

Appendix A:

*Initial Environmental Evaluation for New Snowmobile Trails  
and Associated Works in Mount Carleton Provincial Park.*

ARC Geobac Group Inc. and Kikahan Skitomik

Annexe A:

*Évaluation environnementale initiale pour de nouveaux sentiers de motoneige*

ARC Geobac Group Inc. and Kikahan Skitomik



INITIAL ENVIRONMENTAL  
EVALUATION FOR NEW  
SNOWMOBILE TRAILS and  
ASSOCIATED WORKS IN  
MOUNT CARLETON  
PROVINCIAL PARK

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*for New Brunswick Department of Tourism Heritage and  
Culture*

*by ARC Geobac Group inc. and Kikahan Skitomik*

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## ***MOUNT CARLETON PROVINCIAL PARK***

### ***INITIAL ENVIRONMENTAL EVALUATION – SNOWMOBILE TRAILS AND ASSOCIATED WORKS***

#### **EXECUTIVE SUMMARY**

Infrastructure work had been proposed for the Mount Carleton Provincial Park for 2015. This work included the replacement of two existing but dilapidated bridges, the re-building of a collapsed bridge, cutting of a new trail for snowmobiles, 900 m in length and restoration of the former old access road on Mount Carleton for use as a snowmobile trail. In addition, a new building to house two grooming machines along with a fuelling station would be built in the Park administration compound. Work had already been initiated for one of proposed these activities, namely partial clearing of the new 900 m snowmobile trail. This work was halted and Tourism Heritage and Culture commissioned an environmental review to identify potential impacts and identify concerns in relation to the proposed work. Given the individual nature of each activity, their separate locations and the relative small size of each activity, an initial environmental evaluation (IEE) pathway was chosen. This methodology would identify issues for each activity with potential to impact adversely on the environment.

The study used available information and data, together with a field assessment at each work location. Due to the presence of known archeological sites around the lake system, a separate archeological study was completed at two of the bridge sites by Archeological Services.

The 900 m winter access trail would permit snowmobilers to directly access the Park after they cross Route 385 rather than having to ride along the edge of Route 385 some distance to the Park entrance.

Currently two dilapidated bridges exists to provide foot and light vehicle traffic across the narrow channel that connects Bathurst Lake and Camp Lake and across

the exit from Nepisiguit lakes. These structures are in poor shape and cannot accommodate heavy vehicular traffic such as small trucks or cars. In the case of the Bathurst bridge, passage across this narrow channel is accomplished by using the ford located immediate to the bridge. It is intended to replace the existing bridges with 'bailey bridges'. These will be supported by abutments on either shore, and will have no in-stream piers.

During winter months the old access road on Mount Carleton, although not sanctioned by the Park, is used by snowmobilers as an access route. Less frequently, persons on snowshoes and skiers also use this trail. The proposed work involves clearing encroaching vegetation from along the existing road to a width of approximately 4 m.

Due to its central location, it is proposed to house two of the trail grooming machines in a new building to be located in the Park administration compound. This will be a large drive-through building. It is proposed that an area dedicated to fuel dispensing be built associated with the building.

The expected low impact of the proposed maintenance activities, as well as the small amount of disturbance to undeveloped terrain related to the new section of snowmobile trail will leave the total footprint of human development within the Park essentially unchanged (less than 1 percent of the total land area of the Park). It is believed that the proposed projects will have low impacts to the Park environment. Some potential impacts however to the wilderness experience could be realized by existing winter users of the old road on Mount Carleton. Such conflicts may be resolved with careful planning.

Regardless of the various components addressed, an Environmental Management Plan should be a requirement for all aspects of the proposed work and related activities. This will ensure minimal or no damage will take place due to work activities.

## *FINDINGS*

### *Atmospheric Environment*

GHG will be generated during construction activities over the summer of 2016. These will be small and localised to the area of three bridge crossings; the clearing of the new trail section; and the construction of the groomer building and gas storage area. The potential increase in snowmobile traffic and related grooming, over the long, would not be expected to contribute more than a few tonnes of CO<sub>2</sub>e in the form of greenhouse gases.

Airborne contaminants due to bridge and compound construction will likely remain in the areas of these activities and will likely settle on the ground and water surfaces near to the places where they are generated. For the snowmobiles traffic, air borne contaminants will likely settle out close to the borders of the snowmobile trails. Particulate matter will attach to soil particles, leaves and organic matter in general and remain in the soil or also be used by vegetation and microflora.

### *Acoustic Environment*

The impact of noise around the construction zones will be limited to the immediate area of the bridge crossings; the access roads for the truck traffic; the Park compound and the new trail section and former access road. Construction in the Park administration compound of the groomer building and the gas bar will result in noise being limited to the Park compound itself. An increase in noise along snowmobile trails will also result from potential increase in usage.

### *Surface Water and Aquatic Environment*

Removal of the dilapidated bridge piers and the old bridges and replacement with Bailey type structures, which have no in-stream structures, would enhance the water flow and reduce potential water contamination. Construction of these two bridges and the bridge at the former dam site on Little Tobique River will also increase vehicle traffic within the Park.



### *Sensitive Species and Areas of Special Interest*

With respect to rare plant species, the best means to mitigate impacts to vulnerable plant species within Park is to pinpoint the exact location of the listed species and to identify exclusion zones so that planned activities do not occur at these locations or can be re-located to avoid these areas. Construction operations around the bridge crossings, Park administration compound and trails are not likely to result in impacts to animal species, due to the constant activities in these areas and wildlife avoidance of these areas.

Surveys of the proposed work areas should be conducted to identify if any sensitive, rare or endangered species are present.

Several Managed and Protected Natural Areas are present associated with the Park. The completion of the proposed work activities is expected to have little if any impact on these areas due to their distance from the work activities.

### *Wildlife and Wildlife Habitat*

The proposed projects are expected to have no significant impact on wildlife due to the constant activities during construction and wildlife avoidance of the work sites.

### *Traditional Purposes by First Nations*

Knowledge of the use of the Park by First Nations for meetings, ceremonial and teaching purposes, together with the gathering of medicines and knowledge of its spiritual place in First Nations culture, has not been fully explored or documented. It was evident from the work of the IEE that too little is known regarding Indigenous Knowledge for the Park and that an Indigenous Knowledge study would be advantageous.

Even though the work is taking place in developed or presently used areas, except for the new trail, care must be exercised to the potential presence of heritage resources. Pre work surveys and investigations are required for all areas to be impacted.

## *Groundwater*

Groundwater in the Park is generally not considered at risk, the exception being the well in the Park Administration compound. This well is in regular use and could easily be influenced by any losses or spillages of fuel within the compound.

## *Aquatic Environment*

The effects of work activities on river flow into the lakes, flows within the lake systems and discharge from them are not likely to be of any significance. Any work that is conducted will be in accordance with the WAWA permit. Also, it is important to note the positive aspect of the bridge work, as sediment and silt generation will be reduced by removal of vehicles traffic across the Bathurst lake bed and in river supports will be removed.

Fish populations could be directly influenced by the construction work in the area of bridge construction, through contaminant release, habitat alteration, fishing and obstructions to fish passage.

The re-build and the replacement of the bridges will require work to take place 'in-stream'. Any work within and on the river or lakebeds requires permits from NBELG. As with wetlands, any work within an active ecological unit must be conducted with care and attention to the potential for damage. Environmental management, response protection plans must be part of any work conducted.

## *Vegetation and Wetlands*

Wetlands are present near-by or adjacent to two the bridge crossings. Special care and attention will be required during construction concerning contaminants, activities within wetlands borders, vehicle and equipment access etc. An environmental management plan is required for this work to minimize and prevent impacts to the wetlands.

## *Economy and Employment*

Economic impacts will positive but small. Construction and service crews will be present in the Park and housed at nearby communities for the construction

period. Longer term economic benefits will accrue to nearby communities with any increase in winter Park usage. Employment will likely be on a contract basis and longer term employment cannot be predicted at this time.

### *Infrastructure*

Much of the proposed work involves infrastructure. The new bridge crossings will make travel within the Park safer and easier concerning access, fire response, evacuation and emergency response. The new trail within the Park will make entry to existing trail safer for snowmobilers. The new building and re-fuelling station do present concerns regarding spills and containment with regards to the compound well. Operating procedures and training of staff together with a monitoring and inventory control would reduce risks.

### *Wilderness Experience*

The new 900 m snowmobile trail will leave the total footprint of human development within the Park essentially unchanged (less than 1 percent of the total land area of the Park). Winter use of the old access road on Mount Carleton for snowmobiling will not create additional human footprint as the road already exists. It will formalize the route which has been used by snowmobiles in the past. Some concerns and potential conflicts are evident due to the occasional use of this road by persons on snowshoes or skis. Park management could look at the use of the walking trail for snowshoeing, and if sufficient width of road trail is available, accommodation of both skiers and snowmobilers. The proposed projects will have low impacts to the wilderness experience expected by visitors to the Park.

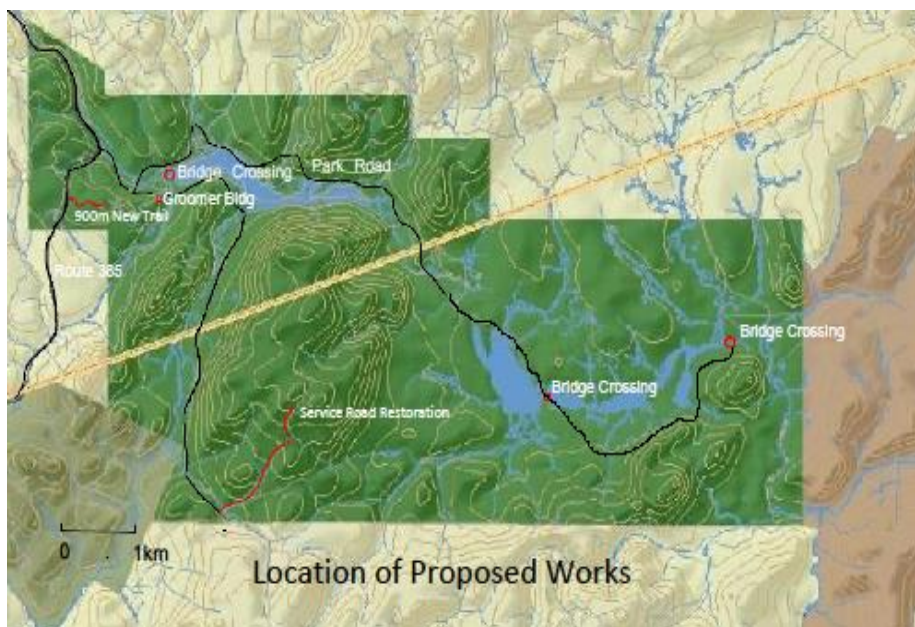
### *Public Safety*

It was evident from the field assessment that there are positive aspects to the bridge construction and creation of an accessible emergency evacuation route on Mount Carleton. Maintenance aspects of Park use are of concern specifically with respect to trail and road maintenance due to deadfalls and erosion. Standardized Operating Procedures are required to address this and other issues such as

environmental management and monitoring procedures for the fuel storage and dispensing operation both for the Park and the snowmobile building.

## 1.0 INTRODUCTION

Significant infrastructure work had been proposed for the Mount Carleton Provincial Park for 2015/16. This work includes the replacement of two existing but dilapidated bridges, the re-building of a collapsed bridge, the cutting of a new trail for snowmobiles, 900 m in length and the designation (and possible restoration) of the former fire road on Mount Carleton which can be used as a snowmobile trail during winter months. Together with trail development, the work includes building a structure to house two grooming machines in the Park compound with an associated refueling facility.



