
KAWARTHA HIGHLANDS SIGNATURE SITE PARK ACCESS ROAD STUDY



FINAL ENVIRONMENTAL STUDY REPORT

Prepared By:
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For:
Ministry of Natural Resources, Ontario Parks

August 2008

Approval Statement

I am pleased to approve this Final Environmental Study Report (ESR) for the Kawartha Highlands Signature Site Park Access Roads Study.

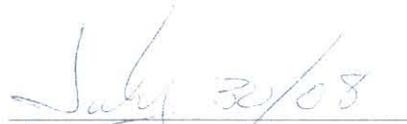
Kawartha Highlands is a natural environment class provincial park located in the northern half of Peterborough County. The Final ESR includes detailed evaluation of alternative ways of providing access to the park from both Highway 28 on the east side of the park and County Road 507 on the west.

The Final ESR was prepared in accordance with Category C project requirements under A Class Environmental Assessment for Provincial Parks and Conservation Reserves. The process that led to the completion of the Final ESR was prepared concurrent with management planning for Kawartha Highlands Signature Site Park. Ontario Parks (Ministry of Natural Resources) has reviewed the Final ESR, is satisfied with the information presented, and supports the preferred access roads. The preferred access roads will be reflected in the final park management plan.

I would like to thank everyone who took the time to participate in the review process that led to the completion of the Final ESR.



Bruce Bateman
Zone Manager
Ontario Parks Southeast Zone
Ministry of Natural Resources



Date

EXECUTIVE SUMMARY

This study investigated alternatives for two potential access roads into Kawartha Highlands Signature Site Park – one from the east side of the park, from Highway 28, and one from the west side, from County Road 507.

Project Proposal

The Access Road Study was carried out as a Category C project under the *Class Environmental Assessment for Provincial Parks and Conservation Reserves* (2005). The study included an evaluation and consultation process that was carried out in accordance with the Ministry's requirements under the Environmental Assessment Act in conjunction with (and parallel to) the management planning process for Kawartha Highlands Signature Site Park.

The purpose of the future access roads is to provide access to the park that maximizes opportunities for recreational activities within the park, and minimizes potential conflicts between park users and private property owners, while not seriously compromising ecological integrity.

Project Alternatives

The study required the development of at least three route alternatives from the east, and three route alternatives from the west as well as consideration of the “do nothing alternative”, in accordance with the Class EA process.

The three road alternatives identified from the **east side** of the park were:

- Using parts of Anstruther Lake Road, to the vicinity of the existing marina;
- Using Long Lake Road to the existing marina; and
- Creating a new road towards McGee Lake (through Lot 4 Concession IX ND and Lot 3 Concession IX ND).

The three route alternatives identified from the **west side** of the park were:

- A new road to the vicinity of Bottle Lake, north of Catchacoma Lake (located through Lot 17 Concession IX and Lot 16 Concession IX);
- Using Beaver Lake Road to the vicinity of Bottle Lake and Sucker Lake; and
- Using Mississagua Dam Road to the existing parking area.

An environmental analysis for each alternative, including ‘do nothing’ was carried out as described in **Section 5.0**.

Project Study Area

A natural heritage study was completed to document the existing aquatic, terrestrial, and wildlife resources within proximity to the access road alternatives.

Natural Environment

Species at Risk and associated habitat that were identified as part of the natural heritage study included the Blanding's turtle, five-lined skink, the eastern hog-nosed snake, cerulean warbler, and the golden-winged warbler.

Kawartha Highlands Signature Site Park also includes two Life Science Areas of Natural and Scientific Interest (ANSI), a Life Science Site, a globally rare and provincially significant alvar community, and provincially rare floral and faunal species.

Significant features, fisheries and aquatic resources, terrestrial wildlife, and breeding birds were identified for each of the project alternatives.

The following features were identified:

- Both coldwater and warmwater fisheries
- Twenty-seven area-sensitive species
- Over 200 species of vascular plants
- Habitat for species at risk and breeding birds

Rock outcrops or knolls occur throughout the park, and existing roads in the park have been built to either go around large rock outcrops, or to traverse the topography at reasonable grades.

Details of the natural features that were identified along each potential roadway are described in detail in Section 3.1.

Land Use and Resource Management

Access road alternatives are intended to be consistent with the long-term land use and resource management goals of the park, including maintaining the semi-wilderness characteristics of the park and remoteness.

The park is currently accessible from County Road 507 on the west and Highway 28 on the east. There are approximately nine existing sideroads that provide access from County Road 507, easterly, towards the park, and five existing sideroads that provide access from Highway 28, westerly, towards the park.

There is limited infrastructure within the park; however, potential new facilities for the park are being identified as part of the Park Management Planning Process.

Recreational activities that currently occur within the park include backcountry camping and canoeing, hunting, angling, and snow sports.

It is expected that demand for backcountry camping within the park will increase once the Park is operational. This demand will be managed through the park's reservation system.

Details of land use and resource management within the park are provided in Section 3.2.

Social, Cultural, and Economic Environments

There are two registered archaeological sites located within the park. Both sites are located in the vicinity of Bottle Lake. A 2003 study of secondary source and background information for archaeological resources in the park indicated that the lack of registered archaeological sites is likely directly related to a lack of detailed archaeological studies in the area.

Significant cottaging communities existing within the park are on Catchacoma, Mississauga, Gold, and Beaver Lakes on the west side of the park, and on Anstruther, Wolf, Loon Call, Long and Loucks Lakes on the east side of the park. There are approximately 2000 cottages in or adjacent to the park, many of which have recently developed minor roadway connections.

Businesses in the park are primarily oriented towards tourism and the cottagers and include marinas and lodges.

The existing social, cultural, and economic environments are discussed in Section 3.3.

Public and Agency Participation

Public and external agency participation was an integral part of the Class EA study. The public, cottage and business owners and external agencies were notified of the following key opportunities for participation in the study:

- Study Commencement and Invitation to Participate
- Public Open House # 1 – May 28 and June 4, 2005
- Public Open House # 2 – July 29 and July 30, 2006
- Public Open House # 3 – September 15 and September 16, 2007

In addition, the public and external agencies were provided with an opportunity to review the draft Environmental Study Report for 60 days and at the third Public Open House. The Final Environmental Study Report will be available for Public Review and submitted to the Ministry of the Environment for Environmental Clearance.

Evaluation of Alternatives and Selection of Preferred Plan

Two evaluation approaches were used to assist in the selection of the Preferred Plan. A Reasoned Argument method was the primary tool used to identify a preferred alternative. In addition, an Arithmetic (weighting-scoring) method was used as a secondary tool to verify the results of the reasoned argument.

The evaluation process included stakeholder and public input through the establishment of the evaluation criteria that reflects what is both relevant to the study area and of importance to the public and stakeholders. The specific evaluation criteria that were used is provided in Section 5.2 and included:

- Natural Environment/Ecological Integrity Considerations
- Land Use and Resource Management Considerations
- Social, Cultural and Economic Considerations

Once the evaluation criteria were confirmed, the advantages and disadvantages of each alternative were identified and presented for public review at the second Open House. The advantages and disadvantages of each alternative are summarized in Section 5.3.

Selection of Preferred Access Road on Each Side of the Park

The Beaver Lake Road alternative has been identified as the Preferred Access Road on the west side of the park and the Anstruther Lake Road alternative (Option 2) has been identified as the Preferred Access Road on the east side of the park. Both Preferred Access Roads:

- Use an existing roadway;
 - Preserve the semi-wilderness characteristics of the park;
 - Minimize impacts to natural environment and ecological considerations;
 - Are compatible with the Park Management Planning Process;
 - Provide a balance between traditional social, cultural and economic activities and the protection of ecological integrity;
 - Minimize impacts to aboriginal values and traditional land or resource issues; and
 - Are less expensive than building a new road.
-

Once the Preferred Alternatives were selected, they were compared to the 'do nothing' alternative to provide a baseline against which to measure the benefits of the undertaking.

The reason why each of the alternatives was selected is discussed in detail in Section 5.4.

Preferred Plan

The Preferred Plan is to identify Beaver Lake Road and Anstruther Lake Road as two of the primary access roads into Kawartha Highlands Signature Site Park.

Key features of the Preferred Plan are discussed below, and in greater detail in Section 6.0.

Public comments on the draft ESR were received and considered, but did not result in major changes to the final document. A summary of comments and responses is provided in **Appendix B**.

Since the start of this study, some improvements to both proposed access roads have been implemented, such as the construction of a temporary parking area on Beaver Lake Road near Bottle Lake.

Bridges

The two existing bridges on Beaver Lake Road are outside of the Park boundary. It is recommended that the second bridge be widened to accommodate two-way traffic and pedestrians when a bridge replacement is required.

Parking and Other Amenities

Current parking restrictions are expected to remain in place on Beaver Lake Road and Anstruther Lake Road. Park visitors will be directed to specific parking areas, through the use of signage.

Signage

Signage on Beaver Lake Road will direct visitors to park at designated parking lots – including existing parking areas or canoe access points. Signage for trails and canoe routes will begin at the parking lots.

Signage on Anstruther Lake Road will direct visitors to park at designated parking lots.

Potential Environmental Impacts and Mitigation

The use of existing roads as primary access roads to the KHSSP will result in minimal impacts to the natural environment. The most sensitive area to potentially be impacted by the proposed works is in the shaded area at the end of Beaver Lake Road, where extra care should be taken in designing and building the parking lot and associated infrastructure.

Standard mitigation measures and proposed control measures are provided in Section 6.9. They include:

- Sedimentation and erosion control measures;
 - Construction timing restrictions for works adjacent to aquatic resources with fish habitat and to protect migratory and protected birds;
 - Protection for peripheral vegetation.
-

Potential impacts to remoteness and private property within the park will be managed through the Park Management Plan. Construction activities may result in temporary noise that could impact nearby cottagers, campers and potentially wildlife. As most of the proposed improvements are being carried out at existing roads, overall changes in noise levels are expected to be minor.

Some consideration should be given to carrying out a Stage 2 Archaeological Assessment at the location off of Beaver Lake Road illustrated in **Figure 2.1** as a shaded area, before a plan is finalized.

Emergency access to central regions of the park should be improved by providing off-road parking on Beaver and Anstruther Lake Roads to keep road allowances accessible in case of emergency.

Project Monitoring Details

An environmental monitoring program is proposed which is comprised of two components: the construction phase (i.e. from clearing a wider corridor for the existing road to the completion of the road, site services and parking areas), and the operational phase (i.e. traffic flow, day use of entrances and wastewater management).

MINISTRY OF NATURAL RESOURCES
KAWARTHA HIGHLANDS SIGNATURE SITE PARK ACCESS ROAD STUDY
ENVIRONMENTAL STUDY REPORT

Table of Contents

1.0	PROJECT PROPOSAL	1
1.1	Location.....	1
1.2	Park Status	1
1.3	Project Objectives	2
1.4	Class EA Process	2
1.5	Project Approach.....	3
1.6	Statement of Purpose for Access Roads.....	3
1.7	Environmental Study Report Contents	3
2.0	PROJECT ALTERNATIVES.....	5
2.1	'Do Nothing' Alternative.....	5
2.2	Road Alternatives	5
3.0	PROJECT STUDY AREA	7
3.1	Natural Environment	7
3.1.1	Species at Risk	7
3.1.2	Natural Heritage.....	8
3.1.3	Fisheries and Aquatic Resources	10
3.1.4	Terrestrial Wildlife.....	13
3.1.4.1	Reptiles.....	13
3.1.4.2	Other Wildlife Habitat.....	15
3.1.5	Breeding Birds.....	16
3.1.6	Natural Vegetation and Terrestrial Habitat Linkages and Corridors	18
3.1.6.1	Vascular Plants.....	18
3.1.6.2	Ecological Land Classification	19
3.1.7	Soils.....	31
3.1.8	Drainage	32
3.1.9	Physiography.....	33
3.2	Land Use, Resource Management.....	33
3.2.1	Remoteness and Semi-Wilderness Characteristics	34
3.2.2	Other Projects.....	34
3.2.2.1	Park Management Planning Process	34
3.2.2.2	Municipal Projects	35
3.2.3	Traffic Patterns and Infrastructure.....	35
3.2.3.1	Traffic Patterns	35
3.2.3.2	Infrastructure	36
3.2.4	Public and Private Recreational Activities	36

3.2.4.1	Backcountry Canoeing	36
3.2.4.2	Hunting	37
3.2.4.3	Angling.....	38
3.2.4.4	Snow Sports	38
3.2.5	Noise.....	38
3.2.6	Aesthetics	39
3.3	Social, Cultural and Economic Environments.....	39
3.3.1	Archaeology, Built and Cultural Heritage.....	39
3.3.1.1	Registered Archaeological Resources	39
3.3.1.2	Built Heritage	39
3.3.2	Businesses	40
3.3.3	Community Character and Cottage Associations	40
3.3.4	Government Services or Infrastructure	41
3.3.5	Public Health and Safety	41
3.3.6	Tourism Lodges/Marinas.....	42
3.3.6.1	Regional Economy	42
3.3.6.2	Marinas and Lodges	42
3.4	Aboriginal Considerations.....	43
4.0	PUBLIC AND AGENCY PARTICIPATION	45
4.1	Initial Public Notice (Invitation to Participate).....	45
4.1.1	Agency Notification	45
4.2	Public Open House #1.....	46
4.2.1	Attendance.....	47
4.2.2	Comments Received and Responses Provided.....	47
4.3	Project Evaluation	47
4.3.1	Attendance.....	48
4.3.2	Comments Received and Responses Provided.....	48
4.4	Opportunity to Inspect the Draft Environmental Study Report (ESR)	48
4.4.1	Attendance.....	49
4.4.2	Comments Received and Responses Provided.....	49
4.5	Opportunity to Inspect the Final Environmental Study Report	49
5.0	EVALUATION OF ALTERNATIVES AND SELECTION OF PREFERRED PLAN	51
5.1	Evaluation Process	51
5.2	Evaluation Criteria.....	51
5.3	Comparison of Alternatives.....	55
5.3.1	New Access Road to Bottle Lake	55
5.3.2	Beaver Lake Road	56
5.3.3	Mississagua Dam Road	57
5.3.4	Anstruther Lake Road.....	58
5.3.4.1	Anstruther Lake Road – Option 1	58
5.3.4.2	Anstruther Lake Road – Option 2.....	59
5.3.5	Long Lake Road	60

5.3.6	New Road Near McGee Lake.....	61
5.4	Selection of Preferred Access Road on Each Side of Park	62
5.4.1	West Side of Park.....	62
5.4.2	East Side of Park.....	62
5.5	Comparison of Preferred Road Alternatives to Do Nothing	63
5.5.1	Do Nothing	63
5.5.2	Do Nothing versus Improvements to Beaver Lake/Anstruther Lake Roads.....	63
6.0	PREFERRED PLAN	65
6.1	Beaver Lake Road Update	65
6.2	Anstruther Lake Road Update.....	66
6.3	Roadway Improvements	66
6.4	Bridges	66
6.5	Parking and Other Amenities	66
6.6	Signage.....	67
6.7	Cost.....	67
6.8	Intersections at County Road 507 and Highway 28	67
6.9	Potential Environmental Impacts and Mitigation	68
6.9.1	Sediment and Erosion Control	68
6.9.2	Construction Timing Restrictions	69
6.9.2.1	Fisheries and Aquatic Habitat.....	69
6.9.2.2	Migratory and Protected Birds.....	69
6.9.3	Minimizing Damage to Peripheral Vegetation	69
6.9.4	Remoteness	69
6.9.5	Other Persons or Properties Outside the Park	70
6.9.6	Traffic Patterns and Infrastructure	70
6.9.7	Private or Public Recreation	70
6.9.8	Noise.....	70
6.9.9	Archaeology.....	70
6.9.10	Local Businesses	71
6.9.11	Community Character.....	71
6.9.12	Public Health and Safety	71
6.9.13	Aboriginal Considerations	71
7.0	PROJECT MONITORING DETAILS.....	73
7.1	Construction Monitoring.....	73

LIST OF FIGURES

- 1.1 Location Plan
- 2.1 Project Alternatives
- 3.1 Significant Natural Features
- 3.2 Aquatic and Terrestrial Resources – Access Road to Bottle Lake
- 3.3 Aquatic and Terrestrial Resources – Beaver Lake Road
- 3.4 Aquatic and Terrestrial Resources – Mississagua Dam Road
- 3.5 Aquatic and Terrestrial Resources – Anstruther Lake Road
- 3.6 Aquatic and Terrestrial Resources – Long Lake Road
- 3.7 Aquatic and Terrestrial Resources – Access Road to McGee Lake
- 3.8 Wildlife Resources – Access Road to Bottle Lake
- 3.9 Wildlife Resources – Beaver Lake Road
- 3.10 Wildlife Resources – Mississagua Dam Road
- 3.11 Wildlife Resources – Anstruther Lake Road
- 3.12 Wildlife Resources – Long Lake Road
- 3.13 Wildlife Resources – Access Road to McGee Lake
- 3.14 Wildlife Management Areas
- 3.15 Land and Soil Types
- 3.16 Access

LIST OF TABLES

- 3.1 Ecological Land Classification Units along the Access Road to Bottle Lake
 - 3.2 Ecological Land Classification Units along Beaver Lake Road
 - 3.3 Ecological Land Classification Units along Mississagua Dam Road
 - 3.4 Ecological Land Classification Units along Anstruther Lake Road
 - 3.5 Ecological Land Classification Units along Long Lake Road
 - 3.6 Ecological Land Classification Units along the Access Road near McGee Lake
 - 3.7 Summary of Traffic Counts on Existing Access Road Alternatives
-

APPENDICES

Appendix A Natural Heritage Features

- A.1 Secondary Source and Field Investigations
- A.2 Environmental Impacts
- A.3 Breeding Bird Point Count
- A.4 Vascular Plant List

Appendix B Public and Agency Participation

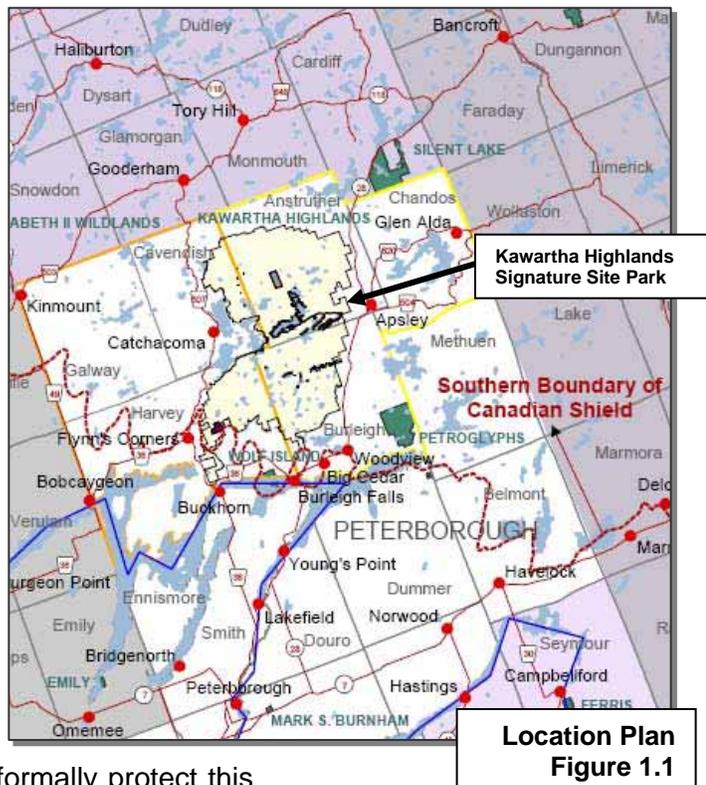
- B.1 Initial Notification
- B.2 Open House #1 Text Panels
- B.3 Open House # 1 Comments Received and Responses Provided
- B.4 Notification for Public Open House #2
- B.5 Open House #2 Text Panels
- B.6 Open House #2 Comments Received and Responses Provided
- B.7 Notification for Public Open House #3
- B.8 Open House #3 Text Panels
- B.9 Open House #3 Comments Received and Responses Provided

Appendix C Evaluation of Alternatives

1.0 PROJECT PROPOSAL

1.1 Location

Kawartha Highlands Signature Site Park is located halfway between Peterborough and Bancroft in northern Peterborough County. It straddles the four geographic townships of Cavendish, Harvey, Burleigh and Anstruther and includes approximately 37,500 ha of Crown land that was identified for protection in the Ontario's Living Legacy Land Use Strategy (LUS). The location of the park is shown in **Figure 1.1**. Kawartha Highlands Signature Site Park is now the largest provincial park in Ontario south of Algonquin Park.



1.2 Park Status

The natural and recreational values of the Kawartha Highlands area have been recognized for decades; however, the decision to formally protect this area originated with the Provincial "Lands for Life" Crown land use planning exercise that took place from 1997 to 1999.

A portion of the Kawartha Highlands already existed as a provincial park prior to the regulation of Kawartha Highlands Signature Site Park. The pre-existing park, which has now been incorporated into the new park's boundary, was classified as a Natural Environment Park and was considered "non-operating" because funding was not allocated for active management. The pre-existing park area of 1861 ha surrounding Bottle Lake and Sucker Lake was put into regulation under the *Provincial Parks Act* in 1989, having been a Park Reserve since 1979. Its potential as a provincial park was first mentioned in a news release from Lands and Forests Minister, J.W. Spooner, in 1959, with the concept that it would accommodate camping, picnicking and bathing facilities.

A Charter and legislation (i.e., *Kawartha Highlands Signature Site Park Act, 2003*) have been established for Kawartha Highlands Signature Site Park. The *Kawartha Highlands Signature Site Park (KHSSP) Act* outlines site-specific policy and operational direction for the Kawartha Highlands and incorporates the provisions of the *Provincial Parks Act* (now the *Provincial Parks and Conservation Reserves Act*). Where different than the *Provincial Parks and Conservation Reserves Act*, the *KHSSP Act* takes precedence.

A provision of the *KHSSP Act* allows for the consideration of two new roads within the park, "one of which shall provide public access to the Park from the western border of the Park and the other shall provide public access to the Park from the eastern border of the Park" (**Section 2**).

Kawartha Highlands Signature Site Park was regulated in 2005 under the *Provincial Parks Act*. The Ministry of Natural Resources has initiated the Management Planning Process for the park; the park will not be fully operational until the Park Management Plan has been approved and implementation is started.

1.3 Project Objectives

The project objectives are:

- to provide public access to Kawartha Highlands Signature Site Park both from the western border of the park and from the eastern border of the park;
- to minimize the negative impacts on the ecological integrity of the park;
- to minimize the potential conflicts with existing residents/development;
- to optimize visitor access to park facilities (e.g. canoe routes, visitor centre, potential hiking routes, parking, etc.); and
- to keep any new facility development >100 m from private property.

