Revised Project Description:
Trans-Canada Highway Realignment
Through New Haven-Churchill, Queens County, PEI

Prepared for:
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1 PROJECT DESCRIPTION

This report is a Project Description for the Trans-Canada Highway Realignment through New Haven-Churchill, Queens County, Prince Edward Island (PEI) (“the Project”), proposed by the Prince Edward Island Department of Transportation and Infrastructure Renewal (“PEITIR”; the “Proponent”). PEITIR is responsible for maintaining and enhancing essential transportation systems and services for the efficient and safe movement of people, goods, and services in the province.

This Project Description is provided for the purposes of the Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements, under the Canadian Environmental Assessment Act (CEAA), as the work is considered a “project” under CEAA. Additional information about the regulatory framework is provided in Section 1.4.

A previous Project Description for the Project was submitted in August, 2011, however following regulatory and public consultation, the Project has been redesigned, resulting in an alternative route, described here.

1.1 Project Title, Project Proponent, and Author of the Project Description

The Project title and details of the Project Proponent and the environmental consultant hired by the Proponent to author this document are as follows.

Project Title: Trans-Canada Highway Realignment, New Haven-Churchill, Queens County, PEI

Project Proponent: Prince Edward Island Department of Transportation and Infrastructure Renewal
11 Kent Street, P.O. Box 2000
Charlottetown PEI C1A 7N8

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1.2 Project Overview

1.2.1 Project Summary

The revised Project consists of the construction of 6.2 kilometres (km) of new and upgraded highway to realign the existing Trans-Canada Highway (TCH) from the St. Catherines Road in Bonshaw west of the West River crossing (i.e., Bonshaw Bridge) heading east to just east of West River Road (Route 9) in New Haven, Queens County, PEI (Figure 1, Appendix A). The realignment will overlap a 500 m section of the existing TCH near Riverdale Road in Churchill. The Project includes the installation of culverts on three tributaries of the West River, as well as a widening of the Bonshaw Bridge crossing of West River to allow for a right turning lane onto Green Road. New T-intersections will be constructed near either end of the realignment; one to connect the western end of the old TCH by extending the Crosby Road to the realignment and another as an extension of Colville Road to the realignment. A grade separation involving an underpass to cross the existing TCH will be constructed just east of Cameron Road. Other intersecting roads will either be maintained as on or off ramps, or cut off from the TCH and cul-de-sacs constructed. Connections to the old TCH near both ends of the project will be maintained as off ramps.

The Project is part of an effort to improve the safety and efficiency of the Trans-Canada Highway system on PEI. The project will be a two-lane highway, built to the Transportation Association of Canada's (TAC's) Geometric Design Guide standards for a Rural Arterial Undivided highway with a design speed of 100 km/hr (RAU100). The posted speed limit will be 90 km/hr and sections of the realignment will be access controlled. The TCH in this area is part of the National Highway System and therefore, is expected to be built to meet national minimum standards.
1.2.2 Project Elements

The Project elements include:

- a grade separation;
- installation of structures;
- temporary ancillary elements; and
- changes to secondary roads and local infrastructure.

Additional information on each of these elements is available in Section 3 – Scope of Project.

1.2.3 Project Development Area

The Project Development Area (“PDA”) is defined as the area within which all construction activities associated with the Project will take place. The PDA includes the 6.2 km of two-lane highway, secondary road modifications, connector roads, and clearing the width of the right-of-way (RoW) required which varies along the alignment from approximately 60 to 100 m.

1.2.4 Purpose / Need / Rationale for the Project

This section of the TCH is a major trade corridor, accounting for 95% of all goods and services entering and leaving PEI. According to Delphi Systems Inc. (2000), the section of the TCH that would be replaced by this Project has vehicle accident rates higher than those for similar sections of highway in other places. The current highway was designed and built in the 1950s and has had very few geometric alignment changes since. It also has grades that range from six to eight percent; higher than four percent which is the recommendation for a highway designed to RAU 100 design standards. Numerous short horizontal and vertical curves result in speed changes and inefficiency. The Project will improve safety by reducing grades, providing longer and larger curves in the road, and will improve vertical curves which will give drivers a higher level of service. Access and sight distances will be improved, which will allow drivers to see hazards sooner and will provide more time and space for avoidance. Improvements to the highway will benefit all users including major economic sectors such as tourism.

The following summarizes the benefits and features of the new alignment:

- eliminates thirty-five driveway accesses;
- eliminates five sharp curves (one in New Haven and four in Churchill) and reduces the vertical grade of the highway;
- improves access to Strathgartney Provincial Park and Riverdale Road by realigning the entranceway to the park to form a four-way intersection with improved sight distance;
improves safety at “the lookout” by restricting access from the highway;
expands Bonshaw Bridge to accommodate new turning lanes for Green Road;
improves safety at Cameron Road, Crosby Road and Colville Road by reducing traffic count;
no loss of parkland or protected lands; and
allows for new accesses onto former Trans-Canada Highway which were previously not permitted.

1.2.5 Project Schedule

The Project is expected to begin in the fall of 2012, following receipt of all necessary permits and authorizations. A two-year construction period is anticipated.

1.2.6 Consultation

Consultation has been conducted between PEITIR and the following stakeholders to date through a variety of mechanisms (e.g., requests for information, professional advice, meetings), concerning the original realignment through Strathgartney Park.

- PEI Department of Transportation and Infrastructure Renewal (internal consultation of divisions);
- PEI Department of Environment, Labour and Justice;
- Mi’kmaq Confederacy of PEI;
- Island Nature Trust;
- Natural History Society of PEI;
- South Shore Watershed Association;
- West River Watershed Group;
- Bonshaw Community Council;
- New Haven Riverdale Community Council;
- South Shore Chamber of Commerce;
- affected property owners; and
- the general public.
Consultation was conducted with the PEI Department of Environment, Energy, and Forestry (PEIDEED; the new relevant department is now Environment, Labour and Justice (PEDELJ)) regarding the original proposed realignment, involving three properties protected under the PEI Natural Areas Protection Act that are in the vicinity of the Project.

Six open houses/public meetings were held in late October and early November 2011 which allowed residents an opportunity to view proposed re-alignment plans for the Trans-Canada Highway in Churchill (as well as two other nearby realignment projects), to ask questions and to submit feedback. The province received over three hundred submissions from Islanders, as well as a petition to preserve Strathgartney Provincial Park which contained over 2,700 signatures. The result was a new realignment.

Further regulatory, stakeholder, public and landowner consultations will be held in 2012 to address the new realignment.

1.3 Environmental Regulatory Setting

1.3.1 Federal Environmental Assessment

The work is considered a Project under CEAA, as it is the proposed construction of a physical work. An EA under CEAA is required if a federal authority exercises one of the powers or performs one of the duties listed in Section 5(1) of CEAA, in respect of a project. This Project is potentially subject to three Sections:

- Section 5(1)(b) of CEAA, which states that a federal EA is required for projects that use funds provided by a federal authority;
- Section 5(1)(c) of CEAA, which states that a federal EA is required for projects where a federal authority sells, leases, or otherwise transfers control or administration of federal land to enable a project to be carried out; and
- Section 5(1)(d) of CEAA, which states that projects that require permits, licenses or approvals under the Law List Regulations require an EA.