Since the work was announced, issues have been raised by concerned groups regarding the impact of these works on the wilderness aspects of the Park, the impact on the environment and the increase in motorized traffic in the Park. To address these issues and recognizing the short timeframe available to commence the work in 2016, a preliminary initial environmental evaluation was initiated.

This preliminary environmental evaluation utilizes available information and data only and does not carry out field investigations or research. The Park was visited and the locations of the proposed works were walked. An interview with the Park manager was also conducted to obtain information and data regarding the various locations and to clarify the proposed work.

## **2.0 PROPOSED WORK**

The proposed works at Mount Carleton Provincial Park involve three separate activities, trail construction, bridge replacement and rebuild; and construction of a building in the Park administration compound. All activities involve various degrees of construction. These works are detailed as:

### **2.1 New 900 m Snowmobile Trail**

Currently, snowmobiles arriving at the western side of the Park, do so directly from the provincial snowmobile trail system. The snowmobiles are then forced to then travel north east along the shoulder of Route 385 for a distance of approximately 1 km to reach the main entrance of the Park, which is the only access point to the Park. This current situation puts snowmobilers, truck drivers and motorists at risk of collision, due to the limited visibility resulting from the sharp turns and steep grade on this section of Route 385 and the closeness of the snowmobiles to the passing vehicles and trucks.

The proposed project involves creating a separate winter access trail to permit snowmobilers to directly access the Park after they cross Route 385. Specifically, it is proposed that a 900 m trail be constructed directly adjacent to the existing intersection of the provincial snowmobile trail at Route 385. This trail, which has been partially cut and partially cleared, will provide direct access to the former cross country ski trails in the Park only during winter months, as the remainder of the year the trail will be gated.



**Section of the 900 m new trail.**

**This section has been cut but not cleared. All work was stopped in the late fall of**

It is proposed that a 7 m wide corridor be completed through the forest to create this winter trail. The tree stems will be removed from trail, however, the branches and tree tops (slash) will be left on site to decompose naturally.



**Cut section of new 900 m trail connecting to Route 385.**

The route of this proposed winter trail will not be a straight line, but will vary to some degree to take advantage of terrain features and to avoid healthy, mature trees where possible. The trail is intended for use only by snowmobiles during winter months, and will not be open for use by any other wheeled vehicles during the snow-free season.

## **2.2 Replacement of Two Existing Bridges**

Currently a bridge exists to provide foot and light vehicle traffic across the narrow channel that connects Bathurst Lake and Camp Lake. The existing bridge is in poor

shape and cannot accommodate heavy vehicular traffic such as small trucks or cars. Consequently, passage across this narrow channel is accomplished by using the ford located immediate to the bridge. It is intended to replace the existing bridge with a bailey bridge. The proposed replacement bridge will be supported by engineered abutments on either shore, and will have no in-stream piers.



**Bridge at Bathurst Lake supported by two steel supports resting on river bed.**

Similarly, the dilapidated bridge at the exit of Nepisiguit Lakes will also be replaced by the same type of bridge. Diagrams of the proposed bailey bridge construction are shown later.



**Dilapidated Bridge at Nepisiguit Lakes supported by steel structure on river bed.**



### 2.3 New Bridge Crossing

A third bridge will be constructed at the exit of the Little Tobique River from Big Nictau Lake. A bailey bridge structure will also be used at this location. The proposed site is at the former dam site on the Little Tobique River.

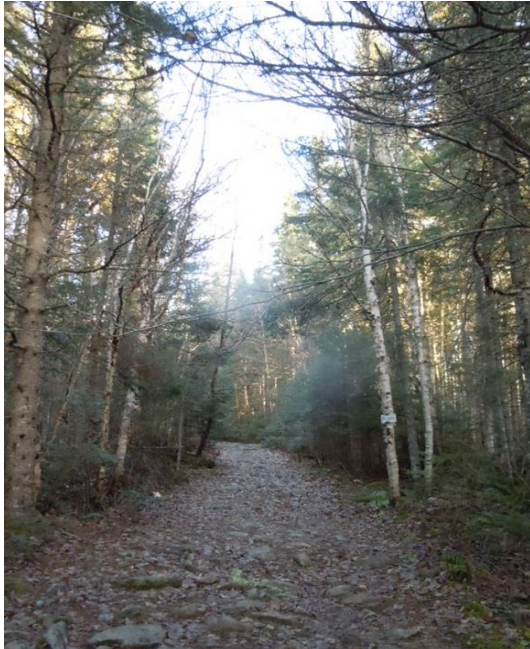
### 2.4 Trail/ Former Service Road Restoration on Mount Carleton

In addition to the designated hiking trail on Mount Carleton, there is also a service road/trail that is occasionally used by Park personnel. This trail originally was a forest logging road, and also provided access to a fire tower at the summit. Currently, mainly through summer months, the service road acts as an access for Park personnel to evacuate injured hikers off the mountain, to provide emergency access for fire suppression; and is used as a 'beginners' hiking trail' to the top of the mountain.



**Former access road to Mount Carleton showing loss of surface material and exposure of bed materials.**

In summer months, the service road is also utilized by hikers to descend the mountain. During winter months the road, although not sanctioned by the Park, is used by snowmobilers as an access route. Less frequently, hikers also use this trail. The proposed work involves clearing encroaching vegetation from along the existing road to a width of approximately 4 m. As the canopy is open for the majority of the trail, no large trees need be cut.



**Section of former access road to Mount Carleton showing width of road and lack of canopy.**

Also, as gully erosion is occurring on some steeper sections of the trail, it is proposed to conduct repairs through diverting surface water flow off the trail and filling the eroded sections of the road with a suitable material (gravel or crushed rock). The restoration of this road is intended to accomplish several goals: to formalize a trail for snowmobiles; to facilitate and improve response times to reach emergency situations; to provide faster, more comfortable conditions to evacuate injured hikers; to allow easier access to Mount Carleton for people not able to ascend or descend the narrow walking trail.

## **2.5 Construction of Groomer Building and Refuelling Station**

At the present time the all the groomers that groom the New Brunswick Trail system in the north-west corner of the Province are housed outside of the Park. Due to its central location, it is proposed to house two of these groomers in a new building located in the Park compound.



**Location in Park  
Administration  
Compound where a new  
groomer building is  
proposed to be built.**

This will be a large drive-through building similar in size to the existing vehicle maintenance building already present in the compound. It is proposed that an area dedicated to fuel storage and dispensing be built attached to the side of this building. This facility will service to re-fuel snowmobiles, if required, as they pass through the Park.

### **3.0 INITIAL ENVIRONMENTAL EVALUATION (IEE)**

Work had already been initiated for one of proposed these activities, namely partial clearing of the new 900 m snowmobile trail. Recognizing and accepting public concerns about any work in the Park without a determination of possible environmental effects related to these proposed activities, Tourism Heritage and Culture commissioned an environmental review to assess potential impacts and identify concerns in relation to the proposed work. Given the individual nature of each activity, their separate locations and the relative small size of each activity, an initial environmental evaluation pathway was chosen. This methodology would identify issues for each activity with potential to impact adversely on the environment. The IEE may lead to a more definitive assessment should concerns

be identified that would compromise the environment of the Park to an unacceptable degree.

The study will use available information and data, together with a field assessment at each location. Due to the presence of known archeological sites around the lake system, a separate archeological study was completed at two of the bridge sites.

#### **4.0 MITIGATION**

Where possible environmental effects could be realized, mitigative measures may be proposed. These would be intended to minimize risk to the environment and to provide guidance for the proposed activities.

#### **5.0 SCOPE OF WORK**

The scope includes an evaluation of each activity in relation to the type of work proposed, the location of each activity and the degree of environmental disturbance or effect anticipated.

#### **6.0 VALUED COMPONENTS (VC'S) AND KEY ISSUES OF CONCERN**

A Valued Component is term used to describe parts of the environment that hold special concern for the public. For instance, items that have scientific, social, cultural, archeological, economic and historical value are usually considered as valued components of any environmental evaluation.

The Valued Components (VC) and Key Issues of Concern for the environmental evaluation were selected based on several factors. They include issues and concerns expressed and voiced by First Nations, Conservation Groups, and interested parties. Also, reviews of newspaper articles and media interviews, regarding the proposed works was conducted. These Valued Components were further defined through a field visit to the Park.

## **7.0 ATMOSPHERIC ENVIRONMENT**

The atmosphere is a valued component (VC) because air quality can impact on the health of all users of the Park and the wildlife and plants that reside there.

The study considers the potential environmental interactions of the proposed works and the atmosphere of the Park. Contaminants in the air could also be transported to the surface waters and terrestrial environments. These air contaminants are in the form of gases and particles that can be deposited on land and water. The potential environmental effects are associated with air contaminants and GHGs from: snowmobile use of the new trail sections; heavy equipment in the construction of the bridges; equipment used for the construction of the groomer building and the operation of a gas dispensing facility.

### **7.1 Key Issues**

The air contaminants considered are based on typical emissions from motorized equipment and vehicles. These contaminants include dust (in the form of particulate matter); sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO); volatile organic compounds (VOCs).

In considering the potential changes to the atmospheric environment it is necessary to identify existing atmospheric conditions with regards to the Park and the proposed works. Snowmobiles presently use designated Park trails including the undesignated old service road on Mount Carleton. Park staff presently use

maintenance vehicles and heavy equipment throughout the Park. They also dispense gasoline and diesel oil from the existing tankage in the compound. Snowmobile groomers presently pass through the Park to groom existing trails and motorized campers and vehicles from visitors travel throughout the Park.

## **7.2 Discussion**

### **7.2.1 Greenhouse Gas Emissions (GHG Emissions)**

While it is recognised that the construction equipment necessary to build or replace the bridges will generate GHG, the quantity generated during the summer construction is expected to be a small and a temporary increase when compared to those GHGs already generated.

Clearing of the new trail and bushing of the old service road by hand, using hand machines, will generate some but considered marginal amounts of GHGs. Additional, but small quantities of GHGs will be generated for the restoration of the service road.

The increase in snowmobile traffic, over that already existing, will increase the generation of GHGs. The exact amount is not known as no figures are available for expected increase in snowmobile passing through the Park. The presence of the re-fuelling station may also cause localized increases in GHGs associated with the Park compound due to the stop and start required for each re-fuelling visit and vapours escaping during re-fuelling. Again without knowledge of the number of re-fuelling stops, GHG contribution is hard to evaluate.

### **7.2.2 Emission of GHGs from Existing Use**

The Park already creates GHG in the form of Park vehicles and equipment; user vehicles and use (i.e. camp fires); and snowmobile traffic and traffic from ice fishers (winter only). Estimates in relation to the amounts of existing GHG's are not available. It is estimated by Environment Canada that New Brunswick will emit approximately 17.0 million tonnes (Mount) of GHG for 2015. The contribution by snowmobiles and construction related to the proposed work for the construction year 2016 is estimated to be less than 3.0 tonnes of CO<sub>2</sub>e. From

year to year operation of snowmobiles (winter only, using a 50% increase in traffic) is likely less than 1.0 tonne or less of CO<sub>2</sub>e will be generated.

### **7.2.3 Airborne Contaminants**

Given the above, the contribution of particulate matter, sulfur dioxide, nitrogen oxides, ammonia, carbon monoxide and volatile hydrocarbons derived from engines operating in the Park, namely snowmobile use of the Park and machinery and equipment during the period of bridge and compound construction, is expected to be equally as low.

The overall areas for potential airborne contaminants impact relating to the construction of the bridges, will be limited to the areas immediately around the bridges, while that of construction within the compound will also remain immediate to that area. Minimal impacts will also be realized due to truck traffic for the construction along the in-Park access roads.

