



COASTAL ACCESS
IN NOVA SCOTIA
UNDERSTANDING
INVENTORYING
& ANALYZING



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“The provincial government has stated that it wants to make this province the best place in Canada to live, in terms of quality of life. I submit that easy and accessible land which is open to the public for recreational purposes—hiking, swimming, skiing, snow mobiling, etc.—makes a great contribution to the quality of life for the average Nova Scotian. If we are to protect access to this valuable resource then we must act both quickly and wisely (VPTF, 1994, pg 35).

Statement submitted by John Janmaat, Department of Economics at Acadia University to the Voluntary Planning Task Force looking at Non-Resident Ownership.

1.0 – Introduction

Issues surrounding the management of coastal resources, such as wharves, lighthouses and beaches and the amount and quality of public access to these areas are becoming increasingly apparent within many regions of Nova Scotia. This is a trend that is not only emerging across much of Nova Scotia but throughout North America and the entire World. Increasing pressure along coastal areas from various interests including natural resource extraction (mining, forestry and fishing) and real estate development, both of which result in the acquisition and development of large tracts of property, is producing a fragmented and patchy pattern of public/private ownership along much of Nova Scotia’s coastline.



Figure 1: Fragmented pattern of ownership along Northwest Arm, Halifax
Source: <http://gis2.gov.ns.ca/website/juan/>



The result of this fragmentation is that over time many of the traditional public access routes and resources that have been enjoyed for generations are becoming discontinuous and blocked.

This fragmentation subsequently decreases the opportunities for enjoyment of prime coastal resources. The Ecology Action Centre, a Halifax based environmental advocacy group states that “excessive coastal development makes large portions of the shore line off limits to the public if private property owners build exclusive access roads. This reduces the opportunity for access to the coast for traditional livelihood activities such as fishing, clam harvesting, boat launching, or marine harvest, as well as for recreational and leisure activities such as swimming, beach combing, sightseeing and pleasure boating” (EAC, 2004).

Jennifer Graham points out that in Nova Scotia “many of the topics that generate concern in communities around the province are about development and most importantly about decision-making and control” (Graham, 2003). Throughout the world, Nova Scotia is still perceived as a place with a stunning and natural coastline free from the pollution and human pressures affecting other regions.



Figure 2: Developed coast at Ocean City, Maryland
Source: <http://pubs.usgs.gov/circ/c1075/conflicts.html>

However, we are increasingly looking to our coastal environments as a place to call home, spend leisure time and as a source of economic prosperity. As a primarily coastal province, residents of Nova Scotia are inextricably tied to the seashore. Each resident has a vested interest in ensuring that the integrity of access to common resources remains intact to ensure future prosperity of the province.



Despite this dependence on the coast, Nova Scotia lacks any strong policy or legislation directly addressing issues of coastal accessibility. Ms. Graham states that “coastal development is proceeding in an ad hoc and unregulated manner” throughout much of the province. With a “comprehensive coastal protection plan” the government could ensure the protection of “important coastal landscape features and natural functions, preserve public access to and along the coast and reduce long-term costs associated with unregulated development” (Graham, 2003).

Understanding the pressures and strains that are creating issues and conflicts along the coast is important to develop an effective strategy for securing coastal access. But what is the current status of the coastal access and resources within Nova Scotia? Who are the stakeholders, and how does the issue of coastal access affect them? What steps has the government taken to address the issues of declining access?

In a time when the federal government is divesting itself of many of its coastal amenities (including wharves and lighthouses) an appreciation of the state of these resources and infrastructure is necessary. The development of an effective coastal management plan addressing, among other things, accessibility to the coast will only be accomplished through the development of an inventory

of the existing resources. Such an inventory will provide planners and decision makers with a valuable tool to understand and analyze what actually exists at the coast.

The purpose of examining the coast and the pressures facing it was to understand the state of public access and the resources along the coast of Nova Scotia as well as to understand what tools can aid decision makers and the public in effectively managing coastal resources. The examination looked at the dynamic nature of the coastal area and the significance of the coast in the lives of Nova Scotians as well as a discussion of the major stakeholders. Examining implications of declining access as a result of increasing pressures placed on the coast will provide context for understanding how access is being affected. Looking at the role of the provincial government through an examination of two major documents prepared by the government relating to coastal management; Coastal 2000 and Voluntary Planning Task Force on Non-Resident



Figure 3: Port Medway Lighthouse
Source:
http://www.lorneslights.com/visits/atlantic_visit_1998.html



Ownership will provide context of how the provincial government perceives the role of the coast in Nova Scotia. Since every square inch of Nova Scotia is covered by one of numerous municipalities, an examination of efforts being at this political level will shed some light on how municipalities are approaching the coastal access issue. For this project, the Halifax Regional Municipality (HRM) was used as the case study.

A discussion of the tools available to planners and decision makers for managing the coastal zone outlines the utility of using GIS for inventorying, understanding and analyzing coastal access resources. This included a discussion of what GIS is, its functionality and a typical GIS planning model. An examination of two case studies (one in the UK and one in USA) of various projects using GIS for coastal management highlights the management systems functionality and versatility for managing coastal access resources.

The increasing popularity and user-friendliness of GIS in recent years coupled with the dramatic increases in computer hardware capabilities has resulted in countless GIS applications across a wide array of disciplines, from earth sciences to marketing. The functionality and popularity of GIS has resulted in a substantial knowledge and information base leading to the capacity for making the technology more accessible online for all stakeholders: government, private property owners and the general public.

The focus at this point turned to the study area for this project: the Eastern Chebucto Peninsula (located in Halifax Regional Municipality) and examined the inventory of amenities that provide access within the site including wharves, parks and lighthouses. Further, the existing public access opportunities from roads to hiking trails have been discussed and how the access relates to the resources, including the identification of potential access issues. A final access map was prepared for this site indicating existing access opportunities and was based on the spatial analysis conducted within this site. The spatial analysis was conducted based on available data provided by HRM.

In conclusion recommendations will provide guidance to encourage the protection of coastal access within the study site as well as HRM and Nova Scotia. As well for the development of a GIS-based access and resource inventory in Nova Scotia which is designed to allow all stakeholders to effectively play a role in the management of the coast.



2.0 – The Coast

2.1 – Definitions

For any discussion of coastal access it will be useful to first define what is meant by this term. Defining coastal access is much like trying to define the coastal zone; it is difficult to do so from a one-dimensional, one-size fits all perspective and is instead dependent on a number of factors (Modified from Fanning, 2000);

- *The perception of stakeholders* – different users have different ideas of what coastal access means. For example, hikers may require pedestrian access to beaches, headlands and to scenic vistas. Those who enjoy adventure sport, such as sailing, kayaking or surfing may require access to coastal areas from the water as well as access points from which to launch their boats. For naturalists, the idea of coastal access may refer to the deliberate and intentional limitation of coastal access points to particular areas for conservation purposes.
- *The physiography of the landscape* – The lay of the land will play a significant role in the perception of coastal access. Areas with steep cliffs or impassable and treacherous countryside may limit the desire and capacity for coastal access and recreation opportunities in a particular area. Areas with a more gentle landscape may be an attractive and popular spot for housing or recreation.

Keeping these factors in mind, the definition for coastal access can be kept straightforward and broad in scope;

*Coastal access is defined as physical access to coastal areas,
and the common resources found there and access is considered
to be from either land or water.*

A description of what is meant by the term ‘coastal resources’ will be useful as these amenities often provide a means of access along the coast. In the context of accessibility, coastal resources refer to features, amenities or services, whether natural or man-made found at the coast that are of common heritage and represent a significant resource for economic, cultural or recreational purposes. For example wharves, boat launches, lighthouses or beaches. These resources are not normally bought and sold, but are considered common property (Hite, 1971). Although this project is primarily interested in examining the issue of declining coastal access, understanding how access



relates to those resources found along the coastal zone is as equally important. Both natural and cultural resources and amenities found along the coast are a significant asset to many of the individuals, communities and businesses within the coast. Securing access to them is important to the vitality of these stakeholders.

