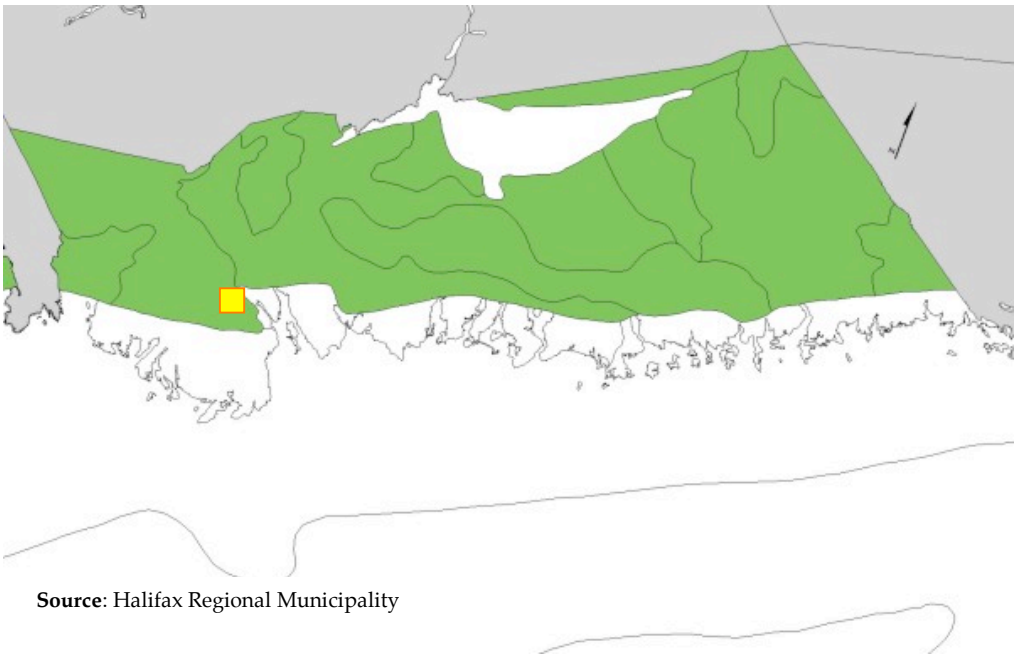
In general, environmental groups consulted asserted that Crown lands in the Blue Mountain/Birch Cove Lakes should be protected as a "wilderness area" under the *Wilderness Areas Protection Act*, or as a "nature reserve" under the *Special Places Protection Act*. NSEL administers both acts.



Source: Halifax Regional Municipality

Approximate location of Study Area

Figure 3.2: Atlantic Interior Theme Region within HRM

3.4.2 Geology and Topography

The Study Area is almost entirely based on granitic bedrock, the second most common bedrock type found in the Atlantic Interior Theme Region (**Figure 3.2**). Granite is perhaps the most familiar geology to Nova Scotians. Granite is the fundamental structure of more than 50 per cent of the Atlantic Interior Theme Region. The coarse-textured rock includes a range of related but different rock types. It outcrops over an area of 10,000 square kilometres extending in a long bow from Yarmouth across to Blue Mountain/Birch Cove and beyond.

Granite is a hard, impermeable crystalline rock that is very resistant to erosion. Knolls and upland areas with a hummocky, boulder-strewn surface characterize the resultant landscape. Most of the soil parent material in Nova Scotia is glacial till,

which is closely related to the underlying bedrock. Given the resistance of granite to erosion, overlying soils are thin and acidic with large areas of exposed bedrock as noted. The Blue Mountain/Birch Cove Area exhibits these characteristics. Substantial outcrops are found throughout the area, frequently rising 10 to 20 feet.

The granite landscape of the Atlantic Interior displays some variety of elevation, topography, and vegetation but overall has common scenic elements. Only occasionally throughout the Atlantic Interior does the land rise significantly above the surrounding area. One instance in the Study Area is Blue Mountain. Blue Mountain reaches a height of 150 metres in an area with an average elevation of approximately 100 metres. The summit of Blue Mountain is the highest point on the Chebucto Peninsula. No higher point intervenes to the south. It, therefore, offers long distance panoramic views southwards to the mouth of Halifax Harbour and northwards to Halifax International Airport (**Appendix A, Figure 8A**).

The surrounding forest is intermingled with exposed bedrock and barrens, and large glacially deposited boulders are found throughout. Plateau-like scenic vistas and intimate views at the edges of lakes are common. Generally, the value of the entire Study Area is greatly enhanced by the panoramic view from the summit of Blue Mountain. If not for the lakes and Blue Mountain, the granite areas would typically exhibit low to medium scenic value.

3.4.3 Watercourses

The irregular landscape and drainage of the Blue Mountain/Birch Cove area creates many lakes that add much to scenic value and recreational value. The Study Area straddles portions of the Nine Mile River and the Kearney Lake/Paper Mill Lake watersheds (**Appendix A, Figure 7**). The Paper Mill Lake watershed covers 3,500 hectares, while the Nine Mile River is a 12,000-hectare watershed system. The lakes and ponds in the Study Area are shallow with the largest, Susies Lake and Quarry Lake, being no more than 10 metres deep. Alternatively, where the granite bedrock outcrops are narrow and formed into ridges, deeper lakes such as Kearney Lake, which has a maximum depth of 28 metres, result.

The Paper Mill Lake watershed boundary extends within the Study Area from the summit of Blue Mountain and drains the southern exposure of the watershed that includes 16 lakes and ponds within the Study Area (**Table 3.2**). The Nine Mile River watershed portion of the Study Area is comprised of and bounded by the Kingswood Subdivision development to the northwest, and includes Cox Lake, Maple Lake, Fraser Lake, Lewis Lake, Ragged Lake, and Stillwater Lake. Together, lakes in the two watersheds cover 555.2 hectares or 12.9 per cent of the total Study Area. Surface waters in these lakes are generally dystrophic, having brownish acidic waters with a high concentration of organic matter, supporting only modest vegetation.

Primary productivity tends to be low and most lakes are oligotrophic, having low productivity, and being deficient in plant nutrients but rich in oxygen throughout their depth. Surface water also tends to be low in dissolved solids, providing little buffering capacity. Combined with the low buffering capacities of the thin soils and tills associated with granite bedrock, much of the fresh water in the Study Area is susceptible to acidification.

Lake or Pond	Area (Ha)	Area (ac)
Paper Mill Lake Watershed		
Ash Lake	30.0	74.1
Belchers Pond	2.5	6.2
Big Cranberry Lake	4.4	10.9
Big Horseshoe Lake	7.0	17.3
Charlies Lake	6.0	14.8
Crane Lake	12.0	29.7
Flat Lake	2.0	4.9
Fox Lake	16.0	39.5
Hobsons Lake	4.0	9.9
Kearney Lake	62.5	154.4
Little Cranberry Lake	1.6	4.0
Little Horseshoe Lake	1.0	2.5
Quarry Lake	45.1	111.4
Susies Lake	80.6	199.2
Three Finger Lake	6.5	16.1
Washmill Lake	8.2	20.3
TOTAL	**289.4**	**715.1**
Nine Mile River Watershed		
Cox Lake	87.6	216.4
Maple Lake	30.3	74.9
Fraser Lake	66.8	168.1
Ragged Lake	30.5	75.3
Stillwater Lake	49.5	122.2
TOTAL	**264.7**	**656.9**

Table 3.2: Waterbodies, Blue Mountain/Birch Cove Study Area

3.4.4 Vegetation

The Blue Mountain/Birch Cove Lakes Study Area is covered with patches of predominately softwood and mixed wood forest. Human disturbance of the landscape is widespread, and there are only a few small areas of mature forest left. For the most part, Red Maple, Aspen, and White Birch predominate as post-fire species. Red Spruce and Eastern Hemlock are found with Black Spruce and Balsam Fir. Black Spruce swamps and peat bogs are extensive. Species representative of Acadian forests are found in stands covering 2 or 3 ha, including stands of mature Red Spruce and mature White Pine.

Included in the reference mapping is a Forest Inventory map describing the area with 2,910.9 hectares of natural forested stands (**Appendix A, Figure 5A**). Wetlands including lake wetlands, open bogs, and treed bogs identified by NSDNR represent approximately 140 hectares of the entire Study Area (**Appendix A, Figure 4**).

3.4.5 Wildlife

Moose are present on the Chebucto Peninsula south of the Study Area. Some stakeholders contend that they inhabit the Study Area. DNR, however, has stated that their records and surveys:

> … do not support claims that there continues to be a moose population in the Blue Mountain Crown land block. We believe the

> current level of development and transportation routes surrounding the block and utility corridors and recreational activities within, have significantly devalued the area as moose habitat. The occasional sighting has been reported in the area but these animals are felt to be transient. Although one of the values identified in this area, through DNR's integrated resource management process, was originally moose habitat, recent surveys have caused DNR to reassess this value for Crown land in this area.[15]

In an attempt to better understand the Chebucto Peninsula moose population, DNR fitted three moose cows and three moose bulls with GPS collars between January 2004 and March 2006. Analysis of this data will provide a better understanding of moose movement both spatially and temporally within the area and thereby assist future land use management, particularly with respect to connectivity and trail corridor analysis.

Deer are more common on the Chebucto Peninsula but avoid barrens and wetlands that are found throughout the Study Area. Nevertheless, new growth on recently forested and burned areas in the Kingswood subdivision provides good forage for moose and deer. As bogs and inland barrens are common, small mammal diversity is low, as should be expected. Beavers are notable at various locations within the lakes network.

Despite the many lakes and streams in the Study Area, the acidic and deeply coloured water supports only a limited population of freshwater fish.

3.4.6 Wilderness Corridor

The Blue Mountain/Birch Cove Lakes area occupies a strategic location as the connecting green space/wilderness area at the "pinch point" between approximately 22,000 hectares of undeveloped land on the Chebucto Peninsula and the greater mainland of central Nova Scotia. The pinch point of the Chebucto Peninsula extends approximately 18 kms between the Head of St. Margarets Bay east to the Bedford Basin, the widest section of the Blue Mountain/Birch Cove Lakes Study Area is approximately 10 kms across this same corridor leaving only 8 kms of land connecting the Chebucto Peninsula to the greater mainland (**Figure 3.3**).

[15] Hugh Gillis, NSDNR, "DNR Comments on Blue Mountain/Birch Cove Assessment Study Situation Assessment Report," to EDM, December 22, 2005, pp. 3-4.

