Shoal Lake No. 40 First Nation

Environment Assessment Report – Shoal Lake No. 40 First Nation Freedom Road Project

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December, 2016

Project Number: 60343493

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4	1	Department of Sustainable Development – Approvals Branch

Revision History

Revision #	**Date**	**Revised By:**	**Revision Description**
1	June 2016	K. Cusitar	Draft1
2	October 2016	K. Cusitar	Draft2
3	December 2016	K. Cusitar	Final

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December 9, 2016

Ms. Tracey Braun, M.Sc.
Director, Environmental Assessment and Licensing
Department of Sustainable Development
123 Main Street
Ste. 160 Union Station
Winnipeg, Manitoba R3C 1A5

Dear Ms. Braun:

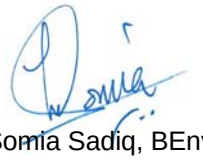
Project No: 60343493
Regarding: Environment Assessment Report –
Shoal Lake No. 40 First Nation Freedom Road Project

Please find enclosed four hard copies and one electronic copy of *The Environment Act* Proposal form and supporting information to obtain approval for the Freedom Road All-Season Road. It is AECOM's understanding that the proposed All-Season Road will be classified as a Class 2 Development under the Classes of Development Regulation of *The Environment Act* (Manitoba). In accordance with the Classes of Development Fee, a cheque for the application fee of $7,500 has already been submitted for this application. We trust that the information on the please find enclosed *The Environment Act* Proposal form and the attached supporting information is sufficient.

This Environmental Impact Statement incorporates feedback from the March 2016 filing of the *Project Description – Shoal Lake No. 40 First Nation Freedom Road Project* and the *Freedom Road Project – Environmental Assessment Scoping Document* with the Department of Sustainable Development.

Should you have any questions regarding the Project or the content of this report, please do not hesitate to contact Somia Sadiq directly at 204-928-8494.

Sincerely,
AECOM Canada Ltd.



Somia Sadiq, BEnv. Sc., EP, MCIP, RPP
Impact Assessment & Permitting Lead, MB/SK

KC:dh

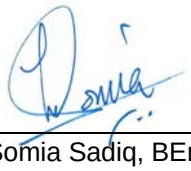
Encl.

cc:

Quality Information

Report Prepared By:

Kristiina Cusitar, CET, EP
Environmental Assessor



Somia Sadiq, BEnv. Sc., EP, MCIP, RPP
Impact Assessment & Permitting Lead, MB/SK

Executive Summary

Shoal Lake 40 First Nation ("Shoal Lake 40") is a First Nation Community situated on the western shores of Shoal Lake, located predominately in the Province of Manitoba, with a smaller section to the east in the Province of Ontario (**Figure 01**). It is isolated from the mainland of Ontario, surrounded by Shoal Lake to the north, east, and south. The eastern portion containing the Community is separated from the Manitoba mainland by a man-made canal (the Falcon River Diversion). The canal was constructed in 1915 to 1919 during the development of the Winnipeg Aqueduct which diverts water to the City of Winnipeg from Shoal Lake and the Lake of the Woods drainage basin.

Shoal Lake 40 First Nation requires an All Season Road ("ASR") that will connect with an On-Reserve Access Road which would improve the quality of life of the Community and ensure the safety of its residents and enable the long-term sustainability of the Community. The Community is only accessible via personal boat or a licensed ferry during the summer months and a winter road when the ice is sufficiently thick and safe to drive on. During the shoulder seasons of spring and fall, the community is without access to the mainland. This creates significant hardship, often resulting in serious incidents of personal safety and even death.

The proposed ASR from Shoal Lake 40 involves the construction of approximately 14.7 km of ASR on new ROW on provincial Crown land and requires a license under *The Environment Act* of Manitoba. This ASR will connect with an On-Reserve Access Road that will require upgrades to existing or partially constructed seasonal and service roads. This proposed road is classified as a Class 2 Development under the Classes of Development Regulation, under *The Environment Act*.

Environmental effects for the proposed Project have been assessed as follows:

Soils and Bedrock

Potential environmental effects on soil and bedrock due to soil compacting and mixing of soil horizons, and erosion will mainly be localized to the Project Site. The mitigation measures proposed in **Section 6.4.1**, along with the implementation of MI's *Construction Related Environmental BMPs* described in **Appendix K**, application of standard construction procedures and best management practices, are deemed sufficient to mitigate potential adverse effects to surface and subsurface soils. Implementation of mitigation measures will be monitored during construction. Residual effects due to surface and subsurface soil activities are therefore expected to be negligible and not significant.

Air Quality

The potential environmental effects on air quality due to noise, dust and exhaust emissions will mainly be localized to the immediate work areas, and will be short-term in duration. Therefore, with the implementation of the mitigation measures noted in **Section 6.4.2**, the overall residual effects on air quality due to noise, dust, and exhaust emissions are expected to be negligible and not significant.

Surface Water Quality

With the implementation of erosion and sediment control measures, including isolation techniques, it is anticipated that the effects will be localized to the immediate working areas during construction activities and will be short-term. Overall, the impact on surface water quality is expected to be negligible, short term, and not significant with the implementation of Manitoba Infrastructure's *Construction Related Environmental BMPs* described in **Appendix K**.

Vegetation

Potential effects on vegetation due to clearing and dust will mainly be localized to the immediate work areas during construction. To minimize the potential effects due to construction, mitigation measures will be built in the construction contract which will be monitored during construction. The overall residual effects on vegetation due to clearing and dust are therefore expected to be negligible and not significant.

Wildlife and Migratory Birds

Construction of the proposed ASR and blasting at quarry/borrow areas will result in increased noise and vibration that may temporarily alter the potential use of the area by other wildlife including songbirds and fur bearers. These effects will mainly be observed within close proximity of the ASR ROW, quarries, and temporary facilities. Once construction is complete, most species will return to the area over time.

Shoal Lake itself, which is in the Project Area, offers nesting areas for some overwater duck species and shorebirds. While there is no existing survey data for these species on Shoal Lake, local residents and the Department of Sustainable Development personnel have observed migratory waterfowl on the lake in spring and fall. The lake is most likely used as a stopover for migration periods. However, the Project does not involve any disturbances to Shoal Lake and is therefore not likely to impact these birds.

Wildlife collisions with construction vehicles will be unlikely due to the slow speed of travel of the heavy equipment. Plus the increase in activity in and around the Project Site may also deter wildlife, thus reducing risk of collisions. Collisions with wildlife may potentially increase once the ASR is in use but is anticipated to remain low due to improved road design which will provide a clear line of sight, thereby minimizing the risk of collisions.

There will likely be an increase in hunting activities within the Project Area due to improved access to areas which were previously inaccessible. As indicated previously, even though the area of the proposed ASR was not used much in the past for hunting due to peat bogs, fens, and the general low-lying areas; some hunting occasionally occurred in the area.

Construction crews will not be permitted to hunt within the area of the Project Site and hunting will be restricted within 300 m of any ROWs. Restricting access by temporarily blocking roads and the placement of “no hunting” signs during construction to the ASR and other facilities (including the temporary access roads) will reduce accessibility for hunters.

Taking into account specific mitigation measures which will be implemented during construction and operation the residual impact on wildlife is expected to be minor, short term, and not significant.

Rare and Endangered Species

No species listed in *The Endangered Species and Ecosystems Act* (Manitoba) or SARA was observed along the route during the helicopter and land based surveys. However, two endangered bird species are known to nest in the Project Area; the Canada Warbler and the Olive-sided Flycatcher. These species were not observed in the Project Area during the terrestrial surveys, but are known to occur in the general region.

To manage potential impacts on rare and endangered species, mitigation measures also identified in **Sections 6.5.1** and **6.5.2** will be implemented. With the implementation of the identified mitigation measures overall residual effects on species at risk due to construction are expected to be negligible and not significant.

Aquatic Resources

Currently, recreational or commercial fishing for Walleye/Sauger is not permitted on Shoal Lake. Subsistence fishing for the Community, however, does include Walleye. The moratorium on recreational and commercial Walleye fishing has been in place since the early 1980s. According to the Manitoba 2016 Anglers' Guide, all Walleye/Sauger caught on Shoal Lake must be released. There may be a potential increase in recreational fishing in the area for other fish species, however, the Fisheries Branch provides general limits for various fish species for Manitoba waterbodies and also provides special regulations for individual lakes such as Shoal Lake.

There is currently no recreational or commercial fishing for Walleye/Sauger permitted on Shoal Lake. According to the Manitoba 2016 Anglers' Guide, all Walleye/Sauger must be released on Shoal Lake. There may be a potential increase in recreational fishing in the area for other fish species, however, the Fisheries Branch provides general limits for various fish species for Manitoba waterbodies and also provides special regulations for individual lakes such as Shoal Lake.

This Project does not involve any in water works and therefore construction activities related specifically to this Project will not impact aquatic resources. To reduce potential erosion and sedimentation at the Project Site, and therefore manage consequential impact on surface water, the mitigation measures identified in **Section 6.4.1.2** will be implemented.

A risk assessment conducted by DFO in 2012 found that Zebra Mussels poses a relatively low risk to the Winnipeg River sub-basin (DFO, 2013) based mainly on the pH, alkalinity, and calcium concentrations of the surface waters. The potential for introduction was assessed as high but the conditions in Shoal Lake make establishment unlikely. The City of Winnipeg conducts regular monitoring for the presence of Zebra Mussels and have not noted Zebra mussels in Shoal Lake to date. The Department of Sustainable Development has established some protocols for proper cleaning of watercraft and will be operating boat washing and inspection stations at various locations in the province (Manitoba Conservation and Water Stewardship, 2014).

Protected Areas

In an email dated April 25, 2016, Parks and Protected Spaces Branch indicated that the Branch does not have any comments or concerns about the proposed Project as it does not affect any provincial parks, park reserves, ecological reserves, areas of special interest, or proposed protected areas.

Socio-Economic Environment

Once the construction of the ASR is complete, it will result in improved health, education and other essential services for the Community. It will also provide the Community an opportunity to explore various other economic opportunities. Members of Shoal Lake 40 have expressed an interest in exploring additional infrastructure for tourism in the future. Any future developments will occur while being cognizant of the needs of Shoal Lake 40 and adjacent communities and service centres. Any future developments will be planned in accordance with applicable development plans and regulatory policies.

With the construction of the ASR, the Community will have an opportunity to build a water treatment facility. This will improve access to drinking water and reduce the cost to members of purchasing bottled water. The ASR will also provide a reliable means of food for the Community. The Community will no longer have to rely only on the winter road and/or ferry (when they are operational) to provide the needed groceries for the Community.

Overall the residual effects of the ASR on the Community will be positive.

Medicinal Plants

The elders from Shoal Lake 40 suggested careful clearing which is limited strictly to the ROW and what is needed for the construction of the ASR. They have also expressed an interest in harvesting all the medicines along the proposed alignment of the ROW prior to construction. This is something the Community will likely explore upon completion of the environmental review process by Manitoba Sustainable Development.

The measures identified in **Section 6.5.1**, to mitigate effects on vegetation will be implemented and the implementation of mitigation measures will be monitored during construction. Taking into account the mitigation measures proposed in this assessment, the residual effects on medicinal plants for traditional uses are expected to be negligible.

Hunting and Trapping

There will likely be an increase in hunting and trapping activities within the Project Area due to improved access to areas which were previously inaccessible. As indicated previously, even though the area of the proposed ASR was not used much in the past for hunting due to peat bogs, fens, and the general low-lying areas; some hunting occasionally occurred in the area. Most Community members did not travel too far into the bush and stayed along the shoreline which is where most hunting and trapping took place.

Taking into account specific mitigation measures which will be implemented during construction and operation, the residual impact on wildlife is expected to be minor and not significant.

Commercial, Recreational, and Subsistence Fishing

The proposed ASR will provide an additional access route to Shoal Lake, however, there is currently no recreational or commercial fishing for Walleye/Sauger permitted on Shoal Lake. In the future, if the Walleye population recovers and is restored to its former health, the Community could consider a Shoal Lake fishery. This fishery would need to include sustainable harvesting limits and could provide significant value to the Community; particularly if it featured a recreational fishery supported by a local resort or cottage development.

This Project does not involve any construction activities along the shores of Shoal Lake and will therefore will not impact the fishery or fish habitat in Shoal Lake.

Heritage Resources

In June 2016, Northern Lights Heritage Services Inc. completed a Heritage Resources Impact Assessment (HRIA) of the Project Site. The archaeologist was accompanied by Elder Doug Redsky, assistant Ken Redsky and Coordinator Daryl Redsky of Shoal Lake 40. No evidence of heritage resources was noted along the ASR during this HRIA and there are no concerns with development of the road at present. Also, in discussions with Daryl and Ken Redsky, it was learned that there was a “mass” grave located on Snake Lake (area that will not be subject to direct disturbances), approximately 1.8 km north/northeast of the proposed ASR. The aerial survey identified signage placed by the City of Winnipeg on the southeast shore of Snake Lake to mark this site. Elder Redsky also noted a second marked burial site, southeast of Snake Lake. None of the sites noted will be disturbed by any project-related activities.

Cumulative Environmental Effects

The purpose of a cumulative effects assessment is to assess residual adverse Project-related effects on valued environmental components that may become significant when they interact with past, present or future projects or activities in the Project Area. In identifying relevant activities, the Project team consulted with the relevant Public

registries for the Provinces of Manitoba and Ontario, and took into account any projects mentioned during the course of engagement activities by various participants and interested parties.

Taking into consideration the regional environmental context, planning and permitting requirements for developments in the area, the anticipated adverse residual environmental impact of the proposed ASR, and the long-term benefit of the proposed project to the community of Shoal Lake 40, no additional mitigation measures, beyond those identified in **Section 6** will be required.

Conclusion Summary

Considering the implementation of the proposed mitigation measures identified in **Section 6,** along with MI's *Construction Related Environmental BMPs,* as described in **Appendix K**, and taking into consideration the design features of the proposed ASR, the adverse effects of the proposed Project are anticipated to be negligible to minor in magnitude, with major positive long-term benefits for the Community of Shoal Lake 40.

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1. General Information and Contacts

Shoal Lake 40 First Nation ("Shoal Lake 40") is a First Nation Community situated on the western shores of Shoal Lake, located predominately in the Province of Manitoba, with a smaller section to the east in the Province of Ontario (**Figure 01**). It is isolated from the mainland of Ontario, surrounded by Shoal Lake to the north, east, and south. The eastern portion containing the Community is separated from the Manitoba mainland by a man-made canal (the Falcon River Diversion), located approximately 5.7 kilometers west of the Community and approximately 18 m in width. The canal was constructed in 1915 to 1919 during the development of the Winnipeg Aqueduct which diverts water to the City of Winnipeg from Shoal Lake and the Lake of the Woods drainage basin.

Currently, access to Shoal Lake 40 during the ice-free period is via personal boat or a licensed ferry, operated by Shoal Lake 40. The ferry travels a distance of approximately 0.5 km from a landing located on Iskatewizaagegan 39 Independent First Nation to a landing along the north shore of Shoal Lake 34B2 Reserve, land jointly held by Shoal Lake 40 and Iskatewizaagegan 39 Independent First Nation. In the winter, once the ice is sufficiently thick and deemed safe to drive on, winter roads are established between the reserves. During the shoulder seasons of spring and fall, the Community is without safe access to the mainland other than by helicopter. This creates significant hardship, often resulting in serious incidents of personal safety and even death.

Healthcare, education, and other essential services such as solid and liquid waste disposal are severely impaired due to the lack of secure all-weather access. There is limited economic opportunity on the Reserve due to its isolation. An All-Season Road[1] ("ASR") would improve the quality of life of the Shoal Lake 40 Community, ensure the safety of its residents and enable the long-term sustainability of the Community. It will also enable an economic future for the Community. Presently there is no ASR to the Shoal Lake 40 Community. A number of past attempts sought to gain all-weather access, but none proved feasible. A seasonal winter road has been in place since the winter of 2013 when a temporary bridge was placed over the canal. This seasonal winter road is not the same as the winter roads into many Manitoba remote communities that have Manitoba Infrastructure involvement and/or oversight. The winter road into the Community of Shoal Lake is not acceptable to most commercial carriers and emergency vehicles due to safety policies and/or insurance reasons. In 2015, the design and partial construction of a 3.3 km long internal service road was completed from the canal to the western edge of the Reserve Boundary (**Figure 02**). Previously a community access road was built as part of the winter road from the Band Office to the canal.

Shoal Lake 40 retained AECOM Canada Ltd. ("AECOM") to undertake the environmental assessment for the proposed ASR and its ancillary components ("the Project"), which include: the temporary access roads, staging areas, quarries, and borrow sites. This report presents AECOM's results of the assessment.

[1] *This ASR has been referred to as "Freedom Road."*

1.1 Proponent Information

Table 1. Proponent Contact Information

Name of Project	**Project Description – Shoal Lake 40 First Nation Freedom Road Project**
Name of Proponent	Manitoba Infrastructure and Shoal Lake 40 First Nation
Address of Proponent	16th Floor, 215 Garry Street Winnipeg, Manitoba R2R 1G6

Table 2. Technical Contact Information

Name of Project	**Project Description – Shoal Lake 40 First Nation Freedom Road Project**
Name of Technical Contact	Somia Sadiq, BEnv. Sc., EP, MCIP, RPP
Title	Impact Assessment & Permitting Lead, MB/SK
Address	AECOM Canada Ltd. 99 Commerce Drive Winnipeg, Manitoba R3P 0Y7
Phone & Email	Ph: (204) 928-8494 Email: somia.sadiq@aecom.com

1.2 Jurisdictions and Other Parties Engaged

Members of Shoal Lake 40 have been engaged throughout the Project planning of Freedom Road. Discussions with various other communities and stakeholders have been ongoing since early 2014. Listed below are the participants who have been contacted to-date regarding the Project:

Neighboring Indigenous Communities:

- Iskatewizaagegan 39 Independent First Nation
- Animakee Wa Zhing #37
- Northwest Angle No. 33 First Nation
- Wabaseemoong Independent Nations
- Ochiichawe'babigo'ining First Nation
- Obashkaandagaang
- Anishinabe of Wauzhushk Onigum

Other Indigenous Communities and Organizations:

- Assembly of Manitoba Chiefs
- Grand Council Treaty 3
- Brokenhead Ojibway First Nation (BON)
- Buffalo Point First Nation (BPFN)
- Peguis First Nation (PFN)

- Sagkeeng First Nation (SFN)
- Manitoba Metis Federation (MMF)
- Black River First Nation (BRFN)
- Bimose Tribal Council

Other Stakeholders:

- City of Winnipeg
- Manitoba Trappers Association
- Manitoba Lodges and Outfitters Association
- Whiteshell Fur Council
- Whiteshell Cottagers Association
- South Whiteshell Chamber of Commerce
- Whiteshell Snowmobile Club
- South Whiteshell Trails Association
- Manitoba Parks
- Rural Municipality of Reynolds
- SE Quota Holders Association
- Falcon Lake
- West Hawk Lake
- Blackjack Outfitters (GHA 35)
- Lamaga Guiding and Outfitting (GHA 36)
- Lamaga Guiding and Outfitting (GHA 35)
- Whiteshell Outfitters (GHA 36)
- Headwater Ranch (GHA 35)
- Silver Birch Resort (GHA 35)
- Boot Hill Hunt Club (GHA 35)
- K.C's Outfitting (GHA 35)

Other Regulatory Bodies:

- Department of Sustainable Development (formerly Manitoba Conservation and Water Stewardship)
    - Wildlife Branch
    - Integrated Resources and Environmental Management Team (Eastern Region)
- Indigenous and Northern Affairs Canada
- Manitoba Aboriginal and Northern Affairs
- Manitoba Mines Branch
- Manitoba Infrastructure
- Department of Fisheries and Oceans
- Transport Canada

As part of the Western Access Road Study (Stantec, 2010a), the following stakeholders were contacted (includes meetings and discussions) as part of the study:

- City of Winnipeg
    - Water & Wastewater Department
- Department of Sustainable Development (formerly Manitoba Conservation and Water Stewardship)
    - Forestry Branch
    - Historic Resources Branch

  - Parks and Protected Spaces Branch (formerly Parks and Natural Areas)
  - Water Stewardship Division
  - Sports, Culture and Heritage (formerly Manitoba Culture, Heritage and Tourism Branch)
- Manitoba Infrastructure (formerly Manitoba Infrastructure and Transportation)
- Crown Lands
- Intergovernmental Affairs
- Canadian Environmental Assessment Agency
- Health Canada
- Transport Canada
- Department of Fisheries and Oceans
- Indigenous and Northern Affairs Canada
- Public Works and Government Services

1.3 Land Ownership

The proposed ASR includes lands owned by the Federal Government (Shoal Lake 40), the City of Winnipeg, and the Province of Manitoba.

1.4 Environmental Assessment Requirements

1.4.1 *The Environment Act* (Manitoba)

The proposed Project will involve construction of approximately 14.7 km of ASR via the existing cleared seasonal winter road right of way (ROW) on provincial Crown land and requires a license under *The Environment Act* (Manitoba). This ASR will connect with an On-Reserve Access Road at the Western Reserve Boundary (**Figure 02**). The proposed ASR is classified as a Class 2 development under the Classes of Development Regulation, under *The Environment Act*.

1.4.2 *Canadian Environmental Assessment Act, 2012* (Canada)

The proposed ASR is not considered a designated project under the *Canadian Environmental Assessment Act, 2012* and therefore will not require an environmental assessment under the authority of CEAA.

1.5 Regulatory Requirements

Provincial permits and approvals will be requested as required for road construction activities including vegetation clearing, quarry development, burning, and camp development. Provincial legislation requirements may include the following:

- *The Crown Lands Act;*
- *The Wildfires Act;*

- *The Wildlife Act;*
- *The Provincial Parks Act;*
- *Mines and Minerals Act;*
- *The Forest Act;*
- *The Dangerous Goods Handling and Transportation Act; and*
- *The Workplace Safety and Health Act.*

The Explosives Act will be requested from Natural Resources Canada for the storage of explosives, if required.

1.5.1 *Crown Lands Act* (Manitoba)

Authorization for road construction on provincial lands will require work permits under *The Crown Lands Act*. This will include vegetation clearing, quarry development, and camp development on provincial Crown lands.

1.5.2 *The Wildfires Act* (Manitoba)

If Burning Permits are required as per Section 19(1) of *The Wildfires Act*, they will be requested by the contractor as needed.

1.5.3 *The Wildlife Act* (Manitoba)

The Environmental Assessment will be cognizant of *The Wildlife Act* (Manitoba) to ensure any applicable activity that pertains to species listed on the Act are conducted in accordance with the procedures and practices set out in the Act.

1.5.4 *The Provincial Parks Act* (Manitoba)

Work permits will be required from the Parks and Protected Spaces Branch.

1.5.5 *Mines and Minerals Act* (Manitoba)

Prior to any quarry development on provincial Crown Lands, a casual quarry permit will be required as per Subsection 133(1) of *The Mines and Minerals Act*.

Blasting certificates may also be obtained from the Mines Branch. If explosives are to be stored at the site (in excess of 75 kg) a Magazine Licence will be required as per the *Operation of Mines Regulation*.

1.5.6 *The Forest Act* (Manitoba)

A timber permit will be required prior to tree removal/clearing.

1.5.7 *The Dangerous Goods Handling and Transportation Act* (Manitoba)

All petroleum storage tanks over 5,000 L on Crown land will require a permit as per *The Dangerous Goods Handling and Transportation Act* (Storage and Handling of Petroleum Products and Allied Production Regulation).

1.5.8 *The Workplace Safety and Health Act* (Manitoba)

All construction activities will be in accordance to *The Workplace Safety and Health Act*.

1.5.9 *The Explosive Act* (Canada)

If explosives are required at non-quarry worksites a license will be obtained from Natural Resources Canada as per *The Explosives Act.*

1.5.10 Other Regulatory Requirements

1.5.10.1 *Migratory Birds Convention Act*, 1994 (Canada)

Provisions of the *Migratory Birds Convention Act* will be adhered to during the construction of the proposed ASR.

1.5.10.2 *Indian Act*, 1985 (Canada)

Prior to any quarry development on-Reserve, a permit may be required as per Subsection 4(b) of the *Indian Act*.

2. Project Information

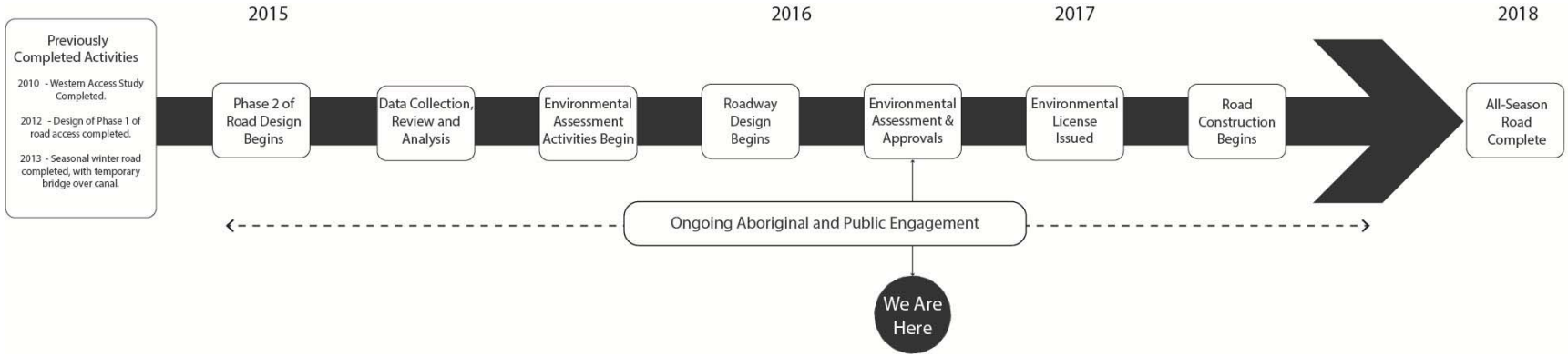
2.1 Project Overview

Shoal Lake 40 is situated on the western shores of Shoal Lake, located predominately in the Province of Manitoba, with a smaller section to the east in the Province of Ontario (**Figure 01**). It is isolated from the mainland of Ontario, surrounded by Shoal Lake to the north, east, and south. The eastern portion containing the Community is separated from the Manitoba mainland by a man-made canal (the Falcon River Diversion). The canal was constructed in 1915 to 1919 during the development of the Winnipeg Aqueduct which diverts water to the City of Winnipeg from Shoal Lake and the Lake of the Woods drainage basin.

