

## 7.0 ENVIRONMENTAL EFFECTS ASSESSMENT

### 7.1 Raptors

Raptors are predators at the top of the food chain and are often used as indicators of ecosystem quality. Within the study area, large raptors such as osprey and bald eagle are widespread. As well, suitable habitat occurs for more secretive forest-dwelling raptors such as great horned owl, boreal owl and sharp-shinned hawk. Original research for the outfitter route was compiled in a Raptor Component Study (JW/MLP 2003b) for this route. A review of available information on raptors in the region was compiled in a Raptor Component Study completed for the preferred route (JW and LMSS 2003b).

#### 7.1.1 Boundaries

Project boundaries for raptors are defined by the spatial and temporal extent of project activities and the anticipated zones of influence in the area surrounding the proposed highway route. This boundary is a 2-km wide corridor centered on the proposed outfitter (A13 section) route. Raptors generally have widespread distribution patterns, with most species in the study area considered migratory. The spatial distribution and range varies between each species; however, they have a similar breeding strategy. With the establishment of a territory and nest site (often used annually by the same individuals), both members of the pair conduct their breeding activities around the nest structure and are inflexible in terms of moving away from the nest until the young are fledged or the nest fails (JW 1998c; Trimper et al. 1998). Given that raptors require larger ranges and tend to establish defended territories, only a small proportion of any raptor population is likely to be located at any one time within the project area. Raptors in Newfoundland and Labrador are managed under the provincial *Wildlife Act* by the Inland Fish and Wildlife Division.

The spatial environmental assessment boundary for raptors is defined as the range of the populations of raptors that occur in the project area. For some species this may extend well beyond administrative borders.

#### 7.1.2 Methods

Information on raptors along the outfitter (A13 section) route was derived from available literature, previous surveys conducted by the study team for DND and the results of aerial surveys conducted by WST in 2003. The specific aerial survey for raptors was conducted on June 20, 2003 following methods developed previously by the study team (JW 1999a; 2000). The 2006L Bell helicopter was maintained at a height of 50 to 100 m above ground level. Flights were conducted at a speed of approximately 100 km/h. Consistent with Wetmore and Gillespie (1976), attention was placed on higher points of land within the coverage area and on trees adjacent to smaller tributary streams, searching for large (1 to 2 m diameter) stick nests. Common and scientific names of raptors discussed in the text are provided in Appendix B.

#### 7.1.3 Existing Environment

Wetmore and Gillespie (1976) conducted aerial surveys for osprey and bald eagles in east-central Labrador from 1969 to 1973. They identified two areas of osprey nest concentration within the region surrounding the project area: the foothills west of the Kenamu River and a portion of the headwaters of the Eagle River (i.e., the Parke Lake area). In similar-sized areas to the west, east and south, including the area of the outfitter



(A13 section) route, fewer nests were identified (Wetmore and Gillespie 1976). Wetmore and Gillespie found most bald eagle nest observations were concentrated in the western Labrador study area, centered around Smallwood Reservoir (Wetmore and Gillespie 1976). Subsequent surveys by DND also support the contention that bald eagle nests are less common in the study area than in other regions of Labrador.

Other species that may be found in the project area include sharp-shinned hawk, red-tailed hawk, rough-legged hawk, American kestrel, merlin, northern goshawk, northern harrier, great-horned owl and short-eared owl. For further details on the distribution and abundance of raptors, refer to Section 6.1 of the TLH - Phase III EIS/CSR (JW/IELP 2003a).

A raptor survey conducted in June 2003 identified raptors, nest structures and status of nests found within the 2-km wide study area (Table 7.1; Figure 7.1). Several osprey nests and two bald eagle nest were identified previously in the surrounding region by surveys for DND (JW 1999a) or through waterfowl surveys conducted by the study team for WST during May to August 2003. These are included in the nests identified in Figure 7.1.