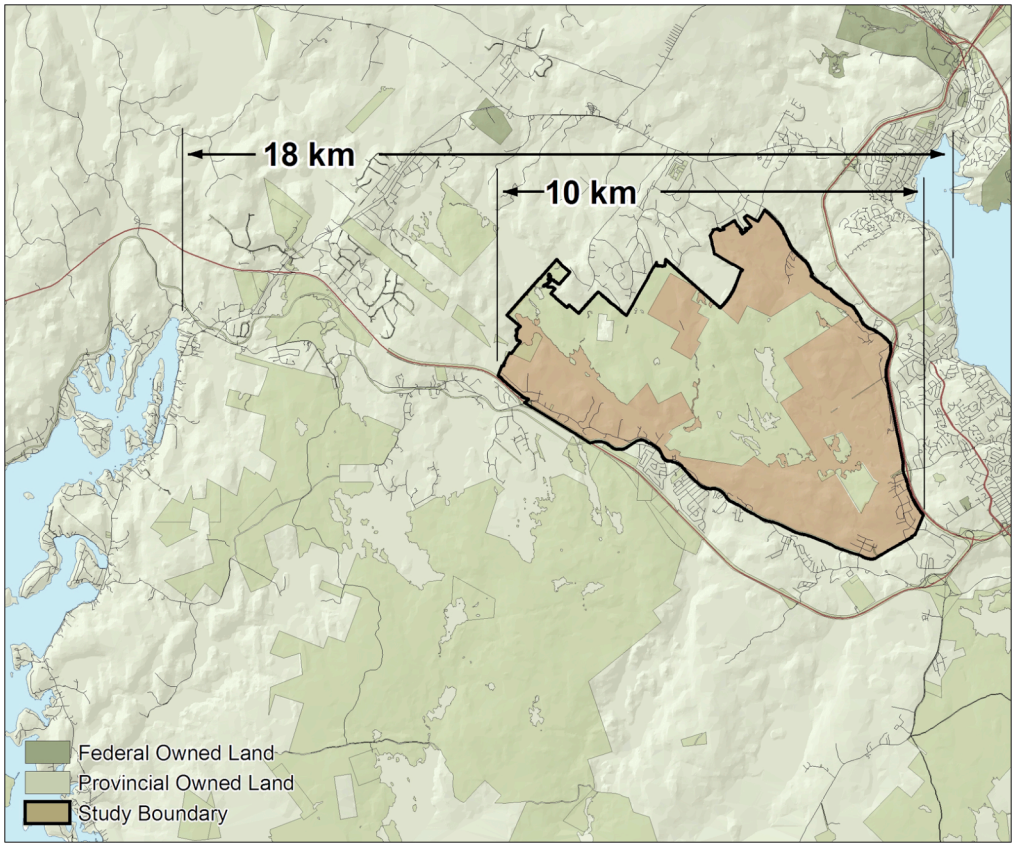


Figure 3.3: Wildlife Connectivity, Blue Mountain/Birch Cove Relative to Chebucto Peninsula

The Study Area location and its position at this "pinch point" make an examination of impediments to wildlife movement through the site necessary. Analysis of Landscape Connectivity found isolated areas of steep slopes along ridgelines (see: **Appendix A, Figure 6**); however, none of these steep areas poses a significant barrier to movement as they are not connected. There are also a number of wetlands as well as waterbodies comprising the Birch Cove Lakes system. The wetlands and lakes impede the movement of some species to a degree, but also provide important habitat and food supply.

3.5 RECREATION USE

Although much of the Study Area is rugged and difficult to traverse, its lakes and landscapes attract many users, especially from adjacent residential areas. The area is regularly used for recreation with well established, if unofficial, walking, hiking, and mountain biking trails (**Appendix A, Figure 9**). One informal trail, for example, leads from a well-known but informal parking layby on the western side of Highway 102 to Susies Lake, which is frequented as a swimming area. The lake system is attractive

to canoeists and kayakers. The area also offers skating and cross-country skiing opportunities in the winter.

A variety of trails have evolved in the area as a result of the activities of these groups. As suggested in the preceding paragraph, these are generally unauthorized and informal. With exception of the BLT Trail, a Rails to Trails project undertaken by the Beechville/Lakeside/Timberlea community with assistance from HRM and the Province, no trail has a Letter of Authority from NSDNR recognizing the right-of-way for trails purposes. To the best of our knowledge, none of the trails on private lands within the Study Area is endorsed by any owner. Indeed, some of the remaining trails referenced below may threaten the preservation of existing natural values and will be evaluated in that light. Those that do not compromise the sustainability of the area, however, are important recreational resources that can be incorporated in a future regional park.

3.5.1 Hiking/Walking

Jim Vance, Executive Director of the NS Trails Federation, stated that his organization was a *de facto* "governing body" and that any specific knowledge or statement regarding trails would have to be addressed by the local association. In this case the local trail association is the Halifax Northwest Trails Association, which is represented by Bob MacDonald.

Several trails provide access to the Study Area. Well-established trails, for example, provide informal access to Quarry and Susies Lakes from Highway 102 to the south of Gateway Quarry. They not only provide access for vehicles that park at the edge of the highway but also correspond to trails serving residential areas on the other side of the Highway. In addition to providing opportunities for walking and hiking, these connections also provide access to the larger area by canoeists and kayakers, and campers. They are also the primary routes for swimmers who use Susies Lake in the summer. Anecdotally, they are also used to access the lake for skating in the winter.

At the northern end of the Study Area, the Kearney Lake trail runs on the south side of Kearney Lake behind Saskatoon Drive. It extends through Kearney Lake Estates at the northwest end of the lake and connects to an extensive web of trails through Blue Mountain Estates and Kingswood. The latter network, furthermore, includes trails from these residential streets that access the northern end of the Study Area, including Blue Mountain. It is valued for cross-country skiing and mountain biking (see below) as well as hiking. It has, however, been cut off to the west by the Blue Mountain subdivision. The Mainland North Trails Association has mapped the trail from Maskwa Canoe Club.

To the south, the BLT Rails to Trails Association has put considerable effort into the development of a nine-kilometre stretch of abandoned railroad bed through the communities of Beechville, Lakeside, and Timberlea. The nine kilometres of rail bed, currently managed by BLT Rails to Trails, begins at the Lakeside Industrial Park and runs through to the Lake of the Woods Subdivision at Exit 4 of Highway 103. The core trail managed by the Association serves the Beechville/Lakeside/Timberlea community and is a component of the Trans Canada Trails network. A variety of spurs branch northward from this spine to provide access to the core of the Study Area, including connection to the Nova Scotia Power right of way.

3.5.2 Cross-country Skiing

Steve Chipman, President of Cross Country Ski NS, contacted his approximately 200-person membership before meeting with EDM. Neither he nor his members had a good appreciation for the area. They tend to use existing formal developed trails, such as the Beechville/Lakeside/Timberlea Rails to Trails, Point Pleasant Park, Shubie Park, and Kings Road in Waverly.

He suggested that the Study Area is not heavily used. Skiers tend to prefer evergreen forests on rolling to flat terrain in areas with consistent snow coverage. Skiing on lakes is inherently unsafe. Barrens and open areas, which cover extensive portions of the Study Area, tend to be windswept and cold, and are not desirable. If trails are developed for skiing, they should have a system of bi-directional loops with no steep slopes or sharp turns, and multi-use structures such as warm-up huts.

3.5.3 Canoeing/Kayaking

Dr. Dusan Soudek, President of Canoe-Kayak Nova Scotia, indicated that the Birch Cove Lakes area is a highly valued recreational paddling resource. The group of lakes provides one of the few loop systems in HRM. He noted only three other loop systems: the Tangier–Grand Lake canoe route, the Mushaboom system, and the Blind Bay–Scotts Bay system.

The primary benefit of a loop route is that paddlers can put their vessel in the water and leave the water at that same location. The Birch Cove lake system, furthermore, is close to the city while providing a true wilderness experience. The convolutions of the lake system also sustain the interest of paddlers as they can visit the area many times to enjoy different experiences exploring new coves and inlets.

Dr. Soudek emphasized the importance of protecting the portage routes on the system noting that, “even if the land was developed you could still navigate the system if the portages were protected.” He suggested that public ownership is the surest means of insuring portage areas continue to be available. He added that only immediate views need to be protected to preserve the wilderness character of the

lake system(see: **Appendix A, Figure 8C**). He noted that the Canadian flag at Costco in Bayers Lake is currently the only intrusion into this experience and it is, nevertheless, beneficial to paddlers as an informal navigation maker.

3.5.4 Mountain Biking

The Study Area has two major mountain biking systems. The first and most heavily used system is the 5 km "Whopper Dropper" near Bayers Lake Business Park. It winds through brush and open barrens, and includes 3 to 4 foot high rocks offering jumping opportunities for the adventurous. The other is the "Evil Birch" trail system, which consists of a 10-kilometre loop accessed from the Maskwa Canoe Club on Kearney Lake.

Both trails are described and rated in the 2001 "Mountain Bike Trails for Halifax and Vicinity," which is printed independently by local enthusiast Randy Gray and summarizes the features of 30 separate trails in the region. Mr. Gray uses a fairly complex system to rate trails. Both the Whopper Dropper and Evil Birch trails include a mixture of easy and difficult sections. Because of the jumps, however, the Whopper Dropper is one of four trails in HRM that secured an "ambulance" symbol. Nevertheless, Mr. Gray's text suggests that it is well suited to novice riders, who will presumably know well enough to avoid the four-foot jumps. The Evil Birch trail is actually rated as more difficult overall but is evidently not as dangerous (i.e., a rider may be more likely to fall down but the fall is less likely to require medical attention). It appears to be regarded as a bit old fashioned with Gray stating, "Retro fun! This is what a Provincial Mountain Bike Race series course used to look like (minus the development)…this was THE place to ride…Oh how things have changed." Both the Whopper Dropper and the Evil Birch can be connected by a trail that follows the power lines through the Birch Cove Lake Blue Mountain area. Mr. Gray also includes an "Urban Development Alert" in his rating icons both trails to indicate that development is encroaching on them and riders should "expect to see some changes at some point."

Sue Earle, a founding member of the East Coast Mountain Biking Association, stated that her organization primarily uses the trails in the area for "Cross-Country Mountain Biking" or riding through the woods on a single track. Single track riding requires narrow (2 to 3 foot) trails. The "Whopper Dropper" is very well suited to the preferences of this group. It provides a variable level of challenge and is very durable because the granite bedrock barrens degrade slowly despite heavy use. In addition, Ms. Earle noted that the "Whopper Dropper" is close to the city.

3.5.5 Off-Highway Vehicles

The rugged terrain in the Study Area is challenging for motorized vehicles; however, it does attract some Off-Highway Vehicles (OHV). The BLT Trail is the only formal

OHV use trail in or around the Study Area. It is also used to some extent by snowmobilers in the winter. A spur running north from the BLT Trail, furthermore, connects to the Nova Scotia Power right of way, which provides a broad cleared area through which vehicles can traverse the Study Area to Kingswood.