Shoal Lake 40 requires an ASR that will connect with an On-Reserve Access Road which would improve the quality of life of the Community, ensure the safety of its residents, and enable the long-term sustainability of the Community. The Community is only accessible via personal boat or a licensed ferry during the summer months and a winter road when the ice is sufficiently thick and safe to drive on. During the shoulder seasons of spring and fall, the community is without access to the mainland. This creates significant hardship, often resulting in serious incidents of personal safety and even death.

The ASR will be 14.7 km from the intersection of the TransCanada Highway to the Reserve boundary (at approximately km 8.6). This will connect with an 8.7 km On-Reserve Access Road from the Reserve boundary to the Band Office (see **Figure 02**).

The current timeline for the Project is illustrated below:


2015
2016
2017
2018
Previously Completed Activities
2010 - Western Access Study Completed.
2012 - Design of Phase 1 of road access completed.
2013 - Seasonal winter road completed, with temporary bridge over canal.
Phase 2 of Road Design Begins
Data Collection, Review and Analysis
Environmental Assessment Activities Begin
Roadway Design Begins
Environmental Assessment & Approvals
Environmental License Issued
Road Construction Begins
All-Season Road Complete
Ongoing Aboriginal and Public Engagement
We Are Here

The *Project Description – Shoal Lake No. 40 First Nation Freedom Road Project* and the *Freedom Road Project – Environmental Assessment Scoping Document* was filed with the Department of Sustainable Development on March 2016. This EA incorporates the feedback received from these two documents from the Technical Advisory Committee (TAC) and the general public. The *Project Description – Shoal Lake No. 40 First Nation Freedom Road Project* was available for public review for 30 days and was located on the on-line Public Registry.

2.2 Background

A seasonal winter road has been in place since the winter of 2013 when a temporary bridge was placed over the Falcon River Diversion Canal. This seasonal winter road is not the same as the winter roads into many Manitoba remote communities that have Manitoba Infrastructure involvement and/or oversight. The winter road into the Community of Shoal Lake is not acceptable to most commercial carriers and emergency vehicles due to safety policies and/or insurance reasons. In 2015, the design and construction of a 3.3 km long internal service road was completed from the canal to the western edge of the Reserve boundary.

The existing seasonal winter road will be utilized for the design and construction of the new ASR. The On-Reserve Access Road will require upgrades to existing or partially constructed seasonal and service roads.

A bridge over the Falcon River Diversion Canal was constructed by the City of Winnipeg in 2016 to support a service road.

2.2.1 Route Determination

Stantec Consulting Ltd. (“Stantec”) completed a road study in June 2010. As part of the route analysis, five conceptual routes for the ASR and On-Reserve Access Road were assessed. These alternative routes were originally considered in the Stantec Interim Report and a map showing these routes are provided in **Appendix A**:

Route 1 – (23.4 km) to the TransCanada Highway directly west of Falcon Lake at Pipeline Road
Route 2 – (19.9 km) to Falcon Lake at west end of South Shore Road
Route 3 – (28.3 km) to Shoal Lake Road (PR 673)
Route 4 – (17.9 km) to Falcon Lake at central location of South Shore Road
Route 5 – (28.7 km) west paralleling Greater Winnipeg Water District (GWWD) Railway to Glenn.

2.2.2 Preferred Route

It was determined during the 2010 conceptual and functional design study (undertaken by Stantec) that the Route 1 option was the preferred option as it best meets the functional, social, and life style needs of the Community. Shoal Lake 40 agreed with the recommendation of Route 1 as it is a direct private route from the Community to the TransCanada Highway, 4 km west of Falcon Lake (**Figure 02**). In 2015, AECOM began the detailed design of the ASR based on the preferred Route 1 option. Minor adjustments to this alignment were subsequently made as a result of discussions held with Community members, stakeholders, resource users, recreational users, and other interested parties in the area. A final alignment was identified and agreed to by the Community members.

On June 2, 2011, the Grand Council Treaty #3 passed a Resolution in support of Shoal Lake 40 Freedom Road (Resolution #CA-11-20) (see **Appendix B**).

A Band Council Resolution (BCR) was prepared and signed by Shoal Lake 40 council on November 5, 2015 that encompasses both upgrades to the On-Reserve Access Road and the ASR.

2.2.3 Road Standards

The standards considered in designing this road incorporate several resources; including the Transportation Association of Canada's *Geometric Design Guide for Canadian Roads* (1999) and Manitoba Infrastructure's ("MI") *Transportation Planning* Manual (MI, 1998). The proposed road is being designed to accommodate in its entirety, or in sections, posted speed limits between 40 km/h to 70 km/h.

As the majority of the proposed road alignment will be within Manitoba, the MI standards for design are being used and the proposed road has been classified as a Rural Collector as per MI's definition (MI, 1998):

> *"Rural Collector: These collect traffic from local roads and feed it to Arterials, or distribute it from Arterials to local roads. They provide direct services for developments such as tourist attractions, mines, small towns, and villages."*

2.2.4 Road Cross Sections

Based on the Geometric Design Criteria (GDC) set for the ASR, the proposed geometric cross section for the road utilizes a gravelled surface comprised of a total road top width of 8.4 m. The GDC has been submitted to MI for acceptance.

2.3 Project Components

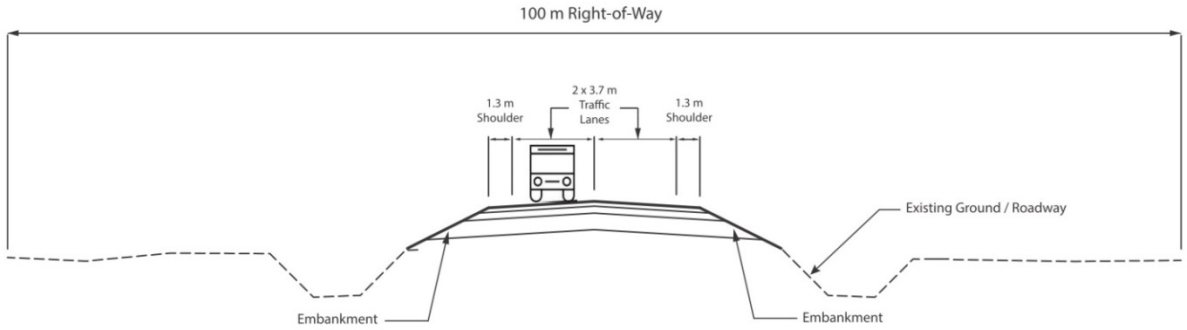
The proposed project will be built on Provincial Crown land and has five components:

- The ASR;
- Quarries and Borrow Areas;
- Temporary Access Roads;
- Temporary Construction Staging Areas; and
- Grade Separation (Aqueduct Bridge and Culverts).

2.3.1 All-Season Road

The ASR will be built within a 100 m ROW cleared to a width of 60 m. The predominate building material will be 600 mm diameter blasted rockfill capped with a granular pavement structure. The blasted rockfill will be obtained from rock outcrops within and/or adjacent to the ROW.

The road will be designed and built to approximately 1 m to 1.5 m above the original ground (OG) elevation. The cross section will have a 10 m top width and recoverable side slopes of 4:1. Below is an illustration of the proposed ASR.



2.3.2 Quarries and Borrow Areas

Rock quarries and borrow areas will be developed to provide crushed rock and granular materials for the construction of the road and temporary access roads. Most of the rock required for the construction of the ASR, temporary roads, and staging areas will come from quarry sites adjacent to the proposed ASR, within 1 km of the ROW centreline. Where this is not possible, temporary access roads will be established to connect the various project components as required. It is anticipated that up to three quarries may need to be established off-Reserve. The total area for quarries and borrow materials will not exceed 100 hectares, contingent upon the final number of quarries and borrow areas established. Preliminary locations for these quarries have been noted on **Figure 03**.

There may be instances where casual quarries (Q2, Q3 & Q4) may be required in order to supplement the volume of material required.

2.3.3 Temporary Access Roads

Temporary access roads may be required to access the ASR ROW. The purpose of the temporary access roads is to facilitate emergency access to the site, provide access for equipment and personnel, and provide access from the quarries and borrow sites to the construction site of the ASR itself. A majority of these roads will be developed within the ASR ROW with the exception of those required for access to the quarries and borrow sites. This might change, depending on the final quarry and borrow material requirements.

The temporary access roads will be cleared, but not grubbed, and will be approximately 10 m wide, to accommodate equipment movement.

The specific mitigation measures, such as erosion protection and sediment control, set out in this assessment along with Manitoba Infrastructure's ("MI") *Construction Related Environmental Best Management Practices* (*BMPs*) will be incorporated into the contractor's tender documents to minimize long-term disturbances to any areas outside of the ROW.

Upon completion of the construction of the ASR, the temporary access roads will either be decommissioned or blocked.

2.3.4 Temporary Construction Staging Areas

Temporary staging areas will be established at various locations along the proposed ROW to support crews, to park construction vehicles, and to store equipment, construction materials and supplies. Approximately three staging areas will be established.

The specific mitigation measures set out in this assessment along with MI's *Construction Related Environmental BMPs* (**Appendix K**) will be incorporated into the contractor's tender documents to minimize long-term disturbances to any areas outside of the ROW.

2.3.5 Aqueduct Bridge and Culverts

A bridge will be required over the aqueduct to provide a grade separation; to ensure ongoing structural integrity of the aqueduct. The bridge structure will be a single-span ACROW 700Xs steel truss panel bridge with timber decking and backwalls. It will also include steel W-beam guardrail that will be connected to the trusses. The steel W-beam guardrails and timber curbs are also recommended to prevent vehicles from damaging the bridge. The foundation support for the shelf-type abutment is two rows of HP 310 x 132 steel H-piles driven to refusal. The H-piles have a cast-in-place cap (Dillion, 2013).

While the potential environmental effects of this bridge have been assessed in this report, the construction of the bridge will be completed by the City of Winnipeg.

Equalization culverts will be installed at locations where it is determined that spring-melt or storm run-off needs to pass from one side of the ASR to the other to prevent flooding and/or erosion damage. The purpose of equalization culverts is to maintain the existing surface water drainage patterns in the area. Culverts will be put in place as construction progresses along the alignment.

There are no stream crossings for the proposed project.

2.4 Project Activities

The proposed project will be executed in four stages:

- Planning and Design;
- Pre-construction;
- Construction; and
- Operation and Maintenance.

Currently, there are no plans for decommissioning the ASR. Decommissioning of temporary components that are no longer required, once construction of the ASR is complete, will occur as a part of the construction phase of the

Project. These temporary components include: access roads, quarries, borrow areas, and construction staging areas; not required to maintain the ASR once it is built.

Portions and components of the winter road that are already in place will be incorporated into the ASR. The winter road will no longer exist once the ASR is commissioned.

2.4.1 Planning and Design

Planning and design of the proposed ASR has involved identifying road corridors and possible alignments within those corridors, evaluating the different options, completing the preliminary road design, selecting the preferred alignment option, and undertaking the detailed design for this alignment. The detailed design process is now complete, and has incorporated feedback from members of Shoal Lake 40, neighboring communities, other stakeholders and the public via public Open Houses. The detailed design process occurred concurrently with surveying, geotechnical investigations, and the environmental assessment process. The environmental assessment process entailed conducting baseline environmental investigations and having discussions with Community members, Provincial and Federal regulators, and other stakeholders identified in **Section 1.2**.

2.4.2 Construction

During the construction stage, temporary construction staging areas, temporary access roads, and quarries and borrow areas will be established. All construction supplies will be transported to the Project site. Once these site preparation activities have been completed, the proposed ASR and culvert crossings will then be constructed.

Key construction activities include: clearing and grubbing, constructing the ASR and ancillary components, and demobilizing and cleaning the Project site once construction is complete.

No construction work camps will be established. It is expected that contractors will take up accommodation in Kenora or in Shoal Lake 40. It is expected that at most 12 workers would take up temporary accommodations at any given time.

2.4.2.1 Clearing and Grubbing

Clearing and grubbing involves removing and disposing of all trees, shrubs, fallen timber and other surface litter. Vegetation clearing will be required for both temporary and permanent project components. Along the ROW itself, vegetation will be cleared from km 9 to km 24. Clearing will be undertaken by local clearing crews using hydro-axes, dozers and power saws. Merchantable timber will be stacked along the ROW and made available for the Community and/or piled/burned and buried within the ROW. Organic materials stripped from the surface will be stockpiled and/or graded on the backslopes within the ROW. Where required, stumps and roots will be grubbed out and separated from the soil and buried. Non-salvageable material such as brush, roots, and limbs will be piled and burned or buried.

After clearing and grubbing of the ROW is complete, the subgrade shall be graded and prepared for the road embankment which will be predominately comprised of rock fill or composite material. Ditching and drainage excavation will be undertaken using best practices for erosion control measures.

To minimize environmental effects as a result of accidental spills or leaks from clearing equipment, any petroleum products to be used at the site will be stored in double-walled tanks in accordance with the National Fire Code of Canada and *The Dangerous Goods Handling and Transportation Act* (Manitoba), Storage and Handling of Petroleum Products and Allied Products Regulation. Sanitary and solid waste will be collected and transported to licensed or approved waste disposal and treatment facilities.

2.4.2.2 Constructing the ASR and Ancillary Components

Construction activities will begin with contouring and blasting of rock outcrops along the ROW. Organic materials will be stripped, stockpiled and used along the road back slopes. Materials, including rock fill, aggregate and composite material will be loaded, hauled, dumped, spread, graded, compacted, trimmed, and shaped before final surfacing with gravel. A geotextile fabric will be placed in wet areas to improve the integrity of the ASR. Roadway signs will be installed, sedimentation control measures will be implemented, and disturbed areas will be prepared for re-vegetation or will be seeded, as required.

The culvert foundation subgrade shall be excavated, prepared, and compacted to design gradeline. A geotextile will be installed and a suitable bedding material (sand or culvert gravel) will be placed and compacted to provide uniform support prior to installing the culvert. The culverts will be assembled, placed to the design grade and alignment, backfilled, and then compacted in lifts using culvert grade or select material.

2.4.2.3 Demobilizing and Cleaning of Project Site

All construction equipment and vehicles will be demobilized once construction is complete. All work areas including temporary access roads, and staging areas that are no longer required, will be decommissioned. The quarry and borrow areas used during construction will be reclaimed. The temporary access roads will be levelled and trimmed. Aggregate materials from these access roads will be salvaged and stockpiled in the appropriate areas for further crushing, if needed, and re-use as maintenance material. Borrow pits will be excavated as uniformly as possible and shall be levelled and trimmed when excavation is complete. Disturbed areas will be restored by spreading stockpiled topsoil and seeding and/or planting as required.

2.4.3 Operation and Maintenance

Maintenance activities will occur over the life of the ASR. These include: routine grading; topping the road with additional gravel; managing vegetation; and cleaning out culverts, when required. In winter, snow clearing activities will be carried out using ploughs, graders, loaders, and dump trucks. Dust suppression such as magnesium chloride may be applied to road surfaces during the summer months, if required. Only chemicals approved for use on other similar roads in Canada will be used. Materials used will be applied as specified by the manufacturer, and only where necessary. 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.

2.5 Construction Vehicles and Equipment

It is expected that the following pieces of equipment will be used on site during construction:

- Crushing Spreads (2);

- Hauling Trucks (4);
- Excavators (6);
- Loaders (4);
- Dozers (3);
- Graders (1);
- Packers (4);
- Water Trucks (1);
- Backhoes (1);
- Half Tons (3); and
- Fuel tanks (4).

2.6 Project Location

The proposed ASR is located east of the City of Winnipeg beginning at the Shoal Lake 40 Reserve boundary (approximately 150 km east of Winnipeg). It will extend approximately 14.7 km west/northwest from the Reserve boundary to directly west of Falcon Lake at Pipeline Road on the TransCanada Highway.

The coordinates of the proposed ASR are as follows:

Reserve boundary
Zone 15U
- 54969612 m N
- 338530 m E

Northern end at Pipeline Road along the TransCanada Highway:
Zone 15U
- 5505077 m N
- 328268 m E

The proposed ASR alignment is provided in **Figure 02**.

2.7 Project Workforce

The construction phase will require substantial equipment and operators, for several activities:

- Clearing trees and grubbing roots;
- Developing access to potential quarries and aggregate resources;
- Harvesting timber;
- Operating heavy equipment;
- Trucking aggregate material;
- Administering construction contracts;
- Undertaking inspection during construction;
- Environmental monitoring; and
- Conducting maintenance once the road is built.

2.8 Project Schedule

The proposed project schedule is provided in the table below and it is subject to funding and regulatory approvals being in place.

Table 3. Project Milestones

Milestones	Date
Road Design Completion	November 2016
Road Construction Tendering	September 2017
Manitoba Environment Act License	April 2017
Construction Commencement	January 2018
Construction Completion	December 2019

2.9 Project Funding

On December 17, 2015, all three levels of government agreed to co-fund the proposed project. The Province of Manitoba, Federal Government, and the City of Winnipeg are expected to each cover one-third of the total cost.

3. Scope of the Assessment

The temporal and spatial boundaries of the EA are presented below.

3.1 Temporal Boundaries

The temporal boundaries of the assessment are divided as follows:

- **Construction Phase**: Construction January 2017 to December 2018.
- **Operation Phase**: Operation will begin on October 2018 into the future and includes Maintenance.
- **Decommissioning Phase**: This refers to the eventual decommissioning of the ASR and all ancillary infrastructure that is being proposed in this document. There are currently no plans to decommission the ASR in the foreseeable future.

3.2 Spatial Boundaries

Spatial boundaries used for the assessment are described below. However, where specifically noted, the boundaries may be adjusted to suit the Environmental Component (EC) or Social Component (SC) being considered.

- **Project Site**: includes all areas subject to direct disturbance as a result of the Project.
- **Project Area**: is a 5 km radius surrounding the Project Site, intended to account for the potential effects of the Project immediately outside of the Project Site.
- **Project Region**: is a 10 km radius beyond the Project Site, intended to account for the maximum spatial extent of potential effects of the Project.

The Project Area and Project Region are shown in **Figure 04** and **Figure 05**, respectively.

4. Existing Environment

4.1 Biophysical Setting

The proposed Project is located within the Pinawa Ecodistrict, within The Lake of the Woods Ecoregion of the Boreal Shield Ecozone (Smith *et al*., 1998).

4.1.1 Climate and Air Quality

The closest meteorological station to the Project Site is the Indian Bay meteorological station (Climate ID 5031320) that measures temperature, precipitation, wind speed, and direction.

Table 4 shows the monthly climate normal data relevant to the Project Area.

Table 4. Climate Data for Indian Bay, Manitoba (1971-2000)
Latitude 50°38'N, Longitude 97°01'W, Elevation 222.80 m

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Daily Average Temperature (°C)	-18.8	-14.4	-6.7	2.8	11.1	16.1	18.6	17.3	11.3	4.7	-5.3	-15.1	1.8	A
Precipitation (mm)	27.5	20.2	23.5	28	61.6	95.9	91.9	81.5	66.4	42.9	38	27.5	604.9	A

Notes:
Data obtained from Environment Canada, Indian Bay meteorological station (2015).
'A'; World Meteorological Organization (WMO) "3 and 5 rule" (i.e. no more than 3 consecutive and no more than 5 total missing for both temperature and precipitation.

The Project Area falls within the Lake of the Woods Ecoregion. Climate in the Lake of the Woods Ecoregion is characterized by short, warm summers, and long, cold winters. The mean annual temperature ranges from 1.9 to 2.3°C with an average growing season of about 180 growing days. The mean annual precipitation for the ecoregion is approximately 540 to 650 mm and is highest during the growing season. The average yearly soil moisture deficit ranges from 45 to 95 mm. (Smith *et al*., 1998) The area receives 605 mm of precipitation per year, with 470 mm as rainfall and 135 cm as snow (Environment Canada, 2015). The annual daily average temperature at the Indian Bay meteorological station was1.8 °C, ranging from -19°C (January) to 19°C (July). Extreme temperatures range from -49°C to 37.8°C (**Table 5**).

Table 5. Other Weather Parameter for Indian Bay, Manitoba

Parameter	Value
Extreme Maximum Temperature (°C)	37.8 (Jul. 12, 1936)
Extreme Minimum Temperature (°C)	-48.9 (Feb. 7, 1933)
Extreme Daily Rainfall (mm)	154 (Ju1. 2, 1982)
Extreme Daily Snowfall (cm)	30.5 (Mar. 3, 1966)

Notes:
Data obtained from Environment Canada, Indian Bay meteorological station (2015).

Air quality data has not been collected for this Project. There are no current industrial activities that would be expected to significantly affect air quality in the region of the proposed Project. If forest fires occur in the area, a temporary decline in air quality may be observed. In May 11, 2016, there was a forest fire near Nopiming Provincial Park which is approximately 105 km north of Shoal Lake 40. A second forest fire occurred at Caddy Lake which is approximately 25 km north of Shoal Lake 40. There were no air quality advisories due to these local forest fires.

4.1.2 Topography

The Project Region is located within the Pinawa Ecodistrict. The topography of this region is generally described as hummocky granitic rock outcrops covered by sandy glacial drift deposits with some wave-built sandy/gravelly bars. Depressions are peat-filled and are usually underlain by clayey glaciolacustrine sediments (Smith *et al*., 1998). The topography of this region is level to depressional with irregular hummocky morainal uplands near Lake Winnipeg (Smith *et al*., 1998). The topography of the Project Area varies from approximately 343 m above sea level (masl) and 328 masl (Natural Resources Canada, 1995).

4.1.3 Geology

The Lake of the Woods Ecoregion is underlain primarily by massive crystalline Archean rocks forming broad sloping uplands and lowlands. The Ecoregion also contains some prominent Palaeozoic limestone erosion remnants. (Smith *et al*., 1998)

The surface geology of the Project Area consists of a combination of glacial and non-glacial organic deposits. The till is composed of calcareous silt diamicton that is derived from carbonate rocks and/or igneous and metamorphic rocks. The non-glacial organic deposits include peat and very low wetland deposits accumulated in fens, bogs, swamps, and marsh areas. (Manitoba Industry, Economic Development and Mines, 2004)

A search of the Project Site for Mineral Dispositions found that there are currently no mining claims or mines within the Project Area. There is an orphaned and abandoned mine within the Project Area, north of the community of Falcon Lake. There is also a mining claim within the Project Region, north of Falcon Lake. (Mineral Resources Division, 2013). **Figure 06** provides mineral leases, mining claims, and quarry leases within the Project Area.

4.1.4 Soils

In general, the Pinawa Ecodistrict consists of bedrock terrain with frequent bedrock outcrops. The soils of the Pinawa Ecodistrict are well to excessively drained Dystric Brunisols that have developed on sandy, stony veneers of

water-worked glacial till. The clayey sediments in depressions are usually covered by shallow to very deep peat deposits. (Smith *et al.*, 1964)

Soils in the Project Site is considered to have a combination of no capability for arable agriculture or permanent pasture (Class 7) and organic soils which are not placed in capability classes (Class 0). The soil limitations for Class 7 include stoniness (stones interfere with tillage, planting, and harvesting), shallowness to solid bedrock (less than 0.90 m from the surface), and excess water (may be due to poor drainage, a high water table, seepage or runoff from surrounding areas). (CLI, 1975)

In August 2015 (Phase I), AECOM conducted a geotechnical investigation along the proposed ASR alignment (Shoal Lake #40 First Nation, Geotechnical Investigation). A total of 96 test pits (TP15-001 to TP15-096) were excavated using a CASE CX 210C excavator at approximately 100 m intervals along the proposed alignment from km 0 to km 9.6. Test pits were excavated within the range of 15 m left to 15 m right of proposed centerline, unless access to proposed locations was restricted by insufficient clearing, rock outcrops, or low-lying bog areas.

Phase II was completed in February 2016 during which 144 test holes (TH16-97 to TH16-233) were drilled along the proposed ASR. All test holes were terminated at a maximum depth of 3.1 m below existing grade where normal soil was encountered. A peat layer was encountered at a maximum depth of 4.6 m below existing grade. The test holes were drilled within the range of 15 m left to 15 m right of the proposed centerline of the ASR, unless access to the proposed locations were restricted by insufficient clearing, rock outcrops, or low-lying bog areas.

In general, soils encountered during the geotechnical investigation consisted of the following:

- Topsoil/Organics
- Fill
- Peat
- Silt and Clay/Clayey Silt
- Clay
- Silt
- Sand
- Gravel, Cobbles and Boulders

4.1.4.1 Terrain Analysis

A review of existing reports and documents was conducted to determine what soil types would likely underlay different vegetative areas and the geologic processes that would contribute to soil formation. The vegetation cover types present in the general Project Area were identified using the digital provincial forest inventory mapping data. This Geographical Information System (GIS) data was used to correlate the terrain units documented in the existing reports with vegetation types to extrapolate the probable soil units of the general area (Manitoba Conservation, 2004).

Figure 07 illustrates the different terrains in the general area.

Till (T)

The till unit in the area occurs as generally rapidly to imperfectly drained mineral soils derived mainly from acidic granitoid rock and are typically very stony. The tills are usually underlain by rocky outcrop with drift thickness of less than 3 m. Vegetation cover varies with drainage and is a mix of Jack Pine, Black Spruce, White Spruce, Balsam Fir, and some birch on the more moist soils.