Funds for the Project will be cost shared (50/50) by the Federal and Provincial governments. Federal funds will be provided through the Atlantic Gateway Fund (administered by Transport Canada). Therefore, Transport Canada will be a Responsible Authority (RA) for the EA, per Section 5(1)(b) of CEAA.

Preliminary discussions with Parks Canada regarding the original realignment plans indicated that the Strathgartney Homestead is the location of a National Historic Site Monument. This designation, which is administered by the Historic Sites and Monuments Board of Canada (HSMBS), does not necessarily mean that Parks Canada would have been an RA for the Project as the site is not federally owned and the structures on the site have recently been changed by the current landowner. However, the new realignment will have no impact on the
Monument or the property on which it is located, and therefore Parks Canada will not likely be an RA.

There are two potential Law List Regulations triggers that could apply to this Project. The Project may require an Authorization from the federal Minister of Fisheries and Oceans Canada (DFO) if, in the opinion of the Minister, the work would constitute a Harmful Alteration, Disruption or Destruction (HADD) of fish habitat under Section 35(2) of the *Fisheries Act*. In consideration of the nature and duration of the work and planned mitigation to minimize adverse environmental effects, the Minister may determine that an Authorization is not required, if it is concluded that a HADD to fish habitat is not likely. Although a determination regarding the need for authorization under Section 35(2) has not been made at this time, recent experience on similar corridor projects in PEI and elsewhere strongly suggests that this will be required. Therefore, DFO is a likely RA for the EA, per Section 5(1)(b) of *CEAA*.

The project may require approval under Section 5(1) of the *Navigable Waters Protection Act* for any works carried out in navigable waters. The *Minor Works and Waters Order* (2009), made pursuant to Section 13(1) of the *Navigable Waters Protection Act* (NWPA), may exempt the Proponent from requiring an approval under Section 5(1) of the NWPA for these structures, which will be determined at the outset of the EA for the Project in consultation with Transport Canada, once the navigability of the watercourses has been assessed. However, the West River is likely considered navigable, and modifications to the existing Bonshaw Bridge are planned. Therefore, Transport Canada is a likely RA for the EA, per Section 5(1)(d) of *CEAA*.

The Project does not appear within the *Exclusion List Regulations*, or the *Comprehensive Study List Regulations* and it has not been referred by the Minister of Environment to a review panel, therefore the EA of the Project shall be a screening-level assessment.

All EAs under *CEAA* are screenings unless they are listed on the *Comprehensive Study List Regulations* or have been referred by the Minister of Environment to a review panel. As neither of these conditions appears to apply to the Project, the EA of the Project shall be a screening.

The Project is subject to both the requirements of the PEI provincial EA legislation and the federal *CEAA* process. Therefore, the Canadian Environmental Assessment Agency (CEA Agency) will likely be designated as the Federal Environmental Assessment Coordinator (FEAC) for the duration of the EA process. Therefore, the federal and provincial EA processes will be coordinated to the extent possible (i.e., joint correspondence to the proponent during the EA process, as well as a joint federal/provincial review committee).

### 1.3.2 Provincial Environmental Assessment

Section 9 of the PEI *Environmental Protection Act* (the Act) sets forth the framework for EIAs in PEI.

The interpretation of the Act is provided in Section 1 of the Act. Note that the term “undertaking” is interpreted to include any project which (i) may cause the emission or discharge of any
contaminant into the environment; (ii) have an effect on any unique, rare, or endangered feature of the environment; (iii) have a significant effect on the environment or necessitate further development which is likely to have a significant effect on the environment; or (iv) cause public concern because of its real or perceived effect or potential effect on the environment.

The construction and operation of a highway (or in this case, the realignment of a section thereof) is considered to be an undertaking.

Section 9(1) of the Act states that “no person shall initiate any undertaking unless that person first files a written proposal with the Department and obtains from the Minister written approval to proceed with the proposed undertaking.”

Furthermore, Section 9(2) of the Act states that the Minister, in considering a proposal submitted pursuant to Section 9(1), may require the Proponent to carry out an environmental impact assessment and to submit an environmental impact statement; and to notify the public of the proposed undertaking and to provide opportunity for the public to comment.

Based on the PEI Environmental Protection Act, an EIA is required to be conducted for the Project, and it is required that an environmental impact statement (EIS) be presented to the Minister of Environment, Labour and Justice for approval of the undertaking.
2 ENVIRONMENTAL SETTING

2.1 Land Use

The PDA is located predominantly on agricultural and forested lands. The PDA crosses 31 private PIDs and one provincial property. As well, there are two institutional (i.e., Churchill Presbyterian Church and Bonshaw Baptist Church) and seven commercial properties (Canadian Broadcasting Corporation, Encounter Creek (currently not operating and for sale), Island Coastal Services, Gass General Store and Gas Station, Newman’s Garage, Crosby’s Construction and Bonshaw Amusement Park), in proximity to the PDA (i.e., within 100 m). However, based on the preliminary design, 13 developed/inhabited properties will be directly impacted by the PDA, which may result in the removal of buildings or the need to establish new access. These include one commercial property (camping lots of Encounter Creek (not currently in business), nine residences, and three farms. The Project does not interact with federal Crown lands.

The PDA crosses approximately 13.0 hectares (ha) of agricultural land. At this time the type of agriculture is unknown. Potato production in this area is uncommon and the land is likely used for growing hay or grains.

The National Historic Monument Site is the Strathgartney Homestead National Historic Site of Canada. The Strathgartney Homestead is a 12.9 ha property that is a remnant of the 202.3 ha property once owned by Robert Bruce Stewart, a nineteenth-century landowner (Parks Canada, no date). Strathgartney Homestead was designated as a National Historic Monument Site because it is a remnant of the historic land tenure system of PEI. This designation is administered by the Historic Sites and Monuments Board of Canada (HSMBS). Parks Canada monitors the system of national historic monument sites as their mandate involves protecting the health and wholeness, or commemorative integrity of the national historic sites it operates. This site is privately owned and was designated in 1996. The Strathgartney Homestead is also a registered heritage place on the PEI Register of Heritage Places; however, it is not a designated site under the PEI Heritage Places Protection Act. The site was registered with the province in 2001. The new realignment does not directly impact the property.

The Strathgartney Provincial Park is designated as a park under the PEI Recreation Development Act. The park is approximately 39.5 ha and includes a nature trail, a playground, kitchen shelters, and washrooms. The nature trail is 1.5 km in length and includes a section of the Strathgartney Homestead property. The Project will not affect the trail.

Strathgartney Provincial Park along with the neighbouring provincial property to the east (16.2 ha) and the neighbouring privately owned property to the west (12.2 ha) are designated as Natural Areas under the PEI Natural Areas Protection Act. The Act offers legal protection for designated sites to protect their ecological integrity. The Provincial Park property was designated in 1992 due to the old growth stands of sugar maple (Acer saccharum) and
American beech (*Fagus grandifolia*), the marsh located at the tip of the property, and to protect the general landscape of the area. The other provincial property was also designated due to the old growth stands of trees located on the property. The privately owned property was designated as a natural area in 1998 due to its hardwood forests dominated by sugar maple and beech trees and to preserve the general landscape of the area. Only the entrance area of the Park is proposed to be altered.

Bonshaw Provincial Park is located along West River near the southwestern end of the Project. The park is not likely to be directly affected by the Project.

