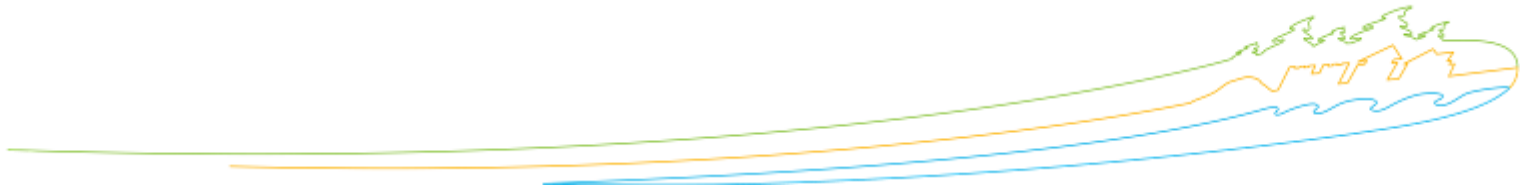




Parks  
Canada

Parcs  
Canada



# Minor Repairs to Transportation Infrastructure in Atlantic Canada National Parks

Replacement Class Screening Report  
2012

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## Acronyms

BMP – Best Management Practices

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

DFO – Department of Fisheries & Oceans Canada - Maritimes and Gulf Regions

EA – Environmental Assessment

EC – Environment Canada

FA – Federal Authority

NP – National Park

PCA – Parks Canada Agency

RA – Responsible Authority

RCSR – Replacement Class Screening Report

ROW – Right of Way

SARA – *Species at Risk Act*

TC – Transport Canada

the Act – *Canadian Environmental Assessment Act*

the Agency – Canadian Environmental Assessment Agency

the Registry – Canadian Environmental Assessment Registry

VEC – Valued Ecosystem Component

## Glossary of terms

**Fish** Includes all the life stages of “fish, shellfish, crustaceans, marine animals and marine plants” (*Fisheries Act* 1985).

**Fish habitat** Spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes (*Fisheries Act* 1985).

**Highway footprint** The permanent physical intrusion of a highway or freeway, including the road surface, shoulders, side slopes, drainage ditches and/or storm drainage ponds (Transport Canada, 2008).

**Water body** Includes a lake, a canal, a reservoir, an ocean, a river and its tributaries and a wetland, up to the annual high-water mark, but does not include a sewage or waste treatment lagoon, storm water management pond, a mine tailings pond, an artificial irrigation pond, a dugout or a ditch that does not contain fish habitat as defined in subsection 34(1) of the *Fisheries Act*. (*Canadian Environmental Assessment Act - Exclusion List Regulations* 2007)

**Wetland** A wetland is land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation and various kinds of biological activity that are adapted to a wet environment. Wetlands include bogs, fens, marshes, swamps and shallow waters (usually 2 m deep or less) as defined in *The Canadian Wetland classification System* published by the National Wetlands Working Group of the Canada Committee on Ecological Land Classification (1987).

## 1. Introduction

The Parks Canada Agency (PCA) has developed a Replacement Class Screening Report (RCSR) to cover minor repairs to transportation infrastructure in Atlantic Canada national parks. This RCSR will cover projects in the following national parks: Gros Morne National Park of Canada, Terra Nova National Park of Canada, Cape Breton Highlands National Park of Canada, Fundy National Park of Canada, Kejimikujik National Park and National Historic Site of Canada, Kouchibouguac National Park of Canada, and Prince Edward Island National Park of Canada.

### *Rationale*

Roads in the Atlantic Canada national parks are in significantly poor condition. Numerous upgrades will be required to address these concerns over the next few years. Thus the Atlantic region has developed this RCSR to cover minor repairs to transportation infrastructure where the PCA is the Responsible Authority (RA) under the *Canadian Environmental Assessment Act* (the Act).

The RCSR will cover road maintenance activities including: Communication Infrastructure, Minor Roadway Enhancements, Small Bridge or Culvert Rehabilitation or Replacement, Highway-related Infrastructure specific to park settings, and Vegetation Management. All of the projects that will fall within this RCSR are considered “physical works” under the Act and PCA is the proponent, and therefore, the RA. Projects considered in this RCSR will be limited to those where PCA is the only RA. While many of these projects contain some elements of simple maintenance and repair, some projects listed in this document may include components that go beyond the scope of maintenance and repair as indicated in the *Exclusion List Regulations*. Projects that go beyond the scope of this document must undergo an individual EA.

An RCSR can be declared for road maintenance projects because the project-environment interactions are well understood and not likely to vary from project to project within respective sub-classes. Though locations may differ, projects will occur within standard and well-established highway corridor footprints or just slightly outside of these. As such, typical environmental setting(s) wherein proposed classes of projects may occur are usually known and well-understood in terms of valued ecosystem components and the interactions among the components.

Such an RCSR would improve the overall EA program for Atlantic Canada national parks in ways that would allow EA practitioners to utilize their time more effectively and efficiently. This RCSR would lead to a better quality program by helping EA practitioners prioritize projects and hence lead to greater consistency and predictability in the EA process and efficient utilization of departmental resources.

The Atlantic Region of the PCA includes national parks and the national historic sites within the provinces of Newfoundland and Labrador, Nova Scotia, New Brunswick and Prince Edward Island. As a special operating agency reporting to the Minister of the Environment one role of the PCA is to provide road transportation infrastructure within its properties for visitors and also as a link to communities where the only access routes are through a PCA property.

As the PCA is the proponent for these projects, the PCA is an RA under the Act and must complete an EA before it can exercise any duty, power or function in relation to a project. Each year, approximately 25 individual screening reports are conducted for the upkeep of roads within PCA properties. The designs

for these projects have been incorporated into this RCSR for the purpose of achieving a more cost effective schedule that honours environmental integrity. Therefore, the total number of EAs that will be covered per year by this class screening is projected to range between 20 and 25.

The RCSR has evolved from previous transportation infrastructure projects and follow-up programs that include proven design standards, best management practices (BMPs), and effective mitigation that are supported by regulations and industry. The creation and implementation of this RCSR is a timely addition to the environmental initiatives at the PCA.

### ***1.2 Management of National Parks***

National parks are "dedicated to the people of Canada for their benefit, education and enjoyment ... and shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations" (*Canada National Parks Act*, 1998). The approach taken for the EA of transportation infrastructure recognizes the benchmarks of ecological and commemorative integrity that are mandated to the PCA for the management of national parks and historic sites. The approach also recognizes that transportation corridors in national parks are considered to be an appropriate use in accordance with PCA policy and that the quality of visitor experience is an important consideration in management decisions.

#### **1.2.1. Managing for Ecological Integrity**

The *Canada National Parks Act* Section 8(2) identifies the importance of protecting park resources in relation to visitor use by stating "the maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks." The *Canada National Parks Act* Section 2(1) states "ecological integrity means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes." In operational terms "ecosystems" can be characterized in terms of composition, structure and process. An ecosystem can be considered to have integrity when native components (plants, animals and other organisms), physical structure (such as habitat connectivity or vegetation patterns) and processes (such as interspecies competition and predation) remain intact and function unimpaired by human activities. Conversely a loss in ecological integrity can be characterized by changes to physical structure, or interference with ecosystem processes as a result of human activity, that result in a loss of native species biodiversity.

Indicators of, and stressors affecting, ecological integrity as identified in park management plans were reviewed to identify the environmental components most likely to be affected by road maintenance activities.

#### **1.2.2. Managing for Cultural Resources**

The protection of cultural resources is a priority for PCA, with the highest obligation being to protect and present those resources of national historic significance in order to retain their historic value and extend their physical life (Parks Canada, 1994). The protection of cultural resources also involves the consideration of the cumulative impacts of any proposed actions concerning the historic character of cultural resources, the goal being to preserve cultural integrity.

A cultural resource is defined as “a human work, or a place that gives evidence of human activity or has spiritual or cultural meaning, and that has been determined to be of historic value” (Parks Canada, 1994). Within national parks, cultural resources are inventoried and assigned a value based on the particular qualities and features that make up their historic character. Resources are evaluated for their historical associations, their aesthetic and functional qualities and their relationships to social and physical environments (Parks Canada, 1994).

### **1.2.3. Managing for Visitor Experience**

The *Canada National Parks Act* states that “The national parks of Canada are hereby dedicated to the people of Canada for their benefit, education and enjoyment...” To fulfill PCA’s mandate of facilitating the education and enjoyment of national parks by the public, a variety of outdoor recreation opportunities are permitted, consistent with direction provided by Parks Canada Guiding Principles and Operational Policies (Parks Canada, 1994). Outdoor activities that promote the appreciation of a park’s purpose and objectives, and respect the integrity of the ecosystem, are intended to serve visitors of diverse interests, ages, physical capabilities and skills. The private sector and non-governmental organizations are encouraged under park policy to provide skills development programs that will increase visitor understanding, appreciation and enjoyment of the national parks. Individual park management plans specify the types and ranges of both new and existing appropriate outdoor recreation activities and their supporting facilities. PCA, working in cooperation with others, is committed to offering high-quality visitor services by ensuring that park resources do not deteriorate and that quality visitor experiences are not diminished.

### **1.2.4. Park Management Plans**

In order to fulfill the mandates for ecological integrity, cultural resources and visitor experience, management plans are developed for each park and reviewed every five years. These documents are tabled in parliament and contain “a long-term ecological vision for the park, a set of ecological integrity objectives and indicators and provisions for resource protection and restoration, zoning, visitor use, public awareness and performance evaluation” *Canada National Parks Act* Section 11(1). Management plans provide the direction for all activities within the park. Based on the management plan, human use strategies and other plans can be developed to further direct activities within the parks.

The park management planning process includes public input and review, strategic environmental assessment (where all proposed actions and initiatives that could result in some adverse environmental impacts and trigger the Act are identified) and Ministerial approval prior to being tabled in parliament. As a result of the intensive management planning and review process, issues related to the cumulative impacts of overall management of human use are addressed more appropriately within the scope of the management planning process including: appropriate use of park lands and facilities; management and maintenance of park facilities; management of overall visitor use levels; commercial business licence allocations or restrictions; area closures, visitor use restrictions or zoning. The RCSR ensures that while managing potential impacts of minor repairs to transportation infrastructure, PCA takes appropriate measures to protect the environment and cultural resources, and ensures the safety of the visiting public.

## ***1.3 Class Screening and the Canadian Environmental Assessment Act***

The Act and its regulations set out the legislative basis for federal EAs. The legislation ensures that the environmental effects of projects involving the federal government are carefully considered early in project planning. The Act applies to projects which require a Federal Authority (FA) to make a decision or



take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or license). The FA then becomes a RA and is required to ensure that an EA of the project is carried out prior to making its decision or taking action.

Most projects are assessed under a screening type of assessment. A screening systematically documents the anticipated environmental effects of a proposed project, and determines the need to modify the project plan or recommend further mitigation to eliminate adverse environmental effects or minimize the significance of these effects.

The screening of some repetitive projects may be streamlined through the use of a class screening report. This kind of report presents the accumulated knowledge of the environmental effects of a given type of project and identifies measures that are known to reduce or eliminate any significant adverse environmental effects. The Agency may declare such a report appropriate for use as a class screening after taking into account comments received during a period of public consultation.

A replacement class screening consists of a single report that defines the class of projects and describes the associated environmental effects, design standards and mitigation measures for projects assessed within the report. It includes a determination regarding significance of environmental effects for all projects assessed by the replacement class screening. Once the Agency declares an RCSR and where an RA is satisfied that a project falls within the class described in the RCSR, no further action is required under sections 18 or 20 with respect to the project as long as the RA ensures that design standards and mitigation measures described in the RCSR are implemented.

In practice, a proposed project must be examined to see if it fits into a project class. It is then checked for elements that may disqualify it from the class. If it is still included, then the mitigation and design standards must be communicated to the project manager and included in project or contract documents. When the project is built, the requirements must be strictly observed and implemented and verified by PCA staff.

### ***1.4 Rationale for Replacement Class Screening***

The applicability of the RCSR to minor repairs to transportation infrastructure is based on the following six criteria:

#### **a) Well Defined Class of Projects:**

Projects proposed for this RCSR were chosen because of their small scale and routine nature. They have been divided into five sub-classes of projects, including: (1) Communication Infrastructure (2) Minor Roadway Enhancements (3) Small Bridge or Culvert Rehabilitation or Replacement (4) Highway-related Infrastructure specific to park settings (5) Vegetation Management.

#### **b) Well Understood Environmental Setting:**

PCA is very familiar with the environmental setting of transportation corridors with detailed information in park management plans. All proposed projects would take place in or immediately adjacent to these existing transportation corridors. The environment in the transportation right-of-ways (ROW) is well understood and has already been disturbed by the original construction and subsequent maintenance.

All of the projects under this RCSR will take place within or immediately adjacent to the existing highway footprint. Specifically:

- The highway footprint is defined as the width of the permanent physical intrusion of a highway or freeway, including the road surface, shoulders, side slopes, drainage ditches and/or storm drainage ponds; and
- Disturbance to areas adjacent to the highway footprint will extend no more than a total of 10 m outside of the existing footprint width and physical works will not cover a footprint of more than 25 m<sup>2</sup> in total area.

**c) Unlikely to Cause Significant Adverse Effects, Taking into Account Mitigation Measures:**

The proposed projects are well understood in terms of their environmental effects, and use standard construction, operation, and maintenance methods with similar types of environmental effects and mitigation strategies. Although projects may occur in different parks across Atlantic Canada, potential environmental effects are well known, predictable, very limited and easily mitigable. In fact, such projects are regularly implemented by PCA with no significant adverse environmental effects.

**d) Follow-up Measures:**

Based on screening reports from similar past projects, site follow-up measures would not be necessary because of the limited range of environmental effects and the proven effectiveness of mitigation measures.

**e) Effective and Efficient Planning and Decision-Making Process:**

These projects involve activities that are straightforward, frequently repeated, and are undertaken by experienced personnel. These projects improve road conditions and contribute to enhanced user safety. Furthermore, since PCA is the only RA, planning and decision-making procedures will be streamlined and consistent. Streamlining the EA process with the RCSR will improve the effectiveness of the project planning process for all parties involved.

**f) Public Concerns Unlikely:**

Based on past experience, public concerns are not anticipated with the development of this RCSR due to the nature of the proposed projects.

## ***1.5 Consultation***

### **Federal Consultation**

The process for developing this RCSR included consultation with federal departments/agencies including: Department of Fisheries and Oceans Canada (DFO), Environment Canada (EC), and Transport Canada (TC). A draft of the RCSR was reviewed and comments were incorporated before submission of the final draft to the Agency. Following its submission, the Agency conducted a 30-day public consultation on the RCSR. All comments received will be taken into consideration by PCA before the declaration of this RCSR.

### **Internal Consultation**

Internal consultation within PCA has been completed to ensure the validity of project activity descriptions. The practicality of mitigation has also been reviewed to provide the highest potential for successful implementation.

### Aboriginal Consultation

In the context of the Crown's legal duty to consult with Aboriginal groups, where it contemplates conduct that might adversely impact any potential or established Aboriginal and Treaty rights:

The RA confirms that a preliminary assessment has been undertaken to determine if a legal duty to consult arises in respect of the declaration of the report as a class screening report. The RA also confirms that based on its assessment, it is of the view that the declaration of this class of project does not give rise to a duty to consult.

The RA undertakes to ensure that, as appropriate, an analysis consistent with the approach proposed in the Government of Canada's Updated Guidelines for Federal Officials to Fulfill the Duty to Consult (March 2011) is carried out when a project is assigned to the class within the proposed RCSR to determine if, in the particular circumstance, the Crown conduct related to that project gives rise to the legal duty to consult.

### ***1.6 Canadian Environmental Assessment Registry***

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to EAs and to provide notice in a timely manner. The Registry consists of two components – an Internet site and a project file.

The Registry project file must include a copy of the RCSR. The RA maintains the file, ensures convenient public access, and responds to information requests in a timely manner.

The Registry Internet site is administered by the Agency. The RA and the Agency are required to post specific records to the Internet site in relation to the RCSR.

Upon declaration of the RCSR, the Act requires RAs to post on the Internet site of the Registry, at least every three months, statements of projects for which an RCSR was used. Each statement should be in the form of a list of projects, and should include:

- the title of each project for which the RCSR was used;
- the location of each project;
- RA contact information (name, phone number, address, email); and
- the date when it was determined that the project falls within the class of projects covered by the report.

**Note:** The schedule for posting statements is:

- no later than July 15 (for projects assessed from April 1 to June 30)
- no later than October 15 (for projects assessed from July 1 to September 30)
- no later than January 15 (for projects assessed from October 1 to December 31)
- no later than April 15 (for projects assessed from January 1 to March 31).

## 2. Projects Subject to Class Screening

### *2.1 Projects Subject to the Canadian Environmental Assessment Act*

For a project to trigger an EA under the Act, the project must either be an undertaking in relation to a physical work or an activity listed in the *Inclusion List Regulations* of the Act. In addition, under section 5 of the Act, PCA must:

- a) be the proponent of a project;
- b) grant money or other financial assistance to a project;
- c) grant an interest in land to enable a project to be carried out; and/or
- d) exercise a regulatory duty in relation to a project, such as issuing a permit, licence, or authorization that is covered under the *Law List Regulations*.

Minor repairs to transportation infrastructure activities are projects under the Act because they are undertakings in relation to a physical work (the road or accessory structure). As PCA is the proponent and triggers the Act as an RA, the completion of an EA is necessary before it can exercise any duty, power or function in relation to a project, as defined by paragraph 5(1)(a) of the Act.

Section 7 of the Act states that projects are excluded if: (a) the project is described in the *Exclusion List Regulations*; (b) the project is to be carried out in response to a national emergency for which special temporary measures are being taken under the *Emergencies Act*; or (c) the project is to be carried out in response to an emergency and carrying out the project forthwith is in the interest of preventing damage to property or the environment or is in the interest of public health or safety.

All components of the project must be described on the *Exclusion List Regulations*, for the project to be exempted from an EA under the Act. If any component of the project is not described on the *Exclusion List Regulations*, an EA of the project, including all components, is required under the Act. EA practitioners should review the most current version of the *Exclusion List Regulations* prior to initiating an EA.

In accordance with the *Exclusion List Regulations*, projects comprised solely of the proposed maintenance or repair of an existing structure will be excluded from the Act; however, modifications of a structure will be subject to the Act.

### *2.2 Projects Subject to the Replacement Class Screening Report*

It is the responsibility of the proponent / project manager to ensure that a full description of all project components are identified and provided to the Environmental Assessment Co-ordinator for the park. This shall include a written project description, a sketch of the proposed project and photos of the work area. *With this project information the Environmental Assessment Co-ordinator will determine if the project is covered by this RCSR and will in turn inform the proponent/project manager on how to proceed.*

## **Class of Projects**

This RCSR for Minor Transportation Projects includes five sub-classes of projects:

### **(1) Communication Infrastructure**

Communication infrastructure projects encompass a broad range of diverse technologies applied to transportation to make highways safer, more efficient, more reliable and more environmentally friendly. Communication infrastructure initiatives are simple and straightforward to implement and can eliminate or reduce the need for more complicated infrastructure improvements.

### **(2) Minor Roadway Enhancements**

The PCA seeks to improve the efficiency and safety of major land transportation routes, both paved and unpaved, that extend through national parks. It should also be noted that occasionally there is a need to readily respond to slope failure after major weather-related events or to be able to start planned projects if there is a sudden availability of funds. These projects are in-line with Park Management Plans.

### **(3) Small Bridge and Culvert Rehabilitation or Replacement**

These projects are being treated as a separate sub-class due to their proximity to water. These projects are repetitive in terms of the expected or known environmental effects associated with watercourse crossings. Projects that require DFO authorization, which are those projects that may result in the harmful alteration, disruption or destruction of fish habitat, are not covered in this RCSR.

### **(4) Highway-Related Infrastructure Specific to Park Settings**

A wide variety of infrastructure could be found within many of the national park roadway corridors. Some of this infrastructure may be unique only to park settings.

### **(5) Vegetation Management**

There is a continual need to manage vegetation along many park roadways in order to make highways safer and more enjoyable for the travelling public, while at the same time being conscientious regarding ecological integrity impacts beyond the corridor. The requirement to manage such vegetation is ongoing and time-consuming.

## ***2.3 Projects Not Subject to this Replacement Class Screening Report***

Projects not categorized as communication infrastructure, minor roadway enhancements, small bridge or culvert rehabilitation or replacement, highway-related infrastructure or vegetation management are not addressed by this RCSR and therefore will require individual EAs.

Projects are not suitable for application of the replacement class screening if they include:

- A new structure at a new location;
- A new lay down area (an area used for the staging and storing of construction related equipment or material);
- A new access road or cross country access;
- Any phase of a project that places personnel or equipment in a wetland;
- Requirements for a permit, approval or authorization from any FA other than PCA, including projects that are likely to cause the harmful alteration, disruption or destruction of fish habitat that would require an authorization from the DFO in accordance with the *Fisheries Act*;
- EA required by the Province;

- Species at risk and/or critical habitat likely to be adversely affected (see below);
- Site/access route or vegetation clearing for all project subclasses within 2 km of an active bird nesting colony during breeding season (April to September) or a migration staging area (August and September);
- Work within 30 m of a water body, with the exception of the activities listed in the above mentioned subclass of: **“Small Bridge and Culvert Rehabilitation or Replacement,”** which are included in the RCSR as they are unlikely to cause any impacts to water bodies.
- Work that extends more than a total of 10 m outside of the existing footprint width and projects extending more than a total of 25 m<sup>2</sup> in total project area;
- Tower installations related to cell phone/telecommunication towers, and/or lit and guyed towers;
- The elongation of culverts; realigning water courses; or any dredging;
- Those projects that have a potential to impact on cultural resources;
- Projects requiring a follow up program; and
- In the context of the Crown’s legal duty to consult with Aboriginal groups, where it contemplates conduct that might adversely impact any potential or established Aboriginal and Treaty rights: those projects for which issues raised during Aboriginal consultation remain to be adequately addressed or are addressed in such a way that the project no longer fits in the class as defined in the RCSR.

### 2.3.1 Projects involving Species at Risk and Sensitive Sites not Subject to RCSR

Projects are not suitable for application of the replacement class screening if they are likely to have an adverse effect on a species at risk and/or critical habitat, either directly or indirectly, such as by adversely affecting their habitat, and/or that would require a permit under the *Species at Risk Act* (SARA). For the purposes of this RCSR, species at risk include:

- species identified on the List of Wildlife Species at Risk set out in Schedule 1 of SARA, and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of SARA.
- species that have been recognized as "at risk" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by provincial or territorial authorities.

*\* if, after reviewing the project description using the class screening report, it becomes known or reasonably suspected that species at risk and/or critical habitat could be adversely affected by the proposed project, do not use the replacement class screening report. The project requires an individual environmental assessment under the Act. Note, the contents of the replacement class screening report may be used in the preparation of the individual screening report to the extent appropriate.*

Any projects which may adversely affect cultural and/or natural resources, either directly or indirectly, will not be permitted under this RCSR. Red and yellow provincially-listed rare species were considered during the preparation of this RCSR. See site descriptions below for further information on sensitive sites particular to each park in this RCSR and Appendix 5 for zoning designations for each park and especially zone 1: special preservation areas.

In some cases, environmentally sensitive sites that deserve special protection are not adequately captured in the zoning system. This situation usually arises because the sites are either too small to be effectively designated as discrete Zone I areas, or because the sites themselves may be variable from one year to the

next, as with bird nesting locations. Project officers must review the project description of the proposed project using the RCSR and consult with specific park resource personnel to ascertain if it is known or reasonably suspected that species at risk and/or critical habitat could be adversely affected by the proposed project. If so, project officers must not proceed using the RCSR.

Similarly, project officers must consult with specific park resource personnel with regard to the location and seasonality of any nearby bird nesting colonies.

Based on the project information provided by the proponent, a determination will be made by PCA as to whether individual projects are suitable for assessment under the RCSR. Some projects that require a screening under the Act are not suitable for this RCSR as their environmental effects are either unknown or may potentially be significant in the absence of project-specific mitigation. All projects that are found to be not included in the RCSR will likely require an individual EA under the Act. Contents of this RCSR may be used to assist in the preparation of the individual EA.

### 3. Project Class Description

The minor repairs to transportation infrastructure project class covers projects located within a large geographic boundary. All regions within the National Parks in the Atlantic Provinces are included. For clarity, the Magdalene Islands are not nor is the Torngat Mountains National Park included. This RCSR covers the following Atlantic Canadian National Parks: Gros Morne National Park of Canada, Terra Nova National Park of Canada, Cape Breton Highlands National Park of Canada, Fundy National Park of Canada, Kejimikujik National Park and National Historic Site of Canada, Kouchibouguac National Park of Canada, and Prince Edward Island National Park of Canada.

Appendix 3 shows the existing locations of Atlantic Canada National Parks.

Within the project class, the project scope is separated into two areas: the material staging location and the work site. Material staging areas are often located as close as possible to the work site and are used when all supplies needed for construction, and/or operation cannot be stored at the project site. These areas are often located in previously disturbed areas that allow easy road, water, or helicopter access: examples include logging roads, industrial yards, and outdoor recreation areas. Materials and equipment are prepared at the staging area before they are transported to the work site. The work site is where the construction, and/or operation activities occur.

#### *3.1 Activities Associated with Minor Highway Transportation Projects*

##### **3.1.1 General Activities**

General activities that apply to most projects and most stages of a project:

- ❑ **Material handling and storage:** includes transportation and storage of building and excavated materials.
- ❑ **Equipment operation:** equipment such as compactors, pumps, jackhammers, compressors, generators, cement mixers, backhoes and trucks are used for many projects. In some cases, specialized equipment (e.g. paving machines, buck trucks for pruning and line work) may be required.

- ❑ **Waste management:** includes the collection of all non-hazardous waste and its removal to appropriate facilities, as well as re-use and recycling of building materials. Vegetative material may be chipped, burned, or left to decay on site.
- ❑ **Hazardous material collection and disposal:** include safe storage and disposal of all hazardous materials such as oil-based paint, fuels, oils, lubricants and other petrochemical products.

### 3.1.2 Site Preparation

Site preparation may be required prior to carrying out some of the highway transportation infrastructure projects listed within this document. Site preparation may include:

- ❑ **Site investigation:** including geotechnical investigations such as digging test pits with backhoes or drilling wells, boreholes or coring with drilling rigs. Such investigations can also locate and identify underground utilities and/or ensure there is no existing contamination on site.
- ❑ **Vegetation removal:** including mowing and removal of shrubs and trees; cleared vegetative material may be chipped on site and reused as mulch or for future use off-site.
- ❑ **Grading, excavation and material stripping:** related to demolition of existing infrastructure; excavation of underground utility lines; or preparation at construction sites, roads or culverts.
- ❑ **Dewatering:** to remove excess water from an excavation using pumps, hoses and sediment traps.
- ❑ **Digging holes:** for new electrical poles within ROWs with a backhoe, auger or other equipment.

### 3.1.3 Communication Infrastructure

Communication infrastructure projects encompass a broad range of diverse technologies applied to make transportation safer, more efficient, more reliable and more environmentally friendly. These initiatives are simple and straightforward to implement, and they can eliminate or reduce the need for more complicated infrastructure improvements.

Work will take place within or just outside the existing roadway footprint no more than 10 m from the existing footprint width and with the total area of disturbance not exceeding 25 m<sup>2</sup>. Work will take place more than 30 m from water bodies and with no potential for the release of a polluting substance.

*Communication infrastructure projects include:*

- ❑ Installing and maintaining highway web cameras,
- ❑ Changeable message signs,
- ❑ Sub-surface phone and fibre optic lines and associated infrastructures,
- ❑ Tower installations, and
- ❑ Environmental scientific data collection instruments.

*Activities Include:*

- ❑ Installation of concrete pads, lines, and towers
- ❑ Potential tree trimming and excavation
- ❑ Recontouring and hydroseeding



- ❑ Installation of conduit hand-holes and manholes
- ❑ Excavation for installation of various components
- ❑ Servicing
- ❑ Installation of steel beam guiderail for poles, cabinets, signs
- ❑ Utility relocation as required

### 3.1.4 Minor Roadway Enhancements

PCA continually seeks to improve the efficiency and safety of major land transportation routes that extend through our national parks. Occasionally there is a need to readily respond to slope failure after major weather-related events or to execute pending projects if there is a sudden availability of funds.

Work will take place within or just outside the existing roadway footprint no more than 10 m from the existing footprint width and with the total area of disturbance not exceeding 25 m<sup>2</sup>. Work will take place more than 30 m from water bodies and with no potential for the release of a polluting substance.

*Minor roadway enhancement projects include:*

- ❑ Intersection improvements,
- ❑ Roadway widening within the existing ROW,
- ❑ Roadway and roadbed reconstruction,
- ❑ Repaving,
- ❑ Ditching,
- ❑ Reinforcement of embankments and bin walls, and
- ❑ Maintenance and repair of existing roads where the project may:
  - Involve the application of a dust control product (oil or calcium chloride) or salt to the road, or
  - Involve the application of a control product (*i.e.*, herbicides/fertilizers) to the areas adjacent to the road.