1.4 Class EA Process

The Access Road Study is following the Class Environmental Assessment (EA) for Provincial Parks and Conservation Reserves (PPCR) and is being carried out as a Category C project. The Class EA approach affords considerable efficiencies to a proponent, partners, agencies, and the public by grouping projects with similar characteristics, and by following a pre-approved, predictable process. The Class EA establishes criteria for screening projects to determine an appropriate category for each project. The process that is implemented through the approval of the Class EA ensures that the intent of the *Environmental Assessment Act* is met by providing for the identification of issues and concerns and the preferred means of addressing them, with regard to environmental management, protection, minimizing effects, and adopting appropriate mitigation measures.

The Class EA assigns projects to categories in order to:

- expedite planning and implementation for the majority of projects that have potential for low negative environmental effects or public and agency concern (Category A);
- focus on addressing public concerns and mitigation for minority of projects that have potential for medium to high net negative environmental effects and public agency concern;
- enable appropriate planning processes to be followed for Categories B and C; and to
- identify projects that will require an individual EA (Category D).

The four Categories of the Class EA include:

- | | |
|-------------------|--|
| Category A | Potential for low net negative effects and/or public/agency concern. |
| Category B | Potential for low to medium net negative effects and/or public/agency concern. This Class EA requires public/Ministry of Environment (MOE) notification. |
| Category C | Potential for medium to high net negative effect and/or public/agency concern. This Class EA requires an Environmental Study Report and public/MOE notices. |
| Category D | Potential for high net negative effects and/or public/agency concern. This Class EA requires an Individual EA Process, Terms of Reference, and public review process and MOE decision. |

1.5 Project Approach

As previously noted, the Access Road Study is being carried out as a Category C project. The study includes an evaluation and consultation process that has been carried out in accordance with the Ministry's requirements under the *Environmental Assessment Act* in conjunction with (and parallel to) the Management Planning process for Kawartha Highlands Signature Site Park. The Class EA Study has investigated alternatives for two potential access roads into the park, one from the east, and one from the west.

1.6 Statement of Purpose for Access Roads

The Kawartha Highlands Signature Site Park Management Advisory Board has developed a *Statement of Purpose* for the roads, which is as follows:

“To provide access to the park that maximizes opportunities for recreational activities within the park and minimizes potential conflicts between park users and private property owners, while not seriously compromising ecological integrity along access routes.”

1.7 Environmental Study Report Contents

The process prescribed by the MNR for the Class EA Category C undertaking, requires that an Environmental Study Report (ESR) be prepared to address the following:

- Project Proposal
- Project Alternatives
- Study Area
- Environmental Analysis
- Evaluation and Selection
- Implementation Details
- Project Monitoring Details
- Public and Agency Participation

This report provides the required information as listed above and was presented as a Draft ESR, to enable the public to comment on the study recommendations.

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2.0 PROJECT ALTERNATIVES

The study required the development of at least three route alternatives from the east, and three route alternatives from the west as well as consideration of the “do nothing alternative”, in accordance with the Class EA process. The access road alternatives would provide access into the park and specifically, existing canoe routes, lakes, trails, campsites etc. and be compatible with the Park Management Plan’s future land use and protection plans for the area. Some alternatives were developed to include the possibility of providing additional facilities at the terminus of the road. These facilities included washrooms, a park administration office, visitor center, garbage and recycling facilities etc. Parking could be provided at the end of each alternative, to provide visitors with a location at which to leave their vehicles. The project alternatives are shown in **Figure 2.1**.

2.1 ‘Do Nothing’ Alternative

The ‘do nothing’ alternative provides a baseline against which to compare all other alternatives. The ‘do nothing’ scenario includes leaving the existing roads as they are and not identifying any new or upgraded access roads to the park.

2.2 Road Alternatives

The three road alternatives identified from the **east side** of the park were:

- Using parts of Anstruther Lake Road, to the vicinity of the existing marina;
- Using Long Lake Road to the existing marina; and
- Creating a new road towards McGee Lake (through Lot 4 Concession IX ND and Lot 3 Concession IX ND).

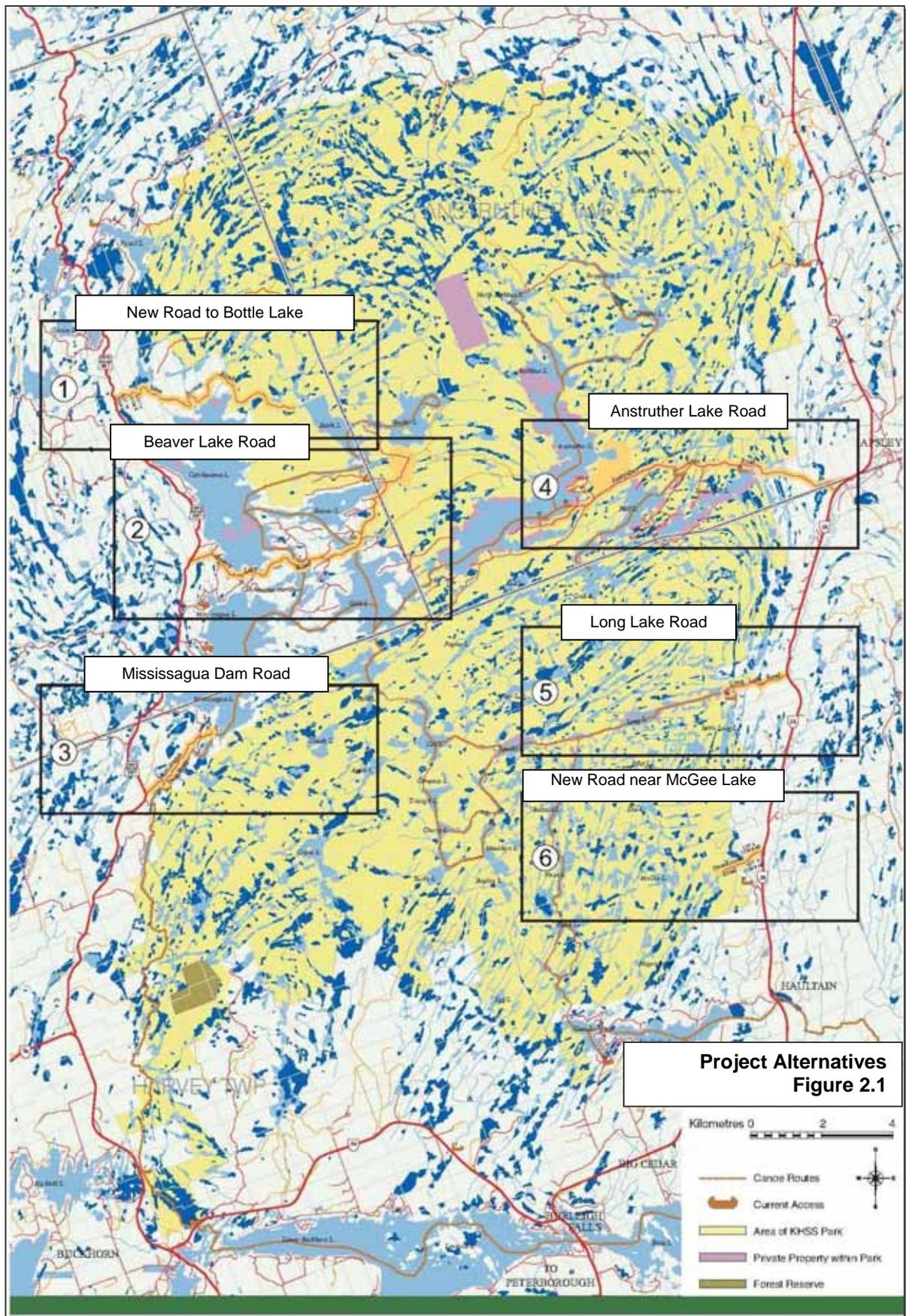
A new route from Tucker’s Road was suggested by some members of the public, to access the northern lakes and campsites at Rathburn, Copper and Serpentine Lakes. This alternative was considered by the park’s Management Advisory Board before this study was initiated and again at the request of the public during the Access Road Study, but was not carried forward for further consideration for the following reasons:

- MNR indicated that the alternative did not satisfy some of the criteria required by the Charter, such as the 100 m distance from private property.
- The maximum length of 2 km for new road development from the boundary of the park would not allow for access to these areas.

The three route alternatives identified from the **west side** of the park were:

- A new road to the vicinity of Bottle Lake, north of Catchacoma Lake (located through Lot 17 Concession IX and Lot 16 Concession IX);
- Using Beaver Lake Road to the vicinity of Bottle Lake and Sucker Lake; and
- Using Mississagua Dam Road to the existing parking area.

An environmental analysis for each alternative, including ‘do nothing’ was carried out as described in **Section 5.0**.



**Project Alternatives
 Figure 2.1**

3.0 PROJECT STUDY AREA

General park information found in this section is taken from the KHSSP Background Information Document.

3.1 Natural Environment

The values for which the Kawartha Highlands Signature Site Provincial Park was established provide for the preservation of the semi-wilderness characteristics of the area. The protection of the ecological integrity of the area is of paramount importance. Long-term protection of natural heritage values is required for the preservation of this unique area. These values are described and have been measured through the criteria under natural environment/ecological integrity as described in **Section 5.2**.

The purpose of this chapter is to document the known existing aquatic resources, terrestrial resources, and wildlife resources, including any significant communities and rare floral or faunal habitat, within proximity to the 6 alternative alignments for access roads into the park. All natural environment features have been characterized based upon field assessment, secondary source data, and consultation with agency staff.

The objective of the natural heritage study is to determine the existing conditions of ecological communities, and to predict potential impacts to natural heritage features along each access road alternative, should development of that specific route alignment be pursued. The evaluation criteria that were assessed include:

- Species at Risk or their habitat;
- significant earth or life science features, including Areas of Natural and Scientific Interest (ANSIs) and Provincially Significant Wetlands (PSWs);
- fish or other aquatic species, communities or their habitats;
- terrestrial wildlife;
- breeding birds; and
- natural vegetation and terrestrial habitat linkages or corridors.

Each of these natural heritage features was the subject of background data searches and field investigations as described in **Appendix A.1**

A summary of environmental features associated with the study area and each access road alternative are shown on **Figures 3.1** to **Figure 3.14** at the end of this section.

The potential environmental impact of each alternative is described in **Appendix A.2** and was taken into consideration in the evaluation of alternatives, as described in the **Section 5.0**.

3.1.1 Species at Risk

Three Species at Risk and/or their habitat were encountered along the potential future access road alternatives. Habitat for the Blanding's turtle was encountered at Bottle Lake Road, Beaver Lake Road, Anstruther Lake Road, Long Lake Road, and McGee Lake Road. Potential five-lined skink habitat and eastern hog-nosed snake habitat was encountered at Bottle Lake Road, Mississauga Dam Road, and Anstruther Lake Road. The eastern hog-nosed snake was observed at two locations along the route for the new access road alternative to Bottle Lake.

Two avian Species at Risk were observed during the field investigations. The cerulean warbler was observed in the vicinity of the potential access roads to Bottle Lake and McGee Lake. Although the golden-winged warbler was observed along ATV trails in the park, it was not observed in the vicinity of any of the potential access road alternatives.

Species at Risk and their habitat are described in greater detail in sections that discuss reptiles, birds and natural heritage.

Species at Risk are relevant to Kawartha Highlands Signature Site Park, as they are the most protected (i.e., legislated) species in the park (and Province) and have special status for protection. Their existence in the park boundary is very relevant to the values for which the provincial park was established, including protection of ecological integrity in the area.

3.1.2 Natural Heritage

The Kawartha Highlands site contains numerous significant features, documented in detail in various publications (Jalava et al., 2001; Government of Ontario, 2005). The park contains two Life Science ANSIs (Bottle Creek ANSI, Long Lake Barrens ANSI), a Life Science Site (Burleigh-Harvey Recreation Zone), a globally rare and provincially significant alvar community, and numerous provincially rare floral and faunal species.

The Life Science ANSIs are located in close proximity to various access road alternative alignments. According to Brunton (1990), the Bottle Creek ANSI is a moderately broken bedrock-controlled landscape of thin soil over granite bedrock, dominated by young to medium aged deciduous and coniferous upland forests. The Long Lake Barrens ANSI is a complex of wetlands and dry granite-based rock barrens with scrubby growth, characterized by young coniferous and deciduous forests. These features are discussed in greater detail herein, as they relate to each route alternative.

Other significant attributes of the Kawartha Highlands area include:

- large tracts of relatively undisturbed natural landscape supporting large mammal habitat;
- vast rock barrens;
- older forest stands, including some with old-growth qualities;
- representation of the northern Ontario limit of Paleozoic bedrock vegetation;
- high quality bog and fen communities; and
- sandy and peaty shoreline communities dominated by concentrations of Significant Species.

Immediately to the west of the park (i.e., west of County Road 507), lies the Kawartha Barrens Enhanced Management Area. This area is dominated by mixed forest types over shallow relief Canadian Shield topography. The eastern portion of this area contains significant mineral aggregate deposits, and the entire area has timber resources important to the forest industry (MNR, 2005).

In addition to those described above, all significant features mapped for the area by the Government of Ontario (2005) were considered in this discussion. None of the 6 access road alignments lie within designated significant natural features (**Figure 3.1**). However, some of the route alternatives lie adjacent to nearby features that may be indirectly

impacted by the development and use of that roadway alternative. Below is a discussion of the significant features located within 1 km of each route alternative.

Route Alternative 1 – Access Road to Bottle Lake

The eastern end of this route alternative approaches the shoreline of Bottle Lake. The shores of this lake have been identified as exhibiting Atlantic coastal plain floral communities. These marsh communities develop on peaty, sandy or gravelly shorelines that typically experience fluctuating water levels (Government of Ontario, 2005). It is the fluctuation of water along the shoreline that prohibits the establishment of most woody species, thereby allowing the perpetuation of this coastal plain vegetation whose seeds are adapted to withstand long periods of inundation. A number of these coastal plain species are provincially rare, including bayonet rush, Carey's smartweed, snail-seed pondweed, Virginia meadow-beauty, twin-scaped bladderwort and yellow-eyed grass.

Also present at the eastern end of this route alternative is the Bottle Creek ANSI. This ANSI represents a bedrock landscape with young to medium-aged deciduous and coniferous forests, dominated by sugar maple and eastern hemlock (Brunton, 1990). An area of unique red oak, white pine and red maple forest is present on thin-to-absent soils along the shore of Bottle Creek. Within the ANSI are exceptional areas of Atlantic Coastal Plain vegetation, and mature eastern hemlock forests along the creek. Additionally, the western terminus of the access road to Bottle Lake is less than 0.5 km from the Kawartha Barrens Enhanced Management Area, which is located west of County Road 507.

Route Alternative 2 – Beaver Lake Road

The end of this route alternative meets the eastern tip of Beaver Lake. In the vicinity of this area are those features listed for Route Alternative 1 (Access Road to Bottle Lake), including the Bottle Creek ANSI and associated natural features, and the shores of Bottle Lake that contain Atlantic Coastal Plain vegetation.

To the east of this route alternative is another area identified as mature forest. This forest community is dominated by eastern hemlock, and is present on the northwestern shores of Anstruther Lake (Government of Ontario, 2005). Additionally, the western terminus of Beaver Lake Road is less than 0.5 km from the Kawartha Barrens Enhanced Management Area (MNR, 2005).

Route Alternative 3 – Mississagua Dam Road

This route alternative connects with the southern tip of Mississagua Lake. No designated natural heritage features are present within the vicinity of this access road alignment. However, the western terminus of Mississagua Dam Road is less than 0.5 km from the Kawartha Barrens Enhanced Management Area (MNR, 2005).

Route Alternative 4 – Anstruther Lake Road

This route alternative terminates at an existing marina on Anstruther Lake. No designated natural heritage features are present within the vicinity of this access road alignment.

Route Alternative 5 – Long Lake Road

This short route alternative meets Long Lake at its western end. Immediately north of this alternative is the Long Lake Barrens ANSI. This ANSI is dominated by a complex of wetlands (mostly bog) and dry rock barrens with patches of scrubby growth and young forests. The site exhibits excellent representation of granite lakeshore cliffs, rock

slopes, bare rock ridge vegetation, red oak–red pine forest, and typical northern bog features (Brunton, 1990).

Also present along the shoreline of Long Lake are fine examples of Atlantic Coastal Plain vegetation communities (Government of Ontario, 2005).

Route Alternative 6 – Access Road near McGee Lake

No designated natural heritage features are present within the vicinity of this access road alignment.

3.1.3 Fisheries and Aquatic Resources

The Kawartha Highlands is comprised of two main watersheds that support drainage to the Mississagua River and Deer Bay Creek, making this park a headwater region for both of these watercourses. Numerous wetlands in the area provide water retention and filtration services ensuring moderated river flows and provide exceptional water quality (Government of Ontario, 2005).

Both cold water and warm water sport fishing opportunities are found throughout the Kawartha Highlands. Precambrian granite, underlying most of the park, lacks the extensive carbonate material found in limestone plains to the south. Therefore, lakes on the shield are slightly acidic and have less buffering capacity than lakes located on limestone plains. Large lakes in the area are oligotrophic, or nutrient poor, clear water lakes that support sport fish species, such as lake trout, largemouth bass, smallmouth bass, walleye, and brook trout (Government of Ontario, 2005). Some of the lakes in the area have also been stocked with splake. Eutrophic, or nutrient rich, lakes are found throughout the Kawartha Highlands, determined by topography and often influenced by beaver activity. These eutrophic lakes are characterized by shoreline bog wetlands, and fish species such as largemouth bass, smallmouth bass, walleye, brook trout, muskellunge, and northern pike (Government of Ontario, 2005).

The results of route-specific fisheries investigations are depicted along each access road alignment in **Figures 3.2 to 3.7**. With the exception of major lakes and rivers that occur within the study area (i.e., Beaver Lake, Mississagua Lake, Anstruther Lake, Long Lake, etc., which all provide diverse habitat for sport fish, panfish, and baitfish), all fisheries waters found along the alternative access road alignments support warm water baitfish habitat. No cool water or cold water resources exist, and no rare or sensitive species were recorded. Details for each alternative access road alignment are summarized below.

The federal *Fisheries Act* is the primary piece of environmental legislation governing the protection of fisheries and aquatic habitat, including the harmful alteration, disruption or destruction (HADD) of fish habitat, and the deposition of deleterious substances into fisheries waters. Potential impacts to fish habitat can be realized as direct habitat loss or indirect impacts to habitat. The potential for HADD exists where the potential access road alignments come within close proximity to aquatic resources. These locations are described below as '*Fisheries Act constraints*' since they could require approvals under the federal *Fisheries Act* and/or *Authorization for Works or Undertakings affecting Fish Habitat* if they are impacted.

Route Alternative 1 – Access Road to Bottle Lake

The new access road to Bottle Lake alternative alignment is situated within the Mississagua River watershed. Four *Fisheries Act* constraints (i.e. watercourses, waterbodies, marshes, swamps, ponds and wetlands) occur along this route. While no

fish were captured at any of these locations, there is the potential for fish habitat at all 4 locations. The four *Fisheries Act* constraints are described below.

The two easternmost features are headwater streams draining south toward Catchacoma Lake. Both of these watercourses demonstrate good riffle-pool-run sequencing, with in-stream habitat (i.e., boulders, coarse woody debris). Benthic substrates are sand and gravel. With water depths ranging between 5 and 8 cm, and channel widths ranging between 5 and 100 cm, these features would likely provide habitat for small-bodied fish only. Water quality data at both drainage features indicates that water temperatures associated with these aquatic resources were similar to air temperatures, ranging between 22 and 23°C.

The two westernmost features are large wetlands; an existing wooden bridge crosses one of the wetlands. At the bridge, there is no to low flow draining from the wetland; however, this outlet is likely not a barrier to fish migration during the spring freshet. Extensive coniferous riparian vegetation surrounds the adjacent wetland units, which are characterized by 75% cover of floating vegetation. Water quality data at both wetland units indicates that water temperatures associated with these aquatic resources were similar to air temperatures, at approximately 23°C.

Route Alternative 2 – Beaver Lake Road

The Beaver Lake Road access road alignment is situated within the Mississagua River watershed. The three *Fisheries Act* constraints that occur along this route are described below.

The two easternmost features are the narrows over which there are existing single span bridges (i.e., at Catchacoma Narrows, and between Beaver Lake and Gold Lake). Both of these bridges are over fisheries waters, supporting warm water sport fish habitat.

The other feature is a large swamp with open water pockets. The water temperature was warmer than the air temperature, at approximately 26°C. This feature supports warm water baitfish habitat, including:

- brook stickleback
- fathead minnow
- northern redbelly dace
- creek chub
- finescale dace

MNR fish stocking records also indicate that Sucker Lake (which is located adjacent to the “shaded area” at the eastern terminus of the route alignment) has been a part of the historical fish stocking program. Brook trout were stocked in Sucker Lake in the 1950s and 1960s, and lake trout were stocked in the lake between the 1970s and 1990s (Government of Ontario, 2005).

Route Alternative 3 – Mississagua Dam Road

The Mississagua Dam Road access road alignment is situated within the Mississagua River watershed. There are no minor fisheries watercourses or water bodies along this route. *Fisheries Act* implications are limited to Mississagua Lake or the Mississagua River, which support diverse warm water fish habitat, including sport fish.

Route Alternative 4 – Anstruther Lake Road

The Anstruther Lake Road access road alignment crosses three watersheds. The majority of the route (i.e., the western portion) is situated within the Anstruther sub-unit of the Mississagua River watershed, in addition to a small area draining within the Deer

Bay Creek watershed, while the area adjacent to Highway 28 is within the Eels Creek watershed. The five *Fisheries Act* constraints that occur along Anstruther Lake Road, and an additional *Fisheries Act* constraint situated within the “shaded area” at the western end of the route alignment (Option 1) are described below.

Four wetland pockets exist on the north side of Anstruther Lake Road, and an additional wetland spans both sides of the road. These features are described from east to west.