### 2.2 Air Quality

Local road traffic and agricultural emissions are the predominant sources of air contaminant emissions in the Project area. In the vicinity of the PDA, contributors to air pollution include vehicle traffic and farming (*e.g.*, fugitive emissions and dust generation due to plowing).

In general, the air quality of the area of the Project meets the desired air quality standards, set forth by the *Prince Edward Island Environmental Protection Act – Air Quality Regulations*, most of the time. Steady wind patterns in the area tend to disperse most pollutants released into the region at most times of the year. Generally, climate conditions provide good dispersion of air contaminants and frequent rainfall scavenges contaminants from the air. The ambient air quality also benefits from the infusion of relatively clean oceanic air masses from the North Atlantic. Occasionally, air masses from central Canada or the eastern seaboard to the south may transport contaminants into the area, causing a reduction in air quality. At other times, the weather is dominated by high-pressure air masses that produce low wind speed and poor dispersion of local emissions, which can lead to elevated concentrations of air contaminants and reduced air quality.

Annual climate normals for the nearest Environment Canada weather station (Charlottetown) indicate that January is typically the coldest month, with a mean daily temperature of -8 degrees Celsius (°C). July and August are typically the hottest months having mean daily temperatures of 18.5°C and 18.1°C, respectively. The mean annual precipitation is 1,173.3 millimetres (mm). October is typically the rainiest month with an average rainfall amount of 105.2 mm, while January is the snowiest month with an average recorded snowfall of 71.1 centimetres (cm). The prevailing winds are generally from the west during the winter months and from the southwest during the summer months. The average annual wind speed is approximately 17.4 km/hr. The maximum wind speeds occur in December with average speeds of 19.6 km/hr and minimum wind speeds occur in August with an average speed of 14.2 km/hr (Environment Canada 2011).

### 2.3 Sound Quality

The location of the PDA is in a rural area with few residential dwellings (Figure 2, Appendix A). Sound quality in the vicinity of the Project is mainly influenced by vehicle traffic due to the presence of the existing highway and farm machinery. There are 22 houses, two churches (Churchill Presbyterian Church and Bonshaw Baptist Church, which appear to be not currently
in use), a legion, five residences and farms, and four commercial buildings located in the vicinity of the Project. The majority of these properties are also located in the vicinity of the existing section of the TCH in the area. No other noise sensitive areas were identified proximate to the PDA.

### 2.4 Groundwater

There are wells in the area associated with the residences; however, they have not been surveyed at this time. Wells in the area are characterized as domestic potable water. Based on the location of the PDA in relation to existing residences, potable wells could be found within 200 m of the PDA.

### 2.5 Aquatic Environment

The Project crosses three watercourses that are tributaries of the West River, as well as West River itself, which ultimately discharges into Charlottetown Harbour. The tributaries are located within a watershed that encompasses an approximate area of 8.9 km² (Figure 2, Appendix A). The watershed is a mixture of agriculture and forested land with residential and recreational lands. The watershed area upstream of the Bonshaw Bridge is much larger, at 102.6 km².

The PDA crosses the West River and three of its tributaries. Although fish surveys have not been completed at this time, the West River is known to contain fish, including Atlantic salmon (*Salmo salar*), brook trout (*Salvelinus fontinalis*), and rainbow trout (*Oncorhynchus mykiss*). The West River is one of only twenty-two rivers on PEI with a population of Atlantic salmon. According to the PEI General Status Ranking system, Atlantic salmon is ranked as “Sensitive”. The sections of the tributaries crossed by the PDA are small streams and run through forested areas adjacent to cleared land.

The crossing point at the existing Bonshaw Bridge is near the head of tide. At this time it is not known whether or not the widening will require in stream works, however the Project involves modifications of the structure, in a section of the West River that is navigable.

The *Minor Works and Waters Order* (2009), made pursuant to the *Navigable Waters Protection Act* (NWPA) Section 13(1), will be used by the proponent in classifying navigable and non-navigable sections (a 200 m length of watercourse) of the watercourses contained within the PDA. These classifications will not be made until field surveys are complete; however, it is unlikely that the tributaries to the West River will be determined to be navigable.

### 2.6 Terrestrial Environment

The Project is located in the Gulf of St. Lawrence lowland forests terrestrial ecoregion (WWF 2001). This ecoregion encompasses all of PEI, the Isles de la Madeleine, the majority of east-central New Brunswick, and the Annapolis Valley and Northumberland Strait coast of Nova Scotia. This ecoregion is characterized by warm summers and mild, snowy winters. The climate and vegetation in the region is strongly influenced by the Gulf of St. Lawrence (WWF 2001).
The surficial geology in the PDA consists predominantly of exposed bedrock outcroppings with localized areas of glacially derived overburden soils. The native soil is generally comprised of the clay-sand phase till containing varying amounts of sandstone gravel and cobble sizes, and is typically limited to 3 to 5 m in thickness. The bedrock consists predominantly of sandstone of Early Permian to Late Pennsylvanian age (Geological Survey of Canada 1973). The bedrock is described as red and grey beds; sandstone and siltstone with minor conglomerate.

The landscape in the vicinity of the Project consists of rolling hills generally sloping towards the West River. Elevations along the proposed alignment range from a high elevation of approximately 95 m just west of Churchill to a low elevation of approximately 4.0 m near the west end. Localized lows occur where the road alignment intersects the West River tributaries. The ground surface generally slopes south up to north within the western half of the PDA, and is rolling terrain within the eastern half due to stream valleys.

### 2.6.1 Wildlife

Characteristic mammals of PEI include red fox (*Vulpes vulpes*), snowshoe hare (*Lepus americanus*), beaver (*Castor canadensis*), raccoon (*Procyon lotor*), and muskrat (*Ondatra zibethica*). There is an increasing population of coyotes (*Canis latrans*), however, they are not a native species and have only recently expanded their territory to include PEI (WWF 2001).

