type: none"> <li>• Clearing</li> <li>• Operating equipment</li> <li>• Operating generator</li> <li>• Housing workers</li> <li>• Storing foods</li> <li>• Sourcing water</li> <li>• Disposing solid wastes</li> <li>• Disposing liquid wastes</li> <li>• Demobilizing</li> <li>• Drilling</li> <li>• Testing soil</li> <li>• Restoring</li> </ul>	<ul style="list-style-type: none"> <li>• Testing for contamination</li> <li>• Inspecting</li> </ul>

### 3.10 Geometric Design Criteria

Geometric design criteria for the proposed P7a All-Season Road Project are provided in Table 3-5. The criteria were derived from a variety of resources and practices in other jurisdictions. The proposed P7a All-Season Road for will serve as two functions by becoming the initial link between the communities of Pauingassi and Little Grand Rapids and serving as the long-term P7a All-Season Road until future volumes merit an increase in road top and/or geometric alterations. The philosophy of the proposed P7a All-Season Road is that topography will dictate the alignment and the design speed. Safety provisions are adapted to lower and potentially variable speed scenarios.

### 3.11 Project Drawings

Drawings for the proposed P7a All-Season Road Project are provided in Appendix B. Design criteria used to design the proposed P7a All-Season Road Project is provided in Table 3-5.

**Table 3 - 5 Manitoba Infrastructure and Transportation Geometric Design Criteria**

Region: 1		Advanced Program: NA	
Highway/Road: Island Lakes Network		Km 0 to km 40	
Limits: Pauingassi to Little Grand Rapids			
Parameter	Present Conditions	Project Design Standards	
Year	2013	2023	
Average annual daily traffic (AADT)	NA	<300	
Highway classification	NA	Collector Road	
Design speed	NA	80 km/h	
Gradient – maximum percentage	NA	8%	
Minimum stopping sight distance	NA	140 m	
Minimum passing sight distance	NA	560 m	
Minimum vertical curve “K” values	NA	Kc 35 Ks 25	
Curvature – minimum radius	NA	230 m	
Maximum super-elevation rate	NA	4%	
Lane width and number	NA	2-4.2 m	
Shoulder width – new construction or rehab	NA	NA	
Shoulder edge treatment	NA	NA	
Median width	NA	NA	
Right-of-Way width	NA	100 m (60 m cleared)	
Truck percentage	NA	~2%	
Truck haul (identify type)	NA	Supplies, resource extraction	
Roadbed width	NA	18 m	
Clear roadway width on structure	NA	Short 9.6 m <60 m	Long 9.6 m > or equal to 60m
<b>Notes:</b>			
1. If project design standards differ from the approved basic design standards, the basic design standards should be entered in brackets to the right of the project design standards with an explanation on sheet 2 under remarks			
2. Present AADT= MA (Year 2013)			
3. Traffic volume growth rate = 2.3%			
4. 10-year future traffic volume (add 25% if upgraded from a gravel top to a hard surface) = < 300			
5. Terrain type (flat, rolling or rugged) = Rolling			
6. Existing posed speed = NA km/h; Future posed speed = 70 km/h			
7. Proposed loading class = B1; (Restricted or unrestricted = Unrestricted; (For details see sheet 2 remarks)			

8. Structure design 350 mm (100 mm rock), 150 mm (50 mm rock); Design status pending; Date Nov 18, 2013
9. All intersections/access points to be studied to determine possible improvements/rationalization
10. This GDC is to be reviewed prior to construction if 5 years have elapsed since its approval to ensure its appropriateness
11. Any additional notes or comments should be on sheet 2 under remarks
12. Regionally approved GDCs to be forwarded to Highway Planning and Design for filing

### 3.12 Construction Vehicles and Equipment

Construction equipment and vehicles likely to be used during construction of the proposed P7a All-Season Road Project are listed in Table 3-6. A variety of rubber-tired and tracked equipment and vehicles will be used during construction of the proposed P7a All-Season Road and other project components. The types and numbers of equipment and vehicles to be used during the construction of the proposed P7a All-Season Road Project have not been determined but are likely to include those listed.