2.2 – What role does the coast play in Nova Scotia?

The province of Nova Scotia is known as Canada's Ocean Playground and is by most



accounts a maritime community. With roughly 55,491 km² of land, the province boasts a coastline of over 10,000 kms in length (NSLUPC, 1994). With a current population of about 936,960 people (statscan, 2004)

Figure 4: Canada's Ocean Playground
Source: <http://www.plateshack.com/76/NS/novascotia.html>

Nova Scotia's population is expected to increase by

approximately 3% over the next 25 years (APEC, 2002). As most citizens live within 40 minutes of the coastline (TCE, 2004) it is fair to say that many Nova Scotians are inextricably tied through employment, culture and recreation to the coast. The coast defines not only the physical character of the Province's landscape and our particular personality but also influences how we make our living.

As the pressures facing the resources in the coastal zone (and in particular the traditional access routes found there) increases in Nova Scotia conflicts over land uses and ownership will become more frequent. It is no surprise that there are countless stakeholders from private land owners to various community groups to industry to government who have a vested interest in ensuring that their 'portion' of the coast is managed with their best interests in mind. It is these often conflicting interests, combined with private ownership patterns that result in a carving up (and sometimes fencing off) of property within the coastal zone. This fragmentation can result in the isolation and fragmentation of the many common resources and access routes found there. Some of the vested interests referred to include government, tourism, fishing, mining, real estate and construction. Private landowners want to enjoy their property in peace while the citizen's wish to have continued access to coastal areas and the various common resources found there. But which interests take priority: the economy, private land owners, the general public?



2.2.1 – Economy

Traditionally, the economy of Nova Scotia has been resource based, including such industries as fishing, forestry and mining. In more recent times, particularly since the collapse of ground fish stocks, the province has become more dependent on service based economies including, among others, tourism. Given the nature of Nova Scotia's form, landscape and settlement pattern and the fact that many resources that drive the province's economy are found along the coast has resulted in a dependence between the economy and the coast. In fact, combined the total direct economic impact of coastal industries in Nova Scotia in 1994 was calculated to be 17.5% of the total Gross Domestic Product of the province as well as being responsible for more than 93,000 jobs (Mandale, 1998). Of these industries, tourism is now playing one of the most significant roles and as many of the traditional industries are in decline (in particular fishing), many coastal communities are becoming dependent on a service-based tourism industry to survive. Thus, tourism will be used as an example to show the dependency between Nova Scotia's economy and the coast.

According to a Nova Scotia Visitor Survey conducted during the high tourist season (May 15th to October 31st) of 2000 approximately 1.4 million non-resident persons visited the province (CRA, 2002). The report entitled Coastal 2000 points out that although tourism cannot be considered an exclusively coastal phenomenon it is safe to assume that most tourists coming to Nova Scotia are drawn to coastal communities and participate in coastal related activities (NSLUPC, 1994).

According to the Tourism Industry Association of Nova Scotia (TIANS) almost 35,000 Nova Scotians are employed in tourism within the province, generating a payroll of almost 487 million dollars. The tourism industry itself has between 1995 and 1999 generated roughly 1 billion dollars in revenue per year, and was expected to generate 1.265 billion in 2000.

According to a 1998 report by the Canadian Tourism Commission, "nature-based tourism" including marine based activities, is the fastest growing sector of the industry. In fact, for 1998 35% of tourism in Nova Scotia was strictly marine related (Mandale, 1998).

Clearly there is a connection between this industry and the coast. Since many forms of tourism in Nova Scotia are resource-based and since most typically occur within coastal areas the continued enjoyment of these activities depends on the "effective planning and



maintenance of our landscapes and seascapes as well as their use for recreation” (TIANS, 2000). Part of this “effective planning” includes securing access to coastal areas so that Nova Scotia’s lucrative tourism industry can remain viable. Without an effective strategy which looks at ensuring access along the entire coastline many of these often new and vulnerable businesses will not survive.

Nova Scotia tries to market itself to the world as a coastal province with catchy slogans and images of a rugged coastline or sandy beaches, and as such many tourists have come to expect this when they travel to the province. Furthermore, tourist related businesses have developed themselves accordingly.



Figure 5: Nova Scotia’s Tourism Pitch
Source: <http://www.novascotia.com/>

Nova Scotia’s tourism industry has become an integral part of the Province’s economy, but despite this the government can’t guarantee that access will always exist across the province. Any loss of access to the coast has potential for serious consequences for this industry.

2.2.2 – Private Landownership

The private landowner has much at stake in the coastal zone as well, but perhaps for other reasons. Private property owners as a collective hold the bulk of control of land along the coast. For many of these property owners, both resident and non-resident, their properties and homes represent a significant asset (in fact for many they are a means of investing for retirement) and so they will want to protect their investments. As such, property owners should be able to ensure their investments are safe while



enjoying their lands peaceably and without having to consent to the public crossing their properties.

Nova Scotia has little in the way of legislation or policies guaranteeing the right of public access across private property save for the Angling Act. As such, private property owners are within their full rights to deny access across their property by anyone. With the increasing presence of people along the coast of Nova Scotia, trespassing is bound to increase as well as many of the side effects that accompany it (vandalism and littering for example). Trespassing in this sense has been a tolerated practice for generations in Nova Scotia, but changing ownership patterns are changing the status quo. Many private landowners have indicated they feel hesitant about letting members of the public use their lands because of liability issues and problems with vandalism from unwelcome visitors (VPTF, 2001).

As private property owners are not required by law to permit people to cross their property Nova Scotians cannot rely on private property owners to provide access to the coast. If property owners do become more reluctant to allow access they could potentially limit access to many coastal regions of Nova Scotia.

Furthermore, Nova Scotia Government and municipalities do little in the way of encouraging property owners to permit access on their property, and instead leave these issues up to the landowner and public to resolve.

Given the extent of private land ownership, private property owners are one of the province's best tools for securing public access to coastal areas through private property easements. It can be reasonably affordable (compared to purchasing land outright) and since most of the land at the coast of Nova Scotia is privately owned it can result in a dramatic increase in the amount and quality of access opportunities to coastal resources. However, for these to work, the provincial and municipal governments must understand the state of existing coastal access within the province in order to effectively understand where gaps and conflicts exist. Furthermore the government must establish a system of reimbursement to those private land owners who do open their property to public use. Incentives can include the identification and elimination of financial and administrative obstacles preventing private land conservation in Nova Scotia. The establishment of easements by creating a tax-exempt status or other incentive to any property identified as valuable to both recreational and ecological purposes could also encourage property owners to open lands to the public. Furthermore, the government



could strengthen existing vandalism and littering laws encouraging land owners to allow access to their property. While limiting and simplifying liability laws and educating property owners could further provide incentive to those who are willing to open private property to the public (taken from policy recommendations of Voluntary Planning Task Force on Non-Resident Ownership, 2001. pp 33-34).

2.2.3 – General Public

There are countless community groups, individuals and other stakeholders who have a vested interest in the coastal zone. However, it would be impossible to examine the investment and interest each has and what is at stake given any loss of access opportunities. There fore general public has been used to describe all those stakeholders who clearly have an interest in the coastal zone however not from an economic perspective, but more from a cultural, recreational or conservation perspective. This can include individual citizens, community groups (such as the Coastal Coalition or Ecology Action Centre), visitors or tourists alike. In fact, from the perspective of provincial legislation on access, these stakeholders are essentially equal.