Available information on the known occurrence of rare or uncommon species near the PDA was compiled and reviewed using information from an AC CDC data request (AC CDC 2011) for records within 5 km of the approximate centre of the original alignment. Fifteen bird species, three invertebrate species, and one fish species were identified within 3-5 km of the new PDA. See Table 2.1, below, for a complete list of rare or uncommon wildlife species within 3-5 km of the PDA.
Table 2.1  Wildlife Species At Risk and Species of Conservation Concern Recorded within 5 km of the approximate Centre of the Original Churchill TCH Realignment (AC CDC 2011)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>COSEWIC Rank</th>
<th>SARA Rank</th>
<th>PEI General Status Rank</th>
<th>AC CDC s-Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic Salmon</td>
<td>Salmo salar</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S2S3</td>
</tr>
<tr>
<td>Barn Swallow</td>
<td>Hirundo rustica</td>
<td>Threatened</td>
<td>No schedule, no status</td>
<td>Sensitive</td>
<td>S3B</td>
</tr>
<tr>
<td>Bay-breasted Warbler</td>
<td>Dendroica castanea</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S3B</td>
</tr>
<tr>
<td>Blue-winged Teal</td>
<td>Anas discors</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Secure</td>
<td>S3S4B</td>
</tr>
<tr>
<td>Bobolink</td>
<td>Dolichonyx oryzivorus</td>
<td>Threatened</td>
<td>No schedule, no status</td>
<td>Sensitive</td>
<td>S3B</td>
</tr>
<tr>
<td>Canada Warbler</td>
<td>Wilsonia canadensis</td>
<td>Threatened</td>
<td>Schedule 1, Threatened</td>
<td>At risk</td>
<td>S3B</td>
</tr>
<tr>
<td>Early Hairstreak</td>
<td>Eorla laeta</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>-</td>
<td>S1</td>
</tr>
<tr>
<td>Eastern Bluebird</td>
<td>Sialia sialis</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Accidental</td>
<td>S1?B</td>
</tr>
<tr>
<td>Eastern Kingbird</td>
<td>Tyrannus tyrannus</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S3B</td>
</tr>
<tr>
<td>Evening Grosbeak</td>
<td>Coccothraustes vespertinus</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S2B, S4N</td>
</tr>
<tr>
<td>Killdeer</td>
<td>Charadrius vociferus</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S3B</td>
</tr>
<tr>
<td>Olive-sided Flycatcher</td>
<td>Contopus cooperi</td>
<td>Threatened</td>
<td>Schedule 1, Threatened</td>
<td>At risk</td>
<td>S3B</td>
</tr>
<tr>
<td>Pine Siskin</td>
<td>Carduelis pinus</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Secure</td>
<td>S2S3B, S4N</td>
</tr>
<tr>
<td>Red-tailed Hawk</td>
<td>Buteo jamaicensis</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Secure</td>
<td>S3B</td>
</tr>
<tr>
<td>Rose-breasted Grosbeak</td>
<td>Pheucticus ludovicianus</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S3B</td>
</tr>
<tr>
<td>Tennessee Warbler</td>
<td>Vermivora peregrina</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S3B</td>
</tr>
<tr>
<td>Twin-spotted Spiketail</td>
<td>Cordulagastr maculata</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>Sensitive</td>
<td>S3</td>
</tr>
<tr>
<td>Wandering Glider</td>
<td>Pantala flavescens</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>May be at risk</td>
<td>S2B</td>
</tr>
<tr>
<td>White-breasted Nuthatch</td>
<td>Sitta carolinensis</td>
<td>Not at Risk</td>
<td>Not at Risk</td>
<td>May be at risk</td>
<td>S1</td>
</tr>
</tbody>
</table>

Notes:
* "* = No ranking associated with this species
S1 = Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
S2 = Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
S3 = Uncommon throughout its range in the province, or found only in a restricted range, even if abundant in at some locations. (21 to 100 occurrences).
S4 = Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurrences, but the element is of long-term concern (e.g., watch list). (100+ occurrences).
S##S# = Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the element (e.g., S1S2).
? = Inexact or uncertain: for numeric ranks, denotes inexactness, e.g., SE? denotes uncertainty of exotic status. (The "?" qualifies the character immediately preceding it in the SRANK)
B = Breeding: Basic rank refers to the breeding population of the element in the province.
N = Non-breeding: Basic rank refers to the non-breeding (usually wintering) population of the element in the province.
Bird habitat in the PDA includes agricultural land, barns, old field, grasslands, hedgerows, immature, and mature forest. These areas may be used by migratory birds for both nesting and feeding. Migratory birds are protected under the Migratory Bird Convention Act, 1994. The MBCA states that no person shall disturb, destroy or take a nest, egg, nest shelter, eider duck shelter, or duck box of a migratory bird.

2.6.2 Vegetation

Forested areas in proximity to the PDA are typically hardwood stands dominated by red maple (*Acer rubrum*), with some stands also containing sugar maple (*A. saccharum*), yellow birch (*Betula alleghaniensis*), and beech (*Fagus grandifolia*), and others also containing white birch (*B. papyrifera*), balsam fir (*Abies balsamea*), and poplar (*Populus sp.*). Old field stands are dominated by white spruce (*Picea glauca*), and typically also contain red maple, poplar, and/or balsam fir. Some clearcutting and partial cutting has occurred recently in stands in or near the PDA. Agricultural lands and fields are also common in areas in and adjacent to the PDA.

Available information on the known occurrence of rare or uncommon plant species near the PDA was compiled and reviewed using information from an AC CDC data request (AC CDC 2011). Thirty-eight plant species of conservation concern, relative to the PEI General Status Ranking and AC CDC S-ranks, were identified within 3-5 km of the PDA. None of the listed plant species are considered at risk under the Species at Risk Act (SARA) or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). See Table 2.2, below, for a list of rare or uncommon plant species within 3-5 km of the PDA.

Based on field surveys for the original realignment through Strathgartney Provincial Park, several rare plants are known to occur in proximity to the PDA. Red pine (*Pinus resinosa*, S2/sensitive) and beechdrops (*Epifagus virginiana*, S3/sensitive) were observed in the Park. Although a plant survey has not been conducted within the updated PDA, beechdrops were prevalent in the stands where they were observed; it is likely beechdrops also occur in other nearby stands with a similar percentage of beech.