**Note:** Maintenance and repair projects of existing roads, which do not involve any of the above, do not require environmental assessment under the Act (Schedule II, #6 of the *Exclusion List Regulation*).

*Activities include:*

- ❑ Clearing, excavation, placing and compaction of asphalt /concrete base and seal ditch construction
- ❑ Production of road-base materials
- ❑ Re-vegetation of new ditches and disturbed soils
- ❑ Retaining wall construction
- ❑ Transport and installation of support material
- ❑ Stockpiling and containment of aggregates
- ❑ Removal of existing asphalt, placement and compaction of shoulder material
- ❑ Repaving with asphalt
- ❑ Guardrail installation, line painting and sign installation

### 3.1.5 Small Bridge and Culvert Rehabilitation or Replacement

These projects are treated as a separate sub-class due to their proximity to water (all other project activities shall occur at least 30 m from any body of water). They are also repetitive in terms of the expected or known environmental effects associated with watercourse crossings. Projects that require

DFO authorization, which are those projects that may result in the harmful alteration, disruption or destruction of fish habitat, are not covered by this RCSR.

***Small bridge and culvert rehabilitation or replacement projects include:***

- ☐ Bridge and bridge surface repairs, and culvert repair, relining or replacement activities,
- ☐ Gabion wall repair activities,
- ☐ Installation of conduits across an existing bridge,
- ☐ Trenchless water body crossings (e.g., horizontal directional drilling) where the associated surface disturbance (e.g. excavation of access/borehole pits) does not come within 10m of the waterbody,
- ☐ Pool establishment, and
- ☐ Debris removal from bridge and culvert passageways.

***Activities include:***

- ☐ Removal, relining and replacement of existing deteriorated structure
- ☐ Potential staging area for prefab structures and/or equipment
- ☐ Repair to and repaving of approaches and deck
- ☐ Jacking and shimming of structure
- ☐ Resurfacing
- ☐ Vegetation removal, widening of approaches
- ☐ Line painting, signage placement

### **3.1.6 Highway-Related Infrastructure**

A wide variety of infrastructure is found within many of the national park roadway corridors. Some of this infrastructure is unique only to park settings.

Work will take place within or just outside the existing roadway footprint no more than 10 m from the existing footprint width and with the total area of disturbance not exceeding 25 m<sup>2</sup>. Work will take place more than 30 m from water bodies and with no potential for the release of a polluting substance.

***Highway-related infrastructure projects include:***

- ☐ Entry / exit kiosks and support infrastructure,
- ☐ Roadside viewing decks,
- ☐ Way-finding signage,
- ☐ Roadside emergency shelters,
- ☐ Bulletin boards and interpretative panels,
- ☐ Guardrails, and
- ☐ Sub-surface utility lines (e.g. water, electrical and sewage lines).

***Activities include:***

- ☐ Vegetation removal, excavation, compaction, recontouring
- ☐ Construction, operation or demolition of kiosks
- ☐ Associated signage installation and operation (post holes, backfilling)
- ☐ Transport and staging of materials
- ☐ Installation and operation of infrastructure
- ☐ Painting and applying finish

### 3.1.7 Vegetation Management

There is a continual need to manage vegetation along many park roadways in order to make highways safer and more enjoyable for the travelling public, while at the same time being conscientious regarding ecological integrity impacts beyond the corridor. The requirement to manage such vegetation is ongoing and time-consuming.

Work will take place within or just outside the existing roadway footprint no more than 10 m from the existing footprint width and with the total area of disturbance not exceeding 25 m<sup>2</sup>. Work will take place more than 30 m from water bodies and with no potential for the release of a polluting substance.

*Vegetation management projects include:*

- ❑ Clearing vegetation from obstructing scenic viewplanes, intersections, signs, roadway lines of sight, and power-line ROWs that are adjacent to highways,
- ❑ Removal of trees posing threats to infrastructure (i.e. overhanging lines), and people (e.g. large decaying roadside trees).

*Activities include:*

- ❑ Vegetation removal and thinning
- ❑ Chipping, stockpiling and transporting organics offsite
- ❑ Signage installations
- ❑ Delineation of no go areas
- ❑ Clearing and removals
- ❑ Identifying problem trees, limbing or complete removals

The following table lists examples of project types and the associated works for each project within each sub-class.

Table 1. Class Description

<b>Sub-Class</b>	<b>Project Type (examples)</b>	<b>Associated Works</b>
<b>(1) Communication Infrastructure</b>	1a Highway cameras  1b Sub-surface line installations  1c Changeable message signs	<ul style="list-style-type: none"> <li>➤ Installation of concrete pads, lines, towers,</li> <li>➤ Potential tree trimming &amp; excavation</li> <li>➤ Recontouring &amp; hydroseeding</li> <li>➤ Installation of conduit hand-holes and manholes</li> <li>➤ Excavation for installation of various components</li> <li>➤ Servicing</li> <li>➤ Installation of steel beam guiderail for poles, cabinets, signs</li> <li>➤ Utility relocation as required</li> </ul>
<b>(2) Minor Roadway Enhancements</b>	2a Road widening and reconstruction within existing right-of-way  2b Destabilization of embankments  2c Repaving roadways  2d Re-surfacing of gravel roads and grading, including the removal of rocks or debris	<ul style="list-style-type: none"> <li>➤ Clearing, excavation, place and compact asphalt /concrete base &amp; seal, ditch construction</li> <li>➤ Production of road-base materials &amp; re-vegetation of new ditches &amp; disturbed soils</li> <li>➤ Retaining wall construction</li> <li>➤ Support material transport &amp; installation,</li> <li>➤ Stockpiling aggregates &amp; containment</li> <li>➤ Remove existing asphalt, place &amp; compact shoulder material, paving</li> <li>➤ Guardrail installation; line painting, sign installation</li> </ul>
<b>(3) Small Bridge or Culvert Rehabilitation or Replacement</b>	3a Infrastructure Rehabilitation	<ul style="list-style-type: none"> <li>➤ Removal and replacement of existing deteriorated structure</li> <li>➤ Potential staging area for prefab structures &amp;/ or equipment</li> <li>➤ Widening of approaches</li> <li>➤ Repair to and repaving of approaches and deck</li> <li>➤ Jacking &amp; shimming of structure</li> <li>➤ Resurfacing</li> <li>➤ Vegetation removal, line painting, signage placement</li> </ul>

<b>(4) Highway-related Infrastructure specific to park settings</b>	4a Kiosk construction & operation  4b Viewing Deck construction & operation  4c Guiderail installations	<ul style="list-style-type: none"> <li>➤ Vegetation removal, excavation, compaction, re-contouring</li> <li>➤ Construction &amp; operation of kiosk</li> <li>➤ Associated signage installation &amp; operation</li> <li>➤ Transport &amp; staging of materials</li> <li>➤ Installation and operation of infrastructure</li> <li>➤ Painting &amp; applying finish</li> </ul>
<b>(5) Vegetation Management</b>	5a Scenic viewplane creation & operation  5b Clearing obstructed and hazardous roadway lines of site, intersections, signs, and power line ROW to remove any vegetation hazardous to road visibility  5c Menace tree removals	<ul style="list-style-type: none"> <li>➤ Vegetation removal &amp; thinning</li> <li>➤ Chipping, stockpiling &amp; transporting offsite organics</li> <li>➤ Delineation</li> <li>➤ Clearing &amp; removals</li> <li>➤ Identifying problem trees, limbing or complete removals</li> <li>➤ Chipping, stockpiling, burning in a designated area within the park &amp;/or removal and disposal offsite</li> </ul>

### 3.2 Typical Seasonal Scheduling and Duration of Projects

Construction season typically runs from May to November, although construction and operation activities may take place at any time of year. Additionally, repairs may be scheduled for winter months if necessary for health and safety reasons.

Projects may also be scheduled for other time periods to avoid disrupting sensitive species. For example, in accordance with the *Migratory Birds Convention Act*, vegetation clearing must be avoided during site-specific breeding and nesting periods to minimize impacts on migratory birds. Also, any instream work in fish bearing waters should only occur between June 1<sup>st</sup> and Sept 30<sup>th</sup> of any year.

The length of time needed to complete a project must be considered when designing and coordinating a project. This can vary greatly (i.e. from a period of a few days to several months) depending on the type and scale of work being carried out.

### 3.3 Operation

Once constructed, projects are inert or operate self sufficiently. Servicing may occur in the event that a repair is required to maintain the efficacy of the project.

### ***3.4 Decommissioning***

Generally there are no plans for decommissioning or abandoning transportation infrastructure within parks. However, sites can be restored to the pre-project state or developed for alternative use by employing conventional demolition and restorative techniques with appropriate mitigation where applicable. In such cases, an individual screening report would likely be required for each decommissioning.

## **4. Environmental Review**

It is important to note that the projects under consideration will occur in national parks or national historic sites, places where protection of ecological integrity and commemorative integrity is of the utmost importance. However, the project locations are generally situated within the confines of highway corridors.

Environmental review methods used in the creation of this report include desktop literature review, internal consultation, and review of monitoring and follow up programs.

### ***4.1 Environmental Assessment Boundaries***

The EA boundaries for the RCSR have been defined by the terrestrial boundaries of the national parks included in this RCSR (Cape Breton Highlands National Park, Fundy National Park, Gros Morne National Park, Kejimikujik National Park, Kouchibouguac National Park, Prince Edward Island National Park, and Terra Nova National Park) in the provinces of Newfoundland and Labrador, Nova Scotia, New Brunswick, and Prince Edward Island (See individual maps Appendix 4).

Smaller boundaries have been defined for the assessment scope to identify project-specific environmental effects. The project scope boundaries, including the staging and construction areas, will be used as a basis for the assessment. The scope of assessment also includes areas between the staging and project sites that may be affected by transport vehicles. The scope also includes the areas outside the park that act as disposal sites.

Regarding the temporal scope of the project, according to design standards the life span of transportation infrastructure is considered to be indefinite but requiring of upkeep and maintenance. However, the actual life span depends on the environmental and anthropogenic conditions at a specific site.

### ***4.2 Effects of the Environment on the Project***

Under the Act, an EA must consider potential effects the environment may have on projects. Increased weather extremes and a number of adverse events may affect permanent structures. Following design standards and ensuring protection against these effects are increasingly important. Transportation projects are vulnerable to a variety of effects from the environment such as:

- Extreme and adverse weather-related effects (i.e. temperature and precipitation) can delay project activities and can damage the physical integrity of projects, and/or cause unpredictable

run-off, erosion or sedimentation during the construction phase and/or cause problems for machinery operation during construction.

- Sinking or settling of soils, ground subsidence and ground surface movement could also damage physical integrity of projects, potentially leading to structural failures and/or a reduced quality of end products.
- Landscape and physical characteristics of project location (e.g. soil structure) could alter materials used in construction or require project re-location or impede the installation of underwater or underground structures.
- Normal wear on project components by weather-related effects and forces (i.e. wind, ice, freeze/thaw cycles, water, sun exposure)

The effects that have been identified are considered mitigable and avoidable through design, timing, the site chosen, and the use of stringent standards under which projects are designed, constructed, and operated.

### ***4.3 Environmental Setting***

The primary purpose of national parks is to preserve unique and representative areas of the country which are “dedicated to the people of Canada for their benefit, education and enjoyment ... and shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations”. The locations selected for national parks reflect this purpose. However, many of the parks in Atlantic Canada have incorporated transportation infrastructure that existed before the parks were created. Thus, the locations of the transportation corridors do not always reflect the best option for preserving ecological integrity.

As there were no specific environmental criteria that determine the location of transportation infrastructure, a general description of the environmental settings in which transportation infrastructure are constructed is provided. In addition, a general description of the ecozones found within the Atlantic Provinces is included below.

#### **4.3.1 Environmental Settings of Transportation Infrastructure**

Transportation infrastructure ROWs tend to have standardized engineered characteristics. A new ROW is usually cleared of trees and the ground grubbed to remove stumps, roots, erratic boulders and organic soil. The contours are evened out by cutting through high spots and infilling depressions. Suitable drainage in the form of culverts, bridges and ditches is installed to prevent damming of drainage and to dry out and prevent saturation of fill material. A raised berm is built down the centre line of the ROW, the top of which will be the road surface. The berm is built of successive layers of structural fill and then successively smaller grades of gravel, the top of which is paved. The shoulders of the berm are sloped to ditches which capture runoff from the road and from the adjacent countryside. The cross section from the centerline is a slightly sloped paved road surface with gravel edges, with shoulders sloping down to a ditch, then an upslope to the original soil horizon. Generally, the road is paved, the edge is gravel, and the shoulders, ditch and upslope re-vegetated with grass which is replaced by a succession of natural vegetation. The minor transportation infrastructure projects under consideration in this report would all be installed in this environment within an existing ROW; no new ROW will be created for projects that are covered by this RCSR.

### *Ecozones*

The Atlantic Canada National Parks in this RCSR are located within the Atlantic Maritime Ecozone of Canada and the Boreal Shield Ecozone of Canada. The Atlantic Maritime Ecozone of Canada includes the three Maritime Provinces of Canada, and the Boreal Shield Ecozone of Canada includes parts of Newfoundland and Labrador (Wiken, 1986). The following summary of Atlantic Canada Ecozones comes from Environment Canada, 2005 unless otherwise noted.

#### **Atlantic Maritime Ecozone**

The Atlantic Maritime Ecozone constitutes a cluster of peninsulas and islands which form the northeastern end of the Appalachian mountain chain that runs from Alabama to Newfoundland and Labrador.

**Climate** Proximity of the ecozone to the Atlantic Ocean creates a cool, moist maritime climate and moderates temperatures. Mean annual temperatures range from 3.5°C in the Gaspé Peninsula to 6.5°C in southwest Nova Scotia. Mean summer temperatures range between 13°C to 15.5°C. Mean winter temperatures range from -8°C in the Gaspé Peninsula to -2°C in Nova Scotia. Mean annual precipitation varies from 900 mm inland to over 1500 mm near the coast.

**Vegetation** Forests are generally composed of mixed stands of conifers and deciduous species, characterized by red spruce, balsam fir, yellow birch, and sugar maple, while red and white pine, and eastern hemlock occur to a lesser but significant degree. Some boreal species are present, including black and white spruce, balsam poplar, and white birch. Jack pine is prominent on sandy soils and in areas of regrowth after fires. Common shrub species include pin cherry, willow, speckled alder, steplebush, and blueberry. Forest growth is fairly productive here, except where the bedrock is exposed. Most of the native forest has been harvested or burnt at least once in the past two centuries.

**Landforms and Soils** The ecozone is dominated by the interior Appalachian Upland and the Northumberland Coastal Plain physiographic units. In the maritimes the uplands are composed of granite, gneiss, and other hard, crystalline rocks. This upland terrain is covered by glacial till, and Humo-Ferric Podzols are the dominant soils. In the coastal lowland areas, deeper more fertile Luvisolic soils exist that have formed on surface materials derived from the underlying sedimentary bedrock (e.g., sandstones, shales, and limestone). These soils accommodate the greatest proportion of the population and support most of the agricultural activities in this ecozone.

**Wildlife** Characteristic mammals include white-tailed deer, moose, black bear, raccoon, striped skunk, bobcat, and eastern chipmunk. Representative birds include whip-poor-will, blue jay, eastern bluebird, and rose-breasted grosbeak. Breeding colonies of marine birds are also found here, including great and double-crested cormorant, Atlantic puffin, common and thick-billed murre, black guillemot, and razorbill. Representative marine species include various species of seal, killer whale and northern bottlenosed whale.

**Human Activities** Forestry, agriculture and mining are the major land-oriented activities. The coastal communities traditionally supported one of the country's most important fisheries, an economic mainstay of the ecozone. Recent decline in groundfish stocks, particularly cod have led to a major cutback in fishing and fish processing industries. In addition, the natural beauty of the interior and coastal environments supports an important tourist industry. The thicker and somewhat more fertile lowland soils support an agricultural industry that includes dairy, beef, and poultry production and the growing of vegetables and fruits. The largest centres include Halifax, Saint John, Moncton, Dartmouth,



Charlottetown, Rimouski, Sherbrooke, and Gaspé. Most of the population of approximately 2 510 000 are found in coastal lowland areas.

### **Boreal Shield Ecozone**

The largest ecozone of Canada, the Boreal Shield, is a broad, U-shaped zone that extends from northern Saskatchewan east to Newfoundland, passing north of Lake Winnipeg, the Great Lakes, and the St. Lawrence River. The Boreal Shield still presents the dominant image of an endless stretch of trees, flashing waters, and bedrock. Despite the fact that highways, railroads, and airports have made much of this ecozone accessible, there is still much that remains in a wilderness condition.

**Climate** This ecozone has a strongly continental climate characterized by long cold winters and short warm summers but is modified by maritime conditions in its coastal margins in Atlantic Canada. The mean annual temperature ranges between -4°C in northern Saskatchewan to 5.5°C in the Avalon Peninsula of Newfoundland. Mean summer temperatures generally range between 11°C to 15°C with the exception of a few areas in Labrador and western Newfoundland. Mean winter temperatures range between -20.5°C in the west to -1°C in the east. The maritime influence on Newfoundland results in a higher level of precipitation ranging 900-1600 mm.

**Vegetation** Over 80% forested, the ecozone is represented by closed stands of conifers, largely white and black spruce, balsam fir, and tamarack. Throughout the contrasting areas of exposed bedrock, this mosaic of soils and rock tends to be covered with a range of communities, dominated by lichens, shrubs, and forbs.

**Landforms and Soils** The ecozone is dominated by broadly rolling mosaic of uplands and associated wetlands. Precambrian granitic bedrock outcrops interspersed with ridged to hummocky, deposits of glacial moraine, fluvio-glacial material (including numerous eskers), and colluvium are characteristic of its surface materials. Soils range from Humo-Ferric Podzols in the south to Brunisols in the north. Luvisols are found in limited areas of finer textured silts and clays. The landscape of the Boreal Shield ecozone is dotted with numerous small to medium-sized lakes. Peatlands with Organic soils are common in wetland areas and are particularly extensive in central Manitoba, northwest Ontario, and Newfoundland.

**Wildlife** Characteristic mammals include woodland caribou, moose, black bear, raccoon, marten, fisher, lynx, bobcat, and eastern chipmunk. Representative birds include boreal and great horned owl, common loon, yellow rumped warbler, blue jay, and evening grosbeak.

**Human Activities** The total population of the ecozone is approximately 2 832 000 which is roughly 11.5% of Canada's population. Almost 60% live in larger urban centres, including St. John's, Chicoutimi, Rouyn-Noranda, Timmins, Sudbury, Thunder Bay, Sault Ste. Marie, and Flin Flon. These towns have developed around the rich natural resource base of the ecozone. Mining, forestry, hydropower, water-oriented recreation and tourist attractions, along with commercial and subsistence hunting, trapping, and fishing are the principal activities. Agriculture is limited to the few areas where the soil quality and microclimate are suitable.

### **4.3.2 Heritage Resources**

The Atlantic Provinces are rich with heritage resources from historic and pre-historic times, dating back 500 and 1,200 years respectively. The most frequently recorded archaeological sites include shell

middens, lithic scatters, pictographs and petroglyphs, and rock formation sites including fish weirs and traps, canoe runs and cairns. PCA owns and administers some of the best examples of these resources in Atlantic Canada.

### 4.3.3 Species at Risk

There are numerous species at risk within the RCSR boundary due to the large area that it encompasses. Species include marine and terrestrial mammals, birds, amphibians, fishes, arthropods, mollusks, insects, vascular plants, mosses, and lichens.

A list of species at risk has not been included in this report as the list is very dynamic. Information regarding species at risk within project boundaries can be obtained from the PCA species at risk coordinator or Federal and Provincial listings for an area on a project-by-project basis. The resource for location information on species at risk in Atlantic Canada is the Atlantic Canada Conservation Data Centre which can be accessed through the PCA species at risk coordinator.

Any project that is likely to have an adverse effect on a species at risk, either directly or indirectly, will not be subject to this RCSR.

See Appendix 1 for a list of environmental information resources that guides to more species at risk information.

### 4.3.4 The Parks

The following subsections contain site-specific descriptions for each national park located in the Atlantic Region (Gros Morne National Park, Terra Nova National Park, Cape Breton Highlands National Park, Fundy National Park, Kejimikujik National Park, and Prince Edward Island National Park) that are subject to this RCSR. Additionally, these subsections contain information on the transportation infrastructure contained within each of the Management Plans of the national parks. Maps of these parks are located in Appendix 4.

#### 4.3.4.1 *Prince Edward Island National Park of Canada*

Established in 1937, Prince Edward Island National Park runs along the Gulf of St. Lawrence (northern) sea coast of Prince Edward Island. It covers only 27 km<sup>2</sup>, making it one of the smallest national parks in Canada. Geological features commonly found in the park are barrier spits, sand beaches, coastal dunes, and red sandstone cliffs.

Found in the Atlantic Maritime ecozone, the climate is moderated by the Atlantic Ocean. As a result, the park experiences warm summers and mild, snowy winters. Mean annual temperature is approximately 5.5°C while mean annual precipitation ranges between 900-1150 mm.

Due to past clearing for farms, mixed forest species, such as maple, beech, elm, ash, birch, pine and hemlock, are rather limited within the park. Instead, Marram grass is the most dominant plant species in the park, as it is hardy, fast growing and can easily colonize sand dunes. Smaller plant species, which follow the establishment of Marram grass, such as wild rose, bayberry, and seaside goldenrod, are also common. Additionally, there are fresh and saltwater marshes that further contribute to the parks vegetation.

The park is home to mainly small mammals such as raccoons, skunks, mink, muskrats, squirrels, and chipmunks, as well as the slightly larger red fox and eastern coyote. Grey and harbour seals also frequent

the coastal areas. The island possesses the best-developed sand dune and beach systems in the Atlantic Maritime ecozone, providing ideal coastal and salt marsh habitat for numerous water-based birds (Environment Canada, 2005), including the endangered piping plover, which breeds on beaches within the boundary of the park.

There are eight Zone I areas encompassing a total area of 834.9 hectares representing 22.7 % of park and Crown lands (See Appendix 5 for map of zoning designations in Prince Edward Island National Park and a description of what constitutes a Zone I area). These areas provide a high level of protection for sensitive and representative features such as barrier beach-dune systems on Cavendish and Blooming Point sandspits, complex parabolic dunes and counter-ridges at Greenwich, saltmarsh and brackish wetlands in New London Bay, Brackley Bay, and Covehead Bay, freshwater wetlands at Greenwich, forested tertiary dunes at Greenwich and Brackley, and excellent primary and secondary dune systems at Dalvay. Several of these Zone I areas include significant habitat for the piping plover and Gulf of St. Lawrence aster (Parks Canada, 2007).

There are eleven specific locations that are designated as environmentally sensitive sites. These include several rare plant locations, a palaeontological site, bird nesting areas, and a freshwater spring. In addition, all piping plover nesting sites in the park are included in this designation on a seasonal basis. Recognition as an environmentally sensitive site ensures that the values for which these sites have been designated are protected and accommodated in any park management decisions or actions (Parks Canada, 2007).

Archaeological evidence found at Greenwich indicates that Aboriginal people may have used the area as long ago as 10,000 years before the present. Shell middens found at Robinsons Island demonstrate that aboriginal people were harvesting marine resources from Rustico Bay around 1500 years ago. The existing evidence suggests that Aboriginal use at this site was based on hunting, fishing and gathering. Local archaeological research has not located Aboriginal habitation sites (Parks Canada, 2007).

The beaches of Prince Edward Island National Park have been valued as a recreational area for over 100 years. The creation of the park in 1937 played a significant role in developing the province's recreation and tourism industry. Today, it remains the premier tourist attraction on the Island seeing approximately 400 000 visitors in 2009-2010 (Parks Canada, 2010).

### **Transportation Infrastructure within Prince Edward Island National Park**

The following information comes from the Prince Edward Island National Park Management Plan (2007) unless otherwise referenced:

A majority of the park's road infrastructure is located in close proximity to the coast where it is affected by coastal erosion. The Gulf Shore Parkway was constructed during the late 1950s to provide sightseeing opportunities, and to facilitate public access to the park. A causeway was constructed across Little Harbour to Robinsons Island in conjunction with the road. Dynamic coastal processes have continued to affect this roadway. In 1999 a portion of the parkway was closed and removed at Cavendish Beach due to progressive encroachment of sand dunes. Other sections of the roadway are now threatened by coastal erosion. These challenges will likely become exacerbated in future years due to the effects of climate change and ongoing sea-level rise. PCA now attempts to minimize interference with natural coastal processes.

#### **4.3.4.2 Fundy National Park of Canada**

Designated as a National Park in 1948, Fundy National Park is located on the southern shores of New Brunswick and covers 206 km<sup>2</sup> of land. Located on a rolling plateau, the park is composed of uplands, deeply cut valleys, rocky shorelines and tidal flats.

Located in the Acadian Forest Region of the Atlantic Maritime Ecozone, the park climate is moderated by the Bay of Fundy, producing breezy summers and cool winters. Mean annual temperature is approximately 3.8°C, with 102 of those days being frost-free. Average precipitation is approximately 1210.7 mm per year.

The park protects a wide variety of plant life including a lush mixed wood forest dominated by Red Spruce, and Balsam Fir, as well as forests of Sugar Maple and Yellow Birch. It is home to 658 species of vascular plants (fern, clubmosses, and flowering plants), 276 species of bryophytes (mosses and liverworts), and more than 400 species of lichens.

In addition to the large number of plant species, the park is also home to many animal species. Over 38 species of mammals reside in Fundy National Park, including moose, white-tailed deer, red fox, bobcat, black bear, porcupine, beaver, raccoon and coyotes. Additionally, over 260 avian species have been identified in the area and 95 of these species have nested in the park, such as kestrels, redtail hawks, and saw-whet owls. Eighteen species of reptiles and amphibians have also been identified in the park. Five of these species are considered rare; these include the leopard frog, the ring-neck snake, the four-toed salamander, northern dusky salamander, and the blue-spotted salamander. A number of federally/provincially-listed species at risk or of special concern are found in the park. Once extirpated species such as the Atlantic salmon, peregrine falcon, and pine marten have been reintroduced to the park over the last 30 years.

The following five Zone I areas are designated within Fundy National Park:

- 1) The Point Wolfe Coastal Cliffs contain one of two known New Brunswick sites of the bird's-eye primrose, a small herbaceous plant of northern affinity. This area is also one of the best potential nesting locations in the park for the peregrine falcon, a species-at-risk. The best examples of the inner Bay of Fundy soft rock (sandstone and conglomerate) coastal cliffs are also located in this Zone.
- 2) The Goose River Coastal Cliffs contain the second of two known New Brunswick sites of the bird's-eye primrose. Along this rugged, precipitous coast there are also potential peregrine falcon nesting sites.
- 3) Rossiter Brook Valley contains stands of rare old red spruce trees.
- 4) The Caribou Plain contains excellent examples of black spruce and raised-bog vegetation types, which are very rare in the park and surrounding region. These habitats are sensitive to visitor disturbance.
- 5) The Point Wolfe River Valley, its East Branch, and the lower part of Bennett Brook are the only locations in the park where the following rare flora are known to occur: slender spikemoss, squashberry, green spleenwort, a rare sedge species, and fir clubmoss. This area also contains some of the best examples of critical habitat for the endangered Atlantic salmon (inner Bay of Fundy), including some of the largest salmon pools on the Point Wolfe River.

There are also a number of environmentally sensitive sites identified in Fundy National Park which are not included in the Zone I designation and whose values are taken into consideration when any park management decisions or actions are made. These include: salamander habitat, rare bryophytes (mosses

and liverworts), rare vascular plant species, Atlantic salmon pools and spawning habitat, rare salt marsh habitat, and frost pocket heathland.

The Fundy area has a rich cultural history. Although there is no known physical evidence related to the use or occupation of the park area by Aboriginal people, it is thought that it falls within the traditional territory of both Mi'kmaq and Wolastokiyik (Maliseet) First Nations (Parks Canada, 2005).

The park area has an extensive history of human use, dating to the early 1800s. Several small communities were located in the park prior to its establishment. Vestiges of these settlements remain in the form of old foundations and regenerating fields. Most of the forest in Fundy National Park has been cut in the past, and a number of dams were constructed to permit log driving and to provide power for saw mills (Parks Canada, 2005).

Visitors can participate in a range of outdoor recreational experiences, such as backcountry or frontcountry hiking and camping, ski touring, sea kayaking, swimming, picnicking, snowshoeing, and sightseeing. In 2009-2010, park visitation was estimated to be 285,034 person-visits (Parks Canada, 2010).