The easternmost feature is a small area of open water, with submergent and emergent vegetation, that drains under both sides of Anstruther Lake Road. The water temperature was similar to the air temperature, at approximately 22°C. This feature supports warm water baitfish habitat, including:

- finescale dace

A small area of ponded water, on the north side of Anstruther Lake Road, is located within a mixed coniferous and deciduous swamp. A dense layer of duckweed covered the surface of the water. The water temperature was similar to the air temperature, at approximately 22°C. This feature supports warm water baitfish habitat, including:

- brook stickleback
- finescale dace

A long narrow marsh, situated on the north side of Anstruther Lake Road, also supports fish habitat. Floating vegetation provides 50% cover. The water temperature was similar to the air temperature, at approximately 22°C. This feature supports warm water baitfish habitat, including:

- finescale dace

A large cattail marsh, situated on the north side of Anstruther Lake Road, is located within a deciduous forest. Floating vegetation provides up to 25% cover. The water temperature was warmer than the air temperature, at approximately 26°C. This feature supports warm water baitfish habitat, including:

- brook stickleback
- fathead minnow
- northern redbelly dace

A large shallow water marsh, situated on the north side of Anstruther Lake Road, is located within a mixed coniferous and deciduous forest. Floating and emergent vegetation provide cover. The water temperature was warmer than the air temperature, at approximately 26°C. This feature supports warm water baitfish habitat, including:

- finescale dace
- northern redbelly dace

Additionally, a large watercourse meanders through the “shaded area” (Option 1). This drainage feature has a defined streambed and stream banks, but was almost dry during the field investigations, with just a few isolated pockets of stagnant water. Benthic substrates are predominately cobble, rubble, and boulder. While no fish were captured at this location, there is the potential for fish habitat. Based on the physical limitations of this feature, fish habitat is likely limited to small-bodied fish during the spring freshet only.

MNR fish stocking records also indicate that Anstruther Lake has been a part of the historical fish stocking program. Brook trout were stocked in Anstruther Lake in the 1920s and 1930s, smallmouth bass were stocked in the 1930s, and lake trout were stocked in the lake between the 1930s and 1980s (Government of Ontario, 2005).

Route Alternative 5 – Long Lake Road

The Long Lake Road access road alignment crosses two watersheds. The western half of the route is situated within the Deer Bay Creek watershed, while the eastern half of the route is within the Eels Creek watershed. One *Fisheries Act* constraint occurs along this route.

A large wetland exists on the north side of Long Lake Road. The feature is characterized by hummocky areas, with grasses and young poplars, and is surrounded by a mixed coniferous and deciduous swamp. Some floating vegetation provides cover. The water temperature was warmer than the air temperature, at approximately 27°C. This feature supports warm water baitfish habitat, including:

- brook stickleback
- fathead minnow
- pearl dace
- creek chub
- northern redbelly dace

Route Alternative 6 – Access Road near McGee Lake

The access road alternative near McGee Lake is situated within the Eels Creek watershed. The three *Fisheries Act* constraints that occur along this route are described below. Each of these features is a small lake, which likely supports diverse warm water fish habitat. These aquatic resources have a variety of habitat types, including open water components, with floating, submergent, and emergent vegetation. Low shrubs line the margins of the features, which are situated within mixed coniferous and deciduous forests.

MNR fish stocking records also indicate that McGee Lake has been a part of their historical and recent fish stocking program. Lake trout were introduced to McGee Lake in 1954, with on-going stocking efforts continuing into the 2000s (Government of Ontario, 2005).

3.1.4 Terrestrial Wildlife

3.1.4.1 Reptiles

Weather conditions during the reptile surveys are summarized as follows:

- June 16, 2005 – Air temperature increased from 16 to 18°C, and cloud cover increased from 5 to 100%. Wind speed increased from 1 to 4 (Beaufort scale).
- June 17, 2005 – Air temperature at 17°C, with overcast skies and a wind of 1 (Beaufort scale).
- June 18, 2005 – Air temperature at 17°C, with 30% cloud cover, and a wind of 3 (Beaufort scale).
- June 30, 2005 – Air temperature at 21°C, with 5% cloud cover, no wind, and haze.

Potential habitat for reptile Species at Risk is identified in **Figures 3.8 to 3.13**, and discussed below.

Route Alternative 1 – Access Road to Bottle Lake

The access road alternative to Bottle Lake provides appropriate habitat for the Blanding's turtle, five-lined skink, and eastern hog-nosed snake. There are several sites along the route that could provide habitat for Blanding's turtle. A wide, slow river, approximately 1 km east of County Road 507, has ideal shallow, weedy water with basking logs. Closer to the east end of the route, a long, branching marshy inlet off Bottle Lake could provide adequate turtle habitat. In addition, the shores of Bottle Lake itself have appropriate vegetation cover with basking logs. Sandy soil for breeding was not observed at either site, but could be within migrating distance. The west end of this route is more densely forested than five-lined skinks or eastern hog-nosed snakes prefer. Approximately halfway along the route, near Catchacoma Lake, the forest understory becomes more open forming a dry hemlock forest. Two eastern hog-nosed snakes were observed in this community during a subsequent visit (see **Figure 3.8**). Further east along the route, the forest opens to an oak barren, with an open canopy and rocky outcrops. This community provides habitat for both the eastern hog-nosed snake and the five-lined skink.

Route Alternative 2 – Beaver Lake Road

The Beaver Lake access road alternative has poor habitat for the eastern hog-nosed snake because it is too rocky and densely wooded. The route also has poor habitat requirements for the five-lined skink. Some cleared areas beside the road have woody debris, but there are few rocky outcrops and the forest is too dense. There are two bridges in the middle of the route that cross large watercourses - these watercourses offer potential Blanding's turtle habitat. The shoreline of Bottle Lake itself is too deep and open, but an inlet on the east end of the "shaded area" is sheltered and weedy, with ample basking logs. No nesting sites were observed along the shores of these aquatic resources. Other wetlands scattered along the route are too dense with shrubs to offer habitat for the Blanding's turtle.

Route Alternative 3 – Mississagua Dam Road

The Mississagua Dam Road access road alignment does not provide the habitat requirements for eastern hog-nosed snakes. There is an area located towards the east end of the route with potential for five-lined skink habitat; a sparsely treed rock barren with fallen logs, approximately 0.5 ha in size. The route is immediately adjacent to the Mississagua River at a couple of points, but not along good Blanding's turtle habitat (i.e., lacking shoreline vegetation, logs and other shelter). Various ponds and river sections with good potential for Blanding's turtle habitat are located along the route, but are 20 m or more away from the road.

Route Alternative 4 – Anstruther Lake Road

The Anstruther Lake Road access road alignment provides good quality reptile habitat. There are many small rock barrens scattered along the route that are excellent skink habitat. Most of these barren areas have logs or stumps, and adjacent wooded areas have leaf litter. These open areas may also provide habitat for the eastern hog-nosed snake, and are complimented by adjacent woodlands that could provide soil for nesting and hibernating. In addition, the landfill, located toward the eastern end of Anstruther Lake Road, should provide good nesting and hibernating habitat. The many small weedy ponds found along this route provide very good Blanding's turtle habitat.

Route Alternative 5 – Long Lake Road

The Long Lake Road alternative has no open or rocky outcrops for five-lined skink or eastern hog-nosed snake habitat. There is one large pond, located halfway along the route that offers very good Blanding's turtle habitat. Adequate nesting soil was observed in the vicinity of the pond. The lake access at Long Lake is at a marina with a developed shoreline that does not provide adequate turtle habitat.

Route Alternative 6 – Access Road near McGee Lake

The new access road alternative near McGee Lake is densely forested and, therefore, poor habitat for the five-lined skink and eastern hog-nosed snake. A couple of open meadow areas are located along the route, but are too densely vegetated to provide basking sites. A small lake, located approximately halfway along this route, provides vegetation and basking logs for Blanding's turtles.

3.1.4.2 Other Wildlife Habitat

During the natural heritage surveys, incidental wildlife observations were made and include the following common species: tetraploid gray treefrog, bullfrog, northern green frog, wood frog, northern leopard frog, mink frog, Midland painted turtle, eastern garter snake, northern ring-necked snake, eastern hog-nosed snake, northern short-tailed shrew, raccoon, beaver, porcupine, red fox, black bear, white-tailed deer, and moose.

Route-specific wildlife habitat notes are described below, including comparisons of each access road alignment with mapping provided by Ontario Parks (2006) regarding Bear Management Areas (BMAs), moose early wintering areas, deer winter area, and deer yards. These features are depicted on **Figure 3.14**.

Route Alternative 1 – Access Road to Bottle Lake

Incidental wildlife observations made along the access road to Bottle Lake alternative include northern leopard frog, eastern hog-nosed snake and moose. The entire route lies within a BMA. The western portion of this route alternative is located within 1 km of a deer winter area, while the eastern portion of the route is located within 1 km of moose early wintering habitat. No deer yards have been identified within the vicinity of the route.

Route Alternative 2 – Beaver Lake Road

Incidental wildlife observations from the Beaver Lake access road include northern green frog, wood frog, eastern garter snake and white-tailed deer. The route lies within a BMA. No deer yards or moose early winter areas have been identified in the vicinity of this route alternative.

Route Alternative 3 – Mississagua Dam Road

Incidental wildlife observations from the Mississagua Dam Road access road alignment include northern green frog, bullfrog, northern ring-necked snake, short-tailed shrew, red fox, black bear and white-tailed deer. The route lies within a BMA. No deer yards or moose early wintering areas have been identified within the vicinity of this route alternative.

Route Alternative 4 – Anstruther Lake Road

Incidental wildlife observations from the Anstruther Lake Road include northern green frog, mink frog, raccoon, beaver, porcupine and white-tailed deer. The route lies within a

BMA. No deer yards or moose early wintering areas have been identified within the vicinity of this route alternative.

Route Alternative 5 – Long Lake Road

Incidental wildlife observations from the Long Lake Road access road alignment include only the green frog. This route alternative is located on the border of a BMA; the north side of the route is within the BMA, while the south side is outside the management area. Additionally, the eastern portion of this route is located within a winter deer yard. No moose early wintering areas have been identified within the vicinity of this route alternative. However, the eastern terminus of Long Lake Road is approximately 1 km from the Peterborough Crown Game Preserve, which is located east of Highway 28.

Route Alternative 6 – Access Road near McGee Lake

Incidental wildlife observations from the access road near McGee Lake alternative include tetraploid gray treefrog, northern green frog, bullfrog and mink frog. This route alternative is located adjacent to a BMA; the eastern end of the route is on the border of the management area. The route lies within a winter deer yard. No moose early wintering areas have been identified within the vicinity of this route alternative. However, the eastern terminus of the access road near McGee Lake is less than 0.5 km from the Peterborough Crown Game Preserve.

3.1.5 Breeding Birds

There was good bird song activity during all surveys. Weather conditions during the bird surveys are summarized as follows:

- June 16, 2005 – Air temperature increased from 16 to 18°C, and cloud cover increased from 5 to 100%. Wind speed increased from 1 to 4 on the Beaufort scale.
- June 17, 2005 – Air temperature at 17°C, with overcast skies and a wind of 1 (Beaufort scale).
- June 18, 2005 – Air temperature at 17°C, with 30% cloud cover, and a wind of 3 (Beaufort scale).
- June 30, 2005 – Air temperature at 21°C, with 5% cloud cover, no wind, and haze.
- July 1, 2005 – Air temperature increased from 18°C to 23°C, with 10% cloud cover, and haze. Wind speed increased from 1 to 3 (Beaufort scale).
- July 2, 2005 – Air temperature increased from 10 to 18°C, with no cloud cover. Wind speed increased from 1 to 3 (Beaufort scale).

A complete list of birds observed is provided in **Appendix A.3** (breeding bird point count results). Avian data collected during the point counts and area searches are discussed cumulatively herein. Locations of the breeding bird point count surveys are depicted on **Figures 3.8 to 3.13**.

Seventy-three species of birds were observed; all of which are likely to be breeding on the subject lands. All species observed are ranked S5, very common and demonstrably secure in Ontario, or S4, common and apparently secure in Ontario; the exceptions include the Cerulean Warbler which is ranked S3 (rare to uncommon in Ontario), and the European Starling which is ranked SE (exotic and not native to Ontario).

The Cerulean Warbler is recognized as a species of special concern by COSEWIC and COSSARO. In Ontario, this species is known to nest in mature, second growth

deciduous or mixed forests of 100 ha or greater. It can be found in both upland and lowland forests, but it prefers lowland sites that are wet to mesic (Government of Canada, 2006).

Twenty-seven area-sensitive species were observed on the subject lands. The more conservative of these species (Broad-winged Hawk, Hermit Thrush, Black-throated Blue Warbler, Cerulean Warbler, and Black-and-white Warbler) require a minimum of 100 ha of suitable forest habitat for breeding. The Broad-winged Hawk is a forest nesting raptor with a breeding territory of 125 to 175 ha.

Route Alternative 1 – Access Road to Bottle Lake

The access road to Bottle Lake alternative has good bird diversity, with 42 species observed along its route. There is a high number of area-sensitive species, 23 in total, including both the cerulean warbler and broad-winged hawk. The cerulean warbler is particularly common on this site, with half a dozen heard calling at various locations along the western half of the route. A great blue heron nesting colony is known to occur at Bottle Lake, at the end of the route alternative (Ontario Parks, 2006). The point counts along this route alternative suggest that the overall density of breeding birds is relatively low, with 14 pairs per 10 ha. The low density is possibly a function of the heavily forested nature of this route alternative, with many area-sensitive species holding large breeding territories. The most abundant species are black-capped chickadee and ovenbird, with black-throated green warblers and white-throated sparrows also being common.

Route Alternative 2 – Beaver Lake Road

The Beaver Lake access road alignment has good bird diversity, with 41 species observations. There are 20 area-sensitive species, including Broad-winged Hawk. The hawk was seen in the “shaded area” near Sucker Lake. The “shaded area” was also the only location where a Swainson’s thrush was observed, generally a more northern species. A great blue heron nesting colony is known to occur at Mississagua Lake near the middle of this route alternative (Ontario Parks, 2006). The point count surveys found an average density of 20 breeding pairs per 10 ha. Red-eyed vireos and ovenbirds are abundant, with black-capped chickadees also very common.

Route Alternative 3 – Mississagua Dam Road

The Mississagua Dam Road access road alignment has good bird diversity, with 40 species observations. However, it has a lower number of area-sensitive species; only 16 were observed along its route. This route is relatively open, as the Mississagua River runs parallel to the road. These open conditions are less favourable to area-sensitive forest breeding birds. The density of breeding birds, as measured by the point counts surveys, is relatively high with 27 pairs per 10 ha. Red-eyed vireos are very abundant. Other relatively common birds include chestnut-sided warbler, pine warbler, ovenbird and American goldfinch, species suited to the more open woodlands along this route alternative.

Route Alternative 4 – Anstruther Lake Road

The Anstruther Lake Road access road alignment has excellent bird diversity, with 57 species observations. The high diversity could be attributed to the fact that this is a longer route, with a wider range of habitats. Several species that are often associated with more open fields or woodlands (barn swallow, chimney swift, and mourning warbler) were observed. This was also the only route where the golden-winged warbler was

observed. This route alternative also has high numbers of area-sensitive species; 23 in total. A broad-winged hawk was observed in the southwest section of the “shaded area.” This individual appeared to be agitated and may have been nesting nearby. The point count surveys suggest that the density of breeding birds along this route alternative were the highest of all alternative alignments, at 39 pairs per 10 ha. No species stood out as being very abundant. However, American goldfinch, red-winged blackbird, swamp sparrow, common yellowthroat and red-eyed vireo are all common species, representative of the patches of open habitat and wetlands along this route alternative.

Route Alternative 5 – Long Lake Road

The Long Lake Road access road alignment has less diversity, with only 29 species observations. It also has a low number of area-sensitive birds; only 11. The density of breeding birds, as measured by the point count surveys, is also low at 12 pairs per 10 ha. Black-capped chickadee is the most common species.

Route Alternative 6 – Access Road near McGee Lake

The access road alternative near McGee Lake has the lowest diversity, with only 26 species observed. It also has the lowest number of area-sensitive species; only 10. However, it should be noted that this alternative was only assessed during the late breeding bird survey. Therefore, some early nesting species were most likely not accounted for along this route. The route covers almost exclusively forested habitat. Therefore, many common forest nesting species can be assumed to be breeding based on extrapolation of abundant species along the other route alternatives. The cerulean warbler was one of the few area-sensitive species observed along this route. The density of breeding birds, as measured by the point count surveys, is relatively high at 28 pairs per 10 ha. Red-eyed vireos, blue jays and ovenbirds were all found to be abundant.

3.1.6 Natural Vegetation and Terrestrial Habitat Linkages and Corridors

3.1.6.1 Vascular Plants

Route Alternative 1 – Access Road to Bottle Lake

One hundred fifty-six species of vascular plants were recorded; of these, 140 species (90%) are native, and 16 species (10%) are exotic. This very high proportion of native species reflects the original character of the land cover and dominance of natural, high-quality habitats, such as forests, swamps, and marshes in which the native species thrive. The few non-native species are associated with trails.

With the exception of one species, no other nationally or provincially rare or endangered plants were found. One hundred thirty-two of the native species (95%) are ranked S5 (secure). There are six (4%) S4 ranked (apparently secure) species. The only S3 ranked (vulnerable) species, Swamp St. John's-wort (*Triadenum virginicum*), was observed at the eastern end of the alignment, along the shoreline of a shallow water wetland (SAF1-1). This species is also the only species recorded along the route alternative that has a high coefficient of conservatism (10). No regionally rare species were observed.

Route Alternative 2 – Beaver Lake Road

One hundred sixty-four species of vascular plants were recorded; of these, 131 species (80%) are native, and 33 species (20%) are exotic. The relatively high proportion of native species reflects the character of the land cover and dominance of natural, high-

quality habitats. On the other hand, non-native species are associated with roadsides and proximity to human habitations.

No nationally or provincially rare or endangered species were found. One hundred twenty-two of the native species (95%) are ranked S5. There are 7 (5%) S4 ranked species. One species observed, Leatherleaf, has a high coefficient of conservatism (9). No regionally rare species were observed.

Route Alternative 3 – Mississagua Dam Road

One hundred sixty-eight species of vascular plants were recorded; of these, 129 species (77%) are native, and 39 species (23%) are exotic. This is a reflection of the relatively high quality habitats present along this route alternative.

No nationally or provincially rare or endangered species were found. One hundred twenty of the native species (95%) are ranked S5. There are six (5%) S4 ranked species. No species with a high coefficient of conservatism, or regionally rare species, were observed along this route alternative.

Route Alternative 4 – Anstruther Lake Road

Two hundred five species of vascular plants were recorded; of these, 165 species (80%) are native, and 40 species (20%) are exotic. This illustrates the mixture of pristine and anthropogenically influenced communities along this route alternative.

No nationally or provincially rare or endangered species were found. One hundred fifty-seven of the native species (96%) are ranked S5. There are 7 (4%) S4 ranked species. A single species along this route alternative, Jack Pine, is considered to have a high coefficient of conservatism (9). No regionally rare species were observed along this route alternative.

Route Alternative 5 – Long Lake Road

One hundred sixty species of vascular plants were recorded; of these, 134 species (84%) are native, and 26 species (16%) are exotic. This species composition again illustrates the mixture of quality natural habitat and human disturbance.

No nationally or provincially rare or endangered species were found. One hundred twenty-nine of the native species (97%) are ranked S5. There are 4 (3%) S4 ranked species. No species with high coefficients of conservation, or regionally rare species, were observed along this route alternative.

Route Alternative 6 – Access Road near McGee Lake

Ninety-four species of vascular plants were recorded; of these, 91 species (97%) are native, and 3 species (3%) are exotic. The very high proportion of native species reflects the character of the land cover and dominance of natural, high-quality habitats.

No nationally or provincially rare or endangered species were found. Eighty-seven of the native species (97%) are ranked S5. There are three (3%) S4 ranked species. No species with high coefficients of conservation, or regionally rare species, were observed along this route alternative.

3.1.6.2 Ecological Land Classification

Vegetation communities are depicted along each access road alignment in **Figures 3.8 to 3.13**. Descriptions of these vegetation communities are summarized below, and presented in **Tables 3.1 to 3.6**.

Route Alternative 1 – Access Road to Bottle Lake

This access road alignment is dominated by coniferous hemlock stands, mostly in the central and western portions. The eastern portions are more diverse, with extensive areas of sparsely treed rock barrens and interspersed deciduous and mixed forest patches. A large marsh, containing floating-leaved vegetation, exists at the eastern end of the proposed road alignment.

Table 3.1 Ecological Land Classification Units along the Access Road to Bottle Lake

Unit Type	Unit Description
Rock Barren	
RBT Oak Treed Rock Barren	Open to semi-open communities of exposed, extensive rock outcrops. The trees (white oak, red oak, white pine) are open-grown and short, growing in shallow soil in rock crevices. The open areas of full sunlight have occasional cover of common juniper and blueberry, carpets of lichens in the xeric portion of rock, and the herbs (e.g., poverty grass and hairgrass) have developed where there is accumulation of mineral soil and moisture in small depressions. The canopy cover is extremely variable and areas with more tree shade feature better shrub and herb development, with saplings of ironwood, Alleghany blackberry, sweet fern and large-leaved aster.
Forest	
FOC Dry-Fresh Hemlock-White Pine Coniferous Forest	A dominant forest cover in the western half of the proposed alignment. On the undulating terrain, hemlock is the leading tree canopy species, closely followed by white pine, with small amounts of hardwoods such as red oak, white oak and white birch. The herb layer is generally poorly developed with only a few species, for example; wild sarsaparilla, spinulose wood fern and creeping partridge-berry. Stands are characterized by considerable amounts of fallen woody debris.
FOM* Red Maple-Sugar Maple-Red Oak-White Pine Mixed Forest	This, and the other 2 mixed forest types (FOM** and FOM***), are composed of various combinations of tree species. In this case the dominant trees are red maple, sugar maple, red oak and white pine.
FOM** Red Maple-Trembling Aspen-Hemlock-Balsam Fir-White Pine Mixed Forest	This association is characterized by canopy species, such as red maple, trembling aspen, American hemlock, balsam fir and white pine, although a few other minor constituents are also present.
FOM*** Fresh Hemlock-White Pine-Maple-White Birch Mixed Forest	Compared to the other two mixed forest communities (FOM* and FOM**), this community has a greater representation of hemlock. Sub-dominants include white pine, red and/or sugar maple and white birch; however, the dominance ratios between all these species are extremely variable.
FOM3-1 Fresh Hardwood-Hemlock Mixed Forest	The dominant tree canopy species, hemlock, is accompanied by several hardwood species, such as white birch, sugar maple and red maple. The community is poor floristically, and structurally simple. The hemlock dominates all the woody understory strata, while the only species in abundance in the herb layer is large-leaved aster.