### Table 2.2 Plant Species of Conservation Concern Recorded within 5 km of the Approximate Centre of the Original Churchill TCH Realignment (AC CDC 2011)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>PEI General Status Rank</th>
<th>AC CDC S-Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flattened Oat Grass</td>
<td><em>Danthonia compressa</em></td>
<td>May Be At Risk</td>
<td>S1</td>
</tr>
<tr>
<td>Upland Bent Grass</td>
<td><em>Agrostis perennans</em></td>
<td>Sensitive</td>
<td>S3?</td>
</tr>
<tr>
<td>a Moss</td>
<td><em>Aulacomnium androgynum</em></td>
<td>Undetermined</td>
<td>S1S2</td>
</tr>
<tr>
<td>a Moss</td>
<td><em>Brachythecium albicans</em></td>
<td>Undetermined</td>
<td>S2?</td>
</tr>
<tr>
<td>a Moss</td>
<td><em>Brachythecium populeum</em></td>
<td>Sensitive</td>
<td>S2S3</td>
</tr>
<tr>
<td>Bug On a Stick</td>
<td><em>Buxbaumia aphylla</em></td>
<td>Undetermined</td>
<td>S2?</td>
</tr>
<tr>
<td>a Moss</td>
<td><em>Campylostelium saxicola</em></td>
<td>May Be At Risk</td>
<td>S1S2</td>
</tr>
<tr>
<td>Silvery Glade Fern</td>
<td><em>Deparia acrostichoides</em></td>
<td>Sensitive</td>
<td>S3</td>
</tr>
<tr>
<td>Awl-Leaved Fork Moss</td>
<td><em>Dicranella subulata</em></td>
<td>Undetermined</td>
<td>S2S3</td>
</tr>
<tr>
<td>a Moss</td>
<td><em>Dicranum ontariense</em></td>
<td>Undetermined</td>
<td>S2S4</td>
</tr>
</tbody>
</table>
### Table 2.2 Plant Species of Conservation Concern Recorded within 5 km of the Approximate Centre of the Original Churchill TCH Realignment (AC CDC 2011)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>PEI General Status Rank</th>
<th>AC CDC S-Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Moss</td>
<td>Dicranum spurium</td>
<td>Undetermined</td>
<td>S1S2</td>
</tr>
<tr>
<td>a Moss</td>
<td>Dicranum viride</td>
<td>Undetermined</td>
<td>S2S4</td>
</tr>
<tr>
<td>a Moss</td>
<td>Diphysci um foliosum</td>
<td>Undetermined</td>
<td>S3S4</td>
</tr>
<tr>
<td>a Moss</td>
<td>Fissidens bryoides</td>
<td>Undetermined</td>
<td>S2S3</td>
</tr>
<tr>
<td>a Moss</td>
<td>Heterocladium dimorphum</td>
<td>Undetermined</td>
<td>S2S3</td>
</tr>
<tr>
<td>Common Hop</td>
<td>Humulus lupulus var. lupuloides</td>
<td>Undetermined</td>
<td>S1?</td>
</tr>
<tr>
<td>a Moss</td>
<td>Leptobryum pyriforme</td>
<td>Secure</td>
<td>S3S4</td>
</tr>
<tr>
<td>a Moss</td>
<td>Leucobryum glaucum</td>
<td>Secure</td>
<td>S3S4</td>
</tr>
<tr>
<td>Flat-branched Tree-clubmoss</td>
<td>Lycopodium obscurum</td>
<td>May Be At Risk</td>
<td>S1S2</td>
</tr>
<tr>
<td>One-flowered Wintergreen</td>
<td>Moneses uniflora</td>
<td>Secure</td>
<td>S3</td>
</tr>
<tr>
<td>Pinesap</td>
<td>Monotropa hypopithys</td>
<td>Secure</td>
<td>S3</td>
</tr>
<tr>
<td>a Moss</td>
<td>Orthotrichum obtusifolium</td>
<td>Secure</td>
<td>S3S4</td>
</tr>
<tr>
<td>Hairy Sweet Cicely</td>
<td>Osmorhiza claytonii</td>
<td>May Be At Risk</td>
<td>S2</td>
</tr>
<tr>
<td>a Moss</td>
<td>Paraleucobryum longifolium</td>
<td>Sensitive</td>
<td>S2?</td>
</tr>
<tr>
<td>a Wavy-leaf Moss</td>
<td>Plagionnium ciliare</td>
<td>Undetermined</td>
<td>S2S4</td>
</tr>
<tr>
<td>Small Round-leaved Orchid</td>
<td>Platanthera orbiculata</td>
<td>Sensitive</td>
<td>S2</td>
</tr>
<tr>
<td>a Moss</td>
<td>Platydictya subtilis</td>
<td>May Be At Risk</td>
<td>S1S2</td>
</tr>
<tr>
<td>a Moss</td>
<td>Pogonatum pensilvanicum</td>
<td>Undetermined</td>
<td>S2S4</td>
</tr>
<tr>
<td>Um-Like Pogonatum</td>
<td>Pogonatum urnigerum</td>
<td>Secure</td>
<td>S3S4</td>
</tr>
<tr>
<td>a Hair-Cap Moss</td>
<td>Polytrichum formosum</td>
<td>Undetermined</td>
<td>S1S2</td>
</tr>
<tr>
<td>a Moss</td>
<td>Polytrichum ohiense</td>
<td>Undetermined</td>
<td>S2S4</td>
</tr>
<tr>
<td>Balsam Poplar</td>
<td>Populus balsamifera</td>
<td>Sensitive</td>
<td>S2S3</td>
</tr>
<tr>
<td>a Moss</td>
<td>Pterigynandrum filiforme</td>
<td>Undetermined</td>
<td>S1S2</td>
</tr>
<tr>
<td>a Moss</td>
<td>Rhizomnium punctatium</td>
<td>Undetermined</td>
<td>S2S4</td>
</tr>
<tr>
<td>Carolina Rose</td>
<td>Rosa carolina</td>
<td>Sensitive</td>
<td>S2S3</td>
</tr>
<tr>
<td>Trailing Stitchwort</td>
<td>Stellaria alpine</td>
<td>Sensitive</td>
<td>S2S3</td>
</tr>
<tr>
<td>Boreal Stitchwort</td>
<td>Stellaria borealis</td>
<td>May Be At Risk</td>
<td>S2S3</td>
</tr>
<tr>
<td>Eastern Hemlock</td>
<td>Tsuga canadensis</td>
<td>Secure</td>
<td>S3S4</td>
</tr>
</tbody>
</table>

**Notes:**
- *"* = No ranking associated with this species.
- S1 = Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
- S2 = Rare throughout its range (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
- S3 = Uncommon throughout its range in the province, or found only in a restricted range, even if abundant in at some locations. (21 to 100 occurrences).
- S4 = Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurrences. (100+ occurrences).
- S#S# = Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).
- ? = Inexact or uncertain: for numeric ranks, denotes inexactness, e.g., SE? denotes uncertainty of exotic status. (The "?" qualifies the character immediately preceding it in the SRANK)
2.6.3 Wetlands

The only provincially-identified wetland within the PDA is wetland associated with the West River crossing (Figure 2, Appendix A). The crossing location represents the most upstream extent of the salt marsh (head of tide). The potential footprint within this mapped saltmarsh habitat is very small.

2.7 Archaeological and Heritage Resources

According to the Canadian Register of Historic Places, there is one registered significant historic site in the vicinity of the PDA; the Strathgartney Homestead National Historic Site of Canada. Due to the redesign of the alignment, no buildings of the Strathgartney Homestead will be relocated as a result of the Project.

The Project does not interact with any Federal Crown lands. As part of their duty to consult operational protocol, PEITIR has and will continue to conduct First Nations consultation for the Project.

The Historic Places of Prince Edward Island Mapping Application indicates that there are two sites of historic importance in the vicinity of the Project (Figure 2, Appendix A), and an additional site more than 600 m from the RoW. The Strathgartney Homestead Cemetery is located off the TCH in Churchill and was constructed in 1871 (Government of PEI 2011b). The Bonshaw Pioneer Cemetery is a small cemetery situated on the south side of the Trans-Canada Highway in Bonshaw between the intersections of the St. Catherine's Road and the Bonshaw Road (Government of PEI 2011c). The McArthur Family Cemetery is located near Peters Road in Churchill and was constructed in 1879 (Government of PEI 2011a); it is located more than 600 m north of the RoW. Project activities are not expected to interact with any of these sites of historic importance.

Preliminary information from the Aboriginal Affairs Secretariat associated with the previously proposed realignment indicated that there are no records of current Aboriginal land use in the area. As well, there are no known sites of historic or cultural importance within the previously proposed PDA. According to a letter provided by the provincial archaeologist (dated June 3, 2011), an archaeological assessment will not be required for the Project as previously proposed. Updated information from the Aboriginal Affairs Secretariat for new PDA is currently being requested.

2.8 Environmental Management

PETIR has an Environmental Management Section (EMS) which provides environmental planning, environmental permitting, and environmental compliance services for all projects occurring within the provincial right-of-way. The EMS is responsible for ensuring all department activities comply with provincial and federal regulations. As part of its environmental management strategy, PETIR has prepared an Environmental Protection Plan (EPP), which includes emergency response planning. As the Project is being conducted in a sensitive area
(e.g., proximate to the West River), PEITIR has decided to complete a site specific EPP (including site specific emergency response plans) for the Project prior to the initiation of construction activities. The EPP will include site specific mitigations that are identified in the environmental assessment process. Environmental Management Section staff, including the Environmental Coordinator and the County Environmental Officer will actively manage the implementation of the environmental protection plan, its measures, and ensure compliance from PEITIR staff, and contractors working on behalf of the Department. This will include regular site inspections and participation in regular Project meetings.
3 SCOPE OF PROJECT

The scope of the Project includes the following Project-related activities:

- removal or modification, of existing infrastructure (which may include residential dwellings);
- construction and decommissioning of temporary ancillary elements, such as construction laydown areas and access points, developed for the purpose of the Project; and
- operation and maintenance of all constructed sections of the road and access points, in perpetuity.