Shallow Till over Rock (T/R)

The till over rock unit occurs primarily on the Precambrian Drift Plain where prominent granitoid rocks outcrop over a considerable portion of the area where they are masked by drift and peat deposits. Associated with these outcrops, mineral soils developed on the drift and peat deposits and vary by the mode of deposition, mineralogy, stoniness, and drainage.

Rock (R)

The rock outcrop generally consists of Precambrian acidic intrusive rock such as granite, granodiorite with minor pegmatites and quartz-feldspar porphyries. The rock has a sparse vegetation cover consisting of birch, balsam fir, aspen, and Jack Pine. The outcrop becomes less frequent to the south and east of the map area.

Deep Organics (DO)

The deep organics unit consists primarily of areas of soils developed from organic materials in various states of disintegration and humification. The depth of organics varies from 1 to 4 m. Mosses and sedges dominate the organic material content that cover mineral soils of moderate to weakly calcerous clay, silt, and sandy substrates. Topography is nearly level and vegetation consists of Tamarack Larch, Black Spruce where water levels do not fluctuate to areas of sphagnum moss, and sedges. Where the water table is closer to the surface and fluctuates, small shrubs with stunted trees develop. Areas of deep organics consist of patterned fens with parallel mossy ridges and sedge filled swales at right angles to the direction of water movement.

Shallow Organics (SO)

The shallow organics consists of areas with less than 1 m of organic soils overlying undifferentiated sediments consisting of fine, moderately calcerous lacustrine deposits. These areas generally occur at the margins of deep organic areas and in the shallow swales and basins. The organics soils are mainly derived from sphagnum, sedges, and shrubs. Areas of shallow organics can consist of open sedge meadows and stands of Black Spruce, Tamarack Larch, and cedars.

Sands (S)

Sand units in the area consist of sandy outwash, beach, and Aeolian deposits. Derived from the sandy moraines of the Bedford Hills most sand units in the mapping area are associated with beach deposits on the larger lakes.

Water (W)

The water unit consists primarily of open water areas (natural or otherwise), including beaver floods and lakes.

Unclassified (U)

The unclassified unit consists primarily of areas that have been modified by anthropogenic activities, which have either removed the original vegetation cover, or modified the ground surface to make terrain analysis difficult. Underlying surficial geology can be identified by inference and by extrapolating from the surrounding unmodified terrain units. Included in these areas are power lines, urban development, roads, and other activities that may have required clearing.

A summary of the terrain units and percentage coverage is provided in **Table 6**.

Table 6. Terrain Units within 50 m of Proposed ASR Alignment for the ASR

Terrain Unit	%
Deep Organics	**35.1%**
Shallow Organics	**1.2%**
Shallow Till over Rock	**0.6%**
Till	**61.4%**
Unclassified	**0.3%**
Water	**1.3%**
Grand Total	**100.0%**

4.1.5 Groundwater

According to the aquifer maps of southern Manitoba, groundwater is found in the Precambrian rock however, finding water varies from area to area. Well yield generally ranged from 0.01 L/s to 0.5 L/s and water quality also varies from excellent to salty (Rutulis, 1986a).

Shallow groundwater aquifers may occur in or at the base of glacial drift between outcrops in the Canadian Shield. This area has extensive outcrops and thin glacial drift areas. The sand and gravel aquifer area generally produce well yields between 0.1 L/s and 10 L/s. (Rutulis, 1986b).

4.1.5.1 Extent of Groundwater Use

A review of the Groundwater Information Network (2014) online mapping service was completed to determine the registered wells within a 1.6 km radius of the proposed ASR alignment (**Figure 08**). The search found a total of 14 registered wells. Of the 14 wells, two were registered as domestic wells, two were registered as “other”, and 10 were registered as “missing.” According to the well logs, the domestic and “other” groundwater wells were registered for production use and the “missing” groundwater wells were registered as test wells. The 14 well records indicate that the well status is “unknown.”

4.2 Hydrology

The Project Site is located within the Winnipeg River Drainage Basin which eventually drains into Lake Winnipeg to the northwest. This drainage basin drains an area of approximately 150,000 km^2 (LWCB, 2015).

There are two main catchments along the ASR alignment as shown in **Figure 09**. To the north is Falcon Lake and Falcon River which, flow into Indian Bay and then into Snowshoe Bay, via the canal as shown in **Figure 02**. To the south is the Boggy River catchment. Both of these catchments are a part of the Winnipeg River system, taking separate paths before joining downstream of the Seven Sisters Generating Station.

The nearest waterbodies to the Project Site are:

- Indian Bay to the north/northeast
- Snowshoe Bay to the south

- Snake Creek and Snake Lake to the north/northeast
- Boggy River to the west/southwest
- Falcon River to the east/northeast
- Shoal Lake to the south/southeast

The City of Winnipeg's drinking water is obtained from Shoal Lake and is monitored by the Province of Manitoba and the City of Winnipeg. With respect to the current water quality, the Shoal Lake Watershed Management Plan (2002) states:

> *"The waters of Shoal Lake, Falcon Lake and High Lake are of a quality that meets provincial and national ambient water quality objectives in most locations and at most times. As such these lakes are well suited to supporting a wide variety of uses. Nearshore and embayment areas may occasionally be impacted by localized pollution sources resulting in limited exceedance of some objectives, e.g. bacteria, but ongoing monitoring suggests that this is not generally a concern at this time."*

As part of the Shoal Lake Watershed Management Plan, the Working Group spoke with representatives from Indigenous communities about water quality changes in Shoal Lake as observed and reported via oral tradition over generations. It was noted in the Shoal Lake Watershed Management Plan (2002) that:

> *"Community elders spoke of declining water clarity over several decades, referring to areas of Shoal Lake where it was once possible to see the lake bottom quite clearly but where increased colouration, suspended sediment, and algae have since reduced the depth of light penetration. Snowshoe Bay in particular was identified as an area where increases in sediment suspension and sediment deposition and in the extent of aquatic weed growth have adversely and progressively impacted on water quality over the past decade or more. These problems were reported, by Shoal Lake #40 representatives, to have affected communal water intakes on Snowshoe Bay and rendered several community water supplies unsuitable for human consumption and other domestic uses."*

4.3 Aquatic Environment

Within the Winnipeg River Basin as shown in **Figure 09**, there are a total of 74 species of fish, 61 of which are native to the watershed (Stewart and Watkinson 2004). According to the Shoal Lake Watershed Monitoring Plan (2002), since 1983, the Shoal Lake Walleye fishery has remained closed to both commercial and recreational fishing to allow the fish stocks to recover. Recent investigations by the Ontario Ministry of Natural Resources (OMNR) indicate that Walleye, Northern Pike and Lake Whitefish stocks in Shoal Lake have only recently begun to show signs of recovery. Following several years of missing year-classes, monitoring results show consistent annual reproduction of Walleye since 1992. Important spawning sites in the lake include Falcon River, Falcon Bay, the diked area separating Falcon Bay from Indian Bay, and several open-water locations. Of these, OMNR believes that Falcon River and Falcon Bay are significant spawning locations.

"*First Nation communities have been allocated 100% of the whitefish and 50% of the northern pike catch"* (Shoal Lake Watershed Working Group, 2002). Subsistence fishing still occurs on the lake. Recreational fishing also occurs at Falcon Lake while traditional-use fishing by members of the communities occurs at High Lake. According to the Stantec report (2010a):

> *"Examples of the most common species of fish likely to frequent the man-made ditches and channel include Northern pike, white sucker, black bullhead, black crappie, yellow perch, spottail shiner, blacknose shiner, northern redbelly dace, finescale dace, pearl dace, fathead minnow, central mud minnow, brook stickleback, and Iowa darter."*

Some general species of fish found in the Winnipeg River watershed include: Chestnut Lamprey; Lake Chub; Common Shiner; Carmine Shiner; Fathead Minnow; White Sucker; Brown Bullhead; Northern Pike; Lake Whitefish; Brook Stickleback; Slimy Sculpin; Yellow Perch; and Walleye (Stewart and Watkinson 2004).

Zebra Mussels are an aquatic invasive species that was confirmed in Lake Winnipeg in the fall of 2013 and the Red River and Cedar Lake in 2015. Zebra Mussels are extremely prolific and destructive. They attach on any hard surface and can cause substantial infrastructure issues including clogging up water intakes, coating grates, out competing native mussels, covering food sources for other aquatic organisms ,and covering the natural lake substrate. The mussels are sharp and cause safety concerns on beaches, docks, ramps, and any other hard surface in the water.

A risk assessment conducted by DFO in 2012 found that Zebra Mussels poses a relatively low risk to the Winnipeg River sub-basin (DFO, 2013) based mainly on the pH, alkalinity, and calcium concentrations of the surface waters. The potential for introduction was assessed as high but the conditions in Shoal Lake make establishment unlikely. The City of Winnipeg conducts regular monitoring for the presence of Zebra Mussels and have not detected them in Shoal Lake to date.

4.4 Terrestrial Environment

4.4.1 Flora

The Project Area lies within the Pinawa Ecodistrict. The native vegetation includes bur oak and ash, growing along streams. Jack pine is primarily found on bedrock and sandy deposits. Other plant species that may be found in the area include Black and White Spruce, Balsam Fir, and Trembling Aspen. Mosses are found within bog and peatland areas while sedge, tamarack, alder, and birch are dominant in fens. (Smith *et al*., 1998)

Based on the Terrain Analysis discussed above in **Section 4.1.4.1** and design clearing limits of 50 m, information on land cover for the proposed alignment for the ASR was generated as outlined below in **Table 7** and as shown in **Figure 10**.

Table 7. Land Cover within 50 m of Proposed Alignment for the ASR

Land Cover	%
Balsam Fir	**6.3%**
Balsam Poplar	**1.1%**
Black Spruce Treed Muskeg	**11.6%**
Black Spruce Treed Rock	**0.6%**
Spruce Black	**20.8%**
Spruce White	**1.0%**
Tamarack Larch Treed Muskeg	**23.5%**
Trembling Aspen	**32.2%**
Willow	**0.9%**
Beaver Flood	**1.0%**
Anthropogenic Features	**0.9%**
Grand Total	**100.0%**

AECOM conducted a site visit and an initial meeting with Shoal Lake 40 and Community elders on May 25, 2015. During this site visit, some plants were noted by the elders that are used for pain relief and heart ailments. The elders also indicated that when the service road was constructed, many medicinal plants were lost during clearing and they hoped that the construction of the ASR will be completed more carefully. During the site visit, several sites of importance were identified by the elders and are included in **Figure 11**.

AECOM conducted two terrestrial surveys; one in July and the other in September 2015. A ground survey was conducted in July 2015 followed by a helicopter survey in September 2015. During these surveys, it was noted that the Project Area is dominated by extensive areas of fen, punctuated by rocky uplands. The fens are typical lowland wet environments with thin stands of tamarack on a sphagnum base. A variety of typical wetland plants use the base substrate. Fens are constantly flowing, unlike in a marsh. Since the base for growth in a fen is saturated sphagnum, typical emergent marsh plants such as reeds and cattails cannot grow in these areas since they require mineral soil below the water surface as a rooting medium. Species such as Bog Birch are capable of growing in the sphagnum medium and create dense stands of understorey growth on the surface of the fen.

The upland areas are complex forest communities with a diverse understory. Tree sizes tend to be large, indicating good growing conditions, and the understory is dense, dominated by tall shrubs. The winter road cut lines bisect several of these upland areas and show evidence of past cut line activity with minor cutting areas throughout the forested zones. These forested areas are founded on igneous rock with varying amounts of soil development. There are exposed rock outcrops throughout the upland area.

The intersection of the uplands and fens can be very abrupt. Upland margins that adjoin the fens offer an open light source that promotes heavy shrub growth. This often forms deep swamps along the edge of the rock outcrops with heavy thickets of shrub growth. Several areas of true marsh occur in low areas adjoining the rocky upland fen interface. These areas are shallow lakes with mineral soil bottoms that offer a rooting medium for emergent plants.

True bogs also occur along the proposed ASR corridor, specifically just to the east of the canal joining Shoal Lake to Snowshoe Bay. This area shows typical bog development in which a water body is gradually filled in from the top by sphagnum growth. This produces a floating mat that eventually fills in the water body with a deep deposit of peat created from the continual growth of the sphagnum mat above. Dense stands of conifers such as Black Spruce and tamarack develop on this sphagnum surface. These stands typically feature trees with small diameters, and a

closed canopy of closely spaced trees. Growth conditions in these areas are poor in comparison to the adjacent rocky uplands.

Overall the Project Area features a very diverse plant community. Of note is the sharp demarcation between these communities, especially between the fens and rocky uplands. The uplands create “islands” in the sea of fens that dominate this region. The vegetation change is rapid from the fen to upland, producing a large edge community around each upland that immediately changes to fen community as the rock base of the upland submerges into the fen.

Additional information on the vegetation in the Project Area is provided in **Appendix C**, *Freedom Road Environmental Terrestrial Report*.

4.4.2 Fauna

Wildlife in the Boreal Shield Ecoregion includes moose, Black Bear, wolf, lynx and Snowshoe Hare. Birds include Ruffed Grouse, Hooded Merganser, Pileated Woodpecker, Bald Eagle, Turkey Vulture, Herring Gull and numerous waterfowl and songbirds. (Smith *et al*., 1998)

During the site visit with Shoal Lake 40 on May 25, 2015, an eagle’s nest was noted near the shore of Indian Bay. No formal path leading to the nest was observed from the service road. Several markers where tobacco offerings had been made to acknowledge the sacred nest were noted. Also, a pathway along the dike was noted as a possible crossing for beavers from the western portion of the Bay across the dike into the Bay. Some other animal tracks were noted (likely bear). The elders asked that the alignment be shifted On-Reserve further away from this sacred site, resulting in a minor change in the road alignment.

Traditionally Woodland Caribou inhabited this area; however they are now characterized as ‘rare’ to ‘extirpated’. Moose were a common species in these environments but have become rare, possibly due to parasite interactions with White-tailed Deer. White-tailed deer have become common in the Project Area (though historically they would not occur here). Data available from the 2016 Deer Survey (not yet published at the time of submission) includes deer and track sightings at the Project Site. Black Bear, wolves and smaller furbearers are present in the Project Region.

Migratory waterfowl are known to pass through the Project Area. Nesting is not common, especially for dabbling duck species. However, some diving duck nesting does take place in the area. Most migratory waterfowl species pass through the Shoal Lake region in spring and fall on the way to other nesting areas. Songbirds are known to nest in the Project Area, especially in the forested uplands. One exception is the Canada Warbler that nests in the open fen areas and other open boreal environments.

Detailed information on fauna in the Project Area is provided in **Appendix C**, *Freedom Road Environmental Terrestrial Report*.

4.5 Protected Species

To identify species at risk that may occur in the Project Region, the Manitoba Conservation Data Centre (Department of Sustainable Development, 2013), Occurrence of Species by Ecoregion was examined (Department of Sustainable Development, 2013). The species listed on the MB CDC were cross-referenced with Schedule 1 of the Federal *Species at Risk Act* (SARA) (Government of Canada, 2015) and *The Endangered Species and Ecosystems Act* (Manitoba) (Department of Sustainable Development, Wildlife Branch, 2015) to determine the provincially listed rare or sensitive species with the ecoregion. Distribution maps and habitat requirements were examined to determine the likelihood of occurrence of federally and/or provincially listed species in the Project Region. The results of the annual surveys conducted by MB CDC were also examined to identify surveys for protected species in the vicinity of the Project Region; the most recent survey results available were from 2012 at the time of this assessment.

Based on this search, there are 16 listed species that may occur in the Project Region (**Table 8**).

Table 8. Federally and Provincially Listed Species that May Occur in the Project Region

Species	SARA Status	MESA Status	Environmental Considerations	Likelihood of Occurrence in Project Region
Vertebrate Animal				
Carmine Shiner *Notropis percobromus*	Threatened	Not Ranked	■ Prefer clear, fast flowing larger streams and small rivers with clean gravel bottoms. [1] ■ They cannot tolerate turbid or silty water. [1]	**Low:** Carmine Shiner is found in southcentral western Manitoba. It is rare in Manitoba but has occurred in the province over a long time. It has been recorded in the Whitemouth-Birch river systems, and it may also occur in the Red River in southern Manitoba. [1]
Silver Chub *Macrhybopsis storeriana*	Special Concern	Not Ranked	■ In Manitoba, found in large, moderate flowing rivers with a substrate of silt or sand. [1]	**Low:** distribution identified for the Red and Assiniboine River and on the south basin of Lake Winnipeg. [3]
Northern Leopard Frog *Lithobates pipiens*	Special Concern	Not Ranked	■ Overwinter in well-oxygenated water bodies that do not freeze to the bottom, including streams, creeks, rivers, deep lakes and ponds. [1] ■ Breeds in pools, ponds, marshes, lakes and slow-moving streams and creeks that are typically located in an open area with abundant vegetation and no fish. [1] ■ Summer in moist upland meadows and native prairie, riparian areas and ponds. [1]	**High**: range of species overlaps with Project Area, likely habitat within the Project Region
Golden-winged Warbler *Vermivora chrysoptera*	Threatened	Threatened	■ Found in regeneration zones where young shrubs grow, surrounded by mature forest. [1] ■ Prefer public utility ROW, the edges of fields, areas where logging has recently occurred, beaver ponds and burned-out or intermittently cultivated areas. [1] ■ Nests are built on the ground in areas of herbaceous plants and low bushes. [1]	**High**: breeding range overlaps with Project Region, possible breeding location identified within Project Region.
Common Snapping Turtle *Chelydra serpentina serpentina*	Special Concern	Not Ranked	■ Generally found in dry, open grasslands and breed primarily in temporary wetlands or edges of some permanent or semi-permanent wetlands. [1] ■ These shallow, clear pools are often found in imperfectly drained, sandy areas in grasslands, pastures, ditches or agricultural fields and range in size from large wetlands to small puddles. [1]	**High**: species range occurs in Southern Manitoba, likely habitat within the Project Region.
Common Nighthawk *Chordeiles minor*	Threatened	Threatened	■ In Manitoba, found south of the treeline and inhabits mixed and coniferous forests. [1] ■ Nests in a wide range of open, vegetation-free habitats including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores and river banks. [1]	**Moderate**: breeding habitat covers most of Manitoba.
Whip-poor-will *Caprimulgus vociferus*	Not Ranked	Threatened	■ Prefer partly open, upland deciduous or mixed-wood forests; however their breeding habitat is not dependent upon species composition, but rather on forest structure. ■ Prefer to nest in semi-open forests or patchy forests with	**Moderate**: possible breeding range located in Project Area. [1]

Species	SARA Status	MESA Status	Environmental Considerations	Likelihood of Occurrence in Project Region
			clearings, such as barrens or forests that are regenerating following major disturbances.	
Canada Warbler *Wilsonia canadensis*	Threatened	Threatened	■ Found in a variety of forest types but is most abundant in wet, mixed deciduous-coniferous forest with a well-developed shrub layer. [1] ■ They are also found in riparian shrub forests on slopes, ravines and in old-growth forests with a high density of shrubs. [1] ■ Nests are built on or very close to the ground in dense ferns or fallen logs. [1]	**High:** breeding range overlaps with Project Area, possible breeding location identified within Project Site.
Piping Plover *Charadrius melodus*	Endangered	Endangered	■ Prefer nesting above the high-water mark on exposed sandy or gravelly beaches. [1] ■ On the prairies, nesting occurs on gravel shores of shallow, saline lakes and on sandy shores of larger prairie lakes and seeps provide foraging habitat. [1]	**High:** breeding range overlaps with Project Area, possible breeding location identified within Project Region.
Red-headed Woodpecker *Melanerpes erythrocephalus*	Threatened	Threatened	■ Found in a variety of habitat including open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, along beaver ponds and brooks. [1] ■ Nests are usually found in dead or dying trees but can also make nests in dead branches of live trees. [1]	**High**: species range overlaps with Project Region, likely habitat within the Project Region.
Yellow Rail *Coturnicops noveboracensis*	Special Concern	Not Ranked	■ Found in marshes dominated by sedges, true grasses, and rushes, where there is little or no standing water (generally 0-12 cm water depth). [1] ■ Found in damp fields and meadows, on the floodplains of rivers and streams, in the herbaceous vegetation of bogs, and at the upper levels (drier margins) of estuarine and salt marshes. [1]	**High**: species range overlaps with Project Region, likely habitat within the Project Region.
Baird's Sparrow *Ammodramus bairdii*	Not Ranked	Endangered	■ Found primarily in mixed grass prairies or in lightly grazed pastures. [2]	**Low:** possible breeding location identified throughout all of Manitoba.
Trumpeter Swan *Cygnus buccinator*	Not Ranked	Endangered	■ Prefer beaver ponds for nesting sites and habitats such as freshwater and coastal estuarine wetlands and flooded agricultural land. [1]	**Low:** breeding range located further east of the Project Region.
Olive-sided Flycatcher *Contopus cooperi*	Threatened	Threatened	■ Mostly associated with open ranges with tall live trees or snags for perching including forest clearings, forest edge located near natural openings (ie. rivers or swamps) or human-made openings (ie. logged areas), burned forest or openings within old-growth forest stands. [1] ■ Nests are usually constructed in a conifer when arriving to Canada in mid-May. [1]	**High:** breeding range overlaps with Project Area, possible breeding location identified within Project Site.

Species	SARA Status	MESA Status	Environmental Considerations	Likelihood of Occurrence in Project Region
Mammal				
Caribou *Rangifer tarandus caribou*	Threatened	Threatened	■ Prefers mature and old growth coniferous forests that contain lichens during the winter months. [1] ■ These forested areas are generally associated with marshes, bogs, lakes and rivers. [1] ■ During the summer months, they occasionally feed in young stands, after fire or logging. [1]	**Low:** distribution located further north of the Project Region.

Sources:
1. Species at Risk Public Registry (Government of Canada, 2015).
2. Manitoba's Species at Risk (Department of Sustainable Development, 2015)
3. The Freshwater Fishes of Manitoba (Stewart and Watkinson. 2004).

No species listed in either *The Endangered Species and Ecosystems Act* (Manitoba) or SARA was observed at the Project Site during the surveys in 2015. However two endangered bird species are known to nest in the Project Area. These are the Canada Warbler (*Cardellina Canadensis*) and the Olive-sided Flycatcher (*Contopis cooperi*). These species have not been observed at the Project Site, but are known to occur in the Project Area. The Canada Warbler is known to nest in open fen areas and other open boreal environments. The Olive-sided Flycatcher prefers the mature heavily wooded uplands such as those on the rocky islands which will be traversed by the proposed ASR.

The other possible species of concern is the Mink Frog (*Lithobates septentrionalis*) but it is not listed on *The Endangered Species and Ecosystems Act* or SARA. This species is highly aquatic and breeds in lakes and slow moving rivers. It is also known to breed in sphagnum bogs, such as those at the east end of Shoal Lake near the proposed ASR corridor. This frog is known to occur in Ontario close to the Shoal Lake Community and should be considered a possible resident of the Project Area.

4.5.1 Migratory Birds

In the Lake of the Woods Ecoregion, waterfowl are common and are protected under Article I of the *Migratory Birds Convention Act*.

Fen areas are generally not used by overwater nesting species. There are no open marshes in this region; it is dominated by large fens throughout the area. Shoal Lake itself, which is in the Project Area, offers nesting areas for some overwater duck species and shorebirds. While there is no existing survey data for these species on Shoal Lake, local residents and the Department of Sustainable Development personnel have observed migratory waterfowl on the lake in spring and fall. The lake is most likely used as a stopover for migration periods. The Project Site however, does not contain any suitable nesting or stopover habitat for migratory waterfowl.

The SARA bird species (rails, sparrows, plovers, swans, fly catchers, woodpeckers, and warblers) identified above in **Table 8** are identified as long distance migrants. No species listed in **Table 8** were observed at the Project Site during the surveys in 2015 however, two endangered bird species are known to nest in the Project Area; the Canada Warbler and the Olive-sided Flycatcher. The Canada Warbler is known to nest in open fen areas and other open boreal environments. The Olive-sided Flycatcher prefers the mature heavily wooded uplands such as those on the rocky islands which will be traversed by the proposed ASR.

4.6 Heritage Resources

According to The Manitoba Historical Society (2015), the closest historic site to the Project Site is the Saunders School/Glenn School No. 1932 located in the RM of Reynolds. This site is located approximately 12 km southwest of the Project Site. This is followed by the East Braintree Cemetery within the RM of Reynolds and is located approximately 20 km southwest of the Project Site.

A screening request to the Heritage Resources Branch (HRB) was sent on January 25, 2016 to determine if there are any potential heritage resources that may be affected by the proposed development and if a Heritage Resources Impact Assessment (HRIA) is required. The Archaeological Unit of the HRB indicated that the Branch has some concerns with the project as there are several sites within the vicinity of the project and the potential to impact significant heritage resources has been deemed high. Therefore, the Branch recommended that a HRIA be completed. A copy of the correspondence received from the HRB is included in **Appendix D**.

In June 2016, Northern Lights Heritage Services Inc. completed a HRIA of the Project Site. During the aerial and pedestrian (ground) surveys, there was no evidence of heritage resources at the Project Site. The archaeologist was accompanied by Elder Doug Redsky, assistant Ken Redsky and Coordinator Daryl Redsky of Shoal Lake 40. The Shoal Lake 40 members noted that the area of the proposed ASR was not used much in the past because of the peat bogs, fens and general low-lying areas. Some hunting occasionally occurred in the area; however, most resources were readily available elsewhere. Most Community members did not travel too far into the bush and stayed along the shoreline, which is where most hunting and trapping took place.