**Table 7.1 Raptor Nest Structures and Status Within the 2 Km-wide Study Area - June 20, 2003 Survey**

Nest Type	# Nest Structures	# Active	# Empty	# Status Unknown
Osprey	13	8	51	0
Bald Eagle	-	-	-	-
Cliff Nest	-	-	-	-

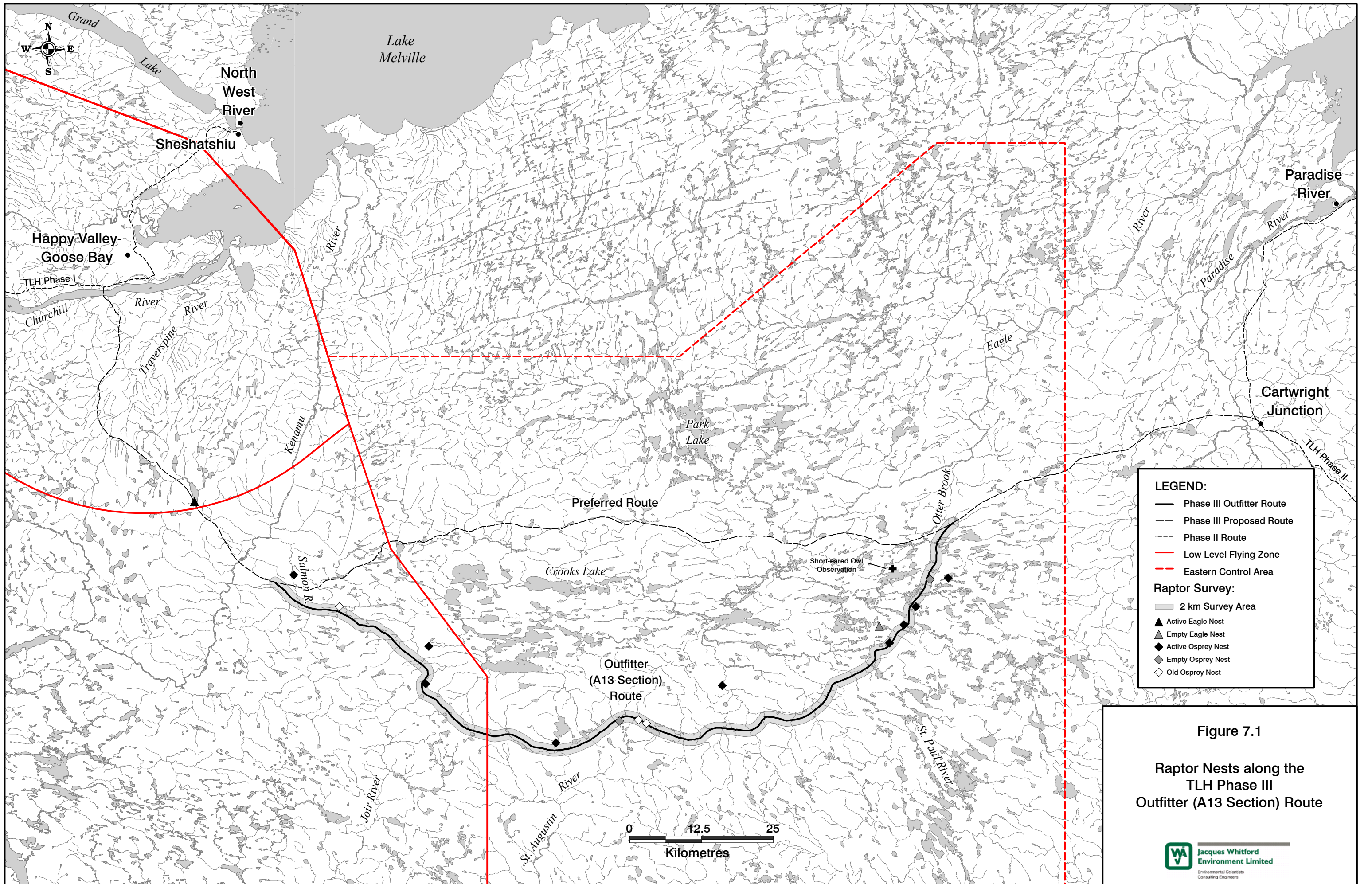
<sup>1</sup> Three empty nests were considered “old”, meaning that their deteriorated condition suggested they were unavailable for use.

Where osprey nests were observed, there tended to more than one in the general area, usually associated with a complex of rivers and waterbodies that had suitable nesting trees along the shoreline. One area of obvious concentration is in complexes of wetlands and waterbodies associated with the western portion of the outfitter (A13 section) route as it turns north back toward the Eagle River area.(Figure 7.1).

The following species were observed during waterfowl surveys conducted along the outfitter (A13 section) route from May through August, 2003:

- red-tailed hawk (six) - flying;
- adult bald eagle (seven) - flying;
- immature bald eagle (two) - flying;
- osprey (38) - flying (note: these are in addition to individuals that would have been associated with the active nests indicated above);
- rough-legged hawk (five) - flying;
- great-horned owl (one) - perched; and
- short-eared owl (one) - flying.