**Table 3 - 6 Construction Equipment and Vehicles for the Proposed P7a All-Season Road Project**

Project Components	Equipment/Vehicle	
All-Season Road	Tree feller	Pick-up trucks
	Logging truck	Fuel truck/trailer
	Dozers	Hand tools
	Dump trucks	Snow blower
	Excavators	Mower
	Graders	Sprayer
Acrow Panel Bridge	Flatbed trucks	Excavator
	Crane	Dozer
	Drill rig	Fuel truck/trailer
	Blast truck	Concrete batch plant
	Excavators	Concrete truck
	Dump trucks	Pick-up trucks
	Loader	Loader
	Grader	Hand tools
Steel Girder Bridges	Flatbed trucks	Back hoe
	Crane	Dump truck
	Drill rig	Fuel truck/trailer
	Blast truck	Concrete batch plant
	Excavator	Concrete truck

Project Components	Equipment/Vehicle	
	Loader	Pick-up trucks
	Grader	Hand tools
	Dozers	
Culvert Stream Crossings	Excavator	Dump truck
	Back hoe	Pick-up trucks
	Grader	
Temporary Construction Bridges	Flatbed truck	Backhoe
	Excavator	Dump truck
	Loader	Pick-up truck
	Grader	Hand tools
	Dozer	
Temporary Access Roads	Tree feller	Dump truck
	Hand tools	Grader
	Dozer	Pick-up trucks
Quarries and Borrow Areas	Drill rig	Loader
	Blast truck	Dump truck
	Rock crusher	Grader
	Excavator	Pick-up trucks
	Dozer	Generator
Temporary Construction Staging Areas	Semi-trailers	Dozer
	Excavator	Grader
	Dump truck	Pick-up trucks
	Fuel truck	Hand tools
	Back hoe	Generator
Temporary Construction Camps	Excavator	Grader
	Dump truck	Pick-up trucks
	Fuel truck	Hand tools
	Back hoe	Generator
	Dozer	All-terrain vehicles

### 3.13 Project Construction Materials

Construction of the proposed P7a All-Season Road Project will require various quantities of locally available raw materials available on provincial Crown land and Federal Reserve lands. Table 3-7 indicates the type of raw material and the estimated quantities required.

**Table 3 - 7 Raw Materials Required for the Proposed P7a All-Season Road Project**

Raw Material Required	Estimated Quantity	Unit
Composite Excavation*	600,000	m <sup>3</sup>
Solid Rock Excavation	120,000	m <sup>3</sup>
TG Class D	60,000	m <sup>3</sup>
Quarried Rock Base Course D	180,000	m <sup>3</sup>
Stone Riprap Class 350	2,000	m <sup>3</sup>
* Existing suitable composite material from areas above the road bed elevation, ditches and within the 100 m right-of-way will be used.		

Construction materials likely to be used for the proposed P7a All-Season Road Project by are listed in Table 3-8 by project component. The type and amount of construction materials have not been fully determined but are likely to include those listed.

**Table 3 - 8 Construction Materials for the Proposed P7a All-Season Road Project**

Project Components	Construction Materials	Use
All-Season Road	Crushed rock	Road bed
	Granular materials	Road bed
	Clay	Road bed
	Riprap	Erosion protection
	Geotextile	Liner
	Organic materials	Shoulder
Acrow Panel Bridges	Steel	Girders
	Concrete	Abutment's
	Pressure treated wood	Bridge bed
	Granular materials	Abutments
	Organic materials	Shoulder/reclamation
Steel Girder Bridges	Steel	Girders
	Concrete	Abutments/bridge bed
	Granular materials	Abutments

Project Components	Construction Materials	Use
	Organic materials	Shoulder/reclamation
	Riprap	Erosion protection
Culvert Stream Crossings	Steel culverts	Water passage
	Riprap	Erosion protection
	Crushed rock	Road bed
	Granular materials	Embedding
	Organic materials	Reclamation
Temporary Construction Bridges	Steel	Girders
	Concrete	Abutment's
	Pressure treated wood	Bridge bed
	Granular materials	Abutments
	Organic materials	Shoulder/reclamation
Temporary Access Roads	Granular materials	Road bed
	Organic soil	Reclamation
Quarries and Borrow Areas	Crushed rock	Reclamation
	Granular materials	Reclamation
	Organic materials	Reclamation
Temporary Construction Staging Areas	Granular materials	Site pad
	Organic soil	Reclamation
Temporary Construction Camps	Granular materials	Site pad
	Wood	Construction
	Metal	Construction
	Organic materials	Reclamation

### 3.14 Fuels and Hazardous Materials

Expected fuels and hazardous materials for the proposed P7a All-Season Road Project are summarized in Table 3-9 by project component. Fuels and other hazardous materials will be transported, stored, dispensed and managed in accordance with the National Fire Code of Canada, *The Transportation of Dangerous Good Act* (Dangerous Goods Handling and Transportation, *Environmental Accident Reporting and Storage and Handling of Petroleum Products and Allied Products Regulation*).

