Nalcor Energy – Lower Churchill Project

L-ITL AVIFAUNA PROTECTION AND ENVIRONMENTAL EFFECTS MONITORING PLAN

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1 PURPOSE

The purpose of this Avifauna Protection and Environmental Effects Monitoring Plan (APEEMP) is to demonstrate how any negative environmental effects on Avifauna will be mitigated, and sets out a program to determine whether the Project is implemented as proposed, and that mitigation and compensation measures to minimize the Project's environmental effects are implemented.

Provincially, wildlife species at risk are managed under the Newfoundland and Labrador Endangered Species Act (ESA). The NLESA was developed to meet provincial commitments under the National Accord for the Protection of Species at Risk and the Canadian Biodiversity Strategy. The NLESA protects wildlife species, subspecies or populations within the province that are considered Endangered, Threatened or Vulnerable based on recommendations from COSEWIC or the provincial Species Status Advisory Committee (SSAC) (Government of Newfoundland and Labrador 2004, internet site). Under NLESA it is prohibited to disturb, harass, injure or kill any individual of a listed species, disturb or destroy the residence of listed species, or be in possession of individuals of a listed species (Government of Newfoundland and Labrador 2004, internet site).

To comply with regulatory requirements and commitments made in the Labrador-Island Transmission Link (L-ITL) (the Project) Environmental Impact Statement (EIS), the EEMP approach includes consideration of:

- Mitigation objectives – performance objectives in respect of each negative environmental effect;
- Mitigation – measures planned to achieve the mitigation objectives;
- Metrics and targets – specific, quantifiable, relevant and time constrained;
- Follow-up or Monitoring Programs – how the project will include follow-up or monitoring surveys to ensure that mitigation strategies are meeting the mitigation objectives; and
- Contingency Plan – plan to be implemented should monitoring reveal that mitigation measures have not been successful.

LITL's APEEMP builds on existing information (e.g., the Avifauna Management Plan (AMP) [Stantec 2012]), commitments made in the EIS (Nalcor 2012), and conditions of permits and licenses for the Project.

2 SCOPE

This plan addresses the required aspects of avifauna protection and effects monitoring for the design, construction, and operation phases of the L-ITL.

3 DEFINITIONS

Environmental Assessment (EA): An evaluation of a project's potential environmental risks and effects before it is carried out and identification of ways to improve project design and implementation to prevent, minimize, mitigate, or compensate for adverse environmental effects and to enhance positive effects.

Environmental Management: The management of human interactions with the environment (air, water and land and all species that occupy these habitats including humans).

Environmental Management System: Part of an organization's management system used to develop and implement its environmental policy and manage its environmental aspects.

Environmental Protection Plan (EPP): Document outlining the specific mitigation measures, contingency plans and emergency response procedures to be implemented during the construction or operations of a facility.

Environmental Effects Monitoring: Monitoring of overall Project effects to confirm the predictions of EA and to fulfill EA commitments.

Environmental Compliance Monitoring: Monitoring of Project activities to confirm compliance with regulatory requirements and commitments made through the EA process.

4 ABBREVIATIONS AND ACRONYMS

CEAA	Canadian Environmental Assessment Act
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWS	Canadian Wildlife Service
EA	Environmental Assessment
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
EMS	Environmental Management System
ERC	Environment and Regulatory Compliance
HVdc	High voltage direct current
LCP	Lower Churchill Project
L-ITL	Labrador – Island Transmission Link
NE	Nalcor Energy
NLDEC	Newfoundland and Labrador Department of Environment and Conservation
OSEM	On-Site Environmental Monitor
PEEMP	Protection and Environmental Effects Monitoring Plan
RCP	Regulatory Compliance Plan
SARA	Species at Risk Act

5 INTERNAL REFERENCES

LCP-PT-MD-0000-PM-PL-0001-01	LCP Project Execution Plan
LCP-PT-MD-0000-PM-CH-0001-01	LCP Project Charter
LCP-PT-MD-0000-EA-PL-0001-01	LCP Environmental Assessment Commitment Management Plan
LCP-PT-ED-0000-EA-SY-0002-01	Environmental Impact Statement and Supporting Documentation for the Labrador-Island Transmission Link
LCP-PT-MD-0000-EV-PL-0009-01	LCP HVdc Overland Transmission and HVdc Specialties Environmental Protection Plan
LCP-PT-MD-0000-RT-PL-0001-01	Regulatory Compliance Plan
LCP-PT-MD-0000-HS-PL-0001-01	Health and Safety Plan
LCP-PT-MD-0000-HS-PL-0004-01.	LCP Emergency Response Plan
LCP-PT-MD-0000-EV-PY-0001-01	LCP No Harvesting Policy

6 LABRADOR-ISLAND TRANSMISSION LINK PROJECT DESCRIPTION

As described in the L-ITL EIS, the Project consists of the Construction and Operations of a ± 350 kilovolt (kV) High Voltage direct current (HVdc) electricity transmission system from Central Labrador to the Avalon Peninsula on the Island of Newfoundland (the Island) (Figure 6-1).

The transmission system will include the following key components:

- An alternating current (ac) to direct current (dc) converter station at Muskrat Falls;
- Approximately 400 km overhead HVdc transmission line from Muskrat Falls to Forteau Point;

- A 60 m wide right of way (ROW);
- Three, approximately 35 km long, submarine cables across the Strait of Belle Isle (SOBI) (i.e., between Forteau Point and Shoal Cove), with associated onshore infrastructure (transition compounds and land cables at both cable landings);
- Approximately 700 km of overhead HVdc transmission line from Shoal Cove to the Avalon Peninsula;
- A dc to ac converter station at Soldiers Pond;
- Shoreline electrodes at L'Anse au Diable and Dowden's Point,
- An overhead, wood pole electrode line
    - Near Forteau Point and L'Anse au Diable; and
    - Between Soldiers Pond and Dowden's Point.

Figure 6-1 Labrador-Island Transmission Link (Nalcor 2012)

7 EXISTING INFORMATION

As outlined in the L-ITL EIS (Nalcor 2012), the Province of Newfoundland and Labrador (NL) is large and diverse, and as such, supports a variety of avian communities. Many avian species are at the limit of their continental range in the province and their habitat requirements may be more specific than at the core of their distribution (Stantec 2012b, 2010c). Geographic differences within the province, such as elevation, also influence where species are found. The Atlantic Flyway, one of four major North American routes followed by migratory birds, includes NL.

Avifauna discussed in this section include terrestrial and aquatic birds, including waterfowl, passerines, raptors, upland game birds and marine birds that breed near the Project. A concern for various stakeholders, are avifauna species of special conservation

status as assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the federal *Species at Risk Act* (*SARA*), and / or the *Newfoundland and Labrador Endangered Species Act* (*NLESA*) or the Species Status Advisory Committee (SSAC). These species are also presented in the L-ITL Listed Species Impacts Mitigation and Monitoring Plan.

Existing information regarding these groups and species is summarized from data compiled for Nalcor's EIS for the Project, which was based on a literature review, Project-specific baseline surveys, other ongoing annual bird surveys conducted for the L-ITL Project Area, and other sources.

7.1 WATERFOWL

Waterfowl in NL can be subdivided into an early-nesting group, comprising dabbling ducks and geese, and a late-nesting group, comprising sea ducks and diving ducks. Information on waterfowl occurrence in the regions crossed by the Study Area is provided in Table 7.1.

Table 7.1 Occurrence of Waterfowl Species in the Study Area by Region

Species	Central and Southeastern Labrador	Northern Peninsula	Central and Eastern Newfoundland	Avalon Peninsula
American Black Duck (*Anas rubripes*)	Present[(a)]	Present	Present	Present
American Wigeon (*Anas americana*)	Infrequent[(b)]	Present	Infrequent	Infrequent
Black Scoter (*Melanitta americana*)	Infrequent	—[(c)]	—	Infrequent
Canada Goose (*Branta canadensis*)	Present	Present	Present	Present
Common Goldeneye (*Bucephala clangula*)	Present	Present	Present	Present
Common Loon (*Gavia immer*)	Present	Present	Present	Present
Common Merganser (*Mergus merganser*)	Present	Present	Present	Infrequent

Species	Central and Southeastern Labrador	Northern Peninsula	Central and Eastern Newfoundland	Avalon Peninsula
Green-winged Teal (*Anas carolinensis*)	Present	Present	Present	Present
Harlequin Duck (*Histrionicus histrionicus*)	Present	Present	Infrequent	Infrequent
Long-tailed Duck (*Clangula hyemalis*)	Infrequent	—	—	—
Mallard (*Anas platyrhynchos*)	Infrequent	Infrequent	Infrequent	Infrequent
Northern Pintail (*Anas acuta*)	Infrequent	Present	Present	Present
Northern Shoveler (*Anas clypeata*)	Infrequent	—	—	—
Red-breasted Merganser (*Mergus serrator*)	Present	Present	Present	Infrequent
Ring-necked Duck (*Aythya collaris*)	Present	Present	Present	Present
Scaup Species	Present	—	—	Present
Surf Scoter (*Melanitta perspicillata*)	Present	—	—	Infrequent
White-winged Scoter (*Melanitta fusca*)	Present	—	—	—

(a) "Present" - presence of that species in that region of the province.

(b) "Infrequent" – confirmed to be present but infrequently observed.

(c) "—" indicates no known occurrence.

A discussion of waterfowl presence, abundance and distribution in the Study Area by region is provided below. Key species identified for further consideration for waterfowl are Canada Goose (*Branta canadensis*), American Black Duck (*Anas rubripes*), Ringed-neck Duck (*Aythya collaris*), Harlequin Duck (*Histrionicus histrionicus*) and Surf Scoter (*Melanitta perspicillata*). The occurrence of these species in the regions is highlighted in the following text.

Central and Southeastern Labrador

A variety of waterfowl stage, breed, and moult in Central and Southeastern Labrador, including species of geese, dabbling ducks and diving ducks, although generally at low

densities (Goudie and Whitman 1987). Local areas such as the Eagle River Plateau and the St. Paul watershed likely have relatively high breeding densities of several species of waterfowl (Canadian Wildlife Service (CWS) unpublished data). Many rivers are still frozen in May, when northbound migrants arrive, thereby concentrating waterfowl in the few suitable staging areas that exist (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999).

The most common breeding species in the region are Canada Goose, American Black Duck, Green-winged Teal (*Anas carolinensis*), Ring-necked Duck, Surf Scoter, Common Goldeneye (*Bucephala clangula*) and Common Merganser (*Mergus merganser*) and Red-breasted Merganser (*Mergus serrator*) (Jacques Whitford 2003a, 1998b; Jacques Whitford and Minaskuat 2003a; AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999; Goudie and Whitman 1987). Small numbers of Lesser Scaup (*Aythya affinis*) also occur in the Study Area during the breeding season (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999), and a variety of other waterfowl also use the area, including Common Loon (*Gavia immer*), American Wigeon (*Anas americana*), Long-tailed Duck (*Clangula hyemalis*), White-winged Scoter (*Melanitta fusca*) and Black Scoter (*Melanitta americana*) (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999; Jacques Whitford 2003a, Jacques Whitford and Minaskuat 2003a). Surveys conducted along portions of the TLH3 to the east of the transmission corridor also detected Mallard (*Anas platyrhynchos*), Northern Shoveler (*Anas clypeata*) and Greater Scaup (*Aythya marila*) during spring staging and / or breeding (CWS 2011a; Jacques Whitford 1998b). Species observed moulting include Canada Goose, American Black Duck, Northern Pintail (*Anas acuta*), Greater Scaup, Surf Scoter and Common and Red-breasted Merganser.

Harlequin Duck are known to breed in Central and Southeastern Labrador. They have repeatedly been observed on the Minipi River (Stassinu Stantec Limited Partnership 2010; Jones and Goudie 2009, 2008; Jacques Whitford 1998a; 1997) and may occur in the St. Paul River, where a pair was observed staging in 1998 (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999). In 2010, a pair was observed outside the boundaries of the Study Area, within the Traverspine River (Stassinu Stantec Limited Partnership 2010). Individuals have also been recorded near the St. Peter Islands, along the south coast which is well outside the boundaries of the Study Area. An

estimated five breeding pairs occur in south coast rivers despite the abundance of apparently suitable habitat (Trimper et al. 2008).

Canada Goose were recorded on nests along the transmission corridor during June 1998 surveys (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999), and were also occasionally observed during passerine surveys and ELC investigations in support of the Project in 2008. Waterfowl studies conducted along the TLH3 identified six Canada Goose nests along the portion of the highway route shared by the transmission corridor and found this species to be relatively common during spring staging, breeding, brood / moulting and fall staging surveys (Jacques Whitford 2003a; Jacques Whitford and Minaskuat 2003a). Concentrations of moulting Canada Geese have been observed on the Eagle River (CWS unpublished data).