With respect to the Project Area (areas that will not be subject to direct disturbance), Snake Lake located approximately 1.8 km north/northeast of the proposed ASR was noted as an area of cultural importance. A unique cultural feature noted was the grove of oak trees which according to Ojibwa Elders elsewhere, were purposely planted as landmarks and a source of food. It was also noted a narrow band of wild rice along the shoreline. According to Daryl Redsky, this area would have been used for local picking. Also, in discussions with Daryl and Ken Redsky, it was learned during the HRIA that there was a “mass” grave located on Snake Lake. The aerial survey identified signage which was placed by the City of Winnipeg, on the southeast shore of Snake Lake. A second burial site was also identified by the Redsky’s which was also marked with signage southeast of Snake Lake. (Northern Lights Heritage Service Inc., 2016)

There is however, always a potential for heritage resources and/or found human remains to be present and inadvertently exposed during the construction of the Project. It was noted in the HRIA report that should heritage resources, including fossil bison be unearthed, that work at the location be stopped and the Project Archaeologist contacted.

A copy of the HRIA report is included in **Appendix D**.

4.7 Socio-Economic Environment

Shoal Lake 40 is an Ojibwa or Saulteaux (Ontario) First Nation located predominately in the Province of Manitoba, with a smaller section to the west in the Province of Ontario. It is isolated from the mainland of Ontario, surrounded by Shoal Lake to the north, east, and south. The western portion of the Community is separated from the Province of Manitoba by a man-made canal, approximately 18 m in width. The canal was constructed in 1915 to 1919 in order to develop a source of clean drinking water for the City of Winnipeg.

Access to the Community is by winter road which intersects the TransCanada Highway west of Falcon Lake during the winter months and by ferry during the summer. This seasonal winter road is not the same as the winter roads into many Manitoba remote communities that have Manitoba Infrastructure involvement and/or oversight. The winter road into the Community of Shoal Lake is built by the First Nation and is not acceptable by most carriers and emergency vehicles to travel on due to safety policies and/or insurance reasons. Access to the ferry is from Highway 673, south of the TransCanada Highway, through the Iskatewizaagegan 39 Independent First Nation. Within the Community, there is a network of On-Reserve roads.

The total registered population of Shoal Lake 40 as of September 2015 was 635 people with 319 people registered on the Reserve (INAC, 2015a). The Community is a member of the Grand Council of Treaty 3. (Shoal Lake #40 First Nation, 2015)

Shoal Lake 40 holds a commercial fishing licence for fish species other than Walleye. In the future, if Walleye population recovers and is restored to its former health, the Community could consider a Shoal Lake fishery. This fishery would need to include sustainable harvesting limits and could provide significant value to the Community;

particularly if it featured a recreational fishery supported by a local resort or cottage development. This has been taken into account as part of assessing the cumulative impact of the proposed Project.

The Kenora Airport Authority is the closest airport to the Project Site; located approximately 65 km east/southeast from the Reserve boundary.

Figure 12 shows the socio-economic features within the Project Area. This includes snowmobile trails, hiking trails and bike/cross country skiing trails.

4.7.1 Land Use

Within the Lake of the Woods Ecoregion, pulpwood extraction, paper product industry, and local sawlog forestry are the dominant uses of resources. Water oriented recreation including camping, cottaging, fishing, and boating are common in the Ecoregion. Hunting and trapping make up a significant portion of the region's land use and are of special significance to the Indigenous people in the area. Agriculture is limited to lowlands along rivers and streams where drainage has been improved. Grains for livestock feed, oilseeds, and hay crops are commonly grown in the Ecoregion. (Smith *et al*., 1998)

Infrastructure within Shoal Lake 40 includes: a band office; the Ojibway Heritage School; nursing station; the Amik Ferry; and an arena.

A seasonal winter road is located west and north of Shoal Lake 40, which connects to the TransCanada Highway and facilitates recreational snowmobiling and all-terrain vehicle (ATV) use.

4.7.2 Indigenous Communities

Neighbouring Indigenous communities to Shoal Lake 40 include the following:

- Iskatewizaagegan 39 Independent First Nation
- Obashkaandagaang
- Anishinabe of Wauzhushk Onigum
- Northwest Angle No. 33 First Nation
- Animakee Wa Zhing #37
- Wabaseemoong Independent Nations
- Ochiichawe'babigo'ining First Nation

Population information is provided for the three closest Indigenous communities to the Project Site as follows:

- Total registered population of Iskatewizaagegan 39 Independent First Nation as of September, 2015 was 642 people with 325 people registered on own Reserve (INAC, 2015b).
- The total registered population of Obashkaandagaang as of September, 2015 was 333 people with 148 people registered on own Reserve (INAC, 2015c).
- The total registered population of Northwest Angle No. 33 First Nation as of September, 2015 was 542 people with 217 people registered on own Reserve (INAC, 2015d).

Other Indigenous Communities and Organizations:

- Assembly of Manitoba Chiefs

- Grand Council Treaty 3
- Brokenhead Ojibway First Nation (BON)
- Buffalo Point First Nation (BPFN)
- Peguis First Nation (PFN)
- Sagkeeng First Nation (SFN)
- Manitoba Metis Federation (MMF)
- Black River First Nation (BRFN)
- Bimose Tribal Council

4.7.3 Nearby Communities

The community of Falcon Lake is located approximately 4 km east of the proposed ASR along the TransCanada Highway. According to the 2011 census, Falcon Lake had a population of 277 (Statistics Canada, 2016a). The population of Falcon Lake is mainly comprised of seasonal (camping and cottagers) and recreational users; with a greater population during the summer months.

The community of West Hawk Lake is located approximately 20 km northeast of the northern end of the proposed ASR along the TransCanada Highway. The population around West Hawk Lake is predominately seasonal (camping and cottagers) and recreational users. According the 2011 census, West Hawk Lake falls within the Division No. 1, Unorganized census subdivision and had a 2011 population of 967 (Statistics Canada, 2016b).

The RM of Reynolds is located approximately 3 km southwest of the northern end of the proposed ASR along the TransCanada Highway. According to the 2011 census, the RM of Reynolds had a population of 1,285. The RM of Reynolds (2016) includes Richer East, Ste. Rita, Molson/Julius, Rennie, Hadashville, Prawda, McMunn, and East Braintree.

4.7.4 Transportation

Vehicular access to the Project Site will be via the TransCanada Highway, which runs east/west. According to the 2014 traffic data, the annual average daily traffic (AADT) along TransCanada Highway, 0.8 km west of the Falcon Lake Access Road is 4,600 vehicles per day. The closest station to PR 673 along the TransCanada Highway is 0.3 km west of the Ontario border and according to the 2014 AADT data, 4,280 vehicles pass per day. (MI, 2014)

As indicated in **Section 4.7**, current access to the Community is via seasonal winter road during the winter months and by ferry during the summer. This seasonal winter road is not the same as the winter roads into many Manitoba remote communities that have Manitoba Infrastructure involvement and/or oversight. The winter road into the Community of Shoal Lake is not acceptable to most commercial carriers and emergency vehicles due to safety policies and/or insurance reasons.

4.7.5 Protected Areas

A portion (approximately 1.3 km) of the proposed ASR is located within the Whiteshell Provincial Park. The land use designations for the park are primarily Resource Management in the western and southwestern area with Wilderness and Backcountry in the east and northeastern areas (Stantec, 2010a and 2010b).

The Project Area is located within the Northwest Angle Provincial Forest. According to the Department of Sustainable Development (Department of Sustainable Development, 2016a), the Northwest Angle Provincial Forest was established in 1956 and occupies an area of 2,192 km^2. This forest has numerous snowmobile trails and areas of peatmoss extraction. The Project Area is also located within the Shoal Lake Area of Special Interest (ASI).

The closest Wildlife Management Area (WMA) to the Project Site is the Whitemouth Bog WMA located approximately 50 km north/northwest. It was established in 2007 and consists of several blocks of land around the Whitemouth Bog Ecological Reserve (Department of Sustainable Development, 2016a).

4.7.6 Traditional Resource Use

The Project Area is used for traditional activities such as hunting, trapping, and harvesting of plants. Hunting activities may include deer, beavers and other mammals. Plants that may be harvested include bitterroot and wild rose along with berries and roots.

During a Community visit on May 25, 2015, elders from the Shoal Lake 40 identified several plants that are of cultural and medicinal importance to the Community located On-Reserve. The elders suggested careful clearing which is limited strictly to the ROW and what is needed for the construction of the proposed ASR.

Subsistence fishing for Community members include; Walleye, Northern Pike, White Fish and suckers. Most fishing takes place in Shoal Lake, Snowshoe Bay and Indian Bay.

The Project Area falls within the Metis Natural Resource Harvesting Zone No. 35 (MMF, 2016). Some areas near the Community where rice harvesting takes place includes the shores of Snowshoe Bay and Indian Bay. As noted in **Section 4.6**, a narrow band of wild rice along the shoreline of Snake Lake was observed during the Community visit.

5. Public Engagement

The Freedom Road Project has been the subject of several media articles, campaigns, blogs, and social media websites for the last several years. This chapter focuses specifically on the selection of the alignment of the proposed ASR and associated environmental investigations.

Shoal Lake 40 has been engaged throughout the planning phases of the proposed Project. Discussions with various other communities and stakeholders have been ongoing since early 2014. The following stakeholders were contacted (includes meetings and discussions) as part of the Western Access Road Study (Stantec, 2010):

- City of Winnipeg
  - Water & Wastewater Department
- Department of Sustainable Development (formerly Manitoba Conservation and Water Stewardship)
  - Forestry Branch
  - Historic Resources Branch
  - Parks and Protected Spaces Branch (formerly Parks and Natural Areas)
  - Water Stewardship Division
  - Sports, Culture and Heritage (formerly Manitoba Culture, Heritage and Tourism Branch)
- Manitoba Infrastructure (formerly Manitoba Infrastructure and Transportation)
- Crown Lands
- Intergovernmental Affairs
- Canadian Environmental Assessment Agency
- Health Canada
- Transport Canada
- Department of Fisheries and Oceans
- Indigenous and Northern Affairs Canada
- Public Works and Government Services

Listed below are the participants who have been contacted to-date regarding the Project.

Neighboring Indigenous Communities:

- Iskatewizaagegan 39 Independent First Nation
- Animakee Wa Zhing #37
- Northwest Angle No. 33 First Nation
- Wabaseemoong Independent Nations
- Ochiichawe'babigo'ining First Nation
- Obashkaandagaang
- Anishinabe of Wauzhushk Onigum

Other Indigenous Communities and Organizations:

- Assembly of Manitoba Chiefs
- Grand Council Treaty 3
- Brokenhead Ojibway First Nation (BON)
- Buffalo Point First Nation (BPFN)
- Peguis First Nation (PFN)

- Sagkeeng First Nation (SFN)
- Manitoba Metis Federation (MMF)
- Black River First Nation (BRFN)
- Bimose Tribal Council

Other Stakeholders:

- City of Winnipeg
- Manitoba Trappers Association
- Manitoba Lodges and Outfitters Association
- Whiteshell Fur Council
- Whiteshell Cottagers Association
- South Whiteshell Chamber of Commerce
- Whiteshell Snowmobile Club
- South Whiteshell Trails Association
- Manitoba Parks
- Rural Municipality of Reynolds
- SE Quota Holders Association
- Blackjack Outfitters (GHA 35)
- Lamaga Guiding and Outfitting (GHA 36)
- Lamaga Guiding and Outfitting (GHA 35)
- Whiteshell Outfitters (GHA 36)
- Headwater Ranch (GHA 35)
- Silver Birch Resort (GHA 35)
- Boot Hill Hunt Club (GHA 35)
- K.C's Outfitting (GHA 35)

Other Regulatory Bodies:

- Department of Sustainable Development, Wildlife Branch
- Department of Sustainable Development, Integrated Resources and Environmental Management Team (Eastern Region)
- Indigenous and Northern Affairs Canada
- Manitoba Aboriginal and Northern Affairs
- Manitoba Mines Branch
- Manitoba Infrastructure and Transportation
- Department of Fisheries and Oceans
- Transport Canada

A letter dated April 19, 2016 was sent to numerous communities along with a copy of the *Project Description – Shoal Lake No. 40 First Nation Freedom Road Project* and the *Freedom Road Project – Environmental Assessment Scoping Document* for review and comment on the proposed project. Copies of these letters are provided in **Appendix E**.

A letter was received from the Grand Council Treaty #3 in regards to the reaffirmation of the Anishinaabe Nation of Treaty #3's support of the Freedom Road. This letter is included in **Appendix F**.

In addition, letters from Brokenhead Ojibway Nation and Sagkeeng First Nation has been received by Shoal Lake 40 in support of the Freedom Road and are also included in **Appendix F**.

Through the Detailed Design phase of the project, very specific engagement activities have been undertaken, focusing on feedback on the proposed alignment and potential environmental effects. The following is a description of the engagement activities that took place between the spring of 2015 and the time of filing this application. Engagement activities included Community visits to Shoal Lake 40, meetings and discussions with key project stakeholders, and four community Open Houses held in communities within and near the Project Area. Engagement methods were chosen to capture feedback from stakeholders, rights holders, local resource users, local recreation users, and members of the public.

For public events, all stakeholders were sent a letter invite to the event along with a newsletter that provided an outline/description of the Project.

5.1 Shoal Lake 40 Community Visits

The engagement team conducted two Community visits as part of conducting the Environmental Assessment (EA) for the Project. These visits allowed the project design team to incorporate feedback received by various parties into the design of the Project, and make any necessary adjustments to the proposed alignment. The visits also facilitated a better understanding of how the Project may impact the environment.

The first Community visit was on May 25, 2015. The objective was to present the preliminary route and encourage Community members to express any comments, questions, or concerns about the proposed alignment for the ASR.

During this initial visit, the following comments/concerns were noted:

- Community members expressed their preference for an intersection at the west end of the Community;
- Elders commented on the presence of medicinal plants in the vicinity of the proposed ASR alignment; and
- Elders noted sites of spiritual significance (confirmed as an Eagle's nest in a subsequent visit).

The engagement team indicated that they would conduct another visit to focus specifically on these sites that had spiritual significance to the Community.

On June 9, 2015, AECOM conducted a second Community visit to record important spiritual sites. During this second visit, the elders noted that several medicinal plants were lost during the construction of the service road. The elders identified a few sites where medicinal plants are still found and demonstrated how such plants are typically harvested. The elders also identified the location of a sacred Eagle's nest.

Feedback provided during the Community visit was recorded using maps and is presented in **Figure 11**.

5.2 Stakeholder Meetings

Stakeholder meetings were held with the following organizations in the fall of 2015:

- Department of Sustainable Development, Wildlife Branch, (October 13, 2015)
- Department of Sustainable Development, Integrated Resources and Environmental Management Team ("IRMT") (Eastern Region), (November 9, 2015)

During these meetings, a brief presentation was provided which outlined:

- Project background;
- Maps of the Project Area;
- Activities being undertaken for the environmental assessment;
- How feedback will be incorporated into the environmental assessment; and
- Opportunities for stakeholders to identify other potential stakeholders for the Project.

The Wildlife Branch expressed concerns about potential changes in hunting patterns as a result of the Project. They also expressed concerns about potential peat development, which they indicated was likely given the landscape.

During the meeting with the IRMT, the proposed ASR alignment and construction, wildlife and resource use in the area, and public engagement were discussed. IRMT noted that two permits have been issued related to the Project, including the geotechnical permit for drilling along the proposed ASR alignment. The IRMT also indicated that if the ASR is being built as a "Provincial Road", it could require a deeper foundation and fill amounts than the local grid roads.

In referring to the local landscape, the IRMT noted that any gravel needed for the proposed Project could be locally sourced.

In regards to wildlife in the area, the IRMT indicated that moose populations are generally low in the Project Area and that Trumpeter Swans have been seen on Shoal Lake, and have been recorded in the Manitoba Breeding Bird Atlas. The IRMT noted that Muskellunge (Muskie) fish are located in Shoal Lake which is one of the few areas in Manitoba. The IRMT also expressed an interest in winter tracking surveys.

The IRMT suggested that a community Open House be held in Falcon Lake for area residents. The area is considered "open trap lines" and IRMT provided contact information for the Whiteshell Fur Council as a representative stakeholder. During this meeting, AECOM was also provided a list of potential stakeholders for inclusion in the public engagement process for the Project.

5.3 Summary of Community Open Houses

Community Open Houses for the Project were hosted by Shoal Lake 40 and AECOM in January and February 2016. The events were scheduled as follows:

- January 12, 2016 at the Discovery Centre, in Kenora, Ontario;
- January 13, 2016 at the Whiteshell Community Club, in Falcon Ridge, Manitoba;
- January 14, 2016 at the Shoal Lake 40 First Nation Arena; and
- February 10, 2016 at the Canadian Museum for Human Rights, in Winnipeg, Manitoba.

In total, over 105 attendees were present at the Community Open Houses. In general, attendees were appreciative of the process, provided positive feedback on the Project itself, were supportive of the development, and offered constructive considerations for the EA.

The Community Open Houses were drop-in format and were designed to provide the public with an opportunity to:

- Review the proposed ASR alignment;
- Discuss the Project with project representatives from AECOM and from Shoal Lake 40; and
- Provide their feedback on the proposed ASR alignment and the nature of their use of the Project Area.

Many attendees asked if there would be a Community Open House in Winnipeg to accommodate seasonal residents. Based on this feedback, a Community Open House was held on February 10, 2016 at the Canadian Museum for Human Rights.

Materials developed for the Project engagement activities were:

- Project Newsletter;
- Radio and newspaper advertisements;
- Story Boards highlighting key Project information and maps of the Project Area;
- A presentation of Shoal Lake 40 photographs; and
- A Feedback Form for attendees of the Community Open Houses.

Copies of the Community Open House Story Boards are provided in **Appendix G**.

5.3.1 Community Open House Notification

A variety of mediums were selected to notify interested parties about the Community Open Houses. Additional information on these is presented in the sections below.

5.3.1.1 Project Newsletter

A newsletter was designed to provide the public with details about the proposed Project, timelines for various planning activities, and information about the dates/venues of Community Open Houses. The Project newsletter was disseminated as follows:

1. Mailed to all stakeholders identified for the Project.
2. Mailed via a Canada Post unaddressed admail delivery to the 145 mailing addresses in Whiteshell, Manitoba and Falcon Beach, Manitoba.
3. Delivered to residents in Shoal Lake 40 and the surrounding Indigenous communities by local representatives, including a door-to-door delivery to residents of Iskatewizaagegan 39 Independent First Nation.

5.3.1.2 Radio and Web Advertising

In the days leading up to the Open Houses, radio advertisements were used to notify the public. Advertisements were run on the Kenora based radio station, CJRL The Lake 89.5. The advertisements were aired 34 times in the week leading up to the Community Open Houses which provided listeners with the purpose of the Community Open Houses, event details, and contact information for the Project representative.

Web advertising was on the Kenora Daily Miner and News website (http://www.kenoradailyminerandnews.com/). The web advertisement was the same image as the newspaper advertisement (**Appendix H**) and was posted from January 6 to 12, 2016.

5.3.1.3 Newspaper Advertising

Newspapers were selected based on readership in the Project Area. Broader public notification in the Winnipeg area was included as there are seasonal users that reside outside the Project Area.

Advertisements for the Kenora, Whiteshell, and Shoal Lake 40 Community Open Houses were printed in the following newspapers:

1. Kenora Daily Miner and News, on Wednesday, January 6 and Saturday, January 9, 2016.
2. Winnipeg Free Press, on Wednesday, January 6 and Saturday, January 9, 2016.
3. Winnipeg Sun on Wednesday, January 6 and Saturday, January 9, 2016.

These advertisements can be found in **Appendix H**.

The Winnipeg Community Open House was advertised in the Winnipeg Free Press on Wednesday, February 3, 2016. This advertisement can also be found in **Appendix H**.

5.3.1.4 Winnipeg Community Open House E-mail Invitation

An invitation was sent via e-mail to attendees of the January Community Open Houses, who provided their e-mail addresses on the sign-in-sheets. The e-mail invitation contained some brief information about the Project and provided details about the upcoming Community Open House at the Canadian Museum for Human Rights. The advertisement that was used in the Winnipeg Free Press (**Appendix H**) was also attached to this e-mail invite.

5.3.1.5 Winnipeg Community Open House Letter Invitation

A letter invitation to attend the Community Open House in Winnipeg was sent to the following;

- Assembly of Manitoba Chiefs
- Brokenhead Ojibway First Nation
- Buffalo Point First Nation
- Grand Council of Treaty 3
- Manitoba Metis Federation Inc.
- Peguis First Nation
- Sagkeeng First Nation

The e-mail also contained brief information about the proposed Project. Copies of the letters are provided in **Appendix H**.

5.4 Community Open House Feedback Forms

A total of 44 Feedback Forms were received from attendees at the four Community Open Houses. A breakdown of number of forms received is provided in **Table 9**.

Table 9. Feedback Forms by Location

Location	Attendees	Signed In	Feedback Forms Received
Kenora	20	14	8
Falcon Lake	23	20	11
Shoal Lake 40 FN	62	n/a	10
Winnipeg	37	34	15

A copy of the Feedback Form is provided in **Appendix H**. The following subsections summarize the responses on the Feedback Forms.

5.4.1 Comments on How People Heard About the Events

Attendees were asked how they heard about the Community Open House (by newsletter, newspaper, radio, website, word of mouth, or other). The responses received are summarized in **Table 10**.

Table 10. How People Heard About the Events

Source	Total Responses
Newsletter	14
Newspaper	7
Radio	9
Website	2
Word of Mouth	11
Other	9

Note: Respondents had the option of selecting more than one answer. There were a total of 52 responses from the 44 Feedback Forms received.

Respondents who indicated they heard about the Project by "other" means included "post office", "work", "moccasin telegraph", "social media", "door to door", "APTN", and "invitation".

5.4.2 Comments on Whether the Event was Useful

Attendees were asked if the event was useful. In all, 41 responses were received. 40 respondents found the Open House to be useful and one person did not.

5.4.3 Comments on Use of Project Area

Attendees were asked if they use the Project Area for hunting, fishing, or resource gathering. To this, a total of 44 responses were received. Ten people indicated they did use the Project Area for resources and 33 people indicated they did not. Of the ten people who said they used the Project Area for resources, the following uses were identified and provided in **Table 11**.

Table 11. Identification of Resource Use

Resource Use	Total Respondents
Hunting	6
Fishing	4
Resource Gathering	5
Trapping	3

Note: Respondents had the option of selecting more than one answer. There were a total of ten responses from the 44 feedback forms received.

Respondents indicated that resources gathered in the area also include: "medicinal plants", "wild rice", "rare plants in bog lands", "Whooping Cranes", "falcons", "swans", "owls", "moose", "deer", and "endangered species".

Attendees were asked if they use the Project Area for recreational use. To this, 13 respondents indicated they use the Project Area for recreational activities and 29 respondents indicated they did not. Of the 13 people who said they used the Project Area for recreation, the following recreational uses were identified and are provided in **Table 12**.

Table 12. Identification of Recreational Use

Recreational Use	Total Respondents
Ski Doo	2
Boating	3
Hiking	2
Skating	2
Shooting	1
Snowmobile/Quad	2
Visiting friends	2
Cottage	2
Camping	2

Note: Respondents had the option of selecting more than one answer. There were a total of 13 responses from the 44 feedback forms received.

5.4.4 Comments on Concerns with the Current Proposal

Attendees were asked if they had any concerns with the current proposal and if they did, to specify those concerns. To this, 44 people responded, with 32 expressing no concerns with the proposal. Nine people indicated they had concerns and are:

- "Protection of wetlands, bog lands, creeks, rivers, ponds, wildlife habitats, pollution."
- "There are many kilometers of bog to cover."
- "Treaty rights need to be discussed after 100 years."
- "Use resources within reserve. How long can road last over muskeg?"
- "Bridges should be environmentally friendly. "
- "Cost."

5.4.5 Additional Comments

Attendees were asked to provide any additional comments. Responses provided are:

- "Good luck – look forward."
- "A human rights violations issue and finally an opportunity to correct."
- "Marsh lands protection, endangered species, e.g.: plants, birds, animals."
- "Bridge design must be redesigned for air boats, boats. Protect the banks at the canal for fish, ducks, turtles, fur bearing animals, sacred sites."
- "Good luck with construction."
- "I am glad that this is finally being done."
- "The road should have been built a long time ago."
- "About time."
- "All I can say is its about time."

- "I would like any newsletters emailed."
- "This project is long overdue."
- "Good for Shoal Lake 40 - About time."
- "I would like to see more photos of work in progress."
- "I am so pleased that this project is finally going to take place. Thank you for not giving up. God bless."
- "On behalf of the Kenora Chamber of Commerce, we are so pleased to see this project moving forward. All the best."
- "The people at the Open House answered all my questions - very helpful."
- "Great information to read about not knowing what was going on with the road. Awesome job."
- "Good information for other community/similar projects."
- "Put legends on maps and scales for distances."
- "Free road need to be an earlier project, to be completed as protection of human rights. Its helpful in freedom of life, liberty, and security."
- "Would appreciate any updates. What about the new school."
- "What is the average upkeep cost annually projected over the long term."
- "Keep in mind associated costs of "transfer station". Always cleared and hauled away."
- "I really hope this will secure safe water access more easily and secure cultural continuity. Human security is a right and the state has not been fair!"
- "It's about time. The people of Shoal Lake 40 have been very patient!"
- "FN to have right of refusal on all construction and maintenance jobs. Use of own equipment and labour. Partner where necessary over in the construction of bridges and other structures. Agreement on structures and developing FNs right to crown lands."
- "Why could the 3 neighboring reserves not agree to use the existing road and simply build one new bridge to permanently connect all 3 and make them share their services and resources?"
- "It appears to me that bridging the channel to Indian Bay would be a more satisfactory solution as there would be a connection to a paved provincial highway. Unfortunately, opposition from neighboring Shoal Lake 39 has to date ruled that out."
- "I was hoping to see some detail of the road crossing at the aqueduct."

5.5 Summary of Questions asked by Attendees

During the Community Open Houses, representatives tracked questions asked by attendees. The questions and comments are summarized below.