**Table 3 - 9 Fuels and Hazardous Materials for the Proposed P7a All-Season Road Project**

<b>Project Components</b>	<b>Fuel/Materials</b>	<b>Purpose</b>
All-Season Road	Diesel	Construction equipment/vehicle fuel
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel Heating trailers/structures
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
Acrow Panel Bridges	Diesel	Construction equipment/vehicle fuel
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel Heating trailers/structures Heating under hoarding
	Acetylene	Cutting steel
Steel Girder Bridges	Diesel	Construction equipment/vehicle fuel
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel Heating trailers/structures Heating under hoarding
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
	Acetylene	Cutting steel
Culvert Stream Crossings	Diesel	Construction equipment/vehicle fuel
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
Temporary Construction Bridges	Diesel	Construction equipment/vehicle fuel
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment

Project Components	Fuel/Materials	Purpose
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
	Acetylene	Cutting steel
Temporary Access Roads	Diesel	Construction equipment/vehicle fuel
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
Quarries and Borrow Areas	Diesel	Construction equipment/vehicle fuel
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
Temporary Construction Staging Areas	Diesel	Construction equipment/vehicle fuel Electrical generator
	Gasoline	Construction equipment/vehicle fuel
	Propane	Construction equipment/vehicle fuel Heating trailers/structures
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment
Temporary Construction Camps	Diesel	Electrical generator
	Gasoline	Vehicles/equipment
	Propane	Heating/cooking
	Oil	Construction equipment/vehicle motor lube
	Hydraulic fluid	Construction equipment

### 3.15 Potable Water Supply

Potable water for the proposed P7a All-Season Road Project will be trucked from existing sources including Pauingassi and Little Grand Rapids First Nations, as required, to the construction camps. Depending upon availability and with prior approval, groundwater may be obtained from wells drilled on site.

### 3.16 Waste Disposal and Treatment

Domestic solid waste will be collected and transported to the nearest community landfill in Pauingassi and Little Grand Rapids First Nations or Little Grand Rapids Northern Affairs Community. Recyclable materials will be segregated and stored in designated areas and containers for removal as conditions permit. Septage waste at construction camps or sites will be stored in approved containers and will be hauled for disposal and treatment at either the sewage treatment plant in Pauingassi First Nation or the aerated sewage lagoon at Little Grand Rapids First Nation. Hazardous materials used for the Project include fuel and lubricants used by the construction vehicles, equipment and machinery, stationary and portable generators, and other portable equipment (e.g., pumps, chain saws). Waste petroleum products (e.g., lubricants, oils, greases) derived from construction vehicles and equipment will be collected and stored in designated areas and containers until they can be removed from site for recycling or disposal through a licenced waste disposal/treatment company.

Waste disposal and treatment for the proposed P7a All-Season Road Project is summarized in Table 3-10. Solid, liquid and hazardous wastes from the road project will be collected, stored, transported, disposed of and/or treated in accordance with *The Environment Act (Waste Disposal Regulation)* and *The Transportation of Dangerous Goods Act (Dangerous Goods Handling and Transportation, Environmental Accident Reporting Regulation, and Storage and Handling of Petroleum Products and Allied Products Regulation)*. If contaminated soil is discovered during the life of the proposed P7a All-Season Road and its components the affected site will be assessed and any soil determined to be contaminated will be managed on-site or removed to an approved treatment site.

**Table 3 - 10 Waste Disposal and Treatment for the Proposed P7a All-Season Road Project**

<b>Project Components</b>	<b>Solid Waste</b>	<b>Liquid Waste</b>	<b>Hazardous Waste</b>
All-Season Road	Trees windrowed and burned on-site	Porta-potties will be used for human wastes.	None expected
Acrow Panel Bridges	Waste construction materials collected and removed from site to an approved facility.	Porta-potties will be used for human wastes.	Any hazardous wastes will be stored and transported to an approved facility.
Steel Girder Bridges	Waste construction materials collected and removed from site to an approved facility.	Porta-potties will be used for human wastes.	Any hazardous wastes will be stored and transported to an approved facility.
Culvert Stream Crossings	Waste construction materials collected and removed from site to an approved facility.	Porta-potties will be used for human wastes.	None expected.
Temporary Construction Bridges	Trees windrowed and burned on-site	Porta-potties will be used for human wastes.	Any hazardous wastes will be stored and transported to an approved facility.
Temporary Access Roads	Trees windrowed and burned on-site.	Porta-potties will be used for human wastes.	None expected.
Quarries and Borrow Areas	Trees windrowed and burned on-site	Porta-potties will be used for human wastes.	Some contamination possible.
Temporary Construction Staging Areas	Waste construction and other materials collected and removed from site to an approved facility.	Human wastes will be contained and taken to an approved treatment facility.	Any hazardous wastes will be stored and transported to an approved facility.
Temporary Construction Camps	Waste construction and other materials collected and removed from site to an approved facility.	Human wastes will be contained and taken to an approved treatment facility.	Any hazardous wastes will be stored and transported to an approved facility.