The general public has a great interest in ensuring that access to the coast is secure and available. The coast clearly plays an integral part in the lives of citizens and visitors alike in Nova Scotia. As much of Nova Scotia's coast is in private hands and as more of it is now being developed for private interests the public should be concerned with private interests potentially limiting opportunities access to coastal resources. Near Lawrencetown Beach in Halifax Regional Municipality a small enclave of homes has developed over the years. A single road entering the site has a clearly marked sign indicating private road - no access to the beach. Although the beach in front of the development is still accessible from Lawrencetown Beach, in many instances this type of development could effectively make the coast inaccessible to all but the property owners.



Figure 6: Declining access opportunities near Lawrencetown Beach, Nova Scotia
Source: Author

Unfortunately, the general public as a stakeholder is typically the group which suffers the most from a loss of access, particularly as the provincial government lacks any substantial piece of legislation to guarantee access to coastal areas. Furthermore, because the federal government continues to divest itself of many of the public resources such as wharves and lighthouses, access will only continue to decline.

Beyond economics, the recreational opportunities that exist within the coastal area of Nova Scotia are a remarkable resource for residents and visitors alike. In an era when society's health and well-being is of great concern the coast offers abundant opportunity for physical activity, while the various archaeological sites to national parks to lighthouses offer a cultural and educational resource that can't be replicated in the classroom.

The following statement submitted by John Janmaat, Department of Economics at Acadia University to the Voluntary Planning Task Force looking at Non-Resident Ownership echoes this:

"The provincial government has stated that it wants to make this province the best place in Canada to live, in terms of quality of life. I submit that easy and accessible land which is open to the public for recreational purposes—hiking, swimming, skiing, snow mobiling, etc.—makes a great contribution to the quality of life for the average Nova Scotian. If we are to protect access to this valuable resource then we must act both quickly and wisely (VPTF, 1994, pg 35).



With a lack of any strong legislation in Nova Scotia guaranteeing access to the coast, residents are usually left to their own devices to ensure that a particular access route remains accessible. Furthermore, many residents of Nova Scotia have expressed a lack of understanding of what access rights and controls they have at the coast (VPTF, 2001). As such, protecting access routes tends to be a reaction by the public when they are surprised to learn that a landowner has blocked access. Furthermore, without any regulatory framework in place, securing access is often done in an ad-hoc manner in which the public either negotiates an arrangement with the particular property owners or through the courts.

2.3 – What is the evidence of declining access? – A Case Study

For generations of Nova Scotia resident's access to coastal areas has not been as significant or contentious an issue as it is today; it has always been assumed that people could get to the coast. Traditionally people travelled to favourite places along the coast by crossing private property. With increasing pressures at the coast people are finding that many of the traditional access routes across private property are no longer there or have been fenced off. Meanwhile coastal land is increasingly falling into more private hands, the federal government is divesting itself of common property along the coast and as long as Nova Scotia's provincial government lacks any decisive legislation or strategy, access issues will inevitably increase.

A recent case involving public access to a well used Nova Scotia beach highlights this issue. Sperry's Beach near Petite Riviere in Lunenburg County has been accessed for decades by the general public via a well-worn sandy path. This path, which happens to cross private property, serves as the only means of accessing the beach. During the summer of 2004 this path was fenced off by the private landowner with a four-strand barbed wire fence. This action resulted from an ongoing dispute between the landowner, David Himmelman and the Department of Natural Resources (DNR).



Figure 7: Four-Strand Barbed Wire Fence at Sperry's Beach, Lunenburg County
Source: http://www.chebucto.ns.ca/~tom_d/sperry/coastal.html

The Province claims ownership to land along a sandy road by the beach that had been fenced into the property of Mr Himmelman years ago. Upon ministerial order issued by DNR to move back the older fence, Mr Himmelman simultaneously moved the offending fence and erected the new fence now blocking public access to the beach. Many local area residents consider this site to be a “community beach.” According to Karen Dempsey, an area councillor and resident “It has essentially been used as a community beach for generations, clearly in excess of a hundred years (Ware, 2004, pg. 1)” and therefore should be considered common property for all.

In a statement Mr Himmelman stated that “his family is simply asserting its rights over the land” (Ware, 2004, pg. 1). Indeed, since the fence is on private property DNR agrees stating that the landowner has every right to erect the fence on his property. “We do not interfere with private land and it is not on Crown Land,” states Mary Anna Jollymore of the DNR (Ware, 2004, pg. 1).

According to Tom Daly, a local resident representing the Sperry's Beach Committee chosen by the community to explore options to reclaim the beach access stated that he is frustrated by the lack of action on DNR's part. “There have been multiple infractions of provincial law which, in each case, have been matched by a decision of DNR staff not to enforce the law for which they are legislatively responsible (Ware, 2004, pg. 1)”.

This case is not uncommon in Nova Scotia. Although the land found between mean high and mean low tide (including part of Sperry's Beach) belongs in the public domain the provincial government lacks any clear policy or legislation guaranteeing public access to it. As such, the public can not rely on the government to aid in securing access when the only way of reaching that public property is across private property. Accordingly, Ms. Jollymore concludes “At this point, it's very much a matter between the landowner and the community.” (Ware, 2004, pg. 1)



The Sperry's Beach Committee has since been exploring various options for 'reclaiming' the access, including a delineation of the true boundaries of the subject property and an examination of all relevant provincial policy and legislation as well as legal options, including claiming the trail as common property of the public. But the issue of coastal access is not always between the public and private property owners. On a beach in Green Bay, which coincidentally is just down the road from Sperry's Beach, the provincial government recently attempted to drop massive boulders along the beach in an effort to protect against storm surges (Ware, 2004). Residents blocked the excavators, saying the boulders blocked access to the public beach and will only harm the beach's ecosystem.



Figure 8: There are numerous places along the coast of Nova Scotia suffering from a loss of access; Pictured here are two: Hirtle's Beach and Green Bay

Source: http://www.richardvroom.ca/cgi-bin/dispatcher.pl?target=list§ion=nova_Scotia
http://www.dal.ca/~impart/IMPART_4132.html

the province are facing similar circumstances in which they are pitted against private land owners in an attempt to secure access routes. The Sperry's Beach case does highlight a number of the issues and perspectives from the many stakeholders, including private landowners, the public and government. Some of these issues include:

- the inconsistent or contradictory provincial legislation pertaining to public access,
- the rights of property owners to protect their private property
- the minimal public control of Nova Scotia's coastline and lack of legal mechanisms and recourse for the public to pursue and secure access to coastal resources and



-
- the lack of clear policy or direction for planners and decision makers to ensure, among other things, public access to coastal resources.

The Sperry's Beach case in particular does highlight the need for action by the provincial government. Situations like these will likely increase in the future and it is up to the provincial government to develop an access strategy to help mitigate them before they occur.

2.4 – Coastal Access & The Government

The amount of land left in public hands along the coastal areas of Nova Scotia is not accurately known and hence is subject to some debate. The Voluntary Planning Task Force on Non-Resident Ownership suggests that of the approximately 5.3 million hectares of land that makes up Nova Scotia, about 25% of this is publicly owned mainly as Crown land. The remaining 75% is privately owned by residents and non-residents alike (VPTF, 2001, pg. 1). In terms of the coast, the Nova Scotia Department of Environment and Labour estimates that of the Province's coastal areas roughly 5% of it is protected as wilderness areas, provincial parks, and national parks or is NGO held property (Maass, 2004). This represents a very small percentage of coastal access sites for the general public within the Province. However this fact is a reflection of historical settlement patterns as well as the Province's dependency on a marine economy (Flanning, 2000).

When compared with other coastlines around the world, Nova Scotia's seashore is experiencing minimal pressure from development. But this is no excuse to be complacent about developing a strategy ensuring accessibility and resources are managed effectively. Too often planning tends to be reactive rather than proactive. As such the provincial and municipal governments must take this opportunity and the lessons learned in other jurisdictions to develop a positive and strong strategy which ensures that not only is existing access secured for the future, but that potential access opportunities are identified and pursued in the public's interest.