Although Surf Scoter were not recorded during waterfowl surveys in the Study Area in 1998 (perhaps due to timing), incidental observations of Surf Scoter were recorded during other surveys in support of the baseline surveys for this Project. Dedicated waterfowl studies by others (Gilliland et al. 2008a; Robert and Savard 2008) have reported Surf Scoter as being widespread in portions of the military Low-Level Training Area adjacent to the Study Area. Surf Scoter have been identified by these authors as one of the most abundant and widespread waterfowl species in portions of the Low-Level Training Area surveyed that either overlaps or is adjacent to the Study Area in Labrador. Additionally, Surf Scoter were observed along portions of the TLH3 shared by the transmission corridor during waterfowl spring staging, breeding, brood / moulting and fall staging surveys, with numbers being particularly high in fall staging surveys (Jacques Whitford 2003a; Jacques Whitford and Minaskuat 2003a).

In general, Central and Southeastern Labrador supports a moderate diversity of waterfowl during staging, breeding and moulting periods. However, densities are generally low but there are areas with seasonally high waterfowl densities. Waterfowl use the headwaters of the Eagle River during spring breeding and moulting periods. Moulting waterfowl (e.g., Common Goldeneye, Scaup sp., Ring-necked Duck, American Black Duck, Canada Goose and Merganser sp.) were found using the area in relatively high concentrations on the Eagle River plateau during a reconnaissance flight in 2008 (CWS unpublished data).

Northern Peninsula

A variety of waterfowl species are found along the Northern Peninsula during staging and breeding, including Canada Goose, American Wigeon, American Black Duck, Mallard, Northern Pintail, Green-winged Teal, Ring-necked Duck, Harlequin Duck, Common Goldeneye and Common and Red-breasted Merganser (Warkentin and Newton 2009; Goudie and Gilliland 2008; Goudie 1987) (Table 7.1). Earlier studies of waterfowl in the Northern Peninsula Forest and Long Range Barrens Ecoregions found overall lower numbers of waterfowl in these areas compared to other Ecoregions in Newfoundland that overlap the Study Area, with the exception of the Maritime Barrens Ecoregion (Goudie 1987). The most frequently encountered species were American Black Duck, Common Goldeneye and Common Merganser; however, relative abundances varied among years.

Most breeding activity of Harlequin Duck on the Island of Newfoundland occurs on the Northern Peninsula but there are breeding records from southeastern Newfoundland on the Bay du Nord River (IBA 2012, internet site). The Torrent River being the most important site for the population (Warkentin and Newton 2009; Thomas 2008). In addition to the Torrent River, records indicate that Harlequin Duck have been observed within the Study Area at two other locations: Brian's Pond River and Castor's River (Stassinu Stantec Limited Partnership 2010; ACCDC 2008, internet site). The number of breeding pairs observed on several known rivers of occupation on the Northern Peninsula increased during the 2005 to 2009 monitoring period (35 in year 2005; 35 in 2006; 40 in 2008; and 43 in 2009), with a decline noted in 2010 (27) (Stassinu Stantec Limited Partnership 2010; Jones and Goudie 2009, 2008; Thomas 2006). Goudie and Gilliland (2008) observed increasing numbers of Harlequin Duck pairs on the Torrent River during the 1990's. These authors also stated that "A high rate of brood production in 1997 and 1998, compared to adjacent watersheds, suggests the possibility that the Torrent River system may behave as a source population for the general region of northern Newfoundland." It has been estimated that 20% of the known wintering population of Harlequin Duck in eastern North America breeds on the Northern Peninsula (Gilliland et al. 2008b). An estimated male Harlequin Duck (indicated pairs) breed along the rivers of western and northern Newfoundland (Gilliland et al 2008a).

Densities of 0.042 to 0.187 birds/km were estimated breeding on the Northern Peninsula (Gilliland et al. 2008a).

Canada Goose densities are relatively low in the Northern Peninsula Forest and Long Range Barrens Ecoregions (Goudie 1987). This habitat is found in small clusters inland from Bellburns (Northern Peninsula Forest Ecoregion) and between Brian's Pond River and Parson's Pond (Long Range Barrens Ecoregion). In the Strait of Belle Isle Barrens Ecoregion, primary habitat is found only along the coast. During 2008 ELC surveys, seven sightings of Canada Goose were reported in Wetland habitat in the Northern Peninsula Study Area. During the June 1998 survey, geese (29 pairs, 33 individuals) were noted on nests or with young on Castor's River, Torrent River and Main River (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999), areas that are generally comprised of secondary and tertiary habitat. Their use of lower quality habitat is likely reflective of the low availability of primary habitat in this region. These baseline surveys suggest that the Main River is a relatively important area for staging and breeding for Canada Goose.

In general, the Northern Peninsula hosts a low to moderate variety of waterfowl species and is important in terms of supporting relatively large numbers of breeding Harlequin Duck. Rivers in higher elevations along the western side of the Long Range Mountains appear particularly important for this species (Gilliland et al. 2008b). AGRA Earth and Environmental Ltd. and Harlequin Enterprises (1999) found waterfowl on the Northern Peninsula to be relatively abundant compared with the remainder of the Study Area in Newfoundland.

Central and Eastern Newfoundland

The diversity of waterfowl in the Central and Eastern Newfoundland region is lower than in other regions of the Study Area (Table 7.1). However, there are local areas where relatively high densities of breeding waterfowl can be found such as: Upper Humber River watershed below Birchy Pond (a variety of waterfowl species); Gander (Ring-necked Duck); and in the Swift Current / Meta Ponds areas (breeding Canada Geese) (CWS unpublished data). Observations of waterfowl in the Central Newfoundland Forest Ecoregion in 1978 and 1979 found the most common species to be American Black Duck, Green-winged Teal, Ring-necked Duck and Common Goldeneye, while Canada Goose, Northern Pintail and Common and Red-breasted Merganser occurred at lower

densities (Goudie 1987). AGRA Earth and Environmental Ltd. and Harlequin Enterprises (1999) recorded relatively low numbers of waterfowl during surveys in 1998. Species identified during the breeding season were Green-winged Teal, Canada Goose and Common and Red-breasted Merganser. Other species that may occur in Central and Eastern Newfoundland include American Wigeon and Mallard (Warkentin and Newton 2009).

There is no documented evidence of breeding activity of Harlequin Duck in this region. Only isolated observations of Harlequin Duck in interior Newfoundland were reported between 1983 and 2005 (Thomas 2008).

Primary habitat for Canada Goose is discontinuous and in low proportions throughout the dominant Central Newfoundland Forest Ecoregion crossed by the Study Area, with a small cluster found west of Terra Nova National Park. A concentration of primary habitat is located in the Long Range Barrens Ecoregion. Secondary habitat is limited in this region, with the exception of an area near North West Brook, south of Clarenville. During the June 1998 surveys, Canada Goose were rarely encountered (two pairs, including one with a brood) (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999). Five sightings of Canada Goose were reported in Wetland habitat incidentally during ELC surveys (Stantec 2012b, 2010c). Near the eastern end of this region of the Study Area, protection is provided at a Canada Goose sanctuary near Clarenville-Shoal Harbour, an area where the birds stay through the winter, and leave in the summer.

Avalon Peninsula

Goudie (1987) found American Black Duck and Green-winged Teal to be most abundant in the Avalon Forest Ecoregion, with smaller densities of Ring-necked Duck, Common Goldeneye and Northern Pintail also being present. Only three species of waterfowl were documented during spring staging in the transmission corridor in 1998: American Black Duck, Ring-necked Duck and Common Goldeneye (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999). Environment Canada has documented relatively high densities of Canada Goose, American Black Duck, Green-winged Teal and Ring-necked Duck (CWS unpublished data). While waterfowl species diversity is relatively low, the Avalon Peninsula provides habitat for breeding Greater Scaup and migrating

Surf and Black Scoters that are generally only found in this region of the Island (Warkentin and Newton 2009). Other species known to occur in this region include American Wigeon, Mallard, and Common and Red-breasted Merganser (Warkentin and Newton 2009). Greater Scaup has been detected on the southern part of the Avalon Peninsula (CWS unpublished data).

While Harlequin Duck are not known to breed in this region, they do occur in coastal waters, including the Cape St. Mary's Ecological Reserve, during winter, staging and moulting (Thomas 2008). A small number of individuals have also been documented at the reserve in summer (Thomas 2008).

Although Canada Goose was not recorded within the region during the June 1998 survey of the Study Area (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999), incidental observations were made during other Project surveys. Two Canada Geese were documented in Scrub / Heathland / Wetland habitat during passerine surveys in 2008 and seven were observed together at a single location during ELC field surveys (Stantec 2012b, 2010c).

7.2 PASSERINES

Passerines are generally small to medium-sized 'perching' birds, with specialized vocal organs which allow them to produce a wide range of vocalizations (songs and calls) (US Fish and Wildlife Service 2002). Passerines in the Study Area include members of the flycatcher, corvid, thrush, warbler, finch and sparrow families, among others. Collectively, they occupy a wide range of terrestrial habitats from riparian areas to burns to mature forest.

During 2008 surveys of the Study Area, warblers and sparrows were the most diverse families observed. The total number of species recorded in an Ecoregion ranged from 25 in the Avalon Forest Ecoregion to 58 in the Central Newfoundland Forest Ecoregion (Stantec 2012b, 2010c).

The most abundant species overall were Yellow-bellied Flycatcher(*Empidonax flaviventris*), American Robin (*Turdus migratorius*) , Northern Waterthrush (*Parkesia*

noveboracensis), Fox Sparrow (*Passerella iliaca*) and White-throated Sparrow (*Zonotrichia albiocollis*).

The following provides an overview of the abundance, distribution and habitat associations of passerines in the various regions of the Study Area. Key species and species groups identified for further consideration for passerines were Olive-sided Flycatcher (*Contopus cooperi*), Gray-cheeked Thrush (*Catharus minimus*), Blackpoll Warbler (*Setophaga striata*), wetland sparrows (including Swamp Sparrow (*Melospiza Georgiana*), Song Sparrow (*Melospiza melodia*), Lincoln's Sparrow (*Melospiza lincolnii*) and Savannah Sparrow (*Passerculus sandwichenisis*)), Rusty Blackbird (*Euphagus carolinus*), Red Crossbill (*Loxia curvirostra percna*), and Bobolink (*Dolichonyx oryzivorus*).

Central and Southeastern Labrador

The most abundant species encountered in this region duing passerine surveys conducted for the Project in 2008 was Ruby-crowned Kinglet (*Regulus calendula*), whereas other commonly recorded species included Fox Sparrow, Northern Waterthrush, Yellow-rumped Warbler (*Dendroica coronate*) and Dark-eyed Junco (*Junco hyemalis*) (Jacques Whitford 2003b).

Olive-sided Flycatcher was not observed in the Study Area in this region during either passerine or ELC surveys in 2008 (Stantec 2012b, 2010c), nor were they observed during surveys conducted for the TLH3 (Jacques Whitford 2003b). The Olive-sided Flycatcher was observed in the lower Churchill River valley during surveys in 2006 and 2007 (Minaskuat Inc. 2008c). Altman and Sallabanks (2000, internet site) indicate that the breeding range of this species extends into a portion of the Central and Southeastern Labrador region.

Dalley et al. (2005) indicated that Gray-cheeked Thrush occur throughout much of Labrador (i.e., south and central areas). During passerine surveys in 2008, four Gray-cheeked Thrush were recorded, all in the Forteau Barrens Ecoregion, where primary habitat comprises 45% of the area. Passerine surveys conducted in support of the TLH3 identified nine Gray-cheeked Thrush and it was classified as a possible breeder in the region (Jacques Whitford 2003b).

Primary habitat for Blackpoll Warbler is common throughout the Central and Southeastern Labrador portion of the Study Area. Blackpoll Warbler were found to be relatively common during passerine surveys conducted in support of the TLH3.

Surveys within the region have found Lincoln's Sparrow and Savannah Sparrow to be relatively common and have infrequently recorded Swamp Sparrow (Stantec 2012b, 2010c; Jacques Whitford 2003b). Although Song Sparrow was not documented during the 2008 field program, this species was encountered during the breeding season along the lower Churchill River during 2006-2007 field studies. Prior to this, Song Sparrow was not known to breed in Labrador (Nalcor 2009). If present in the Study Area (and undetected during the surveys), Song Sparrow is likely to be uncommon.

A number of observations of Rusty Blackbird were recorded in this Ecoregion during passerine surveys in 2008 (Stantec 2012b, 2010c). In addition, surveys conducted in support of the TLH3 confirmed it as a breeder within the region.

Bobolink has been observed near Forteau region of the study area (NLDEC-WD, pers. comm).