5.5.1 Biophysical Environment in the Project Area

- Concerns with respect to over fishing of Walleye in the canal during spawning season. Will the City of Winnipeg address the Walleye issue because it is their responsibility?
- Will the trees that are cut down from the ROW be used as building materials under the road to stabilize it?
- Is this Project going to affect the inlet for Shoal Lake?
- Will there be a boat launch that could facilitate future fishing?
- Will the water quality of the lake be affected as a result of the road?
- Will the road affect snowmobile access?
- Concerns about trapping access and some species (Whooping Cranes, swans) that inhabit the wetlands.

- Petroforms were pointed out between Mud Lake and Falcon Lake; note was made for the heritage study.

5.5.2 Road Design

- Will the existing ROW from the winter road be used for the ASR?
- Where does the current proposed alignment meet the highway?
- How will the road be built to prevent sinking because of the bog conditions?
- Does this road in any way help with people going to the United States?
- Will the bends on the winter road be straightened because they're dangerous?
- What will they do with the existing bridge?
- What will the posted speed be?

5.5.3 Cost and Construction

- Is there Federal funding for the On-Reserve portion?
- When will construction start and how long is it going to take?
- When is the construction tendering process and has it been established yet?
- What is the estimated cost of the project?
- When is the earliest that the Community can start building and what is the timeline like?
- When should Community members get ready for construction to begin and opportunities that will come as a result of construction?
- Neighboring community members wanted to know what opportunities there will be for them once construction begins.
- What is an acrow panel?
- Is the access road there?
- What will the cost of the service road be?
- Will there be a maintenance/long-term plan once the ASR is in place?

5.5.4 About the Shoal Lake 40 Community

- Why did you not just build a bridge to Iskatewizaagegan 39 Independent First Nation and continue to use their road?
- What does Shoal Lake 40 need from Falcon Lake once this road goes ahead? Would Shoal Lake 40 need to tap into existing waste disposal or other facilities at Falcon Lake?
- What current tourism opportunities are available in Shoal Lake 40?
- What is the school like in the Community?
- What other Community upgrades do you want to do?
- What kind of medical services are there in the Community?
- What has the road in the Community been since the announcement?
- Where is the garbage going to go?
- What was the purpose of the canal?
- Will band members that are living away from Shoal Lake 40 move back to the Community once the Freedom Road is built?
- What is happening with sewage in the Community right now? Are there holding tanks?

- What happens with garbage in Shoal Lake 40 right now? Once the road is built, where will all this garbage go? Falcon Lake landfill is at capacity.
- Interest in the hunting and trapping opportunities the road will allow them to access.
- What is Shoal Lake 40's position on twinning of the TransCanada Highway?
- Will there be access to healthcare?
- How is the Community going to grow when it doesn't have anything?
- Do you think the communities will ever work together?

5.5.5 Other

- Will there be an Open House in Winnipeg?
- What opportunities for economic development will there be in the area once the road is built?
- What is the purpose of the Open Houses?
- What happens with the information that is collected at the Open Houses?
- Why is it named Freedom Road?

5.6 Communication with the Department of Sustainable Development

The *Project Description – Shoal Lake No. 40 First Nation Freedom Road Project* and the *Freedom Road Project – Environmental Assessment Scoping Document* was filed with the Department of Sustainable Development on March 2016. The *Project Description – Shoal Lake No. 40 First Nation Freedom Road Project* was available for public review for 30 days and was located on the on-line Public Registry.

A copy of *The Environment Act* Proposal Form is included in **Appendix I**. The Department of Sustainable Development letter of acknowledgement, along with a copy of the advertisement in the Winnipeg Free Press, is provided in **Appendix J**.

6. Environmental Effects Assessment

6.1 Principles and Objectives

The environmental effects assessment section identifies potential environmental effects of the proposed Project within the Project Area. A description of the Project is provided in **Section 2**. A baseline of the existing environment prior to construction of the Project is provided in **Section 4**. This baseline will assist in identifying the potential effects of the Project within the Project Area.

As indicated in **Section 3**, the temporal boundaries were divided into Construction Phase, Operation Phase (includes Maintenance) and Decommissioning Phase (includes removal of temporary access roads and staging areas). There are currently no plans to decommission the ASR in the foreseeable future. However, when the Project Site needs to be decommissioned at some point in the future, a site decommissioning plan will be filed with appropriate regulators prior to decommissioning. Therefore, effects associated with decommissioning have not been assessed as a part of this environmental assessment.

The assessment of environmental effects considered the existing environment without the Project, as a baseline condition against changes caused by the Project and was conducted with reference to the project Scoping Document (*Freedom Road Project – Environmental Assessment Scoping Document*, March 2016). The assessment was conducted with reference to Manitoba Conservation and Water Stewardship's (2015) Information Bulletin "*Environment Act Proposal Report Guidelines*", as well as best management practices within the industry.

The effects assessment included consideration of the:

- Existing biophysical and socio-economic environments in the Project Site;
- Project scope and the potential interactions between the Project and the environment;
- Scientific study and analysis, Indigenous knowledge, local knowledge, and other stakeholder perspectives, issues and concerns;
- Past and potential anthropogenic activities that may have affected the environment and how the results of these activities may interact with the Project;
- Avoidance or mitigation of adverse effects and enhancing positive effects to the extent practicable; and
- Implementation of follow-up monitoring where beneficial.

The main objectives of the effects assessment for the Project are:

- Assist in the planning and design of the Project: by identifying and assessing potential environmental effects; identifying specific measures to mitigate adverse effects; and maximize positive effects to the degree practicable;
- Address concerns and issues identified by Indigenous peoples, local residents, and other stakeholders with respect to the Project;
- Provide sufficient information to prepare an environmental assessment report for consideration by regulators to exercise their legislated mandate; and
- Provide sufficient information about the existing environment, so that follow-up monitoring studies can be planned.

6.2 Environmental Effects Assessment Process

The environmental effects assessment included the following steps:

- Identifying and assessing the interactions between the Project and environment;
- Identifying a selected list of appropriate Valued Environmental Components (VECs) for the Project Site. These VECs were used to provide a focus to the assessment, and an evaluation of the significance of the potential environmental effects of the Project;
- Identifying technically and economically feasible measures to mitigate adverse effects, as well as measures to enhance positive effects; and
- Determining the significance of residual effects.

6.3 Environmental Effects Identification

Environmental effects were categorized as follows:

- The biophysical environment, including wildlife, fisheries, surface water, groundwater, including those caused by the potential release of hazardous materials (diesel fuel, used oil, etc.) or pollutants (emissions, effluents, solid wastes and hazardous wastes) that may be produced;
- Human health and safety, including, but not necessarily limited to potential effects on human health and safety resulting from the release of pollutants;
- Resource use, including hunting, fishing, trapping, gathering, and cultural or traditional activities; and
- Heritage resources including any archaeological sites and sites of spiritual and cultural significance.

Potential socio-economic effects stemming from environmental effects were also identified.

The VECs identified in **Table 13** were developed from the potential interactions between the project components (outlined in **Section 2** of this application) and the existing environment (as described in **Section 4**). Potential interactions were identified based on the following:

- Identified regulatory requirements;
- Discussions with regulatory authorities;
- Information derived from published and unpublished data sources;
- Information and comments received from various participants through the engagement process;
- Community visits conducted with Shoal Lake 40 (defining features of cultural importance and significance); and
- Biophysical field surveys.

VECs that were examined as part of this assessment included the following:

- **Physical Environment VECs**
  - Soils and Bedrock
  - Air Quality
  - Surface Water

- **Biological and Aquatic Environment VECs**
  - Vegetation
  - Wildlife and Migratory Birds

- Rare and Endangered Species
- Aquatic Resources

- **Socio-Economic Environment VECs**
  - Community Water and Food Supply
  - Traditional Resource Use

- **Cultural Environment VECs**
  - Heritage Resources

Table 13. Interactions Between Valued Environmental Components and Project Activities

Project Activities	Physical Environment		Biophysical Environment					Socio-Economic Environment			Cultural Environment
	Soils and Bedrock	Air Quality	Surface Water Quality	Vegetation	Wildlife and Migratory Birds	Rare or Endangered Species	Aquatic Resources	Protected Areas	Community Water and Food Supply	Traditional Resource Use	Archaeological Resources
Construction Phase											
Mobilization of Equipment and Supplies	X	X	X	X	X	X		X			
Temporary Construction Staging Areas	X	X	X	X	X	X		X		X	
Temporary Access Roads and Trails	X	X	X	X	X	X		X		X	X
ROW Clearing and Grubbing	X	X	X	X	X	X		X		X	X
Brush and Timber Disposal	X			X							
Rock Quarries and Borrow Sites (sand and gravel materials)	X	X	X							X	X
Blasting	X				X	X		X			
Road Construction (grading, fill placement, road bed excavation, ditching, etc.)	X	X	X		X	X				X	X
Crossings and Culvert Installation		X	X					X		X	
Construction Site Restoration	X	X	X	X				X		X	
Accident & Malfunctions	X	X	X					X		X	
Operation Phase											
Road Usage		X			X			X	X	X	
Maintenance [1]		X	X					X	X		
Decommissioning Phase											
Borrow Areas and Quarries	X		X	X	X			X		X	
Temporary Camps, Roads/Trails and Staging Areas			X	X	X			X		X	

Notes: Only indirect interactions with SCs as a result of an direct project/EC interactions were considered

X = Identified interaction.

Includes General Maintenance (ie. grading, erosion control, quarrying, borrow pits, etc.), Seasonal Maintenance (ie. snow clearing, bridge and culvert maintenance, etc.), and Special Maintenance (ie. slope failures, road settlement/break-up, etc.).

Environmental effects that may be caused as a result of accidents and malfunctions are discussed separately in **Section 6.9**.

Definitions of the terms used to guide the effects assessment are provided in **Table 14**.

The Project will be constructed and maintained based on the MI *Construction Related Environmental Protection BMPs* as outlined in **Appendix K**. The BMPs includes the following:

- Erosion and Sediment Control,
- Working Within Fish Bearing Waterways,
- Fish Passage,
- Fish Salvage,
- Blasting near a Water Course,
- Temporary Isolation and Dewatering,
- Machinery, Fuel Storage and Handling,
- Emergency Response Plan for Spills,
- Disposal
- Dust and Particulate Control,
- Noise and Noise Limitations,
- Wildlife,
- Clearing, Grubbing, and Brushing,
- Heritage Resources, and
- Other

Some of the above BMPs included in **Appendix K** may not pertain to the Project including Working Within Fish Bearing Waterways, Fish Passage and Fish Salvage as the Project does not involve any in water works.

Table 14. Factors and Definitions Considered in Assessing Environmental Effects

Project Phase:	**Refers to the phase of the project as construction, operation or decommissioning.**
Potential Effect:	Classification of the type of effects possible during a specific project phase.
Magnitude of Effect:	Refers to the estimated percentage of population or resource that may be affected by activities associated with the construction, operation and decommissioning of the proposed project. Where possible and practical, the population or resource base has been defined in quantitative or ordinal terms (e.g., hectares of soil types, units of habitat). Magnitude of effect has been classified as either less than (<) 1%, 1% to 10%, or greater than (>) 10% of the population or resource base. Where the magnitude of an effect has been defined as virtually immeasurable and represents a non-significant change from background in the population or resource, the effect is considered negligible. An exception to this is in terms of potential human health effects where, for example health issues due to water-borne diseases amounting to 1% of the population being affected would still be considered major.
Direction of Effect:	Refers to whether an effect on a population or a resource is considered to have a positive, adverse or neutral effect.
Duration of Effect:	Refers to the time it takes a population or resource to recover from the effect. If quantitative information was lacking, duration was identified as short-term (<1 year), moderate term (1 to 10 years) and long term (>10 years).
Frequency of Activity:	Refers to the number of times an activity occurs over the project phase, and is identified as once, rare, intermittent, or continuous.
Scope of Effect:	Refers to the geographical area potentially affected by the effect and was rated as Project Site, Project Area or Project Region as defined in **Section 3**. Where possible, quantitative estimates of the resource affected by the effect were provided.
Degree of Reversibility:	Refers to the extent an adverse effect is reversible or irreversible over a 10-year period.
Residual Effect:	A qualitative assessment of the residual effect remaining after employing mitigation measures in reducing the magnitude and/or the duration of the identified effect on the environment.

Magnitude of Effect	**Direction of Effect**	**Duration of Effect**	**Frequency of Effect**	**Scope of Effect**	**Degree of Reversibility of Effect**
Negligible (immeasurable)	Positive	Short term (< 1 year)	Once	Project Site	Reversible
Minor (<1%)	Adverse	Moderate (1 to 10 years)	Rare	Project Area	Irreversible
Moderate (1 to 10%)	Neutral	Long term (>10 years)	Intermittent	Project Region	
Major (>10%)			Continuous		

6.4 Environmental Effects on the Physical Environment

Potential effects of the Project on the physical environment are dependent on the nature of the construction activities in specific segments within the Project Site. In areas previously disturbed by an existing road or trail will generally result in environmental effects that have limited geographic extent than in areas where the ASR will be constructed through areas that have not been previously disturbed.

6.4.1 Environmental Effects on Soils and Bedrock

The potential effects due to construction activities of the Project on surface and subsurface soils and bedrock will generally be limited to areas that are physically disturbed including lands within the ASR ROW, temporary access roads, temporary staging areas, and quarries and borrow areas.

Project activities such as removing soils to obtain the required grade/elevation of the ASR and the temporary access roads will result in loss of soils and bedrock. This also includes surface grading and the placement of non-native materials (i.e. crush rock, gravel, etc.) for the construction of the ASR where soils are not suitable for the road construction. Soil and rock materials will also be removed from the quarry and borrow locations.

The ASR along with the temporary access roads and staging area will be constructed and maintained as per MI's *Construction Related Environmental BMPs* (see **Appendix K)**. The ASR will mostly follow the existing winter road path which has been cleared of larger vegetation with some deviations from this existing route.

6.4.1.1 Soil Compaction and Mixing of Soil Horizons

As a result of incidental vehicle and equipment movement, along with grading, excavating, and stockpiling of materials at the Project Site during construction, there is the potential to cause soil compaction and mixing of soil horizons, which may change the soil structure. Soil compaction could also result in changing surface drainage patterns and reducing flora growth.

To reduce potential soil compaction and mixing of soil horizons at the Project Site, the following mitigation measures will be implemented:

- Construction equipment and vehicle movements will be limited to designated roads within and around work areas;
- Construction activities during periods of extensive precipitation/runoff will be limited;
- Disturbed/exposed areas will be kept to a minimum with site restoration occurring as soon as practical;
- Topsoil will be stripped and stockpiled on the Project Site for use in site restoration (quarries, temporary access roads, and staging areas) and ROW ditching; and
- Disturbed areas will be re-vegetated, as required.

6.4.1.2 Soil Erosion

Soil may also be lost during the construction phase due to erosion (in the forms of runoff from wind and precipitation). Conditions favourable for erosion could occur during clearing, grading, excavating, stockpiling, site restoration, and movement of equipment at the Project Site. High wind events could lead to erosion of stockpiled materials, with subsequent effects on air quality (dust and particular matter) and vegetation (dust deposition).

As construction is anticipated to begin in January 2017, the frozen ground will minimize soil erosion. In addition, specific measures outlined in MI's Erosion and Sediment Control BMP will be implemented, as outlined in **Appendix K**. Some key measures are:

- The Transportation Association of Canada (TAC) *Manual of Erosion and Sedimentation Control* will guide construction practices on site;
- Prior to starting work, effective sediment and erosion control measures will be installed to prevent the entry of sediment into any water course or wetland;
    - These will be inspected regularly during the course of the work.

- Construction will be halted during heavy rains with the exception of those works pertaining to sediment and erosion control;
- Sediment and erosion control measures shall remain in place and be maintained until the vegetation has been established.

All construction equipment and vehicles will be demobilized once construction is complete. All work areas including temporary access roads, and staging areas that are no longer required, will be decommissioned. The quarry and borrow areas used during construction will be reclaimed. Aggregate materials from these access roads will be salvaged and stockpiled in the appropriate areas for possible further crushing and re-use as maintenance material. Borrow pits will be excavated as uniformly as possible and shall be levelled and trimmed when excavation is complete. Disturbed areas will be restored by spreading stockpiled topsoil and seeding and/or planting as required.

The mitigation measures proposed above, along with the implementation of MI's Erosion and Sediment Control BMPs described in **Appendix K**, application of standard construction procedures and best management practices, are deemed sufficient to mitigate potential adverse effects to surface and subsurface soils. Implementation of mitigation measures will be monitored during construction.

Residual effects due to surface and subsurface soil activities are therefore expected to be negligible and not significant.

6.4.2 Environmental Effects on Air Quality

The Project will generate noise, dust, and exhaust emissions from activities associated with the construction of the ASR, quarry and borrow areas, temporary access roads, and staging areas.

6.4.2.1 Noise

Sources of noise during construction would be typical of heavy equipment such as graders, excavators, loaders, compactors, and haulage trucks. Blasting of rock and gravel crushing will typically take place within the quarries with the closest proposed quarry located approximately 5.5 km west of the Community. The closest proposed quarry to be used for the Project is approximately 4 km southeast to the community of Falcon Lake. Construction activities are anticipated to generate intermittent noise over the construction period (approximately 24 months of construction). The closest human receptors will be the construction workers at the Project Site. The nearest On-Reserve residence is located approximately 6.5 km west of the Reserve boundary. During the operation phase, sources of noise include maintenance vehicles/equipment (i.e. graders, compactors, loaders, haulage trucks, etc.) and small hand-held tools (i.e. chain saws, shovels, etc.).

To mitigate noise, MI's Noise and Noise Limitations BMP (see **Appendix K**) will be implemented, which includes some of the following measures:

- All equipment used on the Project will be effectively "sound-reduced" by means of proper silencers, mufflers, acoustic linings, or acoustic shields; and
- Any operation of equipment outside of hours regulated by adjacent communities or municipal authorities will require an exemption in writing.

Some additional measures to mitigate noise are:

- Vehicle and equipment will be properly maintained; and
- Provide hearing protection to workers as required.

The contractor will be responsible for following the applicable laws and regulations in relation to workplace safety and health. These are further discussed in **Section 6.8.**

6.4.2.2 Dust

Sources of dust include activities such as ROW clearing and grubbing, grading, vehicle movement, blasting, and stockpiling of materials on-site. Air quality may be affected by dust and particulates with subsequent effects on human health (including respiratory issues) and vegetation (dust deposition). Dust primarily occurs during the summer and fall, with greater likelihood for an increase in dust during dry and windy conditions.

Clearing and grubbing involves removing and disposing of all trees, shrubs, fallen timber, and other surface litter. Vegetation clearing will be required for both temporary and permanent project components. Along the ROW itself, vegetation will be cleared ranging from km 9 to km 24. This cleared material will be piled/burned and/or buried within the ROW.

As construction is anticipated to begin in January 2017, the frozen ground conditions are expected to reduce dust generation.

Although dust is not anticipated to be a major concern, to further manage potential effects due to dust, the following mitigation measures (as MI's Dust and Particulate Control BMP) will be implemented:

- Only water or approved dust suppressants will be used for dust control. The use of waste petroleum or petroleum by-products is not allowed.
- All vehicles used to haul materials to and from the work site shall have a load covered with a tarpaulin during transport to prevent material from falling out and creating dust; and
- All stockpiles or spoil piles shall be maintained as to minimize wind erosion (which contribute to dust).

6.4.2.3 Exhaust Emissions

During construction, exhaust emissions will be generated during the delivery of aggregate materials to the construction site and construction equipment movement. These emissions could decrease the quality of the air by increasing the local concentration of carbon monoxide, carbon dioxide, particulate matter, and nitrogen oxides in the air with potential for subsequent effects on human health. During peak construction, it is anticipated that approximately 30 pieces of construction equipment may be at the site including crushing spreads, haul trucks, excavators, loaders, dozers, graders, packers, water trucks, backhoes, half ton trucks, and fuel tanks.

The following mitigation measures will be implemented to manage these construction /operation-related exhaust emissions:

- Vehicle and equipment will be properly maintained;
- Vehicle and equipment idling will be kept to a minimum; and
- Vehicles and equipment will be placed to minimize congestion in any one particular area.

The potential environmental effects on air quality due to noise, dust and exhaust emissions will mainly be localized to the immediate work areas, and will be short-term in duration. Therefore, with the implementation of the above identified mitigation measures, the overall residual effects on air quality due to noise, dust, and exhaust emissions are expected to be negligible and not significant.

6.4.3 Environmental Effects on Surface Water

6.4.3.1 Surface Water Quality

There is a potential for water quality to be affected during the construction and operation of the Project due to erosion and sediment runoff, particularly because some areas of the ASR alignment contain fens, bogs, and marshes. Changes in water quality can consequentially impact aquatic resources if those pathways exist.

To reduce potential erosion and sedimentation at the Project Site, and therefore manage consequential impact on surface water, the mitigation measures identified in **Section 6.4.1.2** will be implemented.

The following sections of MI's *Construction Related Environmental Protection BMPs* (see **Appendix K**) that will be implemented are as follows:

- Erosion and Sediment Control
- Dust and Particulate Control
- Clearing, Grubbing, and Brushing

The proposed ASR alignment passes through three different drainage basins. During the public engagement process, concerns were raised with respect to potential cross contamination of these drainage basins during construction. The design of the ASR maintains the existing drainage patterns in the area. Water will not be diverted from one watershed to another. The design included culverts in certain locations to allow surface water to flow along its normal path and no culverts in area that are on higher ground (such as in the bog area). The structure of the ASR along the bog area will consist of a blast rock base, constructed on the surface which over time is expected to settle into the bog. The porous nature of the blast rock will allow water to migrate through the road if the water table on one side of the ASR becomes higher than on the other side of the ASR. Therefore, the hydrotechnical design of the ASR is such that surface runoff remains within the original catchments and cross contamination is not a concern.

With the implementation of erosion and sediment control measures, including isolation techniques, it is anticipated that the effects will be localized to the immediate working areas during construction activities and will be short-term. Overall, the impact on surface water quality is expected to be negligible, short term, and not significant with the implementation of MI's *Construction Related Environmental BMPs*.

6.5 Environmental Effects on the Biological and Aquatic Environment

Potential effects of the Project on the biological environment are dependent on the nature of the construction activities in specific segments within the Project Site. Areas previously disturbed by an existing access road or trail will generally result in environmental effects that have limited geographic extent than in areas where the ASR will be constructed through areas that have not been previously disturbed. The ASR will be constructed within the path of the winter road, which has previously been cleared of vegetation. There will be some deviations from this existing route to construct the ASR.

During the terrestrial surveys conducted in July and September 2015, no moose were noted, despite once being a common species within the Project Region. The likely cause of this is due to parasite interactions with white-tailed deer which have become common in the Project Region. There are also no recent observations of woodland caribou within the Project Region.

6.5.1 Environmental Effects on Vegetation

There are two primary vegetative communities within the Project Area that provide wildlife habitat: mixed forests and wet vegetative communities that include fens and bogs.

During a Community visit on May 25, 2015, elders from the Shoal Lake Community identified some vegetation as cultural importance near the Community. Adjustments to the ASR were made within these specified areas.

Clearing and dust from construction activities can affect vegetation. As the ASR will be constructed in the previously cleared winter road path with only some deviations from this route; clearing is anticipated to be minor. Measures identified to mitigate potential adverse effects on vegetation include:

- Limit clearing to designated areas within the ROW and other designated areas;
- Restricting equipment and vehicle use outside the designated cleared areas;
- Restoring ground cover vegetation using natural means with planting and seeding, as required;
- Maintaining treed buffers;
- Routing road and siting construction activities to avoid loss of plant species of cultural importance;
- Undertaking construction activities including burning during winter months to the extent possible; and
- Controlling herbicide use.

The following sections of MI's *Construction Related Environmental Protection BMPs* (see **Appendix K**) will be implemented are as follows:

- Erosion and Sediment Control
- Disposal
- Dust and Particulate Control
- Clearing, Grubbing, and Brushing

In addition, specific measures outlined in MI's Clearing, Grubbing, and Brushing BMP will be implemented, as outlined in **Appendix K**. Some key measures are:

- To avoid disturbance to nesting birds and other wildlife species, clearing, grubbing, and/or brushing will only take place between August 30th and April 1st of the following year; and
- Clearing and grubbing activities will not block or alter existing trails, trap lines, or portage routes.

Potential effects on vegetation will mainly be localized to the immediate work areas during construction. To minimize the potential effects due to construction, mitigation measures will be built in the construction contract which will be monitored during construction. The overall residual effects on vegetation due to clearing and dust are therefore expected to be negligible and not significant.

6.5.2 Environmental Effects on Wildlife and Migratory Birds

Construction activities (site disturbance) and operation activities (such as traffic and wildlife collisions) of the Project have the potential to affect wildlife populations and behaviours, including fur bearers, song birds, and mammals within the Project Area.

The sections of the MI's *Construction Related Environmental Protection BMPs* (see **Appendix K**) that relate to wildlife and wildlife habitat protection that will be implemented are as follows:

- Erosion and Sediment Control
- Disposal
- Dust and Particulate Control
- Noise and Noise Limitations
- Wildlife
- Clearing, Grubbing, and Brushing

Construction of the proposed ASR and blasting at quarry/borrow areas will result in increased noise and vibration that may temporarily alter the potential use of the area by other wildlife including songbirds and fur bearers. These effects will mainly be observed within close proximity of the ASR ROW, quarries, and temporary facilities. Once construction is complete, most species will return to the area over time. Measures to mitigate potential effects on wildlife populations include the following:

- Limit construction activities such as blasting and excavation work during spring months (May to June);
- To avoid disturbance to nesting birds and other wildlife species, clearing, grubbing, and/or brushing will only take place between August 30th and April 1st of the following year; and
- Clear ROW only during the winter months to avoid disruptions to nesting and denning activities.