The provincial associations for different types of OHVs (i.e., ATVs and snowmobiles) do not recognize these trails. The OHV public discussion forum reveals a desire for a trail linking Nine Mile River to the Mount Uniacke area where riders can access the more extensive trails network available for OHVs in the interior and central mainland. Currently, the Nova Scotia Power corridor can be used for this purpose but users are hindered by access problems across private lands in the Kingswood/Hammond Plains Road area.

In recent months the public debate on OHVs has been heightened by Provincial legislation (Bill 275) to better regulate their use. Over the same period, several complaints to DNR and the RCMP have resulted in tickets to OHV drivers exceeding the posted speed limit on the trail of 20 kph.

3.6 PROPOSED TRANSPORTATION IMPROVEMENTS

As noted in **Section 3.4**, the Birch Cove Lakes Watershed Society (BCLWS) considers one of the key features of the Study Area to be the absence of roads. On the other hand, roads, to a considerable extent, define the Study Area. Highways 103, 3, and 102, as well as the Kearney Lake Road are the most readily identified features on the edges of the area. Highway 102, in particular, has created a boundary that has protected the Study Area from intensive impact from development in Mainland North.

Proposed Highway 113, therefore, can be viewed as both a potential threat to natural values in the area and an effective barrier to future encroachment by development. First and foremost, it is important to understand that highway construction is not imminent. Its need is based on analysis by the Department of Transportation and Public Works anticipating increasing traffic levels on Highways 103 and 102. It will connect the two highways as shown on **Figure 1.1**, bypassing the most heavily used sections of the two roads within the Halifax urban core as well as the Hammonds Plains Road. By drawing users from more heavily used roads, it will also improve level of service (i.e., speed and safety) on those roads.

3.6.1 Highway 113 Project Description

Proposed Highway 113 is described on the NSTPW Web site as follows:

> The objective of this undertaking is to identify and preserve a corridor of land for a new highway in anticipation of future highway needs.
>
> The proposed Highway 113 would join Highway 103 near Exit 4 at Sheldrake Lake and Highway 102 near Exit 3 (Hammonds Plains Road). It is planned to be a four-lane wide median-divided highway, approximately 9.9 kilometres long. The right-of-way to be reserved for the highway is 150 metres wide.
>
> Access to the highway would be by high speed "flyover" ramps from eastbound Highway 103 and southbound Highway 102. An interchange and connector would be constructed at Trunk 3 near Exit 4 on Highway 103 and an interchange would be constructed at Kearney Lake Road. These interchanges will improve access to the 100-series highway network and meet the anticipated needs of expanding development in the area.[16]

No date has been fixed to begin construction of this link. The Department of Transportation and Public Works will monitor traffic volumes on the related roadways and will proceed with construction if and when the roadway is warranted. TPW staff interviewed by EDM have suggested that this could take 15 to 25 years or more.

Staff also emphasized that the current focus of their efforts is corridor preservation for future highway construction. The corridor to be secured is 150 metres wide. The highway itself from shoulder-to-shoulder will be approximately 45 metres wide. The Department has begun negotiations for land acquisition to establish the necessary right-of-way. Staff also wanted to address a misconception that Blue Mountain Hill will be quarried to acquire material for highway construction, *which has not been planned at any time*.

The Department recognizes the potential requirement for wildlife corridors and trail connections. It is very important from the perspective of highway safety that crossing occur at specific points on the highway. Staff indicated that data is being collected on the Chebucto Peninsula moose population movement in the area, and will be monitored for several years before the highway is built. The Department is also concerned that trails be accessible from trailheads on local and collector roads associated with development in order to avoid impromptu laybys along 100 series highways.

Under Section 22 (1) the *Public Highways Act*, a variety of activities are, in fact, restricted next to limited or controlled access highways:

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[16] Transportation and Public Works, "Proposed Highway 113," http://www.gov.ns.ca/tran/highwayops/Highway113.asp

22 (1) Where a highway or portion thereof or any land has been designated as a controlled access highway, no person shall, without a written permit from the Minister,

(a) construct, use or allow the use of, any private road, entrance-way or gate which or part of which is connected with or opens upon the controlled access highway;

(b) sell, or offer or expose for sale, any vegetables, fruit, meat, fish or other produce, or any goods, wares or merchandise upon or within forty-five metres of the limit of the controlled access highway; or

(c) erect, construct or place or cause to be erected, constructed or placed, any building or other structure, or part thereof, or extension or addition thereto upon or within sixty metres of the limit of the controlled access highway.

Construction near a highway is further restricted under Section 42(1):

42(1) Subject to subsection (1) of Section 22 and unless the consent in writing of the Minister has been first obtained, no person shall erect, construct or place or cause to be erected, constructed or placed, any building or other structure, or part thereof, or extension or addition thereto, upon any highway or within one hundred metres from the centre line of the travelled portion of any highway.

These regulations, which can be modified or waived by the Minister of Transportation and Public Works as stated in the provisions, mean that a highway implies a substantial "no build/no access" area. These provisions enhance public safety. In the case of proposed Highway 113, they will also add to the buffering impact of the highway on any parkland dedication providing the Department with the ability to restrict building within a band up to 170 metres.

3.6.2 Environmental Assessment

Highway 113 was registered by TPW in April 2000 as a Class I undertaking, as required by the Environmental Assessment Regulations under the *Environment Act*. The registration included an environmental impact assessment, which was intended to address all assessment requirements. Based on public and regulatory comments on the registration document, TPW issued two addenda to clarify the original document and address comments. The project was briefly withdrawn and resubmitted in October 2004, in order to redefine the scope of the undertaking and remove a road connection between Trunk 3 (St. Margarets Bay Road) and the

proposed Highway 113 from the project definition. In November 2004, the Minister issued a decision, based on possible adverse or significant environmental effects, that a Focus Report was required. This Assessment Study is intended, in part, to address the requirements of the Focus Report.

The April 2000 registration document was a detailed environmental assessment report. As such, it included:

- *Project Description* – Serving to describe the project sufficiently to identify the potential interactions with the environment, the description identified the location of the project, the locations of water crossings, the topographic setting, cut and fill areas, design standards, project schedule, pre-construction and construction activities and methods, and maintenance and operations activities. These included environmental protection measures to be included in the project.

- *Reason for the Undertaking, Other Methods and Alternatives to the Undertaking* – Addressing need and justification for the project and consideration of the methods, means, and locations that were considered in the decisions leading to the planned project. An important consideration stated for the registration of the undertaking was to ensure the acquisition and protection of the highway corridor in an area where private lands have been developing rapidly. At that time, TPW did not plan to construct the highway for 10 or 15 years; however, private development in the near term could preclude later highway construction.

- *Description of the Existing Environment* – Providing the environmental setting, which indicates the components of the environment that could be affected by the project. Terrestrial, aquatic, and wetland biophysical environment components were identified. Socio-economic and cultural environments were also identified.

- *Valued Ecosystem Components (VECs)* – Serving to identify components of the biophysical, socio-economic, and cultural environments of importance on which the assessment of impacts was focused.

- *Predicted Impacts* – Identifying potential impacts of the project on the environment shows how potential impacts will be mitigated and determines the significance of potential impacts, positive and negative. Potential impacts of the environment on the project were also addressed. Cumulative impacts as a result of interactions with the impacts of other projects were also addressed.

- *Compliance and Effects Monitoring* – Identifying environmental protection plans, environmental monitoring plans, contingency plans, and a compensation plan to prevent or mitigate impacts, and prevent accidental events or define the

responses to accidental events that might occur.

- *Appendices* – An archaeological assessment and a wetland assessment were appended for these stand-alone studies.

The results of the impact assessment were summarized as advantages and disadvantages to the environment. Identified advantages include an increase in traffic safety and free flow of traffic between Highway 102 and 103, and a predicted reduction in congestion on Hammonds Plains Road, with an associated increase in safety. Associated benefits predicted were reduced travel times and reduced air emissions.

Negative predicted impacts included a loss of land development opportunities, interruptions in forestry operations, and losses of habitat from the area affected by highway development. These were not predicted to be significant with mitigation or compensation.

Other impacts to the biophysical and socioeconomic components were not considered significant as they were predicted not to cause a sustained depression or have an impact in excess of legislation or guidelines.

Following comments received from the public and regulatory reviewers of the registration document, TPW submitted Addendum 1 to the report in April 2001. The addendum was intended to clarify a number of topics and address comments. Notable topics addressed were:

- No Federal funding is expected for the project;

- Mapping of developed and developable private land indicates the rapid rate of development and the likelihood of development on private lands which would preclude construction of Highway 113, if the corridor were not established well before planned highway construction;

- Developers have modified their plans based on the publication of the plans for Highway 113, confirming the need to establish the corridor and identifying a need to resolve the issue, so that developers can proceed;

- The proposed highway would sever a portion of the Crown land to the west; however, private lands would also be severed that could be retained in an undeveloped condition; with the limited intrusion of the highway corridor on the Crown lands the impact on wilderness use of the Blue Mountain and Birch Cove Lakes areas would be minimized;

- Fuel savings and associated emission reductions would be significant; and

- Wildlife and recreation crossings would be addressed in the detailed design phase.

Further clarification was provided in Addendum 2 to the Registration, which was issued in June 2004, responding to the decision by the Minister of Environment and Labour that additional information was required. Addendum 2 addressed zoological species at risk, the population of mainland moose, wilderness recreation, and the effectiveness of the highway as a barrier to development.

Consultation with NSDNR indicated that the only zoological species at risk of concern related to highway construction was the population of mainland moose. Consultation with the Nova Scotia Museum indicated that there was no concern for zoological species at risk and no known species of fish, reptiles, or birds at risk in the area to be affected. The potential impacts and mitigation measures for the population of moose in the area of the highway was addressed in a report attached to Addendum 2.

A second attachment to Addendum 2 addressed the potential impacts of the highway on recreational uses. The report identified a variety of recreational uses in the area. The potential impacts on these recreational uses were predicted from the separation of the Crown land into two blocks and the limitation to access for recreational uses. With the provision of access via the highway overpass that will traverse the watercourse between Maple and Fraser Lakes, as well as a recommended underpass structure for recreational use to connect the Kingswood area to Blue Mountain, the impacts of the highway on recreational use were predicted to be not significant.

Addendum 2 reiterated that the 150-metre wide highway corridor would provide an effective boundary between private lands to the north and Crown lands to the south. Redesign of development plans south of Ragged Lake, in light of the proposed highway, was cited as support for the assertion that the highway would be a barrier to development. TPW concluded that from June 2004 the highway would be needed in 5 to 10 years, that the highway corridor is threatened by development, and the land must be secured in order to meet the coming need.

With the issuance of Addendum 3 by TPW in October 2004, the scope of the undertaking was changed. A connector road between Trunk 3 and Highway 113 was removed from the proposed undertaking so that construction of the road could

proceed in association with the ongoing twinning of Highway 103 and to serve as a local road to allow a residential development to proceed.