Northern Peninsula

The 2008 passerine surveys for this Project (Stantec 2012b, 2010c-) found that among the most abundant species were White-throated Sparrow, Yellow-bellied Flycatcher, Ruby-crowned Kinglet, American Robin, Blackpoll Warbler, Fox Sparrow, Swainson's Thrush (*Catharus ustulatus*), Lincoln's Sparrow and Northern Waterthrush. Of these, Lincoln's Sparrow and Savannah Sparrow (both in the Long Range Barrens Ecoregion) were among the top five species, but did not occur in the top five in any other Ecoregion in Newfoundland.

Eight Olive-sided Flycatcher were recorded on the Northern Peninsula during the 2008 passerine surveys (Stantec 2012b, 2010c).

In Newfoundland, Gray-cheeked Thrush is most common on the Northern Peninsula and the north-east coast, and less common on the west coast and in the interior (Peters and Burleigh 1951). Fourteen Gray-cheeked Thrush were observed during the 2008 passerine surveys in the Study Area.

Along the Northern Peninsula, Blackpoll Warbler were frequently recorded during the 2008 surveys. Blackpoll Warbler was one of the most abundant species in the Long Range Barrens Ecoregion.

A total of 98 Wetland Sparrows comprising Lincoln's Sparrow (68), Savannah Sparrow (25) and Swamp Sparrow (five) were recorded during the 2008 surveys. Observations of Lincoln's Sparrow in this region account for 76% of the total records for this group. Song Sparrows are not known to breed on the Northern Peninsula (Warkentin and Newton 2009).

Rusty Blackbird is considered uncommon on the Island (Warkentin and Newton 2009). Rusty Blackbird were not observed in the region during 2008 surveys associated with the Project (Stantec 2012b, 2010c), but have been recorded in the region at the Mistaken Point Ecological Reserve (ACCDC 2010, internet site).

Bobolink has not been observed near the study area (NLDEC-WD, pers. comm).

Central and Eastern Newfoundland

The 2008 passerine survey documented 58 species in the Central Newfoundland Forest Ecoregion, with the five most common species being White-throated Sparrow, American Robin, Yellow-bellied Flycatcher, Yellow Warbler (*Setophaga petechia*) and Northern Waterthrush (Stantec 2012b, 2010c). The Central Newfoundland Forest Ecoregion has the highest species richness of all Ecoregions surveyed on the Island, although both the mean number of species and mean number of individuals per point count were below the overall average.

In 1995, passerine surveys were carried out in Terra Nova National Park, in the far eastern portion of this region, adjacent to the Study Area. Although the park is outside of the transmission corridor, similar species would be expected in the Central and Eastern Newfoundland region of the Study Area, as a large portion of the park lies in the Central Newfoundland Forest Ecoregion. Twenty-one passerine species were identified in the park, with higher numbers associated with fir and mixed fir-spruce stands (Jacques Whitford 1996a). White-throated Sparrow, Yellow-rumped Warbler and Yellow-bellied Flycatcher were the most abundant species.

Three Olive-sided Flycatcher were documented in the Central and Eastern Newfoundland region during the 2008 passerine surveys. An additional five Olive-sided Flycatchers were heard in this region during the 2008 ELC field program (Stantec 2012b, 2010c).

During the 2008 ELC field program (Stantec 2012b, 2010c), two Red Crossbills were recorded incidentally in primary habitat (i.e., mature Coniferous Forest) in this region. ACCDC records indicate another observation of this species within the Study Area close to Port Blandford (ACCDC 2010, internet site).

Two Gray-cheeked Thrush were encountered in Mixedwood Forest habitat in this region during the 2008 passerine surveys and an additional observation was made in Cutover habitat during ELC surveys (Stantec 2012b, 2010c).

While primary Blackpoll Warbler habitat is abundant in this region of the Study Area, only six observations of this species were recorded during the 2008 surveys (Stantec 2012b, 2010c). During the ELC field program (Stantec 2012b, 2010c), one pair of blackpoll warbler was documented in Conifer Forest habitat.

Passerine surveys in 2008 recorded Lincoln's sparrow (10), Savannah Sparrow (6) and Swamp Sparrow (10) within the Central and Eastern Newfoundland Region (Stantec 2012b, 2010c). Although not observed during this survey, it is also likely that Song Sparrow breeds in this portion of the Study Area.

Although the amount of primary habitat for Rusty Blackbird is as high as 78% for specific Ecoregions within Central and Eastern Newfoundland (i.e., the Long Range Barrens Ecoregion), this species is considered uncommon on the Island and often transient (Warkentin and Newton 2009). It was not observed during 2008 passerine of ELC surveys (Stantec 2012b, 2010c).

Bobolink has not been observed near the study area (NLDEC-WD, pers. comm).

Avalon Peninsula

Vassallo and Rice (1981) examined passerine diversity near South Head, along the east coast inland from Gull Island, and identified 22 species of passerines, including Red Crossbill and Rusty Blackbird. Among the more common species observed were Fox Sparrow, Northern Waterthrush and Blackpoll Warbler (Vassallo and Rice 1981). In

comparison, the 2008 passerine survey (Stantec 2012b, 2010c) found a total of 25 species in the Avalon Forest Ecoregion and 41 in the Maritime Barrens Ecoregion. The most common species observed by this survey within the region were Yellow-bellied Flycatcher, Northern Waterthrush, American Robin, Yellow-rumped Warbler, White-throated Sparrow and Blackpoll Warbler.

Olive-sided Flycatcher was not recorded in this region during the 2008 passerine surveys (Stantec 2012b, 2010c). However, the known breeding range for this species includes the Avalon Peninsula (Altman and Sallabanks 2000, internet site).

Although Red Crossbill were not recorded in the region by surveys conducted for the Project, ACCDC records indicate that there have been 23 observations of this species within the Avalon Peninsula region of the Study Area since 2003 (ACCDC 2010, 2008, internet sites). A number of relatively recent sightings of Red Crossbill have been reported near Whitbourne, suggesting successful nesting of this species in that area (EC 2006).

No Gray-cheeked Thrush were observed during 2008 surveys (Stantec 2012b, 2010c).

Fifty observations of Blackpoll Warbler were documented in this region of the Study Area in 2008. An additional eight individuals were recorded during ELC field surveys (Stantec 2012b, 2010c).

Observations of wetland sparrows within the region during 2008 surveys (Stantec 2012b, 2010c) were of Savannah Sparrow (16), Swamp Sparrow (23) and Song Sparrow (3). Although Lincoln's Sparrow was not recorded in the region during 2008 surveys, the area is within the breeding range of this species (Warkentin and Newton 2009).

The only observation of Rusty Blackbird during the 2008 surveys on the Island of Newfoundland was in the Maritime Barrens Ecoregion of the Avalon Peninsula (Stantec 2012b, 2010c). ACCDC (2010, 2008, internet site) records indicate that this species has been observed twice within the Study Area near Whitbourne.

Bobolink has not been observed near the study area (NLDEC-WD, pers. comm).

7.3 RAPTORS

Raptors capture prey, including reptiles, mammals, other birds, fish and amphibians, using large talons adapted to capture and kill prey (Burton 1998). Hawks, eagles, vultures and falcons and their allies (day-active birds of prey) are grouped in the order Falconiformes, while owls, which are generally nocturnal, are members of the order Strigiformes (Burton 1998).

The following provides a general overview of the presence, abundance and distribution of raptors in the regions that comprise the Study Area. Presence of raptors in the Study Area is based on fieldwork, professional experience, and the following sources: LGL (2008); Minaskuat Inc. (2008c, d); Jacques Whitford (2003c, 1999, 1996); Jacques Whitford and Minaskuat (2003b); AGRA Earth and Environmental Ltd. and Harlequin Enterprises (1999); DND (1994); Northland Associates Limited (1980); and Todd (1963).

Key raptor species identified for further review include Osprey (*Pandion haliaetus*), Bald Eagle (*Haliaeetus leucocephalus*), and Short-eared Owl (*Asio flammeus*). The occurrence of these species in the various regions is also discussed in the following text.

Central and Southeastern Labrador

Seventeen raptor species are known to occur in Central and Southeastern Labrador, eight of which are known to breed within the region. Surveys in 1998 identified Rough-legged Hawk (*Buteo lagopus*) as relatively “numerous” in the Study Area, with 10 observations being made, and also found one active (successful) nest of this species (Jacques Whitford 1999). During this same survey, three active Osprey nests were found and Red-tailed Hawk (*Buteo jamaicensis*), Merlin (*Falco columbarius*), Northern Hawk Owl (*Surnia ulula*) and Short-eared Owl were observed with no associated nest or young. In addition to these species, studies conducted for the TLH3 identified Bald Eagle, Northern Goshawk (*Accipiter gentilis*), Northern Harrier (*Circus cyaneus*), American Kestrel (*Falco sparverius*), Great Horned Owl (*Bubo virginianus*) and Boreal Owl (*Aegolius funereus*) within the region (Jacques Whitford 2003b, c; Jacques Whitford and Minaskuat 2003b).

Osprey are relatively abundant and well-studied in Central and Southeastern Labrador. Raptor surveys conducted in 1998 found 17 Osprey nests along the survey route, with

several of these being active (Jacques Whitford 1999). Similarly, Osprey were found to be relatively abundant in the region during surveys conducted for the TLH3. For example, 33 of 35 raptor nests identified during a survey of the proposed highway route were of Osprey (Jacques Whitford 2003c). Eight Osprey nests were found along the portion of the highway corridor shared by the transmission corridor, primarily in complexes of wetlands and waterbodies associated with a tributary of the Kenamu River (Jacques Whitford 2003c; Jacques Whitford and Minaskuat 2003b).

Although Bald Eagle nests were not observed during 1998 surveys in support of this Project (Jacques Whitford 1999), the breeding range for this species is known to include the area south of the treeline in Labrador (Todd 1963) and they have been observed in or adjacent to the Study Area during other studies. In particular, raptor studies performed for the TLH3 found an active Bald Eagle nest within the portion of the highway corridor shared with the transmission corridor (Jacques Whitford and Minaskuat 2003c) and this species was encountered during point counts conducted for this Project (Jacques Whitford 2003a). Outside of the Study Area, 36 known Bald Eagle nest sites were surveyed in central Labrador in 2005 (Minaskuat Limited Partnership 2005).

This species is frequently reported in the coastal barrens between L'Anse au Clair and Red Bay (Schmelzer 2005) and ACCDC records show a concentration of Short-eared Owl observations within the Study Area in this location (ACCDC 2010, 2008, internet sites). Two Short-eared Owl were incidentally recorded during waterfowl surveys in the Study Area near Forteau in 1998 (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999), one during raptor surveys in 1998 (Jacques Whitford 1999) and two during surveys along the TLH2, east of the Study Area (Jacques Whitford 1998b).

Newfoundland

Diurnal raptors in Newfoundland include Osprey, Bald Eagle, Northern Harrier, Sharp-shinned Hawk (*Accipiter striatus*), Northern Goshawk, Rough-legged Hawk, American Kestrel, Merlin and Gyrfalcon (*Falco rusticolus*) (Warkentin and Newton 2009; Whitaker

et al. 1996; Montevecchi 1993). While Osprey is considered the most common of these, most species nest on the Island and are widely distributed (Warkentin and Newton 2009). The exceptions to this are American Kestrel and Gyrfalcon, which are considered very uncommon, the latter occurring only in migration and over winter (Warkentin and Newton 2009). Owls breeding in Newfoundland include Great Horned Owl, Northern Hawk Owl, Short-eared Owl and Boreal Owl (*Aegolius funereus*) (Warkentin and Newton 2009). All species are found throughout the Island; however, Northern Hawk Owl shows a preference for colder, more northern areas and is considered relatively uncommon (Warkentin and Newton 2009). Snowy Owl (*Bubo scandiacus*) is also found on the Island, although like the Gyrfalcon, only during migration and over winter (Warkentin and Newton 2009).

Osprey, Bald Eagle and American Kestrel were the only three raptor species documented during field surveys along the proposed transmission corridor on the Island in 1998 (Jacques Whitford 1999).

As in Labrador, Osprey is considered to be the most abundant raptor; however, nesting habitat on the Island is considered to be of below-average quality for this species (Jacques Whitford 1999). Surveys in support of the Project in June and early July 1998 found a total of 20 nests (active and inactive), of which only three were on the Island (Jacques Whitford 1999).

Bald Eagle nests were not observed during 1998 raptor surveys of the Study Area (Jacques Whitford 1999) or during passerine surveys in 2008 (Stantec 2012b, 2010c). However, Bald Eagles are year-round residents on the Island, where they are found in association with coasts and forested areas with lakes and ponds (Warkentin and Newton 2009). Relatively high numbers of Bald Eagles are observed in parts of Placentia Bay and Trinity Bay (ACCDC 2010, internet site; Newfoundland and Labrador Tourism 2009, internet site) but relatively few nests are located on inland portions of the Avalon Peninsula (Department of Forest Resources and Agrifoods 2002, internet site).