Areas relating to airborne contaminants due to snowmobiling will be present along the new 900 m trail and the opened trail (restored road) on Mount Carleton and to a degree also within the Park administration compound for re-fuelling.

## **7.4 Discussion**

GHG will only be generated during construction activities over the summer of 2016. These will be small and localised to the area of three bridge crossings, the clearing of the new trail section, and the construction of the groomer building and gas storage area. Additional GHG will be generated over the 4 month winter use period by snowmobiles and groomers over that already being generated.

Overall contributions of GHG from the proposed works above existing emissions will be minor, given that GHGs are already generated in the Park in summer by staff vehicles and maintenance equipment, together with Park visitor vehicles. In winter snowmobiles already create GHGs. The increase in snowmobile traffic would not be expected to contribute more than 1 tonne of CO<sub>2</sub>e from a 50% increase in snowmobile passage.

Airborne contaminants due to bridge and compound construction will likely remain in the areas of these activities and will likely settle on the ground surface near to the places where they are generated. For the snowmobiles traffic, airborne contaminants will likely settle out close to the borders of the snowmobile trails. Airborne contaminants such as hydrocarbons once settled in soil will slowly be biodegraded by soil microflora. Particulate matter will attach to soil particles, leaves and organic matter in general and remain in the soil or also be used by vegetation and microflora.

## **8.0 ACOUSTIC ENVIRONMENT**

The acoustic environment is a valued component because both wildlife and Park users can be impacted. Activities that will interact with the acoustic environment include noise and ground vibration from heavy equipment due to bridge construction and construction in the Park compound, on-road trucks, and accessory vehicles in summer. In winter, noise will be evident from snowmobile traffic.

Estimated noise levels for this report are based on typical noise-generating equipment that is expected to be used of construction and long term use. Sound and sound intensity can affect users of the Park and the wildlife in different ways causing potential changes habitat use by wildlife and avoidance by humans.

### **8.1 Potential changes to the Acoustic Environment.**

Change in sound quality can be due to increased traffic noise, increased noise from mobile construction equipment (such as excavators), increased noise from other site activities such as operation of machinery, drill, compactors, etc. Possible ground vibration, though localized, may result from the passage of heavy equipment.



## 8.2. Key Issues

Sound quality is evaluated with respect to the nearest sensitive receptors. Noise sensitive receptors would include public campsites, cabins and recreational areas, and areas where First Nations cultural or religious ceremonies take place. Wildlife while not expected to frequent the construction areas, due to the ongoing noise, may still be impacted and disturbance may affect migration or general movement.

The Park is considered a wilderness area and therefore far from human habitation. It is located in a forested area of New Brunswick, although commercial clear cutting is removing the tree cover bordering the Park. The existing acoustic environment within the Park contains sounds natural to a Park (i.e., wildlife) but also due to public use of the Park (i.e., campers, trailers, etc.); car and truck traffic along Route 385; car, trailer use of secondary Park roads; heavy forest harvesting equipment (summer and winter) close to Park boundaries; noise from recreational activities, such as boating, camping, hiking in the summer and snowmobiling and ice fishing in winter. In addition, operation of heavy equipment by the Park maintenance staff will also create sound at various locations in the Park.

## 8.3. Potential Changes in Noise and Sound

The impact of noise around the construction zones will be limited to the immediate area of the bridge crossings, the access roads for the truck traffic, the Park compound and the new trail section. Typical sound pressure levels of some commonly used construction equipment compared with various common household sounds are:

### Typical Sound Pressure Levels of Construction Equipment and Household Activities

#### Common construction site noise sources

Background level	86 dB (Average)
Roller/Excavator/Bulldozer1	85-95
Front Loader/ Backhoe/Diesel Truck1	88-96
Concrete mixer	<85

Compressors	<85
Electric equipment (saws / drills)	88-115

**Common Household Activities**

Gasoline-powered lawn mower	100-106
Car, small truck traffic,	70
Typical conversation, dishwasher, dryer	60

**(Source: BC, “Construction noise”, Workers Compensation Board of BC)**

Snowmobiles (at 15 m)	70 -76 (ave)*
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**(Source: \* “Noise data from Snowmobile Pass-bys”; Christopher Menge, Jason Ross and Richard Ernenwein, HMMH, February 2002**

**Notes:** dBA = Decibels.

## 8.4 Discussion

The estimated duration of construction (two to three months) in relation to noise management is an important consideration to limit disturbance and interactions with Park users. Health Canada recommends that noise levels above 75 dBA be mitigated to lower levels. Such could be recommended in planning the construction work in order to improve the noise levels for users of the Park.

Noise will be generated during the construction period at the three bridge crossing sites and the access roads. The exact length of the construction period is unknown at the moment but will likely be in the range of 4 to 6 weeks at each site. Users of the Park will be inconvenienced to some degree by noise generation at these sites as the camping sites are located along the lakes. Noise generation will be intermittent and at times loud. Wildlife will likely avoid these locations due the construction noise, activities and the presence of Park users, vehicles, campers, and Park staff.

Noise generated from snowmobiles and ice fishers already exists in the Park. The traffic related to snowmobiling however is expected to increase. Noise is a

normal part of the Park environment along the lakes due to the use of camp sites, camper vehicles, boating, walking, etc. This noise however will be significantly less than that generated by the bridge construction. Consideration of the Park users and wildlife must form part of any construction contract with designated times for equipment operation; use of low noise generation equipment, and noise barriers if required.

Noise generation along roads will be greater than is normal for the Park as truck will be bringing materials etc. to the bridge sites. Safety of truck traffic vis-a-vis Park users must also be considered.

Noise from construction and/or clearing of the new 900 m snowmobile trail will be minimal and generated in an isolated area of the Park between the existing cross country ski trail and Route 385. This is because the clearing is undertaken largely by hand. As such, it will not likely cause any potential impact on Park users. Wildlife may be affected however, but as the 900 m section is close to the Route 385, additional noise from hand clearing will compete with the noise from Route 385 with expected minimal additional noise generation. Construction is expected to only cover a period of few weeks.

Hand bushing of small growth along the old service road trail up Mount Carleton and the restoration of the road bed will create some noise but is not expected to have long term impacts on either Park users or wildlife as the period of noise generation will be short and of low intensity. Noise from nearby commercial tree harvesting outside the Park is expected to be greater than any noise generated by hand clearing the old fire road. Should the road be upgraded and brought to a state where it can act as a snowmobile route and emergency access route, such construction should also be undertaken by hand or with minimal equipment use.

Construction in the Park compound of the groomer building and the gas bar will result in noise being limited to the Park compound itself, except for truck traffic moving equipment and construction materials to the compound. As such impacts to Park users and wildlife should be minimal as the area is highly active with consequent noise throughout the summer season.

## 9.0 SURFACE WATER

Surface water is an important Valued Component and contributes to one of the most important aspects of the Park, the lake system. The interaction between surface water and the proposed works are therefore important. Potential impacts to lakefront conditions, flow regime, water and sediment quality, and sediment deposition and transport are possible.

The proposed bridge work has the potential to impact water flow and lake water flow. Impacts to water and sediment quality may happen, as may changes to channel shape between lakes, sediment transport and ice flow regime. Surface water is a valued component because of its critical importance to natural and human environments, particularly with respect to the aquatic environment.

### 9.1 Key Issues

Potential impacts could be realized from changes to the surface water flow regime and change in surface water or sediment quality. Specifically, impacts to water flow, water levels and water depth may result from the bridge crossing construction. Impacts may also result to sediment transport, shoreline stability and erosion. Impacts to surface water and sediment quality may also result due to construction activities and potential contaminant use.

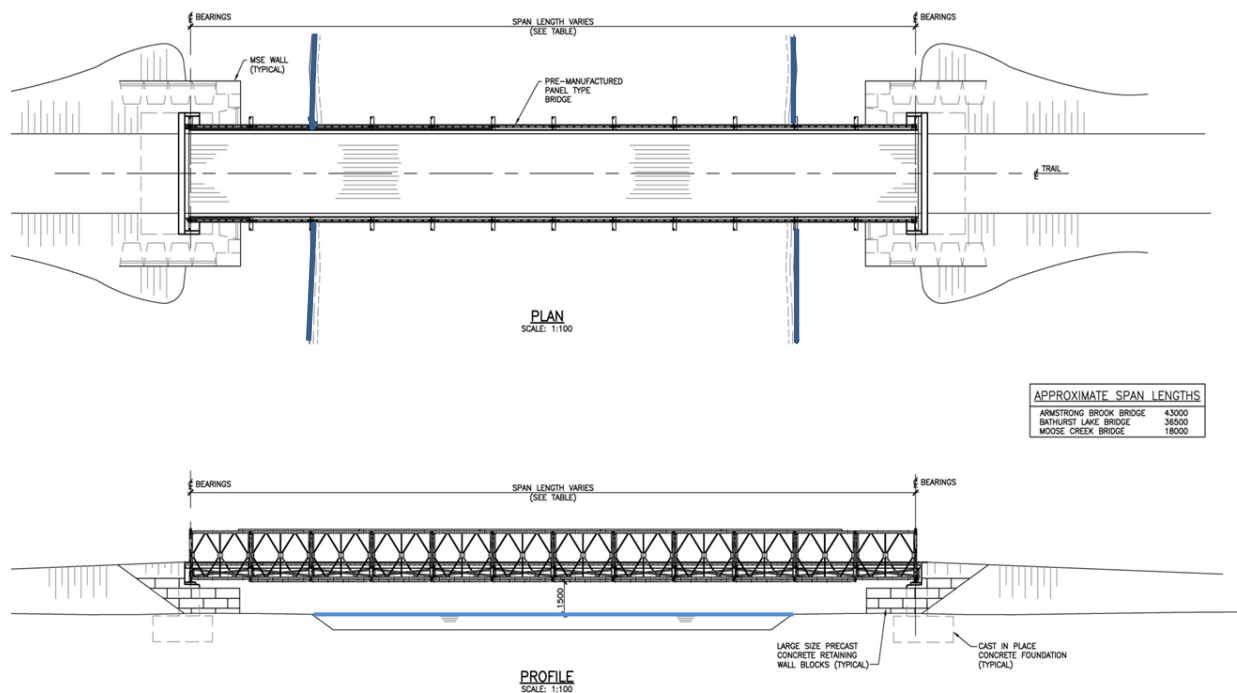


**Bathurst Lakeshore  
showing surface water  
environment.**

The potentially impacted areas include the area of the crossing and the immediate locations upstream and downstream of each bridge crossing. In addition, work at the compound which involves the construction of a gasoline storage and dispensing facility has the potential to impact surface water if a spill occurs. Work at both the new 900 m trail and the old fire road could also have a similar impact should any contaminants escape during the work.

## 9.2 Existing Conditions

The bridges at Bathurst Lake and the exit of the Nepisiguit Lakes are collapsing and/ or broken and dilapidated to a degree where crossing is either impossible or unsafe. These two bridges are of a wooden structure set on two steel trestles, which are set on the sediment of the channel between the lakes. No bridge exists over the Little Tobique River, a new bailey type bridge is proposed for the site of the former dam site on the river.



No surface waters exist on or immediate to the compound. No streams exist at the location of the 900 m new trail section. The old fire road up Mount Carleton

has two small depressions, which cross the road and likely carry surface runoff. These may have been created by erosive effects.

### **9.3 Surface Water Quality**

The existing water quality of the Big Nictau, Littler Nictau, and the Nepisiguit Lakes (Bathurst, Camp and Teneriffe Lake) is unknown, with no recent or available data. Remote and little used lakes such as these are generally of good quality. The lakes however are within the Park and are utilized by Park users for swimming and fishing.