3.6.3 Focus Report

The Terms of Reference (TOR) for the Focus Report required by the Minister of Environment and Labour was issued on December 7, 2004. The TOR states that the proponent (NSTPW) must submit the document within one year of receipt of the TOR. An extension has been granted in relation to this deadline and the report is currently required by March 31, 2006. Following submission of the Focus Report, the Nova Scotia Department of Environment and Labour (NSEL) has 12 days to publish a notice in the newspaper to advise the public where the Focus Report can be accessed for review and comment. The public then has 30 days in which to review the document, after which NSEL has 25 days to review comments received, and provide a Report and Recommendations to the Minister.

Under Section 18(a) of the *Environment Act* the Minister of Environment and Labour will have the following decision options, following review of the Focus Report:

i. the undertaking is approved subject to specified terms and conditions and any other approvals required by statute or regulation;
ii. an environmental-assessment report is required; or
iii. the undertaking is rejected.

The Focus Report is required to address a variety of concerns identified during the screening portion of the environmental assessment. This Assessment Study will specifically address concerns with the relationship between proposed Highway 113 and HRM's Regional Plan. In this regard, the Focus Report Terms of Reference require "examin[ation of] options for integrated/collaborative planning," in particular, as they relate to:

- *Transportation Corridors* – Describe how, or to what extent, Highway 113 is consistent with HRM's planning objectives for integrating transportation systems with land use and the environment.

- *Private Development*—Describe how, or to what extent, Highway 113 is consistent with HRM's planning objectives for residential and related commercial development in suburban and urban areas, including the Blue Mountain area and communities such as Bedford West.

- *Parks and Natural Areas Land Use* – Describe how, or to what extent, Highway 113 is consistent with HRM's planning objectives for regional parks and open space

corridors in the Blue Mountain area and the vicinity of Frasers Lake.

- *Recreational Land Use*—Describe how, or to what extent, Highway 113 is consistent with HRM's planning objectives to provide opportunities for public recreational land-use in the Blue Mountain area and the proposed Bedford West community.[17]

One objective of the Blue Mountain/Birch Cove Assessment Study is to provide input to into these last two bullet points in the Focus Report, specifically information on Parks and Natural Areas Land Use and Recreational Land Use.

[17] Nova Scotia Department of Transportation and Public Works and Nova Scotia Department of Environment and Labour, "Terms of Reference for a Focus Report," December 7, 2004, pp. 3-4.

4.0 LAND USE SUITABILITY

4.1 SUITABILITY ANALYSIS

Suitability analysis determines the fitness of land for supporting a specific land use. It is an interactive GIS modeling process that allows analysts to explore development options, protection criteria, and community and financial issues before any change in land use takes place. The input layers are composed of mapped information from various sources. Input data such as topography or forest inventory information are given values based on a ranked set of criteria or an equation. Layers of input information are modeled or ranked to produce a map showing the most suitable or important locations in relation to the attribute being considered. The process allows analysts to assess a variety of potential land uses from commercial development to residential development to preservation in a natural state.

The basic methodology involves the combination of GIS data management with multi-criteria decision-making techniques. GIS facilitates the assembly and presentation of essential data for assessing alternative locations. To assess the overall implications of the data, scores are assigned to the individual criteria being considered in a data layer. Data layers are then combined as appropriate to the individual model. The resulting overlay model provides an objective and repeatable assessment of the landscape. Put simply, the process is:

Layer 1 + Layer 2 + Layer 3 + Layer 4 + Layer 5 = Model Result.

To aid in the definition of the potential location of a regional park in the Blue Mountain/Birch Cove area, maps were prepared for a variety of designated attributes such as residential suitability and species richness. Model data represents a view of the area from the perspective of the characteristics of each attribute.

4.2 ATTRIBUTES FOR CONSIDERATION

The suitability attributes to be included in the modeling were determined through the collaborative efforts of HRM, TPW, DNR and EDM, and finalized during a charette held at the Halifax offices of TPW on January 13, 2006. While participants considered many characteristics, the final, agreed on list included the following:

- Cultural considerations
  - i. Pre-contact archaeological potential
  - ii. Geological resources
  - iii. Other identified attributes (community stakeholders)
- Watercourse protection
- Residential suitability

- Species richness
- Views from core lakes
- Active recreation suitability

Each attribute was modeled to predict its importance in relation to the Study Area. GIS data used for attribute modeling was provided by DNR. Attributes documented in **Figure 4** of **Appendix A** were derived from interested stakeholders as well as DNR. This information was incorporated in the composite model.

4.2.1 Cultural Considerations

Archaeological Potential

The potential existence of pre-European contact archaeological sites was modeled based on proximity to watercourses, the slope of the land, and proximity to previously identified sites. In particular, archaeologists have identified watercourse intersections (where rivers flow into lakes or the ocean) as higher potential locations. Slope acts as a predictor insofar as that it determines areas that were suitable for campsites (i.e., areas with slopes less than 8 per cent). The model used to perform the analysis is the Pre-European Contact Predictive model that was developed for the Special Places Program of NSTCH, as well as HRM. **Figure 10** in **Appendix A** provides the model outputs, where areas of higher potential are in green and yellow. The area around the Susies, Crane, and Three Finger lake systems, and Stillwater Run in the central section of the proposed Highway 113 corridor range from moderate to high archaeological potential. Known archaeological sites were considered in the analysis, but have not been shown on Figure 10 as they are a confidential dataset protected by the Nova Scotia Special Places Protection Act.

Geological Resources

Geological data obtained from DNR used a fairly coarse scale. A more detailed analysis of the geological characteristics of the Study Area was not possible within the scope of this study. However, two key geological attributes were identified for potential cultural importance: the dimension stone quarry found at the eastern edge of Susies Lake and the amethyst deposit located in the northwest sector of the Governors Lake system. **Figure 4** of **Appendix A** highlights both as points of interest. They were included in the final composite model.

Additional Interesting Features

Figure 4 of **Appendix A** also highlights interesting features identified as potential park attributes. Features such as interesting forest stands, unique flora and fauna, natural beaches, rapids, and cliffs were identified and mapped. These features were given a 30-metre buffer representing a minimum setback to provide a natural context to the features, and included in the final composite model. These features were

almost all included within the proposed park area because they represent the most interesting natural features for enjoyment by the public.

4.2.2 Watercourse Protection

The watercourse protection model evaluates the sensitivity of land to produce erosion as well as the potential of that erosion to reach a receiving watercourse. The primary development-related threat to watercourses is sedimentation resulting from soil erosion.

To assess the potential impact of sedimentation, the model divides the Study Area into land cells. It measures the erodability of each cell through application of the Universal Soil Loss Equation (USLE) assuming that vegetation has been removed from the land as will normally be the case in the development process. A Sediment Delivery Ratio map is then applied over the Study Area. The delivery ratio evaluates the potential for eroded soil to reach a particular watercourse. The model is authored by EDM for Environment Canada and the Government of Newfoundland and Labrador who subsequently published it in the *Watershed Management Plan for Gander Lake and Its Catchment*, February 1996.

The model also accounts for the sensitivity of receiving water bodies to the impacts of soil erosion. For example, a cell with a high potential for soil erosion that drains to a marine system could be designated as less sensitive than a cell that has lower erosion potential but directly impacts a wetland.

Figure 11 in **Appendix A** provides a visual summary of the areas within the Study Area that are key to watercourse protection. Areas in green and yellow identify lands with high erodibility with the potential to impact on sensitive waterbodies. Concentrations of sensitive land are notable around the river systems associated with Frasers and Ragged Lakes. Mitigation measures should not be required.

4.2.3 Residential Suitability

EDM has developed the residential suitability model over many years to support planning and development projects. Residential suitability is a function of the desirability of the area based on typical residential preferences and the feasibility of land development. Factors influencing desirability are vegetation cover, quality of view planes, and south facing slopes. In addition, areas of hardwood or mixed-wood stands tend to be more desirable for residential development than softwood stands, scrub, barrens, or marshland.

Development feasibility is related to till thickness, soil drainage, terrain (i.e., slope), and erosion potential. Till thickness and soil drainage are important considerations for unserviced residential development as they influence the suitability of the lands

for installation of wells and on-site sewage disposal systems. In addition, such areas of thin till require the import of topsoil as part of the development process and afterwards as part of typical suburban landscaping. Such soils tend themselves to be highly erodible and pose a threat to watercourses.[18]

Some areas with high scores for all other factors were designated as low potential for residential development because of these feasibility factors. **Figure 12** in **Appendix A** illustrates low potential in much of the eastern half of the Study Area. Much of the area is characterized by bedrock with a thin till cover making the installation of on-site sewage disposal systems costly.

4.2.4 Species Richness

The Species Richness model was developed by EDM for the Big Cove First Nation in New Brunswick during the course of a community planning project. The model is published by Kluwer Academic Publishers in the 2003 text *Landscape Interfaces – Cultural Heritage in Changing Landscapes*. **Figures 13** through **16** in **Appendix A** present the potential species richness of the Study Area broken down by three animal-type habitats: mammal (**Figure 13**), bird (**Figure 14**), and reptile/amphibian (**Figure 15**). Considerably more bird species are, however, present within the Study Area than mammal species, and mammal species, in turn, outnumber reptile/amphibian species. To adjust for this factor, species richness was scaled into the five categories provided on the respective maps for each group so that, for example, areas with 5 to 6 reptile/amphibian species were treated as equivalent to areas with 19 to 27 bird variants. The final species richness figure (**Figure 16**), consequently, portrays ratings that are the average of ratings for the three animal groups.

For the purpose of the species richness modeling, data was derived from species models developed for New Brunswick where individual species were associated with specific habitat/vegetation types. While the species and habitats in HRM are similar to those found in modeled areas of New Brunswick, the accuracy of this assumption has not been field verified.

4.2.5 Views from Lakes

This model assessed the preservation of natural views experienced from canoe routes identified by canoeing organizations that frequent the area. Areas within view planes along identified canoe routes were highlighted as sensitive to development that could disrupt the natural setting preferred by wilderness enthusiasts.

[18] The 20-metre watercourse buffering proposed pursuant to the Regional Plan is intended to mitigate this type of impact. Nevertheless, the mobilization of sediment is a by-product of nearly all development processes and cannot be completely prevented by screening and buffering.

Canoeists did state, on the other hand, that views of development and human activity were acceptable (and in fact desirable) at the launch areas. In these situations visible areas of human use provide a sense of safety as opposed to parking and deploying in a remote, isolated area with no surrounding communities to go to in the event of an emergency. **Figure 17** of **Appendix A** provides the model output where the intensity of the green reflects areas that are visible from the lake.