Schmelzer (2005) compiled records of Short-eared Owl for the Island, showing a concentration of observations along coastal Newfoundland (western, north-eastern and eastern) and throughout the Avalon Peninsula. Between 2000 and 2005, there were 10 reports of Short-eared Owls between January and March on the Avalon Peninsula

(Schmelzer 2005), and a total of three Christmas Bird Count sightings at St. John's, Cape Race and Stephenville. Within the Newfoundland portion of the Study Area, ACCDC records show one observation of the Short-eared Owl on the Avalon Peninsula and a concentration of records in close proximity to the coastline along the Strait of Belle Isle (ACCDC 2010, 2008, internet site).

7.4 UPLAND GAME BIRDS

The term "Upland Game Bird" refers to non-waterfowl species that are hunted for subsistence and include species such as grouse, ptarmigan and snipe that are not necessarily associated with upland sites. Within the Province of NL, the main species that are hunted include Ruffed Grouse (*Bonasa umbellus*), Spruce Grouse (*Falcipennis canadensis*), Willow Ptarmigan (*Lagopus lagopus*) and Rock Ptarmigan (NLDEC 2009b). Both species of grouse were introduced to the Island of Newfoundland in the 1960s and 1970s (Warkentin and Newton 2009).

The following provides a general overview of the presence, abundance and distribution of upland game birds in the Study Area, with particular emphasis on Ruffed Grouse and Willow Ptarmigan. Ruffed Grouse was identified as a key species representing upland game birds because it has a relatively limited distribution and more specialized habitat requirements than other upland game species, being closely associated with aspen habitats that are comparatively limited in the Study Area.

Willow Ptarmigan was also considered for more detailed review as identified in the EIS Guidelines and Scoping Document issued by the GNL and the Government of Canada (2011). Habitat mapping for this species was not completed because of seasonal movements and variation in its habitat requirements (i.e., this species undergoes seasonal movements of considerable distance to satisfy food and breeding requirements).

Details on upland game species within the Study Area are provided within the Avifauna Component Study (Stantec 2012b, 2010c) and the Avifauna Component Study Supplementary Report (Stantec 2011).

Central and Southeastern Labrador

Few sightings of upland game birds have been recorded during avifauna surveys in this region. Willow Ptarmigan and Spruce Grouse would be expected to occur in higher numbers compared to Ruffed Grouse, based on availability of preferred habitat.

During passerine surveys in 2008, one observation of Ruffed Grouse was made in Wetland habitat in the Low Subarctic Forest Ecoregion (Stantec 2012b, 2010c). This species was also incidentally documented in the Central and Southeastern Labrador region during 2008 ELC surveys (one record) (Stantec 2012b, 2010c). Ruffed Grouse were not encountered during passerine surveys conducted in support of the TLH3 (Jacques Whitford 2003b).

One Willow Ptarmigan was recorded during each of the May and June waterfowl surveys in 1998 (AGRA Earth and Environmental Ltd. and Harlequin Enterprises 1999) and 15 observations of Willow Ptarmigan were made in the region during a May waterfowl survey conducted for the TLH3 (Jacques Whitford 2003a). Four Willow Ptarmigan were incidentally recorded east of the Study Area during surveys along the TLH2 in 1998 (Jacques Whitford 1998b).

Both Spruce and Ruffed Grouse were detected in southern Labrador (west of the transmission corridor) during the River Valley Ecosystem research in 2002 (IEMR 2003, internet site), along the Little Mecatina and St. Augustine River valleys (west of the Study Area).

While a relatively rare species in this area, Todd (1963) documented three records of Rock Ptarmigan on the south coast of Labrador (along the Strait of Belle Isle), within or adjacent to the Project Study Area.

Newfoundland

Ruffed Grouse, Spruce Grouse, Rock Ptarmigan and Willow Ptarmigan are resident species on the Island of Newfoundland (Warkentin and Newton 2009). Spruce Grouse are particularly associated with coniferous forests in Central Newfoundland, where they were first introduced, but have expanded their range to include the Northern Peninsula (Warkentin and Newton 2009).

Ruffed Grouse are resident throughout the Island, with the exception of the south coast (Warkentin and Newton 2009). Primary Hardwood Forest habitat for Ruffed Grouse

does not occur in the Study Area in Newfoundland. However, this species is a year-round resident on most of the Island, the exception being the south coast (Warkentin and Newton 2009). Only one observation of Ruffed Grouse was recorded during passerine surveys in 2008. One other Ruffed Grouse was documented in the Study Area, in Conifer Forest habitat, during the ELC field study (Stantec 2010a).

Willow Ptarmigan are found throughout the Island but they are most common on the Avalon Peninsula, along the Maritime Barrens, near the tips of large peninsulas and in association with open upland sites (Warkentin and Newton 2009). Because winter shelter for this species is relatively close at hand for some areas of Newfoundland, movements of Willow Ptarmigan on the Island are generally less than in Labrador, where they are often suspected of migrating many hundreds of kilometres.

Rock Ptarmigan (*Lagopus muta*) are restricted to high, barren rocky habitats along the south coast (Cape Ray to Fortune Bay), in the Long Range Mountains of the west coast and on the highest plateaus of the interior uplands (Skinner and McGrath 1994, internet site).

7.5 SEABIRDS

Each season, different populations of seabirds use the waters around the two shoreline electrode sites and the submarine cable crossing corridor. During the nesting season (May to September), nesting colonies of pelagic seabirds strongly influence the composition and distribution of the bird community in the Strait of Belle Isle Area, whereas colonies of coastal waterbirds are most important in Conception Bay. During summer, some pelagic seabird and coastal waterbird (specifically sea duck) species gather in some NL marine waters to spend the flightless period during the moult of their flight feathers. During spring and autumn migration (March to April and October to November, respectively, for most species), species of pelagic seabirds, coastal waterbirds and shorebirds that nest in Arctic and Subarctic regions dominate the Strait of Belle Isle Area bird community. In Conception Bay coastal waterbirds and shorebirds that nest in Arctic and Subarctic regions are most numerous during the migrations. During winter (December to February), the avifauna of the Strait of Belle Isle Area is comprised mostly of coastal waterbirds and pelagic seabirds that nest in the Arctic,

whereas in Conception Bay the avifauna is dominated by coastal waterbirds that nest in Subarctic and Arctic regions.

Strait of Belle Isle Area

A diversity of seabird species occurs during the nesting season in the Strait of Belle Isle Area, both as breeders and non-breeders (Sikumiut 2010). This seabird community is dominated by non breeding pelagic seabirds, a large nesting colony of pelagic seabirds, as well as coastal waterbirds nesting in small colonies and as individual pairs. Currents within the Strait of Belle Isle also influence the distribution of the different groups of the bird community. The flow of the cold Labrador Current along the north side of the Strait favours pelagic seabird species, whereas warmer water from the Gulf of St. Lawrence along the south side of the Strait of Belle Isle favours coastal waterbird species (LeGrow 1999).

As in other areas of the Northwest Atlantic, the offshore areas of the Strait of Belle Isle Area hosts tens of thousands of moulting Northern Fulmars, Great Shearwaters and Sooty Shearwaters in late June and July, feeding mostly on offal from fishing vessels (LGL 1983). The pre-moulting and moulting fulmars are likely comprised mostly of non-breeding sub-adults, whereas the two shearwater species arrive in the area after completion of their nesting on islands in the South Atlantic (Lock et al. 1994).

Following completion of breeding, male sea ducks gather in sheltered bays for the summer for their moult. Common Eider and the Harlequin Duck (listed as Species of Concern in *SARA* Schedule 1 and Vulnerable under the *NLESA*) gather in continentally significant numbers (up to 50,077 and 50 individuals, respectively) in June around islands and inlets of St. Peter Bay IBA (Bird Studies Canada 2004f, internet site; Russell and Fifield 2001). Reports of 20 or more individuals of Harlequin Duck seen at the south end of the Bell Island South Coast IBA during summer suggest that this species may moult there (Russell and Fifield 2001).

Large numbers of migrant pelagic seabirds, coastal waterbirds and shorebirds use the Strait of Belle Isle Area in passage between their breeding areas in coastal Labrador, the Canadian Arctic archipelago and Greenland, and their wintering areas in the Gulf of St. Lawrence and the Atlantic waters off Newfoundland, Nova Scotia, New Brunswick and the U.S., and, in the case of many shorebirds, South America (Russell and Fifield 2001;

Lock et al. 1994; Tuck 1967). Observations from the Point Amour IBA, where the Strait of Belle Isle narrows to only 17 km wide, thus funnelling migrants and providing the opportunity to sample the migrant seabirds passing through the proposed submarine cable crossing corridor.

From February through March, seabirds in the Strait of Belle Isle Area are reduced in number and restricted in distribution by ice to small areas of open water (LGL 1983). These birds consist mostly of Common Eider and Thick-billed Murre. In some winters, stretches of open water are present throughout the winter along the Labrador coast of the Strait of Belle Isle. In mid-March 1982, a concentration of 600 unidentified auks was observed along the Newfoundland coast approximately 20 km north-east of the proposed submarine cable crossing corridor.

Nesting, moulting, migration and wintering in the Strait of Belle Isle are covered for Pelagic Seabirds, Coastal Waterbirds, and Shorebirds in the text below.

Pelagic Seabirds

Atlantic Puffin (*Fratercula arctica*), Razorbill (*Alca torda*), Common Murre (*Uria aalge*), Black Guillemot (*Cepphus grylle*), Leach's Storm-Petrel (*Oceanodroma leucorhoa*), gulls and terns nest in the Strait of Belle Isle Area. The only large colony of pelagic seabirds is located 13 km west of the proposed submarine cable crossing corridor at Baie de Brador IBA, Québec, where 18,920 pairs of Atlantic Puffin and Razorbill nest, along with smaller numbers of gulls and Black Guillemot (CWS 2004a, internet site).

At the east end of the Strait of Belle Isle, Leach's Storm-Petrel nests 100 km north-east of the proposed shoreline electrode site on St. Peter Island in St. Peter Bay and Common Murre nests 95 km north-east of the L'Anse au Diable shoreline electrode site, on Belle Isle (Bird Studies Canada 2004f, internet site; Lock et al. 1994). Although these nesting colonies are relatively far from the proposed submarine cable crossing corridor and the L'Anse au Diable shoreline electrode site, birds nesting at those colonies may forage in the corridor or near the electrode site during May to September. Off the east coast of the Northern Peninsula Black-legged Kittiwake (*Rissa tridactyla*), a pelagic gull, nests in the Northern Groais Island IBA (Russell and Fifield 2001). However, birds nesting there are unlikely to cross the peninsula on foraging trips. Nesting seabirds also concentrate in

the Pinware River estuary in summer to forage for spawning capelin and other small fish (Sikumiut 2010).

The density of Northern Fulmar (*Fulmarus glacialis*) during OLABS surveys in 1982 in offshore areas of the Strait of Belle Isle Area in the nesting season ranged from 4.7 birds/km^2 in July to 0.04 birds/km^2 in September (average 2.0 birds/km^2) (LGL 1983). This species was absent during most nearshore surveys during the nesting season. Densities of pelagic seabirds and coastal waterfowl during 1981 OLABS surveys may have been influenced by larger than average capelin spawning runs in the Strait of Belle Isle that summer (Mactavish 2010, pers. comm.). During surveys in the Strait of Belle Isle conducted for Nalcor on 29-30 August 1998, fulmar density was low but during the 15-18 September surveys it was 0.5 birds/km^2 (Jacques Whitford and Kingsley 2000). During ECSAS surveys in the 2000s the average density of fulmars from May to August was 0.41 birds/km^2 (Sikumiut 2010).

During OLABS surveys Great Shearwater (*Puffinus gravis*) arrived in the Strait of Belle Isle in June, and density ranged from 0.2 birds/km^2 in September to 36.0 birds/km^2 in July (average 13.1 birds/km^2) (LGL 1983). Density varied from 0 to 0.07 birds/km^2 in nearshore areas. Sooty Shearwater (*Puffinus griseus*) density in offshore areas during OLABS surveys varied from 0.02 birds/km^2 in September to 5.4 birds/km^2 in July (average 1.2 birds/km^2), whereas in nearshore areas it ranged from 0 to 0.02 birds/km^2 in August. Jacques Whitford and Kingsley (2000) reported Sooty Shearwater was recorded in a density of 4.3 birds/km^2 on 29-30 August 1998 but was scarce during the 15 18 September surveys. Manx Shearwater (*Puffinus puffinus*) was recorded in low densities during summer surveys (Jacques Whitford and Kingsley 2000). During ECSAS surveys combined shearwater species had a density of 0.87 birds/km^2 (Sikumiut 2010).