Table 3.1 Ecological Land Classification Units along the Access Road to Bottle Lake

Unit Type	Unit Description
FOD Fresh Red Maple-Trembling Aspen Deciduous Forest	Small stands representing this particular combination of canopy species were observed amongst extensive rock outcrops in the central portion of the proposed road alignment. Sugar maple is the dominant species, along with smaller amounts of trembling aspen, as well as some white spruce. The herb layer is well developed, with wild sarsaparilla as the major species, followed by bracken fern, large-leaved aster, blue-bead lily and white-grained mountain-rice.
Swamp	
SWT3-15* Alder-Wintergreen Organic Thicket Swamp	This tall shrub thicket is dominated by speckled alder and winterberry, growing in various proportions. The ground is usually very hummocky, and the deep channels between shrub clusters have standing water with duckweed at the surface. Several wetland species form the herb layer, including blue-joint grass, marsh fern, fringed sedge and cattail.
Marsh	
MAS3-4 Broad-leaved Sedge Organic Shallow Marsh	This marsh type was often found in narrow, land-locked channels where organic matter had accumulated. Various species of large sedges have formed patches, most importantly, lake-bank sedge.
MAS3-12* Fowl Manna Grass Organic Shallow Marsh	Fowl meadow grass is the principal species of this marsh. Patches representing this type are often interspersed with other meadow and marsh types.
Shallow Water	
SAM1-1 Pickerel-weed Mixed Shallow Aquatic	Pickerel-weed is the only floating/emerged leaved species in this aquatic type, developing in shallow open waters, mostly along lake shorelines.
SAF1-1 Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic	The largest patches of this association are found towards the eastern end of the alignment, where they are well represented in semi-stagnant waters in the widest portions of a creek.
* Not listed in the ELC manual for southern Ontario (Lee et al., 1998).	

Route Alternative 2 – Beaver Lake Road

This access road alternative is dominated by a mosaic of deciduous and mixed forest stands. Houses and cottages are located along almost the entire length of the alignment, except for the easternmost portion. Housing density is relatively low and the individual lots are large, mostly retaining their natural forest cover. The quality of vegetation improved in the easterly direction, with the extension containing natural, little disturbed cover of sugar maple deciduous forest and associated mixed stands and swamps in areas of low topography.

Table 3.2 Ecological Land Classification Units along Beaver Lake Road	
Unit Type	Unit Description
Forest	
FOD5 Dry-Fresh Sugar Maple Deciduous Forest	A broadly defined community dominated by sugar maple and a diverse assortment of other, mostly hardwood species, with no clear sub-dominants: e.g. red maple, white ash, black cherry, beech, basswood, aspen, white birch or ironwood. The understory layers are generally well-developed and the ground flora is typical of maple stands.
FOD5-1 Dry-Fresh Sugar Maple Deciduous Forest	Sugar maple dominates these communities, with minor representation of ironwood, white ash, basswood, black cherry and hemlock. Sugar maple also forms the bulk of the sub-canopy and its saplings are abundant in the shrub layer. The ground herbaceous flora is well developed, especially in its spring aspect, and included white trillium, blue cohosh, Pennsylvania sedge, wild lily-of-the-valley, wild sarsaparilla and many others.
FOD5-2 Dry-Fresh Sugar Maple- Beech Deciduous Forest	Mature stands dominated by sugar maple with a strong admixture of American beech, and smaller amounts of others species, including coniferous ones (e.g., hemlock). The dominant species are well represented in the understory layers. Hobblebush and saplings of tree species (maple, beech, black cherry) form the shrub stratum. The summer ground flora is typical of maple stands and consists of wild lily-of-the-valley, spinulose fern, beech-drops and white-grained mountain-rice.
FOM Dry-Fresh Mixed Forest	A broad group of diverse patches composed of various proportions of several hardwood and softwood species. The canopy dominants, sub-dominants and minor constituents include, without any specific order: sugar maple, red maple, red oak, white oak, white pine, red pine, hemlock, white ash, black cherry, ironwood and beech.
FOM6-1 Fresh-Moist Sugar Maple- Hemlock Mixed Forest	Sugar maple and hemlock are the two dominant canopy species, but their relative proportions vary considerably. Other species present include white and yellow birch, beech, white ash or black cherry. The shrub layer is typically composed of hemlock, striped maple and hobblebush. Compared to pure deciduous stands of sugar maple, the herbaceous ground flora is generally weakly developed and includes New York fern, spinulose fern, ground-pine, wild lily-of-the-valley, bluebead-lily and wild sarsaparilla.

Table 3.2 Ecological Land Classification Units along Beaver Lake Road	
Unit Type	Unit Description
Swamp	
SWM6* Black Ash-Yellow Birch- Conifer Mineral Mixed Swamp	This community type was recorded only at the easternmost extension of this alternative, between Bottle and Beaver lakes. The stand is located in a long, shallow depression amongst upland sugar maple stands (FOD5-1). This particular community is dominated by black ash, followed by yellow birch, hemlock, white cedar, balsam fir, and a few other species (e.g., basswood, white elm). Mountain maple is the main shrub species and is accompanied by saplings of the tree canopy species. The herb layer is rich and diverse and includes false mitrewort, sensitive fern, bulblet fern, dwarf raspberry, American marsh-pennywort, wood reed-grass, smaller enchanter's-nightshade and many others.
SWT3-15* Alder-Wintergreen Organic Thicket Swamp	This tall shrub thicket is dominated by speckled alder and winterberry, growing in various proportions. The ground is very hummocky, and the deep channels between shrub clusters have standing water with duckweed at the surface. Several wetland herbaceous species form the herb layer, including bluejoint grass, marsh fern, fringed sedge and cattail.
Marsh	
MAS3-13* Bluejoint-Stick-tight Organic Shallow Marsh	Bluejoint and stick-tight are the two dominant species in this community type. The patch is located at the westernmost end of Beaver Lake Road, where damming due to road construction created ponded conditions, die-back of the former tree canopy and a promotion of the herb layer.
* Not listed in the ELC manual for southern Ontario (Lee et al., 1998).	

Route Alternative 3 – Mississagua Dam Road

This access road alignment is dominated by a mosaic of deciduous and mixed forests; however, the majority of these communities have been significantly affected by anthropogenic changes, including housing and cottage development, selective logging, road development, waste disposal and trampling.

Table 3.3 Ecological Land Classification Units along Mississagua Dam Road	
Unit Type	Unit Description
Forest	
FOC2-2 Dry-Fresh White Cedar Coniferous Forest	This community is located at the intersection of County Road 507 and Mississagua Lake Road. This small patch is young and dense, and merges into white cedar-hardwoods further to the south. The stand is dominated by cedar, with a small amount of other species, including black cherry, white ash, red oak and sugar maple. The cedar also dominates the shrub layer. The development of the herb layer is weak, with only Jack-in-the-pulpit attaining any appreciable cover.

Table 3.3 Ecological Land Classification Units along Mississagua Dam Road

Unit Type	Unit Description
FOD5 Dry-Fresh Sugar Maple Deciduous Forest	This is a broadly defined category, dominated by sugar maple, and a diverse assortment of other, mostly hardwood species, with no clear sub-dominants. Other hardwoods include red maple, white ash, black cherry, beech, basswood, aspen, white birch or ironwood. The understory layers are generally well developed and the ground flora is typical of maple stands.
FOD5-12* Dry-Fresh Sugar Maple-Red Maple Deciduous Forest	Within this alignment, this community type is represented by young stands composed of sugar and red maple, with admixtures of several other species, including white elm, hemlock, basswood, balsam fir, white birch and red oak. Fir saplings form the bulk of the shrub layer. Major herbs include graceful sedge, wild lily-of-the-valley, false Solomon's-seal, white-grained mountain-rice and enchanter's nightshade.
FOD5-13* Fresh-Moist Sugar Maple- Poplar Deciduous Forest	A well-developed stand located at the eastern end of the alignment. Sugar maple and large-toothed aspen occur in almost equal proportions. Minor species include ironwood and white pine and other species' seedlings and saplings are red oak, white oak, white ash and red maple. Beaked-hazel is the main tall shrub species. The herb layer is diverse, with blue-bead lily, wild lily-of-the-valley, bracken fern, wild sarsaparilla and several others.
FOM Dry-Fresh Mixed Forest	A broad group of diverse stands composed of various proportions of several hardwood and softwood species. Canopy dominants, sub-dominants and minor constituents include, without any specific order: sugar maple, red maple, red oak, white oak, white pine, red pine, hemlock, white ash, black cherry, ironwood and beech.
FOM2-2 Dry-Fresh White Pine-Sugar Maple Mixed Forest	This type is typical of the general area and occurs on shallow soil over bedrock. The tree canopy is somewhat discontinuous and dominated by white pine and sugar maple, with lesser amounts of red oak, red maple, hemlock, trembling aspen, red pine, and white spruce. The understory is well developed, with Alleghany blackberry, barren strawberry, hairgrass, large-leaved aster, graceful sedge, bracken fern, Canada bluegrass, white-grained mountain-rice, and many others.
Swamp	
SWD2-1 Black Ash Mineral Deciduous Swamp	This community is almost exclusively dominated by black ash, with occasional presence of white cedar, yellow birch or balsam poplar. The shrub layer is composed of winterberry, speckled alder and ash saplings. Lake-bank sedge, bluejoint grass, dwarf raspberry, sensitive fern, fowl meadow grass and several others species are growing in the well-developed and species-rich herb layer.
* Not listed in the ELC manual for southern Ontario (Lee et al., 1998).	

Route Alternative 4 – Anstruther Lake Road

This access road alignment is generally dominated by a mosaic of deciduous and mixed forests of varying degrees of natural state. Localized patches of mixed treed and shrub swamps are also present. Houses and cottages are scattered along the alignment, but housing density is generally low. An area of undisturbed forest cover is present within the “shaded area” adjacent to eastern bay of Anstruther Lake. Numerous marshes and swamps, of various sizes, are traversed by the existing Anstruther Lake Road.

Table 3.4 Ecological Land Classification Units along Anstruther Lake Road	
Unit Type	Unit Description
Forest	
FOD1-1 Dry-Fresh Red Oak Deciduous Forest	Common on flat rock knolls, and consists of short, open-grown red and white oak, along with some white pine, red maple and ironwood. Due to bedrock-controlled microtopography, understory layers are patchy. Shrubs are represented by Alleghany blackberry, juneberry, and low sweet blueberry. The dominant herbs are common hairgrass and bracken fern, with large-leaved aster, white-grained mountain-rice, wild lily-of-the-valley, and marginal wood fern representation as well. The exposed rock is covered by thick carpets of reindeer lichens (<i>Cladina</i> and <i>Cladonia</i>).
FOD5 Dry-Fresh Sugar Maple Deciduous Forest	A broadly defined type, dominated by sugar maple, and a diverse assortment of other, mostly hardwood species, with no clear sub-dominants, including red maple, white ash, black cherry, beech, basswood, aspen, white birch or ironwood. The understory layers are generally well developed and the ground flora is typical of maple stands.
FOD5-1 Dry-Fresh Sugar Maple Deciduous Forest	Sugar maple dominates these communities, but there are very minor contributions of ironwood, white ash, basswood, black cherry and even hemlock. Sugar maple also forms the bulk of the sub-canopy and its saplings grow abundantly in the shrub layer. The ground herbaceous flora is usually well developed, especially in its spring aspect, and includes white trillium, blue cohosh, Pennsylvania sedge, wild lily-of-the-valley, wild sarsaparilla and many others.
FOD5-10 Dry-Fresh Sugar Maple- White Birch-Poplar Deciduous Forest	Within the proposed northward extension, occurring on a gentle, north facing slope, on deep soils. Sugar maple is the dominant tree canopy species, followed by white birch, large-toothed aspen and hemlock. Fir saplings dominate the shrub layer. The herb layer is well developed and contains wild sarsaparilla, large-flowered bellwort, wild lily-of-the-valley, large-leaved aster, white-grained mountain-rice, bracken fern, false Solomon’s-seal among others.

Table 3.4 Ecological Land Classification Units along Anstruther Lake Road

Unit Type	Unit Description
FOD5-11* Dry-Fresh Sugar Maple- White Birch Deciduous Forest	A large patch within the proposed northward extension toward a bay of Anstruther Lake. Sugar maple and white birch dominate the tree canopy in almost equal proportions, and there is some presence of basswood, as well. The forest occurs on moderately deep soils within rolling upland. Beaked hazel and honeysuckle are growing in the shrub layer. The herbs are diverse, with wild sarsaparilla, large-leaved aster, wild lily-of-the-valley, white-grained mountain-rice, Pennsylvania sedge, large-flowered bellwort, bluebead lily and several others.
FOM Fresh-Moist Mixed Forest	A broad group of diverse patches composed of various proportions of several hardwood and softwood species. Canopy dominants, sub-dominants and minor constituents include sugar maple, red maple, red oak, white oak, white pine, red pine, hemlock, white ash, black cherry, ironwood and beech.
FOM2-1 Dry-Fresh White Pine-Oak Mixed Forest	This forest occurs on shallow soils over bedrock. Several patches have been disturbed in the past as there is evidence of selective logging. White pine and red oak are the main canopy species, and there are admixtures of sugar maple, white ash, and ironwood. The shrub layer is moderately well developed, with Alleghany blackberry and some juneberry. Because of the relative openness of the canopy, herbs are abundant, with wild lily-of-the-valley, common hairgrass, bracken fern, low sweet blueberry, large-leaved aster and white-grained mountain-rice.
FOM3-2 Dry-Fresh Sugar Maple- Hemlock Mixed Forest	Sugar maple and hemlock are the leading canopy species in this type. Several other species are present in minor quantities, including white birch, white ash, white elm, balsam fir, white spruce, trembling aspen and beech. The shrub layer is often composed of saplings of the leading canopy species, especially maple, as well as true shrubs, such as beaked hazel. The herb layer is moderately well developed, with wild sarsaparilla, wild lily-of-the-valley, white-grained mountain-rice, bluebead lily and dwarf raspberry.
Swamp	
SWD2-1 Black Ash Mineral Deciduous Swamp	This is a mid-aged community, almost exclusively dominated by black ash, with only occasional presence of white cedar or balsam poplar. The forest is simply structured, essentially consisting of the main tree canopy, sparse shrub layer (winterberry, speckled alder, ash saplings) and a well-developed herb cover, with lake-bank sedge, bluejoint grass, dwarf raspberry, sensitive fern, fowl meadow grass and several others.
SWD2-3* Black Ash-Red Maple Mineral Deciduous Swamp	Occurring near the shores of Anstruther Lake, this swamp is dominated by black ash, followed by red maple and some other species, such as white elm, yellow birch and occasional balsam fir. The shrub layer is relatively well developed and composed of mountain maple, choke cherry, winterberry and beaked hazel. Sensitive fern, dwarf raspberry, wild lily-of-the-valley, rough goldenrod, wild sarsaparilla, royal fern, graceful and fringed sedge and numerous others grow in the rich herb layer.

Table 3.4 Ecological Land Classification Units along Anstruther Lake Road

Unit Type	Unit Description
SWT2-13* Mixed Mineral Thicket Swamp	This is a narrow, fringe community forming a shoreline zone along Anstruther Lake. Willows form a tall (2 to 3 m), discontinuous layer, while sweet gale and winterberry form a lower (1.5 m), continuous cover. Several herbs grow beneath the shrubs and in intervening spaces, including bluejoint grass, wool-grass, royal fern, water smartweed, reed-like three-way sedge and tall meadow-rue.
SWT3-2 Willow Organic Thicket Swamp	Various willow species form the tall shrub canopy of this community type, which frequently occurs as small patches amongst or along the shores of marshes. Bluejoint grass, sensitive fern, dwarf raspberry, cattail, and sedges form the herb layer.
SWT3-15* Alder-Wintergreen Organic Thicket Swamp	This tall shrub thicket is dominated by patchy distribution of speckled alder and winterberry, growing in various proportions. Other shrubs include narrow-leaved meadowsweet and red osier dogwood. The ground is usually very hummocky, and the deep channels between shrub clusters had standing water with duckweed at the surface. Several wetland species form the herb layer, including bluejoint grass, reed canary grass, sensitive fern, multi-coloured blueflag, mint, and lake-bank sedge.
Cultural	
CUT1-7* Mixed Cultural Thicket	This is an open and patchy community of various shrubs and tree saplings in a former open field that is regenerating back to a woody state. There is scattered occurrence of staghorn sumac, white elm, trembling aspen, red pine, Jack pine, balsam poplar, and black cherry. The herb layer remains characteristic of old-field meadows and includes Canada bluegrass, redtop, cypress spurge, wild carrot, white sweet clover, mullein, common St. John's-wort and several others.
Marsh	
MAM2-11* Mixed Mineral Meadow Marsh	Various proportions of forb and graminoid species are found in this community, including bluejoint grass, spotted Joe-pye weed, spotted touch-me-not, reed-canary grass, rough goldenrod, northern water-horehound and many others.
MAS3-1 Cattail Organic Shallow Marsh	Centrally located "islands" within a small marsh, dominated by broad-leaved cattail in the tall herb layer and, in the short herb layer, marsh fern and sensitive fern.
Shallow Water	
SAF1-1 Water Lily Floating-leaved Shallow Aquatic	Fragrant water-lily is the dominant species in this aquatic community, in waters 60 to 120 cm deep. A large alga (<i>Chara</i>) grows in the water, along with abundant flat-leaved bladderwort.
* Not listed in the ELC manual for southern Ontario (Lee et al., 1998).	

Route Alternative 5 – Long Lake Road

This access road alignment is dominated by deciduous, coniferous, and mixed forests. Localized patches of mixed treed and shrubs swamps are also present. Houses and cottages are scattered along the alignment, with a marina at the westernmost end.

Table 3.5 Ecological Land Classification Units along Long Lake Road	
Unit Type	Unit Description
Forest	
FOC4-1 Fresh-Moist White Cedar Coniferous Forest	This community is almost exclusively dominated by white cedar, which forms the tree canopy, sub-canopy and the poorly developed shrub layer. Due to the high density of the trees, shade and deposition of acidic litter, there is very little, if any, ground herb cover. This type occurs in association with mixed forests (FOM).
FOD5 Dry-Fresh Sugar Maple Deciduous Forest	This is a broadly defined community type, dominated by sugar maple, with various minor admixtures of several other species and no clear sub-dominants, including red maple, white ash, white elm, trembling aspen, black cherry, beech, basswood, aspen, white birch or ironwood, sometimes also balsam fir or hemlock. The understory layers are generally well developed and the ground flora is typical of maple stands. Beaked hazel, mountain maple and bush honeysuckle are growing in the shrub layer. The herbs include wild sarsaparilla, wild lily-of-the-valley, bluebead-lily, rose twisted-stalk, dwarf raspberry and several others.
FOM Fresh-Moist Mixed Forest	A broad class of diverse stands composed of various proportions of several hardwood and softwood species. Canopy dominants, sub-dominants and minor constituents include, without any specific order: sugar maple, red maple, red oak, white oak, white pine, red pine, hemlock, white ash, black cherry, ironwood and beech.
FOM5-2 Dry-Fresh Poplar Mixed Forest	Large-toothed aspen and white spruce dominate the tree canopy in this type. Other species are present in small, more or less equal amounts, including white cedar, white birch, balsam fir, and hemlock. The herb layer is well developed, with wild lily-of-the-valley, wild sarsaparilla, blue-bead lily, Pennsylvania sedge, star-flower, bracken fern and several others.
Swamp	
SWT3-15* Alder-Wintergreen Organic Thicket Swamp	This tall shrub thicket consists of speckled alder and winterberry, growing in various proportions. The ground is usually very hummocky, and the deep channels between shrub clusters have standing water with duckweed at the surface. Several wetland herbaceous species form the herb layer, including bluejoint grass, marsh fern, flowering sedge and cattail.

Table 3.5 Ecological Land Classification Units along Long Lake Road

Unit Type	Unit Description
SWM6* Black Ash-Yellow Birch- Conifer Mineral Mixed Swamp	This community is dominated by black ash, followed by white cedar and yellow birch. Balsam fir saplings are dominant in the shrub layer, along with young white elm, and the true shrubs, such as beaked hazel, mountain maple, honeysuckle and alder-leaved buckthorn. The herb layer is rich and diverse and includes wild sarsaparilla, dwarf raspberry, naked mitrewort, sensitive fern, interrupted fern, bluebead lily and many others. Sphagnum and other mosses cover the forest floor. Physiognomically, the community is characterized by numerous tree windthrows, mounds, and pits.
Cultural	
CUP3-3 Scotch Pine Coniferous Plantation	This is a very young coniferous plantation, composed of Scotch pine and occasional white spruce. The intervening spaces between the young trees are covered by old-field meadow vegetation with poverty grass, fleabane, common milkweed, rough-fruited cinquefoil, grey goldenrod and ox-eye daisy.
Marsh	
MAS3-4 Broad-leaved Sedge Organic Shallow Marsh	This marsh type is found in a small pond just off Highway 28. Lake-bank sedge and fowl meadow grass are the main species growing in the shallow water. Scattered amongst them are water-plantain, cattail, hemlock water-parsnip and pondweeds.
* Not listed in the ELC manual for southern Ontario (Lee et al., 1998).	

Route Alternative 6 – Access Road near McGee Lake

This access road alternative is dominated by a diverse, mixed forest community, with the exception of a sugar maple deciduous forest located at the western terminus. Midway along the route is an extensive marsh complex, composed of various meadow communities and scattered islands of thicket swamp. In the eastern half, the alignment crosses a few narrow depressions filled with meadow marshes.

Table 3.6 Ecological Land Classification Units along the Access Road near McGee Lake

Unit Type	Unit Description
Forest	
FOC1-2 Dry-Fresh White Pine-Red Pine Coniferous Forest	Developing on shallow soil over bedrock, this type is dominated by white and red pines, with minor abundances of other species, including white cedar, balsam fir, white spruce, trembling aspen and white birch. There is good development of the shrub layer beneath a somewhat open tree canopy, with such species as bush honeysuckle, poison ivy, red raspberry, choke cherry, and beaked hazel. Barren strawberry and bracken fern are the main herbs.