What exactly is the provincial and municipal government's position on coastal access and the resources found there? What steps have been taken towards developing a coastal strategy to look at, among other things, access opportunities? The provincial government has commissioned a number of studies to look at the issues, while HRM which is currently conducting a Plan review has indicated that the sustainability of



resources along its coast is of key importance to the region. This section shall examine the perspective of both the provincial government as well as that of the Halifax Regional Municipality.

2.4.1 – Coastal 2000

In 1994 the Nova Scotia provincial government commissioned a report entitled Coastal 2000. This report was intended to give the provincial government direction on developing a strategy for the management of the coast including access. The study and report were prepared by the *Coastal Zone Management Issue Group – Nova Scotia Land Use Committee*. The mission statement from this document states that “the province of Nova Scotia will embrace sustainable coastal zone development through coastal integrated resource management, founded on public and private partnerships as an expression of provincial policy (NSLUC, 1994, pg 21).

Through this report the Committee created a comprehensive document designed to create a framework for the planning needs of the coastal areas of Nova Scotia. The document examined the current state of the coast, including the economic, cultural and recreational value for residents and visitors alike while examining the numerous pressures degrading the quality of the coastal zone. The Committee further examined the various roles of those provincial departments involved in managing the coastal areas including, among others the Department of Natural Resources, Department of Environment and Labour and the Department of Tourism. The committee had each department outline the issues they perceived to be affecting the coast including such issues as coastal erosion, lack of cooperation between various levels of government and the effects of inadequate sewage treatment to name a few. From this exercise the committee eventually narrowed the list of issues identified to nine major categories, each addressing a significant issue affecting the coastal areas of Nova Scotia.

One of the main issues facing the coastal zone as identified in this report is coastal access. The report states that “Limited or precluded access to valued environmental and economic resources in the coastal zone is likely to increase without an integrated strategy to coordinate effective resource use and rehabilitation (NSLUC, 1994. pg17)”.

As part of the Goals and Objectives section of the document, the committee outlines its recommendations for managing the coastal access issue;

Goal 6: Resolve the Issue of Restricted Access to and Utilization of Coastal Zone Resources.



Objectives:

- *To prepare a provincial policy on access to the coastal zone.*
- *To develop an implementation plan for the policy.*
- *To establish ownership and control of offshore islands.*
- *To identify areas for resource development in the coastal zone.*

Beyond the access issue, the report explores the need to develop an inventory of coastal resources in order to effectively implement any coastal zone plan. One of the nine major categories looked at environmental and resource information. Under this section the committee outlined the connection between an effective management plan and access to relevant data:

“Good management is based on information which is current, accurate and readily accessible. Effective coastal zone management ... requires relevant, timely information on all aspects of our coastal resources. Furthermore, this information must be available in a form that can be processed and analyzed by managers using the most up-to-date information technologies. The importance of information technology (e.g. Geographic Information System technology) to effective coastal resource management cannot be overstated (NSLUPC, 1994, pg 15).”

The committee goes as far as to make one of its goals and objectives relevant to the need for an inventory.

Goal 3: Generate and manage current, accurate and accessible information on all important aspects of the coastal environment and its resources.

Objectives

- *To Develop a strategic assessment approach to organize and coordinate the collection and management of information and data for integrated coastal zone management*
- *To identify critical data deficiencies and establish a prioritized information collection program.*
- *To ensure adequate information technologies are available to resource managers in the coastal zone.*

Despite its best intentions, most of the recommendations from Coastal 2000 were never implemented. A number of reasons have been cited for its lack of implementation, but perhaps most significant is that the report and its recommendations are too comprehensive and the task of implementing it would have resulted in such a fundamental change in government structure that it simply died under its own weight. In fact, the report itself indicates that “the difficulty we face is in translating our intention into



concrete action (*NSLUPC, 1994, pg 22*).” However, ten years later the document is still used by coastal zone management advocates as justification for the implementation of some management framework to ensure the future sustainability of the coast.

This document indicates the need and responsibility of the provincial government to address issues facing the coastal zone including the access issue. Furthermore, the document clearly indicates the need to develop an inventory of the coastal resources before this area and its resources can be effectively managed.

Even though the recommendations from this report have not been implemented, the pressures facing the coast continue to increase. Private coastal property ownership and development, increasing property assessments and the unintended consequence of decreasing access opportunities remain a significant concern for many small coastal communities. In terms of private ownership, an increasing trend in the last decade has involved the growing ownership and development of coastal property (or at least the perception of) by people that do not call Nova Scotia their primary home. This has prompted residents to call on the provincial government to act on this, by limiting land ownership of foreigners within Nova Scotia. This prompted the provincial government to try to understand the issue and what consequences it would have on residents of the province.

2.4.2 – Voluntary Planning Task Force on Non-Resident Ownership

In Nova Scotia, the issue of increasingly restricted coastal access is often blamed on non-resident ownership (ownership of land by someone who lives in the province for less than half the year) (VPTF Background, 2001, pg 7). Non-resident ownership is a relatively new trend in Nova Scotia but it is a particularly sensitive issue for many Nova Scotians. Many blame ‘outsiders’ for buying up relatively cheap, undeveloped coastal property, building expensive homes and driving up property values and assessment rates. This in turn makes it difficult for many long time residents to buy and own coastal property. Furthermore, it is believed that non-resident ownership plays a significant role in the loss of coastal access within Nova Scotia as the once undeveloped land is occupied and in some cases fenced off (VPTF Background, 2001, pg 7).

Contrary to popular perceptions, many sources indicate that non-resident property ownership is not as significant an issue in terms of accessibility. It is, however an issue of changes in land use. In fact, the Voluntary Planning Task Forces background



research (which they have indicated is not completely accurate) suggests that of the non-public lands in Nova Scotia only 6.4% is owned by non-residents, 16% of which is found in coastal areas. In other words, almost 94% of Nova Scotia's private land (or 84% of coastal property) is still owned by permanent residents (VPTF, 2001, pg. 19).

As the state of property ownership (both public and private) within Nova Scotia is not completely understood and creates concern among many property owners, the provincial government in 2001 tasked the Voluntary Planning Forum with exploring the issues and recommending solutions to the various problems affecting property values within the province. More specifically, the Provincial Government and the Department of Service Nova Scotia and Municipal Relations asked Voluntary Planning to assemble a task force. The role of this task force was to examine the role of non-resident ownership in Nova Scotia and recommend whether a section of Bill 42 enabling municipalities to charge an extraordinary tax on non-resident property assets should be given royal assent. The result of this mandate was a report entitled *Non-Resident Land Ownership in Nova Scotia* released in December of 2001.

In examining the issue of ownership, the Voluntary Planning Task Force inevitably had to examine many of the issues facing the coastal zone. Of particular interest for this project is the background and recommendations regarding public access. In its final report the Task Force identified two important facts regarding access to coastal areas in Nova Scotia. First, it quickly became apparent that securing access to prime recreational resources along the coastal areas is of utmost importance to residents of Nova Scotia. Second, the Task Force determined that the Province of Nova Scotia lacks a clear and accurate understanding of "the level or degree of our current access opportunities" to coastal areas (VPTF, 2001, pg. 35). Both facts are significant given the obviously strong economic and cultural connections Nova Scotians have with the coast.

On the issue of access the Task Force examined many of the comments and suggestions submitted by citizens of Nova Scotia relating to the issues of public access.