The water quality will be affected by the quality of: the water entering from the Little Tobique River, which flows from east to west, runoff from the surrounding hill and mountain sides, small streams and brooks, infrastructure near lakes and streams. Surface water flows initially into the lakes at various locations throughout the Park, and then flow eastwards beyond Park boundaries.

### **9.4 Surface Water Sediments**

Surface Water sediments are the result of fine to coarse material carried into the surface waters: during high water flows such as spring freshets, as detritus and soil in runoff from surrounding hillsides, as streamflow from other surface waters, or sometimes into the lakes and surface water by wind carried dust.

### **9.5 Change in Flow Conditions**

Surface waters exiting the Big Nictau Lake via the Little Tobique River will be bridged at the former dam site with a new bailey bridge.

At the narrows between Bathurst and Camp Lakes, the poor state of the bridge forces vehicles to ford the narrow channel between lakes. Such crossings can easily affect water quality and remove and re-distribute sediment. This also can affect water flows through the shallows by causing erosion and formation of depression etc.



**Bridge at Bathurst Lake  
constructed with two  
steel supports resting on  
river bed sediments.**

The dilapidated bridge at exit of the Nepisiguit Lakes does not affect flow at the moment, but it appears near to collapse. Such an event would cause blockage or partial blockage of the exiting Nepisiguit River.



**Dilapidated Bridge at  
Nepisiguit Lakes  
supported by steel  
structure on river bed.**

## 9.6 Discussion

While the construction work associated with the bridge replacements has the potential to contaminate the surface waters simply because of the soil disturbance adjacent to the surface waters and the use of petroleum products

careful construction techniques would reduce risk to an acceptable level. Also, good emergency response protocols would further reduce risk levels.

Removal of the dilapidated bridge piers and the old bridges and replacement with Bailey type structures which have no instream structures, would enhance the water flow and reduce potential water contamination.

The cutting of the 900 m trail and the bushing and restoration of the old service road on Mount Carleton would be unlikely to impact upon surface waters due their locations.

The construction of the groomer building and the use of a re-fuelling bay for snowmobiles, both located in the Park compound have the potential to cause soil and groundwater contamination. Such contamination could migrate downwards to the water table and then move towards the lakes and/or the Park compound well. Should such an event happen, the water quality and sediment quality would be at risk. Similarly the groundwater well in the Park compound, could be at risk for the same reason, especially as the well is pumped frequently for Park use. Pumping of the well depressed the water table and could draw in any spilt petroleum products.

Such eventualities have not taken place in the compound in past year. The Park has operated its own re-fuelling bay, which services all Park staff vehicles, maintenance vehicles and heavy equipment for many years without incident. In addition, the Park compound supports two large diesel tanks, which service the Park buildings and equipment shops.





**Fuel Storage in Park Administration Compound.**  
**Petroleum products stored are gasoline and diesel fuels.**



**Large heating oil fuel storage tank in Park Administration Compound to service generators.**

The use and frequency of the various types of Park vehicles and heavy equipment with regards to re-fuelling would be far greater than any refuelling volumes that would be attributed to snowmobiles.

The risk of any such spills however must be taken seriously. The risk of such spills can be reduce significantly with the construction of contained storage and refuelling bays for serving of all existing and proposed motorized traffic in the Park Administration Compound.

## 10.0 SENSITIVE SPECIES and AREAS OF SEPECIAL INTEREST

Sensitive species represent a Valued Component that is routinely addressed in environmental studies. Sensitive species represent plant and animal species that science has identified as being at critical population levels, or vulnerable to habitat changes. The continued presence of these species is important to maintain diverse ecosystems with natural ecological functions. Additionally, society has deemed the continued presence of sensitive species on the landscape as important.

### 10.1 Key Issues

Sensitive species may be rare in the Park as they inhabit unique habitats. Unrestricted development could destroy these unique habitats and ultimately affect the plants and animals that are closely tied to these sites. Many of these sites are not known.

### 10.2 Sensitive Species

A list of sensitive species reported within Mount Carleton Park, as well as within a 5 km buffer zone surrounding the Park, was provided by the Atlantic Canada Conservation Data Centre (ACCDC). This data is summarized in the following sections.

#### 10.2.1 Flora

Plants are particularly susceptible to development due to the simple fact that, unlike animals, plants are fixed to one particular point and are unable to move to avoid disturbance. The ACCDC records indicate there are 71 records of 30 rare or sensitive vascular plant species within the defined zone. The common names of those species are listed as follows:

Glandular birch	White-stemmed pondweed
Alpine bilberry	Siberian water minfoil
Fernald's serviceberry	Small yellow pond-lily
Bigelow's sedge	Hornemann's willowherb

Three-petaled bedstraw	Lesser pyrola
Narrow-leaved beaked sedge	Bog willow
Blunt sweet cicely	Northern clustered sedge
Dwarf white birch	Hayden's sedge
Disguised St. John's-wort	Rosy sedge
Eastern white water-crowfoot	Fragrant wood fern
Northern wild licorice	Tuckermann's quillwort
Sparse-flowered sedge	Appalachian polypody
Calypso	Spotted coralroot (var <i>maculata</i> )
Mingan moonwort	Lesser brown sedge
Purple-veined willowherb	Spotted coralroot

In addition to the plants listed above, the ACCDC records show there are 26 records of 17 species of rare, or sensitive, nonvascular plants found within, or immediately surrounding, the borders of the Park. The common names of those species are listed below. Additionally, Latin names are also provided where common names are not provided.

Moss ( <i>Arctoa fulvella</i> )	Obtuse notchwort
Richardson's spear moss	Moss ( <i>Campylium polygamum</i> )
Bonjean's broom moss	Meadow pliat moss
Donn's grimmia moss	Serrate trumpet moss
Black grimmia	Moss ( <i>Pohlia sphagnicola</i> )
Starke's fork moss	Three-toothed whipwort

Peatoss (*Sphagnum subfulvum*)

Dwarf flapwort

Felted leafy moss

Rugel's anomodon moss

Cylindric hairy-tooth moss

### 10.2.2 Fauna

Although animals are generally quite mobile and can avoid disturbance, some are intimately connected to a specific habitat type and any impacts to that habitat can directly impact the well-being of those particular organisms.

A review of the ACCDC data reveals there are 127 records of 20 rare or sensitive vertebrate fauna noted within Park, or recorded within 5 km of the Park boundary. A list of the common names of those animals is as follows:

Chimney swift

Barn swallow

Bicknell's thrush

Olive-sided flycatcher

Common nighthawk

Canada warbler

Eastern wood-pewee

Long-tailed shrew

Cooper's hawk

Boreal owl

Horned lark

Pine grosbeak

Red crossbill

Ring-billed gull

Great crested flycatcher

Eastern kingbird

Evening grosbeak

Rusty blackbird

In addition to the vertebrate fauna listed above, the ACCDC data search also identified 29 records of 6 rare invertebrate fauna at the Park. The common names of those rare invertebrates are listed as follows:

Rush darner

Satyr comma

Compton tortoiseshell

Ringed emerald

Lake emerald

Forcipate emerald

### 10.3 Discussion

The projects that are proposed for Mount Carleton Provincial Park involve opening 900 m of seasonal snowmobile trail on the western side of the Park, conducting trail maintenance activities along the old service road/trail on Mount Carleton, as well as rebuilding the bridge at Big Nictau Lake and replacing existing bridge structures at the outlet of Bathurst Lake and Nepisiguit Lakes. These projects involve a very small area of the Park and are expected to have low environmental impacts. It is important to note, all of the existing infrastructure within the Park (roads, camp sites, headquarters) represent less than 1% of the total area of the Park. Since the proposed projects involve replacing/maintaining existing infrastructure, plus the creation of a short section of seasonal snowmobile trail, the total amount of development in the Park will remain essentially unchanged.

With respect to rare plant species, the best means to mitigate impacts to vulnerable plant species within Park is to pinpoint the exact location of the listed species and to identify exclusion zones so that planned activities do not occur at these locations or can be re-located to avoid these areas.

It is important to note, most of the sensitive species of fauna listed in the ACCDC records represent bird species. Migratory birds receive international protection through the *Migratory Birds Convention Act*. This legislation prevents the destruction of migratory birds, as well as the nests, young and eggs of those species. The accepted means to complete projects in accordance with the Act is through project timing. It is generally accepted that projects that involve tree clearing should be conducted outside of the May to September nesting period for migratory birds.

It is important to note, some of the reported rare birds records at the Park simply

represent chance sightings of transient individuals of those species that have strayed outside of their normal range. Such records would include horned lark, ring-billed gull, Cooper's hawk and rusty blackbird. As a result, the proposed project activities are expected to have no impact on those species.

The invertebrate fauna represent dragonflies, damselflies and a butterfly. The dragonflies and damselflies are closely associated with wetlands and the margins of the lakes. The proposed replacement and/or rebuild of the three bridges, at the outlet to Big Nictau lake, the outlet of Bathurst Lake and the outlet Nepisiguit Lake is the only work slated to occur within this type of habitat. The extremely small project footprint, as well as the anticipated short construction phase, suggests this project will have no noticeable impact on these organisms. In addition, the construction areas have already been cleared of vegetation and undergrowth and work will be confined to these open areas.

Plants are particularly susceptible to a variety of disturbances due to their inability to move to avoid destruction. If disturbance were to occur in specialized habitats where rare or vulnerable species exist, those impacts could eliminate a significant portion of the population of those species. Surveys of the proposed work areas would reveal whether any of these species are present and also provide guidelines for minimizing impacts.

Animals reflect varying degrees on mobility and are generally able to avoid disturbance. However, some animal species are intimately tied to critical habitats for at least a portion of their life cycle, and if impact to that particular habitat were present, the results could significantly affect the population. Although animals are generally mobile, the young of most animals represent a sensitive life stage that is much more vulnerable. Young animals are much less mobile than adults and are less able to avoid direct impacts. Additionally, impacts could potentially repel adult animals, or interrupt the normal activities of parent organisms such as providing food and warmth to new-born young. Construction operations around the bridge crossings and the Park compound are not likely to result in impacts to animal species, due to the constant activities in these areas. Activities in these areas in the past and likely during the work period

will serve to keep animals away from the locations. The construction of the 900 m corridor is a onetime event and should have minimal impact on wildlife. The same can be said for the restoration of the old fire trail roadbed.

## 10.4 Special Areas

In addition to rare species, the ACCDC data search also identified Special Areas within the study area. Special Areas are separated into two categories, Managed Areas and Significant Areas.

### 10.4.1 Managed Areas

Managed areas are those that have legal protection. There are two managed areas within the study area. Those areas are listed as:

Mount Carleton Provincial Park

Extension to the Park (Nepisiguit Protected Natural Area)

Like any provincial Park, activities within the Park are closely regulated through the *New Brunswick Parks Act* (2014) and Policy Manual.

A large area outside of the Park on its' eastern border, has been designated as the 'Nepisiguit Protected Natural Area'. Activities such as tree cutting, travel by motor vehicle, etc., are regulated through the *Protected Natural Areas Act*. Activities within designated areas are tightly restricted. The fact that this area runs along the eastern border of the Park tends to buffer activities and human disturbance on the eastern side of the Park and essentially serves to enhance and extend habitat protection in and around the Park.

### 10.4.2 Significant Areas

Significant areas are recognized for their ecological and/or social importance. Significant areas may, or may not, have legal protection.