4.2.6 Active Recreation Suitability

The model used to generate the active recreation suitability map (**Figure 18** of **Appendix A**) is largely based on the appropriateness of lands for natural areas hiking (i.e., accessible without the need to construct trails). As such, surface cover is an important component to determine the ease of use. Surface cover such as wetlands, granite outcroppings, or low scrub was less desirable due to the obstacles such terrain poses to hikers.

Landscape topography was included to account for the desire of hikers for undulating terrain with a minimum of steep hikes and extended flat areas. Vegetation cover and proximity to existing roads provided a model of likely preferred walking areas. Hikers prefer hardwood or mixed woods stands to barrens, marshes, or softwood stands, and generally try to avoid roadways, particularly those that may be frequented by motorized vehicles. This modeling addresses pathways as opposed to destinations such as Blue Mountain Hill. Special viewing points, beaches, and other areas of interest are identified on **Figure 4** of **Appendix A** portraying Interesting Area Attributes.

4.3 USING THE MAPS AND MODELS

4.3.1 Accuracy of the Maps

The value of the evaluation models is directly correlated to the quality of the input data. This study had a limited field program. Data incorporated in the models was provided to EDM from government sources and was not field verified. The biggest data input weaknesses arose from the coarseness of the data or the difference between the intended use of the data and its integration into the models described above. For example, soils data used in the USLE equation was refined for agricultural purposes and was not specifically developed for use in erosion modeling. Forestry data was developed primarily for use with forestry management practices. This may have an influence on the accuracy of the maps. Prior to detailed concept development of the Park, field truthing of the data will be essential.

4.3.2 The "Model Composite"

The results of each individual suitability model described in the previous Sections provide information on key landscape characteristics considered desirable within the park. Each model portrays where these features can be found in the landscape. Obviously, a successful park will include many areas with high parkland suitability. The Model Composite is a combination of all of the models created without applying any weighting to any individual feature. Areas portrayed as yellow in the Model Composite have the more of the attributes considered desirable for the Park than those portrayed in purple (refer to **Figure 19, Model Composite,** in **Appendix A**).

The Model Composite is a useful test of any proposed configuration of the future Park, as it should include primarily areas that embody the desired attributes.

4.3.3 Using the Maps and Models to Define Parkland Area

The primary purpose of each individual attribute model is as input to the overall parkland area planning process. How the model is used depends upon the overall design intent to be achieved.

For example the entire land area within the primary viewshed of the Lakes defined as the Core Lakes (Ash Lake and Fox Lake) were included within the ideal configuration area, in order to provide a primarily wilderness experience to canoeists in this location. However, for Susies Lake and Quarry Lake, which are proposed to have the greatest public use, the viewshed was used differently. For these lakes, visibility of some development areas was considered a benefit because it would provide surveillance at access points and launch areas.

The design intent is described in the follow chapter, as well as additional detail on the use of the models in developing the recommended area for inclusion.

5.0 PARK CONFIGURATION

5.1 PARKLAND VALUES

The Blue Mountain/Birch Cove Lakes area is valued as a wilderness landscape. The interviews undertaken as part of this study suggest that the Blue Mountain/Birch Cove Lakes area has captured the imagination of HRM residents.

The unique aspect of this particular wilderness is its location. The study area offers a wilderness experience immediately adjacent to a densely developed city. It is a large patch and as such provides many large patch features, including quietness, aesthetic beauty, species diversity and richness, as well as interesting elements and forest stands in an urban context where these attributes are rare. The proximity of this wilderness enables people to experience the wild landscape on a daily basis. It provides users with a rugged and accessible Canadian experience of water, birds, and extensive forest.

The results of the landscape assessment suggest that the study area, while special as a wilderness assemblage, does not rank as outstanding ecologically at a regional or provincial level. There are no known significant or rare landscape elements within the Study Area that suggest the overall property should receive protection for its ecological merit. There are also no individual elements, which if not included, would greatly diminish the ecological value of the park.

That said, the suitability model results do suggest that some locations in the study area embody more of the defined park attributes as described in **Chapter 4.0** of this Final Report, than other areas. The **Model Composite** (**Figure 19, Appendix A**) is a simple combination of all of the park attributes without any weighting applied. Areas portrayed in yellow in this map offer more park features than those shown in purple. A successful park area will include many of the areas that are highly valued for parkland development.

The suitability analysis results also indicate that the area is extremely resilient. Thin soils and hard bedrock that limit the development potential of the area, also make the landscape resistant to recreational uses. The area offers a significant wilderness experience for people in an area that is durable enough to support the impact. The two most valued landscape experiences are Susies Lake and Blue Mountain. If undertaken carefully it will be possible to develop these and other areas for human recreational use while retaining their essential wilderness attributes.

These values suggest the following with respect to determining the most appropriate park configuration: 1) a large intact patch should be preserved that is isolated from

development; 2) provided there is a large patch, there are many equally good options for the final demarcation of the park boundary; 3) and Susies Lake and Blue Mountain should both be focal features of the park.

5.2 ROLE OF THE PARK

Municipal parks are normally set aside to provide areas for recreational activity and landscape enjoyment by residents and visitors. By contrast, many Provincial and Federal parkland areas have been set aside primarily to protect rare and endangered species and/or to preserve unique landscapes. Similarly, while people and their activities are typically preeminent in planning Municipal parks, human activities may be limited in Provincial and Federal parks to protect ecological integrity.

As people become more environmentally aware, their ideas about the ideal landscape for recreation as well as their preferred outdoor activities change. Today, while active sports and "green grass parks" are still popular, walking, hiking, and bird watching in natural settings rank among the highest valued recreational activities. Mountain biking, canoeing, and kayaking are also enjoying a rise in interest. That some of the most popular recreational activities occur in natural settings suggests the need for and role of this Municipal park.

The role of a Municipal wilderness park is to provide residents with a fulfilling natural experience that can occur daily within a relatively safe and secure situation. These aspects, daily contact and a secure situation, set the municipal wilderness park apart from its provincial and federal counterpart. A walk in nature can take place in a location that is still just a few minutes away from a local store or community. Local camping can take place minutes from the hospital, and experiences gained here can be an excellent step towards wilderness treks for those who through this experience become more adventurous. The park can be an excellent location to learn to canoe or kayak, and good place for family water sports because if you tip, there will be someone nearby to help. Similarly rock climbing and skating can take place in a wilderness where you can quickly get help if you hurt yourself or get too cold. The Municipal wilderness park can also provide natural experiences for those who often are unable to access them, including the young, the elderly, the infirm, and the poor. Opportunities for these individuals and their particular circumstances should be a highlight in the park.

The role of the park in providing regular, daily exercise suggests that the park area selected should be highly accessible from new and existing communities, with many access locations, and opportunities to arrive using a variety of transportation modes, including walking, hiking, bicycling, in-line skating, public transportation, automobiles, canoes, etc.

The role of the park in providing a secure wilderness experience suggests that areas where the most intense recreational uses are planned to occur should be immediately adjacent to areas that have existing or planned community development. This will allow the future park design to incorporate CPTED (Crime Prevention Through Environmental Design) principles in the areas most heavily used by people. CPTED, described in more detail below, involves the design of buildings and open spaces to enhance human safety. The principles that guide CPTED include natural surveillance, reinforcement of territory or "defensible space," access control, and the provision of alternative routes. Applying CPTED will require the selection of a park area that is adjacent to development and accessible by emergency vehicles.

5.3 LANDSCAPE CONNECTIVITY

The Study Area is between two extensive wilderness areas. The Terrance Bay Wilderness Area, provincial parklands, and other Crown, Municipal lands on the Chebucto Peninsula south of Highway 103 are extensive and home to wide ranging species including moose and bear. Similarly, extensive interior lands owned largely by Bowater Mersey and the Crown provide wildlife habitat to the north of the Hammonds Plains Road.

The presence of moose and bear within the Study Area is the subject of debate. Regardless of the current situation, both species were formerly in the Study Area, and both are definitely present in the wilderness areas to the south and north. In terms of landscape connectivity, the Study Area offers three key opportunities to facilitate wildlife movement between these two large wilderness areas. Other than these locations subdivision development has largely blocked paths available to wide ranging species.

The three "corridors" that link the Chebucto Peninsula wilderness with the Bowater Mersey lands north of the Hammonds Plains Road correspond to three exits from Highway 103 (**Appendix A, Figure 20**). The first is at Exit 3, where the Nine Mile River offers a corridor. When the planned Westgate community is complete, a 300-foot wide buffer next to the river is anticipated to remain that could provide wildlife passage. The second is at Exit 4 where existing rail cuts and trail development offer a passage. The third is Exit 5 where extensive Bowater Mersey lands to the west of the Tantallon Shopping Centre and Westwood Subdivision offer good habitat and encourage passage. TPW is currently working with DNR to collect data on species movement in these areas. The decision on the need to link these two large tracts, and the possible role of the park area in establishing this link, will be made when this data is available.

It is important to note that while it may be determined in the future that connectivity is not be required at a provincial level of concern between the two large Crown parcels, the proposed Blue Mountain/Birch Cove Lakes Park should still be connected to adjacent resource lands. This connectivity is necessary to maintain the diversity and species richness within the park boundary. As human use of the park intensifies the pressure on individual species will increase, and many species will slowly die out if there is not a ready population that can easily re-populate the park on a regular basis. In addition, without connectivity the genetic pool within the park may become limited over time for species without a sufficiently large population. Connectivity also helps the park be more resilient to disturbances such as a fire, hurricane or other natural disaster. Maintenance of species diversity within the proposed park area over the long term will likely require connectivity to at least one resource area and preferably two.

Connecting the park to resource lands could require management control and/or acquisition of critical parcels in the area between Timberlea, Kingswood, and Hammonds Plains, as indicated in **Figure 20** of **Appendix A** entitled **Connectivity**. The figure also indicates areas where TPW might consider species movement in future highway design to aid the connectivity of the park to the greater landscape.

5.4 PROPOSED PARK AREA

Figure 5.1 illustrates a proposed generalized area for the Blue Mountain/Birch Cove Lakes Park. The generalized park area, comprised of the Core Wilderness Area and Active Use Area, is an example of an ideal park area that was developed as part of this study to illustrate the principles and provide one option for more detailed discussion.

The generalized park area was derived using the suitability model results from **Chapter 4** of this Final Report, and considering the previous discourse on park values, the role of the park, and connecting the park to the greater landscape. The generalized park area described and the principles embodied are necessary to a successful wilderness park. That said, the final shape of the park boundary as shown is but one option. As indicated earlier, given the park values and the role of the park, there will be many equally good options for the final boundary demarcation that can and should be determined at a future date.