The scope of the Project does not include consideration of the following:

- existing sources of aggregates, asphalt-concrete and concrete, and other materials obtained from pre-existing sources for the construction of Project facilities; and
- transportation of workers and materials to and from the Project limits.

The source of materials from outside the PDA was not considered where these sources were or will be developed independently of the Project. The offsite transportation of waste products was not considered as PEITIR is committed to ensuring that all waste products will be disposed or recycled in provincially approved facilities, and that all waste transportation activities will be in compliance with the *Transportation of Dangerous Goods Act*, where applicable.

Given that a highway is already present in the area, and the current Project consists of a realignment to that highway, Project presence has not been included as a component of the Operation and Maintenance phase.

The highway is anticipated to be in operation in perpetuity, and therefore any decommissioning/abandonment activities of permanent Project structures would be subject to future examination as a separate undertaking under the legislation applicable at that time, as appropriate.

The scope of the Project is summarized in the following table (Table 3.1); project components are discussed in more detail below.
### Table 3.1 Scope of Project - Summary Table

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Project Components</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction</strong></td>
<td>Site Preparation</td>
<td>• surveying and geotechnical investigations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• vegetation clearing and grubbing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• installation of sediment and erosion control measures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• removal or modification, of existing buildings</td>
</tr>
<tr>
<td></td>
<td>Installation of Structures</td>
<td>• installation of culverts, including watercourse and drainage culverts</td>
</tr>
<tr>
<td></td>
<td>Roadbed Preparation</td>
<td>• blasting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• excavation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• placement of fill and grading</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ditching and drainage management</td>
</tr>
<tr>
<td></td>
<td>Surfacing and Finishing</td>
<td>• paving</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• signage, lighting and guide rail installation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• highway marking</td>
</tr>
<tr>
<td></td>
<td>Temporary Ancillary Elements Construction and</td>
<td>• borrow areas</td>
</tr>
<tr>
<td></td>
<td>Decommissioning</td>
<td>• petroleum storage areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• materials and equipment (transportation, storage and handling)</td>
</tr>
<tr>
<td></td>
<td>Operation/Maintenance</td>
<td>• pavement maintenance</td>
</tr>
<tr>
<td></td>
<td>Infrastructure Maintenance</td>
<td>• watercourse crossing structure maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• underpass structure maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• highway marking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• signage, lighting and guide rail maintenance</td>
</tr>
<tr>
<td></td>
<td>Winter Maintenance</td>
<td>• salting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• sanding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• plowing</td>
</tr>
<tr>
<td></td>
<td>Vegetation Management</td>
<td>• mowing, vegetation removal and planting</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>• hazardous materials spill</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• failure of sediment and erosion control measures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• fire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• vehicle collisions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• wildlife encounter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• disturbance of archaeological or heritage resources</td>
</tr>
</tbody>
</table>
3.1 Project Components

The list of Project components includes:

- site preparation;
- installation of structures (*i.e.*, watercourse or drainage culverts, underpass structure and bridge structure widening);
- roadbed preparation;
- surfacing and finishing; and
- operation and maintenance.

The following subsections provide more detailed information for each of these Project components. It should be noted that a site specific EPP will be in place prior to the initiation of project activities.

3.1.1 Site Preparation

Site Preparation includes activities associated with the preparation of the site in anticipation of roadbed construction, such as:

- surveying and geotechnical investigations;
- vegetation clearing and grubbing;
- installation of sediment and erosion control measures; and
- removal or modification of existing buildings.

3.1.1.1 Surveying and Geotechnical Investigations

Surveying includes the cutting of a centreline and cross-section offsets wide enough to provide unobstructed sight lines as well as to allow access along the PDA for vehicles and/or geotechnical equipment. The survey crew will carry out their garbage, ensure access roads remain unobstructed, maintain prescribed tree cutting, felling, and removal practices, and take all the necessary precautions to prevent pollution or obstruction of watercourses.

Geotechnical investigations involve the drilling of boreholes or excavation of test pits along the centre line and offsets to determine the subsurface conditions. This may require additional clearing. Equipment used may include a backhoe or drill rig with tracks.
3.1.1.2 Vegetation Clearing and Grubbing

The limits of clearing will be flagged prior to/in advance of clearing activity (e.g., during surveying) to limit the amount of clearing to that which is required for construction. The clearing width for the main lanes will vary depending on the toe of slope of the embankments. Merchantable timber may be harvested and sold depending on the timing of clearing. Non-salvageable material will be chipped or buried onsite.

Grubbing for roadway construction involves the removal of all organic material and unsuitable soil above the underlying soil. It also consists of the removal and disposal of all stumps, roots, felled timber, embedded logs, humus, root mat and topsoil from areas of excavations and embankments or other areas as directed by the Resident Engineer.

Bulldozers are typically used to scrape the organic material off the underlying soil and to pile the material. Where grubbing involves the removal of extensive organic deposits (e.g., peat), the material is usually removed by a track mounted excavator and loaded directly to dump-trucks.

3.1.1.3 Sediment and Erosion Control Measures

The primary environmental concern during clearing is to minimize ground disturbance that may result in the erosion and sedimentation of the watercourse running through the PDA. Prior to construction activities occurring in the PDA, the proper environmental controls will be in place (e.g., installation of silt fences, check dams).

To minimize environmental risks associated with erosion and sedimentation, where possible, a 30 m buffer will be maintained between the construction area and watercourses.

3.1.1.4 Removal or Modification of Existing Buildings

There are several residential and commercial properties within the PDA with buildings that may need to be relocated/removed during land acquisition in preparation for the Project. Any disposal of materials from these buildings will be conducted in accordance with provincial waste disposal regulations.

3.1.2 Installation of Structures

Structures required for the Project include at least three watercourse culverts, the widening of the Bonshaw Bridge at West River, and an underpass structure.

3.1.2.1 Culverts and Bridges

The installation of culverts in tributaries of the West River, and widening of the Bonshaw Bridge may require approval under the Navigable Waters Protection Act (NWPA). It is also possible that a Subsection 35(2) authorization will be required for the harmful alteration, disruption, or destruction of fish habitat. In the event either approval is required, any prescribed requirements will be strictly adhered to.
Design of the culverts and bridge widening will be conducted in consultation with DFO in order that fish and fish habitat issues are addressed. Watercourse crossing structure types will be selected in order to minimize any disruptions and comply with the “Guidelines for the Protection of Fish and Fish Habitat – Placement and Design of Large Culverts” (DFO 1998) and other applicable guidance documentation. These guidelines include provisions to protect fish passage throughout the year by accounting for velocities associated with high flows and fish passage during periods of low flow in the overall design. Culvert installation will also follow the PEI Watercourse and Wetland Alteration Guidelines (2006), which provide guidance for the planning and design stages of watercourse and wetland alterations.

Watercourse, wetland, and buffer zone activity permits, issued by PEIDELJ, will be required as the Project will be conducted in the vicinity of watercourses. The permits are required for work that will create a temporary or permanent change within 15 m of a watercourse or wetland. All conditions of the permit will be adhered to.