Table 3.6 Ecological Land Classification Units along the Access Road near McGee Lake

Unit Type	Unit Description
FOD5 Dry-Fresh Sugar Maple Deciduous Forest	This is a broadly defined group, dominated by sugar maple and a diverse assortment of other, mostly hardwood species, with no clear sub-dominants, including red maple, white ash, black cherry, beech, basswood, aspen, white birch or ironwood. The understory layers are generally well developed and the ground flora is typical of maple stands.
FOM Fresh-Moist Mixed Forest	These are diverse, multi-layered mixed woods covering large areas along this route alternative. The communities are too diverse, patchy and intermixed to be placed in any specific community type. Canopy dominants, or associates, include almost all the species found in the region, including sugar maple, red maple, red oak, white oak, white pine, red pine, balsam fir, trembling aspen, large-toothed aspen, hemlock, white spruce, white ash, black cherry, ironwood and beech. The herbaceous understory is also well developed and diverse.
Swamp	
SWT3-15* Alder-Wintergreen Organic Thicket Swamp	This tall shrub thicket is dominated by speckled alder and winterberry, growing in various proportions. The ground is usually very hummocky, and the deep channels between shrub clusters have standing water with duckweed at the surface. Several wetland herbaceous species form the herb layer, including bluejoint grass, marsh fern, fringed sedge and cattail.
Marsh	
MAM2-11* Mixed Mineral Meadow Marsh	Various proportions of forb and graminoid species are found here, including bluejoint grass, spotted Joe-pye weed, spotted touch-me-not, Canada thistle, reed-canary grass, rough goldenrod, northern water-horehound and many others.
MAS3-4 Broad-leaved Sedge Organic Shallow Marsh	This type is best developed within a wide open marsh at the western end of this alternative. The ground is very wet to saturated, with open water frequent between the sedge hummocks. Sedge species (cattail and bluejoint grass) are the dominant species. Scattered amongst this open herbaceous marsh are "islands" of alder and winterberry (SWT3-15).
* Not listed in the ELC manual for southern Ontario (Lee et al., 1998).	

A complete list of vascular plants that were observed as part of the fieldwork undertaken for this study is provided in **Appendix A.4**.

3.1.7 Soils

The soils of the KHSSP have been classified according to 32 soil associations (Gillespie and Acton 1981), including 21 mineral and 11 organic associations. Large portions of the KHSSP are comprised of rocklands or rock outcrops. In these areas, which include large tracts within the northeastern, southeastern and southwestern portions of the study area, only a few pockets of shallow sandy tills or organic soils occur. These include the Monteagle, Blamer, Chandos, Kenabeek, Mallard, Tweed, Wemyss and Wendigo series, which vary from excessively to imperfectly drained. Pockets of very poorly drained organic mucks and peats are found in low-lying terrain in these areas as well. Within the

extreme southwestern portions of the study area, sandy loams derived from calcareous stony loam tills and calcareous sandy outwash. These include the Brinco, Crahme, Dummer, Douro, Farmington, Otonabee, Rockcroft, Tecumseth and White Lake series, which vary from excessively to poorly drained.

The prevailing characteristics of bedrock and soil types may be used to identify broad scale "land types" of which three have been defined for the Kawartha Highlands (van der Meer 2000:28-29). The Henvey land type, which occurs in areas of exposed Precambrian bedrock or granitic bedrock mantled by shallow, acidic Monteagle sandy loam soils. Areas classified as Henvey occupy the majority of the study area, occurring throughout most of Anstruther, Harvey and Burleigh township portions of the KHSSP.

The largest area classified as Sherborne land type occupies the central section of the Kawartha Highlands, encompassing the lands north and east of Lake Catchacoma, as far north as North Rathbun Lake, east to Anstruther Lake and south to Beaver, Bottle and Sucker lakes. The area along the lower reaches of the Mississagua River and to the north of Lower Buckhorn Lake are also classified as Sherborne. The Sherborne land type comprises acidic stony, loamy and/or silty sands derived from granitic bedrock (typically Monteagle, Wemyss, Chandos and Wendigo series soils in the KHSSP) that are glacially or fluvially deposited shallow tills in the form of ground moraines, broken by exposed bedrock uplands.

The lands along the west central and eastern margins of the KHSSP study area are classified as Limerick land type and consist of acidic to calcareous stony and bouldery sandy loams and loamy sands (typically Wendigo, Chandos and Tweed series soils in the Kawartha Highlands) derived from glacial till occurring as ground moraines or drumlins.

Soil conditions within the park, are shown on **Figure 3.15**.

Soil conditions along the existing sideroads on the east side of the KHSSP vary from Monteagle sandy loams with Rocklands along Long Lake Road, to Monteagle sandy loam along Anstruther Lake Road. On the west side of the KHSSP Douro and Farmington loam, Tweed, Wendigo and Chandos loamy sands make up Mississagua Dam Road and Beaver Lake Road is primarily Chandos, Tweed and Monteagle sandy loam.

3.1.8 Drainage

The waterways of the KHSSP all drain southward into the Kawartha Lakes, which lie in the upper reaches of the Otonabee-Trent River watershed. The hydrological system of the KHSSP is composed of several closely inter-related components: the principal drainage systems; the wetlands; and groundwater. The three principal systems include the Mississagua River, Deer Bay Creek and Eels Creek, which drain the bedrock uplands and plains of the study area (van der Meer 2000:31).

The Mississagua River drainage basin is comprised of a series of creeks that drain from northern Anstruther Township and Northeastern Cavendish Township. Pencil Creek flows southwesterly across the northernmost portion of the KHSSP to Pencil Lake. A small dam controls water flow into Pencil Lake. From Pencil Lake, drainage is south to Catchcoma and Mississagua lakes. Stony and East Stony creeks drain the eastern portion of the Mississagua River watershed, via Sucker and Bottle lakes, which are connected to Catchacoma Lake by Bottle Creek and Beaver Lake. To the east of Bottle Lake, Serpentine, Copper, Wolf, Rathbun and Anstruther lakes are fed by a series of watercourses, including the Anstruther and Camp creeks which ultimately drain

southward along the western edge of the KHSSP study area, emptying into Buckhorn Lake. Dams on Bottle Creek and at the outlet of Mississagua Lake control water levels within the system, which is managed to provide water supply for the Trent-Severn Waterway.

Within the southcentral portion of the KHSSP study area, the Deer Creek drainage basin originates from a complex of minor watercourses that drain into Loon Call Lake to the south of Wolf Lake. The system includes a complex series of small, marshy creeks and includes many lakes of moderate size such as Agate, Buzzard, Cherry, Coon, Cox, Crab, Crane, Long, Loucks, Shark, Stoplog and Vixen. Drainage from the southerly lakes in this system is provided by Buzzard and Deer Bay Creeks. Deer Bay Creek empties into Lower Buckhorn Lake east of Wolf Island. Tertiary creeks also drain the numerous wetlands in the southernmost portion of the watershed.

The eastern margins of the KHSSP study area are located within the Eels Creek drainage basin. Eels Lake, located to the Northeast of the KHSSP, empties into Eels Creek, which follows a meandering southeasterly course to Stony Lake, receiving water from lakes wetlands via numerous secondary tributaries, the largest of that are in the Eels Creek system include Julian, Big Cedar, and McGee.

3.1.9 Physiography

The rocks underlying Kawartha Highlands lie within the Grenville Province, one of the major subdivisions of the Canadian Shield (Thurston, 1991). This belt is comprised of complex assemblages of gneissic and migmatitic rocks which have been divided into domains and subdomains on the basis of lithological, metamorphic, and structural characteristics.

The northern portion of the Kawartha Highlands is underlain by a dome of gneissic and migmatitic rock (the Anstruther Mantle Basement Gneissic Complex), while the southern portion is underlain by a dome of banded migmatite and gneiss (the Burleigh Gneiss Complex). These bedrock foundations are strongly folded and form curvilinear landform patterns that have been enhanced through glacial and sub-aerial erosion of later sedimentary and volcanic deposits (Kor in Javala et al. 2001:8). At a local scale the topography is variable. In the south, bedrock ridges oriented to the northeast provide 30 to 40 metres of local relief. In the north, where the land rises as a broad dome, the bedrock ridges are more variably oriented and local relief ranges up to 60 metres. These portions of the study area correspond to the Georgian Bay Fringe and Algonquin Highlands physiographic regions of Chapman and Putnam (1984:211, 214) respectively, which form the southern margins of the Precambrian Canadian Shield.

The southern boundary of the Canadian Shield is just south of the park, as shown on **Figure 1.1**.

Rock outcrop or knolls occur throughout the park, including near the new road alternatives to Bottle Lake and McGee Lake.

The existing road alternatives (i.e., Beaver Lake Road, Mississagua Dam Road, Anstruther Lake Road and Long Lake Road) have been built to either go around large rock outcrops or traverse the topography at reasonable grades.

3.2 Land Use, Resource Management

Land use and resource management factors are key elements of the current Park Management Planning Study that is being carried out for Kawartha Highlands Signature Site Park. The same factors are very relevant to the Access Road Study because they

describe the types of existing and future land uses that are planned for in the park. The access road alternatives should be consistent with long-term land use and resource management goals in the park.

3.2.1 Remoteness and Semi-Wilderness Characteristics

In its purest form, wilderness is vast and primeval. It includes pristine landscapes and waterscapes, native plants and animals and clean water and air. It is a place where nature functions freely, unencumbered by industrial and agricultural activities. Wilderness is a place of natural wonder, a place of scientific and educational discovery and a place of solitude that has nurtured the evolution of the human body and spirit (Davidson et al., 2000). Wilderness is a place where visitors minimize their impact on the landscapes and waterscapes with low impact camping and travel by non-mechanized means. Ontario Parks minimum size standard for wilderness parks is 50,000 ha (optimum 100,000 ha), and for Wilderness Zones is 2,000 ha (the optimum is 50,000 ha) *OMNR, 1992).

It was noted during an October 2000 helicopter survey of the Kawartha Highlands that much of the northern portion of the study area appeared to have undergone very little recent disturbance. The only significant recent human impacts observed in this area were a few widely scattered hunt camps, two major snowmobile trails and two old roads, which are also used by all-terrain (ATVs) and off-road vehicles (ORVs). Some of the treed bog and fen communities appeared to be exemplary quality.

Based on numerous field visits during 2000, it was also noted that much of the pre-existing Kawartha Highlands Provincial Park, which is immediately to the south of the area just described, is relatively undisturbed. The pre-existing provincial park is dissected by two access roads that are used by ATVs and ORVs, and there is a small cluster of cottages on patent land on the western side of Bottle Lake. Aside from these disturbance factors the combination of the existing Kawartha Highlands Provincial Park and the extensive natural landscape to the north forms what could be considered a relatively intact "wilderness area." Much of the south-central and south-eastern portions of the Signature Site also have wilderness qualities. Large wilderness areas, such as the northern portion of the Kawartha Highlands, may provide refuge for species that are particularly vulnerable to human disturbance or which deliberately avoid areas with human activity.

Remoteness is a key element in maintaining semi-wilderness characteristics.

Semi-wilderness characteristics exist when an area imparts wilderness moments (i.e., silence, solitude, dark night skies, etc.) but the landscape is dotted with evidence of human activities and when the landscape is seemingly unspoiled, while being managed to support a variety of uses.

Many of the cottagers within the park and visitors to the area enjoy the remoteness and semi-wilderness characteristics of the area and feel it is very important to maintain these qualities.

3.2.2 Other Projects

3.2.2.1 Park Management Planning Process

The preparation of Kawartha Highlands Signature Site Park Management Plan is the responsibility of a multi-disciplinary team consisting of MNR staff from Ontario Parks and Bancroft District as well as Kawartha Highlands Signature Site Park Management

Advisory Board. Kawartha Highlands Signature Site Park management planning process is following the Ontario Provincial Park Management Planning Manual (OMNR 1994) and will be adapted specifically for the Kawartha Highlands to ensure the planning process meets the expectations of the stakeholders involved to date. The park management plan will set out the management goals for the park and the approach for reaching these goals, thus providing a framework for future decision making.

The Access Road Study is being carried out concurrently, with milestone findings and decisions being presented to the public at the same time as similar types of decisions in the management planning process. In addition, the Public Open Houses as described in **Section 4.0** are being carried out in conjunction with some of the Open Houses being held for the larger study. This has enabled the public and agencies to comment on the progress of both projects at the same venue and timeframe and for the two project teams to share input received.

3.2.2.2 Municipal Projects

The park management plan and the ongoing management of the park will continue to recognize the essential role played by the municipalities. Municipalities provide many key services, including fire protection, rescue, waste management, ambulance services, development and maintenance of municipal roads. Municipal projects will serve to maintain or enhance municipally owned infrastructure and will continue to be the responsibility of the municipalities.

3.2.3 Traffic Patterns and Infrastructure

3.2.3.1 Traffic Patterns

The existing Kawartha Highlands Signature Site Park is accessible from County Road 507 on the west and Highway 28 on the east. There is no major road across the northern boundary of the park but Highway 118 and County Road 503 form a link from the northeast at Paudash (just south of Bancroft), through Tory Hill, to the northwest at Gooderham.

Sideroads from County Road 507 easterly, towards the park include:

- Pencil Lake Road
- Pencil Lake Forest Access Road
- Baldwin Bay Road
- Beaver Lake Road
- Gold Lake Road
- Mississagua Lake Road
- Mississagua Gold Lake Road
- Mississagua Dam Road
- Travnor Road

Sideroads from Highway 28 westerly towards the park include:

- Tucker's Road
- West Concession 4
- McKay Lake Road
- Anstruther Lake Road
- Long Lake Road

As part of the Access Road Study, traffic counts were carried out on Beaver Lake Road, Mississagua Dam Road, Anstruther Lake Road and Long Lake Road during the peak summer season in 2005.

The counts were taken from 1:00 pm on Thursday, June 30 to noon on Saturday, July 2, 2005 and recorded the total number of vehicles traveling on each sideroad (i.e., two-way traffic) every 15 minutes. Peak hour summaries are provided in **Table 3.7**.

Sideroad	Peak Number of Vehicles (total two directions)	Peak Hour/Day
Beaver Lake Road	140 vehicles	Noon on Saturday, July 2
Mississagua Dam Road	60 vehicles	4:00 pm on Friday, July 1
Anstruther Lake Road	90 vehicles	Noon on Friday, July 1 and Sat. July 2
Long Lake Road	35 vehicles	5:00 pm on Friday, July 1 and Noon on Saturday, July 2

As shown above, the highest traffic volumes were experienced on Beaver Lake Road and Anstruther Lake Road.

3.2.3.2 Infrastructure

There is limited existing infrastructure within the park. The results of the Access Road Study will guide decisions made on potential locations for new facilities within the park.

Future infrastructure will be assessed and decisions made on type, location and operation of such facilities will be made separate from the Access Road Study. Facilities that may be considered include a park administration office, maintenance compound, visitor center, public washroom facilities, day use facilities, etc.

Parking areas will also need to be addressed as a significant concern has been raised regarding (1) conflicts between park visitors and private landowners or tenure holders, who use public launching and parking facilities to access their properties, and (2) health and safety concerns from inappropriate parking by visitors, caused by insufficient parking.

Meetings have been held with municipal staff, cottage association representatives, the Park Superintendent and property owners, to address parking concerns as they relate to emergency access and public safety, particularly on Beaver Lake Road. These discussions are described in greater detail in **Section 3.3.5**, but they have led to an interim solution that extended an existing parking lot within the municipal road right-of-way at Beaver Lake Road, near Bottle Lake in the Fall of 2006. In addition, “no parking” signs installed by the municipality are being used to address parking concerns on Beaver Lake Road.

3.2.4 Public and Private Recreational Activities

3.2.4.1 Backcountry Canoeing

Backcountry canoeing is a major activity in Kawartha Highlands Signature Site Park. The most significant access points include Long Lake Lodge, the pre-existing Kawartha Highlands Provincial Park, Wolf Lake Access, Anstruther Marina, Catchacoma Narrows, Gold Lake Narrows and the Mississagua Lake Dam Access.

Access points and canoe routes are shown on **Figure 3.16**.

These access points are the focal point for the majority of the use within the convenient and well-known points for entry into the different canoe route systems within the area. Long Lake Lodge provides convenient access to the Long, Loucks, Cox, Buzzard, Vixen and Sawlog Lake systems. The access point to the old Kawartha Highlands Provincial Park provides access to Bottle and Sucker lakes. Catchacoma and Gold Lake Narrows provide access to Cox and the distant Turtle, Cherry and Stoplog lakes. Mississagua Lake Dam is the primary access point for canoeists on the Mississagua River.

Results from the 2003 survey demonstrated that canoeists spent an average of 2.37 days per trip in the Kawartha Highlands and are almost exclusively destination canoeists, meaning they are paddling in and setting up camp at one site and returning via the same access point. It appears that very few canoeists engage in circuit routes. This type of use is indicative of canoeists staying for a shorter trip and also concerned about the competitiveness for sites during peak times.

A background study of the area (van der Meer, 2000) indicated that there were fewer than 100 campsites on these routes within the Kawartha Highlands. However, the number of campsites identified in one of the canoe guidebooks was 151 (Viukho, 1995). Anecdotal evidence from access point managers and users of the area would indicate that during peak times, many canoeists use more marginal campsites, which have not been identified by the MNR as recognized sites. This is particularly the case on the handful of lakes where the bulk of use is occurring – Wolf, Crab, Bottle, Long, Buzzard and Cox lakes.

The user statistics for 2003 would confirm that the use is heavily concentrated in the two peak summer months, but it should be reiterated that use seems to be most heavily concentrated on the lakes that are closest to access points.

There are several reasons to expect that demand for backcountry canoeing opportunities will only increase in the Kawartha Highlands. They are because:

- The use of the area has developed without the publicity of an operating provincial park associated with the area – there is every reason to expect demand to increase as the park becomes better known.
- There is positive population growth in Southern Ontario.
- There are a limited number of substitute sites in Central Ontario that can offer a similar semi-remote canoe experience to that found in Kawartha Highlands. The list of substitute sites includes Algonquin Provincial Park, Frontenac Provincial Park, Queen Elizabeth II Wildlands Provincial Park, Frost Centre Lands and the Haliburton Forest Reserve. Both quantitative and anecdotal evidence suggests that these areas are also in demand.

Backcountry canoeing activities are important to consider in the Access Road Study, because they represent a primary reason for people to enter the park. Ideally, road access would be convenient to established canoeing access points and routes.

3.2.4.2 Hunting

Approximately 58 hunt camps have been identified within the park. Land Use Permits (LUPs) are issued to these recreation camps. While hunting is the primary focus of the recreation camps, they are also used for other recreational uses such as angling and snowmobiling. The average number of hunters associated with each camp is approximately eight.

The hunt camp owners that participated in the Access Road Study have expressed an interest in remaining isolated from new visitors to the park. Hunt camps do not want improved access.

3.2.4.3 Angling

Four commercial outpost camps, under the authority of LUPs, are located within the Provincial Park. These are located on Fair Lake (S. Wilcox, Haliburton), Elm Lake and Pilot Lake (Haliburton Highlands Air Service) in Burleigh Township and Bear Lake (R. Tapson, Peterborough) (Van der Meer, 2000). All four of the commercial outposts have a dock and a cabin for overnight accommodations.

Fishing is a popular activity among both visitors to and cottagers within the park. Access to favorite fishing locations for day-time or weekend visitors was considered in the evaluation of access road alternatives to the park.

3.2.4.4 Snow Sports

Currently local snowmobile clubs as well as local residents are using the Kawartha Highlands for snowmobiling. Snowmobile clubs that have Ontario Federation of Snowmobile Club (OFSC) trails within the Kawartha Highlands include the Paudash Trail Blazers and the Buckhorn and District Snowmobile Club. Snowmobiles are used by many for winter access to seasonal properties as well as accessing the Kawartha Highlands for winter fishing opportunities.

There are currently no maintained cross-country ski trails within the park, although many people participate in this activity by breaking trails or following snowmobile trails. Similarly, snowshoeing is also an activity that is not organized, but many practice this activity within the park. Dog sledding has occurred within the Kawartha Highlands, but to a limited degree.

Existing snowmobile trails cross Anstruther Lake Road (between Wolf Lake and Loon Lake) and Mississagua Dam Road, and parallel a short section of Beaver Lake Road near County Road 507. There is also an existing snowmobile trail (i.e., Rathburn Trail) near the new road alternative to Bottle Lake (just east of County Road 507).

Although existing snowmobile trails are recognized where they cross or parallel access road alternatives, their location does not have a significant impact to the Access Road Study which is focused on accommodating vehicular traffic entering the park during the peak summer season. Snowmobilers generally enter the park on the snowmobile trails in the off-season.

3.2.5 Noise

Generally the park is in a quiet area, where *nature* can be heard. Most areas are uninhabited and visitors and cottagers come to the park to enjoy the “peace and quiet.”

An overall increase in cottage use over the last several decades and camping use over the last several years has increased noise levels in habited parts of the park.

Motor boat use, to access cottages and campsites is also increasing noise levels in congested areas or on peak summer weekends.

A new access road in a currently undisturbed area would increase noise in that area. Some wildlife, especially birds, are sensitive to noise. Noise controls for campers is being managed through the park management planning activities. Noise controls for private residents is managed through municipal noise by-laws.

3.2.6 Aesthetics

The park area has been enjoyed by cottagers, local residents and visitors for its spectacular views and aesthetics, year round, for several decades.

Changes to access to the park should minimize impacts to existing views and be designed to be aesthetically appropriate for the natural setting.

3.3 Social, Cultural and Economic Environments

Kawartha Highlands Signature Site Park requires a balance between traditional social, cultural and economic activities and the values that have been identified to protect ecological integrity in the area. Some traditional activities, including cottaging will continue to be an integral component of the area and diverse low-density recreational opportunities will continue to be available.

3.3.1 Archaeology, Built and Cultural Heritage

In 2003, the MNR commissioned an Archaeological Study to assess the cultural heritage resources within the Kawartha Highlands Signature Site study area. The primary objective of this study was to report on background research that would assist in the identification of known and potential cultural heritage values and features that would assist the MNR in making informed planning decisions.

A summary of the findings is provided below.

3.3.1.1 Registered Archaeological Resources

Only two registered sites are known within the proposed boundaries of the Kawartha Highlands as currently defined. The **Bottle Beach Site** is located on the shore of Bottle Lake. Material collected from the surface of the site by Tom Ballantine, of the Huronia Highlands Museum, includes a scraper fragment, a ground stone celt perform and lithic debitage. Ballantine noted that the site has been damaged by fluctuating water levels, although he suggested that there was potential for the presence of additional deposits on the terrace above the beach (OASD Site Record Form, 1996). An October 2002 visit to the site carried out during this study, revealed additional impacts to the site area as a result of camping activities, mainly in the form of heavy pedestrian traffic and subsequent erosion.

The **Levis site** is also located on the shore of Bottle Lake. Ballantine collected a waterworn worked slate fragment, probably a knife, a chert scraper, and some chert debitage from the site. Similar disturbances related to camping were observed at the site in October 2002. It must be noted that the general paucity of archaeological sites in the study area is directly related to the lack of detailed archaeological survey in the area, as opposed to being a result of any lack of inhabitation or land use, either before or after European settlement.