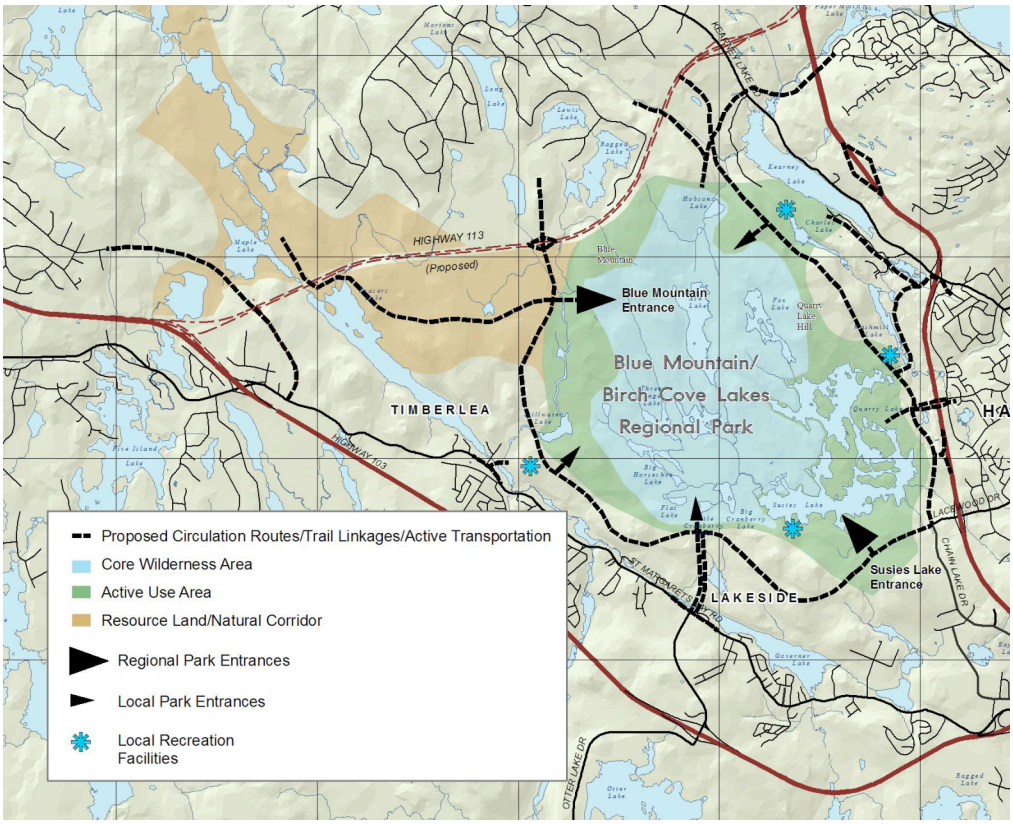

Figure 5.1: Proposed Blue Mountain/Birch Cove Lakes Park

The area proposed for the park includes the following elements: 1) a Core wilderness area that is silent and isolated; 2) a surrounding area of Edge wilderness that is the focus of wilderness recreational activities; 3) a meaningful landscape corridor connecting the designated park area to the extensive Crown holdings beyond; 4) an area of community development around and interspersed with the Edge landscape of the park that is designed in a manner to implement CPTED principles; 5) at least one and preferably two significant regional access locations; and, 6) linkages to all of the surrounding communities including active transportation initiatives.

5.4.1 Core Wilderness Area

To truly be a wilderness park, the park area should encompasses a significant core wilderness area that is in fact remote and supportive of the primary human values attached to a quiet and deep woods. The area should be large enough to include a full day walk on foot in an atmosphere that feels isolated. The area should be made visible, for example; its expanse might lie before the viewer from the top of a hill, but it should not necessarily be easily penetrable (e.g., access should be by significant walking paths, canoe routes or mountain bike trails). The Core area should include a

variety of landscape types, and serve as a seed source and refuge from the more heavily used areas of the park.

In **Figure 5.1** the proposed wilderness Core area is shown in blue. The Core area is approximately 4 km long by 2.5 km wide, and is sufficiently large to support a 20 km loop trail for "back country" day hikes. The proposed Core area also includes a favoured day long canoe/kayak loop route originating at Susies and Quarry Lakes, and encompassing Fox Lake, Ash Lake, Crane Lake, Three Finger Lake, Big Horseshoe lake, and Big Cranberry Lake. The viewsheds from these "back country" lakes (**Figure 17** in **Appendix A**) were wholly included in the core area, ensuring minimal disruption of the natural setting preferred by wilderness enthusiasts.

The proposed Core area also includes a wide variety of landscape types and at least three areas that offer the potential for high species richness for each of the three animal groups modeled (i.e., mammals, amphibians, and birds), as per **Figures 13** through **16** in **Appendix A.** Finally Quarry Lake Hill was included in the core wilderness area. While it is proposed that Blue Mountain be developed for more intensive recreational use (see below), the south facing view from Quarry Lake Hill out over the core wilderness expanse is proposed to be saved for wilderness enthusiasts seeking a remote, quiet and contemplative long view.

Access to the Core wilderness area should be entirely through the surrounding Edge wilderness area. In this way, the Edge landscape provides a buffer zone to the Core landscape, keeping the Core quiet and protected, and allowing the Core to serve as a seed source and refuge for species living in the Edge landscape.

5.4.2 Edge Wilderness Landscape

The Edge wilderness landscape is a band of wilderness that ranges in depth from approximately 100 to 1000 metres surrounding the Core landscape. The Edge offers extensive opportunities to experience the wilderness on a daily basis. Because of the adjacent Core, one side of the Edge landscape is always quiet and offers a sense of the remote woods beyond. Simultaneously, the Edge landscape should be sufficiently narrow and interspersed with community development such that CPTED principles may be applied during its development; quite literally, help should be just a stone throw away. The Edge landscape should encompass the cherished locations of the study area as well as landscapes that host the wilderness species best loved by people, including birds and small mammals, making them accessible for human enjoyment.

In **Figure 5.1** the proposed Edge wilderness area is shown in green. The Edge includes both Blue Mountain and the southern, eastern and northern sides of Susies and Quarry Lakes. These areas are proposed to be key recreational areas in the park.

The viewshed from Blue Mountain is included in the Core area, however the hill itself is contained within the Edge landscape. This will allow Blue Mountain to be enhanced as a significant recreational area, with views out to the extensive forest area of the Core. Short hikes, rock climbing, and picnic areas should be included, and limited commercial opportunities considered during detailed planning. One might imagine bicycling to the top of the hill, and then eating Blue Mountain huckleberry ice-cream from a bench overlooking the wilderness Core while rock climbers ascend the slope below you. Mont Royal in Montreal, Quebec and Cadillac Mountain in Bar Harbor, Maine offer precedent for detailed development. Access to the hilltop should allow even the elderly and the infirm an opportunity to experience the view.

The Edge landscape bordering Susies and Quarry Lakes may be developed as the primary recreational areas. An ideal minimum 100 metres of land width should surround each lake, ensuring the experience remains natural. Activities including bicycling, in-line skating, skate boarding, ice skating, swimming, canoeing and kayaking, pedal and row boating, outdoor picnic areas, running and hiking trails, should be included throughout. The Edge landscape should include a continuous multi-purpose trail system that also provides for half hour and one hour trails that loop back to the starting spot. One can imagine bicycling or walking from Clayton Park, under the highway to a trail along Susies Lake. Along the trail, one can stop for a rest and watch the canoe races as well as the baby ducks that are visible along the Core wilderness landscape on the other side of the Lake. While walking through the Edge landscape one is occasionally aware that homes and community facilities are nearby, providing a level of surveillance and security to the route.

Opportunities for incorporating specific wilderness recreational facilities, such as an "adventure" mountain bike trail area or equestrian trails, should be considered during detailed planning stages. At individual community access locations there may be opportunities to include specific community recreational facilities that are needed to fulfill local needs. The Edge wilderness landscape should also be supportive of the park activities related to the Core area of the park, notably parking/staging areas for paddlers to bring their canoes and kayaks, or for skiers and hikers to park. The Crown parcel on Susies Lake and near the Bayer's Lake Business Park offers an excellent opportunity for the primary staging area for water based activities within the entire park area.

The Edge area also includes a large number of "Interesting Area Attributes" (**Appendix A, Figure 4**), such as interesting forest stands, dams, unique ground flora, and geological resources. During detailed planning, these and other features that are identified during field work, should be incorporated into the Edge area as special park features for interpretation and interest. The Edge area should also include a

large number of locations that are potential habitat for birds, amphibians and small mammals, as identified in **Figures 13** through **16** in **Appendix A.** Shrub planting and clearings should be included and created to improve bird and small mammal habitat.

Some Edge wilderness lands on the western side of the generalized park area corresponding to Stillwater Run should remain as a natural transition to the corridor/resource lands to the west of the park.

5.4.3 Natural Corridor

The Crown and private lands lying to the south and west of the generalized park area form an important natural corridor, providing connectivity to the more extensive Crown and Bowater lands to the south and west, refer to **Figure 21, Generalized Concept Plan**.

A critical link in this corridor is at Maple Lake/Frasers Lake where the proposed Highway 113 corridor crosses the lake system. The highway will be located on one of the few remaining "necks" of land available for species movement. The Piercey Investors subdivision development on their lands to the west of the lakes may present a significant complication for this initiative. HRM should work with landowners, TPW, and DNR to ensure the preservation of adequate connectivity in this area, consistent with the Open Space Functional Plan proposed in the draft Regional Plan.[19]

The resource land areas encompassed by the natural corridor may also provide important hiking and canoeing links to the Tantallon and Hammonds Plains areas. These trail linkages should be designed to follow CPTED principals, particularly where they cross the proposed Highway 113. Resource management of these lands, as currently undertaken by DNR, and including forest harvesting, is compatible with the objective of a natural corridor for the park.

5.4.4 Adjacent Community Development and CPTED

In order for the wilderness experience to be secure, facilities and services must be nearby. The basic and overlapping principles that guide CPTED in practice are: natural surveillance, reinforcement of territory or "defensible space," access control, and provision of alternative routes.[20] The implementation of CPTED will require an area of community development adjacent to the wilderness park area.

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19 HRM, *Regional MPS – DRAFT 2*, p. 39. Specifically, the plan states, "The Open Space Functional Plan should consider: coordinating and managing a program to research and identify potential natural corridor linkages, community networks and significant natural habitats to guide considerations of future development." It follows by stating, "[The Open Space Functional Plan should consider] coordinating and managing a program to research and identify potential urban corridors for the restoration of natural corridor linkages, community networks and significant natural habitats to guide considerations of future development."

20 See: City of Vancouver, "Designing Safer Urban Environments," http://www.city.vancouver.bc.ca/commsvcs/ planning/infobul3.htm

The study area boundary is primarily 100 series highways and roads. While these major highways and roads have served to protect the study area from development encroachment, they also restrict the visibility and accessibility of the study area.