Specific details regarding the design of the culverts and bridge widening are not available at this time. The culvert will be designed to accommodate the precipitation from a one in 100 year storm for the area as defined by data from the Meteorological Service of Canada. The design of the bridge widening will be limited by the current design of the bridge, but would be expected to minimize direct impacts to the West River salt marsh.

3.1.2.2 Underpass Structure

A grade separation will be required at the crossing of the original TCH just east of Cameron Road. A grade separation structure will allow traffic on the existing TCH continued passage across the realigned TCH, but will not provide access to it. This will be an underpass structure, of undetermined design, to allow the realigned TCH to pass under the existing TCH, which will become a secondary road. An undetermined amount of excavation will be required at the approaches to the new underpass within the Project RoW. A temporary by-pass will be constructed north of the existing TCH while the structure is being constructed.

3.1.3 Roadbed Preparation

Roadbed preparation includes activities associated with the preparation of the site in anticipation of roadbed construction, such as:

- blasting;
- excavation;
- placement of fill and grading; and
- ditching and drainage management.
3.1.3.1 Blasting

At this time blasting is not expected to be required; however, if it is necessary, blasting in or near watercourses will require approval from DFO, and shall be conducted in accordance with the Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998). Blasting shall also be conducted in accordance with the applicable laws and regulations of the PEI, and Natural Resources Canada. The contractor performing the blasting will have a valid license and will ensure that a pre-blast survey of any nearby wells and structures (i.e., within 500 m) has been conducted, prior to blasting.

3.1.3.2 Excavation

The excavation of material for the preparation of the subgrade may involve the removal of overburden, including till, smaller boulders, and topsoil. The volume of material to be removed to bring the realignment to grade has not yet been determined. Excavated soils unsuitable for use as fill or dressing slopes will become property of the contractor.

3.1.3.3 Placement of Fill, Cutting, and Grading

Placement of fill will consist of placing soil and/or rock for preparation and construction of roadbeds, embankments, and slopes. The volume of fill material to be used has not yet been determined. Shale used for the Project will be locally sourced, while rock material will be imported from Nova Scotia or New Brunswick. Additional fill will be from a local source and will be provincially approved. Grading will consist of shaping the unpaved road or site surface and is used to stabilize the surface, improve surface drainage, and to provide for runoff in a controlled manner. Dust created onsite by Project activities will be controlled by the application of water, as needed.

3.1.3.4 Ditching and Drainage Management

Ditching, side slopes, and drainage channels will be designed and constructed to avoid erosion problems and ponding over and along roadways from surface water runoff. Ditches, culverts, and drainage channels will be constructed where natural drainage and surface runoff flows are disrupted by the new roadway. Drainage channels will be directed away from the watercourse and into surrounding vegetation, where possible. Erosion control structures, mulching, hydroseeding and/or the use of riprap are measures that may be applied to ditches, side slopes, and channels in an effort to minimize or prevent erosion and siltation of watercourses and wetlands.

3.1.4 Surfacing and Finishing

Surfacing and finishing includes activities associated with paving and preparation for operation including:

- paving;
• signage, lighting, and guardrail installation; and

• highway marking.

3.1.4.1 Paving

Conventional asphalt-concrete will be used in the Construction of this Project. This material is made by mixing petroleum based liquid asphalt with sand and crushed stone in an asphalt plant. The hot mix is easily transported, spread, and rolled to provide a smooth surface that can be used almost immediately.

Appropriate erosion control measures will be employed during paving operations to minimize runoff from the construction site, where warranted. Paving will be conducted in accordance with the appropriate permits and approvals.

3.1.4.2 Signage, Lighting, and Guardrail Installation

Signage and guardrails will be installed once the majority of Construction activities have been completed. Signage installation involves localized disturbances within the PDA, and will require small amounts of excavation and placement of concrete footings for the installation of the signposts and signs. Guardrail installation involves posthole drilling, post installation, and attachment of metal guardrail to the posts. Lighting and reflective devices will also be installed where necessary. Lighting is typically used near ramps and exits.

3.1.4.3 Highway Marking

The painting of pavement markings will also be performed after the majority of Construction activities have been completed. Marking, or striping, a highway consists of physically painting yellow and white longitudinal and transverse lines and other symbols and words as required on road surfaces to ensure the traveling public receives direction and guidance.

3.1.5 Operation and Maintenance

The following is a description of Operation and Maintenance activities typical for highways of this nature. The description of Operation and Maintenance activities has been divided into three categories:

• infrastructure maintenance;

• winter maintenance; and

• vegetation management.
3.1.5.1 Infrastructure Maintenance

General highway maintenance activities retain roadways at a reasonable level of service, comfort, and safety and typically take place during the summer months. The rate of degradation of the pavement surface will be determined by the volume of traffic, proportion of heavy trucks, certain vehicle characteristics (e.g., radial tires), and the structure and quality of pavement. The repair of the asphalt concrete surface may involve excavation or removal of the existing pavement and subgrade, patching and leveling, grading and gravelling, surface treatment and asphalt concrete overlays. Disruption to the public from these repairs would be temporary and infrequent in nature.

Periodic maintenance of roadway drainage systems may be required. This may involve the replacement or repair of culverts and re-establishment of the drainage ditches.

Other highway maintenance activities include shoulder grading, localized pavement repair, and line repainting. Again, disruption to the public from these repairs will be temporary and infrequent in nature.

3.1.5.2 Winter Maintenance

Winter highway operations activities generally involve snow removal and ice control to reduce traffic disruptions and safety hazards. Snow removal involves plowing services provided by, or contracted out and supervised by PEITIR. When snow banks build up along the highway, the banks may be winged back or the snow is removed and dumped at a suitable site – not in wetlands or environmentally sensitive areas. Road ice is managed through the application of salt and sand. Salt can melt ice, or stop the formation of ice, and is applied to roads to retain clear driving lanes within a reasonable time after a storm. Sand is applied to icy or snow-packed road surfaces to provide traction.

On PEI, pure road salt is used to de-ice the main arterial routes (i.e., 1, 1a, 2, 3, and 4). A blend of 6% salt and 94% sand is used on the remaining provincial roadways. Health Canada’s Guidelines for Canadian Drinking Water Quality (2008) has set the aesthetic objective of chloride in drinking water as ≤250 milligrams per litre (mg/L). PEITIR has established a policy to deal with cases where elevated levels of chloride are caused by road salt. Further information can be found in PEITIR’s Salt Management Plan, which also includes their commitment to optimizing road salt use in PEI through improved operational efficiency, newer technology, and the implementation of best management practices.

3.1.5.3 Vegetation Management

Growth of vegetation within the PDA may interfere with the lines of sight required for safe use of the highway. Clearing/mowing along the PDA is part of PEITIR’s regular maintenance to maintain sight lines and may involve both manual and mechanized cutting. PEITIR does not use herbicide application for the control of vegetation.
3.1.6 Temporary Ancillary Elements Construction and Decommissioning

The exact locations of temporary ancillary elements have not been determined at this time. The following subsections provide information regarding the process for selection of suitable sites. The site selection of temporary ancillary elements will strive to avoid sensitive areas to the extent possible. If site selection of new temporary ancillary elements outside of the PDA is required, it will be done in consultation with PEIDELJ. Environmental investigations will be carried out in advance of development of temporary ancillary elements. The results will be made available to PEIDELJ for review.