Leach's Storm-Petrel was recorded in low densities during the 1998 surveys (Jacques Whitford and Kingsley 2000).

Northern Gannet was present in relatively low densities during OLABS surveys, ranging from 0.01 birds/km^2 in May to 0.1 birds/km^2 in September (LGL 1983). Gannet density was 0.2 birds/km^2, low during 29-30 August surveys in 1998 but much lower during other surveys (Jacques Whitford and Kingsley 2000). Gannet density during ECSAS surveys averaged 1.37 birds/km^2 (Sikumiut 2010).

Phalarope density during OLABS surveys in offshore areas ranged from 0.04 birds/km^2 in September to 0.4 birds/km^2 in June, but this species was absent from nearshore areas except in August (LGL 1983). Red Phalarope (*Phalaropus fulicarius*) was recorded in low density during the August and September 1998 surveys (Jacques Whitford and Kingsley 2000).

Black-legged Kittiwake was recorded in nearshore areas in densities ranging from 0.2 birds/km^2 in May to 12.6 birds/km^2 in September during OLABS surveys (LGL 1983). In offshore areas, kittiwake OLABS densities ranged from 0 birds/km^2 in August to 0.1 birds/km^2 in June. Jacques Whitford and Kingsley (2000) reported kittiwake densities ranging from 1.4 birds/km^2 on 29-30 August to 5.7 birds/km^2 on 15-18 September. During ECSAS surveys kittiwake density was 2.34 birds/km^2 (Sikumiut 2010).

Pomarine (*Stercorarius pomarinus*), Parasitic (*Stercorarius parasiticus*) and unidentified Jaegers were observed in low densities during the August and September surveys conducted by Jacques Whitford and Kingsley (2000).

Auks could not be identified to species during OLABS surveys but unidentified auks were seen during OLABS surveys in offshore areas in densities varying from 0.1 birds/km^2 in September to 5.9 birds/km^2 in May (LGL 1983). In nearshore areas, densities ranged from 0 birds/km^2 in August to 0.1 birds/km^2 in June. Jacques Whitford and Kingsley (2000) reported Atlantic Puffin density ranging from 3.4 birds/km^2 on 29-30 August to 0.7 on 15-18 September. During these surveys combined Common Murre, Thick-billed Murre (*Uria lomvia*) and unidentified Murre density was 0.5 birds/km^2 on 29 30 August but low on 15-18 September. Razorbill densities were low during these surveys. During ECSAS surveys, density of combined murres was 0.65 birds/km^2, Dovekie (*Alle alle*) was 0.25 birds/km^2 and other auk species was 0.59 birds/km^2 (CWS 2010b).

Pelagic seabird species nesting in the Strait of Belle Isle Area, with the exception of Black-legged Kittiwake and Arctic Tern (*Sterna paradisaea*), have high adult survival but low reproductive rates because of small clutch sizes (one egg in most species) (Gaston 2004). For this reason, perturbations to nesting colonies can have effects on populations of pelagic seabirds. Egg laying takes place from mid-May to mid-June. Most young fledge by July to August; however, Leach's Storm-Petrel fledging does not peak until mid-September and continues as late as mid-November.

Pelagic species detected in the Strait of Belle Isle Area during migration surveys include Northern Fulmar, shearwaters, Northern Gannet, Black-legged Kittiwake, phalaropes, auks and jaegers. At this site 4,000 large alcids were observed in northward migration from late April to late May (Russell and Fifield 2001; LeGrow 1999). Of those alcids that could be identified to species, most were Razorbills and the remainder were the two species of murre. This number is considered globally significant for Razorbill (Bird Studies Canada 2004d, internet site). Many of these Razorbills likely originated from the large colony in Gannet Islands Provincial Ecological Reserve, Labrador, located 220 km north-west of the Strait of Belle Isle Area, which is the largest Razorbill colony in the world (Sikumiut 2010). The Gannet Islands also host a large Atlantic Puffin colony.

Northern Fulmar density calculated from OLABS surveys during March and April was 0 birds/km^2 in offshore areas and averaged 0.1 birds/km^2 in nearshore areas (LGL 1983). During October and November density in offshore areas averaged 0.1 birds/km^2. In nearshore areas density averaged <0.02 birds/km^2. Densities during surveys by Jacques Whitford and Kingsley (2000) were 0.1 birds/km^2 on 7 October and negligible density on 27-29 October.

Great Shearwater was absent from OLABS surveys during spring (LGL 1983). Density during autumn OLABS surveys averaged 2.1 birds/km^2 in offshore areas, but this species was absent from nearshore areas. During October 1998 surveys Great Shearwater occurred in negligible density (Jacques Whitford and Kingsley 2000). Sooty Shearwater was also absent during spring OLABS surveys (LGL 1983). During autumn, density of this species averaged 0.9 birds/km^2 in offshore areas but zero in nearshore areas. Jacques Whitford and Kingsley (2000) reported a density for this species of 0.1 birds/km^2 on 7 October but it was not recorded on 27-29 October (Jacques Whitford and Kingsley 2000). Almost 6,000 Sooty Shearwaters were counted passing Cape Bauld near L'Anse aux Meadows during land-based sea watches on 18-19 August 1981, indicating that southward migration of this species begins in August in this area (LGL 1983). Two flocks totalling more than 700 individuals were observed in early October.

Northern Gannet was not recorded during spring or autumn OLABS surveys (LGL 1983). It was recorded in low density during October surveys conducted by Nalcor (Jacques Whitford and Kingsley 2000).

Red Phalarope was not recorded during the spring or autumn OLABS surveys; however, the small-bodied phalarope species are difficult to detect during aerial surveys (LGL 1983). Red Phalarope was recorded in low density during the fall 2008 ship-board surveys reported by Jacques Whitford and Kingsley (2000).

Black-legged Kittiwake was not recorded during spring OLABS surveys (LGL 1983). During autumn surveys average density in nearshore areas was 1.0 birds/km^2, and in offshore areas was 0.4 birds/km^2. During 1998 surveys, it was recorded in a density of 0.8 birds/km^2 on 7 October but in much lower density on 27 29 October (Jacques Whitford and Kingsley 2000).

No jaegers were recorded during the OLABS surveys in spring or autumn (LGL 1983). However, jaegers (not identified to species) were recorded in low density during the 7 October 1998 survey (Jacques Whitford and Kingsley 2000).

Unidentified auks were recorded during OLABS spring surveys in nearshore areas in an average density of 0.2 birds/km^2 (LGL 1983). In offshore areas auk density averaged 0.7 birds/km^2 in spring and 0.1 birds/km2 in autumn. During 1998 surveys, density of combined murres was 0.2 birds/km^2 on 7 October (Jacques Whitford and Kingsley 2000). Jacques Whitford and Kingsley (2000) also reported for auks that could not be separated into murres or Razorbill a density of 0.4 birds/km^2 on 27-29 October. Those that could be identified as Razorbill were recorded in a density of 0.2 birds/km^2 on 27-29 October. Atlantic Puffin was recorded in low density on 7 October but 0.5 birds/km^2 on 27-29 October. Dovekie occurred in a density of 0.8 birds/km^2 on 7 October and 0.9 birds/km^2 on 27-29 October.

Densities of pelagic seabird species in the marine waters of the Strait of Belle Isle are low during winter (LGL 1983). During OLABS surveys, Northern Fulmar density during the winter in offshore areas averaged 0.01 birds/km^2 but this species was not recorded in nearshore areas. Shearwaters, Northern Gannet and phalaropes were absent during these surveys. Black-legged Kittiwake density averaged 0.4 birds/km^2 in nearshore areas and 0.3 birds/km^2 offshore. Unidentified auks averaged 0.06 birds/km^2 in nearshore areas and 0.2 birds/km^2 offshore during the winter.

Coastal Waterbirds

Common Eider (*Somateria mollissima*) is the most numerous of the coastal waterbird species in all seasons along NL coasts, and nests in colonies (Lock et al. 1994). Common Eider nests in small numbers at Shoal Cove (CWS 2010d). This species nests in undetermined numbers at Twin Islands (CWS and Newfoundland and Labrador Culture Recreation and Youth Wildlife Division 1987) located 56 km to the south-west of the proposed submarine cable crossing corridor. Six pairs nest at Saint Augustin Migratory Bird Sanctuary and IBA (Bird Studies Canada 2004e, internet site) located 105 km southwest of the submarine cable crossing corridor. At the tip of the Northern Peninsula Common Eider nests near L'Anse aux Meadows in Canard's Cove and in Eastern Pond (Lock et al. 1994). It also nests off the opposite side of the Northern Peninsula in and near Hare Bay Ecological Reserve (93+ pairs), and in Bell Island South Coast IBA (30+ pairs) (Lock et al. 1994). The preferred foraging areas of these nesting birds are not known, but they are unlikely to cross the Northern Peninsula during foraging sorties. Densities of Common Eider, White-winged Scoter, Surf Scoter, and unidentified scoter were low during the August and September 1998 Nalcor surveys (Jacques Whitford and Kingsley 2000).

Small to moderate numbers of Razorbill, Black Guillemot and gulls nest 16 km west of the proposed submarine cable crossing corridor on the Québec shore at Saint-Augustin Migratory Bird Sanctuary and IBA, and 150 km to the west of the corridor at Gros Mécatina Island (Bird Studies Canada 2004e, internet site; Chapdelaine et al. 2001). Common Tern (*Sterna hirundo*) and Arctic Tern nest in colonies at James Island and the Whale Islands located 50 km south-west of the submarine cable crossing corridor (CWS 2010d). Common Tern and Arctic Tern nest at Eastern Pond and on the east coast of the Northern Peninsula in or near Hare Bay Ecological Reserve, but the latter are unlikely to forage in or near the submarine cable crossing corridor or the L'Anse au Diable shoreline electrode site. In addition, several small, unsurveyed colonies of gulls and terns as well as individual pairs of nesting of Black Guillemot are found on cliffs and shorelines along both sides of the Strait of Belle Isle Area (CWS 2010d).

Herring Gull (*Larus argentatus*) was recorded during OLABS surveys in nearshore areas in densities of 3.6 birds/km^2 in September to 9.5 birds/km^2 in June (average 6.3 birds/km^2), and densities in offshore areas ranged from 0.2 to 1.6 birds/km^2 (LGL 1983). Great Black-backed Gull (*Larus marinus*) densities during OLABS surveys in nearshore

areas ranged from 0.2 birds/km^2 in August to 2.9 birds/km^2 in July. In offshore areas densities varied from 0.04 birds/km^2 in September to 0.4 birds/km^2 in July. Jacques Whitford and Kingsley (2000) reported Herring Gull density ranging from 1.6 birds/km^2 on 29-30 August to 0.5 birds/km^2 on 15 18 September. Great Black-backed Gull densities on those survey dates varied from 0.6 to 0.1 birds/km^2, respectively. During ECSAS surveys densities of combined large gulls (Great Black-backed and Herring Gulls) averaged 1.45 birds birds/km^2 during the nesting season (Sikumiut 2010).

Common, Arctic and unidentified Terns and Black Guillemot were recorded in low densities during the August and September 1998 surveys (Jacques Whitford and Kingsley 2000).

Coastal waterbird species using the Strait of Belle Isle Area during spring and autumn migration include eiders, scoters, other ducks, loons, terns, locally-nesting gulls, Arctic gulls and Black Guillemot. Red-throated and Common Loons were recorded in low densities during fall 1998 surveys (Jacques Whitford and Kingsley 2000). Common Eider is observed in globally significant numbers (over 62,000) from Point Amour IBA from late April to late May during spring migration (Bird Studies Canada 2004d, internet site; Russell and Fifield 2001). Fewer than 400 scoters and only seven Harlequin Duck were noted during the same time period. However, the majority of Scoters may have passed through after the surveys. Common Eider was not recorded during OLABS surveys (LGL 1983). Jacques Whitford and Kingsley (2000) reported that it occurred in a low density on 7 October but in a density of 0.4 birds/km^2 on 27 29 October. White-winged Scoter and Long-tailed Duck were also recorded in low densities during the same surveys (Jacques Whitford and Kingsley 2000). Fall migration of murres and Common Eider through the Strait of Belle Isle is more protracted than in spring and can continue into December. However, fall migration in the Strait of Belle Isle has received little study.

Herring Gull was recorded during OLABS surveys in spring in an average density of 0.1 birds/km^2 in nearshore areas and 0.02 birds/km^2 offshore (LGL 1983). During autumn the average density was 0.4 birds/km^2 in nearshore areas and 0.2 birds/km^2 offshore. Jacques Whitford and Kingsley (2000) reported that this species occurred in a density of 0.1 birds/km^2. Great Black-backed Gull was recorded during OLABS surveys in the spring in an average density of 0.3 birds/km^2 in nearshore areas and 0.04 birds/km^2 offshore.