In order to improve security in the park, a zone of community development should be considered between the major highways and roads that border the Study Area and the proposed park area. This development would take place on privately held lands. Residential neighborhoods extending inward from the Bicentennial Highway, Kearney Lake Road, Hammonds Plains Road, and St. Margarets Bay Road will provide many new users for the park including people who take a pride of ownership and offer surveillance for safety and security. Furthermore, these new residents can largely be expected to be park users whose sense of ownership can be relied on to assist in the management of its space.

The relationship between community development and a wilderness park is complex and inter-related. In order to provide a wilderness experience, development cannot feel like it is impinging on the park, and yet it must be accessible. Therefore, the recommended shape of the boundary of the Edge wilderness area is a curvilinear shape that is interspersed with areas of community development. The final boundary location should be determined while simultaneously considering the ideal community build-out such that both the park and community perform well. Supporting commercial operations, such as kayak rental facilities and food service shops might be included in the community areas that develop adjacent to the park. Detailed planning should consider, where possible, a public street frontage bordering the park as opposed to the backyards of homes. Point Pleasant Park Drive provides such an example, creating a very public and secure interface between the south end neighbourhood and the Park.

5.4.5 Regional Entrances and Park Roadways

The proximity of the park to the Provincial highway system can facilitate access where it is provided for. It is recommended that at least one and preferable two regional park entrances be developed to provide convenient access from the Highway system. In **Figure 5.1** a regional access is provided near the Bayer's Lake Business Park at the Lacewood Interchange on the Bicentennial Highway. This regional access location is very near the primary staging area proposed for the Crown parcel to the south of Susies Lake.

A second potential regional access location is near Blue Mountain on the future Highway 113. Possible HRM plans for an interchange at Kingswood/Hammonds

Plains could be combined with a regional access to the park. Like the Lacewood interchange, access in this location would be immediately adjacent to one of the most important park areas, Blue Mountain itself.

The generalized park plan in **Figure 5.1** also suggests the possibility of a circulation route around the park connecting the two regional entrances and providing multiple minor points of access to the park.

5.4.6 Park / Community Access

The limited access highways that flank the Study Area have had a significant role in restricting access. Highway 102, in particular, has inhibited the flow of potential users from areas such as Clayton Park West, Glenbourne Estates, and Rockingham Ridge, which now accommodate a large population. These existing highways and Highway 113, when built, will continue to play an important role in regulating access.

Given these highway barriers, a key aspect of park development must be defining and creating meaningful access points from all of the surrounding communities. Access locations should allow for daily use of the park by existing community residents, and should occur in locations and at a frequency that will encourage park use without necessarily getting into a motorized vehicle.

For the purpose of understanding and helping envision the opportunities for community access, the following possibilities are shown in **Figure 5.1**:

- *Susies Lake* – This access point could be on an extension of Timberlea Village Parkway to Susies Lake. This could be a primary entry to the park extending from Exit 3 on Highway 102, and might also be a suitable location for developing community recreation facilities to serve the Beechville/Lakeside/ Timberlea area.

- *Quarry Lake* – An underpass beneath Highway 102 could extend from Glenbourne Estates to a point near the eastern edge of Quarry Lake. This could provide safe access to park lands for the many residents in the western portions of Clayton Park as well as Glenbourne Estates, and Rockingham Ridge.

- *Hemlock Ravine/Kearney Lake* – The new park could be linked with the well-established Hemlock Ravine Park via the existing road network between the entrance to Hemlock Ravine at Julies Walk and Saskatoon Drive at Kearney Lake. An alternative or additional connection might occur at the new interchange on the Bicentennial

Highway for The Ravines development, with a trail link to the park.

- *Paper Mill Lake* – Farther north another underpass beneath Highway 102 could allow residents of western Bedford and, particularly, Paper Mill Lake to gain access to the area at the head of Kearney Lake. From there, a trail connection could lead to the park.

- *Bedford West* – A passage parallel to Black Duck Brook and/or along the proposed new streets of Bedford West could allow residents of the proposed community of Bedford West, as well as some Kingswood residents, to access the park.

- *Kingswood* – A possible interchange with Highway 113 would provide access to the park for residents of Kingswood and for Highway 113 drivers. Access in this area would provide the most direct means for residents and visitors to ascend Blue Mountain Hill to view the countryside.

- *Maple Lake* – An access under Highway 113 at Maple Lake, and an extension of trials in the natural corridor area could connect residents of Tantallon to the Park.

- *Stillwater Lake* – An access point in the vicinity of the Mill Pond, which is fed by Stillwater Lake and its tributaries, could provide access to the park from Timberlea and the Pierceys Investments development via a proposed trail spur from the BLT Trail.

- *Lakeside*– A second spur from the BLT Trail could provide access from the central portion of Beechville and Lakeside and future residential development in the Governors Lake area.

To further fulfill the Park's role in providing daily experience, these access trails could be developed as multi-use trails, particularly in association with major access locations. Such multi-purpose trail linkages will facilitate access by walkers, joggers, and bicyclists. As much as possible, these access trails should be linked to the sidewalks and internal trail systems of the surrounding communities.

The access system should also respond to CPTED guidelines. Identifiable, controlled access points promote surveillance. A balanced approach to lighting is required to ensure safety without unnecessary disturbance of the natural environment. Lighting is, however, very important in locations to which users are invited. To this end, directed lighting should be specified for all access points. The design of confined

passages should likewise take into considerations of user safety by ensuring openness and visibility, as well as appropriate lighting.

5.4.7 Active Transportation

HRM is currently pursuing a major "active transportation" initiative to encourage self-propelled modes of transportation (e.g., in-line skating, walking, jogging, cycling, and skateboarding) in place of motorized vehicles within the region. A draft of the Active Transportation Plan is to be presented to the public through Open Houses announced for the Spring of 2006.[21] Both the establishment of a park within the Study Area and the securing of the Highway 113 right of way are potentially very supportive of active transportation objectives.

Possible active transportation routes identified through the plan emphasize north-south connections from Sackville through Bedford, flanking the sides of Halifax Harbour. Opportunities for effective east-west connections are limited.

The proposed Highway 113 right-of-way is wider than normal, providing a full 150 metres of width. While current TPW policy allows for up to 300 metres of trail within a highway right-of-way, the extra right-of-way width along Highway 113 may provide an opportunity to consider an active transportation corridor within the outer 25 metres of the proposed right-of-way. This could create the opportunity to provide active transportation access from Tantallon, Timberlea, and subdivisions south of the Hammonds Plains Road to Bedford.

Active transportation routes should also be considered when developing internal circulation systems in the park. For example, as shown in **Figure 5.1**, a circumferential route around the park could provide an active transportation link between Hammonds Plains/Kingswood and the Bayers Lake Business Park. A similar link is also possible from both Timberlea and the Kearney Lake area to Bayers Lake Business Park.

5.5 CONCLUSIONS:

The following are specific conclusions of **Chapter 5**.

5.5.1 Principles for Demarcating the Park Boundary

It is recommended that the final Park Boundary be demarcated in the future. When selecting the final park boundary, the following principles should be considered.

[21] See: www.halifax.ca./activetransportation/index.html. The HRM site provides access to a variety of materials generated by the Active Transportation Plan project including newsletters, updates, and preliminary planning documents.

These principles were outlined in detail in previous Sections of this Chapter, and are as follows:

- There are a number of equally good options for the final park boundary. That said, to be consistent with the values of this study, the final boundary should include: 1) a large intact patch that is isolated from development; 2) provided there is a large patch, areas incorporating more of the valued park attributes (**Figure 19, Appendix A**) should be preferred over those that do not, and 3) Susies Lake and Blue Mountain should both be within the park boundary.

- One role of a Municipal wilderness park is to provide residents with a regular fulfilling natural experience. Regular, daily contact suggests that the park area selected should be highly accessible from new and existing communities, with many access locations, and opportunities to arrive using a variety of transportation modes, including walking, hiking, bicycling, in-line skating, public transportation, automobiles, canoes, etc.

- A second role of a Municipal wilderness park is providing a relatively safe and secure wilderness experience. This role suggests that areas selected for the most intense recreational activity should be immediately adjacent to areas that have existing or planned future community development. This will allow the park design to incorporate CPTED (Crime Prevention Through Environmental Design) principles in the areas most heavily used by people.

- An important opportunity for a Municipal wilderness park is that it can provide natural experiences for those who often are unable to access them, including the young, the elderly, the infirm, and the poor.

- The proposed park area should be connected to at least one and preferably two adjacent resource lands. This connectivity is necessary to maintain species richness and diversity within the park boundary over the long term.

- The area proposed for the park should include the following elements: 1) a Core wilderness area that is silent and isolated; 2) a surrounding area of Edge wilderness that is the focus of wilderness recreational activities; 3) a meaningful landscape corridor connecting the designated park area to the extensive Crown holdings beyond; 4) an area of community development around and interspersed with the Edge landscape of the park that is designed in a manner to implement CPTED principles; 5) at least one and preferably two significant regional access locations; and, 6) linkages to all of the surrounding communities including active transportation initiatives.

- The Core area should be large enough to include a full day walk on foot in an atmosphere that feels isolated. It should be made visible, for example, its expanse might lie before the viewer from the top of a hill, but it should not necessarily be easily penetrable. The Core area should incorporate a wide variety of landscape types and areas that offer the potential for high species richness. Access to the Core wilderness area should be entirely through the surrounding Edge wilderness area, allowing the Edge to provide a buffer zone to the Core landscape, keeping it quiet and protected.

- The Edge wilderness landscape should be a band of wilderness ranging in depth from approximately 100 to 1000 metres around the Core landscape. The Edge should offer extensive opportunities to experience the wilderness on a daily basis. Because of the adjacent Core, one side of the Edge landscape should always be quiet. Simultaneously, the Edge landscape should be sufficiently narrow and interspersed with community development such that CPTED principles may be applied. The Edge landscape should encompass the cherished locations of the study area as well as landscapes that host the wilderness species best loved by people. It should include a continuous multi-purpose trail system that also provides for half hour and one hour trails that loop back to the starting spot. It should include a large number of "Interesting Area Attributes" such as interesting forest stands, dams, unique ground flora, and geological resources.

- The relationship between community development and a wilderness park is complex and inter-related. To provide a wilderness experience, development should not feel like it is impinging on the park, and yet it must be accessible. The recommended shape of the future boundary of the park is a curvilinear, with interspersed areas of community development. The final boundary should be determined while simultaneously considering the ideal community build-out such that both the park and community perform well.

- The proximity of the park to the Provincial highway system can facilitate access where it is provided for. At least one and preferable two regional park entrances should be developed to provide convenient access from the Highway system. The extra right-of-way width provided along the proposed Highway 113 may provide an opportunity to consider an active transportation corridor within the outer 25 metres of the proposed right-of-way. This active transportation corridor could provide important alternative transportation access to the park.