The construction and decommissioning of temporary ancillary elements includes activities associated with the development and removal of temporary ancillary Project elements, such as:

- temporary access roads;
- borrow storage areas
- petroleum storage areas; and
- materials and equipment (transportation, storage and handling).

3.1.6.1 Temporary Access Roads

Construction activities will require provision of access to the PDA. Existing access roads will be used to the extent possible; however, temporary access roads may be necessary. Temporary access roads will be constructed in accordance with landowner agreements and locations will be approved by PEITIR. Additional construction practices as described throughout this document will be adhered to (e.g., Watercourse and Wetland Alteration Guidelines).

3.1.6.2 Borrow Areas

The location and suitability of any new borrow sites for the Project must be approved by the Resident Engineer and must be developed and operated in accordance with all applicable provincial guidelines, policies, acts, and regulations.

3.1.6.3 Petroleum Storage Areas

Specific mitigation measures in regard to storage of hazardous materials during Construction will be identified in the EPP. Mitigation will likely include the following guidelines:

- temporary storage areas for containers or drums will be clearly marked;
- storage areas will have appropriate secondary containment;
- containers will be located on an impermeable floor that slopes to a safe collection area;
- storage of all hazardous materials will comply with WHMIS requirements;
• appropriate material safety data sheets will be located at the storage site;
• machinery will be checked regularly for leaks;
• hazardous materials should not be stored within 30 m of wetlands, watercourses, known groundwater sources, or private wells; and
• refuelling and equipment maintenance required in the field will not occur within 30 m of wetlands, watercourses, known groundwater sources, and private wells where feasible.

These guidelines apply directly to watercourses, but are also considered to be relevant to the protection of groundwater, including private wells. The appropriate permits will be obtained for any onsite temporary fuel storage tanks. On-site petroleum storage will be the responsibility of the contractor.

3.1.6.4 Materials and Equipment

Materials and Equipment refer to construction related transportation and the storage and handling of construction related materials (including hazardous materials).

Transportation

Vehicles used in construction typically include excavators, bulldozers, front end loaders, rollers, trucks, asphalt-concrete pavers, and graders. Most of these vehicles operate on diesel fuel and require some form of daily maintenance. Truck traffic generated by the Project during Construction is largely dependent upon the amount of imported fill material required. If asphalt-concrete and concrete plants are not located onsite and/or aggregate must be obtained from offsite sources, the amount of truck traffic on the access roads will increase accordingly. Offsite truck traffic will also consist of hauling various unclassified excavations and other materials to approved disposal sites, and/or the movement of construction equipment to and from the project site. Trucking operations during the subgrade Construction phase will mainly involve onsite transportation activities of materials for cut and fill operations.

Offsite truck traffic will be generated during the construction of the project subbase and base layers. The volume of truck traffic will depend upon the quantities of crushed stone aggregates and other borrow materials that need to be imported to the site versus that which can be produced onsite from cut sections within the PDA. In addition, specific borrow sites will not be known until they are identified by the construction contractor. All borrow will be sourced at provincially approved sites.

Vehicles used in base and pavement construction include steel drum rollers, graders, trucks, and asphalt concrete pavers. Use of local and collector highways for access to the Project will be subject to applicable Provincial gross vehicle weight maximums and spring weight restrictions.
Storage and Handling

Where appropriate, excavated material and aggregates will be stored for later use in PEIDELJ approved locations. If there is potential for runoff to leave the site, measures will be put in place to collect and test runoff prior to discharge. Material will be stockpiled in such a way as to prevent their erosion and to prevent sedimentation to any adjacent watercourses.

Hazardous Materials

Potentially hazardous materials used during construction include:

- petroleum fuel;
- oils;
- lubricants;
- hydraulic fluids;
- acetylene;
- paints; and
- solvents.

The Workplace Hazardous Materials Information System (WHMIS) has procedures and requirements that reinforce the proper handling, storage, and control of hazardous or toxic materials thereby reducing the potential for accidental release and consequent potential environmental effects. All workers will receive WHMIS training prior to working with such materials. All hazardous waste materials will be disposed of in a provincially approved manner and will be the responsibility of the contractor.

3.1.6.5 Disposal Areas

Disposal of Project-related waste materials from Construction will be at a provincially approved waste disposal facility, where applicable. All measures to divert waste from the landfills will be taken, such as on-site use of materials (i.e., uncontaminated rock, soil, and brush) where possible, and the disposal of construction and demolition debris at an approved construction and demolition debris site. All waste disposal will be the responsibility of the contractor.

Non-salvageable material from the clearing operations, such as limbs and timber, may be chipped within the PDA and left in place except within buffer zones for watercourses. Excavated organics, overburden and rock (where their use as fill material is impractical), will become property of the contractor.
3.2 Accidents, Malfunctions, and Unplanned Events

All necessary precautions will be taken to prevent the occurrence of Accidents, Malfunctions, and Unplanned Events that may occur throughout all phases of the Project and to minimize any environmental effects should they occur. Accidental events with the greatest potential for environmental effects include:

- hazardous material spill;
- failure of erosion and sediment control measures;
- fire;
- vehicular collisions;
- wildlife encounter; and
- disturbance of archaeological or heritage resources.

It is difficult to predict the precise nature and severity of these events. However, the probability of serious accidental events or those causing significant adverse environmental effects is low, particularly when Construction and Operation procedures incorporate contingency and emergency response planning. Construction and Operation will be conducted in accordance with the site specific EPP, which will be in place prior to construction and will include a contingency plan for Accident, Malfunctions, and Unplanned Events. The site specific EPP will build upon PEITIR’s existing EPP.
4 REFERENCES


Appendix A

Figures
Project Location
Revised Project Description:
Trans-Canada Highway Realignment Through New Haven-Churchill
Queens County, N.B.

Client: Prince Edward Island Transportation and Infrastructure Renewal

Scale: 1:50,000
Project No.: 121810317
Fig. No.: 1

Date: 13/01/2012
Fig. By: JAB
Appd. By: DC

Data Sources: ArcGIS Online
Map: Double Stereographic

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC PROJECT AND SHOULD NOT BE USED FOR OTHER PURPOSES.
**Project Overview and Plan**

Revised Project Description: Trans-Canada Highway Realignment Through New Haven-Churchill

Queens County, PEI

Client: Prince Edward Island Transportation and Infrastructure Renewal

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC PROJECT AND SHOULD NOT BE USED FOR OTHER PURPOSES.

Legend

- CBC Tower
- Commercial Structure in Proximity to Site
- Institution Structure in Proximity to Site
- Residence Structure in Proximity to Site
- Residence and Farm Structures in Proximity to Site
- Historic Cemetery
- Proposed Right-of-Way
- Previous Proposed Alignment
- Secondary Road Upgrades
- Watercourse
- Road
- National Historic Monument Site
- Wetland
- Provincial Park
- Provincial Park and Natural Protected Area
- Privately Owned Natural Protected Area
- Property Line
- Watershed Boundary

Data Sources:
- PEITIR
- PEIDEEF

Scale: 1:15,000
Project No.: 121810317

Fig. By: JAB
Appd. By: DC

Date: 20/01/2012

Fig. No.: 2