As indicated in **Section 4.5.1**, waterfowl, the Canada Warbler, and Olive-sided Flycatcher are protected Article I of the *Migratory Birds Convention Act*. The main mitigation measure for bird species is timing. Clearing should be conducted during the winter months, outside of the nesting seasons.

Shoal Lake itself, which is in the Project Area, offers nesting areas for some overwater duck species and shorebirds. While there is no existing survey data for these species on Shoal Lake, local residents and the Department of Sustainable Development personnel have observed migratory waterfowl on the lake in spring and fall. The lake is most likely used as a stopover for migration periods. However, the Project does not involve any disturbances to Shoal Lake and is therefore not likely to impact these birds.

The Project Site does not contain any suitable nesting or stopover habitat for migratory waterfowl. However, two endangered bird species are known to nest in the Project Area; the Canada Warbler and the Olive-sided Flycatcher. These species have not been observed at the Project Site, but are known to occur in the Project Area. The Canada Warbler is known to nest in open fen areas and other open boreal environments. The Olive-sided Flycatcher prefers the mature heavily wooded uplands such as those on the rocky islands which will be traversed by the proposed ASR. As indicated above, the main mitigation measure for bird species is timing; that clearing should be conducted during the winter months, outside of the nesting season.

The construction of the Project may result in vehicular accidents with wildlife. Collisions with construction vehicles will be unlikely due to the slow speed of travel of the heavy equipment. Plus the increase in activity in and around the Project Site may also deter wildlife, thus reducing risk of collisions. Collisions with wildlife may potentially increase once the ASR is in use but is anticipated to remain low due to improved road design which will provide a clear line of sight and the installation of road signage including advisory speed limits, thereby minimizing the risk of collisions. With the application of these mitigation measures, the risk of occurrence of collisions is assessed to be appropriately mitigated.

There will likely be an increase in hunting activities within the Project Area due to improved access to areas which were previously inaccessible. As indicated previously, even though the area of the proposed ASR was not used much in the past for hunting due to peat bogs, fens, and the general low-lying areas; some hunting occasionally occurred in the area. Most Community members did not travel too far into the bush and stayed along the shoreline which is where most hunting and trapping took place.

It is anticipated that due to the construction noise, wildlife may avoid the area over the short term. Construction crews will not be permitted to hunt within the area of the Project Site and hunting will be restricted within 300 m of any ROWs. Restricting access by temporarily blocking roads and the placement of "no hunting" signs during construction to the ASR and other facilities (including the temporary access roads) will reduce accessibility for hunters.

Taking into account specific mitigation measures, which will be implemented during construction and operation, the residual impact on wildlife is expected to be minor, short term, and not significant.

6.5.3 Environmental Effects on Rare and Endangered Species

No species listed in *The Endangered Species and Ecosystems Act* (Manitoba) or SARA was observed along the route during the helicopter and land based surveys. However, two endangered bird species are known to nest in the Project Area; the Canada Warbler and the Olive-sided Flycatcher. These species were not observed in the Project Area during the terrestrial surveys, but are known to occur in the general region. The Canada Warbler is known to nest in open fen areas and other open boreal environments. The Olive-sided Flycatcher prefers the mature heavily wooded uplands such as those on the rocky islands traversed by the road corridor.

To manage potential impacts on rare and endangered species, mitigation measures identified in **Sections 6.5.1** and **Section 6.5.2** will be implemented.

With the implementation of the identified mitigation measures overall residual effects on species at risk due to construction are expected to be negligible and not significant.

6.5.4 Aquatic Resources

During the public engagement process, some comments regarding easier access to the canal may result in overfishing of Walleye during the spawning season were raised. Currently, recreational or commercial fishing for Walleye/Sauger in not permitted on Shoal Lake. Subsistence fishing for the Community, however, does include Walleye. The moratorium on recreational and commercial Walleye fishing has been in place since the early 1980s. According to the Manitoba 2016 Anglers' Guide, all Walleye/Sauger caught on Shoal Lake must be released. There may be a potential increase in recreational fishing in the area for other fish species, however, the Fisheries Branch provides general limits for various fish species for Manitoba waterbodies and also provides special regulations for individual lakes such as Shoal Lake.

There is a potential for aquatic habitat to be affected during construction of the Project due to erosion and sediment runoff, particularly because some areas of the ASR alignment contain fens, bogs, and marshes. The ASR will be a 14.7 km from the intersection of the TransCanada Highway to the Reserve boundary (at approximately km 8.6) which is approximately 3 km west of the canal. This Project does not involve any in water works and therefore construction activities related specifically to this Project will not impact aquatic resources. To reduce potential erosion and sedimentation at the Project Site, and therefore manage consequential impact on surface water, the mitigation measures identified in **Section 6.4.1.2** will be implemented.

Another consideration for waterbodies in the Project Area is introduction of invasive species, particularly Zebra Mussels. The primary vector for spreading Zebra Mussels is through boat and trailer transport. The development of the ASR will improve access and therefore likely result in an increase in boat traffic to Shoal Lake.

As indicated in **Section 4.3**, a risk assessment conducted by DFO in 2012 found that Zebra Mussels poses a relatively low risk to the Winnipeg River sub-basin (DFO, 2013) based mainly on the pH, alkalinity, and calcium concentrations of the surface waters. The potential for introduction was assessed as high but the conditions in Shoal Lake make establishment unlikely. The City of Winnipeg conducts regular monitoring for the presence of Zebra Mussels and have not noted Zebra Mussels in Shoal Lake to date. The Department of Sustainable Development has established some protocols for proper cleaning of watercraft and will be operating boat washing and inspection stations at various locations in the province (Manitoba Conservation and Water Stewardship, 2014).

With the implementation of erosion and sediment control measures, including isolation techniques, it is anticipated that the effects on aquatic resources, as a result of the project, will be localized to the immediate working areas during construction activities and will be short-term and will be monitored during construction. Overall, the impact on aquatic resources is expected to be negligible and not significant.

6.5.5 Protected Areas

As indicated in **Section 4.7.5**, a portion (approximately 1.3 km) of the ASR is located within the Whiteshell Provincial Park and is also located within the Northwest Angle Provincial Forest. In an email dated April 25, 2016, Parks and Protected Spaces Branch indicated that the Branch does not have any comments or concerns about the proposed Project as it does not affect any provincial parks, park reserves, ecological reserves, areas of special interest, or proposed protected areas.

The closest Wildlife Management Area (WMA) is located approximately 50 km north/northwest of the Project Site, therefore the proposed construction and operation of the ASR will not impact the Whitemouth Bog WMA.

6.6 Environmental Effects on the Socio-Economic Environment

As indicated in **Section 4.7**, the Community is only accessible via personal boat or a licensed ferry during the summer months and a winter road when the ice is sufficiently thick and safe to drive on. During the shoulder seasons of spring and fall, the Community is without safe access to the mainland. Health, education, and other essential services such as solid and liquid waste disposal are severely impaired and completely obstructed by the lack of secure, all-weather access.

However, once the construction of the ASR is complete, it will result in improved health, education and other essential services for the Community. It will also provide the Community an opportunity to explore various other economic opportunities. Members of Shoal Lake 40 have expressed an interest in exploring additional infrastructure for tourism in the future. Any future developments will occur while being cognizant of the needs of Shoal Lake 40 and adjacent communities and service centres. Any future developments will be planned in accordance with applicable development plans and regulatory policies.

Currently, Shoal Lake 40 relies on bottled water as they do not have a reliable source of drinking water within the Community. With the construction of the ASR, the Community will have an opportunity to build a water treatment facility. This will improve access to drinking water and reduce the cost to members of purchasing bottled water.

The ASR will also provide a reliable means of food for the Community. The Community will no longer have to rely only on the winter road and/or ferry (when they are operational) to provide the needed groceries for the Community. Overall the residual effects of the ASR on the Community will be positive.

6.6.2 Traditional Resource Use

6.6.2.1 Medicinal Plants

There is potential for medicinal plants used by members of the Community to be impacted due to the construction and operation of the ASR. During a Community visit on May 25, 2015, elders from the Shoal Lake 40 identified several plants that are of cultural importance to the Community located On-Reserve. The elders suggested careful clearing which is limited strictly to the ROW and what is needed for the construction of the ASR. Elders of Shoal Lake 40 have also expressed an interest in harvesting all the medicines along the proposed alignment of the ROW prior to construction. This is something the Community will likely explore upon completion of the environmental review process by Manitoba Sustainable Development.

In addition to limiting clearing activities to the extent possible, specific mitigation measures outlined in the following sections of MI's *Construction Related Environmental Protection BMPs* (see **Appendix K**) will be implemented are as follows:

- Erosion and Sediment Control
- Emergency Response Plan for Spills
- Dust and Particulate Control
- Clearing, Grubbing, and Brushing

Further, the measures identified in **Section 6.5.1**, to mitigate effects on vegetation will be implemented. Implementation of mitigation measures will be monitored during construction. The elders of Shoal Lake 40 have also expressed an interest in harvesting any additional medicinal plants that may be found along the proposed alignment prior to construction. The elders have noted that the plants can be harvested and stored in the Community for future use. If this is feasible, the harvesting of these plants will be undertaken as a part of a ceremony, led by elders, to celebrate the initiation of road construction.

Therefore, when taking into account the mitigation measures proposed, the residual effects on medicinal plants for traditional uses are expected to be negligible.

6.6.2.2 Hunting and Trapping

There will likely be an increase in hunting and trapping activities within the Project Area due to improved access to areas which were previously inaccessible. As indicated previously, even though the area of the proposed ASR was not used much in the past for hunting due to peat bogs, fens, and the general low-lying areas; some hunting occasionally occurred in the area. Most Community members did not travel too far into the bush and stayed along the shoreline which is where most hunting and trapping took place.

It is anticipated that due to the construction noise, wildlife may avoid the area over the short term, however, it is anticipated that once construction is complete, wildlife (including fur bearers, mammals) will return to the area. Construction crews will not be permitted to hunt within the area of the Project Site and hunting will be restricted within 300 m of any ROWs. Restricting access by temporarily blocking roads and the placement of "no hunting" signs during construction to the ASR and other facilities (including the temporary access roads) will reduce accessibility for hunters.

Taking into account specific mitigation measures, which will be implemented during construction and operation, the residual impact on wildlife is expected to be minor and not significant.

6.6.2.3 Commercial, Recreational, and Subsistence Fishing

Shoal Lake 40 holds a commercial fishing licence for fish species other than Walleye. In the future, if Walleye population recovers and is restored to its former health, the Community could consider a Shoal Lake fishery. This fishery would need to include sustainable harvesting limits and could provide significant value to the Community; particularly if it featured a recreational fishery supported by a local resort or cottage development. This has been taken into account as part of assessing the cumulative impact of the proposed Project.

The proposed ASR will provide an additional access route to Shoal Lake, however, recreational or commercial fishing for Walleye/Sauger in not permitted on Shoal Lake. Subsistence fishing for the Community, however, does include Walleye. The moratorium on recreational and commercial Walleye fishing has been in place since the early 1980s. According to the Manitoba 2016 Anglers' Guide, all Walleye/Sauger caught on Shoal Lake must be released. There may be a potential increase in recreational fishing in the area for other fish species, however, the Fisheries Branch provides general limits for various fish species for Manitoba waterbodies and also provides special regulations for individual lakes such as Shoal Lake.

Shoal Lake falls within the Fisheries Management Zone 5 in Ontario and according to the Recreational Fishing Regulations, 2016 Walleye fishing in Shoal Lake above Ash Rapids is closed all year (MNRF, 2016). Ontario Ministry of Natural Resources and Forestry (MNRF) staff also monitor Walleye populations in Shoal Lake and they have worked with both Shoal Lake 40 and Iskatewizaagegan 39 Independent First Nation.

Similarly, the Project does not involve any construction activities along the shores of Shoal Lake and will therefore will not impact the fishery or fish habitat in Shoal Lake. During the course of engagement activities for this Project, a few participants raised concerns with respect to fishing activities in the canal, i.e. once the ASR is built, a longer term indirect effect may be increased access to Walleye in the canal and in Shoal Lake. .

6.7 Environmental Effects on the Cultural Environment

A screening request to the Heritage Resources Branch (HRB) was sent on January 25, 2016 to determine if there are any potential heritage resources that may be affected by the proposed development and if a Heritage Resources Impact Assessment (HRIA) is required. The Archaeological Unit of the HRB indicated that the Branch has some concerns with the project as there are several sites within the vicinity of the project and the potential to impact significant heritage resources has been deemed high. Therefore, the Branch recommended that a HRIA be completed.

In June 2016, Northern Lights Heritage Services Inc. completed a HRIA of the Project Site. No evidence of heritage resources was identified during this HRIA and there are no concerns at present. There is however, always a potential for heritage resources and/or found human remains to be present and inadvertently exposed during construction. It was noted in the HRIA report that should heritage resources, including fossil bison be unearthed, that work at the location be stopped and the Project Archaeologist contacted. If human remains are unearthed, the Policy Concerning the Reporting, Exhumation and Reburial of Found Human Remains (1987) will take effect. Work at the location will be stopped immediately and the RCMP and the Historic Resources Branch will be contacted.

According to the HRIA (**Appendix D**), the archaeologist was accompanied by Elder Doug Redsky, assistant Ken Redsky and Coordinator Daryl Redsky of Shoal Lake 40. The Shoal Lake 40 members noted that the area of the proposed ASR was not used much in the past because of the peat bogs, fens and general low-lying areas. Some hunting occasionally occurred in the area however most resources were readily available elsewhere. Most Community members did not travel too far into the bush and stayed along the shoreline which is where most hunting and trapping took place.

With respect to the Project Area (areas that will not be subject to direct disturbance), Snake Lake located approximately 1.8 km north/northeast of the proposed ASR was noted as an area of cultural importance. A unique cultural feature noted was the grove of oak trees which according to Ojibwa Elders elsewhere, were purposely planted as landmarks and a source of food. It was also noted a narrow band of wild rice along the shoreline. According to Daryl Redsky, this area would have been used for local picking. Also discussions with Daryl and Ken Redsky, it was learned during the HRIA that there was a "mass" grave located on Snake Lake. The aerial survey identified signage which was placed by the City of Winnipeg, on the southeast shore of Snake Lake. A second burial site was also identified by the Redsky's which was also marked with signage (Northern Lights Heritage Service Inc., 2016).

During the site visit with Shoal Lake 40 on May 25, 2015, an eagle's nest was noted near the shore of Indian Bay. No formal path leading to the nest was observed from the service road. Several markers where tobacco offerings had been made to acknowledge the sacred nest were noted. Also, a pathway along the dike was noted as a possible crossing for beavers from the western portion of the Bay across the dike into the Bay. Some other animal tracks were noted (likely bear). The elders asked the alignment be shifted further away from this sacred site, resulting in a minor change in the road alignment.

6.8 Health and Safety

During construction and operation, there is potential for negative effects to worker and Project Site employee safety. Exposure to fuels, moving vehicles, construction equipment and pinch points could all negatively impact worker health and safety. In Manitoba, worker protection is provided through legislated standards, procedures and training under *The Workplace Safety and Health Act*. All contractors will be subject to site specific environmental, health and safety orientation for the construction phase of the proposed project. The contractor will also be COR Certified and will be the prime contractor for the Project.

The health and safety program will generally include the following:

- All construction will be carried out in accordance with *The Workplace Safety and Health Act* to minimize health and safety effects;
- Contractors will adhere to the requirements of applicable health and safety legislation and the site specific safety plan developed by the prime contractor or contractor as appropriate; and
- All workers will wear appropriate personal protective equipment at all times, including hearing protection as required.

With the implementation of the above mitigation measures as necessary and assuming the implementation of safe work practices, the risk of health and safety concerns are considered to be appropriately mitigated.

6.9 Accidents and Malfunctions

To minimize the risk of accidents and malfunctions, all phases of the Project will be conducted in accordance with applicable regulatory requirements. However, there could always be a risk of accidents and malfunctions may occur during the construction and operation phases of the Project. These may include hazardous spills, fires and explosions, and collisions.

The sections that follow provide additional precautionary measures to further minimize the risk of occurrence for accidents and malfunctions.

6.9.1 Spills

During construction and operation, there is potential for environmental effects due to fuel spills and/or leaks. Accidents (including transportation accidents) could also result in the accidental release of hazardous materials and/or equipment/vehicle fluids and fuels. Potential environmental concerns are also associated with the accidental release of chemicals and fuels resulting from improper storage and handling procedures. Spills can affect soil, vegetation, groundwater quality, air quality, and can potentially threaten human health and safety. During operation, the risk of accidental release of hazardous substances will mainly involve maintenance equipment, transport trucks and passenger vehicles. Spills are expected to be predominantly contained to the Project Site. The magnitude of the spill effects are anticipated to range from negligible to moderate depending on the severity of a spill. The risk of spills and mechanisms to mitigate these risks will be assessed in the EIS.

All hazardous substances will be transported, stored and handled at the Project Site in accordance with *The Dangerous Goods Handling and Transport Act*, *Storage and Handling of Petroleum Products and Allied Petroleum Products Regulation*, *Environmental Accident Reporting Regulation*, and guidelines. Hazardous substances are also included as part of *The Manitoba Workplace Safety and Health Act* and *Workplace Safety and Health Regulation*. If herbicides are required at the Project Site, their use will be in accordance with *The Pesticides and Fertilizers Control Act*, *Pesticides and Fertilizers Control Regulation* and guidelines. All hazardous waste will be collected, stored and disposed of at a licensed facility.

All precautions necessary will be taken to prevent spills from occurring at the Project Site; these include, but are not limited to:

- All potentially hazardous products (if required on-site) will be stored in a pre-designated, safe and secure product storage area(s) in accordance with applicable legislation within the construction material laydown area.
- Storage and disposal of liquid wastes and filters from equipment maintenance, and any residual material from spill clean-up will be contained in an environmentally safe manner and in accordance with any existing regulations.
- Storage sites (equipment storage, hazardous product storage, etc.) will be inspected periodically for compliance with requirements.
- Service and minor repairs of equipment performed on-site will be performed by trained personnel in appropriate areas.
- Vehicles and equipment will be maintained to minimize leaks. Regular inspections of hydraulic and fuel systems on equipment/machinery will be completed on a routine basis. When detected, leaks will be repaired immediately by trained personnel.
- Any used oils or other hazardous liquids will be collected and disposed of according to provincial requirements.
- Appropriate type and size of spill kits are available on-site.
- On-site construction staff will be trained in how to deal with spills and clean-up procedures, including review of applicable Spill Response Plans and knowledge of how to properly deploy site spill kit materials; which will be readily accessible at the site at all times.

In addition, specific measures outlined in MI's Emergency Response Plan for Spills BMP and Disposal BMP will be implemented, as outlined in **Appendix K**. Some key measures are:

- *"A Workplace Hazardous Materials Information System (WHMIS) file will be maintained on-site for all hazardous materials at the work area.*
    - *Prior to commencement of the work, Material Safety Data Sheets (MSDS) will be available on-site for all hazardous materials to be used.*
    - *An updated spill response and containment plan for each dangerous good/hazardous waste will be maintained in the work area at all times."*

Adherence to standard environmental management practices will minimize the risks of accidental spills and adverse effects. This includes regular equipment inspection and maintenance to minimize the risk of fuel spills. In the event of an accidental spill, a regulatory report will be made to Environment Canada and the Department of Sustainable Development. Following a spill, measures will be taken immediately with a spill kit or suitable alternative to prevent migration of the spilled material. Recovery measures will be implemented as necessary in consultation with the appropriate provincial authorities. Following initial response, a remediation program will be undertaken if necessary with contaminated material appropriately managed (in accordance with federal and provincial regulations).

With the implementation of the above mitigation measures as necessary and assuming the implementation of safe work practices, the risk of spills is considered to be appropriately mitigated.

6.9.2 Fire/Explosions

During construction and operation there exists the potential for fires at the Project Site involving mechanical equipment and fuels. Effects related to fires include, but are not limited to, harm to on-site personnel, equipment, and the potential release of contaminants and hazardous materials. Explosives will be used primarily for blasting purposes at the quarries and borrow pits during construction; and quarries during operations.

All precautions necessary will be taken to prevent fire hazards at the Project Site; these include, but are not limited to:

- All flammable waste will be removed on a regular basis and disposed of at an appropriate disposal site.
- Appropriate fire extinguisher(s) are available on the Project Site. Such equipment will comply with and be maintained to, the manufacturers' standards.
- All on-site fire prevention/response equipment is checked on a routine basis, in accordance with local fire safety regulations, to ensure the equipment is in proper working order at all times.
- Greasy or oily rags or materials subject to spontaneous combustion are deposited and stored in appropriate receptacles. This material will be removed from the Project Site on a regular basis and be disposed of at an appropriate waste disposal facility.

A burning permit will be obtained if required for the Project Site as per *The Wildfires Act* (Manitoba). Any fires outside of the intended burn area will be reported to the Department of Sustainable Development immediately.

With these mitigation measures employed and assuming the implementation of typical safe work practices, the risk of fires and explosions is considered to be appropriately mitigated.

6.9.3 Collisions

There is the potential for accidents due to vehicle collisions, and collisions between site equipment and wildlife. These may result in equipment damage, site damage, and/or injury or mortalities to people and/or wildlife. The

ASR is a new road connecting Shoal Lake 40 to the TransCanada Highway and will result in an increase in traffic locally.

During construction, potential collisions with equipment or wildlife will be managed through Project Site safety plans and protocols. Collisions with construction vehicles and wildlife are less likely due to the slow speed of travel of the heavy equipment and the increase in activity in and around the Project Site.

The risk of collisions during operation can be mitigated by implementing proper road design. The standards considered in designing this road incorporate several resources; including the Transportation Association of Canada's *Geometric Design Guide for Canadian Roads* (1999) and Manitoba Infrastructure's *Transportation Planning* Manual (MI, 1998). The proposed road is being designed to accommodate posted speed limits between 40 km/h to 70 km/h. Collisions with wildlife may potentially increase once the ASR is in use but is anticipated to remain low due to improved road design which will provide a clear line of sight, thereby minimizing the risk of collisions.

Mitigation measures also identified in **Section 6.5.2** will be implemented

Monitoring posted speed limits and other road traffic rules will be the responsibility of local law enforcement agencies.

Overall, with the proper design and construction of the ASR, the implementation of an Emergency Response Plan for accidents and assuming the implementation of typical safe work practices, the risk of collisions is assessed to be appropriately mitigated.

7. Cumulative Environmental Effects

7.1 Background

The purpose of a cumulative effects assessment ("CEA") is to assess residual adverse Project-related effects on VECs that may become significant when they interact with past, present or future projects or activities in the Project Area.

Cumulative effects are defined as "the environmental effects likely to result from a designated project in combination with other physical activities that have been or will be carried out." (CEAA, 2015a) Overall, a CEA involves five steps as follows:

- **Scoping**: Define the scope of the assessment and identify VECs (as well as their spatial and temporal boundaries).
- **Analysis**: Consider how the physical activities affect VECs within the spatial and temporal boundaries.
- **Mitigation**: Identify technically and economically feasible measures to eliminate, reduce or control adverse cumulative effects.
- **Significance**: Determine the significance of the effect after implementation of mitigation measures, in combination with other physical activities.
- **Follow-up and Monitoring**: Design a program to verify the accuracy of the environmental assessment ("EA") and effectiveness of mitigation measures.

The following sections provide details of the above five steps (CEAA, 2014 and 2015b).

7.2 Scoping

Scoping in a CEA involves the following:

- Determining the spatial and temporal boundaries;
- Identifying the past, present, and future physical activities; and
- Identifying VECs.

Section 6.3 outlines the VECs that were examined as part of this assessment.

7.2.1 Spatial and Temporal Boundaries

For the purpose of this CEA, the Project Area as described in **Section 3.2** will be used as the spatial boundary.

With respect to temporal boundaries, construction of the Project will be occurring over three years and the road will be operation over the lifetime of the Project. To identify activities for the purpose of this assessment, the Project team searched for active projects as well as projects that may occur in the Project Area in the next 10 years.

7.2.2 Identifying Past, Present, and Future Physical Activities

With respect to identifying past, present, and future activities, a search of the Ministry of Ontario ("MOE") Environmental Registry and the Department of Sustainable Development Public Registry was completed to determine if there were any projects within the Project Area. Projects that have been recently licensed, are in construction already, or are going through regulatory review in anticipation of approval were taken into account. As noted the Project team searched for active projects as well as projects that may occur in the Project Area in the next 10 years. Further, the Project team also took into account any projects that were mentioned during the course of engagement activities by various participants and interested parties. To supplement the list of projects, various parties were asked if they had knowledge of regional activities that were being contemplated. While these projects may not be in the regulatory review stage, knowledge of these projects does provide a regional context for this assessment. Projects/activities identified for this assessment are:

- South Whiteshell Provincial Park Truck Haul Wastewater Treatment Lagoon;
- Bridge construction over the Shoal Lake aqueduct;
- Potential road works (maintenance) may be completed on the On-Reserve Access Road;
- Potential peat mining exploration;
- Potential twinning of the TransCanada Highway east of Winnipeg;
- Upgrades to the infrastructure On-Reserve including water treatment and solid and liquid waste management;
- Potential for a marina/boat launch, and other tourism activities to be developed within the Community; and
- Potential forestry in the Project Area

7.2.2.1 South Whiteshell Provincial Park Truck Haul Wastewater Treatment Lagoon

A search of the Department of Sustainable Development Public Registry identified the South Whiteshell Provincial Park Truck Haul Wastewater Treatment Lagoon project. The project activities for this project will occur approximately 750 m northwest of the intersection of where the proposed ASR meets the TransCanada Highway. It was noted that a request for a project extension has been approved by the Director of Environmental Approvals Branch to extend to April 30, 2018. The construction period of this project may coincide with the construction of the proposed ASR.