Twenty-three of the 38 osprey observed were seen during the last waterfowl survey on September 4 to 5, 2003. It is likely that a number of these individuals were newly-fledged young of the year.

Two bald eagle nests were identified during a waterfowl survey in July (Figure 7.1). One nest was empty, the other active with one chick.

#### **7.1.4 Potential Interactions**

During construction, the clearing of vegetation could remove active or potential tree nesting or (in the rare case of blasting at steep rock locations) cliff-nesting habitat for raptors.

Noise and general disturbance, including use of lights, blasting activities and vehicular movement, during construction may also disturb nesting or foraging raptors. During operation, noise and regular vehicular activity may also cause disturbance to raptors, resulting in avoidance of habitat in the vicinity of the highway.

An accidental event such as a forest fire may cause raptors to temporarily avoid areas previously inhabited. Contamination of waterbodies resulting from unlikely spills of fuel or other hazardous materials could lead to reduced foraging opportunities for aquatic feeders such as osprey.

#### **7.1.5 Issues and Concerns**

Issue and concerns related to raptors include:

- loss of nesting and foraging habitat due to vegetation removal;
- avoidance of habitat due to project-related disturbances (i.e., noise); and
- an accidental event such as a forest fire could result in loss of habitat.

#### **7.1.6 Existing Knowledge**

Disturbance to raptors during construction and operation of the highway may result in increased physiological stress, displacement or permanent avoidance of habitat. However, a review of various types of human disturbances concluded that these activities have had only a small environmental effect on raptor populations (Postovit and Postovit 1987). The presence of a highway itself does not typically cause a disturbance response, rather, it is human presence on the highway that causes disturbance (Fraser et al. 1985; McGarigal et al. 1991; Grubb and King 1991). Raptors may experience mortality on roads, particularly if the road is traversing open country. The openness of the landscape and the lack of tall vegetation, particularly along the roadside, may cause raptors hunting in these open areas to see a flat landscape into which the road merges (Harding 1986).

Refer to Section 6.1.6 in the TLH - Phase III EIS/CSR (JW/IELP 2003a) for detailed discussion on existing knowledge related to the effects of highways on raptors.



### 7.1.7 Mitigation

WST has attempted to reduce the project's potential effects on raptors through project design and planning. Specific mitigative measures for raptors include the following:

- minimization of vegetation removal to 30 m within the right-of-way;
- WST will confer with Inland Fish and Wildlife Division on appropriate mitigations for all active raptor nests within 800 m of the highway;
- WST will conduct an annual pre-construction survey for active raptor nests;
- no harassment of raptors by project personnel;
- construction vehicles will remain in the right-of-way and all-terrain vehicles will use designated routes;
- locations of raptors nests will not be released to the public; and
- design and implementation of fuel and other hazardous material spill contingency plans and emergency response in the event of an accident.