### **Transportation Infrastructure within Fundy National Park**

The following information comes from the Fundy National Park Management Plan (2005) unless otherwise referenced:

There are approximately 34 km of hard surfaced roads and 38 km of gravel roads open to vehicular traffic in the park, excluding campground and facility access roads. Highway 114 provides the principal access to the park. Secondary paved roads traverse the south eastern section of the park, running from the Headquarters to Point Wolfe and Herring Cove. The current road system adequately supports park operations and provides appropriate opportunities for accessing, exploring and appreciating Fundy National Park.

The highest priority for maintenance and recapitalization is Highway 114. PCA remains committed to maintaining this highway in satisfactory condition in order to ensure safe and reliable access to the national park, as well as through-transit at the current level of service. PCA will endeavour to manage this highway as an “ecological parkway”. While public safety concerns will remain paramount, the road will be managed in such a way as to minimize negative road effects on adjacent ecosystems.

In the Headquarters Area, Highway 114 provides access to a number of park facilities, secondary roads, and the community of Alma. This area is also heavily used by pedestrians and tourist traffic. Improved lighting, signs, pedestrian crossings and vehicular intersections are planned to enhance public safety. Traffic in the Headquarters Area will be monitored to ensure that the road system meets visitor needs and public safety standards.

Roads are a key component of the park's infrastructure, providing access to a variety of park facilities and visitor opportunities. Maintaining an adequate and safe road system continues to be a management priority. It has also been recognized that the existing road network contributes to negative effects on the ecological integrity of the park. Mitigating these effects, reducing the financial burden of road maintenance, and restoring closed roads is a park management priority.

#### **4.3.4.3 Kouchibouguac National Park of Canada**

Designated a National Park in 1969, Kouchibouguac National Park is found along the shores of the Gulf of St. Lawrence, New Brunswick. The park consists of 239 km<sup>2</sup> of flat land that gently slopes eastwards towards the coast. Geological features of the park include dunes, shallow coastal lagoons and estuaries, salt marshes, forests, small rivers and streams, and vast open peat lands.

Located in the Atlantic Maritime ecozone, this area has a humid continental type of climate with the Gulf contributing to warm summers and cold winters, as well as uniform precipitation patterns throughout the year. The park has a mean annual temperature of 4.8°C. Average precipitation is 979 mm per year.

Kouchibouguac National Park is home to a wide range of vegetation. At least 1600 species have been identified within the park, including a wide range of vascular plants, lichens, and mosses. Much of the park is Acadian forest composed predominantly of coniferous trees, such as black and red spruce, balsam fir, and cedar. Small areas of deciduous trees, such as aspens, grey birch, and red maple are also present. Other plant communities include salt marshes, peat bogs, and fens.

A number of animals reside in the park including, moose, black bear, white-tailed deer, coyote, mink, weasel, river otter, red fox, bat and squirrel; while, seals and a variety of whales are found in the adjoining waters. Additionally, the park provides habitat for over 200 species of birds, including the endangered piping plover, a number of fish species and a few reptile and amphibian species. Moreover, several thousand invertebrate species have been discovered in the park many of which are new to Canada and/or science.

The most significant Zone I area in Kouchibouguac National Park is the Barachois Sector, located along the park's northern coast. The Barachois forms an extraordinary isolated microcosm of all the habitats, resources, and natural processes of the park and has experienced very few human pressures. Its uniqueness is underscored by the absence of such representative ecosystems in Prince Edward Island National Park. The Black River Valley (excluding the water and riverbed of the Black River) is also Zone I. This area combines a concentration of rare and significant forest communities and plants with an exceptional diversity of fungi. The park also has a few small areas that are designated as "Temporal Zone I", meaning they are designated zone I during certain times of the year. The Tern Islands, Kelly's Island, and the southern and northern tips of the South Kouchibouguac Dune are 'Temporal Zone I' areas during the piping plover breeding season and are Zone III the remainder of the year (Parks Canada, 2010). See Appendix 5 for zoning map including zone I areas of Kouchibouguac National Park and description of what constitutes a Zone I area.

Kouchibouguac National Park has a rich diversity of plants and animals, including several species at risk that require a high level of protection. Currently seven species that occur within the park have been accorded legal protection under the federal SARA. An additional eight species have been assessed by the province of New Brunswick and/or the COSEWIC as either endangered, threatened, or of special concern, but have not been listed under SARA (Parks Canada, 2010).

A sacred Aboriginal burial area in the southern half of the park has been designated as Zone I to accord it the highest level of protection. This area is not shown on the zoning map out of respect for the wishes of local Aboriginal communities (Parks Canada, 2010). The earliest archaeological evidence of Aboriginal peoples inhabiting and harvesting the natural resources in Kouchibouguac National Park dates back

approximately 4000 years. There are several Aboriginal archaeological sites in the park, covering the period from the Maritime Archaic to the park's establishment in the late 1960s (Parks Canada, 2010).

Kouchibouguac National Park is popular for its sandy white beaches and warm coastal waters and is ideal for swimming and spending a summer's day at the beach. Tranquil lagoons and tidal rivers, protected by sand dunes, provide ideal conditions for kayaking and canoeing. Kouchibouguac's flat terrain and gentle waters provide family-oriented and 'soft-adventure' opportunities for people of many ages and abilities. Between 2009-2010, Kouchibouguac National Park received an average annual visitation rate of 162,805 individuals (Parks Canada, 2010).

### **Transportation Infrastructure within Kouchibouguac National Park**

The following information comes from the Kouchibouguac National Park Management Plan (2010) unless otherwise referenced:

Highway 117 traverses Kouchibouguac National Park from its central sector to the northern boundary. It serves as a commuting route for the community of Pointe-Sapin and supports two major industries: peat moss harvesting and commercial fishing. Highway 117, including up to 150 metres in perpendicular width off its centre line, is zoned as Zone IV (Outdoor Recreation), which allows for motorized vehicles. The highway received its last major recapitalization in 1993, which addressed an urgent need for upgrading at the time. This recapitalization was deemed a temporary fix that was expected to last five years. The highway is inspected and evaluated every two years by Public Works and Government Services Canada.

Five bridges exist along Highway 117, all of which are at least 30 years old. The bridges received detailed inspections in 2006, which revealed that rehabilitations and upgrades are necessary to extend their serviceable life. PCA will continue to inspect and maintain the highway to acceptable standards, and, to the extent possible, extend the life of the highway.

### **4.3.4.4 Gros Morne National Park of Canada**

Established in 1973, Gros Morne National Park is located on the west coast of Newfoundland and covers 1,805 km<sup>2</sup> of land. Situated in the Boreal Shield ecozone, the park protects two important natural regions, the Western Newfoundland Island Highlands and the St. Lawrence Lowlands. Gros Morne National Park was carved by glaciers to form massive cliffs and valleys and is known for its remarkable landscape. Along the eastern half of the park runs the alpine Long Range plateau. The coastal lowlands, which encompass strips of boreal forest and bog, as well as cliffs, beaches and tidepools make up the western half of the park. Additionally, a barren mountain with an unusual geology and ecology can be found in the tablelands, which are located in the southern end of the park.

Seasonal temperatures are moderated by the winds that blow off the Gulf of St. Lawrence. Mean annual temperature is approximately 4°C, with an average temperature of 17°C in the summer and -7°C in the winter. Gros Morne National Park typically experiences heavy snowfall. Mean annual precipitation is roughly 1621 mm per year.

Gros Morne is habitat for more than 700 species of vascular plants, including a number of rare species. Much of the park is boreal forest; thus, the most dominant species is the balsam fir. Other tree species commonly found in the park include white birch, black spruce and tamarack. Red maple and yellow birch are less common and generally found in the southern part of the park. In addition to forest

communities, the park has many bogs and fens that are home to various plant species, such as the dragon's mouth orchid. Other important plant communities include the arctic-tundra on the Long Range plateau and the serpentine barrens of the Tablelands.

The park has much less diversity when it comes to wildlife. There are no native reptiles or amphibians, and only 14 native mammals reside in the park. Woodland caribou occur in forested areas of the park year round, while the arctic hare and rock ptarmigan are found in higher elevation areas. Species such as moose, snowshoe hare and red squirrel are also found frequently within the park; however, these animals are not native and were introduced in the past by humans. A few species at risk are also associated with the park, these include the Newfoundland Marten, Harlequin Duck, Short-eared Owl, Piping Plover and Barrow's Goldeneye Duck.

Zone 1 lands constitute 7% of the park (See Appendix 5 for zoning map of Gros Morne National Park and a description of what constitutes a Zone I area). Zone 1 areas include Big level, Frontal Slope Southwest of Western Brook Pond, Heather Pond (Island Pond), Killdevil Mountain, Shallow Bay-Lower Head, Stearin Island, St. Paul's Inlet Salt Marsh, and Summit of the Tablelands.

The Gros Morne area has been home to humans for about 4500 years. Over the millennia, Maritime Archaic Indians, Groswater and Dorset Palaeo-Eskimos, Recent Indians and Mi'kmaq have inhabited the different coves and headlands. Europeans, mainly French and English, settled this area in the early 1800s. Vikings and Basques visited the area hundreds of years before. Commercial forestry began in the late 1800s, but the cod and other fisheries remained the primary industry of the area (Parks Canada, 2009).

Today, tourism contributes significantly to the economy of the park's eight adjacent communities (Trout River, Woody Point, Glenburnie-Birchy Head-Shoal Brook, Norris Point, Rocky Harbour, Sally's Cove, St. Paul's, and Cow Head). The national park plays an important role in the tourism industry in the local area and also plays an important role in the economy of Newfoundland and Labrador. The park saw 173,970 visitors between 2009-2010 (Parks Canada, 2010).

### **Transportation Infrastructure within Gros Morne National Park of Canada**

The following information comes from the Gros Morne National Park Management Plan (2009) unless otherwise referenced:

A number of utility corridors and roads serving surrounding communities pass through the park. Highway 430, which runs the length of the park, is the only road access to the Great Northern Peninsula and Southern Labrador. Most visitors travel to the south side of the park via Route 431; this road starts at the community of Wiltondale. Winding its way around Bonne Bay, the road passes through the communities of Glenburnie, Birchy Head and Shoal Brook before reaching the historic town of Woody Point. Travelling from Woody Point, past the internationally significant Tablelands, visitors are greeted by the fishing community of Trout River at the end of Route 431.

The 2004 Visitor Survey listed scenery and sightseeing as the number one reason for visiting Gros Morne. The park's highway network provides an important venue and opportunity to facilitate this visitor experience. Gros Morne has a 143 km network of highways and access roads. This network provides access to all visitor use facilities and supports the main transportation links for the provincial road network along the Northern Peninsula highway. In October 2005, Route 430 was designated part of the National Highway System. PCA remains directly responsible for summer maintenance and all secondary roads. Gros Morne faces several challenges with respect to highway services, including increased heavy



transport and visitor traffic, and deterioration due to aging infrastructure. Other issues include limited quarry/ gravel material for future reconstruction, increasing maintenance costs, and the identification of salt as a toxic substance.

### ***4.3.4.5 Terra Nova National Park of Canada***

First established as a national park in 1957, Terra Nova National Park is found on the east coast of the island of Newfoundland. Located in the Boreal Shield and a part of the Appalachian Mountains, the park covers 397 km<sup>2</sup> of remote, rocky shorelines divided into numerous arms, sounds, coves, inlets, sea caves and rocky headlands.

The parks temperate climate is the result of both the warm Gulf Stream, which delays and moderates the winter months, and the cold Labrador Current, which cools the spring and early summer months.

The park is home to various types of vegetation. Boreal tree species, such as balsam fir, black spruce, white birch, and poplar are found along the rolling hills of the park. Additionally, there are a number of wetlands that provide habitat for mosses, orchids, pitcher plants, bog laurel and Labrador tea. Rare and unusual species found in the park include curly grass fern, wild sarsaparilla, pink lady's slippers, and mountain ash.

Mammals found in the park area include the black bear, otter, red fox, lynx, beaver, marten, and weasel. Introduced animals commonly found in the park are moose, snowshoe hare, and ruffed grouse. More than 63 species of birds nest in the park. Various crustaceans and mollusc species can be found along the coast. Additionally, a number of sea mammals, including humpback, fin, and pilot whales, as well as seals and white-sided dolphins are found offshore of the park.

Zone 1 lands constitute 3.11km<sup>2</sup> or 1% of the park (See Appendix 5 for zoning map of Terra Nova National Park and a description of what constitutes a Zone I area). Motorized access is not permitted in this area. Zone 1 areas in Terra Nova include the Black Spruce-Cladina community, with adjusted boundaries, and Copper Island. Barren hill tops and the estuary of inner Newman Sound have been added as Zone 1 areas due to their environmental sensitivity and presence of rare vegetation. Some areas are considered too small in area to merit being included as Zone 1 and are considered "Environmentally and Culturally Sensitive Sites." Special protection of these sites may occur under Superintendent's order (Parks Canada, 2009).

Terra Nova NPC has a rich history of human use, traceable to the past 5000 years. The earliest peoples: Maritime Archaic, Dorset Eskimo and Beothuk were coastal dwellers, living throughout Bonavista Bay. Five prehistoric Aboriginal sites have been identified in the park, and archaeological evidence supports the occupation of both Maritime Archaic and Dorset Eskimo in the park. Although the presence of Beothuk occupation in the park is not confirmed, there is substantial evidence of a Beothuk presence at the nearby Beaches Site in Burnside (Parks Canada, 2009).

The two campgrounds (Newman Sound and Malady Head) and primitive campsites combined attract approximately 14 600 camper nights per year (2005 figures). The visitors to the park are primarily from in-province and largely from the Avalon Peninsula and the eastern part of the Island of Newfoundland. Visitation occurs primarily in the summer months, and camping is the most popular activity. The park is divided by a stretch of 43 km of the Trans Canada Highway running north-south through the park, and

by other local roadways (Parks Canada, 2009). Between 2009-2010 Terra Nova National Park had an average of 259 079 visitors come through the park (Parks Canada, 2010).

### **Transportation Infrastructure within Terra Nova National Park**

The following information comes from the Terra Nova National Park Management Plan (2009) unless otherwise referenced:

Roadways in the park include 43 km of Trans Canada Highway that runs north-south through the park, and 29 km of secondary roadways, including the provincial Highways 310 and 301 within the park. The existence of the major through-highway in the park has resulted in noticeable impacts upon wildlife population numbers and their movement/behavioural patterns. Vehicle traffic contributes to significant wildlife mortality and may inhibit the movement of some species in the park. The Eastport causeway has affected the tidal pattern of Southwest Arm. Improperly installed drainage culverts along the Trans Canada Highway, which affect 38% of park watersheds (42% of the park by area), have limited the access to headwater areas for some anadromous fish.

Approximately 1.6 million vehicles pass through park on the Trans Canada Highway annually. Each year there are a number of moose-vehicle collisions within the park, which has led to safety precautions such as increased signage and reduced speed limits through the park. PCA respects the recommendations of a 1994 study to add passing lanes to the Trans Canada Highway, but to date funding has not been identified for this major project. PCA seeks to reduce the impacts of the Trans Canada Highway through measures such as restoration of the ROW with native vegetation use, through salt-management and culvert design improvements.

### ***4.3.4.6 Cape Breton Highlands National Park of Canada***

Cape Breton Highlands National Park is located in the northern end of Cape Breton Island, Nova Scotia. Established in 1936, it was the first national park in Atlantic Canada. The park protects 950 km<sup>2</sup> of highlands, an area known for its picturesque scenery that consists of various cliffs canyons, and talus slopes, as well as many waterfalls and streams.

Found in the Atlantic Maritime Ecozone, the park experiences warm summers and cold winters. Additionally, the northern section of the park is situated in a snow belt and experiences a considerable amount of snowfall during the colder months. Mean annual temperature is approximately 6°C, with an average temperature of 15°C in the summer and -2°C in the winter. Average annual precipitation is approximately 1700 mm per year.

The low-lying areas accommodate Acadian forest, largely composed of beech, yellow birch, sugar maple, and Eastern hemlock. Boreal forest stands of balsam fir, black spruce, and muskeg are found at higher elevations. Rare alpine and arctic species can be found in the park's bogs and barren highland areas. Remnant apple orchards and old fields can also be found in the park, grown by local residents before the park became established.

Mammals commonly found in the park include moose, white-tailed deer, red fox, and squirrel. Several reptile and amphibian species also reside within the park. Birdlife consists mainly of coast birds, such as gannets and terns. The Bras d'Or Lakes have the largest concentration of breeding bald eagles in Nova Scotia and they are also a common siting within the Park. Peregrine Falcon have been observed on

occasion. Many of the parks native wildlife species are regarded as rare, threatened or endangered; including the Canada lynx, American marten, Bicknell's thrush, and peregrine falcon.

Zone 1 areas in Cape Breton Highlands National Park include Grand Falaise, Corney Brook-French Lake, George Brook Coastal Area, Grand Anse River-Interior Plateau, and two Island Lake. The park also includes a number of sensitive sites that do not meet the criteria of zone 1 designation but deserve attention. Examples include: lush floodplain vegetation in Cheticamp estuary area, large ironwood trees near the Cabot Trail, ironwood and ash trees in the Rigwash Valley, the biological diversity of the Presqu'île Lake area, and the rare arctic alpine plants of the Skyline Hiking Trail. Special protection of these sites may occur under Superintendent's order (Parks Canada, 2010).

Both the Atlantic Salmon and American Eel are located in various streams throughout the park especially the Cheticamp and Clybourn Rivers. Furthermore, the American Eel has no SARA status but it has been listed by COSEWIC as a species of special concern. Thus, protective measures must be taken to ensure that the project's activities disturb these species as little as possible.

Northern Cape Breton has a rich cultural heritage dating from Mi'kmaw occupancy of the area to more recent human settlement and use. Cultural resources include Aboriginal sites, remnants of early Acadian, Scottish and other settlements in the area, several recognized heritage buildings and cultural landscapes such as the Ingonish Administration Complex (Parks Canada, 2010).

Park visitors have an opportunity to experience nature and solitude, and participate in a variety of outdoor recreational activities, including hiking, sight-seeing, camping, cross country skiing and snowshoeing. Visitation to Cape Breton Highlands National Park has been relatively stable at around 200,000 visits per year, with the majority of visitors coming to the park during the peak season of July and August (Parks Canada, 2010).

### **Transportation Infrastructure within Cape Breton Highlands National Park**

The following information comes from the Cape Breton Highlands National Park Management Plan (2010) unless otherwise referenced:

Driving the Cabot Trail is the most popular visitor activity at Cape Breton Highlands National Park and is the primary means by which most people experience the park. As a historic roadway that was central to the establishment of Cape Breton Highlands National Park, there are opportunities to further enhance the vistas originally intended by the road's designers through viewplane maintenance. The Cabot Trail is of key importance to northern Cape Breton and the province as a whole as an internationally recognized scenic drive, the premier vehicle touring route in Atlantic Canada, and the only highway transportation corridor which links the communities of northern Cape Breton. The physical condition of the road is the most significant challenge facing the Cabot Trail.

Roads are a key component of the park's infrastructure, providing access to a variety of park facilities and visitor opportunities. Maintaining an adequate and safe road system continues to be a management priority. PCA manages approximately one third of the Cabot Trail. The remainder is owned and managed by the Province of Nova Scotia. Secondary roads support the Cabot Trail touring experience by providing motorized access to visitor opportunities.

Road networks and their maintenance can affect the environment by fragmenting habitat, increasing likelihood for animal-vehicle collisions, and physically disturbing ecosystems during maintenance and

recapitalization. Mitigating environmental effects, reducing the financial burden of road maintenance, and rehabilitating closed roads back to a natural state is a park management priority.

### ***4.3.4.7 Kejimikujik National Park and National Historic Site of Canada and Kejimikujik Seaside National Park of Canada***

Kejimikujik National Park and National Historic Site and Kejimikujik Seaside National Park of Canada is found in Southwestern Nova Scotia. The park consists of an inland area (381 km<sup>2</sup>) established in 1974 and a seaside portion (22 km<sup>2</sup>) that was established in 1988.

Located in the maritime ecozone, the park experiences hot, humid summers and short, cold winters, with minimal snow cover. Mean annual temperature is 6°C and average precipitation is 1400 mm per year.

The forests of inland Kejimikujik represent a significant portion of the Acadian Forest. Within these forests old growth stands of 300 year old hemlock trees can be found, as well as newer stands of sugar maple and yellow birch. White pine is a common species found throughout the park. Other interesting vegetation found in the park include coastal plain flora. These plants grow along the flooded lakeshores of several lakes in the park. Twenty species of coastal plain flora grow only in Kejimikujik National Park, including the endangered water pennywort. Boggy, near barren headlands and dense clumps of white spruce are commonly found in the Seaside.

Mammals commonly found in the park include the black bear, coyote, bobcat, white-tailed deer, snowshoe hare, porcupine, beaver, otter, and mink. Small numbers of skunks, red fox, pine marten (reintroduced), pipestrelle bat and southern flying squirrel are also found in the park. Harbour and grey seals commonly bask on the rocky shores of the seaside adjunct. Kejimikujik National Park has more reptiles and amphibians than anywhere else in Atlantic Canada, including two species at risk, the Blanding's turtle and the Ribbon snake. Birds found in the park include a high diversity of song birds and some other species such as the gray jay, spruce grouse, and common loon. The endangered piping plover nests on beaches at the Seaside National Park.

The critical habitat of several species at risk includes large areas of Kejimikujik inland's front country, including areas immediately adjacent to existing facilities and infrastructure. For example, endangered Blanding's turtles use infrastructure areas opportunistically, including roadsides for nesting habitat. Special management actions (such as speed bumps during nesting and hatchling seasons) are implemented to protect important ecological values during specific seasons when most required (Parks Canada, 2010).

There are 26 zone I areas in the inland portion of Kejimikujik and 3 at the Seaside, representing 5% and 15% of their total respective areas (See zoning maps in Appendix 5 with a description of what constitutes a zone 1 area). These areas include (but are not limited to) critical habitat for species at risk, unique stands of old growth forests and sensitive Mi'kmaw petroglyphs. Additional zone I areas for cultural resource protection will be identified as a result of future research (Parks Canada, 2010).

The cultural landscape of the inland portion of Kejimikujik was designated a national historic site because it attests to Mi'kmaw occupancy of this area since time immemorial. The resources related to the historic site include petroglyph sites, habitation sites, fishing sites, hunting territories, travel routes and burials. The wilderness character of Kejimikujik is an integral part of this landscape (Parks Canada, 2010).

Kejimikujik inland is a year-round destination for overnight campers and day-use visitors alike. While people visit for a variety of different reasons, most are motivated by the diverse range of camping, recreational, cultural and learning opportunities to choose from at Kejimikujik. The Seaside is an ideal day-hiking destination to experience a wild and isolated stretch of Nova Scotia's Atlantic Coast. Kejimikujik inland hosts approximately 50,000 person-visits per year while the Seaside hosts approximately 11,000 visitors during the summer season (Parks Canada, 2010).

### **Transportation Infrastructure within Kejimikujik National Park and National Historic Site of Canada and Kejimikujik Seaside National Park of Canada**

The following information comes from the Kejimikujik National Park and National Historic Site Management Plan (2010) unless otherwise referenced:

Road construction's potential effects in Kejimikujik National Park include forest conversion, habitat loss, water quality and hydrological changes and habitat fragmentation. Facilities (including buildings, trails and roads) contribute to Kejimikujik's ecological footprint. Kejimikujik provides a diverse range of recreational opportunities (including biking, canoeing, kayaking, swimming, skiing, snowshoeing, walking and sightseeing) supported by well-developed trail and road networks and other infrastructure. Kejimikujik's existing assets (including roads and other infrastructure) are generally in good physical condition. However, due to their increasing age, they are requiring higher levels of maintenance and, where necessary, upgrades or replacement. PCA recognizes the role that infrastructure plays in facilitating visitors' experiences and is committed to keeping assets in the best possible repair. Infrastructure improvements recapitalization will not increase Kejimikujik's overall footprint.

### ***4.4 Issues Scoping and Valued Ecosystem Components***

In keeping with PCA's commitment to protect natural and cultural heritage, valued ecosystem components (VECs) are selected based on the potential for minor repairs to transportation infrastructure and all associated activities, as covered by the RCSR, to affect the environment.

Issue scoping included analysis of previous project activities with respect to locations and identified ecosystem receptors. The scoping exercise was internal and focused on existing information and corporate knowledge.

VEC have been identified by assessing parts of the ecosystem that may be affected as a result of project activities. VECs are summarized into three categories: physical-chemical, ecological, and anthropogenic. Table 2 provides a summary of the VEC categories.

**Table 2. Valued Ecosystem Components**

VEC Category	Ecosystem Components
<b>Physical – Chemical</b>	<ul style="list-style-type: none"> <li>• Water Resources</li> <li>• Land Resources</li> <li>• Air Quality</li> </ul>
<b>Ecological</b>	<ul style="list-style-type: none"> <li>• Species and Populations</li> <li>• Habitat and Communities</li> </ul>

<b>Anthropogenic</b>	<ul style="list-style-type: none"> <li>• Cultural Resources</li> <li>• Public Safety/Visitor Experience</li> </ul>
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VECs are components of the environment (ecological and cultural) on which an EA of project activity/VEC interactions should be focused. Successful protection of these VECs will protect ecological integrity at and around activity sites. Each subclass activity discussed above can potentially interact with each of the VECs listed below:

**(1) WATER RESOURCES:**

- ❑ ***Surface Water Hydrology:*** surface drainage alterations can encourage erosion and increase the probability of runoff to the surrounding environment.
- ❑ ***Surface Water Quality:*** quality of water is linked to potability, recreational use and the health of aquatic life.
- ❑ ***Aquatic Sediments:*** quality of sediments and their potential disturbance can affect biota and their habitat and result in sedimentation downstream.
- ❑ ***Groundwater Quality and Quantity:*** importance is linked to its impact on surface water quality and its supply as a drinking water source.

**(2) LAND RESOURCES:**

- ❑ ***Topography and Landscape:*** alteration of the terrestrial landscape is an aesthetic issue in parks. It can also affect surface water drainage within a park.
- ❑ ***Soils:*** soil quality is an important consideration for plant species, groundwater quality and terrestrial species.

**(3) AIR QUALITY:**

- ❑ ***Air Quality and Noise Levels:*** air quality and noise is important to wildlife and visitor experience within the parks. Municipal bylaws and provincial regulations set standards that must be met.

**(4) ECOLOGICAL (FLORA AND FAUNA):**

- ❑ ***Aquatic Habitat/Species:*** protection of habitat and species is important to ecological integrity as well as park visitors.
- ❑ ***Terrestrial Habitat/Species:*** protection of habitat and species is important to ecological integrity as well as park visitors.

**(5) ANTHROPOGENIC / HUMAN ENVIRONMENT:**

- ❑ ***Public Safety/Visitor experience:*** Changes to the landscape, and introduction of new structures may cause concern for public safety and for the enjoyment of the public's park experience.
- ❑ ***Cultural/Heritage Resources:*** preservation of cultural resources has significance within park management plans and to the public.

VECs were determined based on the benefits they provide ecologically and anthropologically. VEC-Project interactions were then identified by reviewing project activities and their relationship to physical-chemical, ecological, and anthropogenic elements. A summary of VEC justifications and project activities interactions is included in Table 3. For further identification of VEC-project interactions, refer to the VEC-Project Interaction Matrix in Table 4. Table 4 is a matrix of elements of the Valued Ecosystem Components and project activities. It shows where potential interactions are likely to occur.