They include:

1. Public confusion over the complex legal issues surrounding the term 'access'
2. Clear lack of appreciation for the amount of recreational resources that currently exist within the province
3. Public understanding regarding what rights exist pertaining to the crossing of private lands
4. Liability issues of private land owners for injuries incurred by visitors
5. Vandalism issues faced by private land owners from unwelcome visitors



6. Abandonment by federal government of long-standing public amenities including wharves, lighthouses and public roads
7. Administration of Crown Land acquisition budget

The Task Force concludes by making a number of recommendations to the provincial government to secure and ensure public access in the future. Of the recommendations the following are of particular interest to this project. They include:

Table 1: Voluntary Planning Task Force Recommendations on Access

	Recommendation	Effect
1	Provincial government, along with relevant departments should undertake an analysis of current Crown-owned recreation and conservation property for use in a coordinated communications strategy.	Would provide a solid picture of existing recreational and conserved property within the province and would indicate regions lacking such amenities.
2	Provincial government should educate citizens, visitors and all land owners about access rights and privileges on private and crown land.	Would provide a better understanding for residents, tourists, etc as to what rights they have for accessing coastal areas. Would also provide an understanding to government of what the current status of legislation is with respect to access.
3	Provincial government should establish a province-wide inventory of important access paths and roads that have been used historically by communities to access prime recreational venues. Further the government should pursue legal and voluntary avenues to secure these rights of access.	Would provide a province wide picture of access opportunities and could be used by citizens, visitors to understand where legal access exists. As well, decision makers and planners could use this inventory to fully effectively manage these resources.
5	Provincial government should encourage private land conservation in the province by eliminating all possible obstacles that discourage this practice.	This would open up more private lands for accessibility potentially alleviating many of the concerns local citizens have over loss of access.
6	Provincial government should establish a tax-exempt status to properties that provide valuable contributions to recreational and ecological protection through easements.	This would encourage more private land owners to preserve property for public use and for conservation purposes, allowing the Province to perpetuate its international appearance as natural and pristine.
8	Provincial and municipal governments should strengthen existing laws dealing with vandalism and littering or other abuse of property.	This would encourage more private property owners to allow public access on their property if they felt they had more power to deal with vandals.
9	Provincial government should review liability laws, should simplify if possible and explain regulations to Nova Scotians who are willing to open up their property to public use.	This would encourage more private property owners to allow public access on their property if they were not liable for accidents occurring on their land.



2.4.3 – Halifax Regional Municipality Plan Review

Halifax Regional Municipality represents a large area of Nova Scotia, with an equally large variety of coastline. In fact, at 5,577 square kilometres, the HRM is slightly larger than Prince Edward Island. Within this area there are a wide variety of coastal uses from aquaculture and forestry to surfing, boating and sunbathing. HRM has over 200 individual communities which are home to a wide variety of people with a broad variety of interests in the coast. At the time of this writing HRM was in the process of completing a Municipal Plan Review. As part of this review, the municipality had outlined a number of overarching principles and goals which outline its desire to ensure the effective use of coastal resources. For example, Principle 1 set out by the Regional Planning Committee states that HRM will “Ensure opportunities for the protection of open space, wilderness, natural beauty and sensitive environmental areas” (RPC, 2004). A number of the underlying goals (Goal 1.7 and 1.8) of this principle indicate the desire to preserve environmentally significant areas while ensuring the availability and access to open space for environmental character and community identity in coastal areas (RPC, 2004). Presumably in this sense “open space” and “access” can refer to the coast as well as to other regions in the municipality.

Principle 2 states that it shall be the intention to “preserve and promote sustainability of cultural and historical assets” (RPC, 2004). Goals 2.1 (Cultural Landscapes) and 2.2 (Rural Culture) states that it shall be the intention of HRM to recognize and protect urban, rural and coastal cultural landscapes to define HRM's cultural identity and quality of life (RPC, 2004).

Based on these principles and goals, many of the features that exist along HRM's coast which provide access can be seen as historically, culturally and naturally significant assets and warrant protection as open space. Sambro Island Lighthouse has received national historical protection as the oldest lighthouse in North America, while the Chebucto Head Lighthouse has recently been acquired from the federal government by a local community group who intend to preserve this resource for historical and recreational purposes. Of course, Peggy's Cove Lighthouse is possibly one of the most well recognized lighthouses in North America and acts as a cultural and economic stimulant for much of the surrounding area. HRM's coastline is dotted with countless beaches and headlands that serve both a recreational and ecological role, as well as providing access to the coastal areas. Despite the significance of many of the features



found along the coast of HRM, access to them cannot necessarily be guaranteed. With the increasing private ownership of many coastal areas in the province, these resources are becoming more fragmented and isolated.

Clearly there is a need and more importantly a desire to secure access opportunities to the coast within Nova Scotia by citizens, industry and government alike. Both provincial documents - Coastal 2000 and Voluntary Planning Task Force on Non-Resident Ownership - suggest that to ensure access exists in the future a number of simple steps should be taken. Specifically, develop and implement policy regarding coastal access at the provincial level; use a number of simple tools (like tax incentives) to encourage private property owners to open their land to the public and develop an inventory of existing access and recreational opportunities to fully understand the resource.

At the municipal level, HRM has indicated a desire and is aware of the need to identify, promote and preserve the coastal assets and access along the shores of the municipality. The goals and objectives as outlined by the HRM have come from a lengthy and exhaustive process which included public consultation. Residents of HRM have indicated through this process that the desire to preserve and protect coastal assets should be a priority for HRM. It is now up to the government to act upon these wishes and secure access to prime coastal resources for the future.

2.5 – Managing Coastal Access

Up to this point, this report has examined and detailed the need for a coastal access strategy in the province. To secure long term access to coastal areas and the resources found there requires that the provincial and municipal governments develop a framework for protecting existing access while implementing methods of identifying and acquiring new opportunities for coastal access. As part of this strategy is the development of a coastal resource inventory.

Voluntary Planning Task Force on Non-Resident Ownership as well as Coastal 2000 both indicate the need for the establishment of an inventory of coastal recreational and access opportunities within the province to ensure protection of traditional access ways. The development (and more importantly the maintenance) of such an inventory has immense potential for the management of the coastal areas of the province.

According to the final report from Voluntary Planning “we need to get a better handle on how much recreation and conservation property we have already, how it is distributed,



and the potential for further development of existing Crown land. Concerted efforts must be made to make this type of information available to the general public” (VPTF, 2001, pg. 37). Further, these documents state that “we suggest that an inventory of traditional public access ways throughout the Province be recorded. Every possible effort should be undertaken to entrench these rights for the benefit of the general public” (VPTF, 2001, pg. 37). Similarly, Coastal 2000 indicates the need to understand the full inventory of resources along the coast of Nova Scotia before any informed decisions can be made. The report’s authors make the argument that until such an inventory is known, it will be difficult to effectively create a coastal management strategy.

Coastal 2000 states that “Nova Scotia’s coastal zone contains a vast array of resources of which the multiple use and substantial importance of each warrants a strategic approach to resource protection. Informed decision making with respect to critical resources and resource areas can only happen with adequate information about, and characterization of existing resources. This is the fundamental basis on which to design a comprehensive management strategy for resource protection (NSLUPC, 1994, pg 14).” Resource in this case presumably includes access opportunities.

Clearly there exists the need to understand the inventory the existing coastal resources including access. But how is such an inventory developed, and more importantly how can it be maintained and put to good use in the management of these resources in Nova Scotia? The remainder of this project will examine these questions.

3.0 – Management Tools for Planners & Decision Makers

3.1 – Overview

This report has attempted to present the case that the overall management of coastal resources in Nova Scotia is a somewhat tricky and complicated business. Specifically, this report has attempted to identify and understand the issues around declining access to coastal areas and the resources within Nova Scotia. Coastal resources, as defined for this project represent a significant asset economically, culturally and recreationally for many communities within the Province. Securing access to them is in the best interest of the province’s government, industry, citizens and visitors.