### 7.1.8 Environmental Effects Assessment

#### 7.1.8.1 Construction

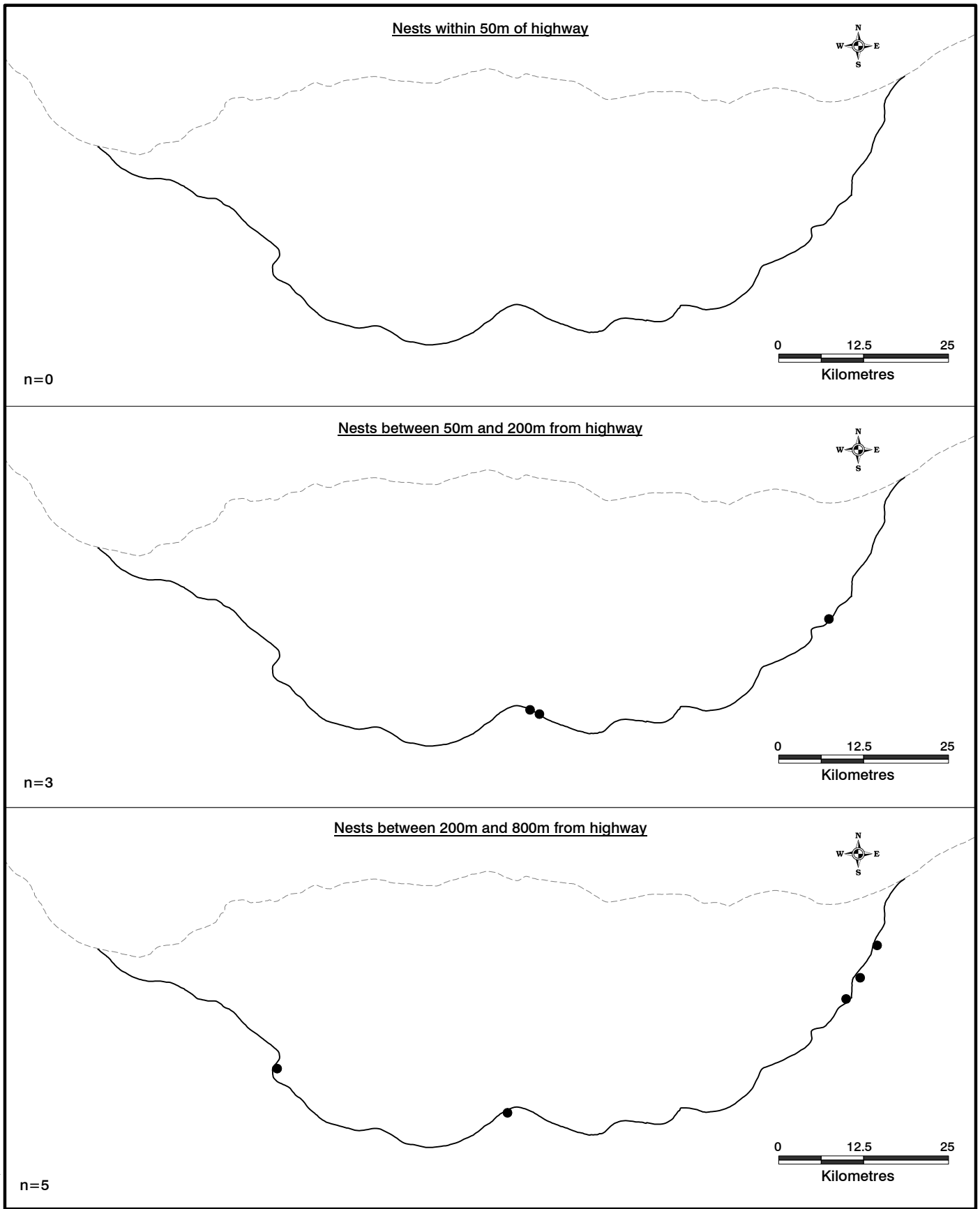
There will be a loss of potential foraging and tree nesting habitat through vegetation removal along the highway right-of-way. However, the vegetation types that will be affected by construction are not considered unique within the region, and are well represented in the surrounding area.

Government of Newfoundland and Labrador guidelines for construction near raptors nests recommend no construction within 800 m of a raptor nest during the nesting season and maintenance of a 200 m buffer around raptor nests outside of the nesting season. As a result of the dedicated surveys and previous knowledge of these species in the study area, eight osprey nests fall within 800 m of the centre line of the outfitter (A13 section) route. Of these eight, only one is within 200 m of the centre line of the proposed route. No nests are located within 50 m of the centre line of the highway and there will be no requirement for removal of any nest structures due to construction activities (Figure 7.2). In comparison, 11 osprey nests fall within 800 m of the centre line of the central section of the preferred route (i.e., the section not in common with the outfitter route). Of these 11 nests, two are between 50 and 200 m from the highway centre line and four are within 50 m of the centre line, and may be within the right-of-way. Overall, there were less osprey nests identified along the outfitter route than were identified along the preferred route (one nest within 50 m of the centre line on the outfitter route versus five nests within 50 m of the centre line on the preferred route).

Noise and human disturbance during construction may cause raptors to avoid habitat in the vicinity of the activity. Raptors may be particularly sensitive during the nesting and brood-rearing period from mid-May through mid-August. With appropriate mitigation for active raptor nests, it is likely that disturbance effects from construction will be primarily an avoidance of potential foraging habitat in the area of disturbance.

Raptor densities in the project area are relatively low, making it likely that any population-based effects of project-related disturbance and vegetation removal within this species group will be limited.