3.3.1.2 Built Heritage

Built heritage resources comprise any man made feature that is of historical, architectural or engineering interest and can include such features as buildings, structures, landscaping and planting. Built heritage features in the southern shield typically encompass a wide array of structure types including cabins, roads, dams, mining headframes, river crossing structures, bridges, cairns, timber chutes and trading posts (standing or ruins). Most such features will include archaeological components.

The assembly of site location data for cultural resources (excluding pre-contact archaeological sites) was carried out through consulting archival sources, published histories and knowledgeable informants, the latter during the course of a helicopter flight over the study area on December 2, 2002. This has provided a preliminary inventory of built heritage features that exist within Kawartha Highlands and provides an indication of the types of post-contact activities that are represented by physical and often visible remains within the Kawartha Highlands. Lumbering was the most significant activity within the study area, a factor that is reflected in the inventory. A total of 20 abandoned mine and quarry sites have been inventoried as well, based on information provided by the Ontario Ministry of Northern Development and Mines. The latter, however, may not include the remnants of any poorly documented nineteenth century mines in the Kawartha Highlands region, as they comprise only those sites registered under the *Mining Act* or the *Aggregate Resources Act*.

There are no built heritage structures in the vicinity of the access road alternatives.

3.3.2 Businesses

Regionally, the Kawartha area is well-known for tourist related activities and hosts a number of businesses that service the tourist and cottage market.

Apsley and Buckhorn are the closest business districts to Kawartha Highlands Signature Site Park. These communities include businesses such as restaurants, gas stations, grocery stores, hardware stores, leisure sport and marine stores, auto parts, furniture and appliance stores, banks, insurance brokers, and many other local businesses.

There are very few businesses within the park. Existing marinas are described in a subsequent section.

3.3.3 Community Character and Cottage Associations

Peterborough and the Kawarthas is one of Ontario's major cottaging regions. In contrast to the large cottaging lakes in the lower Kawarthas, the Kawartha Highlands are characterized by medium and smaller sized lakes. Significant cottaging communities have developed on Catchacoma, Mississagua, and Gold and Beaver lakes, accessible from the west (County Road 507) and on Anstruther, Wolf, Loon Call, Long and Loucks lakes accessible from the east (Highway 28). Lakes such as Catchacoma, Mississagua and Anstruther are large in comparison to other lakes in the KHSSP but are much smaller than major lakes such as Buckhorn in the lower Kawarthas or the large lakes in Muskoka.

Close to 2000 cottages are located in, adjacent to or on lakes that touch the boundaries of Kawartha Highlands Signature Site Park. A total of 509 cottages were identified as being located in the park and, for the purposes of this study, formed the "cottager population associated with the Kawartha Highlands."

Many of the cottaging areas within the Kawartha Highlands were originally water-access only. These water-access cottages supported the development of many small marinas in the area. However, over the last few decades more and more cottages have become road accessible (Plug, 2003). It has also been suggested that the proliferation of roads has led to an increased investment in upgrading and winterizing of cottages. The proliferation of cottage roads has also resulted in the closure of a few of the small marinas and a change in the business of the remaining ones (Plug, 2003; Pilon, 2003).

Cottaging is a major economic driver of the local economy. In the geographic townships, which wholly enclose the Kawartha Highlands, there are a total of 6,257 seasonal households. This contrasts to only 3,007 permanent and farm households (Greater Peterborough Area Economic Development Corporation, 2003). The cottaging industry is a major economic stimulus to local retail, all types of construction and repair industries, services to cottagers, marinas and a variety of other economic activities (Basciano, 2003; Sherk, 2003; Griffith, 2003). This type of economic impact is not unique to the Kawartha Highlands, but is typical of most of Ontario's cottaging regions.

One of the marina operators noted that most cottages have a minimum of one motorized watercraft and many have two or three. This generates considerable business for the local marinas.

The cottage community is of great significance to the Access Road Study and many cottagers provided valuable information on current activities in the park during the study. Cottagers continue to require access to their properties as the park develops.

Community character and the enjoyment of property is important to the cottage community. As such, the access road alternatives are being developed and evaluated to include and address the concerns of cottagers within the park. Many cottagers attended the Public Open Houses and provided comments on their preferences for which alternatives should be used as primary access roads into the park. Input received from cottagers during the consultation program is described in the Section 4.0.

3.3.4 Government Services or Infrastructure

As previously noted, County Road 507 provides access to Kawartha Highlands Signature Site Park from the west and the Ministry of Transportation's Highway 28 provides access from the east.

Beaver Lake Road, Mississagua Dam Road, Anstruther Lake Road and Long Lake Road are all municipal roads. They are maintained and plowed by municipalities both within and outside the park boundaries.

There is an existing waste transfer site, operated by the Township of North Kawartha on Anstruther Lake Road, approximately 1 km west of Highway 28.

3.3.5 Public Health and Safety

Most cottage roads within the park are serviced by 911 emergency response. The 911 program is operated by the Townships of North Kawartha, Galway-Cavendish and Harvey and the County of Peterborough.

In summer of 2006, cottagers on Beaver Lake Road submitted a request to the municipality to have "no parking" signs installed on a particularly hazardous stretch of Beaver Lake Road (near Sucker Lake) where parked cars on the sideroad were preventing emergency service vehicles from accessing the area. The "no parking" signs were installed by the municipality, but a place for vehicles to park had to be found for the interim. After several discussions, including on-site meetings with representatives of the municipality, cottage association, private property owners and the Park Superintendent, an interim solution was agreed to that would include the construction of a temporary parking lot for approximately 20 to 25 vehicles, adjacent to the traveled portion of Beaver Lake Road (and within the municipal right-of-way). The interim parking lot is a joint effort, between the park, municipality and cottage association, and has now been constructed.

Public health and safety includes emergency access to the cottages and areas where population is most concentrated within the park. The access road alternatives all provide improved access for emergency service to a given area. Some alternatives service larger populations or existing areas of concentrated human activity than others.

3.3.6 Tourism Lodges/Marinas

3.3.6.1 Regional Economy

What distinguishes the Kawartha Highlands Signature Site region from other signature site regions is the relatively lower importance of the resource-based industries. Only 350 people were employed in resource-based industries in this region in 1996 and 240 of these were associated with agriculture. The next largest sub-sector in the resource-based industries was 20 in the sawmill sector.

Tourism is the most dominant industry that is reliant upon the region's natural resource base (except for the agricultural land south of Peterborough County). Cottaging, camping, resort use, recreational boating and angling are likely all significant economic activities in the region and in particular in the small communities and all these recreational activities are dependent on the natural resource base of this region.

Research commissioned by the Greater Peterborough Economic Development Corporation has demonstrated that tourism is a major industry in Peterborough County attracting 1,951,000 person visits in 2001, just over half the visits being same-day trips. It is estimated that these visitors spent approximately \$165 million with approximately \$39 million by same day tourists and the balance by overnight visitors.

The new Kawartha Highlands Signature Site Park has great potential to increase tourism in the general area. The types of tourist facilities and land uses will be confirmed through the Park Management Planning Study.

Ultimately, some form of directional signage will be required to direct tourists to the primary points of access to the park.

3.3.6.2 Marinas and Lodges

Marinas were initially constructed and managed to service the cottagers in the area, which were largely all water access cottages. Over the last 20 to 30 years, as more lots have been purchased, cottagers have jointly developed roads giving them vehicular access and lessening the need for marinas. A number of the marina operators noted that the total number of cottagers on the lake was too small to support all the marinas, so the total number has been reduced and many of them have branched off into more specialty services (e.g., Baldwin Bay Marina actively sells boats throughout Ontario).

Baldwin Bay Marina is located on the north end of Catchacoma Lake. Its principal business activities include: boat and motor sales; boat and motor repairs and storage; dock construction, retail sales and boat/canoe rentals. Little Gull Marina's primary business is serving cottagers with boating needs. The Marina provides for storage of up to 600 boats and actively repairs boats and motors and has slip space for 51 water-based cottages.

The Anstruther Marina is now the only marina on Anstruther Lake. This marina provides seasonal



docking and storage, canoe boat rental, sales and service on ATVs and snowmobiles, marine maintenance and service, barge service, gas sales and a snack bar.

Long Lake Lodge is located at the eastern end of Long Lake and is considered to be an optimal launching point for canoe trips into the southern lakes of Kawartha Highlands Signature Site Park.

Access road alternatives should be consistent with and complementary to tourist related businesses in the park. Some access road alternatives (i.e., Anstruther Lake Road and Long Lake Road) have the potential to increase business at the marina by directing visitors to the area. There is also some potential to add park visitor related services to these existing businesses. Ideally, the selection of a preferred access road alternative could enhance existing business(es).

3.4 Aboriginal Considerations

In 1996 the Census identified a total aboriginal population of 1,965 individuals in the region. The Curve Lake First Nation Reserve is a large community with a total registered population of 1,679, with 717 living on the Reserve (Indian and Northern Affairs Canada, 2002).

Nothing in this study changes Aboriginal or Treaty rights within the park. Consultation has included First Nations and Aboriginal communities, as described in the following section. Ontario Parks recognizes that Aboriginal values are important to respect and will avoid or minimize impacts to traditional land or resource uses.

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4.0 PUBLIC AND AGENCY PARTICIPATION

Public and agency participation is a critical component of the EA process, as it permits the Project Team to consider what is locally important to an undertaking and it provides the public and stakeholder groups with opportunities to have input into the decision making process before final decisions are made.

All public open houses for the Access Road Study were combined with open houses for the Park Management Planning Process.

4.1 Initial Public Notice (Invitation to Participate)

The Kawartha Highlands Signature Site Park Access Road Study was announced to the public, stakeholders, local agencies and Aboriginal groups in May of 2005, which marked the beginning of the Access Road Study. Study notification was provided through a mail out to approximately 3000 addresses, including owners of cottages abutting the park, other property owners in the area, and interest groups (i.e., cottage associations, snowmobile clubs, etc.) .

The Invitation to Participate was also placed in the following local newspapers:

- Bancroft Times
- Bancroft This Week
- Peterborough Examiner
- Peterborough This Week
- Lakefield Herald

A copy of the Invitation to Participate public notice is contained in **Appendix B.1**.

The purpose of the first notice was to inform the public of the study to evaluate potential access road alternatives in conjunction with the Park Management Planning Process, to invite participation in the study and to announce the first Public Open House.

The initial notification allowed for the opportunity to submit comments on access road alternatives and evaluation criteria for a 45 day period that ended on July 12, 2005.

4.1.1 Agency Notification

A direct mailing was sent to relevant ministries, government agencies, First Nations, municipalities, business operators and groups expected to have an interest in the study. The purpose of the agency contact was to request information on the environmental (i.e., natural, social or cultural) features of the study area and to seek their input on the project. The correspondence included a flyer with additional information, a map of the study area and an agency comment sheet requesting input by July 12, 2005. This was completed during the publication period of the First Public Notice.

Agency notification materials are contained in **Appendix B.1**.

The following First Nations, external agencies and municipalities were contacted at the start of the project:

- Kawartha Nishnawbe
- Curve Lake First Nation
- Beausoleil First Nation
- Georgian Bay First Nation
- Hiawatha First Nation
- Mississauga of Scugog Island First Nation

- Ministry of Transportation – Eastern Region
- Ministry of the Environment – Kingston Regional Office
- The Ontario Archaeological Society Inc.
- Peterborough County - Public works
- Peterborough County – Technical Services
- Township of North Kawartha
- Townships of Galway, Cavendish and Harvey
- MPP of Haliburton-Victoria-Brock
- Trout Lake Hunt and Fish Club
- Anstruther Lake Cottage Association
- Central Eastern Ontario Snowmobile Association
- Ontario Federation of Anglers and Hunters
- Supporters of the Kawartha Highlands Provincial Park
- Bancroft Minden Forest Company
- Wilderness Canoe Association
- Kawartha Highlands Conservation Club
- Ontario Heritage Trust
- Stakeholder Groups of Kawartha Highlands.

The purpose of the initial project notification was to inform the public and external agencies about the study and to seek input from property owners and users of the highway.

4.2 Public Open House #1

Notice of Public Open House #1 for the Access Road Study was combined with the Invitation to Participate, as described in the previous section.

The first Public Open Houses were held on May 28th, 2005 at the Apsley Community Centre from 10:00 a.m. until 3:00 p.m. and on June 4th, 2005 at the Buckhorn Community Centre from 10:00 a.m. until 3:00 p.m.

The purpose of the first Public Open House for the Access Road Study was to:

- display and seek input on potential access road alternatives on the east and west sides of Kawartha Highlands Signature Site Park;
- display and seek input on the preliminary evaluation criteria that would be used to evaluate alternatives;
- seek input on the advantages and disadvantages associated with each alternative;
- explain the study process; and
- answer questions about the study.

The following display panels were provided:

- Welcome
- Potential Access Road Alternatives
- Study Process
- Access Road Objectives
- Evaluation Criteria

A copy of the materials displayed at Public Open House #1 are contained in **Appendix B.2**. This information was also made available on the project web-site at http://www.ontarioparks.com/english/kawa_access_roads.html

4.2.1 Attendance

Approximately, 274 individuals attended the first set of Public Open Houses. External agencies and interest groups in attendance included the Township of North Kawartha; a representative from the North Kawartha Council and the County of Peterborough. Interest groups in attendance included the Central Eastern Ontario Snowmobile Association and the Ontario Federation of Anglers and Hunters.

4.2.2 Comments Received and Responses Provided

A summary of the comment sheets are found in **Appendix B.3**.

All names and addresses from comment sheets and the visitor register were added to the study mailing list.

Responses to input received from the first Public Open House were provided in a project newsletter that was mailed to everyone who submitted comments. A copy of Newsletter #1 is contained in **Appendix B.3**.

4.3 Project Evaluation

The second set of public open houses for the Access Road Study were held on Saturday, July 29th, 2006 at the Cavendish Community Centre on County Road 507 from 10:00 a.m. until 3:00 p.m. and on Sunday, July 30th, 2006 at the Wilson Park Community Centre on Northey's Bay Road from 10:00 a.m. until 3:00 p.m.

The open houses were advertised in local newspapers and through direct correspondence to approximately 3000 addresses, including cottage owners, members of the public and external agencies or interest groups.

The following First Nations, external agencies and municipalities were contacted:

- Kawartha Nishnawbe
- Curve Lake First Nation
- Beausoleil First Nation
- Georgian Bay First Nation
- Mississauga of Scugog Island First Nation
- Eastern Region, Ministry of Transportation
- Ministry of the Environment, Kingston Regional Office
- The Ontario Archaeological Society Inc.
- Peterborough County
- Township of North Kawartha
- Townships of Galway, Cavendish and Harvey
- MPP of Haliburton-Victoria-Brock
- Trout Lake Hunt and Fish Club
- Anstruther Lake Cottage Association
- Central Eastern Ontario Snowmobile Association
- Ontario Federation of Anglers and Hunters
- Supporters of the Kawartha Highlands Provincial Park
- Bancroft Minden Forest Company
- Wilderness Canoe Association
- Ontario Heritage Trust
- Stakeholder Groups of the Kawartha Highlands.



A copy of the Notice for Public Open House #2 is contained in **Appendix B.4**.

The purpose of the second Public Open House was to:

- provide an update on the Access Road Study;
- present and seek input on information collected from field investigations carried out in the summer of 2005;
- present and seek input on the evaluation criteria that was modified to be relevant to the study area based on public input, environmental field investigations and the Park Management Planning process;
- present and seek input on the advantages and disadvantages of each access road alternative;
- explain what's next in the study process; and
- answer questions about the study.

The following panels were on display:

- Welcome
- Potential Access Road Alternatives
- Study Process
- Access Road Objectives
- Evaluation Criteria
- What's Next in the Environmental Assessment



A copy of the public open house materials is contained in **Appendix B.5**

4.3.1 Attendance

Approximately 230 members of the public and external agency representatives attended the second set of Public Open Houses.

4.3.2 Comments Received and Responses Provided

Comments were collected from the second public open house for a period of 60 days ending September 8, 2006.

Forty-two comment sheets (or emails) were received following the public open houses. All names and addresses from comment sheets and visitor register were added to the study mailing list. A summary of the comments received and the second project newsletter (sent in response), are found in **Appendix B.6**

4.4 Opportunity to Inspect the Draft Environmental Study Report (ESR)

The third set of public open houses for the Access Road Study were held on Saturday September 15th, 2007 at the Wilson Park Community Centre on Northey's Bay Road from 10:00 a.m. until 3:00 p.m. and on Sunday September 16th, 2007 at the Cavendish Community Centre on County Road 507 from 10:00 a.m. until 3:00 p.m.

The open houses were advertised in the following local newspapers:

- Bancroft Times - Thursday August 30, 2007
- Peterborough Examiner - Saturday September 1, 2007
- Lakefield Herald - Friday August 31, 2007
- Bancroft This Week - Fri August 31, 2007

Notification also occurred through direct correspondence to approximately 3000 addresses, including cottage owners, members of the public and external agencies or interest groups on August 24, 2007. A copy of the Notice for Public Open House #3 is contained in **Appendix B.7**

The purpose of the third Public Notice was to notify the public and agencies of the preferred east and west primary access roads, to invite them to the Open Houses to comment on the study and Draft ESR and to inform them of the formal public review period (until October 22, 2007) to comment on the Draft ESR. As noted in Section 1.5, the process occurred in conjunction with the Management Planning Process for the park.

The following panels were on display at the third Public Open House:

- Welcome
- Primary Access Road from the West Side
- Primary Access Road from the East Side
- Reasons Why the Preferred Primary Access Roads were Selected
- Key Features of the Preferred Primary Access Roads
- Environmental Impacts and Mitigation
- Next Steps

A newsletter was also provided, that gave an update on the Access Road Study. A copy of public open house materials is contained in **Appendix B.8**.

4.4.1 Attendance

Approximately 161 members of the public and external agency representatives attended the Northey's Bay Road Open House and 232 members of the public and external agency representatives attended the Cavendish Community Centre Open House.

4.4.2 Comments Received and Responses Provided

Comments were collected from the third Open House for a period of 60 days ending October 22nd, 2007.

Approximately 93 comment sheets, letters or emails were received from the third set of Public Open houses. A summary of the comments received and responses provided are found in **Appendix B.9**.

Individual response letters were prepared and mailed to everyone who requested a response. A summary table of response provided is also included in **Appendix B.9**.

4.5 Opportunity to Inspect the Final Environmental Study Report

The Final ESR will be available on the Ontario Parks website. Opportunities to inspect the Final ESR will be announced through newspaper notices and direct mailings.

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5.0 EVALUATION OF ALTERNATIVES AND SELECTION OF PREFERRED PLAN

5.1 Evaluation Process

Two evaluation approaches were used to assist in the selection of the Preferred Plan. A Reasoned Argument method was the primary tool used to identify a preferred alternative. In addition, an Arithmetic (weighting-scoring) method was used as a secondary tool to verify the results of the reasoned argument.

The Reasoned Argument evaluation process provides a clear presentation to stakeholders of the key advantages and disadvantages between the various evaluation factors and criteria and the reasons why one alternative is preferred over another.

The Arithmetic evaluation provides a means to compare the alternative methods based on a numerical scaling with weights assigned to each evaluation criteria, by Ontario Parks and other stakeholders as determined through EA consultation. A numerical approach is a good sensitivity analysis tool to determine if the conclusions of the reasoned argument approach are valid and appropriate. The Arithmetic evaluation of the Access Road Alternatives is summarized in **Appendix C**.

The evaluation process is a comparative process that compares the access road alternatives to each other in terms of each evaluation criteria. The process confirms that the Project Team gives full consideration to each alternative in all aspects and includes consideration of information that is collected through secondary source data, field investigations and public consultation for each alternative. It further includes stakeholder and public input through the establishment of the evaluation criteria that reflects what is both relevant to the study area and of importance to the public and stakeholders.

5.2 Evaluation Criteria

A complete list of evaluation criteria as presented in the MNR Class EA was displayed to the public at the first Public Open House, held in June 2005. Input was requested and obtained.

Following the first round of public consultation and after carrying out environmental and traffic field investigations, the Project Team was able to screen the full list of criteria, to include only criteria that are relevant to the undertaking, the study area and the stakeholders. The project specific evaluation criteria were presented to the public at the second set of Public Open Houses held in July 2006 as shown below.