Most people involved in promoting the idea of a coastal management strategy agree that it is necessary to develop a thorough and comprehensive understanding of the



access and resource opportunities that exist at the coast. At a conference entitled *Changing Tides –Taking Action on a Coastal Zone Management Plan for Nova Scotia* held from November 6th to 8th, 2004 attended by representatives from dozens of community groups and various provincial government departments, most participants indicated a need and desire to develop or obtain such an inventory before effective coastal management can really occur. How can the resources be managed, if we don't even know what's there?

As planning at the coast, like most planning, tends to be reactive the development of a management tool such as a Geographic Information System (GIS) can provide the means for mapping and understanding existing and potential assets within the coastal zone. A management system such as this may aid in the prevention of conflicting land use problems before they occur. For example, as GIS is a dynamic tool that allows information to be updated regularly, it could help land use planners (beyond the traditional methods of static, hard-copy maps) identify areas particularly vulnerable to loss of access or to understand the relationship of sensitive coastal habitat to potential pollution sources before they become issues. Furthermore, by developing a system that can be shared across a network (e.g. the internet) it could ensure that decision makers have the most up to date information at their hands when making important decisions affecting the coastal zone. Further it could provide community groups and other interested individuals with the ability to understand the state of coastal access within their own community.

The provincial government is currently running several such online management systems. For example, the Nova Scotia Civic Addressing File (NSCAF) and the Nova Scotia Properties Record Database (NSPRD) are two online systems available for use (at a cost) by residents, government and industry. The NSCAF is an online system which provides each municipality with access to a centrally maintained GIS allowing each community to examine, update and manage civic addresses within their town. The information is then shared among emergency services to aid in speeding up emergency response times. The NSPRD is a system which provides up-to-date information about every property within the province including assessed value, property size, and historical tracking of ownership allowing users to easily access pertinent information.

Further, the Department of Natural Resources is currently maintaining the Hurricane Juan Preliminary Assessment site. This site was created following Hurricane Juan in



2003 and provides airphotos and various GIS layers (roads, rivers, lakes and a damage assessment layer as interpreted from air photos). A similar online system could be used by interested parties for managing coastal accessibility and other resources in the coastal zone.

The potential of a system such as this for coastal zone management is great. It can provide any person with a computer, from grass roots to the highest levels of government, with a tool for understanding the spatial distribution of coastal access and resources in any particular area thereby allowing for effective and efficient and, most importantly proactive planning and land use management.

3.2 – GIS

3.2.1 – *What is GIS*

“Geographic Information Systems (GIS) are information management systems tied to geographic data. Various types of data sets, such as hydrology, road networks, urban mapping, land cover, and demographic data can contain hundreds of pieces of information about a specific feature...all tied together geographically to provide spatial context” (NSF, 2004). According to Aronoff a GIS “is designed for the collection, storage and analysis of objects and phenomena where geographic location is an important characteristic or critical to the analysis (Aronoff, 1995, pg 1).”

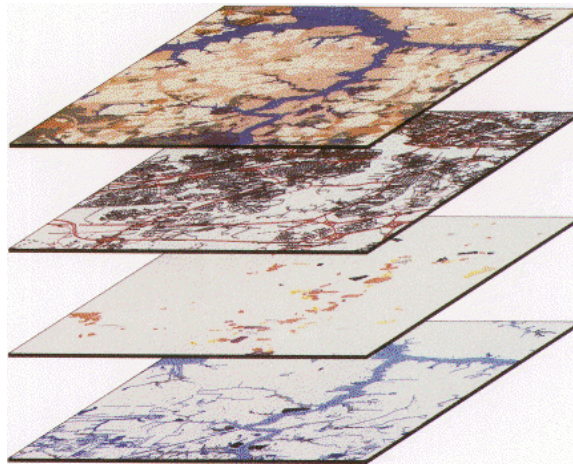


Figure 9: Overlaying GIS layers can help identify spatial patterns
Source: <http://danpatch.ecn.purdue.edu/~engelb/abe526/GIS/Index.html>

GIS can serve as a management tool for any type of data that possesses a spatial quality to it. GIS is unique in that it allows users to effectively and efficiently collect,



format, organize and share spatial data while offering a tool for understanding spatial relationships through analysis and synthesis.

Ultimately, GIS is a method of producing, organizing and managing large volumes of geographic information which is primarily driven by user and client needs; whatever and whoever they may be. To be of use to the end user the geographic data must be the right kind and quality, must be up to date and must be available to the end-user in a format that suits the need (Aronoff, 1995, pg 3).

Data in a GIS comes in two different forms. First is the tabular data, or attribute data. Second is the spatial data or map data which comes in three forms: point, line or polygon. Attribute data does not necessarily have a spatial quality, but instead communicates information about a particular feature with a spatial quality. For example, the spatial data could indicate the location of forest stands, while the associated tabular data could indicate the age of the forest stand, the particular species found in that stand and the average height of the trees.

The use of GIS has exploded in the last decade as more and more sectors of government, private industry and various other groups begin to appreciate its potential for the understanding and management of valuable resources and ecosystems. What started as a simple map making tool has since emerged into full fledged management system used by more and more disciplines and for more and more applications.

3.2.2 – Examples of GIS at the Coast

There are countless examples of how GIS has been effectively used for the management of coastal zone resources. Examples include environmental monitoring systems to an online database of recreational opportunities and the available amenities. This section shall examine two examples of how GIS has been used to effectively manage coastal resources in various regions of the world. The first example is particularly relevant to this project.

3.2.2.1 – The Countryside Agency, United Kingdom

The Countryside Agency is a division of the Department for Environment, Food and Rural Affairs and is mandated as the “statutory champion and watchdog working to make the quality of life better for people in the countryside and the quality of the countryside better for everyone” (TCA, 2004). In 2000 the British Parliament enacted the Countryside and Rights of Way Act. According to the legislation the purpose was:



“An Act to make new provision for public access to the countryside; to amend the law relating to public rights of way; to enable traffic regulation orders to be made for the purpose of conserving an area's natural beauty; to make provision with respect to the driving of mechanically propelled vehicles elsewhere than on roads; to amend the law relating to nature conservation and the protection of wildlife; to make further provision with respect to areas of outstanding natural beauty; and for connected purposes. (CROW, 2000)”

Of particular interest to this project is that the Act also includes a section relating to the power to extend to coastal land. According to section 3.1 of the Act “the Secretary of State (as respects England) or the National Assembly for Wales (as respects Wales) may by order amend the definition of "open country" in section 1(2) so as to include a reference to coastal land or to coastal land of any description” (CROW, 2000, s3p1).

In a country well known for its ‘rambling’, this Act's primary purpose is to ensure public access to various parts of the British countryside “giving new rights to walk on areas of open country and registered common land” (TCA, 2004). However, a statutory duty of the Act specifies that before land can be legally accessible to the public the land must first be mapped. The mapping process is quite extensive and clearly covers a large area of land. To ensure that the mapping is done accurately and the sheer volume of data can be managed and presented in an efficient manner, a GIS has been developed as the framework for the project. In fact a GIS will be used to construct draft, provisional and conclusive maps, a web-based GIS will be used for distribution of maps for consultation procedures as well as for the audit trail of map development and for the appeals and restrictions procedure (TCA, 2004)

Under this legislation, private property owners don't lose their right to make use of the legal powers to restrict new access rights; however the program is designed to encourage property owners to allow their property to be accessed.

There is an extensive methodology behind how the mapping procedure is being completed and is outlined in detail on the Agencies website. The document outlines the methodology for several aspects of the project:

- Producing draft, provisional and conclusive maps of the open country and registered common land.
- Stages of creating, modifying, editing and issuing maps
- Aspects of data standards and data formats.