During fall OLABS surveys density was 0.2 birds/km^2 in nearshore areas and 0.04 birds/km^2 offshore. Density of this species during 1998 surveys was low (Jacques Whitford and Kingsley 2000). Iceland Gull (*Larus glaucoides*) density during spring OLABS surveys in nearshore areas averaged 0.2 birds/km^2 and in offshore areas averaged 0.3 birds/km^2 (LGL 1983). During fall surveys density averaged 0.02 birds/km^2 in both nearshore and offshore areas. Density was low during fall surveys conducted in 1998 (Jacques Whitford and Kingsley 2000). Glaucous Gull (*Larus hyperboreus*) density during OLABS spring surveys averaged 0.01 birds/km^2 nearshore and averaged 0.003 birds/km^2 offshore (LGL 1983).

Globally significant numbers (over 5,000) of migrating Black Guillemot have been observed from Point Amour during spring migration (Bird Studies Canada 2004d, internet site; Russell and Fifield 2001). Low densities of this species were recorded during October surveys conducted for Nalcor (Jacques Whitford and Kingsley 2000). Large alcids (Thick-billed and Murre, Razorbill) migrate past Point Amour in globally significant numbers (over 40.000) during spring.

During the same surveys in 1998, few terns were recorded (Jacques Whitford and Kingsley 2000).

The only reported area in the Strait of Belle Isle Area where pelagic seabirds or coastal waterbirds concentrate during spring or autumn migration is Cape Bauld. Although most of the bird concentrations seen from Point Amour are migrants in passage, tidal rips during summer and autumn occasionally attract seabirds in concentrations visible from Point Amour (Russell and Fifield 2001).

Large concentrations of Common Eider have been observed in the Strait of Belle Isle Area beginning in mid-December, and several thousand have been noted in coastal waters of sheltered bays near L'Anse aux Meadows, 61 km north-east of the submarine cable crossing corridor and a similar distance from the L'Anse au Diable shoreline electrode site, during winter (Lock et al. 1994; LGL 1983). Common Eider also winters in coastal waters of the Northern Groais Island and Bell Island South Coast IBAs (82 km and 96 km, respectively, from the submarine cable crossing corridor) (Bird Studies Canada 2004a, d, internet sites) and in globally significant numbers (10,000 individuals) in the Fischot Islands IBA (68 km from the corridor) (Bird Studies Canada 2004b, internet site).

Approximately 200 American Black Ducks winter in Hare Bay (44 km from the corridor), which is this species' northernmost wintering site in the world (CWS and Newfoundland and Labrador Culture Recreation and Youth Wildlife Division 1987), but these birds are unlikely to travel overland to the submarine cable crossing corridor or L'Anse au Diable shoreline electrode site.

During winter OLABS surveys, coastal waterbird species present in the Strait of Belle Isle were limited to gulls (LGL 1983). Herring Gull was recorded in an average density of 0.01 birds/km^2 in nearshore areas and 0.003 birds/km^2 in offshore areas. Great Black-backed Gull density averaged 0.1 birds/km^2 in nearshore areas and 0.02 birds/km^2 offshore. Iceland Gull density varied widely, from 0 to 4.1 birds/km^2 (average 1.4 birds/km^2) in nearshore areas, but 0 to 0.02 birds/km^2 (average 0.007 birds/km^2) in offshore areas. Glaucous Gull density averaged 0.1 birds/km^2 in nearshore areas and 0.007 birds/km^2 offshore.

Shorebirds

Shorebird species that use the marine shorelines of the Strait of Belle Isle Area while nesting consist of Spotted Sandpiper (*Actitis macularia*) and Greater Yellowlegs (*Tringa melanoleuca*) (Mactavish 2010, pers. comm.). Autumn migration of shorebird species that nest along the Labrador Sea and in the Canadian Arctic begins in July and continues until late October. Several species, in addition to the two above, use shoreline habitat within the Strait of Belle Isle Area during their autumn migration. These are discussed below under Seasonal Migratory Movements.

Shorebirds stop at tidal flats along headlands, beaches and lagoons to feed and rest during migration through the Strait of Belle Isle (Sikumiut 2010). The largest numbers of passage migrants are typically observed during autumn migration from July to November, peaking from August to October. Few shorebirds are observed at these sites during spring, because most migrate through the Great Plains of North America during northward migration.

Shorebird stopover sites surveyed by CWS's Atlantic Canada Shorebird Surveys in the Strait of Belle Isle Area include Shoal Cove East, Pines Cove, Eddies Cove East, Anchor Point, Bear Cove, Lower Cove, Shoal Cove West, Deadman's Cove, Sandy Cove and L'Anse aux Meadows (all in Newfoundland), and L'Anse au Loup, Battle Harbour, L'Anse

au Clair, Pinware Harbour, L'Anse au Amour and English Point (Forteau Bay) (all in Labrador) (CWS 2010c; Sikumiut 2010; Goulet and Robertson 2007). Migrant shorebirds also stop at Hare Bay (CWS and Newfoundland and Labrador Culture Recreation and Youth Wildlife Division 1987).

The ten most numerous species of shorebirds at stopover sites observed in the Strait of Belle Isle Area are, in order of abundance, White-rumped Sandpiper (*Calidris fuscicollis*), Greater Yellowlegs (*Tringa melanoleuca*), Semipalmated Sandpiper (*Calidris pusilla*), Ruddy Turnstone (*Arenaria interpres*), Semipalmated Plover (*Charadrius semipalmatus*), Dunlin (*Calidris alpina*), Sanderling (*Calidris alba*), Least Sandpiper (*Calidris minutilla*), Black-bellied Plover (*Pluvialis squatarola*) and Lesser Yellowlegs (*Tringa flavipes*) (CWS 2010c).

Whimbrel and American Golden-Plover (*Pluvialis dominica*) stage at coastal barrens (heathlands) located in close proximity to the Labrador and Newfoundland coasts, including coastlines adjacent to the Strait of Belle Isle, during autumn migration. There they feed on the berries of ericaceous shrubs (Mactavish 2010, pers. comm.; Sikumiut 2010; Peters and Burleigh 1951).

Conception Bay

Although small numbers of fulmars or shearwaters may enter outer Conception Bay, the marine habitat within Conception Bay is not known to support pre-moulting or moulting concentrations of seabirds within 40 km of the proposed Dowden's Point shoreline electrode site (Mactavish 2010, pers. comm.). There are no large concentrations of moulting coastal waterbirds in Conception Bay during summer. There are insufficient data to describe seabird density in the marine waters of Conception Bay (Fifield 2011, pers. comm.).

There are few reported concentrations of migrating seabirds in Conception Bay.

Pelagic seabirds do not winter in Conception Bay, but several species of coastal waterbirds do, including various duck species, Common Loon and Great Cormorant.

Pelagic Seabirds

The seabird community of Conception Bay during the nesting season is comprised mostly of coastal waterbirds nesting in small colonies and as individual pairs. However, a

large colony of pelagic seabirds is located just outside the bay. Colonies of eight pelagic seabirds species are located in the Baccalieu Island Ecological Reserve located 75 km north by north-east of the proposed Dowden's Point shoreline electrode site (Lock et al. 1994). The Leach's Storm-petrel colony supports an estimated 3.3 million pairs, which is the largest colony of this species in the world. There are also 30,000 Atlantic Puffin, 12,795 Black-legged Kittiwake, 4,000 Common Murre and 1,712 Northern Gannet pairs at Baccalieu Island (Lock et al. 1994).

Much smaller colonies of kittiwakes are scattered along the west shore of Conception Bay, the nearest being Brigus Lookout located 13 km north-west of the Dowden's Point electrode site (CWS 2011b). There are insufficient data to describe seabird abundance in the marine waters of Conception Bay (Fifield 2011, pers. comm.). However, nesting Leach's Storm-Petrels likely do not forage in Conception Bay in substantial numbers because this species is known to feed primarily off the continental shelf in NL waters (Steele and Montevecchi 1994). Pelagic seabirds are not known to concentrate at or near the Dowden's Point electrode site during capelin spawning (Mactavish 2010, pers. comm.).

Nesting coastal waterbirds are widespread around Conception Bay. There is a colony of 50 pairs of unidentified tern on Kelly's Island, located 8 km north-east of the Dowden's Point shoreline electrode site (Lock et al. 1994). These terns appear to be mostly Common Tern, a species that nests at several other sites around Conception Bay (Mactavish 2010, pers. comm.). Arctic Terns are seen in Conception Bay in the nesting season only at Spaniard's Bay located 25 km north-west of Dowden's Point (Mactavish 2010, pers. comm.).

Black Guillemots nest at Kelly's Island (100 pairs), Little Bell Island (125 pairs) 12 km north-east of Dowden's Point and Bell Island (unknown number) 14 km north-east of Dowden's Point (Lock et al. 1994). However, nesting habitat for this species is scarce in the upper reaches of Conception Bay (Mactavish 2010, pers. comm.). Nesting Great Black-backed and Herring Gulls are ubiquitous around Conception Bay (Mactavish 2010, pers. comm.), and nest on Baccalieu Island but have not been censused there (Lock et al. 1994). Double-crested Cormorant (*Phalacrocorax auritus*) nests on the Harbour Grace Islands just north of Spaniard's Bay (CWS 2011b). These species of coastal waterbirds

forage widely in the bay during nesting season but are not known to concentrate at or near the Dowden's Point shoreline electrode site, even during the capelin spawning season (Mactavish 2010, pers. comm.).

Strong north-east winds in autumn occasionally force Leach's Storm-Petrel, jaegers and auks to the head of the bay, after which many of the birds move north-east along the shoreline past the Dowden's Point shoreline electrode site (Mactavish 2010, pers. comm.). At the Cape St. Francis IBA, 43 km north-east of the shoreline electrode site, up to 650 Common Eiders have been observed during spring migration (Bird Studies Canada 2004g, internet site).

Coastal Waterbirds

Although smaller groups may winter within Conception Bay on occasion, there are no known concentrations of wintering Eiders near Dowden's Point. As many as 5,000 Common Eiders winter at the Cape St. Francis IBA (Bird Studies Canada 2004g, internet site), located approximately 43 km north-east of the proposed Dowden's Point shoreline electrode site. Common Eiders (mostly the northern subspecies, borealis) winter in globally significant numbers (12,000 individuals) at the Grates Point IBA, 73 km north-west of the shoreline electrode site (Bird Studies Canada 2004h, internet site). Up to 0.04 ducks/km winter along the shores of Bell and Kelly's Islands and along the coast to the east of these islands (Lock et al. 1994). The closest of these islands, Kelly's Island, is 8 km north-east of the electrode site. One to two Barrow's Goldeneyes, have been observed wintering at Spaniard's Bay, 22 km north-west of Dowden's Point, for over ten years (Mactavish 2010, pers. comm.; Schmelzer 2006). However, none have been sighted near the electrode site.

Individual Harlequin Ducks, are occasionally sighted around Conception Bay in winter, but not near Dowden's Point. Great Black-backed, Herring, Glaucous, Iceland and Black-headed Gulls are distributed around the coastline of the bay in mixed flocks of up to a few hundred individuals during the winter. Most of these birds forage primarily at raw sewage outlets and garbage dumps and roost on islands around Conception Bay (Mactavish 2010, pers. comm.).

Shorebirds

Spotted Sandpiper is the only shorebird to regularly use the marine waters within Conception Bay during the nesting season (Mactavish 2010, pers. comm.). However, this species is not colonial, so its density during nesting season is low.

There are no known concentrations of migrating shorebirds at or near the Dowden's Pont shoreline electrode site, but migrating shorebirds stop at a variety of sites around Conception Bay. The location with some of the largest numbers of shorebirds during autumn migration, Spaniard's Bay, is also the only Atlantic Canada Shorebird Survey site on Conception Bay (surveys from 1984 to 2007) (Goulet and Robertson 2007). Spaniard's Bay is approximately 23 km north-west of the Dowden's Point shoreline electrode site, and a total of 22 species of shorebird have been recorded there during migration. Maximum counts of shorebirds at this location include 75 Semipalmated Plovers, 40 Black-bellied Plovers, 80 White-rumped Sandpipers, 139 Greater Yellowlegs, 17 Lesser Yellowlegs, 33 Semipalmated Sandpipers, 17 Sanderlings, six Red Knot and 50 Ruddy Turnstones (Goulet and Robertson 2007).

Shorebirds rarely winter in Conception Bay, but up to 35 Purple Sandpipers regularly winter just outside the bay at Cape St. Francis (Bird Studies Canada 2004g, internet site).