The ACCDC data search determined there are four Significant Areas (SA) within the Park area. These sites are listed as follows:

Mount Carleton Provincial Park (Important Bird Area)

## Sagamook Mountain SA

## Mount Carleton SA

## Nepisiguit Lakes Red Pine Stand SA

The Park ACCCDC recognizes the Park as an important area for birds. Forest birds require forested habitat for their survival. A large area of the Park, as well as the adjacent Nepisiguit Protected Area, provides the required habitat for those species and that habitat is protected by legislation. It should be noted, some of the “rare” bird records for this site represent the observation of transient individuals outside of their normal range and habitat.

Sagamook Mountain SA recognizes the special significant this place holds for the First Nations. The mountain is considered by First Nations peoples as sacred ground.

The Mount Carleton SA recognizes the fact that the peak of this mountain has the highest elevation of any landform in all the Maritime Provinces. Additionally, due to its prominence, Mount Carleton is a popular hiking destination for visitors to the Park.

The Nepisiguit Lakes Red Pine SA is located on the south shore of the Nepisiguit Lakes. This feature represents a second-growth red pine stand on podzolic soil. The stand type is unique for this area, since most similar red pine stands have been harvested in past years.

### **10.5 Discussion**

With respect to Managed Areas and Significant Areas, the proposed project involves bridge rebuilds and the restoration of the old fire trail will contribute to part of the management/maintenance activities required to provide a safe and enjoyable outdoor experience at the Park as the proposed works will facilitate better access to recreational experiences and distribute visitors more evenly across the Park. Access to sensitive areas can be restricted through signage and gates.



The completion of the proposed work activities will have no impact to the Nepisiguit Protected Natural Area.

With respect to Significant Areas, as previously stated, the proposed work activities will maintain/replace existing bridge infrastructure, restore the old road on Mount Carleton and make it suitable for snowmobile traffic and establish a new section of snowmobile trail from Route 385 into the Park. With respect to Mount Carleton SA, the groomed snowmobile trail that is to be added, is the existing former service road on Mount Carleton. This road is being used by snowmobilers at present. It is however badly dilapidated through lack of maintenance and is prone to erosion. The project will not impact the existing public hiking trail, but rather is intended to improve the existing, but abandoned, service road that formerly accessed the helicopter pad and ranger fire tower lookout near the top of the mountain. Restoring the old road would also provide a designated snowmobile trail and in the summer would provide a safe hiking trail for older persons who wish to ascend and descend Mount Carleton.

Specifically, the small amount of brush trimming and infilling of erosion gullies and placement of roadbed cover are intended to provide a groomed snowmobile trail, enhance public safety by upgrading and stabilizing the road to improve the response time to reach and evacuate injured hikers. In addition to reducing response times, the planned improvements to the surface of the road bed will reduce damage to the equipment, and provide a smoother, less stressful, evacuation for injured Park users.

The Sagamook Mountain SA and Nepisiguit Lakes Red Pine Stand SA are sufficiently removed from the location of the planned activities that they will not be impacted.

## **11.0 WILDLIFE AND WILDLIFE HABITAT**

The preservation of wildlife, as well as the habitats that support wildlife, is a valued ecosystem component since it is a mandate of the New Brunswick Parks Act: “permanently protect ecosystems, biodiversity and the elements of natural and cultural history”.

### **11.1 Key Issues**

Many forms of wildlife are found in Mount Carleton Park because it represents a large and remote area of land that is excluded from many of the impacts of industry and civilization. Uncontrolled development within the Park could impact rare habitats and result in the reduction or elimination of sensitive species of plants and animals. Unfortunately, extensive destruction of wildlife habitat is being realised around and up to the boundaries of the Park as forest companies clear cut much of the land. While not impacting on Park land directly, indirect impacts from clear cutting up to the Park boundaries may be realised through exposed of tall mature trees to extreme storm events which may damage trees cause trees falls within the Park.

As wildlife roams freely and/or is located throughout the Park, each of the proposed activities has the potential to impact on wildlife. Noise generated during construction activities is an obvious case in point. Other impacts may be less obvious, such as water quality degradation. Each activity takes place takes place in previously disturbed or presently utilized areas, except for the construction of the new trail. Consequently, impact may be both transitory, such as bridge construction but may also be permanent but intermittent.

### **11.2 Discussion**

Currently Mount Carleton Provincial Park provides a large land base that represents a variety of natural habitats (i.e., wilderness, lakes, wetlands, streams, various forest types, etc.), as well as the wildlife that occupy these habitats. The area of human disturbance and influence (headquarters, roads, camp grounds, trails) represent less than 1% of the total area of the Park.

Three of the proposed project activities, bridge replacement, expansion of facilities in Park compound and trail maintenance, involve improvements and maintenance to existing infrastructure areas and will have no measurable impact on wildlife or the existing habitat. The remaining activity involves the completion of a 900 m corridor through the forest to permit winter access for snowmobiles.

Although the creation of the proposed trail will involve cutting some trees, the route will not be constructed using heavy equipment. Much of the work will be conducted by hand. Heavy equipment may be required to remove larger wood unless a decision is made to leave them to rot at the side of the trail. The corridor will have a narrow width, and will be laid out to take advantage of terrain and natural openings in the forest. Also, low vegetation will be encouraged to inhabit the corridor. It is important to note, the surrounding forest reflects a significant amount of natural dead fallen timber and much of the proposed route could take advantage of these natural holes in the tree canopy.

It is anticipated that there will be little, if any, soil disturbance during the construction and operation phase of this work. It is expected that ground vegetation characteristic of similar adjacent habitats will fully occupy the site. Additionally, since the trail is relatively narrow (approximately 7 m), it is envisioned that the crowns of adjacent trees will overhang the trail, and the crowns of some species such as birch may even provide complete crown closure above the trail.

The existing snowmobile trails in the Park show no evidence of erosion and are adequately covered in grasses and small shrubs.

Based on the above, the proposed projects will have no significant impact on wildlife. There may be some avoidance of the construction sites while work is occurring, however the duration of construction will be short term. The nests and young of migratory birds are protected under the international *Migratory Birds Convention Act*. The standard practice to avoid impacts to migratory birds is to schedule tree clearing to periods outside of the May to September nesting period, and this method to mitigate impacts to breeding birds will be employed. It is

important to note, the total amount of vegetation cover in the Park will remain unchanged as a result of the completion of these projects. Since wildlife is dependent on maintenance of habitat, it is suggested that there will be no measurable impact to wildlife populations.

## **12.0 TRADITIONAL PURPOSES BY FIRST NATIONS**

The recognition of an Indigenous Knowledge Study (formally called a Traditional Knowledge Study) as a valued environmental component (VC) as part of the IEE for the Mount Carleton Provincial Park acknowledges the spiritual attachment that the First Nations have with regards to this area of the Province. Indigenous knowledge will complement and provide relevant information to help protect ecosystems, manage lands, natural resources and should accompany any management plan for the Provincial Park.

Each First Nation has its own distinctive cultural, historical and geographical traits. Consequently, perceptions about Indigenous Knowledge vary accordingly from group to group. Historically, Mount Carleton Provincial Park was used by at least two groups of peoples in the area: The Maliseet and the Mi'kmaq. There are many oral stories in both groups that centre on Mount Carleton and the surrounding area. One story that comes from the Park is the Creation story for the Maliseet peoples. It is told that the Maliseet's were instructed by *Glooscap* to follow the Little Tobique River to the Wolustuk River (St. John River), that was where the Wolustuk were to take their name, live and flourish, and use the land for their economic prosperity.

The Indigenous place name of Mount Carleton is shared by both groups, Mount Sagamook, translated means "*the place where the Chiefs meet*", and this place name signifies that this area was highly important to both groups in politics, ceremonial and cultural activities.

Since the mid to late 1800s the area (now the Park) has undergone many transitions and excluded the Indigenous use of this land, only becoming a Provincial Park under Premier Richard Hatfield in the 1980s. Over the last 25 years, the First Nations began using the Park again for cultural activities, spiritual activities and most recently political meetings with other neighboring Alliances and Indigenous Tribes.

### **12.1 Key issues**

Any activities within the Park and especially those in relation to the lake shores, mountains and other areas where archeological sites exist have great importance to Indigenous people. This area also contains sites where indigenous people have placed ancestral remains. Medicinal plants are also gathered here and a variety of ceremonies take place within the Park. Any activity within the Park, especially with regards to construction, has the potential to impact upon areas of special interest to indigenous people.

### **12.2 Discussion**

The Park would likely have pre-contact burial sites within the boundaries and it should be noted that some areas in the Park are of critical importance to the membership of the Maliseet people, as some members within the Tobique First Nation have repatriated loved ones within the Park boundaries.

Many communities are now sending youth to the Park for Indigenous teaching, storytelling and ceremonies such as the vision quest, fast and sweat lodge. Annually, young people and elders will visit the Park to enjoy the experience and learn about the abundance of Medicines that grow within the boundaries of the Park.

As well as the abundance of Medicinal plants, there are various wildlife habitats in and around the Park of importance to First Nations.



Native medicinal plant.

A significant moose habitat is located in the general area, starting within the Park and extending out towards the Christmas Mountains. Moose is a resource of significant importance to the Indigenous communities. At present hunting is not permitted in the Park.

Knowledge of the use of the Park by First Nations for ceremonial and teaching purposes, together with the gathering of medicines and the exercising Indigenous rights and its spiritual place in First Nations culture has not been fully explored or documented. The use of the Park to place the remains of First Nations peoples to rest has taken place and these areas need to be identified and marked as spiritual sites and as post-contact burial sites. It is evident that the First Nations' attachment and use of the Park requires more in depth assessment as available information for this study was small.

### **12.3 Considerations for Future Assessment of Indigenous Knowledge**

It was evident from the work done for the IEE that too little is known regarding Indigenous Knowledge for the Park and that an Indigenous Knowledge study would be advantageous. Several positives could be realized from this. Possible outcomes could include a template or manual to determine what activities would trigger consultation in Park development. The study may offer an opportunity for Government and Indigenous communities to jointly develop a sound management plan to ensure that Aboriginal inherent Rights are not impacted and if unavoidable, offer mitigation or accommodation plans to resolve disputes.

It may also provide ethical guidelines for proper procedures for the collection, analysis and reporting of data and artifacts found within the boundaries of the Park. The areas bordering the lakes especially contain many surface finds such as Arrowheads, Spear tips and fire crack rock. *(There is one known find within the Park of an arrow head found by a visitor on the surface, along the shore lines of Bathurst Lake who kept the Arrowhead without it being photographed or cataloged).*

The information that is collected through an Indigenous Knowledge Study would be considered the intellectual property of the Indigenous peoples. It would encompass all knowledge including but not limited to the historical information, medicinal, habitat, cultural and spiritual activities. Contemporary use of the Park should also be included as part of the study.

The study would also provide a holistic perspective and possible communication strategy to address the goals of the study and with a view to making them realistic and achievable. Such a study would provide the assurance to Indigenous communities that the information collected is protected and the goals respected.

### **13.0 ARCHAEOLOGY**

Archaeology is identified as a valued component of the ecosystem as many existing and known archeological resources lie within the Park. Additionally, First Nations meet for cultural and political activities in the Park, specifically near Mount Sagamook long before Europeans arrive in North America. Due to this, artifacts remaining from these gatherings as well as indigenous peoples use of the area for hunting, medicine gathering and spiritual purpose have left sites of archeological interest throughout Parklands.

Archeology is also specifically identified as an important mandate in the New Brunswick Parks Act: “permanently protect ecosystems, biodiversity and the elements of natural and cultural heritage history; provide opportunities to

increase knowledge and appreciation of the natural and cultural heritage of the Province”.