Table 3. VEC Justification and Project Activities Interaction

Valued Ecosystem Components (VECs)	VEC Justification	Project Phase	VEC – Project Activities Interaction
Physical-Chemical – water, soil, air			
Groundwater quality/quantity	- direct relationship to terrestrial and aquatic habitat quality and abundance. - supports anthropogenic uses such as fishing, recreation, and transportation.	- construction	- chemical/physical interactions from machinery operation, excavation, rock or wood drilling, concrete works
Surface water quality/quantity		- operation	- chemical/physical interactions from site access, maintenance.
Topography/landscape	-support habitat for terrestrial and near-shore aquatic species.	- construction	- chemical/physical interactions from site access, machinery operation, concrete works, excavation, rock drilling, power service installation
Soils	- anthropogenic values include recreation, archaeological, aesthetics, drainage, and erosion.	- operation	- chemical/physical interactions from site access, maintenance.
Aquatic sediments			
Air Quality	- anthropogenic values include health, recreation, and aesthetics. - chronic or sudden loud noise or noise at certain frequencies can disturb wildlife and park users.	- construction	- chemical/physical interactions from site access, machinery operation
Noise		- operation	- chemical/physical interactions from site access, maintenance.
Ecological – flora, fauna			
Aquatic/terrestrial species and population health	- indicator for ecosystem health and resiliency - anthropogenic values include recreation, industry, education, and health	- construction	- interactions from site access, machinery operation, power-washing, excavation, rock or wood drilling, power service installation, concrete works
		- operation	- interactions from site access, maintenance



Valued Ecosystem Components (VECs)	VEC Justification	Project Phase	VEC – Project Activities Interaction
Aquatic/terrestrial communities and habitat health	- contribute to species survival and biodiversity - anthropogenic values include recreation, industry, education, and health	- construction	- interactions from site access, machinery operation, power-washing, excavation, rock drilling, power service installation, concrete works
		- operation	- interactions from site access, maintenance
Anthropogenic / Human Environment			
Cultural/Heritage resources	- cultural integrity is a top priority of the PCA	- all phases	- interactions from site access, machinery operation, construction, accidents.
Public Safety and Visitor Experience	- contributes directly to enhancing quality of life - enhances public enjoyment and support for parks	- all phases	- potential accidents and health repercussions from physical dangers including machinery operation and contact with chemicals - transportation infrastructure has a positive effect on the safety of travelers

Table 4. VEC – Project Interaction Matrix

		Valued Ecosystem Components																															
		Physical – Chemical Effects												Ecological Effects								Anthropogenic Effects											
		Water Resources						Land Resources						Air Quality						Species and Populations				Habitats and Communities				Public Safety and Visitor Experience			Cultural Resources		
Terrestrial																				Aquatic													
		Water Table Alteration	Ground Water Quantity	Ground Water Quality Changes	Shoreline and Bottom Alteration	Surface Flow Variation	Surface Water Quality Changes	Soil Erosion	Topography / Landscape	Compaction and Settling	Stability (Slides and Slump)	Geology/Soil Quality	Air Quality	Wind	Temperature	Noise	Dust	Terrestrial Vegetation	Birds and Mammals	Amphibians and Reptiles	Invertebrates	Aquatic Vegetation	Birds and Mammals	Amphibians and Reptiles	Fish and Invertebrates	Terrestrial Communities	Terrestrial Habitats	Aquatic Communities	Aquatic Habitats	Health Risks (Chemical)	Safety Risks (Physical)	Aesthetics	Heritage Resources
Project Phase	Project Activities																																
CONSTRUC TION	SITE ACCESS/STAGING AREA (incl. transportation methods)					•	•	•		•	•		•			•	•	•	•	•	•	•	•	•	•	•	•		•	•			
	MACHINERY OPERATION (incl. operation of all equipment required for construction operations below)					•	•	•	•	•	•		•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	

		Valued Ecosystem Components																																
		PHYSICAL – CHEMICAL EFFECTS												ECOLOGICAL EFFECTS								ANTHROPOGENIC EFFECTS												
		WATER RESOURCES						LAND RESOURCES				AIR QUALITY				SPECIES AND POPULATIONS				HABITATS AND COMMUNITIES				PUBLIC SAFETY AND VISITOR EXPERIENCE			CULTURAL RESOURCES							
																TERRESTRIAL		AQUATIC																
		WATER TABLE ALTERATION	GROUND WATER QUANTITY	GROUND WATER QUALITY CHANGES	SHORELINE AND BOTTOM ALTERATION	SURFACE FLOW VARIATION	SURFACE WATER QUALITY CHANGES	SOIL EROSION	TOPOGRAPHY / LANDSCAPE	COMPACTION AND SETTLING	STABILITY (SLIDES AND SLUMP)	GEOLOGY/SOIL QUALITY	AIR QUALITY	WIND	TEMPERATURE	NOISE	DUST	TERRESTRIAL VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	INVERTEBRATES	AQUATIC VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	FISH AND INVERTEBRATES	TERRESTRIAL COMMUNITIES	TERRESTRIAL HABITATS	AQUATIC COMMUNITIES	AQUATIC HABITATS	HEALTH RISKS (Chemical)	SAFETY RISKS (Physical)	AESTHETICS	HERITAGE RESOURCES	
	EXCAVATION/FILLING/RECONTOURING/COMPACTION (physical alteration/impact)	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	STORAGE of FILL/BACKFILL MATERIAL (physical alteration/impact)					●	●	●	●	●	●						●	●	●	●	●	●				●	●	●	●		●	●	●	
	DRILLING/SOIL AUGER (physical alteration/ impact)			●			●					●				●	●		●	●			●	●						●	●			
	TREE TRIMMING/CUTTING (physical alteration/impact)					●	●	●	●	●	●		●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	REVEGETATION					●	●	●	●		●		●	●	●		●	●	●	●	●		●	●	●	●	●	●	●			●		

		Valued Ecosystem Components																															
		PHYSICAL – CHEMICAL EFFECTS												ECOLOGICAL EFFECTS								ANTHROPOGENIC EFFECTS											
		WATER RESOURCES						LAND RESOURCES				AIR QUALITY				SPECIES AND POPULATIONS				HABITATS AND COMMUNITIES				PUBLIC SAFETY AND VISITOR EXPERIENCE		CULTURAL RESOURCES							
TERRESTRIAL																AQUATIC																	
		WATER TABLE ALTERATION	GROUND WATER QUANTITY	GROUND WATER QUALITY CHANGES	SHORELINE AND BOTTOM ALTERATION	SURFACE FLOW VARIATION	SURFACE WATER QUALITY CHANGES	SOIL EROSION	TOPOGRAPHY / LANDSCAPE	COMPACTION AND SETTLING	STABILITY (SLIDES AND SLUMP)	GEOLOGY/SOIL QUALITY	AIR QUALITY	WIND	TEMPERATURE	NOISE	DUST	TERRESTRIAL VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	INVERTEBRATES	AQUATIC VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	FISH AND INVERTEBRATES	TERRESTRIAL COMMUNITIES	TERRESTRIAL HABITATS	AQUATIC COMMUNITIES	AQUATIC HABITATS	HEALTH RISKS (Chemical)	SAFETY RISKS (Physical)	AESTHETICS	HERITAGE RESOURCES
	CONCRETE WORKS/PAVING (physical alteration / impact)		•			•	•		•				•		•			•								•	•	•	•	•	•	•	•
OPERATION	SITE ACCESS (incl. transportation methods)					•	•	•		•	•					•	•	•	•	•			•	•	•	•			•	•			
	MAINTENANCE / SERVICING (incl. power washing, painting, equipment replacement)						•						•			•		•	•	•	•	•	•	•	•	•	•		•	•			•
ACCIDENTS / MALFUNCTIONS	INAPPROPRIATE OPERATION of MACHINERY (physical alteration/impact)	•					•	•		•	•		•			•	•	•	•	•	•	•	•	•	•	•	•		•	•			•

		Valued Ecosystem Components																															
		PHYSICAL – CHEMICAL EFFECTS										ECOLOGICAL EFFECTS							ANTHROPOGENIC EFFECTS														
		WATER RESOURCES						LAND RESOURCES				AIR QUALITY				SPECIES AND POPULATIONS				HABITATS AND COMMUNITIES			PUBLIC SAFETY AND VISITOR EXPERIENCE		CULTURAL RESOURCES								
																TERRESTRIAL		AQUATIC															
		WATER TABLE ALTERATION	GROUND WATER QUANTITY	GROUND WATER QUALITY CHANGES	SHORELINE AND BOTTOM ALTERATION	SURFACE FLOW VARIATION	SURFACE WATER QUALITY CHANGES	SOIL EROSION	TOPOGRAPHY / LANDSCAPE	COMPACTION AND SETTLING	STABILITY (SLIDES AND SLUMP)	GEOLOGY/SOIL QUALITY	AIR QUALITY	WIND	TEMPERATURE	NOISE	DUST	TERRESTRIAL VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	INVERTEBRATES	AQUATIC VEGETATION	BIRDS AND MAMMALS	AMPHIBIANS AND REPTILES	FISH AND INVERTEBRATES	TERRESTRIAL COMMUNITIES	TERRESTRIAL HABITATS	AQUATIC COMMUNITIES	AQUATIC HABITATS	HEALTH RISKS (Chemical)	SAFETY RISKS (Physical)	AESTHETICS	HERITAGE RESOURCES
	SPILLS (chemical alteration/impact)			•	•		•											•	•	•	•	•	•	•	•	•	•	•	•	•			
	PHYSICAL ACCIDENTS (physical alteration/ impact)				•		•										•	•		•	•	•	•				•						
	TRANSPORTATION ACCIDENTS (physical alteration/impact)			•		•	•										•	•	•	•	•	•	•	•	•	•	•		•				

## 5. Impacts and Mitigation

### 5.1 Potential Environmental Effects

Based on the environmental conditions described in section 4 and past experience with minor highway transportation projects in the Atlantic Canadian National Parks, a comprehensive list of potential environmental effects created by the projects described in this RCSR has been developed (see Table 5). These environmental effects are considered likely to occur in the absence of mitigation measures.

The environmental effects have been organized according to five broad VECs: (1) Water Resources, (2) Land Resources, (3) Air Quality, (4) Flora and Fauna, and (5) Anthropogenic/Human Environment.

**Table 5. Potential Environmental Effects of Minor Highway Transportation Projects**

VECs	Potential Environmental Effects
<b>(1) Water Resources:</b> surface and ground water hydrology, surface and ground water quality, aquatic sediments, and surface and groundwater quantity	<input type="checkbox"/> Adverse modifications to surface drainage patterns <input type="checkbox"/> Potential runoff, erosion, sedimentation, and altered drainage, <input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination (i.e. from leaks and accidental spills, nutrients from improper wastewater disposal, etc.)
<b>(2) Land Resources:</b> soils, topography and landscape.	<input type="checkbox"/> Changes in slopes, landforms, and landscape <input type="checkbox"/> Soil compaction and rutting <input type="checkbox"/> Slope instability, due to increased soil exposure and improper excavation and storage <input type="checkbox"/> Soil contamination
<b>(3) Air Quality:</b> air quality and noise levels.	<input type="checkbox"/> Decreased ambient air quality (i.e. from dust, emissions, etc.) <input type="checkbox"/> Increased ambient noise levels <input type="checkbox"/> Increased levels of CO <sub>2</sub> and other pollutants (from removal of trees and vegetation) <input type="checkbox"/> Increased localized temperatures because of newly expanded roads/paving
<b>(4) Flora and Fauna:</b> aquatic and terrestrial species /population and communities/habitats	<input type="checkbox"/> Damage to and/or removal of vegetation in immediate or adjacent areas <input type="checkbox"/> Introduction of invasive species <input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance <input type="checkbox"/> Wildlife habituation/attraction to artificial food sources <input type="checkbox"/> Impeded/altered wildlife movement <input type="checkbox"/> Loss of habitat (food & cover) <input type="checkbox"/> Damage to nests/disruption of nesting animals <input type="checkbox"/> Decreased wildlife abundance due to direct mortality from physical activities (i.e. road kill) <input type="checkbox"/>
<b>(5) Anthropogenic/Human Environment:</b> public safety, visitor experience, and cultural/heritage resources	<input type="checkbox"/> Disruption to park visitor experience due to changed noise, air and water quality, and traffic and changed aesthetics <input type="checkbox"/> Injuries to public and workers arising from project activities <input type="checkbox"/> Loss/disruption of unknown heritage, archaeological and paleontological features

## 5.2 Mitigation Measures

Mitigation measures control, reduce or eliminate the environmental effects caused by project activities. Accomplished through preventive actions, preparation, and proper site restoration, application of mitigation measures are designed to result in no significant residual environmental effects.

Mitigation measures that significantly reduce the magnitude, extent, frequency, and duration of the potential environmental effects are listed in Table 6 by VEC and Appendix 2 by project activity. The mitigation measures have been previously applied and proven to be successful for projects that have undergone individual screenings pursuant to the Act. The mitigation measures have been synthesized, modified, and enhanced for the purposes of this report. Park officers and contractors must be familiar with these mitigation measures and must implement them on work-sites in order to comply with the requirements of this RCSR.

A number of PCA policies and guidelines provide frameworks for minor transportation infrastructure project activities including: 1) Asset Management Directive (2009); 2) Directive for Design, Construction, and Inspection of Vehicular and Pedestrian Bridges (2008); 3) Parks Canada Management Directive on Impact Assessment (1998); and 4) Parks Canada Guiding Principles and Operational Policies (1994). PCA mitigation strategies have evolved from these policies.

PCA will ensure that mitigation measures will be implemented by requiring compliance with the RCSR and related BMPs by all PCA staff, crews and contractors. Staff, crews and contractors will be introduced to the RCSR and required to implement it properly as part of standard operating procedures.

**Table 6. Environmental Effects and Mitigation Measures by VEC.**

GENERAL ACTIVITIES		
VECs	Description of Effects	Mitigations
<b>(1) Water Resources:</b> surface and groundwater hydrology, surface and groundwater quality, aquatic sediments, and surface and groundwater quantity	<ul style="list-style-type: none"> <li><input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc.</li> <li><input type="checkbox"/> Adverse modifications to surface drainage patterns.</li> <li><input type="checkbox"/> Potential runoff, erosion, sedimentation, and altered drainage.</li> </ul>	<p>Chemicals</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Fuels, oils, lubricants, and other petrochemical products must not be stored within 100 meters of any water body.</li> <li><input type="checkbox"/> Refueling areas must be designated and be at least 100 m away from any water body. Refueling areas should be on impermeable pads or buried liners designed to allow full containment of spills.</li> <li><input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.</li> <li><input type="checkbox"/> Any equipment operating in water bodies must be cleaned prior to entering the water and inspected daily for leaks; never leave equipment in water overnight.</li> </ul> <p>Sedimentation and Turbid Water</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Halt activity on exposed soil during periods of high rainfall/runoff.</li> <li><input type="checkbox"/> Isolate work area from open water. Sedimentation and erosion control mechanisms must be installed around work areas to prevent silt from entering watercourse. Periodically inspect, and repair these structures if necessary.</li> <li><input type="checkbox"/> Filter/settle out sediment before allowing water to</li> </ul>

		<p>enter any drainage pathway.</p> <p>Drainage</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Implement Sediment /Erosion Control measures wherever soil is disturbed or exposed.</li> <li><input type="checkbox"/> Minimize changes to the ground surface that affects its infiltration and runoff characteristics and maintain effective surface drainage upon completion of project.</li> <li><input type="checkbox"/> Minimize clearing, grubbing, and grading near water bodies (no work shall occur within 30 m from a waterbody).</li> <li><input type="checkbox"/> Retain vegetated buffer (at least 30 m) around water bodies.</li> <li><input type="checkbox"/> Dewatering directly into a water body, sanitary/storm water system is not permitted. Sediment must settle out or be filtered before water is allowed to enter a drainage pathway.</li> <li><input type="checkbox"/> All instream work should be minimized, however when required, all instream work should be completed in isolation from adjacent stream flow by isolating the instream work area using a temporary stream diversion-the work should be completed "in the dry" – as per direction provided within applicable DFO Guidelines and Factsheets.</li> <li><input type="checkbox"/> Properly seal all boreholes.</li> <li><input type="checkbox"/> Apply seal coats only to dry surfaces and not prior to (within 24 hrs) or during rainfall.</li> <li><input type="checkbox"/> Concrete should be ready mix. If concrete is mixed on site, concrete wash water should be used in subsequent mixes and final wash water contained and deposited at a Transfer station.</li> <li><input type="checkbox"/> Water quality is to be maintained at all times. Only clean building material, free of particulate matter, shall be placed in water. Any equipment operating in water bodies must be cleaned prior to entering the water and inspected daily for leaks; never leave equipment in water overnight.</li> <li><input type="checkbox"/> Filter/settle out sediment before allowing water to enter any drainage pathway.</li> <li><input type="checkbox"/> Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for revegetation.</li> <li><input type="checkbox"/> Any pipes to be abandoned must be pressure tested for leaks and sealed with no part of the line exposed above the surface.</li> <li><input type="checkbox"/> When constructing and/or upgrading storm sewers, install oil/contaminant sumps.</li> <li><input type="checkbox"/> No brush mowing is to occur within 30 m of any water body.</li> <li><input type="checkbox"/> Debris must not be piled in environmentally sensitive areas (i.e. runoff areas creek beds).</li> </ul>
<p><b>(2) Land Resources:</b> soils, topography and landscape.</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Soil contamination</li> <li><input type="checkbox"/> Soil compaction and rutting</li> <li><input type="checkbox"/> Slope instability, due to increased soil exposure and improper excavation and storage</li> </ul>	<p>Work Site</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Keep site maintained in a tidy condition, free from the accumulation of waste products, debris, and litter. Construction sites must undergo thorough clean up at project completion. All waste must be</li> </ul>



	<p><input type="checkbox"/> Changes in slopes, landforms, and landscape</p>	<p>disposed of at an appropriate facility.</p> <p>Transport/Access</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Maintain a consistent access route.</li> <li><input type="checkbox"/> Restrict vehicular travel and other equipment operation to the construction site and approved access routes.</li> <li><input type="checkbox"/> Minimize or halt construction traffic during wet conditions when the soil shows signs of ponding or rutting</li> <li><input type="checkbox"/> Construction materials shall be stored within the delineated confines of the work site.</li> </ul> <p>Silt/Erosion Control</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Keep site clearing to a minimum (maintain vegetated buffer wherever possible) and restore vegetation as soon as possible to minimize duration of soil exposure.</li> <li><input type="checkbox"/> Phase work to minimize duration of exposure of disturbed areas</li> <li><input type="checkbox"/> Choose the most appropriate time/method to remove vegetation and revegetation. It may be cut early in the season to allow herbs to regenerate or it may be removed as close to construction time as possible to minimize the opportunity for erosion and invasion of non-native species.</li> <li><input type="checkbox"/> Assess site for erosion control requirements and implement control measures as required (<i>i.e. traps, straws, bales, erosion blankets, silt fencing</i>)</li> <li><input type="checkbox"/> Implement Sediment /Erosion Control measures whenever soil is disturbed or exposed</li> <li><input type="checkbox"/> Halt construction during excessive rainfall events.</li> <li><input type="checkbox"/> Cover devegetated area if heavy rains are expected in erosion prone areas.</li> <li><input type="checkbox"/> Delay trenching or excavation until just prior to installation of infrastructure. Minimize length of trench or area and exposure time.</li> <li><input type="checkbox"/> Dewater all excavations at appropriate locations. Sediment must settle out or be filtered before water is allowed to enter a drainage pathway.</li> <li><input type="checkbox"/> Ensure backfilling is undertaken using suitable materials and that adequate soil compaction is conducted to avoid ground subsidence. Provide additional backfill where subsidence has occurred.</li> <li><input type="checkbox"/> Avoid activities on steep and/or sensitive slopes.</li> <li><input type="checkbox"/> Assess slope stability (based on slope length/steepness and soil texture/depth). If possible, adjust activities to avoid areas where slopes are <math>\geq 15</math> degrees and where soils are shallow and likely to move with disturbance). Stabilize slopes as appropriate for local conditions.</li> <li><input type="checkbox"/> Hand clear steep slopes when possible. If prolonged exposure is expected, stabilize surface using temporary cover (<i>i.e. grass, mulch, erosion blanket, etc.</i>).</li> <li><input type="checkbox"/> Clear minimum area necessary. Hand clear steep slopes that do not require grading. Delay clearing slopes until immediately before scheduled construction and reclaim immediately afterwards.</li> </ul>
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		<p><b>Hazardous Materials</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.</li> <li><input type="checkbox"/> All hazardous materials and wastes must be clearly labeled with WHMIS labels and information and handled as legally required.</li> <li><input type="checkbox"/> Prepare an Emergency Response Plan (<i>i.e. for incidents such as chemical spills, fires, high winds, heavy rainfall and runoff, etc.</i>), ensure site is equipped with appropriate containment/clean-up tools, and that all personnel are trained in their use.</li> <li><input type="checkbox"/> If contamination is uncovered during excavation, investigate and identify the source, properly remove and dispose of.</li> <li><input type="checkbox"/> Have <i>Spill Response Plan</i> and ensure spill contingency equipment and measures are in place before work begins.</li> <li><input type="checkbox"/> Use paints with minimal amounts of potentially harmful substances.</li> <li><input type="checkbox"/> Hand painting is preferred over spray painting. Where sprayers are used, properly adjust and shield to minimize paint loss due to overspray. Do not spray in high winds.</li> </ul> <p><b>Maintenance</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> All maintenance measures should be non-abrasive, non destructive and environmentally benign.</li> <li><input type="checkbox"/> Replacement of infrastructure should only occur when a major part of an element is decayed beyond repair.</li> </ul>
<p><b>(3) Air Quality:</b> air quality and noise levels.</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Decreased ambient air quality</li> <li><input type="checkbox"/> Increased ambient noise levels</li> <li><input type="checkbox"/> Increased levels of CO2 and other pollutants</li> <li><input type="checkbox"/> Increased localized temperatures</li> </ul>	<p><b>Air Quality</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Equipment and vehicles must not be left idling between work periods.</li> <li><input type="checkbox"/> Ensure materials being stored/transported are covered with tarps or equivalent material to contain fine particulate matter.</li> <li><input type="checkbox"/> Avoid site preparation during dusty, dry, windy periods.</li> <li><input type="checkbox"/> Avoid ground vegetation removal during dry, windy periods to prevent blowing of dirt/dust.</li> <li><input type="checkbox"/> If herbicide sprayers are used, properly adjust and shield to minimize loss due to overspray. To prevent herbicide spray drift, spraying must be restricted to calm weather.</li> <li><input type="checkbox"/> Manage vehicle traffic and halt construction operation to decrease localized temperature if deemed necessary.</li> </ul> <p><b>Noise</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Confine “noise” activities to daytime hours as approved by Park authority.</li> </ul>
<p><b>(4) Flora and Fauna:</b> aquatic and terrestrial</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Introduction of invasive species</li> <li><input type="checkbox"/> Wildlife habituation/attraction to</li> </ul>	<p><b>General</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> All construction equipment/materials must be</li> </ul>

<p>species /population and communities/habitats</p>	<p>artificial food sources</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance</li> <li><input type="checkbox"/> Impeded/altered wildlife movement</li> <li><input type="checkbox"/> Habitat loss/fragmentation</li> <li><input type="checkbox"/> Decreased wildlife abundance due to direct mortality from physical activities</li> <li><input type="checkbox"/> Damage to nests/dens and disruption of associated animals</li> <li><input type="checkbox"/> Damage to/and or removal of vegetation in immediate or adjacent areas</li> </ul>	<p>cleaned prior (<i>i.e. steamed or pressure washed</i>) to entering park to minimize the risk of introducing weeds and invasive species.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Restrict vehicular travel and other equipment operation to the construction site and approved access routes. Use existing roadways/disturbed areas for site access and travel within the site.</li> <li><input type="checkbox"/> Only clean building material is to be used.</li> </ul> <p>Vegetation/Habitat</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Prior to commencing activities, survey vegetation for species at risk, rare species, non-native species and species specially desired for visitor viewing.</li> <li><input type="checkbox"/> Careful machine operation is required to prevent damage to surrounding vegetation.</li> <li><input type="checkbox"/> Ensure excavated material does not damage/bury plant material that is to be retained on site/adjacent areas.</li> <li><input type="checkbox"/> Minimize site clearing and retain vegetation when possible to reduce habitat loss/fragmentation.</li> <li><input type="checkbox"/> Minimize disturbance/removal of vegetation. Re-establish native vegetation where has been removed/damaged and return all project areas to their original form to discourage invasive species from settling.</li> <li><input type="checkbox"/> Clearly mark vegetation that is not to be removed. Delineate areas to be avoided with biodegradable flagging tape and/or temporary fences.</li> <li><input type="checkbox"/> Minimize site clearing and retain vegetation when possible to reduce habitat loss/fragmentation. Store removed vegetation on already disturbed areas to minimize disturbance area. In appropriate areas re-establish native vegetation where it has been removed/damaged.</li> <li><input type="checkbox"/> Where possible preserve wildlife trees if they are not hazard trees.</li> </ul> <p>Wildlife</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Depending on presence of wildlife, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (<i>i.e. breeding, nesting, rearing, migration</i>). <i>Park Resource Personnel will be consulted for specific species information.</i></li> <li><input type="checkbox"/> When working adjacent to undisturbed areas restrict activity to daylight hours as dusk and dawn are critical times for wildlife.</li> <li><input type="checkbox"/> Survey area for nests/dens prior to start of work. Any active nests/dens shall not be damaged.</li> <li><input type="checkbox"/> Under the <i>Migratory Birds Regulations</i> it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird, or its carcass, skin, nest or egg except under authority of a permit.</li> <li><input type="checkbox"/> Survey area for basking or hiding animals (reptiles or small mammals) prior to start of work. Avoid such locations until advised by Park biologist.</li> <li><input type="checkbox"/> Fence excavations to prevent injuries to wildlife.</li> <li><input type="checkbox"/> Construct and orient fences in a manner that</li> </ul>
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		<p>reduces impact to wildlife movement.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas.</li> <li><input type="checkbox"/> Feeding, enticement, or harassment of wildlife is prohibited.</li> <li><input type="checkbox"/> Toxic materials and any materials, which may pose a hazard to wildlife, must be stored in secured buildings or containers.</li> <li><input type="checkbox"/> Store food, garbage, and other smelling products in sealed containers. Pack all garbage out from the site daily, unless permanent garbage facilities exist at the site.</li> <li><input type="checkbox"/> Minimize time boreholes/test pits remain open to reduce small terrestrial wildlife mortality. Properly seal when work is completed.</li> <li><input type="checkbox"/> The project shall meet the requirements of the Fish Passage Guidelines of the respective DFO Region in which the work is occurring (See appendix 1 for operational statements)</li> <li><input type="checkbox"/> Any instream work in fish bearing waters should only occur between June 1<sup>st</sup> and September 30<sup>th</sup> of any year.</li> <li><input type="checkbox"/> Fish passage will be provided at all times.</li> <li><input type="checkbox"/> Downstream flow shall be maintained during construction.</li> <li><input type="checkbox"/> Suitable non-erosive materials shall be used, such as rip-rap, in appropriate areas to prevent erosion.</li> <li><input type="checkbox"/> Sediment and erosion controls should be installed <i>prior</i> to the beginning of construction activities.</li> <li><input type="checkbox"/> Culverts shall allow for the passage of fish.</li> <li><input type="checkbox"/> When replacing culverts and bridges it will be ensured that structures are bottomless and clear span respectively.</li> </ul> <p>Aquatic Vegetation/Habitat</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Minimize removal of vegetation and disturbance to natural banks and streambed. When possible use hand clearing as it minimizes erosion and siltation.</li> <li><input type="checkbox"/> Re-establish native vegetation where it has been removed/damaged and return all areas in and adjacent to the watercourse to their original form.</li> <li><input type="checkbox"/> Construct and orient fences/temporary dams, etc. in a manner that reduces impact to wildlife movement.</li> </ul>
<p>(5) <b>Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Disruption to park visitor experience due to changed noise, air and water quality, and traffic and changed aesthetics</li> <li><input type="checkbox"/> Potential damage to unknown cultural/archaeological resources</li> <li><input type="checkbox"/> Injuries to public and workers arising from project activities</li> </ul>	<p>Aesthetics</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Evaluate proposed site layout, access routes, and construction activities to minimize their visual impact. Time construction activities to minimize vehicle conflicts</li> <li><input type="checkbox"/> When possible, use natural pruning methods, which minimize damage to trees and retain (as much as possible) their natural appearance and form.</li> <li><input type="checkbox"/> Prune limbs close to the tree trunk. For a clean cut, make a shallow undercut first, then follow with</li> </ul>

		<p>the top cut. This prevents the limb from peeling bark off the tree as it falls.</p> <ul style="list-style-type: none"> <li>❑ Do not use an axe for pruning. If over half of the tree needs pruning, usually cut it down. Cut trees off at ground level and do not leave pointed stumps.</li> <li>❑ Cut vegetation low/flush to the ground.</li> <li>❑ Utilize a hazard tree rating and removal system.</li> <li>❑ When vegetation is left to decay, cut in a manner that mimics the natural decay rate, ie. Limb trees close to the trunk to ensure the trunk is in close contact with the ground</li> </ul> <p>Cultural Resources</p> <ul style="list-style-type: none"> <li>❑ Archaeological surveys should be conducted prior to construction.</li> <li>❑ Should previously unknown archaeological resources/cultural artifacts be discovered, immediately cease work, and alert PCA archaeologist.</li> </ul> <p>Safety</p> <ul style="list-style-type: none"> <li>❑ Clearly sign and fence work areas when left unattended to minimize injury or mortality.</li> <li>❑ All trenches or ditches left unattended or overnight must be fenced.</li> <li>❑ Use appropriate signage/fences for closed areas and identify detours/alternatives.</li> <li>❑ Call utility companies to identify buried resources/lines.</li> </ul> <p>Health/Hazardous Materials</p> <ul style="list-style-type: none"> <li>❑ Minimize herbicide use where viable alternatives exist. Only herbicides federally approved by Agricultural Canada under the Pest Control Act may be used.</li> <li>❑ Transportation, storage, handing, application, and disposal of herbicides and other chemicals should follow all applicable federal/provincial laws</li> <li>❑ Workers shall wear appropriate protective clothing and gear.</li> <li>❑ Workers must have appropriate training (First Aid, WHMIS, etc.).</li> </ul>
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### 5.3 Accidents and Malfunctions

Accidents and equipment malfunctions affecting the VECs were determined based on a survey of project activities, the potential for an environmental emergency, and prior experience with all project types at each National Park covered by this RCSR.