7.6 SPECIES OF SPECIAL CONCERN

Additional species of special conservation status known to potentially occur in the vicinity of the study area (and not previously discussed in sections 7.1 to 7.5) include Common Nighthawk and Red Knot.

Central and Southeastern Labrador

Red Knot is not known to breed in Labrador but is expected to occur along the coast during migration. However, there is a lack of data relative to the area and as a result there are few records of Red Knots from locations where they may be expected to occur during migration along the Labrador coastline (Mactavish, pers. comm., cited in Garland and Thomas 2009). There were approximately 5 to 10 historical Red Knot sightings reported in Labrador between 1860 and 1950, the majority of which were during fall

migration along the east and south coasts (Todd 1963). Although this species has been observed along the coast of the Strait of Belle Isle, records do not indicate any sightings within the Central and Southeastern Labrador region of the Study Area (ACCDC 2010, internet site; Garland and Thomas 2009).

Although known to breed in Labrador, Common Nighthawk was not observed during baseline surveys in support of this Project (Stantec 2012b, 2010c) and were not recorded during 13 years of the operation of the Happy Valley Breeding Bird Survey (Sauer et al. 2007), although this likely reflects the nocturnal behaviour of this species. One incidental observation of Common Nighthawk was made (while walking between point count locations) during 2006 passerine surveys (Minaskuat Inc. 2008c). During targeted surveys for Common Nighthawk in 2014, for the Lower Churchill Hydroelectric Generation Project, observations were recorded.

Newfoundland

Red Knot sightings have been reported on almost the entire coast of Newfoundland, but the majority have been at several locations on the west coast and at Bellevue Beach in Trinity Bay (Garland and Thomas 2009 and references therein). Bellevue Beach, along with two other locations where Red Knot has been observed (Arnold's Cove and Come by Chance), is located within the Study Area at the western end of the Avalon Peninsula. Records indicate that these sightings are of fall migrants, primarily observed during September and October (ACCDC 2010, internet site). Although also observed along the coast of the Strait of Belle Isle (Garland and Thomas 2009), ACCDC records do not indicate any sightings within the Study Area on the Northern Peninsula (ACCDC 2010, internet site).

Common Nighthawk are extremely rare, if present at all, on the Island of Newfoundland (EC 2010, internet site). Earlier studies did not observe Common Nighthawk in Newfoundland (Todd 1963) and it is considered only a rare visitor on the Island (COSEWIC 2007b, internet site).

In addition to the aforementioned species, isolated records of Barrow’s Goldeneye (*Bucephala islandica*) and Ivory Gull (*Pagophila eburnea*) have been recorded within the Newfoundland portion of the Study Area. A 1993 record of Barrow’s Goldeneye was made at Arnold's Cove on the Avalon Peninsula (ACCDC 2010, internet site) but this

species is not known to breed on the Island. However, Barrow's Goldeneye does winter in coastal areas of Newfoundland where they are considered uncommon, with <15 individuals observed near Terra Nova National Park (Eadie et al. 2000, internet site). Observations were also reported in Labrador during the winter on three occasions up to 325 km inland from open coastal water (Chubbs and Phillips 2007). Ivory Gull was recorded at the Avondale River estuary in 1998 (ACCDC 2008, internet site). This species breeds in high-Arctic coastal areas in Nunavut and winters primarily in Arctic seas, but is occasionally seen along the coast of Newfoundland (Stenhouse 2004). Although these records demonstrate that these species may very infrequently be observed within the region, they do not typically utilize the habitat within the Study Area.

8 REGULATORY COMPLIANCE

The Migratory Birds Convention Act (MBCA) was designed to protect and conserve migratory birds, both as populations and individual birds, and their nests (internet site: Government of Canada 1994a). In Canada, the MBCA and associated Migratory Birds Regulations (internet site: Government of Canada 1994b) are administered through Environment Canada by the Canadian Wildlife Service (CWS) (internet site: Government of Canada 1994a). Coverage of the MBCA includes songbirds (e.g., warblers, thrushes, and sparrows, waterfowl (e.g., ducks, loons and geese), and seabirds (e.g., gulls and terns) but does not include grouse, ptarmigan, hawks, eagles, owls, blackbirds or jays (Environment Canada 1991).

SARA was established to provide wildlife species additional protection against extirpation, extinction or endangerment (internet site: Government of Canada 2002). This includes protection from human activity. Under the *SARA*, there are three schedules, species officially protected are listed on Schedule 1, where species are classified under the following designations (three of which mirror the provincial definitions):

- Extirpated: a wildlife species that no longer exists in the wild in Canada, but exists elsewhere;
- Endangered: a wildlife species that is facing imminent extirpation or extinction;

- Threatened: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction; and
- Special Concern: a wildlife species that has characteristics which make it particularly sensitive to human activities or natural events.

Schedule 1 of *SARA* is the official list of wildlife species at risk. Once a species is listed, the measures to protect and recover a listed wildlife species are implemented. Species that were designated at risk by the COSEWIC prior to the existence of the *SARA* require reassessment before being placed on Schedule 1. These species are listed on Schedule 2 if they were previously assessed by COSEWIC as endangered or threatened, and on Schedule 3 if they were previously assessed by COSEWIC as special concern. Both Schedules 2 and 3 are not provided with legal protection under the *SARA*.

SARA provides protection to listed migratory bird species and aquatic species everywhere in Canada but all other species are only afforded these protections on federal lands or through a specific order.

Provincially, wildlife species at risk are managed under *NLESA*, designed to complement federal *SARA* legislation. The *NLESA* protects wildlife species, subspecies or populations within the province that are considered extirpated, endangered, threatened or vulnerable based on recommendations from COSEWIC or the provincial Species Status Advisory Committee (SSAC) (internet site: Government of Newfoundland and Labrador 2004). Under *NLESA* it is prohibited to disturb, harass, injure or kill any individual of a listed species, disturb or destroy the residence of listed species, or be in possession of individuals of a listed species (internet site: Government of Newfoundland and Labrador 2004). There are currently 14 bird species listed under *NLESA* (NLDEC 2012).

To comply with federal and provincial legislation and regulations Nalcor has, or will:

- Identify avian related sensitivities (e.g., nests, concentration areas) through focused, habitat based avian surveys, including for listed species;
- Designed and employed appropriate best management mitigation to avoid disturbance and mortality of birds, including listed species;
- Avoid vegetation clearing activities during the migratory bird breeding season, where possible;

- Conduct monitoring or follow-up, as appropriate, to determine success of the mitigation; and,
- Address contingency plans if the mitigation is found to be unsuccessful.

The intent of the APEEMP would be to allow LCP to evaluate, and to respond appropriately to the findings of, the Project effects during construction and operations on:

- Disturbance to birds, including listed species, and their residences (i.e., nests, shelters); and
- Mortality of birds, including listed species.

The NLR 87/13, also referred to as the Labrador-Island Transmission Link Undertaking Release Order under the Environmental Protection Act releases the Project from environmental assessment and sets conditions for this release that Nalcor Energy must meet. The release of the Labrador-Island Transmission Link from environmental assessment under section 4 is subject to the following terms and conditions:

(a) Nalcor Energy shall adhere to all mitigation, monitoring and commitments stated in the Environmental Impact Statement submitted April 12, 2012 and the additional Environmental Impact Statement information submitted December 10, 2012;

(f) the proponent shall prepare environmental effects monitoring plans, EEMs, in consultation with the applicable government divisions, and submit them to the Minister of Environment and Conservation for approval before the start of any site specific construction;

(g) the environmental effects monitoring plans referred to in paragraph (f) shall address the following project valued ecosystem components, VECs, and will be developed to monitor effects as a result of the project and to ensure that any changes to existing baseline as a result of project effects are documented and mitigated:

(iv) Avifauna species not covered by Section 19 of the Endangered Species Act

Submission of this EEMP satisfies the condition/requirement in NL Reg 87/13 (f) and (g) under Section 3.

9 ENVIRONMENTAL EFFECTS MANAGEMENT

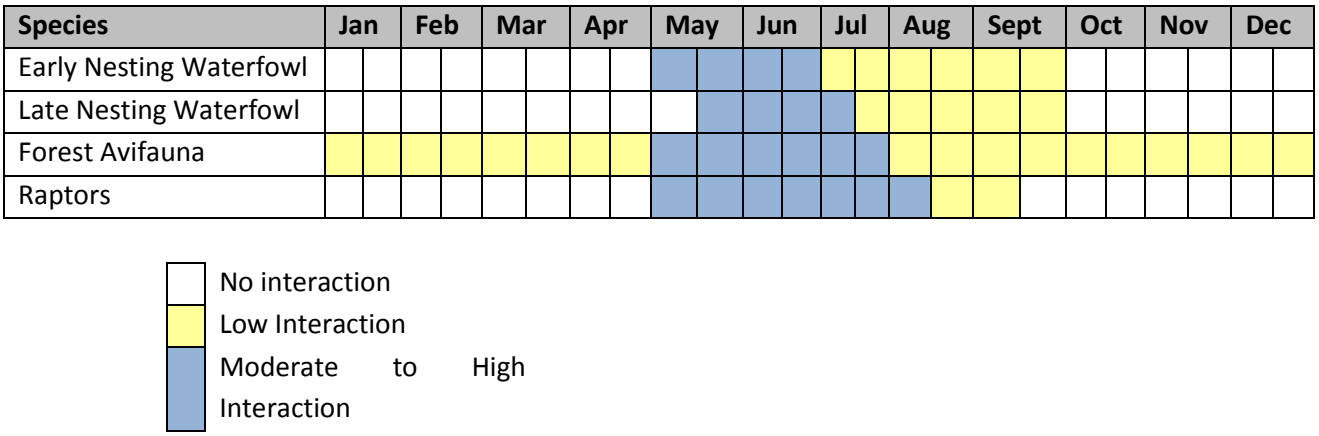
The protection and environmental effects monitoring plans (i.e., mitigation measures outlined in the AMP [Stantec 2012]) executed to ensure regulatory compliance of the above discussed acts and regulations include:

Level 1 Protection

- Avoid disturbance and / or the clearing of sensitive wildlife areas during all clearing, where possible;
- Known locations of red pine stands (i.e., potential Red Crossbill habitat) have been avoided during the routing process;
- Implement no harvesting policy and other harassment of wildlife, and no possession of firearms or pets by Project personnel;
- Implement environmental awareness training and conduct regular briefings for all personnel;
- Oversee environmental protection plans (EPP) using environmental monitors;
- Use existing roads, quarries, existing right-of-way corridors for construction of transmission lines, and other disturbed areas, where possible;
- Restrict public access to temporary roads and work areas;
- Equipment and vehicles shall yield the right-of-way to wildlife and adhere to construction site speed limits. Speed limits associated with Project access roads vary from 10 – 60 km/hr, and are set as per the regulatory requirements set by the Department of Transportation and Works. LCP enforces speed limits on all Project roads;
- Rehabilitate work areas and access roads no longer required in accordance with the EPP to encourage re-formation of natural conditions;
- Undertake blasting in accordance with permits and standard procedures;

- Schedule activities related to transmission line construction and vegetation clearning around sensitive periods or areas, where possible (see Table 9.1); and
- Create conditions for establishing formation of hardwood forest at selected locations.

Figure 9-1 Sensitive Life History Stages for Avifauna



Level 2 Protection

Level 2 protection involves a general awareness of all construction personnel on the Project of avifauna. Through implementation of the EPP and specific orientation training, all construction personnel and On-Site Environmental Monitors are trained to identify nests during construction activities.

Nests could be located in trees or shrubs or on the ground. An active nest can be identified by:

- the presence of birds or eggs in a nest
- adult birds carrying food or nesting materials to a specific location
- adult birds defending territory, through singing, screeching or diving

When one or more of these indicators are noted, measures will be undertaken to identify if the potential location of the nest is in the disturbance footprint or within a recommended setback buffer.

If a potentially active nest has been identified during pre-construction surveys, the setback buffer is based on the recommended nest setback guidelines recommended by Environment Canada (EC 2014) or the Government of Newfoundland and Labrador for species of management concern (NLDEC 2012).

In forested and non-forested habitats, painted lath with flagging or other suitable marking should be used to mark the buffers with appropriate direction and bearing recorded in the field notes. If an occupied nest is discovered on or adjacent to the disturbance footprint during construction, activities within a minimum of 30 m from the nest should not occur until the Environmental Inspector has been notified by the Construction Manager. Once the Environmental Inspector is notified, a wildlife monitor will be dispatched to the site (if not already present) to identify the nest or bird species and determine the appropriate mitigation in consultation with the Construction Manager and Chief Inspector. If a nest is found adjacent to a trail, vehicles will be allowed to continue using the trail but will be prohibited from stopping within the recommended setback buffer.