*Archeological Services conducted digs at the location of two of the bridge crossings, Bathurst Lake and Camp Lake in the late fall of 2015. For a complete description of the archeological investigation the reader is referred to the report by NB Archeological Services.*

### **13.1 Key Issues**

Uncontrolled activities and development within Mount Carleton that involve ground disturbance could destroy archaeological sites, or interfere with the archaeological record and the study and understanding of such sites. As much of the proposed work will take place near to and in the location of known and/or suspected archeological sites, impacts could be realized.

### **13.2 Discussion**

The land of Mount Carleton Park encompasses the headwaters of two major river systems, the Tobique River system, that flows westward to the Saint John River and the Nepisiguit River system that flows eastward to Chaleur Bay. There is considerable evidence that the lands and waters within the Park were used historically by First Nations, and some land features such as Sagamook Mountain, were very important to their cultures, and continue to be sites of cultural and spiritual significance. In addition to First Nations, the area of the Park was heavily logged by early lumbermen, and the disused logging trails, the remains of camps and driving dams can still be found.

Any project that involves ground disturbance poses a risk to destroy, or disrupt, the archaeological record. The bridge replacement project at Bathurst Lake will involve some degree of excavation to construct bridge abutments. However, an archaeological survey has been conducted to document and recover artifacts from this location. It is expected that recommendations will follow concerning the construction procedures at his site.





**North shore of Bathurst Lake Bridge showing archeological test pits where artifacts were found.**

The maintenance activities that are proposed for the service trail on Mount Carleton simply involve trimming encroaching brush, and back filling and stabilizing eroding ruts on the existing trail. These activities will not involve excavation and will not compromise the archaeological record. In fact, the in-filling of ruts on steep sections of the service trail with gravel will help prevent existing and progressive erosion processes that could potentially expose and disrupt the archeological record of any buried artifacts at those locations.

The creation of the proposed new 900 m winter access trail for snowmobiles will not involve and soil disturbance and will therefore have no direct impact on archaeology.

## **14.0 GROUNDWATER**

In the Park, groundwater is used as a secure source of drinking water for the Park operations; camp sites and campgrounds. Groundwater is obtained from bedrock aquifers using drilled wells. Groundwater is an important resource because it is used for the following purposes: domestic uses such as including drinking water, food preparation, personal hygiene, cleaning, and outdoor uses at the Park. In

addition groundwater contributes to the surface waters of the several lakes within the Park itself through direct groundwater discharge.

### 14.1 Key Issues

Groundwater interacts with surface water features by flowing into and out of rivers and lakes. This groundwater originates from precipitation falling on the higher ground surrounding the lakes, enters streams and percolates downwards into the underlying soil and bedrock. From there it passes through the ground to discharge: at the lake edge, into the sediments beneath the lake; or pass deeper to become part of regional groundwater flow system. Should contaminants enter the groundwater they could compromise groundwater quality. Contaminants may originate from losses or spillages from vehicle operations, storage areas, re-fuelling, septic waste systems and non-point discharges such as animal wastes, etc.

In the Park, groundwater enters the ground in areas of high elevation passes through the soil and bedrock to discharge at low elevations (i.e., streams, lakes, wet areas adjacent to the lakes). The bedrock containing this groundwater is penetrated by wells which then withdraw the water. The large capacity well in the Park administration compound services all the uses required by Park operations including for drinking water.



**Drilled well in Park  
Administration  
Compound.**

Drinking water is also provided by wells located in the various campgrounds at the Armstrong, Bathurst Lake and Nictau Lake camp sites. These wells have acceptable water quality.

## 14.2 Discussion

Groundwater quality in general will be affected by contaminant entry. The water in the various groundwater wells however will potentially only be affected by contaminants entering the groundwater near to and under the influence of these wells. The well most at risk would be the well in the Park compound. This well is in regular use and could easily be influenced by any losses or spillages of fuel within the compound.



**Re-fuelling station in Park Administration Compound.**

**Re-fuelling takes place on concrete pad.**

Even with regular re-fuelling, maintenance of vehicles, vehicle use and operation within the compound over the past number of years, this well has maintained acceptable water quality. As with all contamination events due to spillage, good operation procedures coupled with regular maintenance of containment systems, training and care and attention to the task will prevent losses.

Regardless of the good record to date, precautionary measures and redundant systems are good options. Secondary containment of fuel storage in the Park compound, standard operating procedures (SOP) together with training are such options.

The above, while relating to the protection of groundwater from existing operation, has direct implications for the new groomer building and the proposed re-fuelling station, as the same will apply to both the fuel storage and re-fuelling areas. Additional discussion is provided under the section on Infrastructure.

The construction of the bridges will have no perceived impact on ground water quality as all operations will take place adjacent to surface waters, which could be the first impacted. Also, ground water at these locations will likely be discharging into the lake waters. This does raise the issue of any contaminants that may have entered the water table away from the lakes causing concern upon their entry into the lake waters. Such an event could occur from accidents involving trucks hauling materials to the construction sites. Also, any accidents involving snowmobiles and subsequent loss of fuel could impact groundwater at the location where the accident occurs. While such accidents are possible, the speed at which the trucks will operate, within the Park due to the winding Park roads and the speed restriction, will reduce the risk of such accidents.

Accidents involving fuel spillage by snowmobiles within the Park are rare, even though snowmobiling has taken place for a number of years. Again, while this record is good, the possibility of accidents does exist. In this case and to reduce the risk, the snowmobile association must educate their clients in accident response. The Park also must prepare an operations procedure for response in such an event. The priority of this must focus on containment and clean-up.

## **15.0 AQUATIC ENVIRONMENT**

The aquatic environment is the freshwater aquatic habitat excluding wetlands. For the Park, this consists of the rivers, streams and lakes that occupy the lowest elevations within the Park. The importance of the aquatic environment to the Park, to the Park visitors, to First Nations cannot be understated. The natural beauty of the Park is built around two important groups of geographic structures,

the mountains and the lakes. The Park experience would be so much less without the either of these. No field investigations were carried out specifically for the proposed work relating to the IEE. This Valued Component is evaluated based upon existing information

### **15.1 Key Issues**

Effects to the aquatic environment could result from the bridge construction and other proposed works. Changes in fish habitat may result from changes to: water flow characteristics, water quality, sediment quality, area of fish habitat, passage between habitats, and in fish populations. As much of the work, specifically the bridge re-build and bridge replacements, take place adjacent to or 'in- stream', impacts are possible. These impacts can also be far reaching, if a significant loss of contamination results.

Impacts, from the new 900 m trail and the re-build of the old fire road, to the aquatic environment, are not likely given the distance from notable surface waters. The potential does exist for fuel spillage within the Park compound to migrate in groundwater and discharge into the nearest lake water.

### **15.2 Discussion**

#### **15.2.1 Fish Habitat**

Features of fish habitat, including water flow, water and sediment quality and aquatic habitat are also discussed in other sections. Distinct habitat characteristics exist within the lake systems. The lakes and streams represent a pristine environment far from industrial development. These habitats provide a variety of organisms the habitat to grow and survive.

There is a recreational fishery for brook trout in the lakes within the Park. In addition to brook trout, Nictau Lake also supports landlocked salmon. The fishing regulations vary from lake to lake in order to conserve fish stocks (hook and release for Bathurst Lake, various bag limits for the other lakes). This sport provides anglers a quality experience pursuing a popular species of sport fish in a wilderness setting. The lakes are regularly stocked and thus provide anglers the opportunity to catch trout in a pristine setting during both the summer and

winter months. Any activity that may impact upon the fishery may also impact the quality of the angling experience and ultimately the number of visitors to the Park. Healthy fish populations depend upon a clean habitat. Fish and fish habitat is protected under the federal *Fisheries Act*. Fish habitat may also receive additional protection under the provincial *Clean Environment Act*.

For the bridge projects to proceed, an application under the Wetlands and Watercourse Alteration (WAWA) permit must be applied for through the Provincial Department of Environment and Local Government (DELG).

This permit is also reviewed by the federal Fisheries and Oceans Department.

If approved the permit will contain a list of conditions for the work relating to the timing of the project and will contain environmental conditions to protect fish and fish habitat.

### **15.2.2 Water Flow**

The effects of the work on river flow into the lakes, flows within the lake systems and discharge from them are not likely to be of any significance. The work at the two bridge sites to be replaced will take place on the lake banks except for the removal of the two steel bridge supports. The bridge crossing at Little Tobique River entry to Big Nictau Lake, will involve greater 'instream work', necessitating the removal of the collapsed bridge piers. These consist of wooden cribbing with rock cores. In all cases the results will increase and/or reinstitute the natural flow of the water into and through the lakes. All instream work will be conducted under conditions list in the WAWA permit.

### **15.2.3 Water and Sediment Quality**

Water and sediment quality are important fish habitat characteristics. Changes in their parameters can influence the number, type, and location of species present in the aquatic environment. Important parameters such as water quality, temperature, dissolved oxygen, pH, water clarity and suspended sediment are unlikely to be affected by the work due to any degree due to the fact that most of the work is not in stream or on lakebeds. Any work that is conducted will be in accordance with the WAWA permit. Also, it is important to note that sediment

and silt generation will be reduced by removal of vehicles traffic across the lake bed.



**Cars and trucks cross the river at Bathurst Lake using the old ford as the bridge cannot carry the weight of vehicles.**

With regards to the loss of fuel within the Park compound, sufficient distance exists between the compound and the nearest lake for the capture and containment of any spilled fuel. Also, secondary containment of fuel will reduce this risk further.

#### **15.2.4 Fish Populations and Fish Passage**

Fish populations could be directly influenced by the construction work in the area of bridge construction, through contaminant release, habitat alteration, fishing and obstructions to fish passage. The bridge replacement and re-build work, will in the long run, improve these factors. The WAWA permit will define the appropriate times to conduct the work so as to minimise impacts on fish. Generally, in stream work takes place from June 1<sup>st</sup> to September 30<sup>th</sup>. This timing is specified as it will avoid impacts to spawning salmonids as well as to avoid impacts to larval fish and eggs in the gravel lake beds.

## 16.0 VEGETATION AND WETLANDS

Vegetation and wetlands are a Valued Component for environmental, recreational, aesthetic and socio-economic reasons. The integrity of vegetation and wetlands has an influence on wildlife and wildlife habitat, as vegetation communities (including wetlands) provide habitat for wildlife species. Vegetation and wetlands are also connected to surface water resources as wetland functions can interact with surface water conditions.

Wetlands are defined in federal and provincial policy as land permanently or temporarily submerged or saturated by water for long enough that these lands becomes occupied by plants adapted to saturated soil conditions, wet poorly drained soils and conditions associated with wet environments.

Wetlands in New Brunswick are managed by the New Brunswick Department of Environment and Local Government (NBDELG). Management of wetlands falls under the New Brunswick Wetlands Conservation Policy (NBDNRE 2002). Any activity that takes place within 30 m of a wetland or surface water requires a WAWA permit.