- Given the highway barriers, a key aspect of park development must be defining and creating meaningful access points from all of the surrounding communities. Access locations should allow for daily use of the park by existing community residents, and should occur in locations and at a frequency that will encourage

park use without necessarily getting into a motorized vehicle. The access system should also respond to CPTED guidelines.

5.5.2 The Implications of Highway 113

Section 5.4 considered what an ideal park boundary might look like. Through this concept exploration, some conclusions were reached about the nature of the relationship between the proposed "ideal" Park and the proposed Highway 113. These conclusions are summarized below:

- Only a small portion of the ideal park boundary touches the Highway 113 corridor, just north of Blue Mountain Hill. The section is approximately 1,400 metres long and constitutes only approximately 7.4 per cent of the total perimeter of the park. In this location, the highway grade is below the elevation of the park, and thus the visual impact will be less than the alternative arrangement.

- The proposed Highway 113 where it abuts the ideal park boundary is immediately adjacent to residential development in the Kingswood area that has experienced rapid expansion. The location of the alignment abutting this development will serve to curtail further expansion and aid in protecting some of the lands considered most appropriate for the park.

- One of the primary benefits of the Highway is that it has the potential to provide a regional access location to the park as part of a future interchange to Kingswood. An entrance to the park at Blue Mountain could provide access to a feature that is as notable in the landscape as Mont Royal in Montreal, Quebec and Cadillac Mountain in Bar Harbour, Maine.

- The detailed design of the Highway right-of-way should consider mimicking natural landscape forms and other aesthetic criteria. If appropriately detailed, the future highway could provide a "parkway-like" experience for the motorist raising the visual profile of the Park. The wider highway right-of-way proposed for Highway 113 should allow for the incorporation of more natural and visually appealing grade transitions between the roadbed and the surrounding landscape.

- The proposed Highway 113 right-of-way offers the potential opportunity for an active transportation corridor between Timberlea/Tantallon and Hammonds Plains/Bedford. If accommodated, the ability of the proposed park to link to this east/west active transportation corridor will greatly improve the accessibility of the park to residents and visitors.

- The greatest concern of the proposed Highway 113 adjacency to the ideal park area is the potential interruption of access for people moving north/south whether in vehicles, on foot or bicycle, or portaging a canoe on the waterways. A critical component of future highway design relative to the proposed park, must be direct and safe access from each of the neighbourhoods on the other side of the proposed Highway 113, including: Kingswood, Bedford West, and Tantallon. In addition, existing trails and portage routes through the Crown resource lands should be accommodated following appropriate CPTED principles.

- Each access for people that crosses the highway to the proposed park, should also be accessible from trailheads on local and collector roads associated with development on "the other side of the highway". In this way, communities adjacent to the future Highway 113 can provide access to the park, without encouraging parking at impromptu laybys on the proposed Highway 113.

- The highway has the potential to interrupt the regular flow of species that may be necessary to repopulate a heavily used wilderness parkland. Highway design that facilities the movement of a wide variety of plant and animal species should be considered particularly through the resource lands owned by the Crown.

- Through careful detailed highway design, as described above, the proposed Highway 113 corridor offers many opportunities for 1) the protection of the ideal park land area in the short term by limiting development expansion, and 2), providing significant regional and local access to the park when it is formalized and established in the future.

5.5.3 Next Steps: a Strategy for Moving Forward

The total land area included in the ideal park configuration described in **Section 5.4** is approximately 1700 ha (including lakes) and 1450 ha (excluding lakes). Of the proposed park area, approximately 900 ha is on lands owned by the Crown and a further 550 acres is held privately. A portion of municipal property (PID 40701955) is required for park access just south of Susies Lake. The private holdings include:

- Land around Susies and Quarry Lakes currently owned by Annapolis Group Inc.
- Land encircling Fox Lake owned by Kimberley-Lloyd Developments Ltd.
- Land bordering the southwest shore of Susies Lake as well as the southern shores of Big Cranberry Lake and Little Cranberry Lake owned by Parkdale Developments Ltd.
- Land to the south of Susies Lake owned by the Sisters of Charity

DNR staff state that DNR's involvment in this study was based on its role as custodian of the Crown lands included in the Regional Park as proposed by HRM;

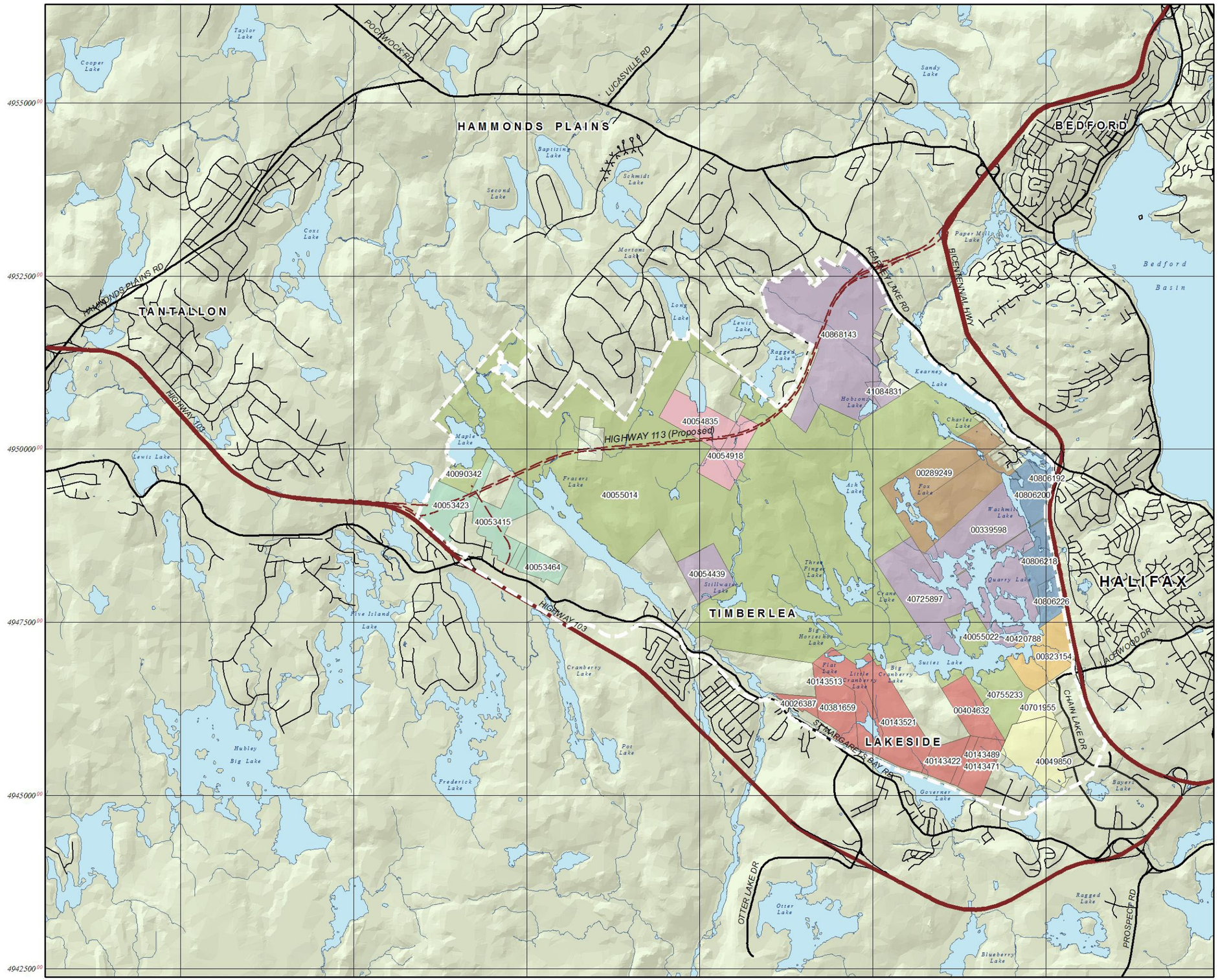
the Department neither agrees nor disagrees with the Crown lands being encompassed in the proposed park. Implementing HRM's Blue Mountain/Birch Cove Lakes park vision will require many years and a great deal of cooperation between DNR and HRM. It is recommended that HRM and DNR work together to develop a mechanism for cooperation as well as a detailed long-term strategy for implementing this initiative. There are a variety of mechanisms for HRM to work with DNR including HRM's input to Crown land management through DNR's IRM process for Crown lands, which includes the upcoming development of the IRM Long Range Management Framework for the area. In addition, HRM might consider a specific Project Proposal to DNR that would request the creation of a joint implementation plan, including a management agreement for the Crown lands in the manner similar to that achieved between HRM and DNR at Hemlock Ravine.

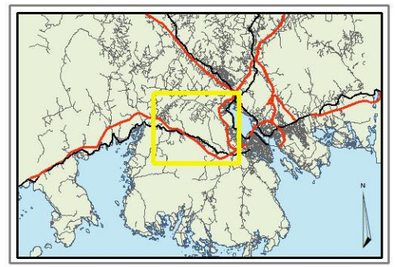
It is important to note that much of the area proposed for the "Core" wilderness is currently on land owned by the Crown. The Crown lands in this area include some areas where DNR may be managing to re-establish more original forest assemblages, which offers wonderful long-term interpretive potential.

Decisions about the need to acquire land should be made jointly by both agencies. In addition to land acquisition, HRM has a variety of regulatory options available to obtain additional private lands, including the masterplan mechanism which to date have typically provided approximately 30% public land reservation. Other opportunities include public/private partnerships, and partnerships with non-governmental agencies to provide wilderness easements.

The unique partnership of TPW, DNR and HRM that led to the creation of this study is a fine example of inter-governmental cooperation. The Steering Committee acknowledges the Report as an initial stage in what will likely be a long-term relationship to ensure an integrated approach to future highway development, natural resource management and park planning and development. Further discussions will be necessary to define the mechanisms and working agreements that will meet the needs of all three agencies.

APPENDIX A: STUDY AREA MAPPING





Data Source: HRM
Projection: 3°MTM, Zone 5
Horizontal Datum: ATS77
March 2006

The following is a graphical representation and although care has been taken to ensure the best possible quality, EDM does not guarantee the accuracy of this document.

Figure 1A

Selected Property Ownership*

- Provincial Ownership
- Municipal Ownership
- Gateway Materials Limited
- Sisters of Charity
- Parkdale Developments Limited
- Kimberly-Lloyd Developments Limited
- Barrett Lumber Company Limited
- Annapolis Group Inc.
- Piercey Investors Limited

* Commercial Developers and Key Land Owners

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Prepared for NOVA SCOTIA / HALIFAX REGIONAL MUNICIPALITY

0.5 0.25 0 0.5 1 1.5 km

BLUE MOUNTAIN/BIRCH COVE ASSESSMENT STUDY