Through a system of Positive Access Management the Countryside Agency has developed a system of identifying access points and understanding the behaviours of people when identifying and designing access trails. People behave in predictable ways, preferring to use existing paths and tracks to reach destinations. For example, people will generally follow clearly marked routes and trails and so it is possible for land owners to steer visitors in a predetermined direction. Understanding this behaviour is a positive way to effectively manage and control access. While the establishment of Local Access Forums, community committees in which important issues relating to access are dealt with within communities is a proactive way to ensure that issues, such as vandalism or trail meandering can be dealt with (TCA, 2004).

Although the mapping phase of this project is not yet complete, large sections of the country have been mapped and have had conclusive maps produced. The Countryside Agency has developed an online application (see appendix A for a screenshot of the online service) that allows interested persons to enter an address, postal code or UTM coordinates and identify those areas that are considered either open country or registered common land. This tool is an incredible resource to the public, private land owners and decision makers. Having a definitive inventory of existing open space will allow all stakeholders to clearly understand their options for using public space.

3.2.2.2 – Center for Coastal Resource Management

The mandate of the Virginia Institute of Marine Science's Center for Coastal Resource Management (CCRM) is to "provide objective policy guidance and to support informed management of coastal resources" (CCRM, 2004). The foundation covers everything from applied research to outreach education across a wide array of disciplines and "strives to make integrated resource management a practical reality by providing advice from an ecosystem perspective" (CCRM, 2004). In the course of the foundations work, they have developed a significant amount of expertise in GIS and Remote Sensing (RS) and have amassed a significant base of geographic data, which it refers to as the Comprehensive Coastal Inventory (CCI). This inventory is used in both academic studies addressing coastal, watershed and landscape issues and in the development of tools for use by managers at the local and state levels to "improve their decision making capacity" (CCRM, 2004).



Using this data CCRM has developed a number of useful online applications that are available for public access. The Shoreline Managers Assessment Kit (SMAK) is designed to aid shoreline managers in examining the state of the coastline and the existing impacts affecting it while providing a strong foundation to make recommendations for proposed actions. The SMAK online mapping tool integrates a variety of shoreline and landuse features generated in GIS.

One such project is The Elizabeth River Online Environmental Atlas which was developed as a way to organize a vast amount of environmental data about the Elizabeth River in an atlas form. The intent of this project was to provide a repository of for all GIS data available from a wide range of sources (including the Wetland Advisory Program and the Virginia Marine Resources Commission), while making it easily accessible to resource managers, regulatory agencies and environmental organizations via an online application. For example, the Elizabeth River Project is a grassroots involved in the development of this atlas and is committed to both raising the awareness of the value of the Elizabeth River as well as restoring it to its highest level of environmental quality. Through this project, the belief is that if you make the data available to all stakeholders you will encourage and support the stewardship of the River's resources and prudent decisions for the future of the River (CCRM, 2004).

Both of these examples demonstrate how effective the use of GIS can be in organizing and managing large volumes of spatial data while providing access online to any interested party. But these systems are simple and primarily perform a show and tell role. That is they don't show the full range of GIS capabilities, but merely act as static maps indicating the existence of a particular resource. GIS offers the potential for much more, allowing the user to measure lengths and areas and query data for assigned attributes. The remainder of this report shall examine the potential of GIS and its functionality for better understanding the access and resource opportunities within the study area.

4.0 – Pilot Project – Site Analysis

The site chosen for this demonstrative analysis is the Eastern Chebucto Peninsula (see appendix B for site location). It is felt that this area is experiencing many of the pressures facing coastal areas as discussed in this report and will serve as a good test site. This portion of the report will first consider the data requirements for this project



and the technical difficulties that arose when processing and analyzing the data. An analysis will then be conducted to understand the access and resource opportunities that exist within this study site as well as to understand the effectiveness of using GIS for performing spatial analysis of public access resources.

4.1 Data Requirements

Several datasets representing several different features have been used to conduct an effective spatial analysis of the study area. The planning and GIS department of the Halifax Regional Municipality provided access to all spatial datasets for this project for the entire municipality. However, some data limitations did arise during the processing and analysis for this pilot project and will be discussed in the following section.

For the purposes of this project the following data sets were used to indicate and reveal any pattern and distribution of public access within the study area. Although this list is by no means exhaustive, it was felt that they represent the major access opportunities in this area and that these datasets will prove useful for examining the access issue. They are outlined in Table 2:

Table 2: Layers to be used in GIS analysis		
Dataset	Data-type	Purpose
Provincial outline	Polygon	Identify and calculate the size of the study area.
Roads	Line	Identify vehicular access within the site as well as to indicate settlement patterns.
Trails	Line	Identify pedestrian and ATV access within the site. Develop knowledge of how the access corresponds to public vs. private land.
Property Database	Polygon	Indicate parcels of land which are 'publicly' owned. This dataset will be used to indicate which sections of the coast are accessible.
Communities	Point	Identify the location of communities within the study site.
Lighthouses	Point	Identify the location of lighthouses and lightstations. These sites can be used for access to the coast.
Wharves	Point	Identify the location of publicly owned wharves and slipways. These sites can be used for access.
DEM/Slope	Raster	Create a slope map to identify accessibility based on the landscape at the access sites.
Beach	Polygon	Identify the presence of beaches in the site (a highly valued resource requiring access).
Building	Point	Identify the distribution of structures, and hence the pattern of settlement in the study area



4.2 Technical & Procedural Issues

As with any datasets collected from multiple sources certain technical issues will need to be identified and corrected before any effective analysis can be conducted. Although all data was provided by HRM, many of those datasets were obtained from other agencies including the federal, provincial and municipal governments. The following is a list of issues and a disclaimer for some of the data used for this analysis.

Projection

Upon receiving the data, it was obvious that the data existed in various different projections. To ensure accurate measurements, the data needed to be reprojected to one common projection. In total 68 datasets were received from HRM. There were three different projections/datums used:

- Modified Transverse Mercator (MTM) Zone 5/Average Terrestrial System (ATS) 77
- Geographic Coordinate System (GCS)/North American Datum 1927 (NAD27)
- Universal Transverse Mercator (UTM) Zone 20/North American Datum 1983 (NAD83)

MTM5/ATS77 was chosen as the projection/datum combination for this project. This was chosen as most of the data provided by HRM was already in this projection and this projection is specific for this region providing for the most accurate calculations of area and length.

Data Requirements, Scale & Redundancy

Although most of the datasets provided by HRM presented interesting information about the site much of the information was unnecessary, not applicable and at too small scale for the purposes of this project. For example, one data set indicated landcover type such as drumlinized till plains or basal moraine which was not applicable to the access issue, and further the data was presented at a provincial scale.

Many of the datasets presented the same information in various ways. For example, the government owned property dataset indicated all properties that were federally, provincially or municipally owned, while another dataset would indicate municipal parks and another would indicate provincial parks. For this project, the most comprehensive datasets were identified and used.

Data Intent & Accuracy



The datasets chosen for this study were not collected for the purposes of creating a coastal inventory and performing analysis for accessibility. Instead the data was more of an ad hoc collection of various geographical features that can be used to indicate in an indirect way accessibility opportunity. The data sets are not ideally suited for analysis of this type.

Ideally, spatial data would be collected specifically for this purpose based on a pre-designed data collection framework which identifies data needs and acquisition.

A disclaimer needs to be offered here. Although every effort has been made to ensure that the analysis is correct and true, no guarantee can be made of the accuracy of the results. For example, the dataset that identifies all public land as well as the dataset that identifies all trails in the study area is assumed to be spatially and representationally accurate, but it cannot be guaranteed that all properties and trails have been identified or mapped correctly.

Site Visit

Every good spatial analysis requires a site visit in order to perform ground truthing. Ground truthing is the term for at or near surface observations and refers to the on-site collection of data and information to confirm the findings of any study. This step should be performed to calibrate, interpret and ensure that what the results claim are in fact true.