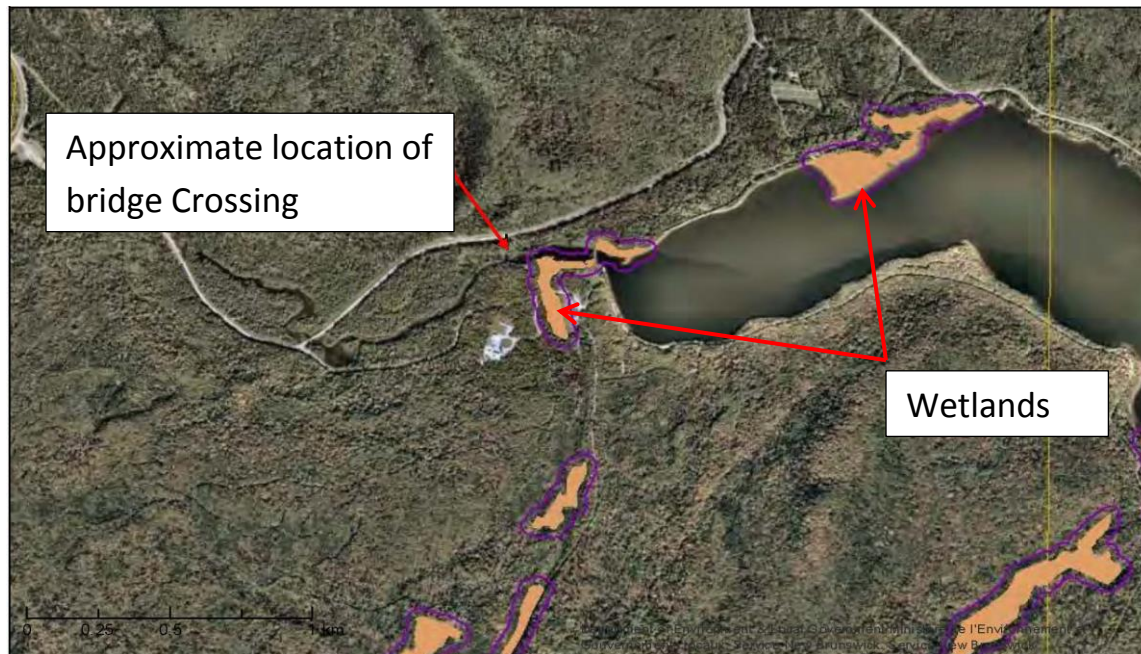
### 16.1 Key Issues

Construction of the bridges, trails and groomer building in the compound together with the operation of a re-fuelling station can have impacts upon wetland function and structure. Changes in vegetation resulting from direct impact of the works or changes due to operations resulting from the proposed works can affect wetland habitat. Such impact may result in changes to species types and loss and/or risk to plant species. The work may affect wetland size and function due to removal or re-direction of water which services the wetland. Necessary dewatering or re-direction of near surface flows may be needed for bridge pier construction. Such actions may result from dewatering, drainage, redirection and/or removal of water flow to the wetland areas.



## 16.2 Discussion

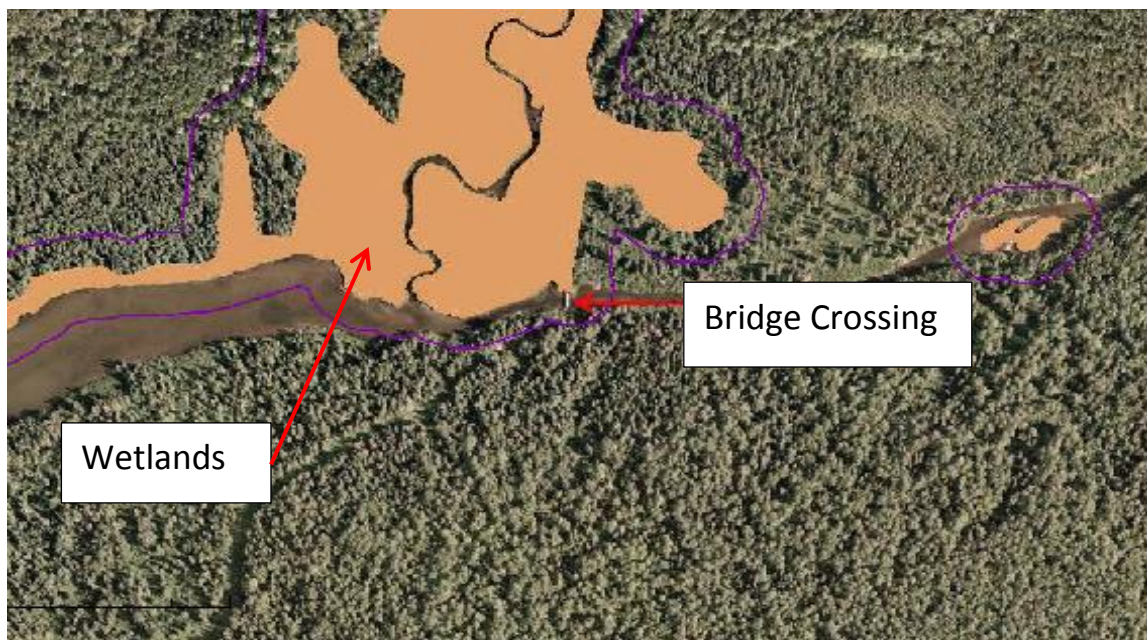
Wetlands have been defined using aerial photograph by NBELG. These are displayed in the GeoNB website. Wetlands around the proposed bridge crossings are shown:



Wetlands around the Little Tobique River Crossing.

NBELG has defined regulated wetlands to be present immediately adjacent to the dilapidated bridge structure and collapsing piers at the head of Big Nictau Lake. There are two identified wetlands, one on each side of the Little Tobique River at location for re-building of the bridge. Due to the proximity of these wetlands to the construction site, care must be exercised in the use of heavy equipment, storage of fuel and re-fuelling, excavation for piers and even simple removal of the bridge piers. Fortunately, elevated road access exists on either side of the former bridge. These could be used for staging the removal of piers and re-building the bridge. Contractors involved in this work should be asked to present a work plan laying out procedures to re-build the bridge without damage to the wetlands. This is an essential function of the work, as each wetland lies within a few metres of the bridge site.

There are no wetlands immediate to the site of the bridge replacement at the head of the Bathurst Lake that could be affected by work at this site. Wetlands are present downstream from the lake entrance. At the location of the Nepisiguit Lakes bridge replacement, there is a large wetland on the north shore. Both the access roads on the south and north sides of the exiting Nepisiguit River are raised above the surrounding land surface. While the south shore land elevation is a natural shoreline, the raised access road on the north shore is a filled elevated road. This access road crosses the eastern edge of the designated wetland. Work to replace the bridge structure at this location will require care and attention to the wetland on the north shore.



Wetlands around Nepisiguit Lakes bridge.

The re-build and the replacement of the bridges will require work to take place 'in-stream'. Any work within and on the river or lakebeds requires permits from NBELG. As with wetlands, any work within an active ecological unit must be conducted with care and attention to the potential for damage. Environmental management and response plans must be part of any work conducted in the Park.

## **17.0 ECONOMY AND EMPLOYMENT**

Economy and employment is a Valued Component as it involves aspects relating to employment changes, business opportunities, and the impacts on the local and regional economy. Changes in employment can be both positive and negative as can changes that impact the local economy. The area of potential impact includes the local communities of Tobique First Nation, and the Villages of St. Quentin, Perth Andover and Plaster Rock. Other communities further afield, may also see impacts due to longer ride snowmobilers. The Park itself is also included, as it will see impacts due to the increased infrastructure, access and operations from the proposed work.

### **17.1 Key Issues**

The key issues of concern for economy and employment are: potential impacts to local businesses, impacts due to construction, long-term changes in the Park due to access, operation and use of the Park and its facilities. Both the proposed construction and the longer term operation of those structures can affect the economy locally. Short term business opportunities may be realized from the construction of the bridges, and building in the compound. Longer term impacts may be felt through an increase in visitors and use of local facilities during both the winter and summer months.

### **17.2 Discussion**

For the proposed construction work, there will be short term employment, possibly for the summer and potentially into fall, employment for a number of people. It is not known how many of these jobs will be created locally or whether workers will be brought into the Park from other areas. Heavy equipment will also be employed both for the bridge construction and replacement and for the construction of the groomer building and re-fuelling bay in the Park compound.

Work to create, clear and dress the new 900 m trail has been and will be by hand, as will the re-build of the former road up the side of Mount Carleton. Benefits should be realized by the nearest communities of St. Quentin and the Tobique First Nation both in employment and servicing opportunities.

Benefits for the Park accruing from the bridge replacement work will be easier and safer access across the lakes, a benefit for summer Park users. An increase in snowmobile traffic is anticipated due to the more centralized grooming of trail and the gas bar service. The new infrastructure will also enhance fire response times, enhance emergency response times, and provide easier access to various parts of the Park for Park users.

Specifically, the new 900 m trail will result in a safer access route to the trails in the Park and from there to outside the Park for snowmobilers. The rebuild of the eroded former road will create a less onerous pathway to the top of Mount Carleton, available for those persons visiting the Park who are less able to walk the narrow somewhat arduous forest trail to top of Mount Carleton. The new groomer building will allow better and more efficient grooming of the trails, throughout this northern section of the trail system and the rebuilt trail on Mount Carleton will keep snowmobilers to a distinct pathway. The new bridges will provide better and easier access for Park users to the various sections of the Park. All of these changes will impact directly upon the use of the Park and thus impact the economy of the region.

Increased use of the Park, especially during winter months by snowmobiles, may reduce the wilderness experience. Those wishing for a wilderness experience however, do frequent the Park in winter, although in low numbers. During the summer months and for winter snowmobile users, the proposed work should overall increase the enjoyment of visitors thus resulting in positive economic benefits.

## **18.0 INFRASTRUCTURE and SERVICES**

Infrastructure is considered a Valued Component as it has the potential to impact directly upon the environment of the Park. The proposed work could lead to effects impacting surface water and groundwater, wetlands and the lakes,

vegetation and plant communities, the atmospheric and acoustic environment as well as wildlife. Infrastructure and Services are built for and provided to the public.

This component also includes services available and provided for Park visitors. For the IEE, Infrastructure and Services not only includes construction activities relating to trails, such as bridge replacement and building construction, it also relates to emergency response (e.g., fire, medical, and police and emergency services), as well as to public infrastructure such as water distribution systems, camping sites and camps. Infrastructure and Services may also have impacts to surrounding communities.

### **18.1 Key Issues**

Bridge construction and replacement will: change the traffic patterns within the Park; potentially open up access to shorelines; affect river and lake beds; raise the potential for accidents; and release of contaminants and increase traffic in the short term. The changes to the trail system by adding a new 900 m section of trail for snowmobiles from Route 385 to the former cross country ski trails and the formalization of the use of the old fire road on Mount Carleton for snowmobiles will not impact on typical road infrastructure in the Park. It will, however, have implications for winter use of the Park, allowing snowmobiles quicker but safer access to existing snowmobile trails in the Park. The restoration of the old service road by installing a wearing surface has implications for access, stability and availability as well as safety, not only for winter snowmobile use but also for summer use. It will also have implication for wilderness aspect of the Park.

The construction of the groomer building in the camp compound and the associated gas re-fuelling bay will have little direct implications regarding infrastructure as these facilities will be located in a large Park compound already contains several buildings, fuel oil and gasoline storage for Park vehicle use; and oil storage for generators.

The services that will be required include hospital, emergency response, police, housing and accommodations, particularly summer accommodations for

construction. It is not expected that construction workers will live or be billeted within the Park as available sites will be reserved for visitors.

## **18.2 Discussion**

At the moment vehicles wishing to access the northern areas of the Park have to use the bridge near the Park entrance. The construction of bailey bridges at the three locations proposed will change the traffic patterns throughout the central area of the Park. Vehicles would be able to shorten their journeys by being able to pass across and between the various lakes, rather than having to go a circuitous route around them. This has long reaching implications for enjoyment of the Park and will aid in reducing the atmospheric impacts on vehicles within the Park.

While this work essentially improves the Park infrastructure, it also has implication for public safety and services. This work will provide for greater safety and emergency response within the Park. It will allow quicker access to accident sites, providing a greater degree of flexibility in evacuation of the Park and most importantly in aiding in the response to forest fires.