EVALUATION CRITERIA FROM MNR CLASS EA	WHY IT IS RELEVANT TO INCLUDE
NATURAL ENVIRONMENT / ECOLOGICAL INTEGRITY CONSIDERATIONS	
<p>The values for which the Kawartha Highlands Signature Site Provincial Park was established provide for the preservation of the semi-wilderness characteristics of the area. The protection of the ecological integrity of the area is of paramount importance. Long-term protection of natural heritage values is required for the preservation of this unique area. These values will be measured through the criteria under natural environment/ecological integrity.</p>	
Species at risk or their habitat	Is relevant to the values for which the provincial park was established and ecological integrity. Will adhere to current Species At Risk (SAR) legislation.
Natural Heritage - Significant earth or life sciences features (including ANSI's and provincially significant wetlands)	Is relevant to the values for which the provincial park was established and ecological integrity. Natural heritage features are also important to local landowners and the public at large.
Fish or other aquatic species, communities, or their habitat (including numbers, diversity and movement of resident or migratory species)	Is relevant to the values for which the provincial park was established and ecological integrity.
Terrestrial wildlife (including numbers, diversity and movement of mammals, as well as their habitat)	Park values include minimizing impacts to terrestrial wildlife (e.g., road mortality, migration corridors). Sport hunting community is interested in maintaining terrestrial game wildlife populations.
Breeding birds	Park values include minimizing impacts to breeding birds, as part of wildlife.
Natural vegetation and terrestrial habitat linkages or corridors through fragmentation, alteration, critical loss and/or potential for invasive species	Natural vegetation and terrestrial habitat linkages are important to maintain. Some species, such as wolves, lynx, bobcat, moose and bear are sensitive to roads and construction. New access roads or construction in previously undisturbed areas may impact wildlife habitat linkages and movement. New route(s) may facilitate/accelerate introduction of invasive species to previously non-impacted areas.
Land subject to natural or human-made hazards, including impacts to soils and sediment quality, drainage or flooding, sedimentation or erosion and/or release of contaminants in soils	<p>Some access road alternatives may be subject to flooding, erosion, rockslides or impacts from ice.</p> <p>Some alternatives will have soil related concerns and others will not. Future soil testing will confirm that new roads are constructed to be stable.</p> <p>Roadway alternatives with long sections through low wet areas may be difficult to drain or subject to flooding.</p> <p>Roadway alternatives adjacent to watercourses may be a direct source of sediment. Some roads may alter erosion rates or result in erosion related challenges.</p> <p>Contaminants compromise ecological integrity. New roads and water crossings may introduce contaminants to undisturbed areas.</p>

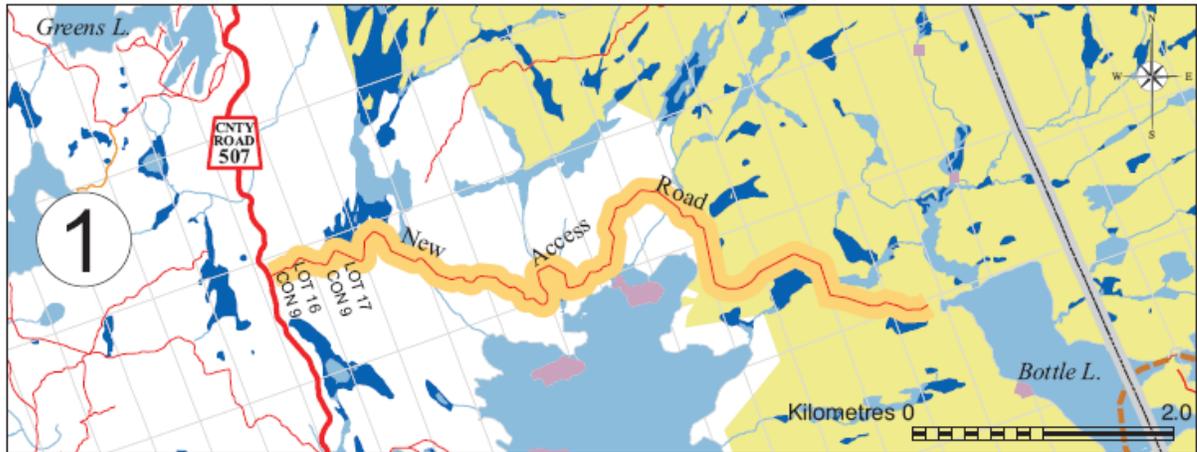
EVALUATION CRITERIA FROM MNR CLASS EA	WHY IT IS RELEVANT TO INCLUDE
<p>LAND USE, RESOURCE MANAGEMENT CONSIDERATIONS</p> <p>The Kawartha Highlands Signature Site Park Management Planning process is a very important process that is directly related to Land Use and Resource Management considerations. The selection of a preferred access road will be integrated with the Management Planning Study.</p>	
Remoteness	Remoteness is a key element in maintaining semi-wilderness characteristics. New road alternatives reduce remoteness and semi-wilderness qualities.
Other projects, uses, persons or property outside the park	Other projects could include municipal improvements to Anstruther Lake Road and Beaver Lake Road. Improvements to any access road alternatives are relevant to this study. Land uses, people and properties immediately outside or adjacent to the park boundary may be indirectly impacted by activities in the park, especially with existing sideroad alternatives.
Traffic patterns or traffic infrastructure	Very important to the access road study. Change in traffic patterns or infrastructure could improve existing traffic/parking conditions on main roads in park. Some upgrading of existing sideroads may be required if existing road alternatives are selected. Intersection improvements (geometrics improved sight distance and/or turning lanes) may be required at intersections with County Road 507 and Highway 28.
Public or private recreation	Recreational land uses are an important component of KHSSP and access must be maintained to public and private recreational facilities. They include existing marinas, cottages, canoe routes, hunt camps, trails and campsites. Increased access to remote areas could negatively impact some recreational activities such as hunting, angling, hiking, backcountry canoeing or wilderness camping.
Noise levels	The park includes wildlife and birds that are sensitive to noise. Access roads in previously undisturbed areas will introduce new noise in those areas.
Views or aesthetics	New roads or changes to existing roads can have negative impacts to views and aesthetics in the park.

EVALUATION CRITERIA FROM MNR CLASS EA	WHY IT IS RELEVANT TO INCLUDE
<p>SOCIAL, CULTURAL AND ECONOMIC CONSIDERATIONS</p>	
<p>The Kawartha Highlands Signature Site Park requires a balance between traditional social, cultural and economic activities and the values that have been identified to protect ecological integrity in the area. Traditional activities, including cottaging, will continue to be an integral component of the area and diverse low-density recreational opportunities will continue to be available.</p>	
<p>Archaeology, built heritage, cultural heritage landscapes, non-aboriginal sacred or traditional use sites</p>	<p>New routes may impact previously undisturbed areas. Roadway improvements, extensions or new roads could impact built heritage features, cultural heritage landscapes or non-Aboriginal sacred or traditional use sites.</p>
<p>Displace people, businesses, institutions, or public facilities</p>	<p>Although it is not expected that an access road alternative will displace a business, institution or public facility, consideration will be given to working with existing business owners co-operatively to provide park administration facilities, parking, marina, toilets, information kiosks etc.</p>
<p>Community character, enjoyment of property, or local amenities</p>	<p>The existing cottage community is strong on the cottage lakes. Community character and the enjoyment of property is important to the cottage community.</p>
<p>Demands on government services or infrastructure</p>	<p>Some alternatives use long stretches of municipal roadways before they enter the park, and their use as primary access roads could impact municipal infrastructure. Visitors will be using Highway 28 and County Road 507 to access park. Some intersection improvements may be required (i.e., turn lane) on municipal or provincial infrastructure.</p>
<p>Public health and/or safety</p>	<p>Emergency access to cottages is important to maintain. Cottagers have concerns about emergency access when sideroads are clogged on busy weekends.</p>
<p>Tourism values including, resource-based tourist lodges and local, regional or provincial economies or businesses</p>	<p>All access road alternatives will increase tourism in the area by providing the improved facilities (i.e., signage, information kiosks, washrooms, etc.) for newcomers to the park. Some access road alternatives include access to existing, local businesses (i.e. marina) or outpost camps in the park. These alternatives could support local business economy if visitors to the park use the existing businesses.</p>
<p>ABORIGINAL CONSIDERATIONS</p>	
<p>Nothing in this study changes Aboriginal or Treaty rights within the park. Consultation will continue to endeavor to include First Nations and Aboriginal communities. Ontario Parks recognizes that Aboriginal values are important to respect and will avoid or minimize impacts to traditional land or resource uses.</p>	
<p>COST</p>	
<p>Although the cost of each alternative is important to consider before a recommendation is made, it is not listed with evaluation criteria in the Class EA for Provincial Parks and Conservation Reserves. Costs will be taken into consideration during the study.</p>	

5.3 Comparison of Alternatives

The advantages/disadvantages of Access Road Alternatives were presented to the public at the second Public Open House, held in July 2006 as shown below.

5.3.1 New Access Road to Bottle Lake



Summary of Advantages and Disadvantages

Advantages

No conflict with projects or uses outside park boundaries. Could indirectly benefit people near park boundary on existing sideroads (i.e., Beaver Lake Road)

Has some potential to reduce traffic on Beaver Lake Road, however, visitor traffic will still be attracted to current access points on Beaver Lake Road in order to access adjacent lakes, canoe routes, campsites etc.

Provides good access to canoeing and camping on Bottle Lake and Sucker Lake

Provides potential for increased public recreational activities in northern section of Park - is advantage only if this is compatible with Park Management Plan

Minimizes impacts to cottage communities on Beaver Lake, Gold Lake and Mississagua Lake by providing greater separation between park visitors and cottage community

Has some potential to provide improved emergency access to northern area of park but in a relatively unpopulated area

Disadvantages

Significant impact to Species at Risk (Eastern Hog-nosed Snake, Blanding's Turtle and Five-lined Skink)

Significant impact to natural heritage, including Area of Natural and Scientific Interest (ANSI) and Atlantic Coastal Plain species

Significant impact to terrestrial wildlife because new road impacts wildlife movement and fragments mammal habitat

Significant impact to natural vegetation and terrestrial habitat linkages or corridors because it is a very long new linear corridor through undisturbed areas

Crosses five watercourses and three large wetlands, which potentially results in impacts to soils and sediment quality, drainage or flooding, sedimentation or erosion and/or release of contaminants in soils

Has significant impact on remoteness and opens up new area with semi-wilderness characteristics

Introduces new noise to undisturbed area

Comes closest to historical sites near Bottle Lake

Could cause increased disturbance and reduce sense of remoteness for cottages on northern shore of Catchacoma Lake

5.3.2 Beaver Lake Road



Summary of Advantages and Disadvantages

Advantages

- Limited impacts to remoteness, as only “shaded area” potentially impacts semi-wilderness characteristics
- Has potential to improve existing roadway geometrics and conditions to improve safety and efficiency on existing sideroad
- Roadway improvements on Beaver Lake Road would benefit a large number of people
- Good visibility at intersection with County Road 507
- Provides access to four existing water access points in Park, canoe routes and campsites on Sucker Lake and Bottle Lake, Cox Lake, Cold Lake, Triangle Lake, Cherry Lake, Turtle Lake, Stoplog Lake, Compass Lake and Loucks Lake
- Is central to park, which provides good point of access for public and private recreational uses
- Potential benefit to businesses with access from Beaver Lake Road (i.e., marina)
- Improvements to Beaver Lake Road could improve emergency access to most populated and central area of park
- Has some potential for existing marina to benefit from additional tourist traffic

Disadvantages

- Private property owners near park boundary (i.e., outside park) perceive undesirable impacts (i.e., intrusion of increased numbers of visitors) using Beaver Lake Road as primary access road to KHSSP
- Some members of public strongly believe that this road alternative will have negative impact on existing cottage communities on Catchacoma, Beaver and Gold Lakes and that additional visitor traffic will disturb cottage community character and reduce enjoyment of property and local amenities
- Requires co-ordination with municipality re: infrastructure improvements outside park boundary

5.3.3 Mississagua Dam Road



Summary of Advantages and Disadvantages

Advantages

- No impacts to significant earth or life science features
- Minimal impacts to terrestrial wildlife because alternative uses existing road (no new areas are impacted)
- Minimal impact to natural vegetation and terrestrial habitat, linkages or corridors - no fragmentation
- Has least impact to remoteness or semi-wilderness characteristics
- Has potential to improve roadway geometrics, cross-section and surface treatment on existing sideroad
- Very scenic end point for visitors arriving at Park

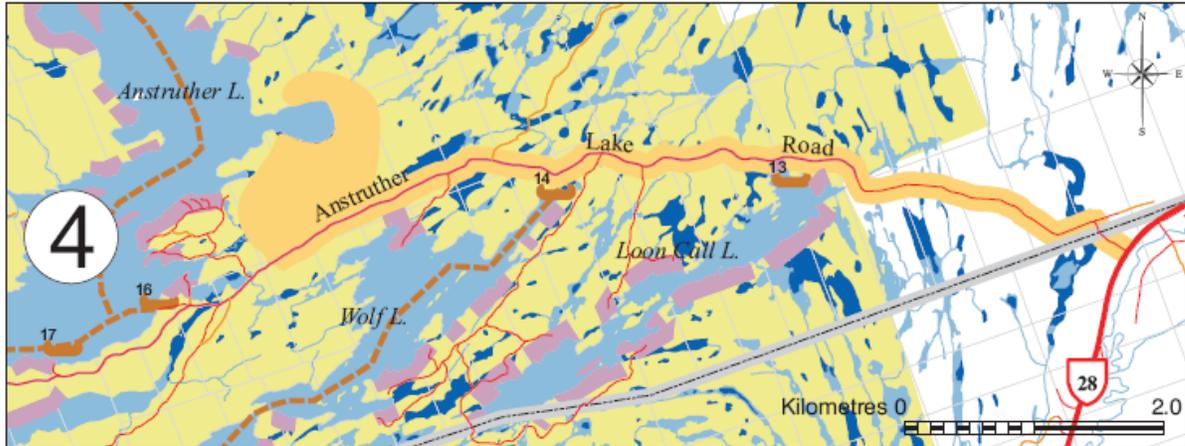
Disadvantages

- Has potential for two species at risk (Five-lined Skink and Blanding's Turtle)
- Existing road is in floodplain, parallel to shoreline (in parts) and prone to erosion
- Restricted visibility in both directions at intersection with County Road 507 will require intersection improvements
- Requires long paddle for visitors to access park by canoe
- Relatively close to private property at end of road
- Too far south to maximize access to public recreation within Park boundaries
- Too far south to benefit emergency access within Park boundaries
- Requires co-ordination with municipality re: infrastructure improvements outside park boundary

5.3.4 Anstruther Lake Road

Two Options were developed for Anstruther Lake Road, as shown below. The second option was developed in response to environmental field investigations and public/stakeholder input.

5.3.4.1 Anstruther Lake Road – Option 1



Summary of Advantages and Disadvantages

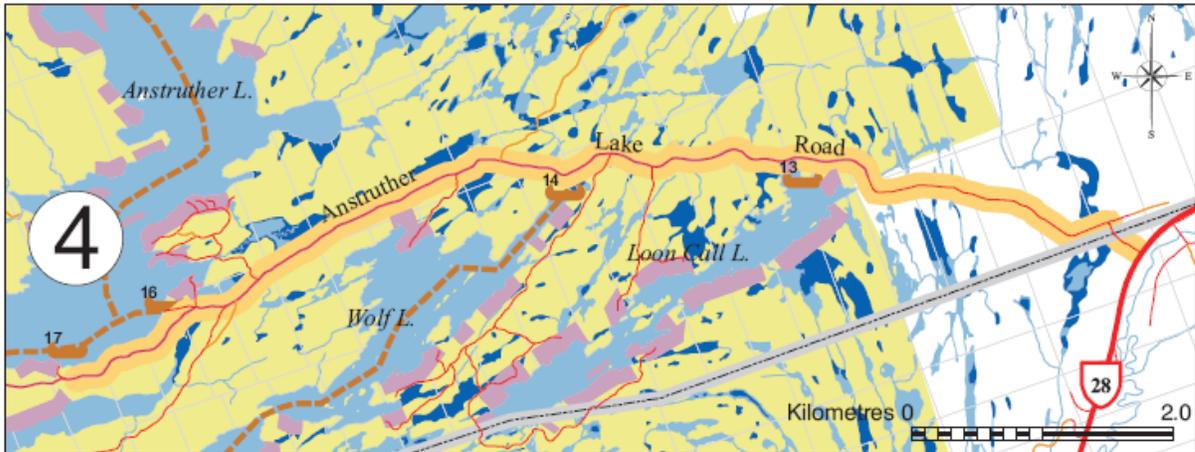
Advantages

- Has potential to improve parking and safety on busy sideroad
- Existing road has good alignment
- Provides access to two existing water access points and well-established canoe routes
- Improvements to Anstruther Lake Road could improve emergency access to most populated and central area of park

Disadvantages

- Impacts terrestrial wildlife in previously undisturbed (i.e., shaded) area
- Impacts to natural vegetation and terrestrial habitat linkages or corridors some fragmentation in shaded area
- Impacts to remoteness or semi-wilderness characteristics at Horseshoe Bay
- No potential to improve economic viability of existing facility (i.e., marina, store, etc.) at end of road - may reduce traffic at business by removing tourist traffic
- Not favoured by community (i.e., cottage association) on Anstruther Lake
- Restricted visibility at intersection with Highway 28
- Intersection improvements at Highway 28 could impact one private entrance
- May impact cottage community character on Anstruther Lake, Wolf Lake or Loon Call Lake
- Requires co-ordination with local municipality re: infrastructure improvements outside park boundary

5.3.4.2 Anstruther Lake Road – Option 2



Summary of Advantages and Disadvantages

Advantages

- No impacts to significant earth or life science features
- Minimal impacts to terrestrial wildlife
- Minimal impacts to natural vegetation and terrestrial habitat linkages or corridors - no fragmentation without shaded area
- Minimal impacts to remoteness or semi-wilderness characteristics
- Has potential to improve parking and safety on busy sideroad
- Existing road has good alignment
- Provides access to three existing water access points and well-established canoe routes
- Potential benefit to existing business at end of road and provides opportunity for tourist related business to expand
- Cottage community (i.e., cottage association) on Anstruther Lake supports this alternative
- Improvements to Anstruther Lake Road could improve emergency access to most populated and central area of park

In response to input received from the first Open Houses (in spring 2005) as well as environmental field investigations carried out (in summer 2005), the Project Team has made adjustments to the Anstruther Lake Road alternative.

The adjustments to this alternative, made since the first Public Open House are:

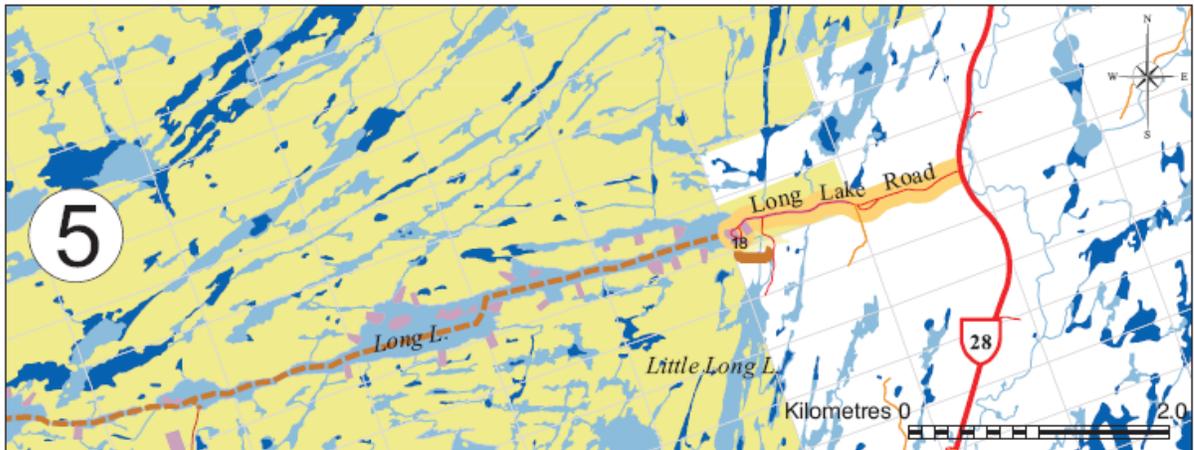
- to reconsider the shaded area that was originally shown in the vicinity of Horseshoe Bay to reduce environmental impacts and to extend the park access road further west to the vicinity of the existing marina near the end of the road.

The facilities that may have been provided originally in the shaded area could be provided near the existing marina, with far fewer environmental impacts.

Disadvantages

- Restricted visibility at intersection with Highway 28
- Intersection improvements at Highway 28 could impact one private entrance
- May impact cottage community character on Anstruther Lake, Wolf Lake or Loon Call Lake
- Requires co-ordination with local municipality re: infrastructure improvements outside park boundary

5.3.5 Long Lake Road



Summary of Advantages and Disadvantages

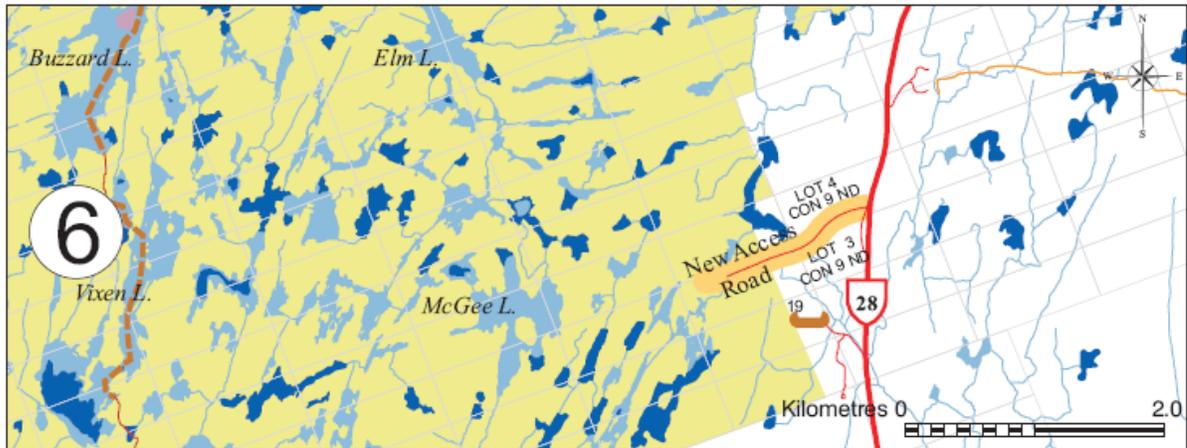
Advantages

- No impacts to significant earth or life science features
- Minimal impacts to natural vegetation and terrestrial habitat linkages or corridors - no fragmentation
- Only one watercourse crossing - less potential for fisheries impacts or impacts from erosion/sediment
- Minimal impacts to remoteness or semi-wilderness characteristics
- Existing road has good alignment and would not require significant improvements
- Good launching point for canoe trips into southern lakes in park
- Very scenic views to visitors at end of road (looking out to Long Lake)
- Potential benefit to existing business at end of road - but topography limits land use expansion opportunities
- Potential to improve emergency access to southern part of park, but only to edge of park boundary

Disadvantages

- Restricted visibility at intersection with Highway 28 - improvements could impact up to four residences, entrances and/or properties
- Terrain is rugged at end of road and makes it difficult to expand existing facilities
- The end of the road is too close to private property for any park development to occur
- Requires co-ordination with municipality re: infrastructure improvements outside park boundaries

5.3.6 New Road Near McGee Lake



Summary of Advantages and Disadvantages

Advantages

Has some potential to reduce traffic on existing sideroads, however, visitor traffic will still be attracted to current access points to lakes, canoe routes and campsites on existing sideroads

Provides potential for new public recreational access in southern section of park

Slightly reduces potential impacts to cottage communities on Anstruther Lake, Wolf Lake, Loon Call Lake and Long Lake

Provides some improved emergency access to new but isolated area

Disadvantages

Has one large, unevaluated wetland

Significant impact to terrestrial wildlife because new road impacts wildlife movement and fragments mammal habitat

Adjacent to deer yards near Highway 28

Has breeding bird species sensitive to loss of area including Cerulean Warbler

Significant impact to natural vegetation and terrestrial habitat linkages or corridors because it is a new linear corridor through undisturbed areas

Considerable length through wetland is prone to flooding, erosion and sediment release to water

Opens up small area with semi-wilderness characteristics

Introduces new noise to undisturbed area

Potential impact to recreational camps (that may seek remoteness)

Does not provide access to canoe route

5.4 Selection of Preferred Access Road on Each Side of Park

5.4.1 West Side of Park

The Beaver Lake Road alternative has been identified as the Preferred Access Road on the west side of the park for the following main reasons:

- Using the existing road provides for the preservation of the semi-wilderness characteristics of the area and the protection of the ecological integrity of the park, which is of paramount importance to Ontario Parks and many stakeholders and members of the public. It also facilitates the long-term protection of natural heritage values that are unique to the area and has the least amount of overall impact to evaluation criteria under the general heading of Natural Environment/Ecological Integrity Considerations – especially when compared to the new access road alternative to Bottle Lake.
- Directing visitors to Beaver Lake Road is compatible with the Park Management Planning Study, which is addressing land use and resource management options, because it maintains remoteness in currently undisturbed areas with semi-wilderness characteristics, can accommodate the needs of public and private recreational land uses within the park and provides a connection to County Road 507 at an existing intersection.
- It provides a balance between traditional social, cultural and economic activities and the values of protecting the ecological integrity of the area, in terms of social, cultural and economic considerations. Furthermore, the use of Beaver Lake Road enables Ontario Parks to address some of the existing concerns raised by cottagers along the road and within the park, by providing roadway and parking improvements in an area of concern.
- As an existing road it has minimal impacts to Aboriginal values and traditional land or resource uses.
- It is less expensive than building a new road and the investment in roadway and parking improvements at Beaver Lake Road has the potential to benefit the largest number of users (i.e., a high traffic area) within the park.

