



# PHYSIOGRAPHY, TERRAIN, AND SOILS AND VEGETATION PLAIN LANGUAGE SUMMARY

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The various study areas and activities associated with the Community Access Road might affect the land’s physical features (physiography) like terrain, soils and vegetation. Our studies examined both the direct and indirect effects of the Community Access Road. This is important because changes to the land and soil not only affect plant growth and vegetation, but also wildlife habitats over time. Understanding these impacts helps us evaluate other important areas like water, fish, plants and animals.

## Existing Conditions

The Regional Study Area is located on the Canadian Shield, divided into two types of landscapes: the Severn Upland and the Hudson Bay Lowland. The upland area is characterized by low, rolling hills with lakes and rocks from glaciers, and is made up of coniferous forests, deciduous forests, mixed forests and young, sparsely treed areas. The lowland area is marked by wetlands and is flat, and swampy with bogs and shallow lakes. A riparian habitat is a transition between water and land, and can occur alongside rivers, lakes and streams. Riparian habitats can include both wetland and upland vegetation. Most of the Local Study Area is in the Severn Upland division; the northeast part is in the Hudson Bay Lowland division.

The bedrock in the area has two main types of rocks. The older rocks are volcanic and ancient (2.5 to 3.2 billion years old). The younger rocks are sedimentary, like shale and limestone, and are much younger (444 to 488 million years old).



What is...

**Local Study Area:** the area where direct effects of the road are likely to take place



What is...

**Regional Study Area:** the area where indirect effects are likely to occur



### The terrain varies from flat to very steep and is made up of:

- 62% peatlands or muskeg (wetlands with thick, decayed plant material called peat);
- 27% moraine (made of till or debris which is a mix of clay, sand, gravel and boulders that were left behind by melting glaciers);
- 11 eskers (low hills made of sand and gravel left by glaciers);
- 3.5% clays and silts from ancient lakes;
- 4% open water;
- 1.5% sands and gravels from glaciers;
- 1% river deposits; and
- Less than 1% each of landslides, lake deposits, bedrock and disturbed areas.



The soils in the study area are mostly organic, covering over 65% of the land. The mineral soils range from coarse sands to very fine, heavy clay.

Traditional use plants include plants that have been historically used by Indigenous communities for food, materials, medicinal or spiritual purposes, and are still of particular interest to Indigenous communities within the region. These species are found throughout the region, but most of the plant harvesting occurs close to access routes like large waterbodies or watercourses. Three plant species that are listed as Species at Risk and / or Species of Conservation Concern may be found within the Local Study Area. They include Black Ash, Pitcher's Thistle and Northern Marsh Violet. Of these, only Black Ash was confirmed during field surveys, and was found in the southern limits of the Local Study Area.

## Potential Effects and Mitigations

The Community Access Road may affect soil and vegetation in several ways during both the construction and long-term use (i.e. operations and maintenance) of the Community Access Road.

The following are potential effects from these activities:

Clearing lands to carry out construction activities can cause changes to the terrain, esker landforms and slope stability. It can also reduce upland, wetland and riparian ecosystems, including some in designated areas like Provincial Parks. It may also remove 5% of suitable habitat for Black Ash and 3% for Northern Marsh Violet.

Land clearing can also lead to vegetation biodiversity loss, increased soil erosion, spread of invasive species, changes in water temperature and changes to the ecosystem.

Building roads and other structures can change how water flows and where it goes, which can affect the health of plants and soil. Soil compaction is another important concern. Compacted soils have fewer spaces for water to move through, leading to increased runoff and reduced water infiltration (that can cause erosion). Compacted soils can also make it harder for plant roots to grow and access nutrients and water.

Building activities can introduce invasive plant species, which can change plant communities and wildlife habitats, especially along road edges.

Contamination caused by spills, leaks, dust and vehicle emissions related to the construction and operation of a road can affect soil and harm plant and animal life.

Building roads can alter water flow and groundwater levels, impacting soil and plant health, especially in wetlands and peatlands.

Mitigation measures will be implemented to minimize soil and vegetation loss, protect sensitive ecosystems and restore affected areas. Efforts to reduce these effects include limiting the footprint of the construction area and related sites, where possible, and minimizing vegetation clearing and soil disturbance. A Soil Management Plan will be developed to avoid placing soil stockpiles near waterbodies or drainage features, and to manage soils in accordance with federal and provincial guidelines.

To protect native plants from harm, including the spread of invasive species, several preventative measures will be put in place. These include cleaning equipment, using native seeds, and minimizing soil disturbance during construction. Once the Community Access Road is operational, ongoing weed control with limited herbicide use and regular monitoring will be conducted. Plans will be developed and adjusted if needed, following applicable guidelines, to protect the environment and monitor air quality, dust and emissions.

## Residual Effects

Once mitigation measures are put into place, there may be some residual effects (leftover effects after mitigations are applied) including:

Minor changes to the terrain and soils (such as changes to eskers, the amount of soil and the quality of soil from spills or leaks).

An estimated 45% of the eskers in the construction area will be permanently disturbed.

Minor changes to the amount and location of soil.

Changes to vegetation from direct vegetation loss, changes in hydrology and groundwater, and from the introduction and spread of invasive plant species.

Changes to vegetation from air contaminants and dust emissions.

## Cumulative Effects

The Community Access Road will consider the combined environmental effects with other activities occurring in the area, such as the Northern Road Link, the Anaconda and Painter Lake Forestry Access Road Upgrades, and the Rapid Lynx Broadband projects.

The combined projects in the area are anticipated to result in:

Direct vegetation loss	Changes to groundwater	Fragmentation and edge effects
Dust emissions	Esker disruption	Changes to terrain quality
Changes to terrain quantity and distribution	Changes to soil quantity and distribution	

Overall, while these effects are anticipated, with effective mitigation measures, the negative impacts will be low and not significant.

The Community Access Road will disturb 5 out of 16 eskers in the area. If other projects (Northern Road Link and Anaconda and Painter Lake Forestry Access Road Upgrades) use measures to limit sand and gravel extraction from eskers, the impact can be reduced. However, if eskers are used by other projects for road materials, there could still be changes. Overall, the Community Access Road will affect 31% of the eskers, so the combined impact is considered medium.

Monitoring programs will be carried out to make sure that erosion and sediment control measures have been successful, and stability of each waterbody crossing is maintained. These programs are carried during and after construction.

## Want to learn more?

If you are interested in learning more about this topic, please review the technical report available in the appendix of the Draft Environmental Assessment / Impact Statement.

### Contact Info

You are welcome to contact the Marten Falls First Nation Community Access Road Project Team at any time with questions or comments.

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