The likelihood of accidents or malfunctions occurring and causing negative environmental impacts due to project activities and physical works is minimal. Potential accidents and malfunctions may occur at the staging location and during the construction and operation phases. These may include:

- vehicle collisions
- spills from equipment operated on site
- structural failures
- spills or leaks (from paint, chemicals, and concrete) into the terrestrial or aquatic environment

Project activities that could result in accidents and malfunctions largely relate to the operation and maintenance of heavy machinery, vehicles, and hand machinery. Structural failures, vehicle collisions, spills, and leaks would likely be attributed to human error. Spills resulting from improperly stored materials are also possible.

Accidents and malfunctions will be avoided through compliance with mitigation measures listed in Table 6 and Appendix 2 of this RCSR. For example, vehicles will be regularly serviced to avoid malfunctions, all hydrocarbon spills, regardless of size, will be reported in accordance with local legislation and contingency plans will be in place.

#### 5.4 *Environmental Effects on Project Activities*

Under the Act, an assessment must consider the potential effects the environment may have on a project. Weather-related events, such as extreme rainfall, flooding, wildfire, extreme winds, and landslides may damage physical works and delay project activities. Most of the environmental effects of these events as they relate to routine projects (i.e. increased run off from the work site causing sedimentation) are anticipated in this report. No significant adverse environmental effects on projects resulting from the existing environment are expected with proper implementation of the identified mitigation measures (Appendix 2).

#### 5.5 *Residual Environmental Effects*

Residual effects are “those environmental effects that remain after the application of design standards and the implementation of mitigation measures” (Virtue 2005). Analysis of the significance of residual environmental effects is based on several criteria including magnitude, geographic extent, duration, frequency, reversibility, and the ecological context of the effect (Table 7). The criteria are combined to determine whether or not the residual effect of an activity is significant.

**Table 7. Rating System Used to Determine the Significance of Residual Environmental Effects Caused by Project Activities at each National Park (NP) Covered by this RCSR, Following the Application of Mitigation Measures.**

Criteria	Importance Level Rating		
	Negligible - 1	Minor - 2	Major - 3
Magnitude	▪ Negligible levels of disturbance and/or damage	▪ Minor levels of disturbance and/or damage	▪ Major levels of disturbance and/or damage
Geographic Extent	▪ Limited to project area	▪ Extends beyond project area, but remains within the NP	▪ Extends beyond the NP boundaries
Duration of Effect	▪ Within 24 hour period	▪ Days to weeks	▪ A month or longer
Frequency of Effect	▪ Occurs on a monthly	▪ Occurs on a weekly	▪ Occurs on a daily basis

	basis or less frequently	basis	or more frequently
Reversibility	<ul style="list-style-type: none"> <li>Effects reversible over short term without active management</li> </ul>	<ul style="list-style-type: none"> <li>Effects reversible over short term with active management</li> </ul>	<ul style="list-style-type: none"> <li>Effects reversible over extended term with active management or effects are irreversible</li> </ul>
Ecological and Historical Context	<ul style="list-style-type: none"> <li>Little risk to ecological values and commemorative integrity</li> </ul>	<ul style="list-style-type: none"> <li>Minor effect on ecological values and/or commemorative integrity</li> </ul>	<ul style="list-style-type: none"> <li>Ecological values and/or commemorative integrity at risk</li> </ul>

These criteria are combined to determine whether or not a residual environmental effect is significant based on the following definitions:

### **Significant**

A residual environmental effect is considered significant when it induces frequent, major levels of disturbance and/or damage and/or the effects last a month or longer, and/or extend beyond the national park boundaries following application of mitigation measures. The effect is either reversible with active management over an extended term or irreversible and threatens ecological values and/or commemorative integrity.

### **Not Significant**

A residual environmental effect is considered not significant when it has infrequent, minor, or negligible levels of disturbance and/or damage and the effects, lasting less than a week, and is contained within national park boundaries following application of mitigation measures. This effect is reversible with or without short-term active management and there is little risk to ecological values and/or commemorative integrity.

**Table 8. Significance of Residual Environmental Effects**

1=Negligible, 2=Minor, 3=Major

VEC	Project Phase/Elements	Residual Environmental Effects	Criteria Ratings					Significance
			Magnitude	Geographic Extent	Duration of Effect	Frequency of Effect	Reversibility	
WATER RESOURCES	Construction, excavation	Potential inputs to receiving waters and changes to surface flows.	1	1	1	1	1	Not Significant
LAND RESOURCES	Construction phase: equipment installation, excavation	Physical change to rock, soil structure in a small, localized manner	1	1	1	1	2	Not Significant
AIR QUALITY	All phases: machinery operation, site access.	Chemical release of fumes; dust	1	1	1	1	1	Not Significant
	All phases	Noise	2	2	1	1	1	Not Significant
	Operation phase: maintenance activities.	Small scale release of fumes, foreign materials	1	1	1	1	1	Not Significant
FLORA AND FAUNA SPECIES AND POPULATIONS/ COMMUNITIES AND HABITATS	All phases: site access, machinery operation, and construction activities	Short term disturbance to terrestrial species	2	2	1	1	1	Not Significant
ANTHROPOGENIC/ HUMAN ENVIRONMENT	All phases	Aesthetic effects	1	1	3	1	1	Not Significant
	All phases	Decreased public safety	1	1	1	1	1	Not Significant
		Disruptions of cultural/heritage resources	2	2	1	1	1	Not Significant

Legend: 1=Negligible, 2=Minor, 3=Major



### **Residual Effects and Significance**

Identified VECs including water, land, air, species and populations/communities and habitats, and anthropogenic factors are affected by residual effects from project activities. Each of these residual effects has been identified and examined according to the above criteria ratings and all of the residual effects were found to be insignificant. Table 8 includes a summary of the criteria and significance of the residual environmental effects associated with minor transportation infrastructure projects.

### **Summary of Significance of Residual Environmental Effects**

All residual environmental effects remaining after the application of recommended mitigation measures were found to be negligible, insignificant, and limited to the immediate project area. Although the potential exists for short term environmental effects during construction and operation the implementation of recommended mitigation measures will result in insignificant impacts. PCA concludes that projects under this RCSR are unlikely to cause significant adverse environmental effects.

## ***5.6 Cumulative Environmental Effects***

The Act requires that the assessment of potential environmental effects also consider the potential of cumulative environmental effects. Cumulative environmental effects are defined as “changes to the environment that are caused by an action in combination with other past, present and future human activities” (CEAA, 1999). The concept of cumulative environmental effects recognizes that the environmental effects of individual human activities can combine and interact with each other to cause aggregate effects that may be different in nature or extent from the effects of the individual activities (CEAA, 1994).

Under the Act, the identification of likely future projects takes into consideration projects that are certain (i.e. approved, under regulatory review, or officially announced to regulatory agencies) and reasonably foreseeable (i.e. identified in a development plan that is approved or under review, or conditional upon approval of a development plan that is under review). Hypothetical actions (i.e. conjectural or discussed on a conceptual basis) are not considered (CEAA, 1999). Consideration of the cumulative effects associated with projects covered in this RCSR includes all activities and projects flowing from the current management plans for each National Park covered by this RCSR. Potential interactions between a project and activities outside the sites are also assessed for potential environmental effects and are used to predict the cumulative effects that might result from the combination of projects covered by this RCSR known at the time of declaration of this document.

Cumulative effects can result when VECs are affected by interactions between multiple projects, including past, present, and future projects. Many of the potential environmental effects associated with minor transportation infrastructure projects are short-lived, localized and reversible; their capacity to act in a cumulative manner is minimal. For the purposes of this RCSR, the cumulative effects assessment must consider the potential cumulative effects resulting from: (1) other projects addressed by this RCSR, (2) other project/activities within the site boundaries, and (3) projects and activities occurring outside the site boundaries.

### **Interactions between Minor Transportation Infrastructure Projects**

The environmental effects associated with minor transportation projects, as defined by this RCSR, have been found to be negligible and limited to each individual project area. A number of RCSR projects occurring in the same time and space could possibly contribute to slight cumulative effects. However,

considering the negligible to minor nature of impacts, individual RCSR minor transportation projects are not likely to contribute to significant cumulative effects. These are evaluated for significance in Table 9. Appropriate mitigation measures are those detailed in Table 6, Section 5.2.

#### **Interactions between Minor transportation Infrastructure Projects and Other Projects/Activities inside the Site Boundaries**

The environmental effects of interactions between minor transportation infrastructure projects and other projects/activities inside the site boundaries must be factored into the consideration of cumulative effects.

Due to the small size of each individual project's boundaries, it is highly unlikely that other projects will occur within the same boundaries as minor transportation infrastructure projects.

Given that the potential environmental effects resulting from the construction and operation of minor transportation infrastructure are expected to be negligible and limited to the immediate area of each individual project, it is unlikely that the environmental effects of such projects will interact with the environmental effects of other project/activities and contribute to cumulative effects.

#### **Interactions between Minor Transportation Infrastructure Projects and Projects/Activities outside Site Boundaries**

The environmental effects of interactions between minor transportation infrastructure projects and projects/activities outside site boundaries must be considered during the assessment of cumulative effects.

Cumulative environmental effects have the potential to occur if the effects from minor transportation project activities work in concert with other anthropogenic sources of pollutants existing in the vicinity of the transportation project locations which could degrade water quality, habitat and/or affect local flora and fauna (*i.e.*, increased heavy transport and visitor traffic, habitat fragmentation, increased surface runoff/sedimentation). However, the isolated nature of most minor transportation infrastructure sites makes it unlikely that the environmental effects of outside projects will combine with minor transportation infrastructure projects to produce significant cumulative effects. Cumulative effects are evaluated for significance in Table 9. Appropriate mitigation measures are those detailed in Table 6, Section 5.2.

#### **Summary of Cumulative Effects on VECs**

Taking the mitigation measures from section 5.2 of this RCSR into account, potential adverse environmental effects would be limited to each individual project site. Consequently, potential significant adverse cumulative environmental effects are unlikely to occur either inside or outside the project boundaries.

Proper project planning and design will take into account surrounding infrastructure, and other projects or activities inside and outside of project boundaries which could have potential to act in a cumulative manner on affected VECs. The respective management plans for national parks covered in this RCSR fully consider the nature of ongoing issues and proposed development within the parks and within their greater context. Strategic Environmental Assessments of the management plans were conducted to ensure proposed actions strongly support the maintenance of ecological integrity and gave full consideration to the impacts of management decisions on natural and cultural resources (Parks Canada Management Directive on Impact Assessment, 1998). Consequently, the potential for any significant

cumulative effects to occur as a result of project interactions with other minor transportation infrastructure projects, other projects or activities inside or outside park boundaries are unlikely.

Assumptions made regarding cumulative environmental effects will be confirmed on a yearly basis.

**Table 9. Summary of the Potential Cumulative Effects and their Significance as Produced by Interactions Resulting from: (1) Other Projects Addressed by this RCSR, (2) Other Project/Activities within the Site Boundaries, and (3) Projects and Activities Occurring outside the Site Boundaries.**

			Criteria Ratings						SIGNIFICANCE
VEC	Project Elements	Potential Cumulative Environmental Effects	Magnitude	Geographic Extent	Duration of Effect	Frequency of Effect	Reversibility	Ecological & Historical Context	
Water Resources	All projects: Construction, excavation, machine operation	Increase in sediment concentration of surface runoff	1	1	2	1	1	1	Not Significant
Land Resources	All project phases	Habitat fragmentation	1	2	2	1	1	1	Not Significant
	Communication Infrastructure, Minor Roadway Enhancements, Small Bridge or Culvert Rehabilitation or replacement, Highway related Infrastructure specific to park settings: construction	Some landfill space used for waste disposal	1	2	3	1	1	1	Not Significant
Air Quality	All projects: Operation phase	Increase in visitors cause pollution/increase in greenhouse gas emissions	1	2	2	1	1	1	Not Significant
Flora and Fauna Species and Populations/Communities and Habitats	All phases	Habitat fragmentation /loss	1	2	2	1	1	1	Not Significant
		Wildlife disruption/habitat encroachment	1	2	1	1	1	1	Not Significant
Anthropogenic /Human Environment	All phases	Minor short term increased traffic in work areas may make commuting more difficult in those areas	1	2	1	1	1	1	Not Significant

Legend: 1=Negligible, 2=Minor, 3=Major

## ***5.7 Monitoring***

PCA is the proponent for the projects covered in this RCSR. They will ensure that mitigations and any other conditions of this RCSR will be implemented while carrying out the projects listed in this document. Success of the mitigation measures will be assessed through the evaluation of the significance of any residual environmental effects. Cumulative effects will be noted thorough routine property maintenance and condition reports. PCA will consider whether amendments to the RCSR are warranted in light of such reports.

Since the projects included in this RCSR are small in scale, routine, and located within the boundaries of existing cleared and disturbed areas long-term specific monitoring will not normally be required.

## **6. Roles and Responsibilities**

### ***6.1 Responsible Authorities***

#### **6.1.1 Parks Canada Agency**

It should be noted that since the RA is PCA, the RCSR can be applied, where appropriate, by PCA until such time as the Agency declares the RCSR not to be a class screening report or the declaration period expires.

It will be the responsibility of PCA to:

- ensure that projects are properly identified as class-applicable;
- ensure that applicable mitigation is implemented;
- place a regular statement on the Registry Internet site describing the extent to which the RCSR has been used, as identified in section 1.6;
- maintain the Registry project file, ensure convenient public access, and respond to information requests in a timely manner; and
- provide annual confirmation of the continuing validity of cumulative effects assessment conditions to the Agency.

### ***6.2 Other Responsible Authorities***

If permitting or approval is required from an RA other than PCA this RCSR will not apply and an individual EA under the Act will be required.

Potential responsible authorities of note include DFO Habitat Management or TC.

If an approval is required from within DFO in the form of a *Fisheries Act* Authorization the RCSR will not apply.

If an approval is required from TC in the form of a *Navigable Waters Protection Act* (NWPA) permit the RCSR will not apply. However, it should be noted that not all NWPA authorizations require an EA pursuant to CEAA.

### **6.3. Federal Authorities**

The following list includes federal authorities that have provided comments regarding this report's identification of potential environmental effects, suggested mitigation, and procedures. Comments have been incorporated as appropriate so that further referrals to these FAs will not be required:

- Environment Canada
- Fisheries & Oceans Canada – Habitat Management Division
- Transport Canada

Any project that requires further assessment by or referral to another FA will not be included in the RCSR.

## **7. Procedures for Revising the Replacement Class Screening Report**

The RA will notify the Agency in writing of its interest to revise the RCSR as per the terms and conditions of the declaration. It will discuss the proposed revisions with the Agency and affected federal government departments and may invite comment from stakeholders on the proposed changes. For a re-declaration of the RCSR, a public consultation period will be required. The RA will then submit the proposed revisions to the Agency, along with a statement providing a rationale for each revision proposed as well as a request that the Agency amend or re-declare the RCSR.

### **7.1 Amendments**

The purpose of an amendment is to allow for minor modifications to the RCSR after experience has been gained with its operation. Amendments do not require public consultation and do not allow for changes to the term of application. In general, amendments to the RCSR can be made if the Agency is satisfied that changes:

1. represent editorial changes intended to clarify or improve the document and procedures screening process;
2. streamline or modify the planning process and/or
3. do not materially alter either the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects.

### **7.2 Re-declaration**

The purpose of a re-declaration is to allow substantial changes to the RCSR after experience has been gained with its operation. Re-declarations require a public consultation period. A re-declaration of an RCSR may be undertaken for the remaining balance of the original declaration period or for a new declaration period if the changes:

- extend the application of the RCSR to projects or environmental settings that were not previously included, but are similar or related to projects included in the class definition;
- represent modifications to the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects;

- reflect new or changed regulatory requirements, policies or standards;
- introduce new design standards and mitigation measures;
- modify the federal coordination notification procedures;
- extend the application of the RCSR to RA(s) who were not previously declared users of the report;
- remove projects that are no longer suitable for the class; and/or
- extend the term of application of the RCSR.

### ***7.3 Term of Application***

This report will be in effect for 5 years from its date of declaration. Near the end of the RCSR declaration period, and at other times as necessary, PCA will review content and usage to allow for report updates and the preparation for potential re-declaration.

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## **9. Appendices**

1. Environmental Information Resources
2. Standard Mitigation by Project Activity
3. Map of Atlantic Canada National Parks
4. Individual maps of Atlantic Canada National parks
5. Individual Zoning Maps of Atlantic Canada National Parks

## **Appendix 1**

### **Environmental Information Resources**

## Environmental Information Resources

<b>Parks Canada Agency</b>	<ul style="list-style-type: none"> <li>• Home page (<a href="http://www.pc.gc.ca/index_e.asp">http://www.pc.gc.ca/index_e.asp</a>)</li> <li>• Senior Environmental Advisor – <a href="mailto:mabaye.dia@pc.gc.ca">mabaye.dia@pc.gc.ca</a></li> <li>• SARA Co-ordinator – <a href="mailto:Deborah.Austin@pc.gc.ca">Deborah.Austin@pc.gc.ca</a></li> </ul>
<b>Department of Fisheries and Oceans Canada</b>	<ul style="list-style-type: none"> <li>• Home page (<a href="http://www.dfo-mpo.gc.ca/">http://www.dfo-mpo.gc.ca/</a>)</li> <li>• Atlantic Region Operational Statements (<a href="http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp">http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp</a>)</li> <li>• New Brunswick Operational Statement: <a href="http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/nb/index-eng.asp">http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/nb/index-eng.asp</a></li> <li>• Nova Scotia Operational Statement: <a href="http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/ns/index-eng.asp">http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/ns/index-eng.asp</a></li> <li>• PEI Operational Statement: <a href="http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/pei/index-eng.asp">http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/pei/index-eng.asp</a></li> <li>• Newfoundland and Labrador Operational Statements: <a href="http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/nl/index-eng.asp">http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/nl/index-eng.asp</a></li> </ul>
<b>Environment Canada</b>	<ul style="list-style-type: none"> <li>• Atlantic Region (<a href="http://www.ec.gc.ca">http://www.ec.gc.ca</a>)</li> </ul>
<b>Canadian Environmental Assessment Agency</b>	<ul style="list-style-type: none"> <li>• Canadian Environmental Assessment Agency (<a href="http://www.ceaa-acee.gc.ca">http://www.ceaa-acee.gc.ca</a>)</li> <li>• Canadian Environmental Assessment Registry (<a href="http://www.ceaa-acee.gc.ca/050/index_e.cfm">http://www.ceaa-acee.gc.ca/050/index_e.cfm</a>)</li> </ul>
<b>Transport Canada</b>	<ul style="list-style-type: none"> <li>• Navigable Waters Protection Program (<a href="http://www.tc.gc.ca/eng/marinesafety/oep-nwpp-menu-1978.htm">http://www.tc.gc.ca/eng/marinesafety/oep-nwpp-menu-1978.htm</a>)</li> <li>• Transport Canada Environmental Affairs <a href="http://www.tc.gc.ca/eng/atlantic/menu.htm">http://www.tc.gc.ca/eng/atlantic/menu.htm</a></li> </ul>
<b>Province of Nova Scotia</b>	<ul style="list-style-type: none"> <li>• Home page (<a href="http://www.gov.ns.ca">http://www.gov.ns.ca</a>)</li> <li>• Natural Resources</li> <li>• Heritage/Archaeology</li> <li>• Species at Risk</li> </ul>
<b>Province of New Brunswick</b>	<ul style="list-style-type: none"> <li>• Home page (<a href="http://www.gov.nb.ca/">http://www.gov.nb.ca/</a>)</li> <li>• Natural Resources</li> <li>• Heritage/Archaeology</li> <li>• Species at Risk</li> </ul>
<b>Province of Prince Edward Island</b>	<ul style="list-style-type: none"> <li>• Home page (<a href="http://www.gov.pe.ca/">http://www.gov.pe.ca/</a>)</li> <li>• Natural Resources</li> </ul>

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	<ul style="list-style-type: none"> <li>• Heritage/Archaeology</li> <li>• Species at Risk</li> </ul>
<b>Province of Newfoundland and Labrador</b>	<ul style="list-style-type: none"> <li>• Home page (<a href="http://www.gov.nf.ca/">http://www.gov.nf.ca/</a>)</li> <li>• Natural Resources</li> <li>• Heritage/Archaeology</li> <li>• Species at Risk</li> </ul>
<b>Species at Risk data</b>	<ul style="list-style-type: none"> <li>• Atlantic Canada Conservation Data Centre home page (<a href="http://www.accdc.com">http://www.accdc.com</a>)</li> <li>• Species at Risk Registry (<a href="http://www.sararegistry.gc.ca/">http://www.sararegistry.gc.ca/</a>)</li> <li>• Species at Risk, Species Index (<a href="http://www.sararegistry.gc.ca/sar/index/default_e.cfm">http://www.sararegistry.gc.ca/sar/index/default_e.cfm</a>)</li> <li>• Committee on the Status of Endangered Wildlife in Canada (<a href="http://www.cosewic.gc.ca">http://www.cosewic.gc.ca</a>)</li> </ul>

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## **Appendix 2**

### **Standard Mitigation by Project Activity**

**Table I. Environmental Effects and Mitigation Measures: General Activities**

GENERAL ACTIVITIES		
VECs	Description of Effects	Mitigations
<b>(1) Air Quality:</b> air quality and noise levels.	<ul style="list-style-type: none"> <li><input type="checkbox"/> Decreased ambient air quality</li> <li><input type="checkbox"/> Increased ambient noise levels</li> <li><input type="checkbox"/> Increased levels of CO<sub>2</sub> and other pollutants</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Unnecessary idling of equipment and vehicles will not be permitted</li> <li><input type="checkbox"/> Ensure materials being stored/transported are covered with tarps or equivalent material to contain fine particulate matter</li> <li><input type="checkbox"/> Confine “noise” activities to daytime hours</li> </ul>
<b>(2) Land Resources:</b> soils, topography and landscape.	<ul style="list-style-type: none"> <li><input type="checkbox"/> Soil compaction and rutting</li> <li><input type="checkbox"/> Slope instability, due to increased spoil exposure and improper excavation and storage</li> <li><input type="checkbox"/> Soil contamination</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Restrict vehicular travel and other equipment operation to the construction site and approved access routes.</li> <li><input type="checkbox"/> Construction materials shall be stored within the delineated confines of the work site.</li> <li><input type="checkbox"/> Keep site clearing to a minimum to maintain vegetative cover</li> <li><input type="checkbox"/> Minimize or halt construction traffic during wet conditions when the soil shows signs of ponding or rutting</li> <li><input type="checkbox"/> Assess site for erosion control requirements and implement control measures as required (<i>i.e. traps, straws, bales, erosion blankets, silt fencing</i>)</li> <li><input type="checkbox"/> All hazardous materials and wastes will be clearly labelled with WHMIS labels and information and handled as legally required.</li> <li><input type="checkbox"/> Keep site maintained in a tidy condition, free from the accumulation of waste products, debris, and litter. Construction sites must undergo thorough clean up at project completion. All waste must be disposed of at an appropriate facility.</li> <li><input type="checkbox"/> Prepare an Emergency Response Plan (<i>i.e. for incidents such as chemical spills, fires, high winds, heavy rainfall and runoff, etc.</i>), ensure site is equipped with appropriate containment/clean-up tools, and that all personnel are trained in their use.</li> </ul>
<b>(3) Water Resources:</b> surface water hydrology, surface water quality, aquatic sediments, and groundwater quality and quantity	<ul style="list-style-type: none"> <li><input type="checkbox"/> Adverse modifications to surface drainage patterns</li> <li><input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc.</li> <li><input type="checkbox"/> Potential runoff, erosion, sedimentation, and altered drainage.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> All fuels, oils, lubricants, and other petrochemical products will not be stored within 100 meters of any water body.</li> <li><input type="checkbox"/> Designate refuelling areas at least 100 m away from any water body. Refuel machinery on impermeable pads or buried liners designed to allow full containment of spills.</li> <li><input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.</li> <li><input type="checkbox"/> Any equipment operating in water bodies must be cleaned prior to entering the water and inspected daily for leaks; never leave equipment in water overnight.</li> <li><input type="checkbox"/> Halt activity on exposed soil during periods of high rainfall/runoff</li> <li><input type="checkbox"/> Isolate work area from open water. Sedimentation and erosion control mechanisms shall be installed around work area to prevent sediments from silt from entering watercourse. Periodically inspect and repair, if necessary, these structures.</li> <li><input type="checkbox"/> Filter/settle out sediment before allowing water to enter any drainage pathway.</li> </ul>

<p><b>(4) Flora and Fauna:</b> aquatic and terrestrial species /population and communities/habitats</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Damage to/and or removal of vegetation</li> <li><input type="checkbox"/> Introduction of invasive species</li> <li><input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance</li> <li><input type="checkbox"/> Wildlife habituation/attraction to artificial food sources</li> <li><input type="checkbox"/> Habitat loss/fragmentation</li> <li><input type="checkbox"/> Decreased wildlife abundance due to direct mortality</li> <li><input type="checkbox"/> Damage to nests/dens and disruption of associated animals</li> <li><input type="checkbox"/> Impeded/altered wildlife movement</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Careful machine operation is required to prevent damage to surrounding vegetation.</li> <li><input type="checkbox"/> Ensure excavated material does not damage/bury plant material that is to be retained on site/adjacent areas.</li> <li><input type="checkbox"/> Minimize disturbance/removal of vegetation. Re-establish native vegetation where has been removed/damage and return all project areas to their original form to discourage invasive species from settling.</li> <li><input type="checkbox"/> All construction equipment/materials will be cleaned prior (<i>i.e. steamed or pressure washed</i>) to entering park to minimize the risk of introducing weeds and invasive species.</li> <li><input type="checkbox"/> According to wildlife present schedule, high noise level activities and other intrusive construction activities to avoid critical life stages (<i>i.e. breeding, nesting, rearing, migration</i>)</li> <li><input type="checkbox"/> The breeding season for most birds within the project area occurs between May 1<sup>st</sup> and August 31<sup>st</sup> in the Maritimes, and between May 1<sup>st</sup> and July 15<sup>th</sup> in Newfoundland; however some species protected under the <i>Migratory Birds Convention Act</i> nest outside these timeframes. Under section 6 of the <i>Migratory Birds Regulations</i>, it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit.</li> <li><input type="checkbox"/> While most bird species construct nests in trees and shrubs, a number of species of birds nest at ground level (e.g. Common Nighthawk, Killdeer), and some species may nest in burrows in stockpiles of soil or the banks of pits (e.g. Bank Swallows) It should be ensured that activities to reduce erosion do not result in hydroseeding of nests. But that alternate measures be taken to reduce potential for erosion and that nests be protected until chicks have fledged and left the area.</li> <li><input type="checkbox"/> Should active nests or birds caring for pre-fledged chicks be discovered during project activities outside the prime breeding season windows, establishment of vegetated buffer zones around nests, and minimization or activities in the immediate area until nesting is complete and chicks have naturally migrated from the area shall take place</li> <li><input type="checkbox"/> When working adjacent to undisturbed areas restrict activity to daylight hours as dusk and dawn are critical times for wildlife.</li> <li><input type="checkbox"/> Survey area for nests/dens prior to clearing. Do not clear any active nests/dens, or relocate nests/dens without a permit.</li> <li><input type="checkbox"/> If nests containing eggs or young of migratory birds are located or discovered during breeding season, all activities in the nesting area should be halted until nesting is completed.</li> <li><input type="checkbox"/> Construct and orient fences in a manner that</li> </ul>
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		<p>reduces impact to wildlife movement.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Minimize site clearing and retain vegetation when possible to reduce habitat loss/fragmentation.</li> <li><input type="checkbox"/> Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas where wildlife mortality has or is likely to occur.</li> <li><input type="checkbox"/> Feeding, enticement, or harassment of wildlife is prohibited.</li> <li><input type="checkbox"/> Toxic materials and any materials, which may pose a hazard to wildlife, must be stored in secured buildings or containers.</li> <li><input type="checkbox"/> Store food, garbage, and other smelling products in sealed containers. Pack all garbage out from the site daily, unless permanent garbage facilities exist at the site.</li> <li><input type="checkbox"/> The project shall meet the requirements of the Fish Passage Guidelines of the respective DFO Region in which the work is occurring (See appendix 1 for operational statements)</li> <li><input type="checkbox"/> Any instream work in fish bearing waters should only occur between June 1<sup>st</sup> and September 30<sup>th</sup> of any year.</li> <li><input type="checkbox"/> Fish passage will be provided at all times.</li> <li><input type="checkbox"/> Downstream flow shall be maintained during construction.</li> <li><input type="checkbox"/> Suitable non-erosive materials shall be used, such as rip-rap, in appropriate areas to prevent erosion.</li> <li><input type="checkbox"/> Sediment and erosion controls should be installed <i>prior</i> to the beginning of construction activities.</li> </ul>
<p>(5) <b>Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Disruption to park visitors, residents, and businesses due to changed noise, air and water quality, and traffic and changed aesthetics</li> <li><input type="checkbox"/> Injuries to public and workers arising from project activities</li> <li><input type="checkbox"/> Potential damage to unknown cultural/archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Evaluate site layout, access routes, and construction activities to minimize their visual impact</li> <li><input type="checkbox"/> Clearly sign and fence work areas when left unattended to minimize injury or mortality.</li> <li><input type="checkbox"/> Workers shall wear appropriate protective clothing and gear.</li> <li><input type="checkbox"/> Archaeological surveys should be conducted prior to construction</li> <li><input type="checkbox"/> Should previously unknown archaeological resources/cultural artifacts be discovered, immediately cease work, and alert Parks Canada archaeologist.</li> </ul>