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Figure 7.2  
Raptor Nests Within 800m of the  
Highway Centre Line - Outfitter (A13 Section) Route

### **7.1.8.2 Operation**

The environmental effects of construction of the proposed highway on raptor populations will be similar for both the preferred route and the outfitter route. An alteration of foraging patterns may result once the highway is in operation. Osprey may avoid waterbodies directly adjacent to the highway, although there are numerous examples of osprey habituating to human activity, particularly if the disturbance is not perceived as a threat. There will be no further loss of habitat during operation.

Refer to Section 6.1.8.2 in the TLH - Phase III EIS/CSR (JW/IELP 2003a) for further discussion on the environmental effects of highway operation on raptor populations..

### **7.1.8.3 Accidental and/or Unplanned Events**

The environmental effects of construction of the proposed highway on raptor populations will be similar for both the preferred route and the outfitter route. A forest fire could affect tree-nesting habitat for raptors for several decades. A large fire may destroy hundreds of hectares of vegetation, resulting in a decrease in raptor densities within the affected region. However, raptors living in the boreal ecosystem have adapted to a cycle of naturally occurring fires and the proportion of a population affected during any one fire would be small.

Few raptors are likely to be killed through collision with vehicles due to the low density of raptors in the region, particularly given those at greatest risk, such as the open ground hunters, occur at low density, and in consideration of the low volume of traffic expected along the highway.

Refer to Section 6.1.8.3 in the TLH - Phase III EIS/CSR (JW/IELP 2003a) for further discussion on the environmental effects of accidental or unplanned events on raptors.

### **7.1.9 Environmental Effects Evaluation**

The key potential interactions between project activities and raptors include direct disturbance and loss of primarily tree-nesting habitat. The following definitions are used to rate the significance of the predicted residual environmental effects of the project on raptor species in the study area.



A **major (significant) environmental effect** to raptors is one affecting a population of a species of raptor in such a way as to cause a change in abundance and/or distribution beyond which natural recruitment (reproduction and in migration from unaffected areas) would not return that population, or any populations or species dependent upon it, to its former level within several generations. The effect is not reversible.

A **moderate (significant) environmental effect** to raptors is one affecting a portion of a population of a species of raptors in such a way as to cause a change in the abundance and/or distribution of that portion of the population or any populations or species dependent upon it over one or more generations, but does not change the integrity of any population as a whole. The effect may not be reversible.

A **minor (not significant) environmental effect** to raptors is one affecting a specific group of individuals of a species of raptors in such a way as to cause a change in abundance and/or distribution in a localized area and/or over a short period (one generation or less), but not affecting other trophic levels or the integrity of the population itself. The effect is reversible.

A **negligible (not significant) environmental effect** to raptors is one affecting a specific group of individuals of a species of raptors in such a way as to cause a change in abundance and/or distribution in a localized area and/or over a short period (one generation or less) in a manner similar to small random changes in the population due to natural irregularities, but having no measurable effect on the population as a whole. The effect is reversible.

The proposed highway is a linear development that will have minimal interaction with raptors in the region. Environmental effects will be restricted to removal of existing and potential tree-nesting habitat in the immediate highway right-of-way corridor. While this effect is of a long-term nature, it will be localized and breeding should continue through the use of adjacent habitat and/or, if required, the installation of artificial nesting platforms; thus, there will be no measurable effect at the population level. Similarly, human disturbance as a result of induced activities following road construction may cause some raptors to avoid nesting or foraging habitat. However, the low densities of these species in the region means that only a few individuals from a population will likely be affected. Based on the preceding discussion and proposed mitigation, the residual effects of the project on raptors are assessed as minor (not significant) for construction and operation (Table 7.2). However, an accidental forest fire may remove (at least for several decades) large areas of habitat for raptors. Therefore, the residual effects of an accidental event on raptors is considered moderate (significant) (Table 7.2). Overall, the project is not likely to result in significant adverse environmental effects on raptors.