Level 3 Protection

Additional avifauna mitigation measures include ground surveys to identify breeding migratory bird species including species at risk within areas that will be disturbed. A qualified avian biologist will lead the program that includes conducting ground searches for avifauna nests during the time period 15 May to July 31 (Labrador) and 1 May to 31 July (Island). These dates are based on typical nesting behaviours historically observed in the related geographical location as per (EC 2014). Given the many variables that influence nesting behaviours, the implementation of this plan includes an assessment that will occur each year to confirm the start and end dates. Therefore, please note that deployment dates for the associated surveys may vary.

These surveys will be designed to occur <7 days prior to the clearing activity. The survey techniques will vary according to the configuration of the area of interest but will be based on 100% coverage of the affected area during the breeding season, a census technique (census referring to area not individuals). Active nests will be identified and locations and mitigation measures communicated to the OSEMs. In addition, OSEMs are directed to continue to watch for signs of active nests while working during the breading period.

The ground survey team will be instructed in the identification of nests that may be readily visible or well concealed. The survey team will be aware of behavioral cues that suggest the presence of an active nest, even if it cannot be seen. These cues include singing males, pairs observed together (including courtship and copulation), adult birds repeatedly carrying nest materials or foods to a specific location, aggressive defense of a location (against other birds or people), or the presence of recently fledged birds (often with some tufts of down feathers remaining, or begging persistently for food).

When avian species at risk are in an area under construction/development the NLDEC-WD will be contacted to determine if appropriate mitigations can be put into place or if activity in the area must be halted. Questions regarding migratory birds will be addressed to Environment Canada's Canadian Wildlife Service. For most situations, buffers surrounding Project activities, in addition to clearing activities have been identified, to ensure the effect on nest success is mitigated. These buffers and mitigation activities include:

- A visual survey of the immediate area of a blast site within one hour prior to a blast and operations will be curtailed if wildlife (e.g., Harlequin Duck) is observed within 500 m. Environmental personnel and OSEMs will conduct a pre-blast survey for species of risk;
- Only essential vehicular activity shall be permitted (such as project construction vehicles, heavy equipment etc);
- Crews will cease work if there is a disturbance at a nest until activity at the nest has returned to normal; work will not commence again until approved by the OSEM;

- Helicopters are to respect a minimum altitude when moving through specific locations known as spring and fall staging areas for Harlequin Duck. Helicopters moving through these locations (typically during May or September) will maintain a minimum altitude of 500 m from Harlequin Duck;
- For known Rusty Blackbird nests, a minimum 75 m buffer of natural vegetation will be maintained to increase likelihood of successful fledging;
- For known Harlequin Duck nesting areas, a 100 m buffer of natural vegetation will be maintained along the river's edge during their breeding, nesting and staging times (May through September). A 30 m buffer will be maintained outside the sensitive nesting season; and
- For active nests of other species at risk, a 30 m buffer of natural vegetation will be maintained during May through July until the young have fledged and the nest is inactive.

Buffer zones for other bird species not indicated in this document are outlined in the Avifauna Management Plan and will be respected.

10 ENVIRONMENTAL EFFECTS MONITORING

This APEEMP contains both:

Follow-up Programs – studies or surveys designed and completed to confirm the predictions of the EA and to determine the effectiveness of any measure taken to mitigate the adverse environmental effects of the Project; and

Monitoring Programs – studies or surveys designed and completed to determine whether the Project is implemented as proposed, and that mitigation and compensation measures to minimize the Project's environmental effects are implemented.

Compliance Monitoring is all environmental monitoring of a proponent's activities to ensure compliance with regulatory requirements and other environmental

commitments made through the environmental impact assessment process, including conditions of EA release.

10.1 SURVEY PROTOCOLS

LCP has committed to conduct baseline, follow-up and monitoring surveys for the above groups to determine their current state, apply the appropriate mitigation, and to determine if expansion or reduction or deletion of the indicated programs is appropriate (with justification).

This would apply to the following, as appropriate:

- Baseline data collection (i.e., data collected prior to construction);
- Data collection during construction; and
- Data collection during operations.

Protocols for the various surveys are discussed below in sections 10.1.1 and 10.1.2. Data collection includes metrics that are species specific, as appropriate, quantifiable, repeatable, relevant and time constrained. The goal would be to collect meaningful data in a focused, defendable, repeatable approach, within a timeline that is reasonable, to ensure that the mitigation is appropriate. Where it is determined that the mitigation is not appropriate, a contingency plan would be presented that LCP could incorporate as per their adaptive management approach.

10.1.1 Raptor Nest Survey and Follow Up Survey

Survey Type	**Raptor Nest Survey**
Location	Labrador – Island Transmission Link right of way
Protocol	Surveys were completed of the two km wide study corridor from Muskrat Falls in Labrador to Soldiers Pond on the Island of Newfoundland. Using an experienced three person team plus the pilot, the Study Team completed aerial surveys by helicopter along the transmission corridor centre line starting at Muskrat Falls, maintaining constant speed and height. On the return transect, the speed and height of the aircraft varied to allow for deliberate investigations of environmental features of interest, such as raptor nests. All of these nests have been added to environmental constraints

mapping.

In addition, nest surveys are to be conducted early in the breeding season with the goal of documenting activity prior to potential nesting failures and prior to full "leaf out", thereby allowing better viewing of potential nest sites within deciduous vegetation. Survey flights should be planned in accordance with applicable Safe Work Practices and LCP Standard Operating Procedures. All occupants should be able to communicate freely using headsets with a live microphone.

Survey methodology was adapted from recommended guidelines described in current British Columbia Resources Information Standards Committee (RISC) standards for raptor surveys.

For flight paths flown along the transmission line, each flight will follow two predetermined linear transect lines approximately 250 m apart on each side of the proposed transmission line right-of-way (ROW). For this survey, a 100 m overall ROW clearing width was assumed (50 m on each side of the transmission line centerline). Transect coordinates should be provided to the aircraft pilot prior to survey initiation and uploaded to the onboard global positioning system (GPS) unit for navigation purposes. Transects should be flown at a minimum height of 50 m above the canopy or tree tops and a maximum of 100 m above the canopy or tree tops. Flight speed can vary from 50 to 80 km/hr. Two qualified avian biologists experienced in conducting aerial surveys plus the pilot will make up the survey crew. Each biologist will act as an observer and will survey approximately 250 m on their side of the aircraft for 100% coverage of the area flown. Suitable habitat (i.e., the shoreline of lakes, ponds, rivers, creeks and other water bodies) will be preferentially searched to a distance of at least 800 m from the transmission line when encountered along transects. Flight paths will be tracked using a handheld GPS unit. When a nest is observed, the pilot will be instructed to maintain a minimum distance of 200 m and to maneuver the aircraft in a way that distributes rotor downwash away from the nest to minimize potential for damage to nest structure and stability.

While searching for stick nests, close attention will be paid to sign including individual raptors and white wash. When a previously unidentified nest is located, the crew will obtain a Universal Transverse Mercator (UTM) position (Zone 09/NAD 83) and digital photographs of the nest site. Additional data recorded at a new nest site includes the nesting species (if known), adult presence and behavior, nest status (occupied or

	unoccupied), number of young (if possible to see into the nest from the helicopter), nest tree type, nest location in tree, and general habitat information. Any nests previously identified during previously conducted surveys for the Project will also be assessed for nesting activity. Nest site characteristics will be recorded with a GPS unit. A second GPS unit, hard copy data sheets, and a digital voice recorder will be on board all flights to facilitate back-up data recording. The location of alternate nest sites suitable for the placement of artificial nesting platforms will also be identified and recorded with a GPS unit where an occupied nest is identified. For the transmission line survey the proposed location will be beyond 800 m from the transmission line centreline. The location of incidental wildlife encountered during survey flights will also be recorded and geo-referenced. *If an occupied nest is found where clearing is required, avoidance and appropriate buffers will be implemented. If alternative approaches are required, LCP will consult with NL Department of Environment and Conservation and Environment Canada as appropriate and implement appropriate mitigation.* A follow up survey will be completed following the Construction phase of the Project. The follow-up survey will document the abundance and distribution of raptor nests in select areas crossed by the Project to confirm the effects of the Project.

10.1.2 Pre-Clearing Nest Search and Follow Up

Survey Type	**Pre-clearing nest search**
Location	Labrador – Island Transmission Link right of way
Protocol Details	The purpose of a pre-clearing nest search is to locate all occupied migratory bird nests within and around (i.e., within 30 m for passerines and 100 m for waterfowl / waterbirds or as otherwise) an area proposed for Project clearing. These nests will also include a search for raptor nests in the vicinity of Project clearing. This mitigation along

with the other environmental protection measures described in Section 9, will reduce bird mortality by avoiding potential destruction of bird nests, nestlings, or attending adults when clearing is unavoidably scheduled within the migratory bird restricted activity period (RAP), and thus will meet requirements of the federal *Migratory Birds Convention Act* (MBCA) and Migratory Birds Regulations, *Species at Risk Act*, 2002 (SARA), the Newfoundland and Labrador *Endangered Species Act*, and the *Wild Life Act.* The RAP in the Project area in Labrador is typically from 15 May to 31 July (Labrador) and 1 May to 31 July (Island). Surveys will be conducted as close to the scheduled clearing date as possible, with seven days being the maximum time between the survey date and clearing activity.

The survey will be conducted by two qualified avian survey team members (or the number appropriate to evaluate the area to be cleared within seven days) using a widely accepted ground search protocol such as meander surveys to document migratory bird nests. While searching for nests, close attention will be paid to individual birds exhibiting nesting behaviour such as birds flushing from the ground at close proximity to the observer, carrying nesting material, carrying food, sitting on nests, alarm calling or displaying territorial (i.e., agitated) behaviour or breeding behaviour. As these behaviours would indicate the presence of an occupied nest. Evidence of breeding will require setback distances that vary from 30 m for passerine nests to 100 m for waterfowl / waterbird nests.

Upon discovery of an occupied nest, the species will be documented when possible, the nest location will be geo-referenced with a global positioning system (GPS), and photographs will be taken. Time spent at the nest will be minimized to avoid prolonged disturbance to the nest and surrounding area. From this information, the location of the nest can be determined and appropriate mitigation measures can be developed.

Although the purpose of the survey is to identify any occupied nests within the Project area to be cleared, any provincially and federally listed bird species observed will be recorded using a GPS unit.

The location of incidental wildlife encountered during the survey will also be recorded and geo-referenced.

If an occupied nest is found where clearing is required, avoidance and appropriate buffers will be implemented. If alternative approaches are required, LCP will consult with

	NL Department of Environment and Conservation and Environment Canada as appropriate and implement appropriate mitigation. A follow up survey will be completed following the Construction phase of the Project. These follow-up surveys will document the abundance and distribution of passerines in select areas crossed by the Project to confirm the effects of the Project.

10.1.3 Harlequin Survey

Survey Type	**Harlequin Survey**
Location	Known locations of Harlequin Duck Breeding Sites
Protocol	To evaluate the presence of breeding pairs of Harlequin Duck on the Traverspine River and St. Paul River, five surveys were conducted in May, June, July and August as breeding pairs have been recorded infrequently. The results of these surveys did not indicate the presence of any breeding pairs. Therfore no additional surveys of these rivers is planned for the Project. In Newfoundland, the Torrent River is known to support breeding Harlequin Duck pairs. A survey of relevant portions of this river (i.e., 5 km upstream and downstream) will be completed during the appropriate season before Construction activities commence to determine the extent of breeding activities. The findings of these surveys will be used to refine and optimize proposed mitigation. All proposed mitigation will be refined and optimized during monitoring and follow-up. A follow up survey will be completed following the Construction phase of the Project (i.e., 2016) and continue for a period of two years following commencement of Operations and Maintenance (i.e., 2018 and 2019). These follow-up surveys will document the abundance and distribution of Harlequin Duck along the watercourses in the areas crossed by the Project to determine the effects of the Project on breeding pairs. *If an occupied nest is found where clearing is required, avoidance and appropriate buffers will be implemented. If alternative approaches are required, LCP will consult with NL Department of Environment and Conservation and Environment Canada as appropriate and implement appropriate mitigation.*

10.2 REPORTING

A compilation of daily reports will be submitted to NLDEC-WD on a weekly basis. This report will provide a synopsis of completed activities, any new mapping or data plots, photographs as well as a weekly look-ahead. Any alteration to habitat, monitoring updates and changes in activities, timeline or schedule will also be communicated to NLDEC-WD.

A yearly report will be submitted to NLDEC-WD that summarizes the monitoring activities described in this APEEMP and any associated environmental effects monitoring conducted for the Project. The yearly report will include all data collected as part of monitoring programs.

A follow up report will also be prepared for the surveys conducted on the Torrent River for breeding pairs of Harlequin Duck, passerines and raptors. These reports will be present the findings of the environmental effects monitoring program for avifauna.

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