**Table II. Environmental Effects and Mitigation Measures Projects: Site Preparation**

SITE PREPARATION		
VECs	Description of Effects	Mitigations
<b>(1) Air Quality:</b> air quality and noise levels.	<input type="checkbox"/> Decreased ambient air quality <input type="checkbox"/> Increased ambient noise levels	<input type="checkbox"/> Avoid site preparation during dusty, dry, windy periods <input type="checkbox"/> Confine “noise” activities to daytime hours
<b>(2) Land Resources:</b> soils, topography and landscape.	<input type="checkbox"/> Changes in slopes, landforms, and landscape <input type="checkbox"/> Soil compaction and rutting <input type="checkbox"/> Slope instability, due to increased spoil exposure and improper excavation and storage <input type="checkbox"/> Soil contamination	<input type="checkbox"/> Assess slope stability (based on slope length/steepness and soil texture/depth). If possible, adjust activities to avoid areas where slopes are $\geq 15$ degrees and where soils are shallow and likely to move with disturbance). Stabilize slopes as appropriate for local conditions. <input type="checkbox"/> Clear minimum area necessary. Hand clear steep slopes that do not require grading. Delay clearing slopes until immediately before scheduled construction and reclaim immediately afterwards. <input type="checkbox"/> Implement Sediment /Erosion Control measures when soil is disturbed or exposed <input type="checkbox"/> Dewater all excavations at appropriate locations. Sediment must settle out or be filtered before water is allowed to enter a drainage pathway. <input type="checkbox"/> If contamination is uncovered during excavation, investigate and identify the source, properly remove and dispose of. <input type="checkbox"/> Have <i>Spill Response Plan</i> and ensure spill contingency equipment and measures are in place before work begins.
<b>(3) Water Resources:</b> surface water hydrology, surface water quality, aquatic sediments, and groundwater quality and quantity	<input type="checkbox"/> Adverse modifications to surface drainage patterns <input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc. <input type="checkbox"/> Potential runoff, erosion, sedimentation, and altered drainage.	<input type="checkbox"/> Minimize changes to the ground surface that affects its infiltration and runoff characteristics and maintain effective surface drainage upon completion of project. <input type="checkbox"/> Minimize clearing, grubbing, and grading near water bodies. A 30 m no grub zone will be maintained adjacent to any water body-stream, river, pond, lake, etc. <input type="checkbox"/> Dewatering directly into a water body, sanitary/storm water system is not permitted. Sediment must settle out or be filtered before water is allowed to enter a drainage pathway. <input type="checkbox"/> Properly seal all boreholes. <input type="checkbox"/> Capture, contain, and clean up any spills and leaks immediately
<b>(4) Flora and Fauna:</b> aquatic and terrestrial species /population and communities/habitats	<input type="checkbox"/> Damage to/and or removal of vegetation in immediate or adjacent areas <input type="checkbox"/> Introduction of invasive species <input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance <input type="checkbox"/> Impeded/altered wildlife movement <input type="checkbox"/> Habitat loss/fragmentation <input type="checkbox"/> Damage to nests/dens and disruption of associated animals <input type="checkbox"/> Decreased wildlife abundance due to direct mortality from physical activities	<input type="checkbox"/> Restrict vehicular travel and other equipment operation to the construction site and approved access routes. <input type="checkbox"/> Minimize disturbance/removal of vegetation. Re-establish native vegetation where has been removed/damage and return all project areas to their original form to discourage invasive species from settling. <input type="checkbox"/> The breeding season for most birds within the project area occurs between May 1 <sup>st</sup> and August 31 <sup>st</sup> in the Maritimes, and between May 1 <sup>st</sup> and July 15 <sup>th</sup> in Newfoundland; however some species protected under the <i>Migratory Birds Convention Act</i> nest outside these timeframes. Under section 6 of the <i>Migratory Birds Regulations</i> , it is forbidden to disturb, destroy or take a nest or egg of a

		<p>migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> While most bird species construct nests in trees and shrubs, a number of species of birds nest at ground level (e.g. Common Nighthawk, Killdeer), and some species may nest in burrows in stockpiles of soil or the banks of pits (e.g. Bank Swallows) It should be ensured that activities to reduce erosion do not result in hydroseeding of nests. But that alternate measures be taken to reduce potential for erosion and that nests be protected until chicks have fledged and left the area.</li> <li><input type="checkbox"/> Should active nests or birds caring for pre-fledged chicks be discovered during project activities outside the prime breeding season windows, establishment of vegetated buffer zones around nests, and minimization of activities in the immediate area until nesting is complete and chicks have naturally migrated from the area shall take place</li> <li><input type="checkbox"/> Survey area for nests/dens prior to clearing. Do not clear any active nests/dens, or relocate nests/dens without a permit.</li> <li><input type="checkbox"/> If nests containing eggs or young of migratory birds are located or discovered during breeding season, all activities in the nesting area should be halted until nesting is completed.</li> <li><input type="checkbox"/> According to wildlife present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages.</li> <li><input type="checkbox"/> Construct and orient fences in a manner that reduces impact to wildlife movement.</li> <li><input type="checkbox"/> Minimize time boreholes/test pits remain open to reduce small terrestrial wildlife mortality. Properly seal when work is completed.</li> <li><input type="checkbox"/> Fence excavations to prevent injuries to wildlife</li> <li><input type="checkbox"/> Any instream work in fish bearing waters should only occur between June 1<sup>st</sup> and September 30<sup>th</sup> of any year.</li> <li><input type="checkbox"/> Fish passage will be provided at all times.</li> <li><input type="checkbox"/> Downstream flow shall be maintained during construction.</li> <li><input type="checkbox"/> Suitable non-erosive materials shall be used, such as rip-rap, in appropriate areas to prevent erosion.</li> <li><input type="checkbox"/> Sediment and erosion controls should be installed <i>prior</i> to the beginning of construction activities.</li> </ul>
<p>(5) <b>Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Disruption to park visitors, residents, and businesses due to changed noise, air and water quality, and traffic and changed aesthetics</li> <li><input type="checkbox"/> Injuries to public and workers arising from project activities</li> <li><input type="checkbox"/> Potential damage to unknown cultural/archaeological resources.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Evaluate site layout, access routes, and construction activities to minimize their visual impact.</li> <li><input type="checkbox"/> All trenches or ditches left unattended overnight must be fenced.</li> <li><input type="checkbox"/> Archaeological surveys should be conducted prior to construction. Should previously unknown archaeological resources/cultural artifacts be discovered, immediately cease work, and alert PCA archaeologist.</li> </ul>

**Table III. Environmental Effects and Mitigation Measures: Communication Infrastructure**

<b>COMMUNICATION INFRASTRUCTURE</b>		
<b>VECs</b>	<b>Description of Effects</b>	<b>Mitigations</b>
<b>(1) Air Quality:</b> air quality and noise levels.	<input type="checkbox"/> Decreased ambient air quality <input type="checkbox"/> Increased ambient noise levels	<input type="checkbox"/> Ensure materials being stored/transported are covered <input type="checkbox"/> Confine “noise” activities to daytime hours.
<b>(2) Land Resources:</b> soils, topography and landscape.	<input type="checkbox"/> Changes in slopes, landforms, and landscape <input type="checkbox"/> Soil compaction <input type="checkbox"/> Slope instability, due to increased spoil exposure and improper excavation and storage <input type="checkbox"/> Soil contamination	<input type="checkbox"/> Avoid activities with steep and/or sensitive slopes. <input type="checkbox"/> Assess site for erosion control requirements and implement control measures as required. Stabilize slopes as appropriate for local conditions. <input type="checkbox"/> Keep site clearing to a minimum and restore as soon as possible to minimize duration of soil exposure. <input type="checkbox"/> Phase work to minimize duration of exposure of disturbed areas <input type="checkbox"/> Halt construction during excessive rainfall events. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately
<b>(3) Water Resources:</b> surface water hydrology, surface water quality, aquatic sediments, and groundwater quality and quantity	<input type="checkbox"/> Adverse modifications to surface drainage patterns <input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc.	<input type="checkbox"/> Minimize changes to the ground surface that affects its infiltration and runoff characteristics and maintain effective surface drainage. <input type="checkbox"/> Halt activity on exposed soil during periods of high rainfall/runoff <input type="checkbox"/> Implement Sediment /Erosion Control measures where applicable <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.
<b>(4) Flora and Fauna:</b> aquatic and terrestrial species /population and communities/habitats	<input type="checkbox"/> Damage to/and or removal of vegetation in immediate or adjacent areas <input type="checkbox"/> Introduction of invasive species <input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance <input type="checkbox"/> Impeded/alterd wildlife movement <input type="checkbox"/> Habitat loss/fragmentation <input type="checkbox"/> Damage to nests/dens and disruption of associated animals	<input type="checkbox"/> Use existing roadways/disturbed areas for site access and travel within the site. <input type="checkbox"/> Minimize disturbance/removal of vegetation. Re-establish native vegetation where has been removed/damaged. <input type="checkbox"/> Only clean building material is to be used. <input type="checkbox"/> According to wildlife present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages and critical times for wildlife. <input type="checkbox"/> The breeding season for most birds within the project area occurs between May 1 <sup>st</sup> and August 31 <sup>st</sup> in the Maritimes, and between May 1 <sup>st</sup> and July 15 <sup>th</sup> in Newfoundland; however some species protected under the <i>Migratory Birds Convention Act</i> nest outside these timeframes. Under section 6 of the <i>Migratory Birds Regulations</i> , it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit. <input type="checkbox"/> While most bird species construct nests in trees and shrubs, a number of species of birds nest at ground level (e.g. Common Nighthawk, Killdeer), and some species may nest in burrows in stockpiles of soil or the banks of pits (e.g. Bank Swallows) It should be ensured that activities to reduce erosion do not result in hydroseeding of nests. But that alternate measures be taken to reduce potential for erosion and that nests be

		<p>protected until chicks have fledged and left the area.</p> <ul style="list-style-type: none"> <li>❑ Should active nests or birds caring for pre-fledged chicks be discovered during project activities outside the prime breeding season windows, establishment of vegetated buffer zones around nests, and minimization or activities in the immediate area until nesting is complete and chicks have naturally migrated from the area shall take place</li> <li>❑ Survey area for nests/dens prior to clearing. Do not clear any active nests/dens, or relocate nests/dens without a permit.</li> <li>❑ If nests containing eggs or young of migratory birds are located or discovered during breeding season, all activities in the nesting area should be halted until nesting is completed.</li> </ul>
<p><b>(5) Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources</p>	<ul style="list-style-type: none"> <li>❑ Disruption to park visitors, residents, and businesses due to changed noise, air and water quality, and traffic and changed aesthetics</li> <li>❑ Injuries to public and workers arising from project activities</li> <li>❑ Potential damage to unknown cultural/archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>❑ Evaluate site layout, access routes, and construction activities to minimize their visual impact</li> <li>❑ All trenches or ditches left unattended overnight must be fenced.</li> <li>❑ If archaeological resources/cultural artifacts are discovered, immediately cease work, and alert archaeologist.</li> </ul>
* Also see relevant mitigations listed in Table I and Table II		

**Table IV. Environmental Effects and Mitigation Measures: Minor Roadway Enhancements**

MINOR ROADWAY ENHANCEMENTS <sup>8</sup> (WITHIN OR JUST OUTSIDE EXISTING ROW)		
VECs	Description of Effects	Mitigations
<b>(1) Air Quality:</b> air quality and noise levels.	<input type="checkbox"/> Decreased ambient air quality <input type="checkbox"/> Increased ambient noise levels	<input type="checkbox"/> Ensure materials being stored/transported are covered <input type="checkbox"/> Confine “noise” activities to daytime hours
<b>(2) Land Resources:</b> soils, topography and landscape.	<input type="checkbox"/> Changes in slopes, landforms, and landscape <input type="checkbox"/> Soil compaction and rutting <input type="checkbox"/> Slope instability, due to increased spoil exposure and improper excavation and storage <input type="checkbox"/> Soil contamination	<input type="checkbox"/> Avoid activities with steep and/or sensitive slopes. <input type="checkbox"/> Assess site for sediment/erosion control requirements and implement control measures as required. Stabilize slopes as appropriate for local conditions. <input type="checkbox"/> Keep site clearing to a minimum and restore as soon as possible to minimize duration of soil exposure. Phase work to minimize duration of exposure of disturbed areas. <input type="checkbox"/> Halt construction during excessive rainfall events. <input type="checkbox"/> Ensure backfilling is undertaken using suitable materials and that adequate soil compaction is conducted to avoid ground subsidence. Provide additional backfill where subsidence has occurred. <input type="checkbox"/> Use paints with minimal amounts of potentially harmful substances. <input type="checkbox"/> Hand painting is preferred over spray painting. Where sprayers are used, properly adjust and shield to minimize paint loss due to overspray. Do not spray in high winds. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately
<b>(3) Water Resources:</b> surface water hydrology, surface water quality, aquatic sediments, and groundwater quality and quantity	<input type="checkbox"/> Adverse modifications to surface drainage patterns <input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc.	<input type="checkbox"/> Retain vegetated buffer around water bodies <input type="checkbox"/> Minimize changes to the ground surface that affects its infiltration and runoff characteristics and maintain effective surface drainage upon completion of project <input type="checkbox"/> Apply seal coats only to dry surfaces and not prior to (within 24 hrs) or during rainfall <input type="checkbox"/> Concrete should be ready mix. If concrete is mixed on site, concrete wash water should be used in subsequent mixes and final wash water contained and deposited at a Transfer station. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.
<b>(4) Flora and Fauna:</b> aquatic and terrestrial species /population and communities/habitats	<input type="checkbox"/> Damage to/and or removal of vegetation in immediate or adjacent areas <input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance <input type="checkbox"/> Impeded/altered wildlife movement <input type="checkbox"/> Habitat loss/fragmentation	<input type="checkbox"/> Use existing roadways/disturbed areas for site access and travel within the site. <input type="checkbox"/> Minimize disturbance/removal of vegetation. Re-establish native vegetation where has been removed/damaged. <input type="checkbox"/> According to wildlife present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages and critical times for wildlife. <input type="checkbox"/> The breeding season for most birds within the project area occurs between May 1 <sup>st</sup> and August 31 <sup>st</sup> in the Maritimes, and between May 1 <sup>st</sup> and July 15 <sup>th</sup> in Newfoundland; however some species protected under the <i>Migratory Birds Convention Act</i> nest outside these timeframes. Under section 6 of

		<p>the <i>Migratory Birds Regulations</i>, it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit.</p> <ul style="list-style-type: none"> <li>❑ While most bird species construct nests in trees and shrubs, a number of species of birds nest at ground level (e.g. Common Nighthawk, Killdeer), and some species may nest in burrows in stockpiles of soil or the banks of pits (e.g. Bank Swallows) It should be ensured that activities to reduce erosion do not result in hydroseeding of nests. But that alternate measures be taken to reduce potential for erosion and that nests be protected until chicks have fledged and left the area.</li> <li>❑ Should active nests or birds caring for pre-fledged chicks be discovered during project activities outside the prime breeding season windows, establishment of vegetated buffer zones around nests, and minimization of activities in the immediate area until nesting is complete and chicks have naturally migrated from the area shall take place</li> <li>❑ Survey area for nests/dens prior to clearing. Do not clear any active nests/dens, or relocate nests/dens without a permit.</li> <li>❑ If nests containing eggs or young of migratory birds are located or discovered during breeding season, all activities in the nesting area should be halted until nesting is completed.</li> <li>❑ Construct and orient fences in a manner that reduces impact to wildlife movement.</li> </ul>
<p>(5) <b>Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources</p>	<ul style="list-style-type: none"> <li>❑ Disruption to park visitors, residents, and businesses due to changed noise, air and water quality, and traffic and changed aesthetics</li> <li>❑ Injuries to public and workers</li> <li>❑ Potential damage to unknown cultural/archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>❑ Evaluate site layout, access routes, and construction activities to minimize their visual impact</li> <li>❑ Use appropriate signage for closed areas and identify detours/alternatives.</li> <li>❑ All trenches or ditches left unattended overnight must be fenced</li> <li>❑ If archaeological resources/cultural artifacts are discovered, immediately cease work, and alert archaeologist.</li> </ul>

*\* Also see relevant mitigations listed in Table I and Table II*

**Table V. Environmental Effects and Mitigation Measures: Small Bridge and Culvert Rehabilitation and Replacement**

SMALL BRIDGE AND CULVERT REHABILITATION OR REPLACEMENT 8 (ONLY PROJECTS THAT DO NOT REQUIRE DFO AUTHORIZATION)		
VECs	Description of Effects	Mitigations
<b>(1) Air Quality:</b> air quality and noise levels.	<input type="checkbox"/> Decreased ambient air quality <input type="checkbox"/> Increased ambient noise levels	<input type="checkbox"/> Ensure materials being stored/transported are covered. <input type="checkbox"/> Confine “noise” activities to daytime hours.
<b>(2) Land Resources:</b> soils, topography and landscape.	<input type="checkbox"/> Changes in slopes, landforms, and landscape <input type="checkbox"/> Soil compaction and rutting <input type="checkbox"/> Slope instability, due to increased spoil exposure and improper excavation and storage <input type="checkbox"/> Soil contamination	<input type="checkbox"/> Avoid activities with steep and/or sensitive slopes. <input type="checkbox"/> Keep site clearing to a minimum (maintain vegetated buffer wherever possible) and restore vegetation as soon as possible to minimize duration of soil exposure. <input type="checkbox"/> Hand clear steep slopes when possible. If prolonged exposure is expected, stabilize surface using temporary cover (i.e. grass, mulch, erosion blanket, etc.). <input type="checkbox"/> Implement Sediment /Erosion Control measures when soil is disturbed or exposed. Phase work to minimize duration of exposure of disturbed areas. <input type="checkbox"/> Maintain a consistent access route. <input type="checkbox"/> Halt construction during excessive rainfall events. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.
<b>(3) Water: Resources</b> surface water hydrology, surface water quality, aquatic sediments, and groundwater quality and quantity	<input type="checkbox"/> Adverse modifications to surface drainage patterns <input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc.	<input type="checkbox"/> Retain vegetated buffer around water bodies. <input type="checkbox"/> Minimize changes to the ground surface that affects its infiltration/runoff characteristics and maintain effective surface drainage upon completion of project. <input type="checkbox"/> Water quality is to be maintained at all times. Only clean building material, free of particulate matter, shall be placed in water. Any equipment operating in water bodies must be cleaned prior to entering the water and inspected daily for leaks; never leave equipment in water overnight. <input type="checkbox"/> Sedimentation and erosion control mechanisms shall be installed around work area to prevent sediments from silt from entering watercourse. Periodically inspect and repair, if necessary, these structures. <input type="checkbox"/> Filter/settle out sediment before allowing water to enter any drainage pathway. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately. <input type="checkbox"/> Instream work shall be minimized <input type="checkbox"/> All instream work must be completed in the dry using temporary stream diversions and/or pumping around to isolate the project work area from adjacent stream. <input type="checkbox"/> Downstream flow shall be maintained during construction. <input type="checkbox"/> Suitable non-erosive materials shall be used, such as rip-rap, in appropriate areas to prevent erosion <input type="checkbox"/> Every effort shall be made to ensure that replacement structures are bottomless and clear span respectively.
<b>(4) Flora and Fauna:</b> aquatic and terrestrial	<input type="checkbox"/> Damage to/and or removal of vegetation in immediate or adjacent	<input type="checkbox"/> Use existing roadways/disturbed areas for site access and travel within the site.



species /population and communities/habitats	<p>areas</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Introduction of invasive species</li> <li><input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance</li> <li><input type="checkbox"/> Impeded/altered wildlife movement</li> <li><input type="checkbox"/> Habitat loss/fragmentation</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Minimize removal of vegetation and disturbance to natural banks and streambed. When possible use hand clearing as it minimizes erosion and siltation.</li> <li><input type="checkbox"/> Re-establish native vegetation where has been removed/damage and return all areas in and adjacent to the watercourse to their original form.</li> <li><input type="checkbox"/> Only clean building material shall be placed in water.</li> <li><input type="checkbox"/> According to wildlife present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages and critical times for wildlife.</li> <li><input type="checkbox"/> The breeding season for most birds within the project area occurs between May 1<sup>st</sup> and August 31<sup>st</sup> in the Maritimes, and between May 1<sup>st</sup> and July 15<sup>th</sup> in Newfoundland; however some species protected under the <i>Migratory Birds Convention Act</i> nest outside these timeframes. Under section 6 of the <i>Migratory Birds Regulations</i>, it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit.</li> <li><input type="checkbox"/> While most bird species construct nests in trees and shrubs, a number of species of birds nest at ground level (e.g. Common Nighthawk, Killdeer), and some species may nest in burrows in stockpiles of soil or the banks of pits (e.g. Bank Swallows) It should be ensured that activities to reduce erosion do not result in hydroseeding of nests. But that alternate measures be taken to reduce potential for erosion and that nests be protected until chicks have fledged and left the area.</li> <li><input type="checkbox"/> Should active nests or birds caring for pre-fledged chicks be discovered during project activities outside the prime breeding season windows, establishment of vegetated buffer zones around nests, and minimization or activities in the immediate area until nesting is complete and chicks have naturally migrated from the area shall take place</li> <li><input type="checkbox"/> Survey area for nests/dens prior to clearing. Do not clear any active nests/dens, or relocate nests/dens without a permit.</li> <li><input type="checkbox"/> If nests containing eggs or young of migratory birds are located or discovered during breeding season, all activities in the nesting area should be halted until nesting is completed.</li> <li><input type="checkbox"/> Construct and orient fences/temporary dams, etc. in a manner that reduces impact to wildlife movement.</li> <li><input type="checkbox"/> Any instream work in fish bearing waters should only occur between June 1<sup>st</sup> and September 30<sup>th</sup> of any year.</li> <li><input type="checkbox"/> Fish passage will be provided at all times.</li> <li><input type="checkbox"/> Culverts shall allow for the passage of fish.</li> <li><input type="checkbox"/> Old stream crossings that interfere or prevent fish</li> </ul>
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		migration through the existing crossing structure shall be corrected.
<b>(5)</b> <b>Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources	<input type="checkbox"/> Disruption to park visitors, residents, and businesses due to changed noise, air and water quality, and traffic and changed aesthetics <input type="checkbox"/> Injuries to public and workers arising from project activities <input type="checkbox"/> Potential damage to unknown cultural/archaeological resources	<input type="checkbox"/> Evaluate site layout, access routes, and construction activities to minimize their visual impact. <input type="checkbox"/> Use appropriate signage/fences for closed areas and identify detours/alternatives. <input type="checkbox"/> If archaeological resources/cultural artifacts are discovered, immediately cease work, and alert archaeologist.
* Also see relevant mitigations listed in Table I and Table II		

**Table VI. Environmental Effects and Mitigation Measures: Highway-Related Infrastructure**

<b>HIGHWAY-RELATED INFRASTRUCTURE <sup>s</sup></b> <b>(SPECIFIC TO PARK SETTINGS)</b>		
<b>VECs</b>	<b>Description of Effects</b>	<b>Mitigations</b>
<b>(1) Air Quality:</b> air quality and noise levels.	<input type="checkbox"/> Decreased ambient air quality <input type="checkbox"/> Increased ambient noise levels	<input type="checkbox"/> Ensure materials being stored/transported are covered with tarps <input type="checkbox"/> Confine “noise” activities to daytime hours
<b>(2) Land Resources:</b> soils, topography and landscape.	<input type="checkbox"/> Changes in slopes, landforms, and landscape <input type="checkbox"/> Soil compaction and rutting <input type="checkbox"/> Slope instability, due to increased spoil exposure and improper excavation and storage <input type="checkbox"/> Soil contamination	<input type="checkbox"/> Avoid activities with steep and/or sensitive slopes. <input type="checkbox"/> Implement Sediment /Erosion Control measures where applicable. <input type="checkbox"/> Keep site clearing to a minimum and restore as soon as possible to minimize duration of soil exposure. <input type="checkbox"/> Ensure backfilling is undertaken using suitable materials and that adequate soil compaction is conducted to avoid ground subsidence. Provide additional backfill where subsidence has occurred. <input type="checkbox"/> Delay trenching until just prior to installation of infrastructure. Minimize length of trench and exposure time. <input type="checkbox"/> Halt construction during excessive rainfall events. <input type="checkbox"/> All maintenance measures should be non-abrasive, non destructive and environmentally benign. <input type="checkbox"/> Replacement of infrastructure should only occur when a major part of an element is decayed beyond repair. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately
<b>(3) Water Resources:</b> surface water hydrology, surface water quality, aquatic sediments, and groundwater quality and quantity	<input type="checkbox"/> Adverse modifications to surface drainage patterns <input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc.	<input type="checkbox"/> Retain vegetated buffer around water bodies <input type="checkbox"/> Minimize changes to the ground surface that affects its infiltration and runoff characteristics and maintain effective surface drainage upon completion of project <input type="checkbox"/> Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for re-vegetation. <input type="checkbox"/> Any pipes to be abandoned must be pressure tested for leaks and sealed with no part of the line exposed above the surface. <input type="checkbox"/> When constructing and/or upgrading storm sewers, install oil/contaminant sumps. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.
<b>(4) Flora and Fauna:</b> aquatic and terrestrial species /population and communities/habitats	<input type="checkbox"/> Damage to/and or removal of vegetation in immediate or adjacent areas <input type="checkbox"/> Introduction of invasive species <input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance <input type="checkbox"/> Impeded/alterd wildlife movement <input type="checkbox"/> Damage to nests/dens and disruption of associated animals <input type="checkbox"/> Decreased wildlife abundance due to direct mortality from physical activities	<input type="checkbox"/> Use existing roadways/disturbed areas for site access and travel within the site. <input type="checkbox"/> Minimize disturbance/removal of vegetation. Re-establish native vegetation where has been removed/damaged. <input type="checkbox"/> Only clean building material is to be used. <input type="checkbox"/> According to wildlife present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages and critical times for wildlife. <input type="checkbox"/> Construct and orient fences in a manner that reduces impact to wildlife movement <input type="checkbox"/> The breeding season for most birds within the

		<p>project area occurs between May 1<sup>st</sup> and August 31<sup>st</sup> in the Maritimes, and between May 1<sup>st</sup> and July 15<sup>th</sup> in Newfoundland; however some species protected under the <i>Migratory Birds Convention Act</i> nest outside these timeframes. Under section 6 of the <i>Migratory Birds Regulations</i>, it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit.</p> <ul style="list-style-type: none"> <li>❑ While most bird species construct nests in trees and shrubs, a number of species of birds nest at ground level (e.g. Common Nighthawk, Killdeer), and some species may nest in burrows in stockpiles of soil or the banks of pits (e.g. Bank Swallows) It should be ensured that activities to reduce erosion do not result in hydroseeding of nests. But that alternate measures be taken to reduce potential for erosion and that nests be protected until chicks have fledged and left the area.</li> <li>❑ Should active nests or birds caring for pre-fledged chicks be discovered during project activities outside the prime breeding season windows, establishment of vegetated buffer zones around nests, and minimization of activities in the immediate area until nesting is complete and chicks have naturally migrated from the area shall take place</li> <li>❑ Survey area for nests/dens prior to clearing. Do not clear any active nests/dens, or relocate nests/dens without a permit.</li> <li>❑ If nests containing eggs or young of migratory birds are located or discovered during breeding season, all activities in the nesting area should be halted until nesting is completed.</li> <li>❑ Fence excavations to prevent injury to wildlife.</li> </ul>
<p><b>(5) Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources</p>	<ul style="list-style-type: none"> <li>❑ Disruption to park visitors, residents, and businesses due to changed noise, air and water quality, and traffic and changed aesthetics</li> <li>❑ Injuries to public and workers arising from project activities</li> <li>❑ Potential damage to unknown cultural/archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li>❑ Evaluate site layout, access routes, and construction activities to minimize their visual impact. Time construction activities to minimize vehicle conflicts</li> <li>❑ Call utility companies to identify buried resources/lines.</li> <li>❑ All trenches or ditches left unattended overnight must be fenced.</li> <li>❑ If archaeological resources/cultural artifacts are discovered, immediately cease work, and alert archaeologist.</li> </ul>
* Also see relevant mitigations listed in Table I and Table II		