**Table 7.2 Environmental Effects Summary - Raptors**

	Construction	Operation	Accidental/Unplanned Events
<b>Mitigation:</b> <ul style="list-style-type: none"> <li>• minimization of vegetation removal to 30 m within the right-of-way;</li> <li>• WST will confer with Inland Fish and Wildlife Division on appropriate mitigations for all active raptor nests within 800 m of the highway;</li> <li>• WST will conduct an annual pre-construction survey for active raptor nests;</li> <li>• no harassment of raptors by project personnel;</li> <li>• construction vehicles will remain in the right-of-way and ATVs will use designated routes;</li> <li>• locations of raptors nests will not be released to the public; and</li> <li>• design and implementation of fuel and other hazardous material spill contingency plans and emergency response in the event of an accident.</li> </ul>			
<b>Environmental Effects Criteria Ratings</b>			
Magnitude	Low	Low	Unknown
Geographic Extent	<1 km <sup>2</sup>	1-10 km <sup>2</sup>	100 km <sup>2</sup>
Frequency	Continuous	Continuous	<10
Duration	37-72	>72	>72
Reversibility	Irreversible	Irreversible	Unknown
Ecological/Socio-economic Context	Nil		
<b>Environmental Effects Evaluation</b>			
Significance	Not Significant (Minor)	Not Significant (Minor)	Significant (Moderate)
Level of Confidence	High	High	High
Likelihood <sup>1</sup>	n/a	n/a	Low
Sustainable Use of Resources <sup>1</sup>	n/a	n/a	n/a
<sup>1</sup> Likelihood is only defined for effects rated as significant, and Sustainable Use of Resources is only defined for those effects rated as significant and likely (Canadian Environmental Assessment Agency 1994).			
<b>Environmental Monitoring and Follow-up:</b>			
<ul style="list-style-type: none"> <li>• Prior to each construction season, a survey for active raptor (specifically osprey and bald eagle) nests will be completed within 800 m of the proposed construction zone in order to determine the appropriate mitigation required for that year.</li> </ul>			
<b>Key:</b>			
Magnitude:	High, Medium, Low, Nil or Unknown		
Geographic Extent (km <sup>2</sup> ):	<1, 1-10, 11-100, 101-1000, 1001-10,000, >10,000 or Unknown		
Frequency (events/year):	<10, 11-50, 51-100, 101-200, >200, Continuous or Unknown		
Duration (months):	<1, 1-12, 13-36, 37-72, >72 or Unknown		
Reversibility:	Reversible, Irreversible or Unknown		
Context:	Existing Disturbance (High, Medium, Low, Nil or Unknown)		
Significance:	Significant, Not Significant, Positive or Unknown		
Level of Confidence:	High, Medium, Low		
Likelihood:	High, Medium, Low or Unknown		
Sustainable Use of Resources:	High, Medium, Low or Unknown		



### **7.1.10 Cumulative Environmental Effects**

The cumulative effects related to the interaction of existing activities and potential future activities with the proposed highway will be the same regardless of whether the highway follows the preferred route or the outfitter route. However, if the highway follows the outfitter (A13 section) routing, it is unlikely that the road will be within the boundaries of the proposed Akamiuapishku/Mealy Mountain National Park. Therefore, resources that may have fallen within the boundary of the National Park will not be protected from future development or exploitation.

If resources agencies do not have adequate resources to plan or manage activities such as cabin development, human disturbance around nesting and foraging areas may cause raptors to be displaced. Similarly, uncontrolled access to wetlands by all-terrain vehicles (ATVs) could result in noise disturbance or destruction of nests by ATVs, negatively affecting ground nesting raptors such as the threatened short-eared owl. The low densities of these species in the region means that only a few individuals from a population would likely be affected as long as the effects are limited to areas near the road.

If large scale industrial harvesting occurs without any consideration of habitat requirements for boreal forest species, a moderate (significant) cumulative effect (i.e., one affecting a portion of a population in such a way as to cause a change in the abundance and/or distribution of that portion of the population or any populations or species dependent upon it over one or more generations, but does not change the integrity of any population as a whole) may result from these activities. This would only result from negligence or carelessness in the planning or implementation of forest harvesting plans.

The various resource management agencies should consider a cooperative management or regional land use planning approach to managing the land and resources along the highway and surrounding area. In addition, the departments and agencies responsible for managing wildlife resources may need to review existing management policies and programs to ensure that they are appropriate. There may also be a need for agencies to increase their enforcement staff levels.

For a detailed discussion on cumulative environmental effects, refer to Section 6.1.10 of the TLH - Phase III EIS/CSR (JW/IELP 2003a).

### **7.1.11 Environmental Monitoring and Follow-up**

Prior to each construction season, a survey for active raptor nests (specifically osprey and bald eagle) will be completed within 800 m of the proposed construction zone. Active nest sites would be discussed with the construction engineers and officials from the Inland Fish and Wildlife Division to determine the appropriate mitigation required for that year.