### 3.17 Project Workforce

The anticipated workforce for the proposed P7a All-Season Road Project is summarized in Table 3-11. Construction will be carried out under contracts tendered and managed by ESRA. Presently, the number, scope and magnitude of the contracts are not fully known. ESRA employees will be involved in the planning and design of the proposed Road Project, and will manage and/or supervise pre-construction, construction and operation and maintenance activities. Construction activities will be monitored by ESRA inspectors and contractors if tendered. One part-time ESRA employee and three contract people will be required for operation and maintenance activities on a full-time basis after commissioning of the P7a All-Season Road.

**Table 3 - 11 Estimated Workforces for the Proposed P7a All-Season Road Project**

Project Components	Pre-Construction		Construction		Operation and Maintenance	
	Contract	Staff	Contract	Staff	Contract	Staff
All-Season Road	3	2	25	5	3	1(PT)
Acrow Panel Bridges	0	0	20	3	Incl. above	Incl. Above
Temporary Construction Camps	2	1	5	1	-	-

### 3.18 Project Schedule

The schedule to achieve an in-service date of 2020 for the proposed P7a All-Season Road Project is summarized in Table 3-12.

**Table 3 - 12 Planned Schedules for the Proposed P7a All-Season Road Project**

Project Components	Project Phase	Start Date	Completion Date
All-Season Road	Planning/Design	2014	2015
	Construction	2016	2020
	Operation/Maintenance	2021	Ongoing
Acrow Panel Bridges	Planning/Design	2014	2015
	Construction	2017	2019
	Operation/Maintenance	2019	Ongoing
	Decommissioning	~2040	~2040
Steel Girder Bridges	Planning/Design	To be determined	To be determined
	Construction	To be determined	To be determined
	Operation/Maintenance	To be determined	To be determined
Culvert Stream Crossings	Planning/Design	2014	2015
	Construction	2016	2019
	Operation/Maintenance	2019	Ongoing
Temporary Construction Bridges	Planning/Design	2014	2015
	Construction	2017	2018
	Operation/Maintenance	2017	2018
	Decommissioning	2018	2018
Quarries and Borrow Areas and Temporary Access Roads	Planning/Design	2014	2018
	Construction	2016	2019
	Operation/Maintenance	2016	2019
	Decommissioning	2020	2020
Temporary Construction Staging Areas	Planning/Design	2014	2015
	Construction	2016	2020
	Operation/Maintenance	2016	2020
	Decommissioning	2020	2020
Temporary Construction Camps	Planning/Design	2014	2015
	Construction	2016	2020
	Operation/Maintenance	2016	2020
	Decommissioning	2020	2020

### **3.19. Project Funding**

The total cost for construction of the proposed P7a All-Season Road Project is estimated to be \$50 million with bridges. Initial operating costs for the proposed road project are estimated to be \$6 million per year and are subject to the cost of inflation over time. The source of funding for construction and operation of the proposed P7a All-Season Road Project is the Manitoba Government. Funding for the Community Access Roads on First Nation Reserve land is being requested from Aboriginal Affairs and Northern Development Canada in support of Aboriginal economic development with Little Grand Rapids First Nation, Pauingassi First Nations and ESRA as co-applicants.

### **3.20 Summary**

This chapter of the environmental assessment report provided a description of the proposed All Season Road Project linking Pauingassi First Nation and Little Grand Rapids First Nation to the Little Grand Rapids Airport. The project description included its regional context, location on the east of Lake Winnipeg, ownership of the land, alternatives means of carrying out the project, construction stages, components and activities, construction materials, waste products, workforce, schedule and funding. The proposed P7a All-Season Road Project is described to facilitate the identification and analysis of potential environmental effects, and the mitigation of adverse effects in the subsequent chapters.