The new trail and restoration of the trail/fire road on Mount Carleton has similar implications. With regards to the new 900 m trail infrastructure will be improved by providing a safer and shorter access to the Park trails for snowmobiles. It will also have implications for a potential increase in snowmobile trips. The brushing and repair of the trail/old service road on Mount Carleton will have several impacts. The service access road has existed for over 50 years and was built to allow access to lookout tower at the top of Mount Carleton. It was built with a compacted boulder base and sand and gravel wearing surface. The road appears to have been constructed +/- 4m wide. As it has not been maintained for many years since the use of the lookout tower was discontinued, it has fallen into disrepair with extensive loss of the wearing surface. This loss has led to the exposure of the underlying boulders and rocks forming the base of the road. In some places the road has eroded to a degree where ruts 0.3 m deep are present.



**Heavily eroded section of former access road showing large boulder and rock base.**

It is evident that passage across the boulder surface is hazardous due to the slippery nature of the rocks and boulders. In recent years this road has been used as a walking trail, an alternative to the narrow trail through the woods which starts at the base of the road and Mount Carleton.



**Walking trail at the base of Mount Carleton.**

Some snowmobiles have used the former access road in the winter, even though it is not sanctioned, groomed or easily accessible.

It is clear, that regardless of the wish of various parties to restrict the road from, or open to, snowmobiles use, restoration of the road is essential. Natural erosion is slowly destroying the road base. This has notable consequences for public safety within the Park, as it is used as an evacuation route for accident victims on Mount Carleton and Mount Sagamook.

In 2015, four people had accidents on Mount Carleton. The average evacuation time to bring them down from the mountain was 4 hours. The longest evacuation took 16 hours. Evacuation is presently by hand, with four Park staff carrying the injured person on a stretcher down the road from the mountain, as the road is very rough for an all-terrain vehicle carrying a stretcher. Passage using a Park all-terrain vehicle is restricted to lower sections of the road due to erosion.

Concerns regarding the construction of this road as a snowmobile trail relate to the widening of the road, the loss of tree canopy over the road and possible erosion caused by snowmobiling. In addition, there are concerns regarding wildlife and other aspects of the environment. These have been discussed in other sections of the report. There is also the aspect of use of the road by



**Typical snowmobile trail in the Park.**

snowmobiles, which may preclude cross country skiers or persons snowshoeing from using the old road. An alternative route is however available for snowshoeing, which is the existing walking trail up Mount Carleton. Using the walking trail allows access to the top of the mountain without conflicting with the proposed snowmobile trail. Walking trail would have to be cleaned to suit this type of winter activity, but this would not be a large undertaking and should be accomplished by hand. Once re-built however, the old road would be the most likely trail to use. This could lead to concerns reading a dual purpose use of the



trail and safety concerns. Controlling snowmobile speed may not solve this concern.

The service road is already 3 to 4 m wide with small brush encroachment at the sides. Therefore little clearing of mature wood is required. The canopy above the road is mainly open and is even visible from aerial photographs.



**Old road showing absence of the overhead canopy and existing width of the road. Little bushing would be needed to accommodate the grooming machine.**

Erosion taking place on the road is due to lack of maintenance and natural degradation. This road was built with a rock base and sand and gravel cover. Traffic over the road will not cause any erosion.

Restoration of the road would stabilize the existing erosion and restore the road for safe and timely evacuation, when accidents occur. It would also provide a new access for provincial residents and visitors to the Park to easily access the top of Mount Carleton. At the moment people who have difficulty in walking on narrow rough trails cannot access Mount Carleton to enjoy the view. These people would have an alternate access with less difficulty. This would benefit

New Brunswick's aging population and others and possibly encourage greater use of the Park.

As a designated snowmobile trail it would be groomed in the winter once sufficient snow had fallen. It would however add an area of potential impact to wildlife and increase emissions in the Park. One could argue that as snowmobiles already access the road, emissions therefore would be no different, although this does not take into account additional snowmobile trips. Wildlife would be generally be expected to avoid this road in the summer due to walkers and hikers. In the winter, similar actions may take place as snowmobiles already use the road.

In order for the road to be restored and stabilized it will require the importation of pit run gravel (a mixture of gravel, sand and silt). This would likely come from the Parks' existing gravel pit. The pit run would have to be spread and compacted by hand. Clearing of the road is not necessary, except for small brush along the sides of the road. Deadfalls, however occur randomly and often across the old road.



**Deadfalls over the old road.  
The result of tropical storm  
Arthur. Deadfalls are  
common throughout the  
Park and happen on a  
regular basis.**

The road base itself has prevented much plant growth and the original canopy cut for the road remains largely in place. For snowmobile grooming, a trail width of 4m is required as is a height of 4 m. These distances already exist along the road for the most of its length.

## **19.0 OTHER FACTORS**

### **19.1 Wilderness Experience**

Through its sheer size, remoteness and its undeveloped nature, Mount Carleton Park provides a wilderness experience that is an important aspect for Park visitors. Maintaining the wilderness experience is not only important for both visitors to this remote Park but also the flora and fauna that inhabit the Park. The relatively undeveloped nature of the Park is important to First Nations, who consider the Park a spiritual place. In addition, the wealth of heritage resources, together with known and unknown archeological sites requiring preservation, are somewhat protected by the lack of development within the Park.

### **19.2 Key issues**

It is important to note, the existing footprint of human activity represents less than 1% of the total area of the Park. The proposed work activities will not change the percentage of human footprint in the Park. The completion of these proposed projects will maintain, and perhaps enhance some features within the Park. These improvements may encourage more visitors to visit the Park (particularly during the winter). While more visitors could impact upon the 'wilderness experience', visitors and their vehicles, would still be confined to the existing 1% of trails, roads and campgrounds in the Park. Some of the proposed work however could lead to conflicts with existing winter users of the Park.

### **19.3 Discussion**

The replacement of the bridge structures and the completion of trail maintenance activities on an existing former service road represent necessary maintenance activities on existing infrastructure and will not increase the human activity footprint within the Park. The number of overnight camping areas is not scheduled to be increased. Although the completion of the new access road for snowmobile traffic will require the removal of some mature trees along a 900 m corridor, the trail will be narrow and will be laid out to avoid steep terrain and mature, healthy trees where possible. Efforts should be made to avoid ground disturbance, and herbaceous vegetation and low shrub cover will be encouraged

to occupy the corridor. No wheeled vehicle traffic (ATV) is allowed on this trail or within the Park. The new trail will be gated in the summer to prevent any access.

In the summer, mechanical equipment is limited to Park staff and maintenance vehicles, visitor cars and campers. In winter, vehicular traffic is limited to snowmobiles and vehicle that access the entrance road to reach the lakes for ice fishing. The most notable potential impact to the wilderness experience could be realized from increased snowmobile traffic. In the winter the users of the Park are snowmobilers and those ice fishing. Some use is made of the old road on Mount Carleton by persons using snowshoes and by cross country skiers. The natural habitat and wildlife are already affected by present Park usage. Will these impacts of the proposed works be greater than those already being experienced within the Park, assuming there will be an increase in winter use? This is difficult to answer as the actual increase in potential snowmobile trips is not known. Not all snowmobilers are likely to use the Mount Carleton trail, if it is constructed and not all snowmobiles will refuel at the Park compound.

The expected low impact of the proposed maintenance activities, as well as the small amount of disturbance to undeveloped terrain related to the new section of snowmobile trail will leave the total footprint of human development within the Park essentially unchanged (less than 1% of the total land area of the Park). Based on the above, it is believed that the proposed projects will have low impacts to the wilderness experience expected by visitors to the Park.

Even though the additional land use is small and the work is taking place in developed or presently used areas, except for the new trail, care must be exercised to the potential presence of heritage resources. Pre-work surveys and investigations are required for all areas to be impacted by the work.

## 20.0 PUBLIC SAFETY

The consideration of public safety is considered a basic Valued Component. Public safety is implied, in several of the stated goals of the *NB Parks Act* (2014): “provide opportunities for recreational and outdoor educational activities that promote healthy lifestyles; offer a tourism product that enhances the Province’s image as a quality vacation destination”.

### 20.1 Key Issues

Infrastructure within Provincial Parks will degrade over time. For example, trees fall across roads and trails, brush grows in from the sides of trails obscuring tripping hazards, bridges degrade and must be repaired or replaced. If these basic maintenance activities are not completed on a regular and timely basis, the likelihood of accidents involving visitors to the Park will increase.

As this is a Provincial Park it is the responsibility of the provincial government to provide a safe environment for visitors. This not only involves maintaining all infrastructure and reducing hazards, it also means that emergency response procedures must be in place and evacuation routes must be present.

### 20.2 Discussion

Most of the proposed activities for the Park are essentially maintenance activities. Rebuilding the former bridge at the Little Tobique River and Big Nictau Lake, will provide greater access to the northern shore of the lakes and allow faster emergency response and allow quicker evacuation should it be necessary.

The replacement of the existing structures at the outlet of Bathurst Lake and Tenerife Lake will see the dilapidated bridge structures replaced with more secure structures to accommodate foot and vehicle traffic. For the Bathurst Lake bridge, the new structures will also accommodate light wheeled-vehicle passage that now must cross in a fording location in the water. These new structures will significantly improve the ability to safely cross the lake and river waters and improve access to remote sections of the Park by Park personnel to conduct patrols and maintenance activities. The new bridges will also allow emergency

vehicles to more quickly respond to fires, or to evacuate an injured visitor.

Similarly, the trimming of encroaching brush and dead trees along the existing service road and re-surfacing the road on Mount Carleton will enhance safety on the mountain. Although there is a separate narrow dedicated hiking trail to the summit of the mountain, the public often hike along this service road. Erosion is a significant safety issue for this road. Erosion is evident along the majority of this road, but is severe along several sections. The erosion has created gullies and exposed the rock and boulders base of the road. This poses a hazard to hikers and has reduced the ability of the service road for quick responses for the purposes of fighting fires or evacuating injured hikers. The plan to upgrade the service road involves trimming brush and small trees.

Also, the safety of persons in the Park accessing trails and roadways is threatened by the extensive amount of deadfalls present along either side of the roads and trails.



**Park roads and walking trails are also impacted by the deadfalls.**

Those trees adjacent to and the back from the road that are sufficiently damaged to become a threat must be removed. Removal of these trees must take place as a priority. Throughout the Park, the regular hiking trails are similarly threatened by deadfalls and those trees leaning towards the trails. Removal and cleaning of these trees will reduce the hazard to hikers and also reduce the threat of forest

fires by removing dead dry wood.



**Deadfalls throughout the Park, especially along roads, trails and around campgrounds, constitute not only a safety hazard but a fire danger especially in a dry summer.**

The proposed restoration of the service road must include stabilization and infilling of erosion gullies. Additionally, where it is deemed necessary, runoff should be diverted from the surface of the road into the adjacent vegetated areas to extend the life and serviceability of the restored road.

The creation of a seasonal access trail for snowmobiles to enter the Park is based on enhancing safe use of the existing trail system. Currently snowmobilers have to travel for some distance along Route 385 before they are able to enter the Park. This section of Route 385 has a steep hill and several turns that makes it difficult for vehicles (including wood trucks) to see snowmobiles. The new access road will allow snowmobiles to directly access to the Park and the provincial snowmobile trails while minimizing their exposure to traffic on Route 385.

Appendix B:

*Mount Carleton and Christmas Mountains Snowmobile Trails Development  
Operations and Business Plan*

Trails Work Consulting

Annexe B :

Opérations et plan d'affaires du mont Carleton et des monts Christmas

Trails Work Consulting