**Table VII. Environmental Effects and Mitigation Measures: Vegetation Management**

VEGETATION MANAGEMENT *		
VECs	Description of Effects	Mitigations
<b>(1) Air Quality:</b> air quality and noise levels.	<input type="checkbox"/> Decreased ambient air quality <input type="checkbox"/> Increased ambient noise levels	<input type="checkbox"/> Avoid ground vegetation removal during dry, windy periods to prevent blowing of dirt/dust. <input type="checkbox"/> Confine “noise” activities to daytime hours <input type="checkbox"/> If herbicide sprayers are used, properly adjust and shield to minimize loss due to overspray. To prevent herbicide spray drift, do not spray in high winds.
<b>(2) Land Resources:</b> soils, topography and landscape.	<input type="checkbox"/> Changes in slopes, landforms, and landscape <input type="checkbox"/> Soil compaction and rutting <input type="checkbox"/> Slope instability, due to increased spoil exposure and improper excavation and storage <input type="checkbox"/> Soil contamination	<input type="checkbox"/> Maintain a consistent access route. <input type="checkbox"/> When possible, avoid activities with steep and/or sensitive slopes. <input type="checkbox"/> Hand clear steep slopes when possible. If prolonged exposure is expected, stabilize surface using temporary cover (i.e. grass, mulch, erosion blanket, etc.). Implement Sediment /Erosion Control measures where applicable. <input type="checkbox"/> Choose the most appropriate time/method to remove vegetation. It may be cut early in the season to allow herbs to regenerate or it may be removed as close to construction time as possible to minimize the opportunity for erosion and invasion of non-native species. <input type="checkbox"/> Phase work to minimize duration of exposure of disturbed areas. Restore vegetation as soon as possible to minimize duration of soil exposure. <input type="checkbox"/> Halt construction during excessive rainfall events. Cover devegetated area if heavy rains are expected in erosion prone areas. <input type="checkbox"/> Capture, contain, and clean up spills and leaks immediately.
<b>(3) Water Resources:</b> surface water hydrology, surface water quality, aquatic sediments, and groundwater quality and quantity	<input type="checkbox"/> Adverse modifications to surface drainage patterns <input type="checkbox"/> Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination, etc.	<input type="checkbox"/> Minimize changes to the ground surface that affects its infiltration and runoff characteristics and maintain effective surface drainage upon completion of project <input type="checkbox"/> Retain vegetated buffer around water bodies. <input type="checkbox"/> No brush mowing is to occur within 30 m of any water body. <input type="checkbox"/> Debris will not be piled in environmentally sensitive areas (i.e. runoff areas creek beds,) <input type="checkbox"/> Capture, contain, and clean up any spills and leaks immediately
<b>(4) Flora and Fauna:</b> aquatic and terrestrial species /population and communities/habitats	<input type="checkbox"/> Damage to/and or removal of vegetation in immediate or adjacent areas <input type="checkbox"/> Introduction of invasive species <input type="checkbox"/> Sensory disturbance causing displacement/habitat avoidance <input type="checkbox"/> Habitat loss/fragmentation <input type="checkbox"/> Damage to nests/dens and disruption of associated animals	<input type="checkbox"/> Use existing roadways/disturbed areas for site access and travel within the site. <input type="checkbox"/> Survey vegetation along the trail for species at risk, rare species, non-native species and species specially desired for visitor viewing. <input type="checkbox"/> Clearly mark vegetation that will not be removed. Delineate areas to be avoided with biodegradable flagging tape and/or temporary fences. <input type="checkbox"/> Minimize site clearing and retain vegetation when possible to reduce habitat loss/fragmentation. Store removed vegetation on already disturbed areas to minimize disturbance area. In appropriate areas re-establish native vegetation where has been removed/damaged. <input type="checkbox"/> According to wildlife present, schedule high noise

		<p>level activities and other intrusive construction activities to avoid critical life stages and critical times for wildlife.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The breeding season for most birds within the project area occurs between May 1<sup>st</sup> and August 31<sup>st</sup> in the Maritimes, and between May 1<sup>st</sup> and July 15<sup>th</sup> in Newfoundland; however some species protected under the <i>Migratory Birds Convention Act</i> nest outside these timeframes. Under section 6 of the <i>Migratory Birds Regulations</i>, it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird or its carcass, skin, nest or egg except under authority of a permit.</li> <li><input type="checkbox"/> Clearing activities shall be avoided during prime breeding season in the project area.</li> <li><input type="checkbox"/> While most bird species construct nests in trees and shrubs, a number of species of birds nest at ground level (e.g. Common Nighthawk, Killdeer), and some species may nest in burrows in stockpiles of soil or the banks of pits (e.g. Bank Swallows) It should be ensured that activities to reduce erosion do not result in hydroseeding of nests. But that alternate measures be taken to reduce potential for erosion and that nests be protected until chicks have fledged and left the area.</li> <li><input type="checkbox"/> Should active nests or birds caring for pre-fledged chicks be discovered during project activities outside the prime breeding season windows, establishment of vegetated buffer zones around nests, and minimization or activities in the immediate area until nesting is complete and chicks have naturally migrated from the area shall take place</li> <li><input type="checkbox"/> Survey area for nests/dens prior to clearing. Do not clear any active nests/dens, or relocate nests/dens without a permit.</li> <li><input type="checkbox"/> If nests containing eggs or young of migratory birds are located or discovered during breeding season, all activities in the nesting area should be halted until nesting is completed.</li> <li><input type="checkbox"/> Where possible preserve wildlife trees if they are not hazard trees.</li> </ul>
<p>(5) <b>Anthropogenic/Human Environment:</b> socioeconomic, public health, and cultural/heritage resources</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Disruption to park visitors, residents, and businesses due to changed noise, air and water quality, and traffic and changed aesthetics</li> <li><input type="checkbox"/> Injuries to public and workers arising from project activities</li> <li><input type="checkbox"/> Potential damage to unknown cultural/archaeological resources</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> When possible, use natural pruning methods, which minimize damage to trees and retain (as much as possible) their natural appearance and form.</li> <li><input type="checkbox"/> Prune limbs close to the tree trunk. For a clean cut, make a shallow undercut first, then follow with the top cut. This prevents the limb from peeling bark off the tree as it falls.</li> <li><input type="checkbox"/> Do not use an axe for pruning. If over half of the tree needs pruning, usually cut it down. Cut trees off at ground level and do not leave pointed stumps.</li> <li><input type="checkbox"/> Cut vegetation low/flush to the ground.</li> <li><input type="checkbox"/> Utilize a hazard tree rating and removal system.</li> <li><input type="checkbox"/> Minimize herbicide use where viable alternatives</li> </ul>

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		<p>exist. Only herbicides federally approved by Agricultural Canada under the Pest Control Act shall be used.</p> <ul style="list-style-type: none"> <li>❑ Transportation, storage, handing, application, and disposal of herbicides and other chemicals should follow all applicable federal/provincial laws</li> <li>❑ If archaeological resources/cultural artifacts are discovered, immediately cease work, and alert archaeologist.</li> </ul>
* Also see relevant mitigations listed in Table I and Table II		

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### **Appendix 3**

#### Map of Atlantic Canada National Parks



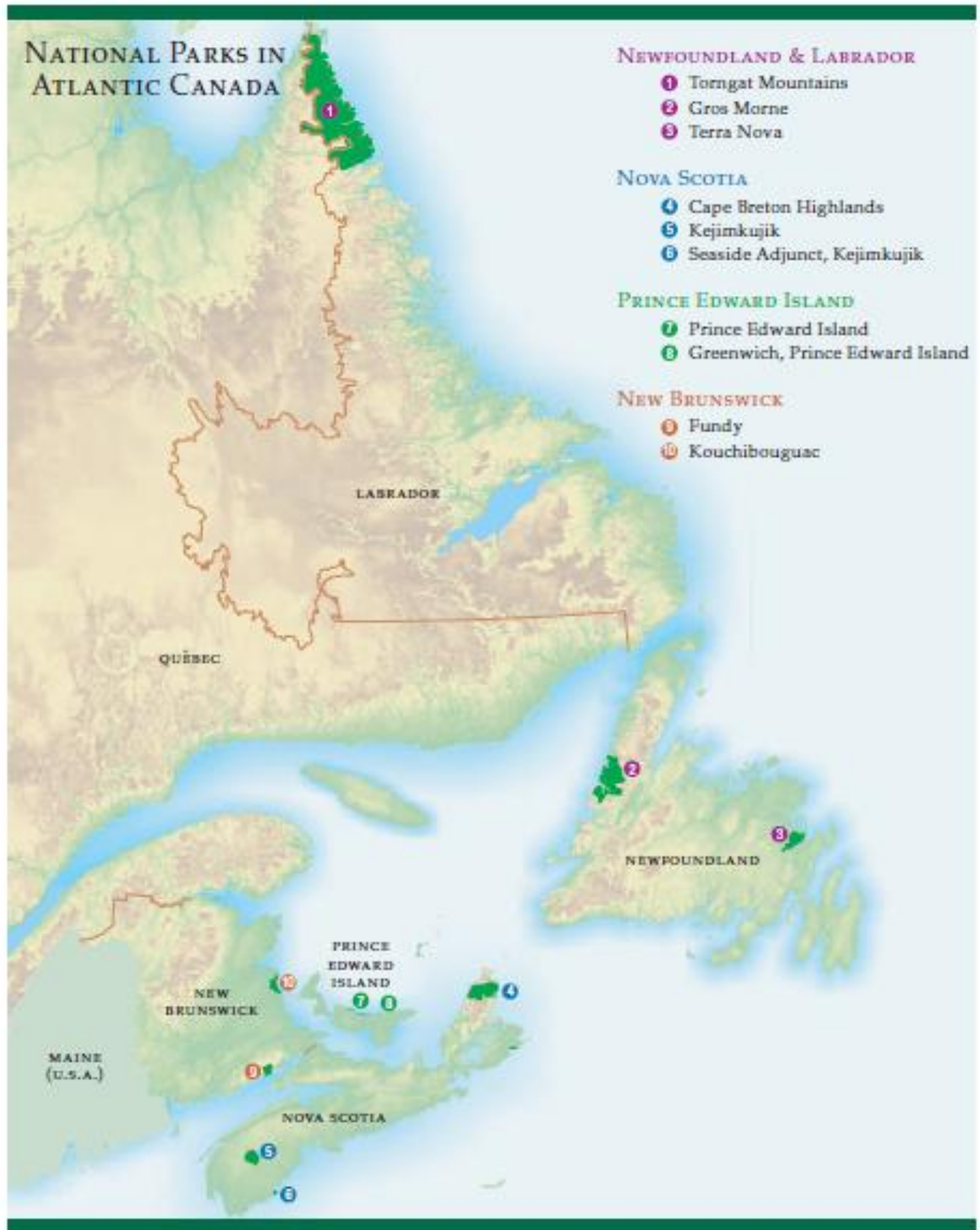
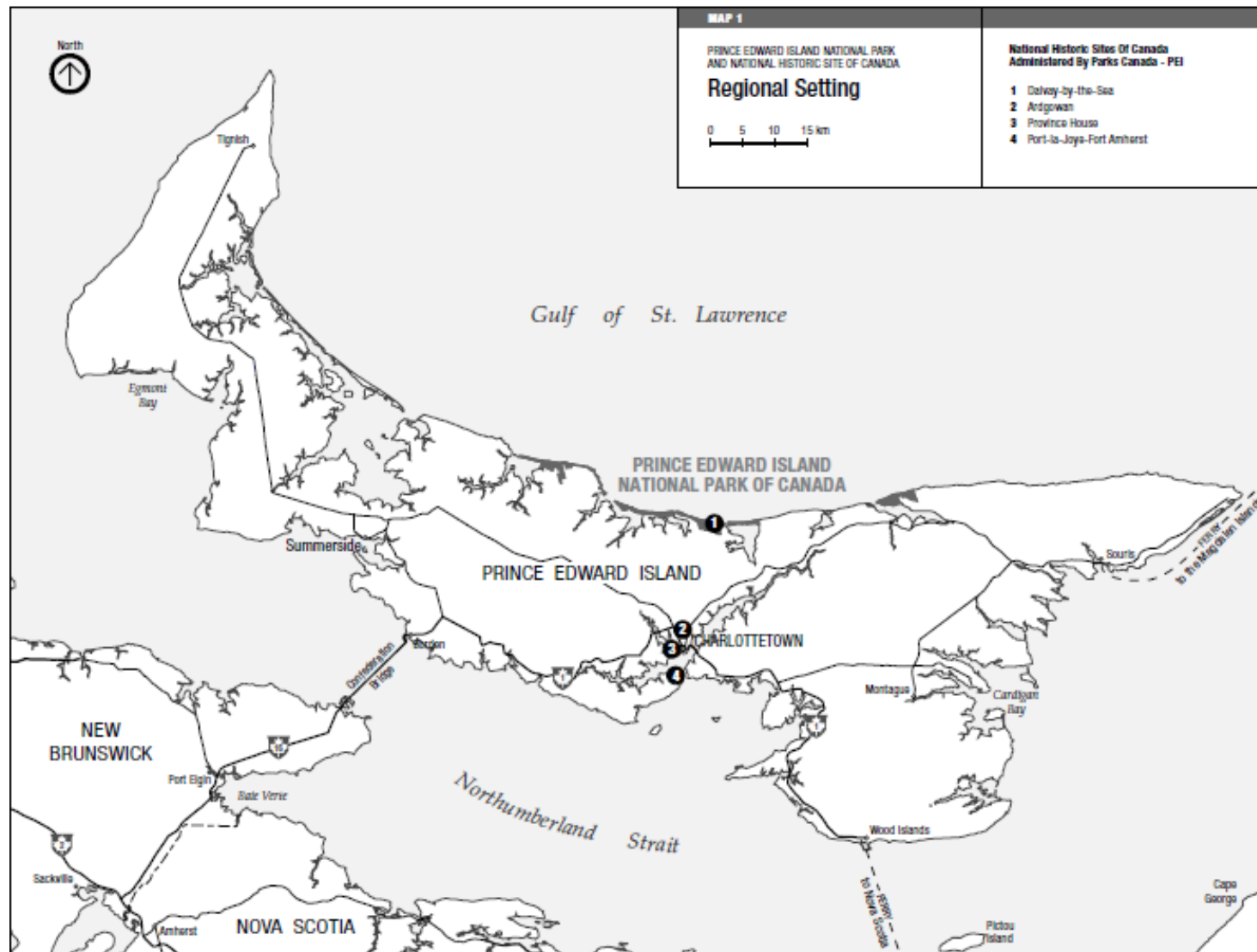


Figure 1. Locations of Atlantic Canadian National Parks

**Appendix 4**  
Individual Maps of Atlantic Canada National Parks

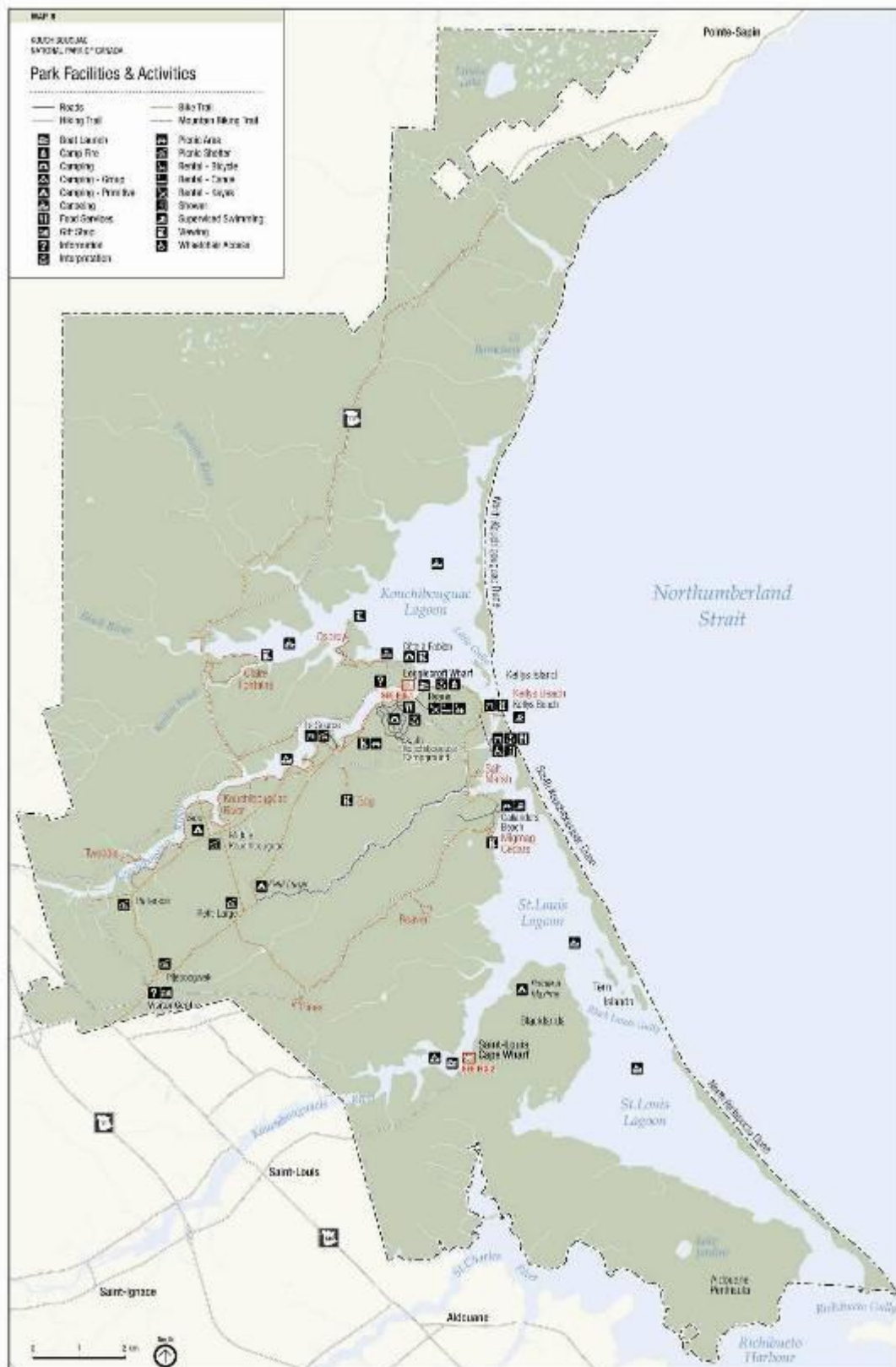


Map 1. Prince Edward Island National Park Regional Setting Map

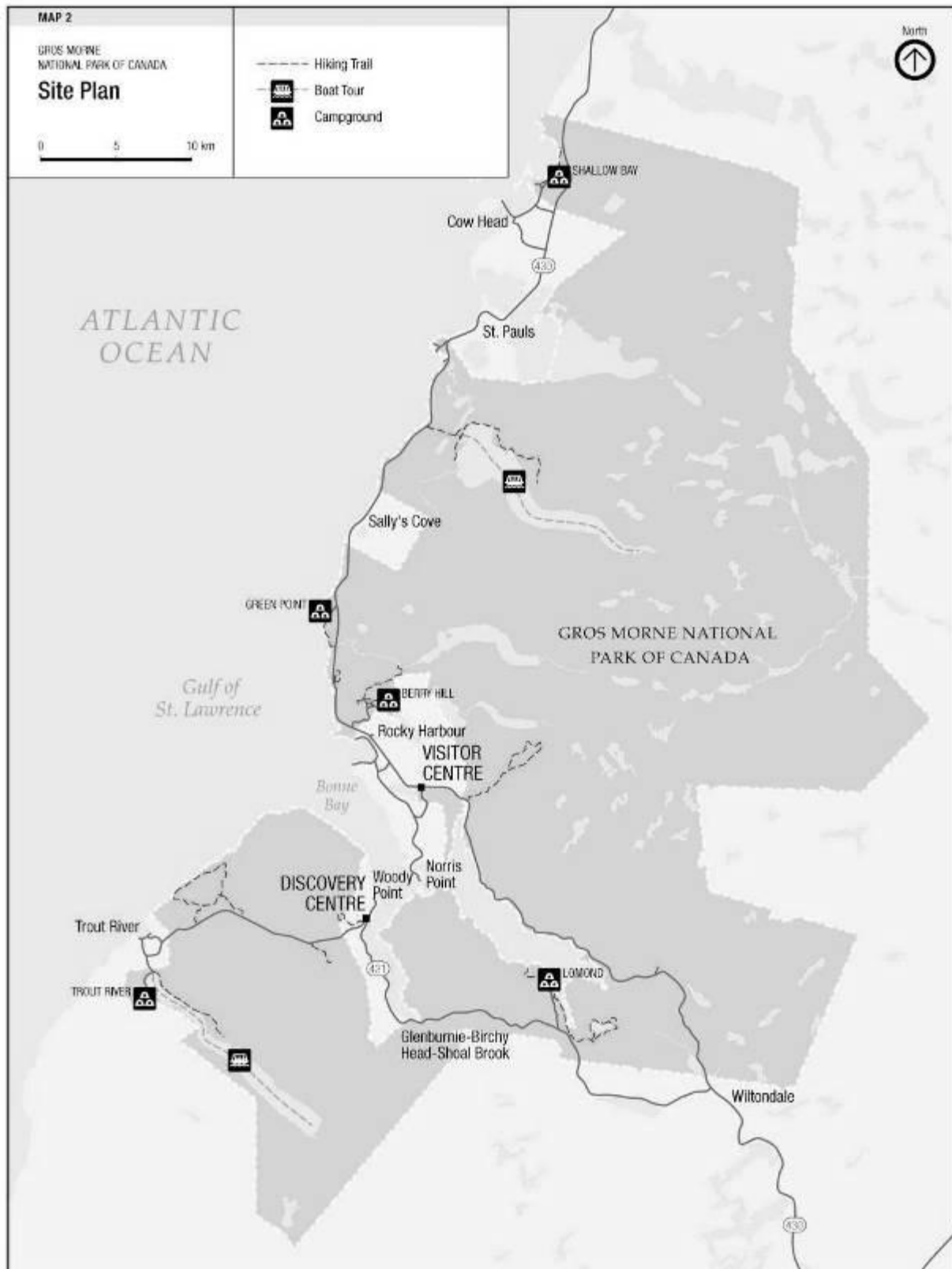


Map 2. Fundy National Park Regional Setting Map

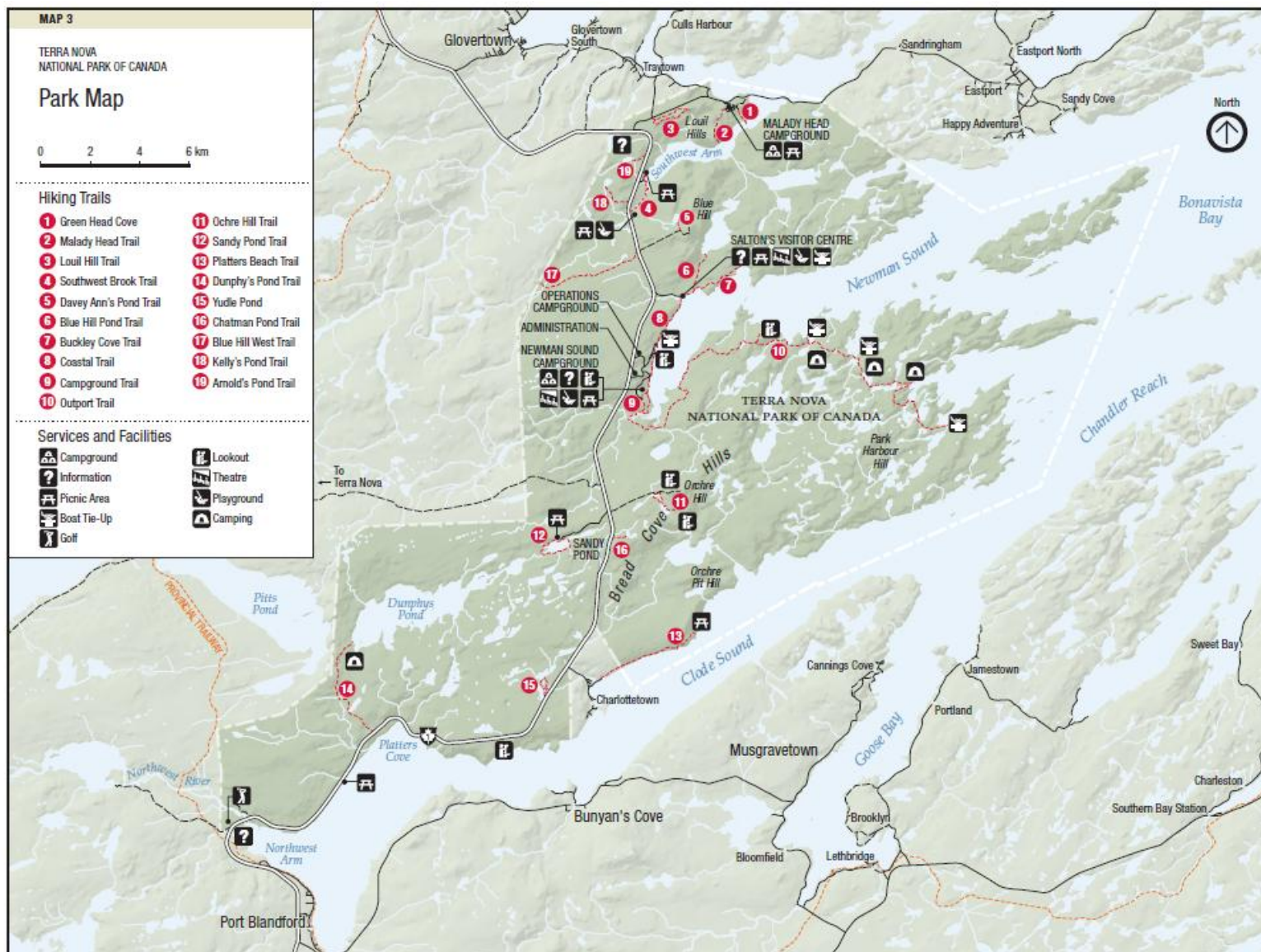




### Map 3. Kouchibouguac National Park Regional Setting Map



Map 4. Gros Morne National Park Regional Setting Map



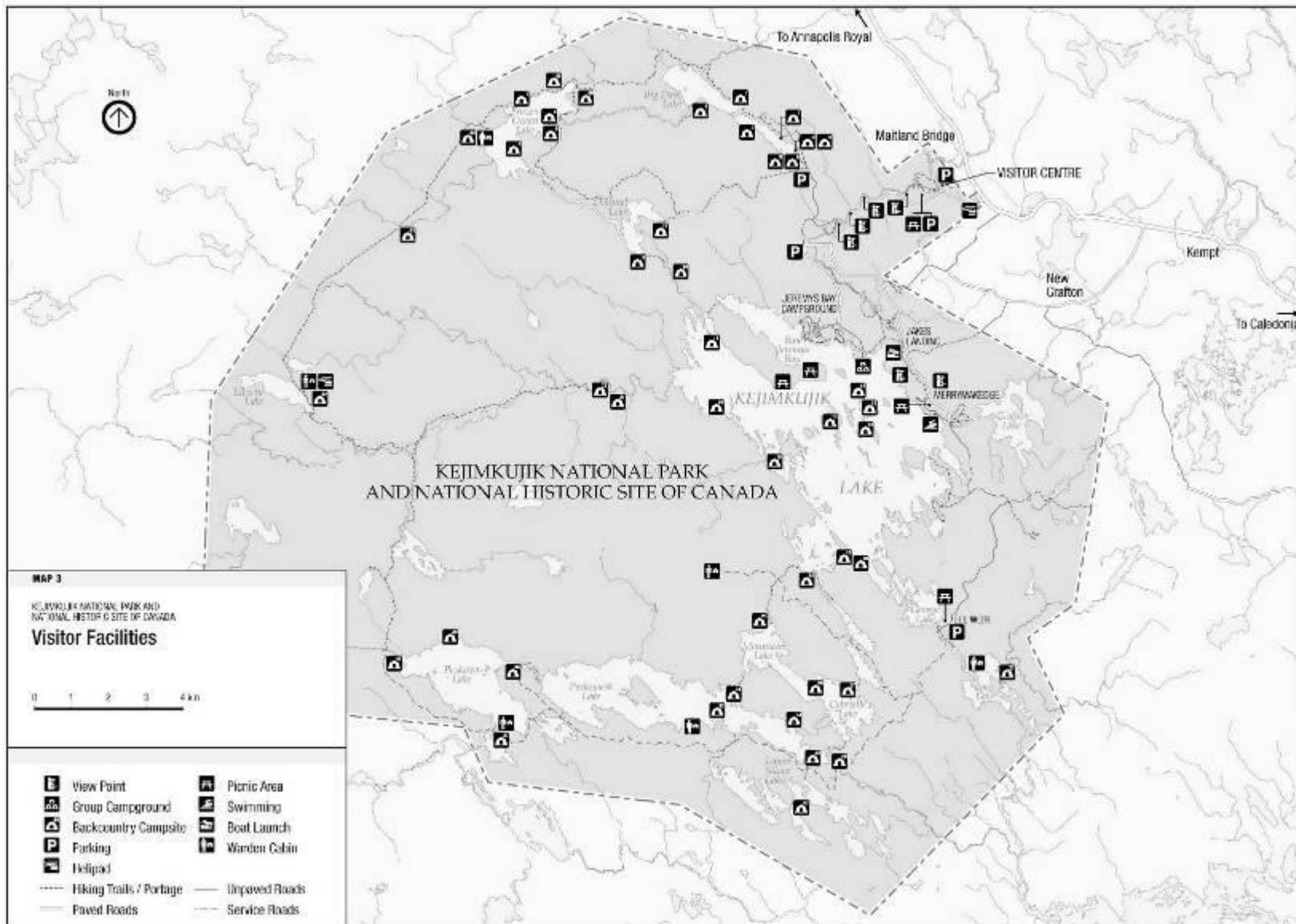
Map 5. Terra Nova National Park Regional Setting Map