Although the use of Beaver Lake Road is not supported by some members of the cottage community on Beaver Lake Road, the use of this road is considered to be more reasonable than the construction of a new road to Bottle Lake or use of the Mississagua Dam Road on the west side of the park. It is being carried forward by Ontario Parks to compare against the ‘do nothing’ alternative, because it is seen as serving the greater good for Kawartha Highlands Signature Site Park.

Furthermore, Ontario Parks is committed to continuing discussions with cottagers on Beaver Lake Road and the municipality, to pursue the most effective means of mitigating the impacts of using the road as a primary access road to the Park.

5.4.2 East Side of Park

The Anstruther Lake Road alternative (Option 2) has been identified as the Preferred Access Road on the east side of the park for the following main reasons:

- Using the existing road provides for the preservation of the semi-wilderness characteristics of the area and the protection of the ecological integrity of the park, which is of paramount importance to Ontario Parks and many stakeholders and members of the public. It also facilitates the long-term protection of natural heritage

values that are unique to the area and has a minimal amount of overall impact to considerations regarding the natural environment and ecological integrity.

- Directing visitors to Anstruther Lake Road is compatible with the Park Management Planning Study, which is addressing land use and resource management options, because it maintains remoteness in currently undisturbed areas with semi-wilderness characteristics, can accommodate the needs of public and private recreational land uses within the park and provides a connection to Highway 28 at an existing intersection.
- It provides a balance between traditional social, cultural and economic activities and the values of protecting the ecological integrity of the area, in terms of social, cultural and economic considerations. Furthermore, the use of Anstruther Lake Road enables Ontario Parks to address some of the existing concerns raised by cottagers along the road and within the park, by providing roadway and parking improvements in an area where some cottagers have expressed concern (i.e., Wolf Lake parking, etc.).
- As an existing road it has minimal impacts to Aboriginal values and traditional land or resource uses.
- It is less expensive than building a new road and the investment in roadway and parking improvements at Anstruther Lake Road has the potential to benefit the largest number of users (i.e., a high traffic area) within the park.

The Anstruther Lake Cottage Association is on record as supporting this alternative.

Ontario Parks is committed to continuing discussions with cottagers on Anstruther Lake Road and the municipality, to pursue the most effective means of mitigating the impacts of using the road as a primary access road to the park.

5.5 Comparison of Preferred Road Alternatives to Do Nothing

The 'do nothing' alternative provides a baseline alternative against which to measure the benefits of undertaking improvements and the consideration of this alternative is a requirement of the Class EA process. As such, the Project Team has compared the benefits of 'doing nothing' versus the preferred access road alternative, identified as providing improvements at Beaver Lake Road and Anstruther Lake Road.

5.5.1 Do Nothing

The "do nothing" alternative means using the existing points of access to the park, without any improvements. It does *not* include upgrading existing roads because those are other alternatives, namely, improvements to Beaver Lake Road, Mississagua Dam Road, Anstruther Lake Road or Long Lake Road.

In short, the "do nothing" alternative means to keep the current access roads just the way they are with the potential for only minor development opportunities (i.e., parking lots or placement of garbage receptacles, etc.) as identified through the Park Management Planning process.

5.5.2 Do Nothing versus Improvements to Beaver Lake/Anstruther Lake Roads

Public concerns from the first set of Open Houses included several comments about the challenges associated with mixing visitors and newcomers to the park with the cottagers or seasonal residents. The concerns included visitors parking on sideroads, garbage, noise, trespassing, etc. Many cottagers felt that the new park needed some "order" as soon as possible – because currently, the visitors are accessing the park, its lakes and

campsites from anywhere they can, and in some cases, on or through private property. The “do nothing” alternative does not address these concerns.

Alternatively, improving Beaver Lake Road and Anstruther Lake Road acknowledges the need for improvements to existing conditions and the need for something better especially at these two primary and central points of entrance to the park.

Kawartha Highlands Signature Site Park Charter states that the semi-wilderness characteristics of the KHSSP must be preserved and that the protection of ecological integrity is of paramount importance. It also states that careful management is required to protect the environmentally sensitive aspects of the area and that respect must be shown towards existing private lands and tenure within the park.

The “do nothing” alternative does not benefit the existing private landowners within the park because it does not address public concerns about safety and emergency access. Furthermore, through continued visitor activity such as parking on existing sideroads, launching boats or camping “anywhere”, environmental conditions or ecological integrity, may in fact be jeopardized in sensitive areas if nothing is done. Improving certain access routes to the park can help control the areas of impact from visitors.

With a view to managing the KHSSP effectively the Project Team feels that the “do nothing” alternative falls short of everyone’s needs. Visitors’ needs must be balanced with cottagers’ needs and as such, signed points of access should be provided to the future park, along with parking areas that include facilities such as washrooms, etc.

The “do nothing” alternative is therefore not preferred.

6.0 PREFERRED PLAN

The Preferred Plan is to identify Beaver Lake Road and Anstruther Lake Road as two of the primary access roads into Kawartha Highlands Signature Site Park.

Other existing sideroads that provide access to the park (i.e., Mississagua Dam Road, Long Lake Road, etc.) will continue to be used by visitors to the park because they provide access to canoe routes and campsites that would otherwise be inaccessible. However, certain amenities and facilities that may not be available elsewhere will be concentrated in these areas.

This section of the ESR describes the improvements that are proposed for Beaver Lake Road and Anstruther Lake Road, serving as two of the primary access roads into KHSSP.

The Class EA Process for this Category C undertaking includes identifying a Preferred Plan and documenting the study in an ESR. Although roadway improvements are being discussed at a planning level, the scope of work for the study does not include detailed roadway design work. Therefore, the description of the Preferred Plan is being prepared at a planning level of detail, which is appropriate, as the work plan to date has not included engineering investigations such as surveying, geotechnical soil sampling, bridge or drainage inspections.

Public comments on the draft ESR were received and considered, but did not result in major changes to the final document. A summary of comments and responses is provided in **Appendix B**.

Ontario Parks and the Ministry of Natural Resources have engineering staff and may choose to enter into partnerships with the municipalities to design and implement the proposed improvements.

6.1 Beaver Lake Road Update

Since the start of the Access Road Study, some improvements to Beaver Lake Road have already been implemented.

Most recent improvements include:

- the installation of “no parking” signs from the second bridge to the access point near Bottle Lake;
- surface treatment improvements (i.e., tar and chip) from the second bridge to the access point near Bottle Lake;
- minor drainage improvements, including some culvert replacements;
- construction of a new interim parking lot for approximately 20 to 25 vehicles the access point to Bottle Lake and within the existing road right-of-way; and
- installation of a gated laneway and minor improvements where the current trail to Bottle Lake is located to provide access to tenured land on Bottle Lake.

The above noted improvements were implemented as part of the municipal roadway maintenance program and in response to local concerns regarding emergency access to the area. The existing parking lot extension is considered to be an interim measure, for addressing parking needs as well as health and safety issues, while the Access Road Study and Park Management Planning processes are completed.

6.2 Anstruther Lake Road Update

Since the start of the Access Road Study, some improvements have also been designed and carried out on Anstruther Lake Road.

In 2005, the municipality submitted (and subsequently withdrew) a funding application for grading and cross-sectional improvements to Anstruther Lake Road.

In addition, the current marina owner has expanded his facilities, easterly, to provide additional parking in this area.

6.3 Roadway Improvements

In an effort to minimize impacts and because traffic volumes are not expected to increase (based on current Park Management Planning goals and objectives), no improvements to the plan or profile of the existing roadway alignments are being recommended at this time.

Roads requiring two-way traffic should have a finished width of 7.5 metres. Final road improvements will be established in the field to minimize the disturbance of existing trees that encroach on width or visibility requirements. Ditching and culvert installation may be required in some areas to ensure the existing drainage patterns are maintained. Disturbed shoulder areas should be topsoiled and a naturalizing seed mix applied.

6.4 Bridges

There are two existing bridges on Beaver Lake Road both outside the park boundary. These bridges are maintained by the municipality. Future bridge inspections and routine maintenance will confirm the condition of existing bridges.

In the long-term, when bridge replacements are required, some consideration should be given to widening the second bridge, to permit two-way traffic and provide room for pedestrians on at least one side. Access to the canoe routes at the bridges may also require improvements that are appropriate to introduce when the bridges are replaced.

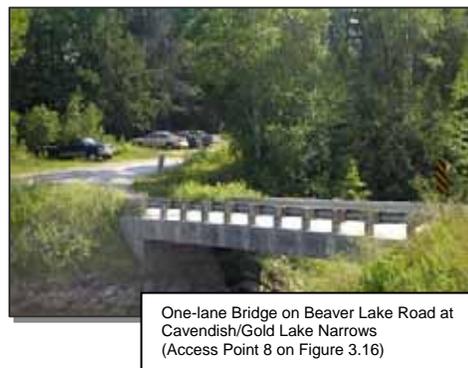
There are no bridges on Anstruther Lake Road.

6.5 Parking and Other Amenities

Current parking restrictions are expected to remain in place on Beaver Lake Road and Anstruther Lake Road (*as shown photographs on next page*). Parking regulations will be enforced through entrance permits to the park and municipal bylaw enforcement measures on the municipal side roads.

Visitors will be directed to specific parking areas, through the use of signage, as part of the improvements (as described in the following section). The number of parking spaces provided should be based on peak weekend demands.

The Beaver Lake Road alternative includes a “shaded area” where parking and other amenities could be provided just south of Sucker Lake and Bottle Lake. This area could



be developed to include a parking lot, waste receptacles. Public washrooms, an information kiosk and new trail signage or markers to lead people on foot to Bottle Lake. Amenities to be provided at this location will be confirmed through the Park Management Planning Study.

6.6 Signage

Ontario Parks will work with the County of Peterborough and the Ministry of Transportation to install appropriate signage on County Road 507 and Highway 28 to direct visitors to Beaver Lake Road and Anstruther Lake Road to access the park. Tourism Oriented Directional Signs (TODS) Provincial Park signage will be used.

Signage on Beaver Lake Road will direct visitors to park at designated parking lots – including existing parking areas or canoe access points and/or the proposed new parking lot in the “shaded area” near Bottle Lake and Sucker Lake. Signage for trails and canoe routes will begin at the parking lots.

Signage on Anstruther Lake Road will direct visitors to park at designated parking lots.

Signage to parking lots on Beaver Lake Road and Anstruther Lake Road should be strategically placed at decision points to direct new-comers past local side roads that are used by cottagers in the area. This should direct visitors away from private property and help manage previous conflicts in this regard.

6.7 Cost

The following approximate costs are provided as general guidelines for similar roadway improvement projects, recognizing that there have been no engineering investigations carried out on the access road alternatives.

New sideroad construction - \$500,000/km

Sideroad widening - \$100,000/km

Minimal improvements (no platform widening) - \$ 50,000/km.

Cost sharing arrangements will be discussed with the local municipalities to confirm how the improvements to Beaver Lake Road and Anstruther Lake Road will be paid for.

Such discussions are outside the scope of this study and will be resolved during future consultation with each municipality.

6.8 Intersections at County Road 507 and Highway 28

The projected traffic volumes expected to be entering the park on Beaver Lake Road and Anstruther Lake Road are based on the Park Management Plan and reflect the assumption that the Plan will maintain only the existing number of current campsites and canoe routes, etc., within the park.

As a result, it may be that the number of visitors to the park, or cars entering the park, may actually decrease, when Ontario Parks begins to regulate the campsites within the park and restrict people from camping at non-campsite locations (which is currently



occurring, based on input received from the public). As a result, it is possible that traffic volumes on the sideroads may decrease when the park becomes operational.

6.9 Potential Environmental Impacts and Mitigation

The use of existing roads as primary access roads to the KHSSP will result in minimal impacts to the natural environment. The most sensitive area to potentially be impacted by the proposed works is the shaded area at the end of Beaver Lake Road, where extra care should be taken in designing and building the parking lot and associated infrastructure.

Most impacts in this area can be mitigated with standard mitigation control measures such as those described below.

6.9.1 Sediment and Erosion Control

Various mitigation techniques will need to be employed during construction to reduce the risk of impacts to natural environment features. During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction. Dust and silt generated from construction activities can also harm natural areas. These potential effects can be mitigated through the use of standard sediment and erosion control measures.

The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure; (2) retain existing vegetation, where feasible; (3) encourage re-vegetation; (4) divert runoff away from exposed soils; (5) keep runoff velocities low; and to (6) trap sediment as close to the source as possible. To address these principles, the following mitigation measures are proposed:

- Equipment activity in natural areas during construction should be minimized.
- Silt fencing should be used along all construction areas adjacent to natural areas and the boundaries of the site.
- All materials requiring stockpiling (fill, topsoil, etc.) should be stabilized and kept a safe distance from any sensitive natural features. The perimeter of the stockpiles should be encircled with silt fencing.
- All exposed soil areas should be stabilized and re-vegetated, through the placement of seed and mulching or seed and an erosion control blanket, promptly upon completion of construction activities.
- Refueling of equipment should be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs.
- In addition to any specified requirements, additional silt fence, straw bales, and rip-rap should be moved on site, prior to grading operations, to provide a contingency supply in the event of an emergency.
- All sediment and erosion controls should be monitored regularly and properly maintained, as required during construction. Controls should be removed only after the soils of the construction area have been stabilized and adequately protected until cover is re-established.
- The limits of construction, adjacent to all natural features to be retained, should be flagged and fenced prior to construction, and monitored during construction (along

with sediment and erosion control measures) to ensure the limits are maintained with respect to vehicular traffic and soil or equipment stockpiling.

- The Contractor should be required to restore any disturbed natural areas to pre-construction conditions.

6.9.2 Construction Timing Restrictions

6.9.2.1 Fisheries and Aquatic Habitat

Works adjacent to aquatic resources that possess fish habitat, or have the potential to support fish habitat, are often restricted to certain periods to avoid construction-related impacts to fish species during their most sensitive/vulnerable life cycles (i.e., during reproduction and early development stages of off-spring). Therefore, construction activities should not be permitted close to, or within, fish habitat during these periods.

Construction activities associated with this project will likely be restricted between March 31 and July 1 (i.e., in-water works are prohibited during this period). This warm water timing window should apply to in-water works at all fisheries resources identified in Figures 3.3 (Aquatic and Terrestrial Resources Beaver Lake Road) and Figure 3.5 (Aquatic and Terrestrial Resources Anstruther Lake Road).

6.9.2.2 Migratory and Protected Birds

Mitigative measures should also be in place to avoid interference with nesting and fledging activities associated with migratory and protected birds, in accordance with the *Migratory Birds Convection Act*. For the purposes of avoidance/prevention of migratory nests in culvert structures, construction activities at existing culverts can be timed to avoid the nesting season for migratory birds. In this regard, where nests are evident, work at those culverts should not be carried out between May 1 and August 15 of any year.

Alternatively, the culverts could be outfitted with exclusionary netting or tarping (on the undersides of the culverts) prior to May 1 to prevent nesting and, therefore, allow the work to proceed. Environmental monitoring may also be required to ensure that any exclusionary netting/tarping is secure, that no birds become entangled, and that no new nesting occurs during construction.

6.9.3 Minimizing Damage to Peripheral Vegetation

During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction. Prior to heavy machinery working adjacent to these areas, a barrier for tree protection (e.g., snow fencing) should be employed to protect any site vegetation that is to be retained and is in the vicinity of exposure to damage by machinery. This involves fencing the vegetation at, or beyond, the treed drip-line.

6.9.4 Remoteness

The Preferred Plan should have minimal impacts to remoteness in the study area. Although new (or improved) access to Bottle and Sucker lakes may be provided from the shaded area off of Beaver Lake Road, these lakes already have campsites and are being used by visitors to the park. Visitor behavior and the number of campsites etc., will be managed when the park becomes operational.

6.9.5 Other Persons or Properties Outside the Park

The use of existing side roads has some potential to impact residents and cottagers on Beaver Lake Road and Anstruther Lake Road, outside the park boundaries. These impacts may include additional traffic for day visits, lost travelers visiting the area for the first time, increased dust, garbage, etc.

Most of these impacts can be mitigated through proper management of visitor amenities (i.e., provision of directional signage, etc.) and effective information distribution to visitors and cottagers. Ontario Parks will continue to work with cottage associations and individual property owners to address areas of concern as they are raised by residents outside the park boundaries. An example of this type of commitment is reflected in the Park Superintendent's availability to meet with Wolf Lake and Beaver Lake Cottage Association representatives, municipal staff and local politicians to address parking and emergency service concerns in the summer and fall of 2006 where cottagers outside the park boundary were looking for solutions to deal with concerns about visitors to the park.

Ontario Parks staff remain committed to addressing the concerns of its neighbours whenever possible.

6.9.6 Traffic Patterns and Infrastructure

The proposed works are expected to improve traffic patterns in the park because they include the provision of new directional signage and additional off-road parking as well as potential for amenities at two of the busiest side roads in the park.

The infrastructure improvements that could be associated with the primary access roads and the new parking areas at both Beaver Lake Road and Anstruther Lake Road should provide improved opportunities for both visitor and cottage traffic in the area.

6.9.7 Private or Public Recreation

The access roads themselves are not expected to impact private or public recreational activities because they are on existing roads, where established canoe routes, etc., will continue to be used. Some indirect benefits may be achieved if new recreational activities (i.e., hiking trails, etc.) would be developed from the "end of road" facilities at both Beaver Lake Road and Anstruther Lake Road. Decisions regarding new recreational facilities will be made as part of the Park Management Planning Process.

6.9.8 Noise

Construction activities may result in temporary noise that could impact nearby cottagers, campers and potentially wildlife. As most of the proposed improvements are being carried out at existing roads, overall changes in noise levels should be minor.

The shaded area at Beaver Lake Road is somewhat removed from cottages and relatively isolated. Although some construction noise may be heard from this area, the overall impacts should be minimal. Some disturbance to wildlife (i.e., birds, etc.) is expected to occur both during construction and after, because the provision of parking and amenities will introduce human activity to an area that is presently undisturbed.

6.9.9 Archaeology

Some consideration should be given to carrying out a Stage 2 Archaeological Assessment at the shaded area off of Beaver Lake Road, before a plan is finalized.

Stage 2 Archaeological Assessments include some shovel testing activities and are recognized by the Ministry of Culture as being appropriate where new facilities are constructed in previously undisturbed areas.

6.9.10 Local Businesses

The provision of signed access points to the park for Beaver Lake Road and Anstruther Lake Road has some potential to increase revenue for current businesses. The existing marina at Anstruther Lake Road is provided with an opportunity to serve visitors to the park.

In addition, the proximity of Anstruther Lake Road to the community of Apsley (at Highway 28) has some potential to increase business due to exposure of the area by new visitors.

6.9.11 Community Character

As previously noted, some members of the Beaver Lake Cottage Association have expressed considerable concern about using Beaver Lake Road as a primary access road to the park because they do not want the cottage community character to be impacted by the changes that KHSSP has brought (or may bring) to the area.

Ontario Parks is willing to continue to meet with cottagers and resolve issues on Beaver Lake Road (and other side roads), as required. They feel that the types of concerns raised by cottage owners in this community can be addressed through the provision of specific improvements such as off-road parking and regulation of activities within the park.

Ontario Parks staff and the Management Advisory Board remain optimistic that the community character and cottagers along Beaver Lake Road can adapt to the presence of Kawartha Highlands Signature Site Park and the use of Beaver Lake Road as the westerly access road to the park. The proponent is committed to working with local interest in a mutually beneficial relationship.

6.9.12 Public Health and Safety

Emergency access to central regions of the park should be improved by providing off-road parking to keep road allowances accessible and improved signage to the area.

The provision of new amenities at the end of each side road could also improve health and safety for visitors to the park.

6.9.13 Aboriginal Considerations

The use of existing roads is expected to minimize impacts to Aboriginal values with respect to traditional land uses and resources.

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7.0 PROJECT MONITORING DETAILS

During construction, the work will be monitored by qualified staff to ensure that any surrounding natural areas are not damaged and that encroachment into protected areas does not occur. Qualified staff is also required to remove/relocate existing fish specimens from any construction areas to be de-watered and to return the fish to a watercourse/water body where habitat conditions are suitable. Regular monitoring should ensure that all sediment and erosion control measures are functioning effectively.

An environmental monitoring program is proposed which is comprised of two components: the construction phase (i.e. from clearing a wider corridor for the existing road to the completion of the road, site services and parking areas), and the operational phase (i.e. traffic flow, day use of entrances and wastewater management).

7.1 Construction Monitoring

Construction shall be undertaken in accordance with current provincial guidelines, including the *Construction and Mitigation Handbook for MNR Class EA Projects* and current industry best site management practices, as well as mitigation measures identified in this report.

Monitoring of the construction process to verify compliance with the contract specifications will be undertaken by the construction site representatives or his/her designate as part of the routine supervision and monitoring of this project. This should include all aspects of project implementation including the road improvement for the preferred access road, parking area and installation of site services. The program will place particular importance on monitoring the following:

- implementation and effectiveness of measures to minimize nuisance effects such as noise and dust; and
- implementation and effectiveness of erosion and sediment control measures.

7.2 Operational Monitoring

The goal of the operational monitoring program is to assess the success of the site restoration activities. It is proposed that the following program be undertaken:

- inspect and monitor the ongoing process of natural regeneration and growth of any planted seeds and vegetation within 30 m of the area disturbed by construction to confirm its survival and growth of all restored areas;
- monitor the access roads at appropriate times for the presence of endangered species and document;
- identify any impacts (anticipated or otherwise) and whether mitigation measures were successful;
- include a review of the effectiveness of existing environmental guidelines, standards and policies; and
- determine the overall effectiveness of the access road preferred development scenario to the proposed alternatives.