7.2.2.2 Aqueduct Bridge Construction

The City of Winnipeg recently completed the preliminary design for a bridge structure, approach, and approach roadways, which will cross the Shoal Lake aqueduct near maker Mile 93. The construction period of the bridge may coincide with the construction of the proposed ASR.

7.2.2.3 On-Reserve Access Road Maintenance

Regular maintenance will be required on the existing On-Reserve Access Road. These activities may coincide with the construction of the proposed ASR.

7.2.2.4 Mining Exploration and Development

As indicated in **Section 4.1.3**, there are currently no mining claims or mines within the Project Area. **Figure 06** provides mineral leases and quarry leases within the Project Area. It appears that there are numerous cancelled mining claims within the Project Area, which may be due to lack of work on the site, money, and/or if Mines Branch

revokes the eligibility of the land for claiming. If mining claims were to be established within the Project Area, including any potential peat mining, it would require all the proper approvals and permits from Manitoba Mineral Resources. Permits may include an exploration permit, an advanced exploration permit, and if a mine is deemed feasible, an *Environment Act* application. Depending on the extent of the infrastructure required, additional permits may also be needed for both water and energy use at the proposed mine site. As there are no known mining claims in the Project Area, this was not factored into the CEA.

7.2.2.5 Twinning of TransCanada Highway

The Province of Manitoba and Ontario, discussed the twinning of the TransCanada Highway, east of Winnipeg, in 2005. No new developments were noted in this regard. If and when this concept proceeds, it will require design and planning, including environmental approvals.

7.2.2.6 Upgrades to On-Reserve Infrastructure

Currently, health and other essential services, such as solid and liquid waste disposal, for the Shoal Lake 40 Community are severely impaired due to the lack of secure, all-weather access. Once the construction of the proposed ASR is complete, Shoal Lake 40 will have the opportunity to upgrade these facilities On-Reserve including the water treatment facility, wastewater treatment facility, school, health services, and waste management.

7.2.2.7 Recreation and Tourism

As shown in **Figure 12**, there are registered snowmobile trails located north/northeast of the ASR alignment with hiking and bike/cross country trails located near Falcon Lake. There is potential for further development of tourism and recreation in the area. This may include backcountry camping, wildlife viewing, canoeing, kayaking, fishing and hunting.

In the future, if Walleye population in Shoal Lake recovers and is restored to its former health, the Community could consider a Shoal Lake fishery. This fishery would need to include sustainable harvesting limits and could provide significant value to the Community; particularly if it featured a recreational fishery supported by a local resort or cottage development.

Once the ASR is in place, Shoal Lake 40 may want to explore additional infrastructure for tourism. This may include a marina, boat launch, cottage development, and/or other tourist attractions. While these activities are being contemplated, comprehensive planning or design for none has been initiated.

7.2.2.8 Forestry Development

A large portion of the Project Area and Project Region falls within the Northwest Angle Provincial Forest. In order to harvest within Crown land, permits to harvest timber are required. The permits outline typically outline the amount, type and location of trees that can be harvested. Timber Permits apply to both commercial and personal harvests of less than 300 m^3 (Forestry Branch, 2016b). These permits are issued for a maximum of one-year and are not extended. Indigenous members may obtain a Timber Permit free of charge from the Forestry Branch which will allow them to harvest timber for domestic or traditional use.

There are currently only two Forest Management License Agreements (FMLA) in Manitoba and are located in The Pas and Minitonas, Manitoba. A Forest Management License (FML) may be granted by the minister with approval from the Lieutenant Governor in Council to an industry where the investment in a wood-using industry that has

been established or will be established, and where a continuous supply of timber is required. The license is restricted to the species, size, and quantity of timber. The FML are also required to prepare a long-term Forest Management Plan (FMP), Operating Plans (OP), and Annual Reports. (Forestry Branch, 2016b)

7.2.3 Regional Planning Initiatives

Known regional planning studies that have been carried out in the Project Region are:

- Shoal Lake Watershed Management Plan (2001)
- Whitemouth Reynolds Planning District Development Plan 2030 (2012)
- Whiteshell Provincial Natural Park Mater Plan, Department of Natural Resources (1983)

7.2.4 Regional Environmental Concerns

In order to determine the regional environmental concerns which should be taken into account for the CEA, feedback from entities outlined in **Section 5** was incorporated. This included any discussions that occurred with the different parties through the course of Project planning, engagement activities, letters received by the Project team, or letters submitted to the Department of Sustainable Development upon review of the Scoping Document and the Project Description. This also includes feedback received from the Technical Advisory Committee ("TAC") and other regulators.

Regional environmental concerns include:

- Ongoing participation in the environmental studies;
- Species of concern;
- Longer term monitoring and follow-up;
- Navigation under the canal bridge;
- Traditional land use;
- Lack of capacity of solid waste management in the region;
- Over fishing of Walleye in the canal during spawning seasons;
- Access (i.e. future boat launch, trapping, snowmobile);
- Water quality (i.e. Shoal Lake); and
- Invasive species (i.e. Zebra Mussels in Shoal Lake).

7.2.5 Regional Valued Environmental Components

Regional VECs relevant to the CEA for the proposed Project were determined to be the following:

- **Physical Environment VECs**
  - Surface Water

- **Biological and Aquatic Environment VECs**
  - Aquatic Resources
  - Wildlife and Migratory Birds

- **Socio-Economic Environment VECs**
  - Community Water and Food Supply
  - Traditional Resource Use

7.2.6 Potential Environmental Effects

The potential environmental effects of the proposed Project must interact, overlap, cause or enable environmental effects of other project components and activities to act cumulatively. With the potential environmental effects identified in **Section 6**, the following are assessed to be the residual environmental effects resulting from the Project that may result in cumulative effects.

- Impaired short term air quality from bridge/road construction activities.
- Potential increase in invasive species (Zebra Mussels).
- Impairment of mammal movements and increased mortality due to predation, hunting and vehicles.
- Increased access to backcountry areas due to the ASR.
- Increased tourism and recreational opportunities.
- Increased hunting and fishing.

7.3 Analysis of Cumulative Environmental Effects

The following sections outline potential cumulative environmental effects of the proposed Project with other potential activities/projects in the Project Area.

7.3.1 Physical Environment

The relevant VEC considered under physical environment is surface water quality.

There is a potential for aquatic habitat to be affected during construction of the Project due to erosion and sediment runoff, particularly because some areas of the ASR alignment contain fens, bogs, and marshes. The ASR will be a 14.7 km from the intersection of the TransCanada Highway to the Reserve boundary (at approximately km 8.6) which is approximately 3 km west of the canal. This Project does not involve any in water works and therefore construction activities related specifically to this Project will not impact aquatic resources. To reduce potential erosion and sedimentation at the Project Site, and therefore manage consequential impact on surface water, the mitigation measures identified in **Section 6.4.1.2** will be implemented.

7.3.2 Biological Environment

There may be minor residual effects on mammal populations due to vehicle collisions with wildlife, and access to hunting/trapping. The main contributor to these potential effects is improved access to this area. As indicated previously in **Section 4.6**, even though the area of the proposed ASR was not used much in the past for hunting due to peat bogs, fens, and the general low-lying areas; some hunting occasionally occurred in the area.

If the construction phase of the proposed Project overlaps with any other regional activities, the overall disturbance to wildlife may be greater than what would be expected from the proposed Project alone. As noted in

Section 6.6.2.2, measures will be applied to restrict hunting within the Project Site. It is expected that other projects in the area that overlap with the proposed Project will implement similar restrictive measures.

During the public engagement process, some comments regarding easier access to the canal may result in overfishing of Walleye during the spawning season were raised. Currently, recreational or commercial fishing for Walleye/Sauger in not permitted on Shoal Lake. Subsistence fishing for the Community, however, does include Walleye. The moratorium on recreational and commercial Walleye fishing has been in place since the early 1980s. According to the Manitoba 2016 Anglers' Guide, all Walleye/Sauger caught on Shoal Lake must be released. There may be a potential increase in recreational fishing in the area for other fish species, however, the Fisheries Branch provides general limits for various fish species for Manitoba waterbodies and also provides special regulations for individual lakes such as Shoal Lake.

Another consideration for waterbodies in the Project Area is introduction of invasive species, particularly Zebra Mussels. The primary vector for spreading Zebra Mussels is through boat and trailer transport. The development of the ASR will improve access and therefore likely result in an increase in boat traffic to Shoal Lake.

As indicated in **Section 4.3**, a risk assessment conducted by DFO in 2012 found that Zebra Mussels poses a relatively low risk to the Winnipeg River sub-basin (DFO, 2013) based mainly on the pH, alkalinity, and calcium concentrations of the surface waters. The potential for introduction was assessed as high but the conditions in Shoal Lake make establishment unlikely. The City of Winnipeg conducts regular monitoring for the presence of Zebra Mussels and have not noted Zebra mussels in Shoal Lake to date. The Department of Sustainable Development has established some protocols for proper cleaning of watercraft and will be operating boat washing and inspection stations at various locations in the province (Manitoba Conservation and Water Stewardship, 2014).

7.3.3 Socio-Economic and Cultural Environment

Once the proposed ASR is built, Shoal Lake 40 can explore several economic opportunities such as a marina, boat launch, cottage development, or other tourist attractions. Any opportunities that Shoal Lake 40 is able to pursue will be a major positive effect for the Community as it will bring in additional revenue into Shoal Lake 40. With the operation of the proposed ASR, there could be potential for the Community to build a water treatment facility, wastewater treatment facility, and/or landfill for the Community. This in turn will also be a positive effect for the Community as they will no longer have to pay and rely on bottled water as their main drinking water source.

During the course of the environmental assessment, some concerns were raised about potential pressures on the natural environment which may have previously been inaccessible. While the proposed ASR will increase accessibility with consequential increase in recreational pursuits, all activities on Crown land will require approvals through various regulatory agencies, background environmental investigations, and other relevant studies. It is assumed that these checks will allow for development in the area to occur in an environmentally responsible manner. There is also a Tripartite Agreement between Shoal Lake 40, the City of Winnipeg, and the Province of Manitoba in place. The agreement was issued on June 30, 1989 and affirms that Shoal Lake 40 has the responsibility for protecting the water quality of Shoal Lake.

7.4 Mitigation Measures

No additional mitigation measures, beyond those identified in **Section 6** will be required for potential cumulative environmental effects directly associated with the proposed ASR.

7.5 Conclusions on Cumulative Effects

Taking into consideration the regional environmental context, planning and permitting requirements for developments in the area, the anticipated adverse residual environmental impact of the proposed ASR, and the long-term benefit of the proposed project to the Community of Shoal Lake 40, no additional mitigation measures, beyond those identified in **Section 6** will be required.

8. Conclusions

Soils and Bedrock

Potential environmental effects on soil and bedrock due to soil compacting and mixing of soil horizons, and erosion will mainly be localized to the Project Site. The mitigation measures proposed in **Section 6.4.1**, along with the implementation of MI's *Construction Related Environmental BMPs* described in **Appendix K**, application of standard construction procedures and best management practices, are deemed sufficient to mitigate potential adverse effects to surface and subsurface soils. Implementation of mitigation measures will be monitored during construction. Residual effects due to surface and subsurface soil activities are therefore expected to be negligible and not significant.

Air Quality

The potential environmental effects on air quality due to noise, dust and exhaust emissions will mainly be localized to the immediate work areas, and will be short-term in duration. Therefore, with the implementation of the mitigation measures noted in **Section 6.4.2**, the overall residual effects on air quality due to noise, dust, and exhaust emissions are expected to be negligible and not significant.

Surface Water Quality

With the implementation of erosion and sediment control measures, including isolation techniques, it is anticipated that the effects will be localized to the immediate working areas during construction activities and will be short-term. Overall, the impact on surface water quality is expected to be negligible, short term, and not significant with the implementation of Manitoba Infrastructure's *Construction Related Environmental BMPs* described in **Appendix K**.

Vegetation

Potential effects on vegetation due to clearing and dust will mainly be localized to the immediate work areas during construction. To minimize the potential effects due to construction, mitigation measures will be built in the construction contract which will be monitored during construction. The overall residual effects on vegetation due to clearing and dust are therefore expected to be negligible and not significant.

Wildlife and Migratory Birds

Construction of the proposed ASR and blasting at quarry/borrow areas will result in increased noise and vibration that may temporarily alter the potential use of the area by other wildlife including songbirds and fur bearers. These effects will mainly be observed within close proximity of the ASR ROW, quarries, and temporary facilities. Once construction is complete, most species will return to the area over time.

Shoal Lake itself, which is in the Project Area, offers nesting areas for some overwater duck species and shorebirds. While there is no existing survey data for these species on Shoal Lake, local residents and the Department of Sustainable Development personnel have observed migratory waterfowl on the lake in spring and fall. The lake is most likely used as a stopover for migration periods. However, the Project does not involve any disturbances to Shoal Lake and is therefore not likely to impact these birds.

Wildlife collisions with construction vehicles will be unlikely due to the slow speed of travel of the heavy equipment. Plus the increase in activity in and around the Project Site may also deter wildlife, thus reducing risk of collisions. Collisions with wildlife may potentially increase once the ASR is in use but is anticipated to remain low due to improved road design which will provide a clear line of sight, thereby minimizing the risk of collisions.

There will likely be an increase in hunting activities within the Project Area due to improved access to areas which were previously inaccessible. As indicated previously, even though the area of the proposed ASR was not used much in the past for hunting due to peat bogs, fens, and the general low-lying areas; some hunting occasionally occurred in the area.

Construction crews will not be permitted to hunt within the area of the Project Site and hunting will be restricted within 300 m of any ROWs. Restricting access by temporarily blocking roads and the placement of "no hunting" signs during construction to the ASR and other facilities (including the temporary access roads) will reduce accessibility for hunters.

Taking into account specific mitigation measures which will be implemented during construction and operation the residual impact on wildlife is expected to be minor, short term, and not significant.

Rare and Endangered Species

No species listed in *The Endangered Species and Ecosystems Act* (Manitoba) or SARA was observed along the route during the helicopter and land based surveys. However, two endangered bird species are known to nest in the Project Area; the Canada Warbler and the Olive-sided Flycatcher. These species were not observed in the Project Area during the terrestrial surveys, but are known to occur in the general region.

To manage potential impacts on rare and endangered species, mitigation measures also identified in **Sections 6.5.1** and **6.5.2** will be implemented. With the implementation of the identified mitigation measures overall residual effects on species at risk due to construction are expected to be negligible and not significant.

Aquatic Resources

Currently, recreational or commercial fishing for Walleye/Sauger is not permitted on Shoal Lake. Subsistence fishing for the Community, however, does include Walleye. The moratorium on recreational and commercial Walleye fishing has been in place since the early 1980s. According to the Manitoba 2016 Anglers' Guide, all Walleye/Sauger caught on Shoal Lake must be released. There may be a potential increase in recreational fishing in the area for other fish species, however, the Fisheries Branch provides general limits for various fish species for Manitoba waterbodies and also provides special regulations for individual lakes such as Shoal Lake.

There is currently no recreational or commercial fishing for Walleye/Sauger permitted on Shoal Lake. According to the Manitoba 2016 Anglers' Guide, all Walleye/Sauger must be released on Shoal Lake. There may be a potential increase in recreational fishing in the area for other fish species, however, the Fisheries Branch provides general limits for various fish species for Manitoba waterbodies and also provides special regulations for individual lakes such as Shoal Lake.

This Project does not involve any in water works and therefore construction activities related specifically to this Project will not impact aquatic resources. To reduce potential erosion and sedimentation at the Project Site, and therefore manage consequential impact on surface water, the mitigation measures identified in **Section 6.4.1.2** will be implemented.

A risk assessment conducted by DFO in 2012 found that Zebra Mussels poses a relatively low risk to the Winnipeg River sub-basin (DFO, 2013) based mainly on the pH, alkalinity, and calcium concentrations of the surface waters.

The potential for introduction was assessed as high but the conditions in Shoal Lake make establishment unlikely. The City of Winnipeg conducts regular monitoring for the presence of Zebra Mussels and have not noted Zebra mussels in Shoal Lake to date. The Department of Sustainable Development has established some protocols for proper cleaning of watercraft and will be operating boat washing and inspection stations at various locations in the province (Manitoba Conservation and Water Stewardship, 2014).

Protected Areas

In an email dated April 25, 2016, Parks and Protected Spaces Branch indicated that the Branch does not have any comments or concerns about the proposed Project as it does not affect any provincial parks, park reserves, ecological reserves, areas of special interest, or proposed protected areas.

Socio-Economic Environment

Once the construction of the ASR is complete, it will result in improved health, education and other essential services for the Community. It will also provide the Community an opportunity to explore various other economic opportunities. Members of Shoal Lake 40 have expressed an interest in exploring additional infrastructure for tourism in the future. Any future developments will occur while being cognizant of the needs of Shoal Lake 40 and adjacent communities and service centres. Any future developments will be planned in accordance with applicable development plans and regulatory policies.

With the construction of the ASR, the Community will have an opportunity to build a water treatment facility. This will improve access to drinking water and reduce the cost to members of purchasing bottled water. The ASR will also provide a reliable means of food for the Community. The Community will no longer have to rely only on the winter road and/or ferry (when they are operational) to provide the needed groceries for the Community.

Overall the residual effects of the ASR on the Community will be positive.

Medicinal Plants

The elders from Shoal Lake 40 suggested careful clearing which is limited strictly to the ROW and what is needed for the construction of the ASR. They have also expressed an interest in harvesting all the medicines along the proposed alignment of the ROW prior to construction. This is something the Community will likely explore upon completion of the environmental review process by Manitoba Sustainable Development.

The measures identified in **Section 6.5.1**, to mitigate effects on vegetation will be implemented and the implementation of mitigation measures will be monitored during construction. Taking into account the mitigation measures proposed in this assessment, the residual effects on medicinal plants for traditional uses are expected to be negligible.

Hunting and Trapping

There will likely be an increase in hunting and trapping activities within the Project Area due to improved access to areas which were previously inaccessible. As indicated previously, even though the area of the proposed ASR was not used much in the past for hunting due to peat bogs, fens, and the general low-lying areas; some hunting occasionally occurred in the area. Most Community members did not travel too far into the bush and stayed along the shoreline which is where most hunting and trapping took place.

Taking into account specific mitigation measures which will be implemented during construction and operation, the residual impact on wildlife is expected to be minor and not significant.

Commercial, Recreational, and Subsistence Fishing

The proposed ASR will provide an additional access route to Shoal Lake, however, there is currently no recreational or commercial fishing for Walleye/Sauger permitted on Shoal Lake. In the future, if the Walleye population recovers and is restored to its former health, the Community could consider a Shoal Lake fishery. This fishery would need to include sustainable harvesting limits and could provide significant value to the Community; particularly if it featured a recreational fishery supported by a local resort or cottage development.

This Project does not involve any construction activities along the shores of Shoal Lake and will therefore will not impact the fishery or fish habitat in Shoal Lake.

Heritage Resources

In June 2016, Northern Lights Heritage Services Inc. completed a Heritage Resources Impact Assessment (HRIA) of the Project Site. The archaeologist was accompanied by Elder Doug Redsky, assistant Ken Redsky and Coordinator Daryl Redsky of Shoal Lake 40. No evidence of heritage resources was noted along the ASR during this HRIA and there are no concerns with development of the road at present. Also, in discussions with Daryl and Ken Redsky, it was learned that there was a “mass” grave located on Snake Lake (area that will not be subject to direct disturbances), approximately 1.8 km north/northeast of the proposed ASR. The aerial survey identified signage placed by the City of Winnipeg on the southeast shore of Snake Lake to mark this site. Elder Redsky also noted a second marked burial site, southeast of Snake Lake. None of the sites noted will be disturbed by any project-related activities.

Cumulative Environmental Effects

The purpose of a cumulative effects assessment is to assess residual adverse Project-related effects on valued environmental components that may become significant when they interact with past, present or future projects or activities in the Project Area. In identifying relevant activities, the Project team consulted with the relevant Public registries for the Provinces of Manitoba and Ontario, and took into account any projects mentioned during the course of engagement activities by various participants and interested parties.

Taking into consideration the regional environmental context, planning and permitting requirements for developments in the area, the anticipated adverse residual environmental impact of the proposed ASR, and the long-term benefit of the proposed project to the community of Shoal Lake 40, no additional mitigation measures, beyond those identified in **Section 6** will be required.

Conclusion Summary

Considering the implementation of the proposed mitigation measures identified in **Section 6,** along with MI’s *Construction Related Environmental BMPs,* as described in **Appendix K**, and taking into consideration the design features of the proposed ASR, the adverse effects of the proposed Project are anticipated to be negligible to minor in magnitude, with major positive long-term benefits for the Community of Shoal Lake 40.

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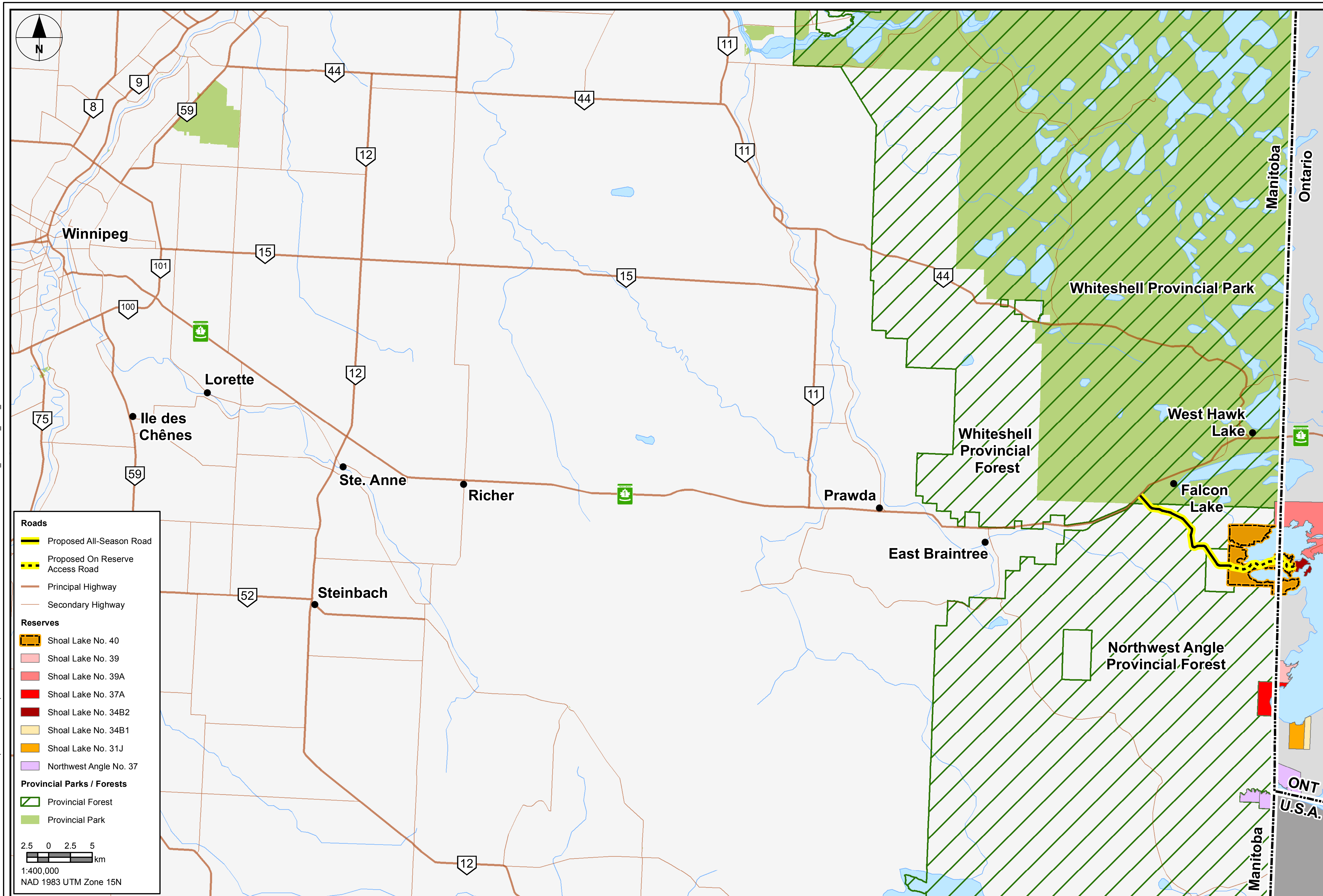
Figures


N
Winnipeg
Lorette
Ile des Chênes
Ste. Anne
Richer
Steinbach
Prawda
East Braintree
Whiteshell Provincial Park
Whiteshell Provincial Forest
West Hawk Lake
Falcon Lake
Northwest Angle Provincial Forest
Manitoba
Ontario
ONT
U.S.A.
Manitoba
9
8
59
44
12
11
15
101
100
75
52
Roads
Proposed All-Season Road
Proposed On Reserve Access Road
Principal Highway
Secondary Highway
Reserves
Shoal Lake No. 40
Shoal Lake No. 39
Shoal Lake No. 39A
Shoal Lake No. 37A
Shoal Lake No. 34B2
Shoal Lake No. 34B1
Shoal Lake No. 31J
Northwest Angle No. 37
Provincial Parks / Forests
Provincial Forest
Provincial Park
2.5 0 2.5 5
km
1:400,000
NAD 1983 UTM Zone 15N

AECOM

Figure: 01

Location Plan

Environment Act Proposal – Shoal Lake No. 40 First Nation Freedom Road Project

Shoal Lake 40 First Nation, Manitoba

ANSI B 279.4mm x 431.8mm

Approved: Checked: Designer: Project Management Initials:

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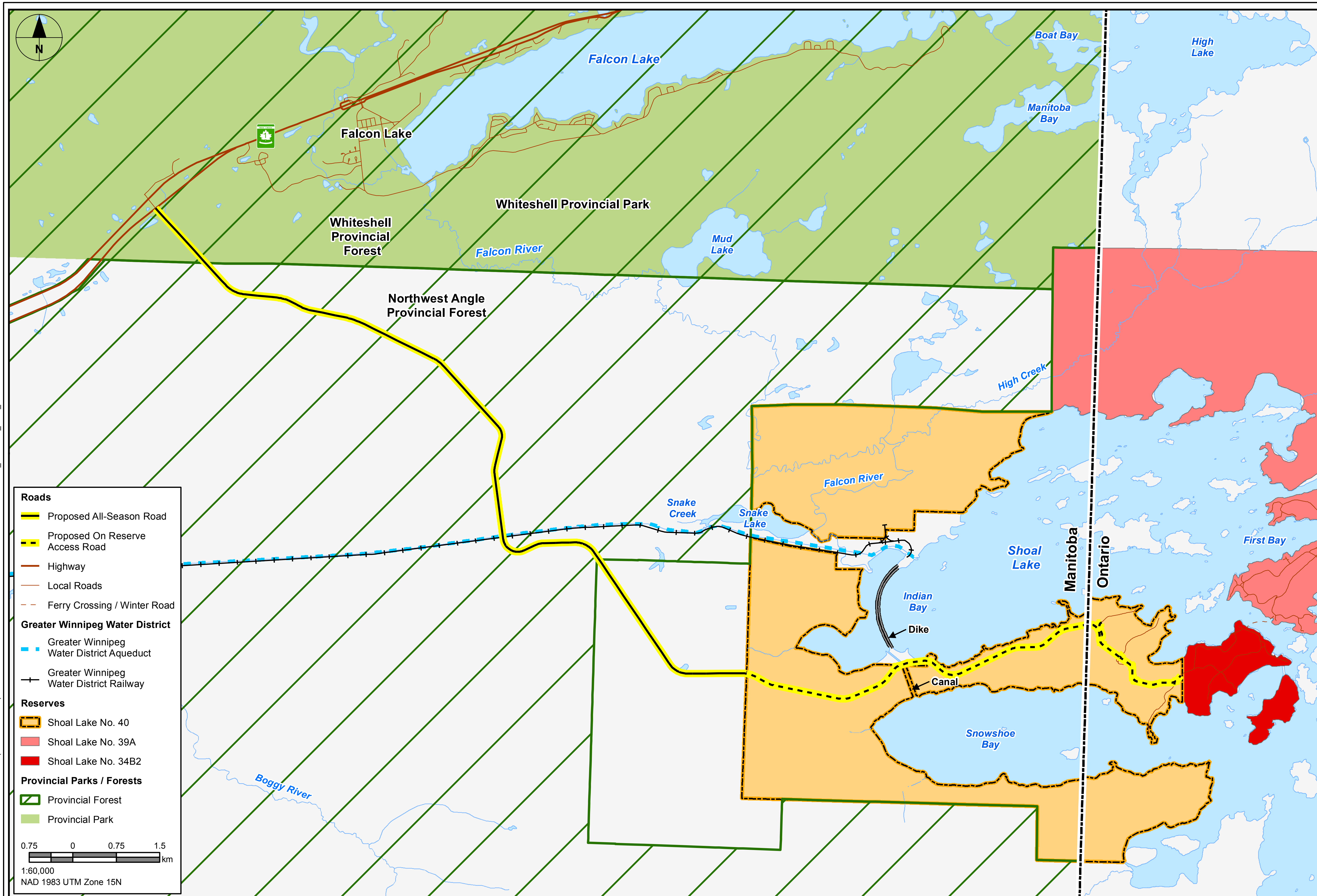

AECOM

Figure: 02

Proposed Road Alignment Plan

Environment Act Proposal – Shoal Lake No. 40 First Nation
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba

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Approved:
Checked:
Designer:
Project Management Initials:
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N

Whiteshell Provincial Park

Falcon Lake

301

Falcon Lake

Boat Bay

High Lake

Manitoba Bay

Falcon River

Mud Lake

Whiteshell Provincial Forest

Site: Q4
E: 329050
N: 5503252

Northwest Angle Provincial Forest

Site: Q3
E: 333613
N: 5500863

High Creek

Manitoba

Ontario

Falcon River

Snake Creek

Snake Lake

Shoal Lake

Indian Bay

Dike

Site: Q1
E: 340244
N: 5496681

Canal

Site: Q2
E: 337871
N: 5496248

Snowshoe Bay

Boggy River

Quarries
- Potential Quarry

Roads
- Proposed All-Season Road
- Proposed On Reserve Access Road
- Highway
- Local Roads

Greater Winnipeg Water District
- Greater Winnipeg Water District Aqueduct
- Greater Winnipeg Water District Railway

Reserves
- Shoal Lake No. 40
- Shoal Lake No. 39A
- Shoal Lake No. 34B2

Provincial Parks / Forests
- Provincial Forest
- Provincial Park

0.75 0 0.75 1.5 km

1:75,000
NAD 1983 UTM Zone 15N

AECOM

Figure: 03

Quarry Sources

Environment Act Proposal – Shoal Lake No. 40 First Nation
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba

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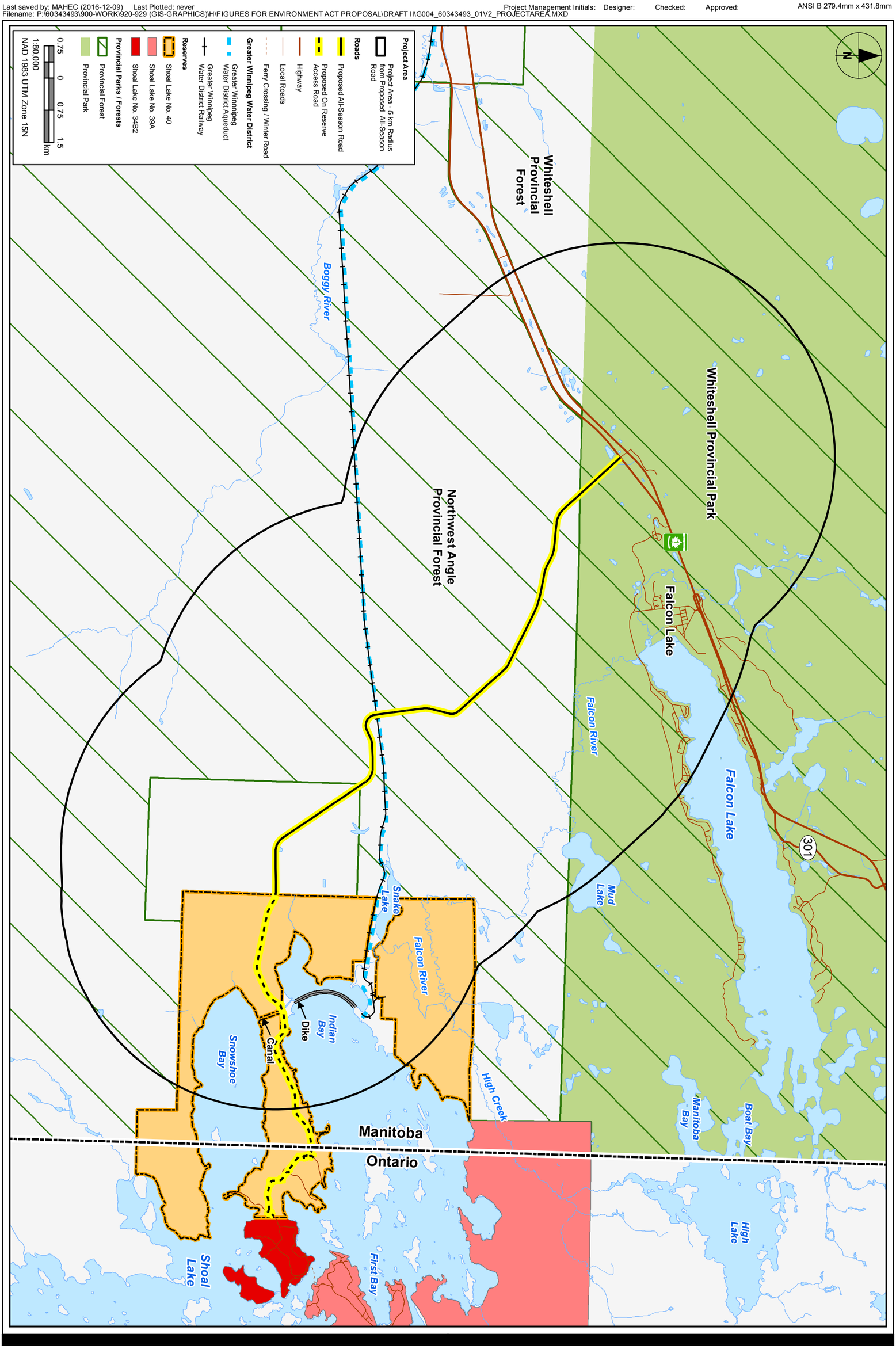

Environment Act Proposal – Shoal Lake No. 40 First Nation
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba

Project Area - 5 km Radius from Project Site

AECOM

Figure: 04

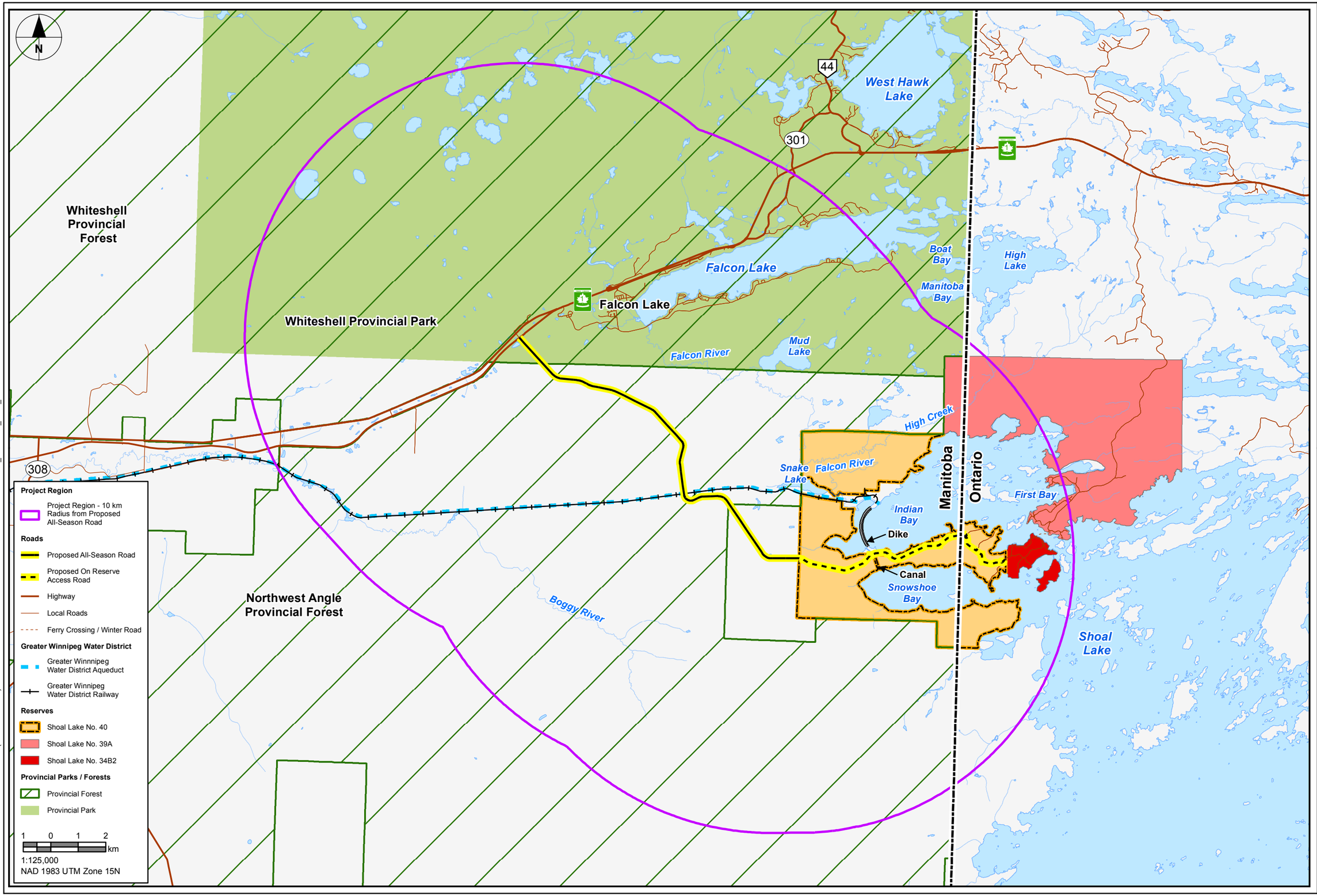

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Figure: 05

Environment Act Proposal – Shoal Lake No. 40 First Nation Project Region - 10 km Radius from Project Site
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba

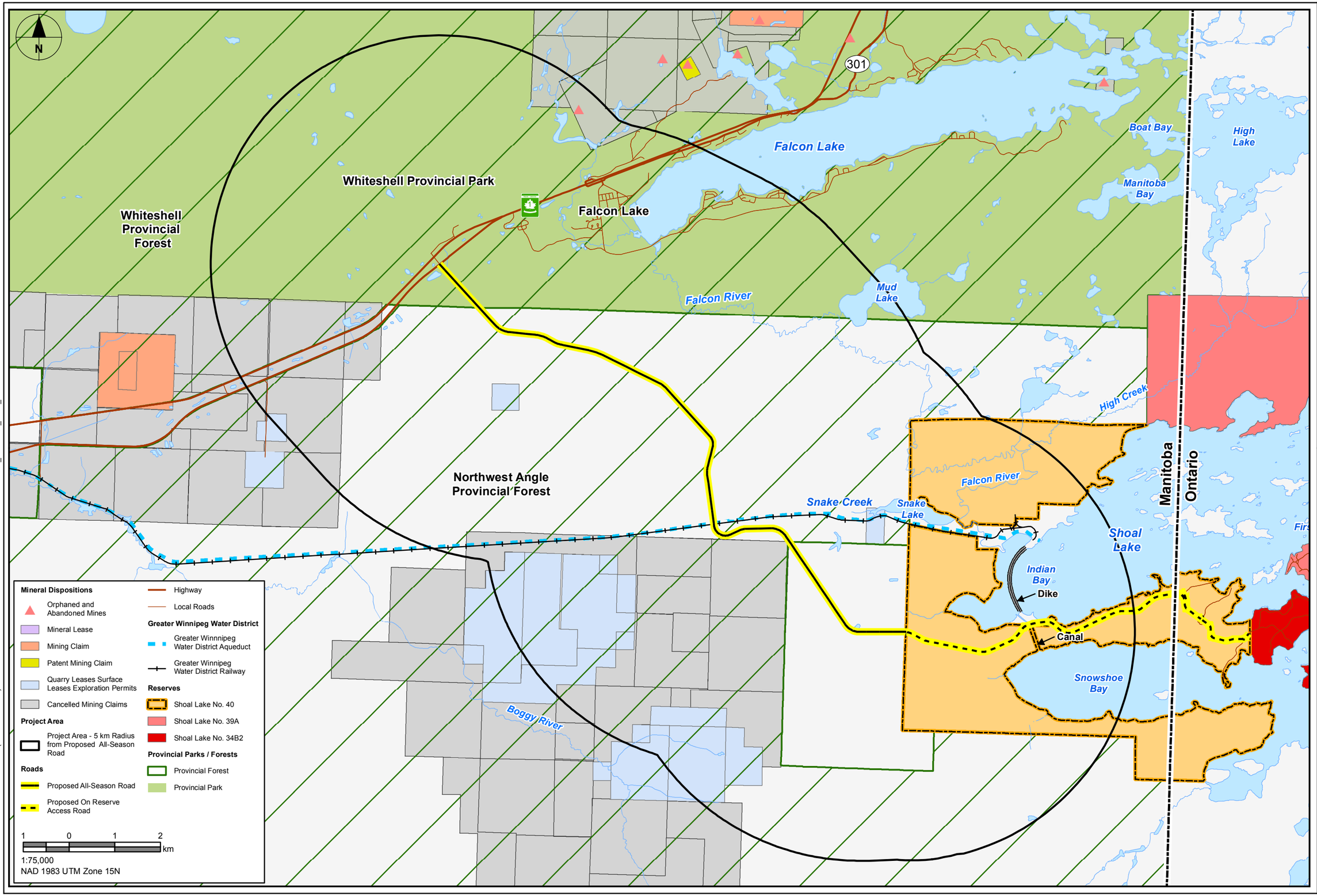

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Figure: 06

Environment Act Proposal – Shoal Lake No. 40 First Nation
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba

Mineral Dispositions Within the Project Area

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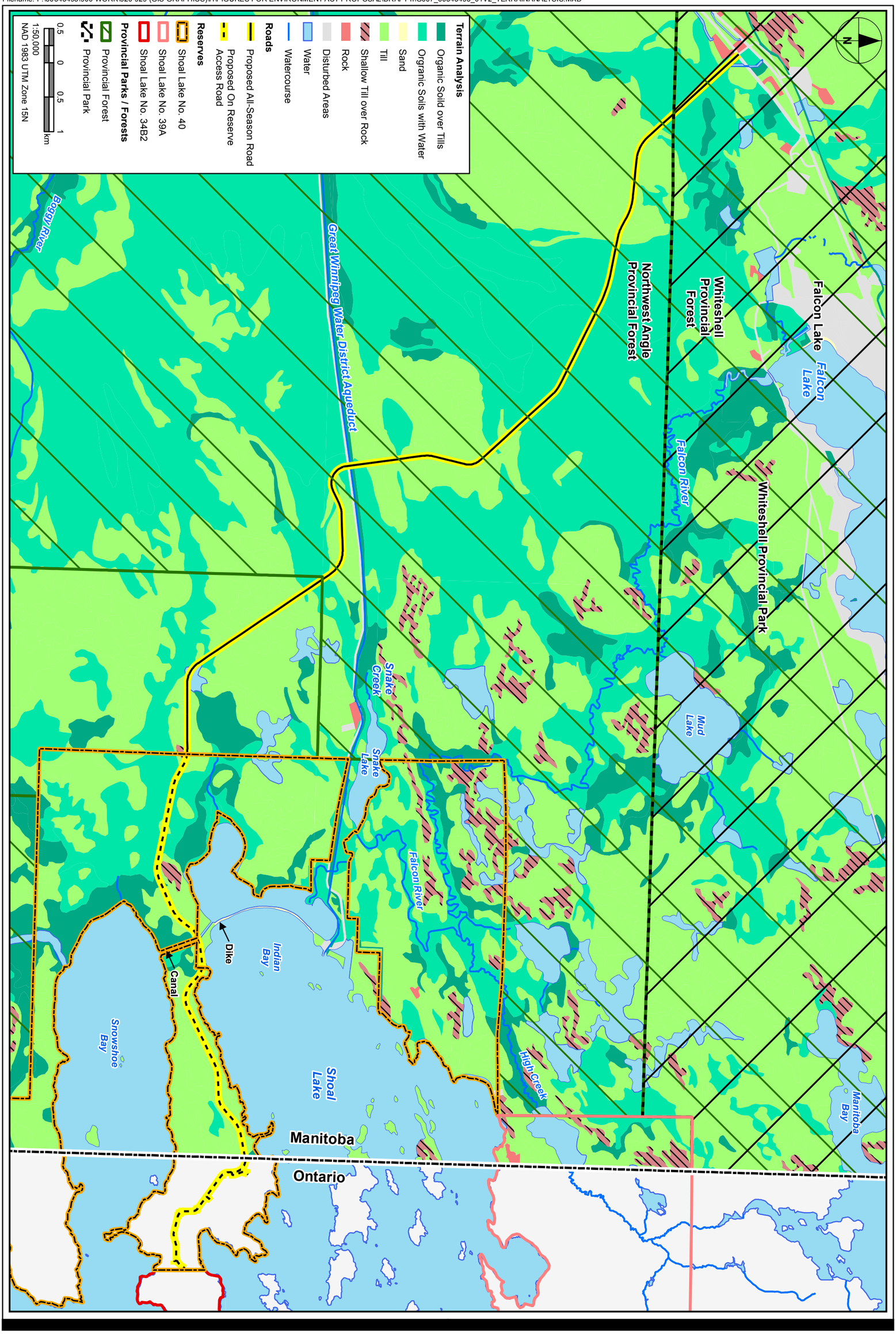

Environment Act Proposal – Shoal Lake No. 40 First Nation
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba

Terrain Analysis

AECOM

Figure: 07

ANSI B 279.4mm x 431.8mm

Project Management Initials: Designer: Checked: Approved:

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N

Falcon Lake

Boat Bay

Manitoba Bay

High Lake

Falcon Lake

Whiteshell Provincial Park

Well Names:
19827, 19828, 19829
19830, 19831, 19832
19833, 19834, 19835
19838, 31089, 19824

Whiteshell Provincial Forest

Falcon River

Mud Lake

Northwest Angle Provincial Forest

High Creek

Well Name:
60696

Well Name:
73643

Snake Creek

Snake Lake

Falcon River

Manitoba

Ontario

First Bay

Shoal Lake

Indian Bay

Dike

Canal

Snowshoe Bay

Boggy River

Water Wells

- Registered Water Well
- Water Well Selections - 1.6 km Radius from Proposed All-Season Road and on Reserve Access Road

Roads

- Proposed All-Season Road
- Proposed On Reserve Access Road
- Highway
- Local Roads
- Ferry Crossing / Winter Road

Greater Winnipeg Water District

- Greater Winnipeg Water District Aqueduct
- Greater Winnipeg Water District Railway

Reserves

- Shoal Lake No. 40
- Shoal Lake No. 39A
- Shoal Lake No. 34B2

Provincial Parks / Forests

- Provincial Forest
- Provincial Park

0.75 0 0.75 1.5 km

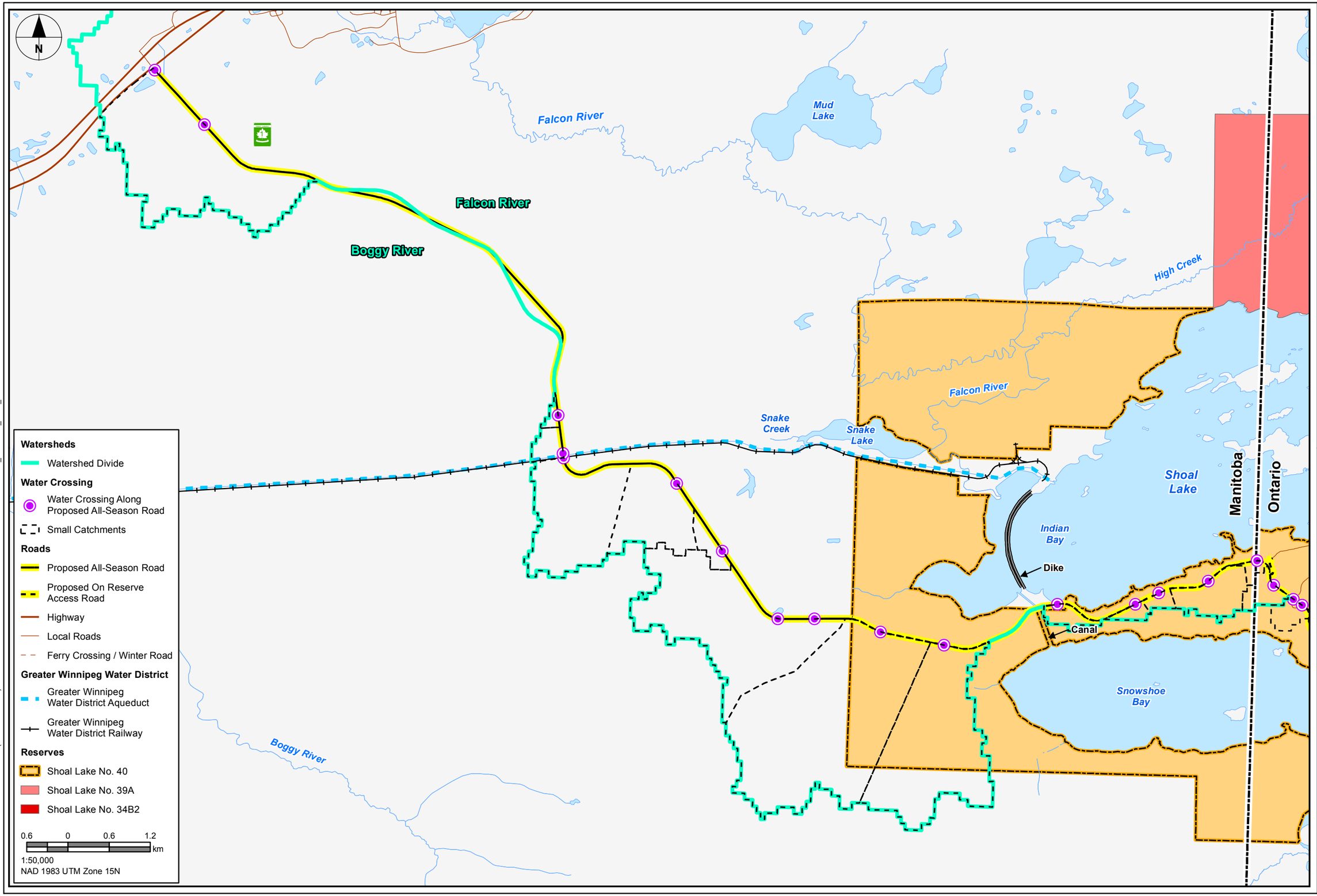
1:60,000
NAD 1983 UTM Zone 15N

AECOM

Figure: 08

Registered Groundwater Wells Within **1.6km of the Project Site**

Environment Act Proposal – Shoal Lake No. 40 First Nation
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba



AECOM

Figure: 09

Watersheds - Winnipeg River Basin

Environment Act Proposal – Shoal Lake No. 40 First Nation
Freedom Road Project
Shoal Lake 40 First Nation, Manitoba