Map 6. Cape Breton Highlands National Park Regional Setting Map





Map 7a. Kejimikujik National Park Inland Regional Setting Map

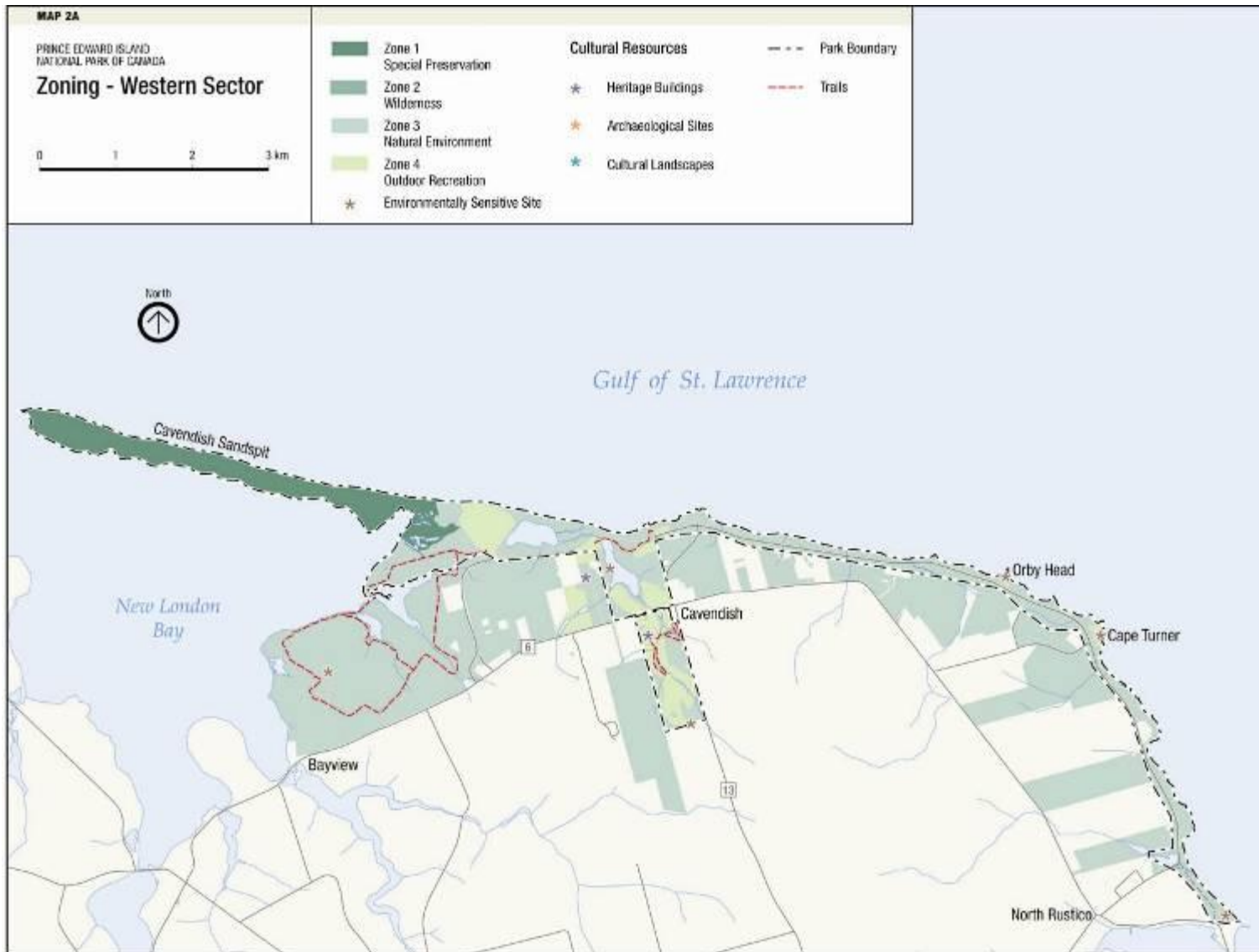


Map 7b. Kejimikujik National Park Seaside Regional Setting Map

**Appendix 5**  
Individual Zoning Maps of Atlantic Canada National Parks

## **ZONE I - SPECIAL PRESERVATION**

Zone I areas provide an increased level of protection for the most sensitive or representative natural features and threatened cultural resources. Public motorized access (including both vehicles and motorized boat use) is not permitted. Opportunities are provided for visitors to experience and learn about these unique areas in a manner that does not threaten their values.



Map 1a. Prince Edward Island National Park Western Sector Zoning Map

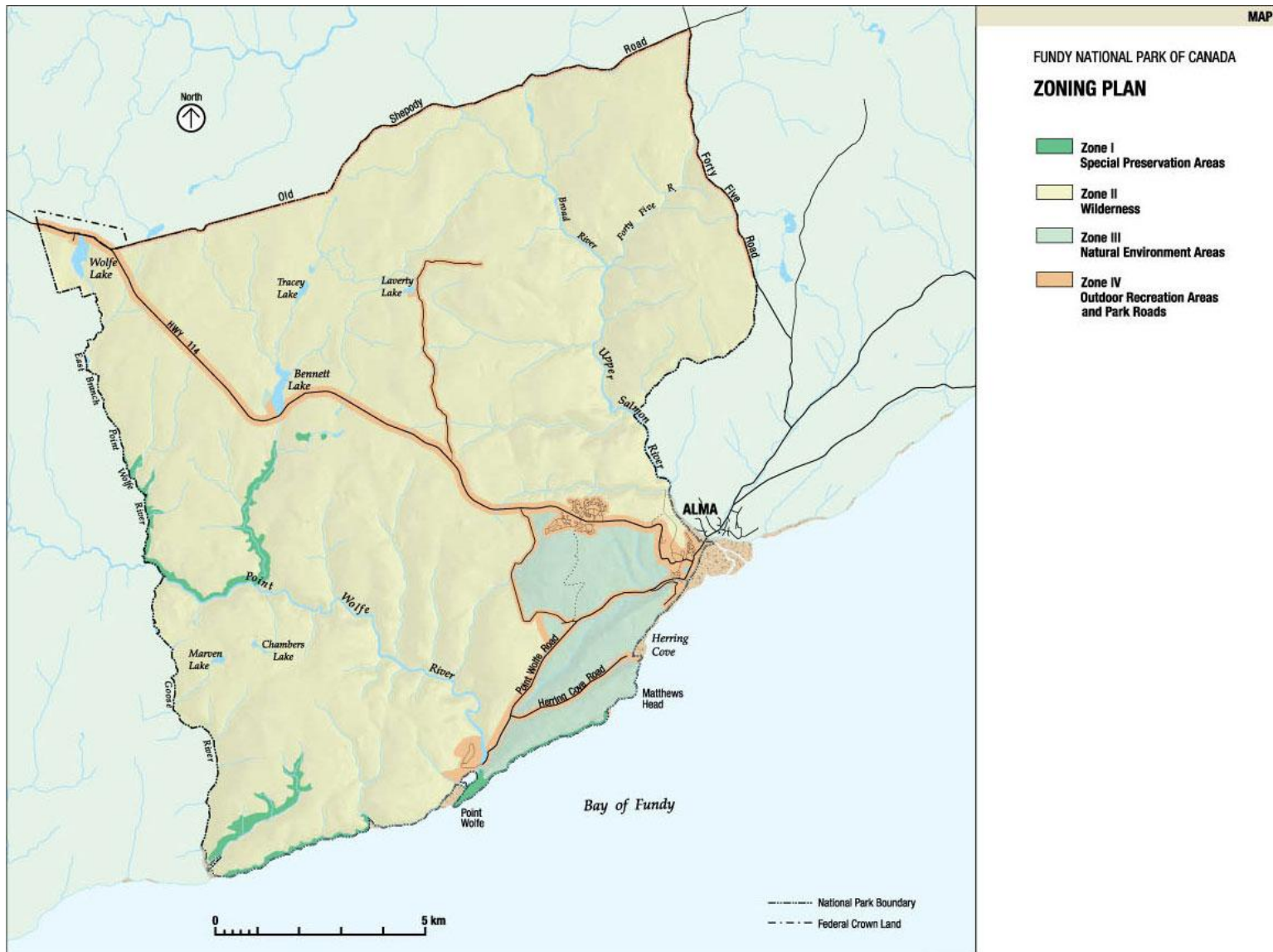


Map 1b. Prince Edward Island National Park Central Sector Zoning Map



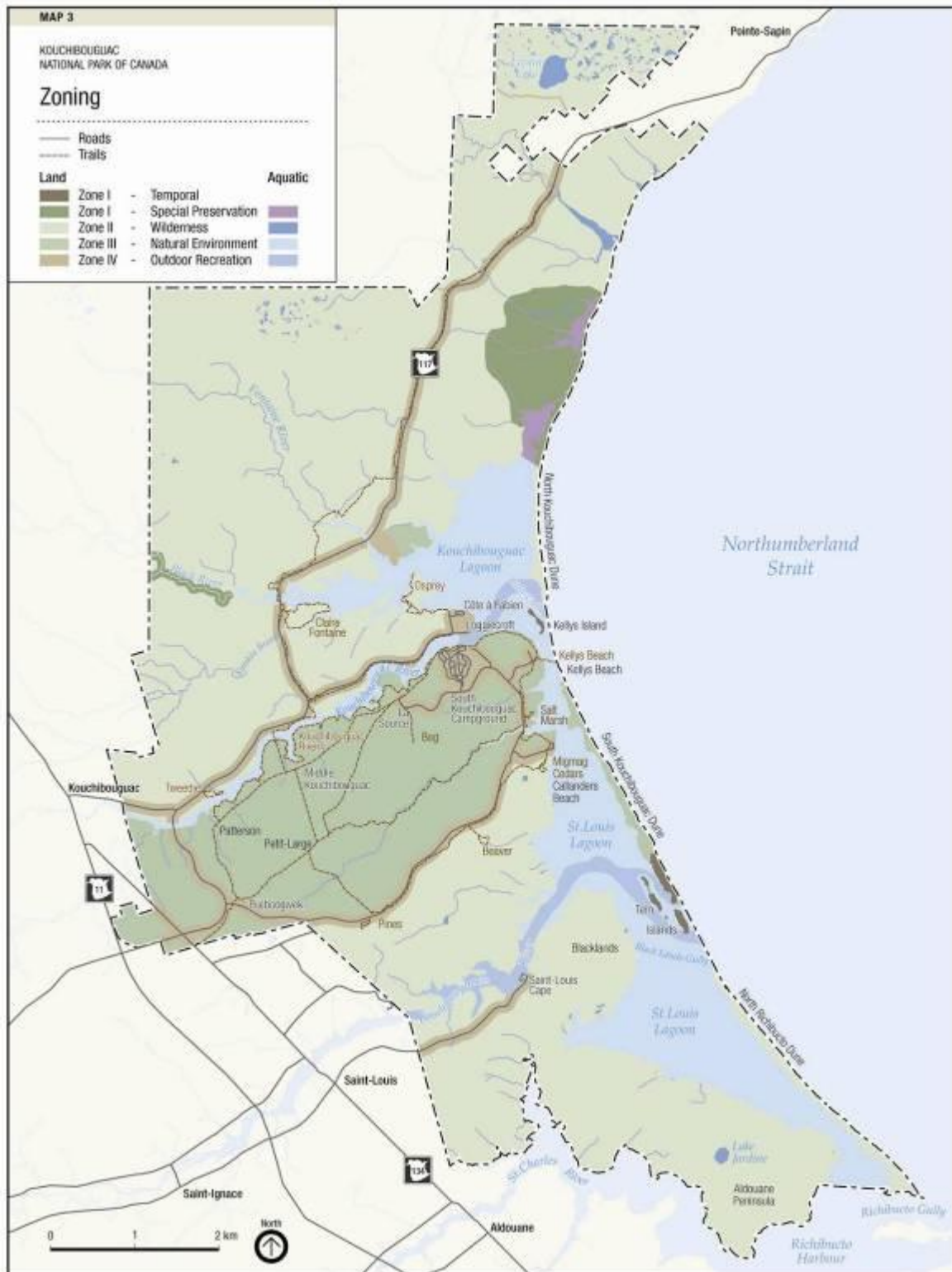
Map 1c. Prince Edward Island National Park Eastern Sector Zoning Map



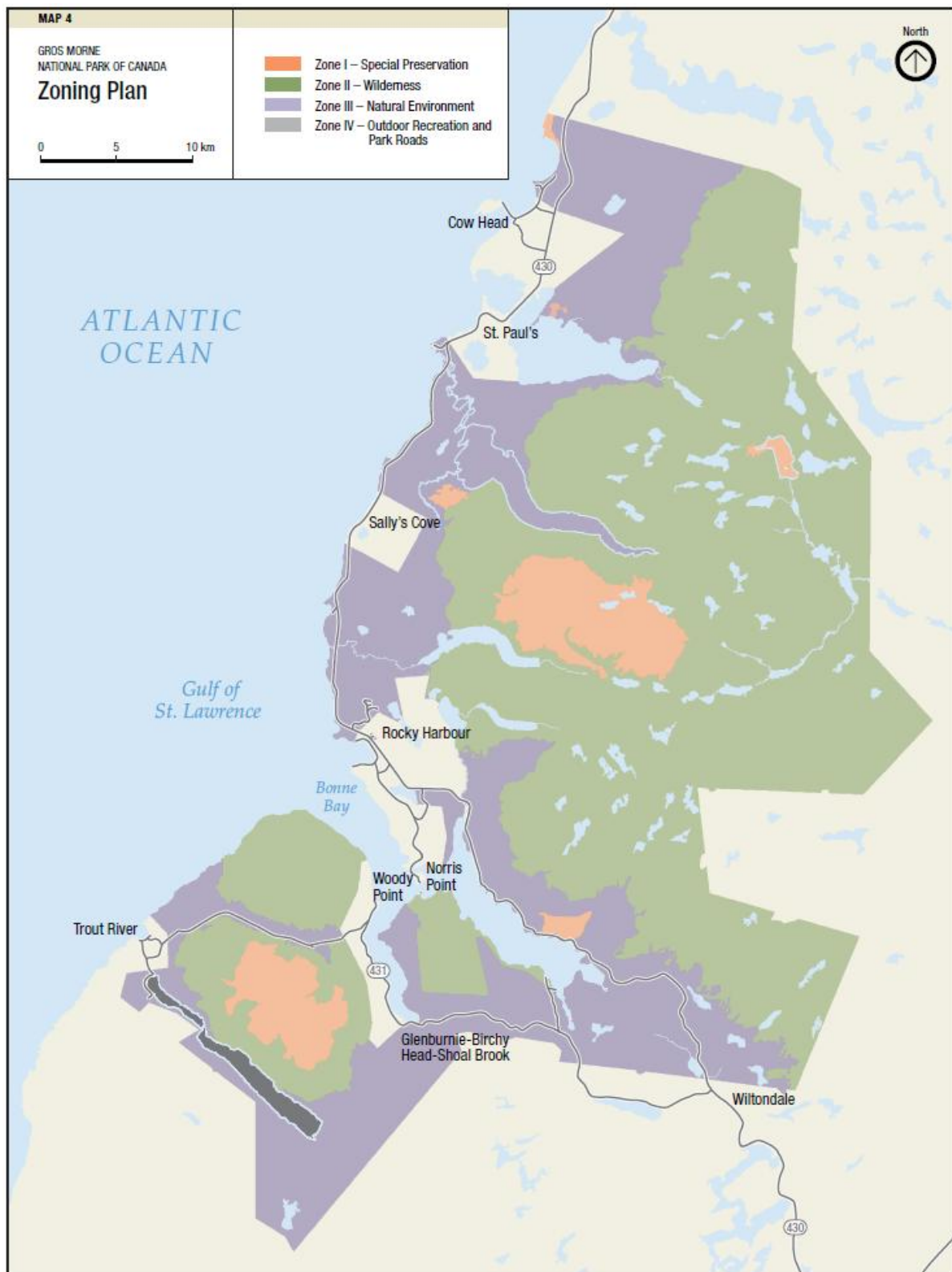


Map 2. Fundy National Park Zoning Map





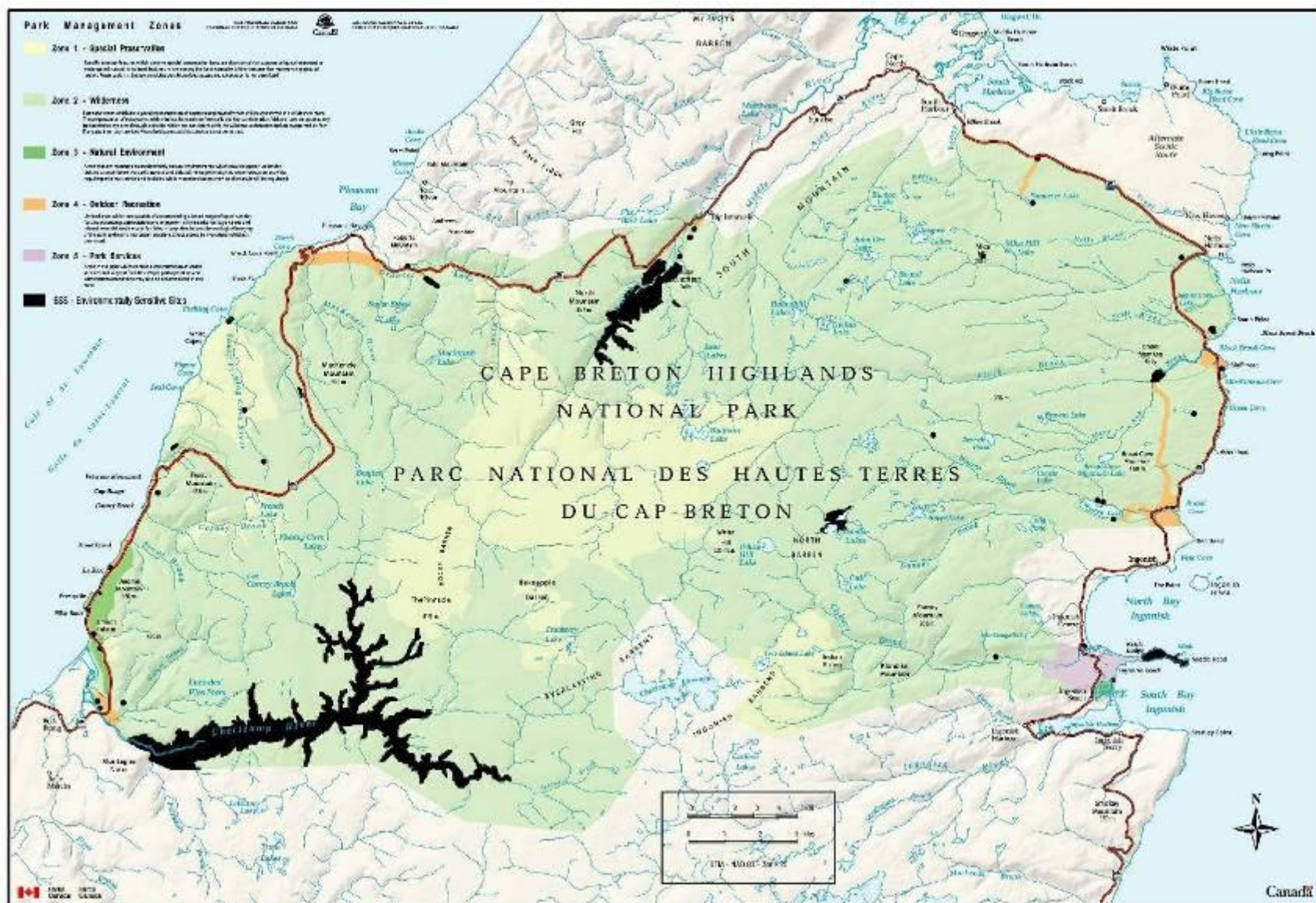
Map 3. Kouchibouguac National Park Zoning Map



Map 4. Gros Morne National Park Zoning Map

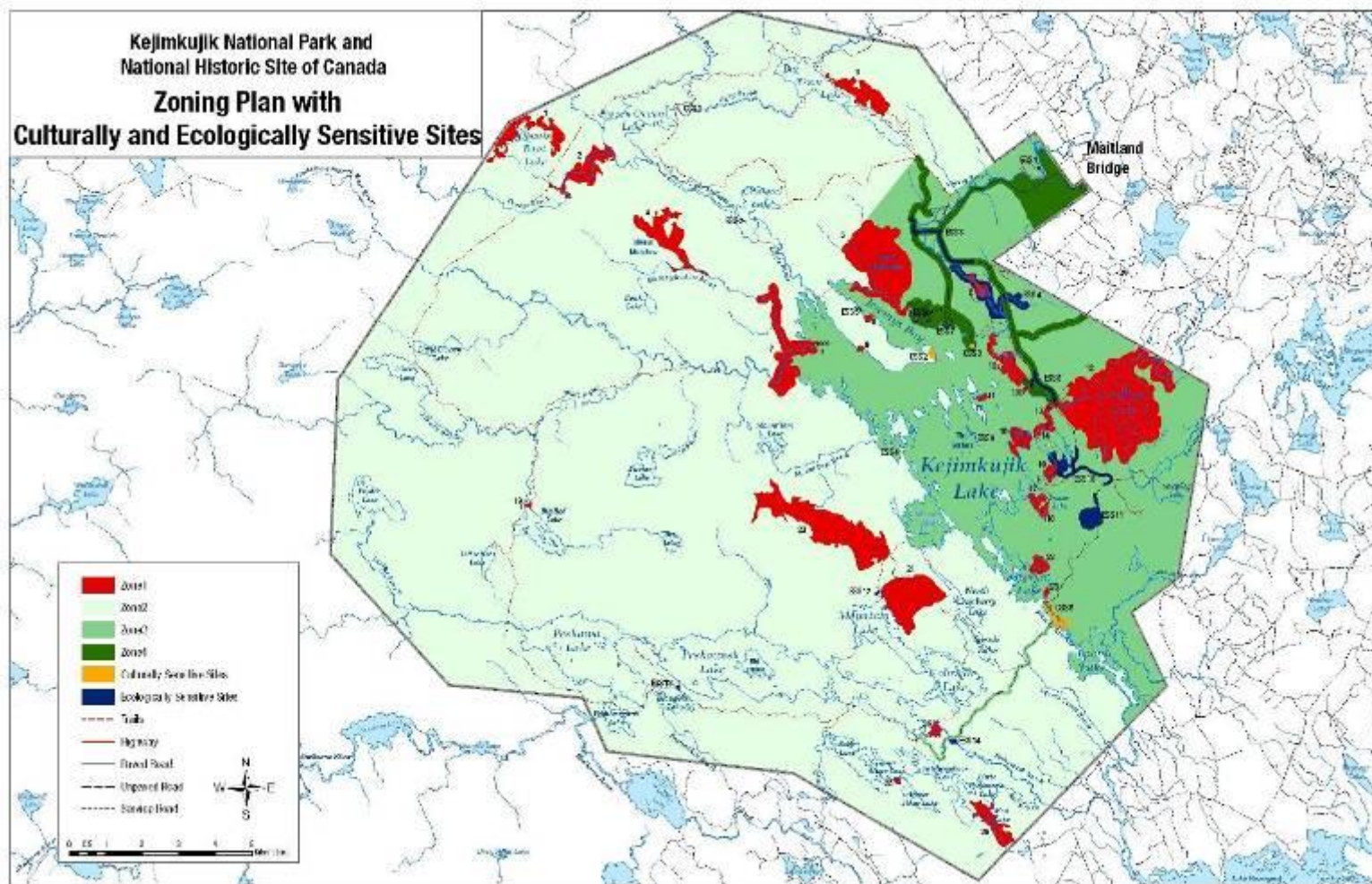




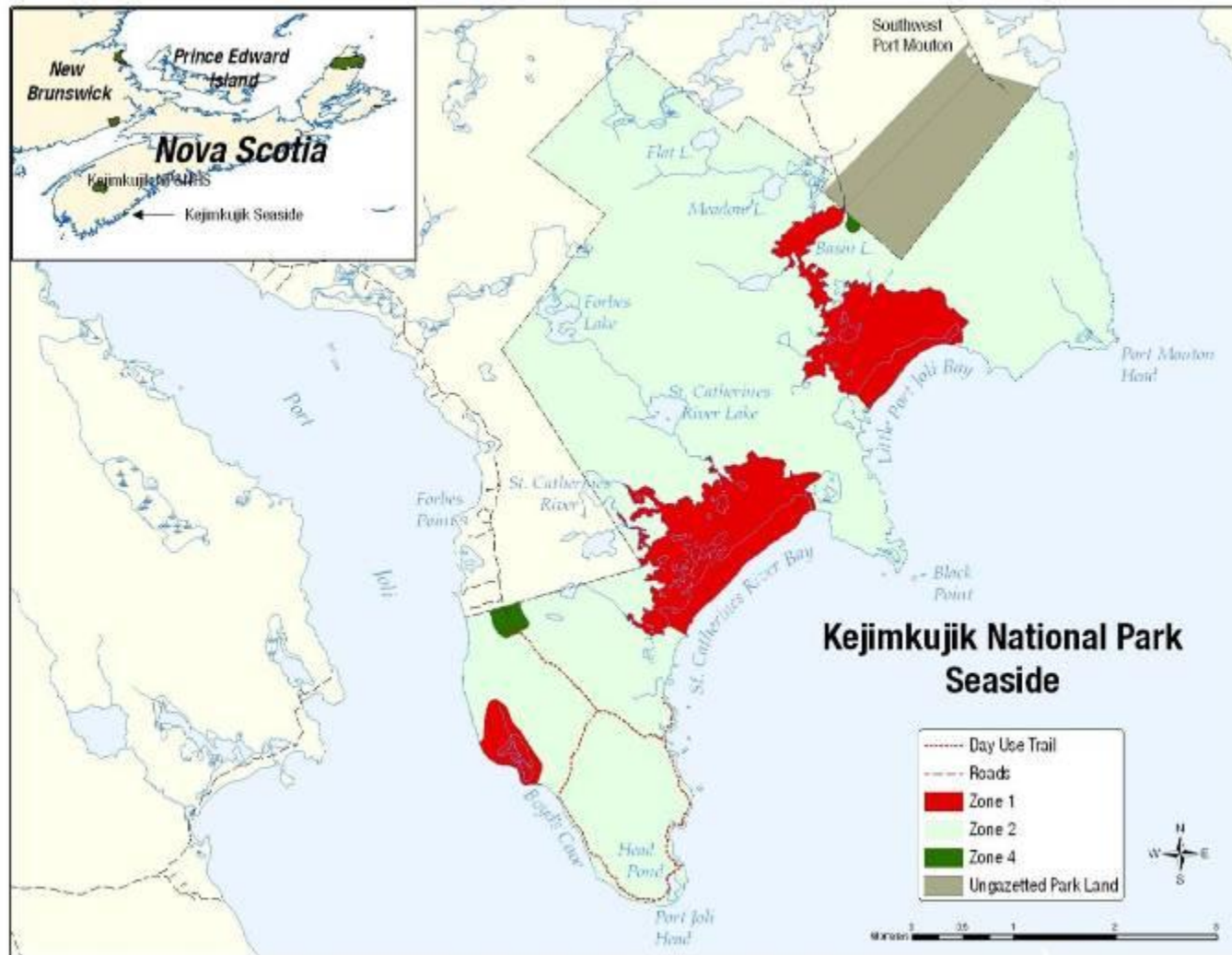


Map 6. Cape Breton Highlands National Park Zoning Map





Map 7a. Kejimikujik National Park and National Historic Site Zoning Map



Map 7b. Kejimikujik National Park Seaside Zoning Map