Besides actual data collection, this can step can be the most time consuming of any good GIS analysis. As such, little ground truthing could be done for this project other than a priori knowledge of the site.

Despite these limitations, the author would like to stress that it is more the process that is of interest in this project than the actual results. Part of the purpose of the project is to identify the practicality and usefulness of using a GIS to manage, understand and analyze public access. This analysis can be accomplished using the available resources.

4.3 – Spatial Analysis Defined

“Spatial analysis can be defined as the analysis of spatial phenomena performed to find and describe order and patterns (or confirm their absence), and to understand their underlying structure (UoT, 2004).” Spatial analysis is not strictly a GIS procedure. It can be performed using hard copy maps or from visual analysis of a site or area. It can be



as simple as a visual analysis to analysis based on complex processing algorithms. However, GIS certainly provides for better functionality, processing speed and data management (when compared to traditional methods) making it a very practical means of conducting spatial analysis. The following section provides a simple yet effective spatial analysis of the study site, to demonstrate the practicality of using GIS for mapping, understanding and making effective decisions regarding public access along the coast of Nova Scotia.

4.4 – Spatial Analysis and Eastern Chebucto Peninsula

4.4.1 – Study Site Description

The Eastern Chebucto Peninsula is situated just west of the Halifax peninsula (see appendix B for site location). The Eastern Chebucto Peninsula is a geographically distinct area with a landscape dominated by a granite batholith that underlies and frequently emerges at the surface. The coastline of the area is typically rocky and rugged with several pocket beaches dotting the shoreline. Many parts of the coast have extremely steep cliffs which although provide superb viewing opportunities, make reaching the water impractical.



Figure 10: Chebucto Head – Typical Coastline of Eastern Chebucto Peninsula
Source: <http://www.dal.ca/~cstaicer/Images/terrestrialPhotos/pages/058-chebucto%20head.htm>

Due in part to the area's proximity to the urban core of Halifax, the Eastern Chebucto Peninsula has developed a unique pattern of land use and settlement. Traditionally a mostly rural area, the region is now home to almost 25,000 people living urban, suburban and rural-residential lifestyles all of whom share common roads, coastline and waterways as well as a traditional dependence on the sea, forest and soil (Manuel,



2003). Despite being politically governed by the Halifax Regional Municipality the area is regulated by two very different land use plans. The community has expressed an interest in developing an integrated plan for the area that would ensure protection of valued natural amenities from urban encroachment (Manuel, 2003).

The majority of the study area, particularly the southern portion, is still generally rural in nature. The area's slower way of life, its proximity to Halifax and the relative ease of commuting are making the Eastern Chebucto Peninsula an increasingly desirable place to live. In fact, "in recent years developers have shown an increasing interest in the 'amenity' landscape of the rugged backland terrain – views, vistas, lakes and streams, and 'scenic coastline'" (Manuel, 2003, pg.3). Coastal 2000 came to the same conclusion pointing out that in this area, as in many areas around the urban core of HRM "the quality of life attributes of the coastal zone are the magnet" while the "population expansion in the coastal areas adjacent to Halifax-Dartmouth has also been a result of the growth of a commutershed (NSLUC, 1994, pg. 7)".



Figure 11: Construction on Eastern Chebucto Peninsula
Source: <http://www.ns.ec.ac.ca/weather/hurricane/iuan/photos/15.jpg>

As a result, large portions of the area are being subdivided and developed for private homes including large sections of the coastline; this in turn is driving up the property values while decreasing the amount of coastal access. "Rural areas are experiencing encroachment by 'exclusive estate' enclaves that seal off access to traditional backland territory and coastline (Manuel, 2003, pg. 3)."



There are a number of small communities located within the study area, including Purcell's Cove, Herring Cove, Sambro and Ketch Harbour (See appendix C). From the map it is apparent that the historical pattern of settlement in this area, much like the rest of Nova Scotia primarily follows the coast. Many of these communities, particularly the ones located in the southern portion of the study area are fishing communities. In more recent times with the increase in tourism related activities in Nova Scotia (and a decrease in fishing) many of these communities and surrounding areas have become popular as destination spots for tourist activities. This fact is further compounded in this area by the proximity of the study area to urban Halifax, one of the prime tourist destinations for cruise ships and bus tours. Furthermore, this area is becoming popular as a destination spot for Halifax's 'weekend warriors'. Sight-seeing, kayaking, camping and boat cruises, attract many of the local residents and visitors to the coast.

4.4.2 – General Site Characteristics

The Eastern Chebucto Peninsula is 155.72 km² in size including islands (144.25 km² when lakes are removed). Of the total area 22.13 km² is publicly owned (see Appendix D). This represents almost 15% of the entire area, which when compared to the provincial average (about 25%) is quite low. For each tract of publicly owned property at least one government department is responsible for its administration and management. However, interpreting which departments actually have jurisdictional responsibility over any given parcel can often be as confusing as the legislation surrounding public access to them (Rutherford, 2004). Table 2 identifies all publicly owned space organized by department (some have been aggregated).



Table 3: Publicly held land in study site, by department

Level of Government	Responsible Department	Area of Land (km ²)	Percent of Total Area
Federal	Canadian Mortgage & Housing	0.11	0.06
Federal (Crown Land)	Parks & Heritage, Fisheries & Oceans, NRCAN, Etc	2.30	1.47
Federal	Department of National Defence	0.71	0.44
Federal	Public Works & Government Services Canada	0.01	0.01
Federal	Transport Canada	0.19	0.85
Provincial	Department of Transportation & Public Works	0.08	0.05
Provincial (Crown Land)	Natural Resources, Environment, Etc	7.11	4.55
Provincial	Service Nova Scotia & Municipal Affairs	0.02	0.01
Provincial	Department of Natural Resources	7.28	4.66
Municipal	HRM - Other	2.19	1.40
Municipal	HRM – Public Works & Transportation	2.13	1.36
		22.13	14.86

As the map indicates not all this property is directly connected to the coastal area nor is it all ideally suited for use as coastal access. Due to the nature of the government owned property dataset it is difficult to determine the exact area and extent to which it is directly connected to the coast. Instead, the total length of coastline that is publicly owned has been calculated based on the properties with direct coastal connection.

The study area has a total of 115.82 kilometres of coastline including islands. Of the total length of coast line within the study area 24.92 kilometres are considered publicly owned (see Appendix E) and managed by one of several governmental departments. Table 3 identifies each managing department and the total length of coast they are responsible for.



Table 4: Publicly held coastline in study site, by department

Level of Government	Responsible Department	Length of Coast (kms)	Percent of Total Coast
Federal (Crown Land)	Parks & Heritage, Fisheries & Oceans, NRCAN, Etc	4.80	4.14
Federal	National Defence	3.14	2.71
Federal	Public Works and Government Services Canada	0.11	0.09
Federal	Transport Canada	3.37	2.90
Provincial (Crown Land)	Natural Resources, Environment, Etc	1.15	0.99
Provincial	Department of Natural Resources	8.57	7.39
Municipal	HRM - All	3.78	3.25
		24.92	19.55

Although all the land and coastline indicated in the above tables is considered public, not all of it will necessarily be publicly accessible. Some parcels of land are off limits due to the nature of the land use. For example, the Department of National Defence lands north of Herring cove is mostly off-limits to public and should not be considered as public access to the coast. Several such properties exist within this study area.

Some of the coastline that is publicly held is on islands located off the coast. Although this land is considered public domain, it will only be accessible to people with boats. However, if there are no locations from which to launch boats on the shore, the islands will only be accessible to those travelling from other regions. Table 4 indicates the total amount of publicly held land and coastline located on offshore islands and the responsible government department.

Table 5: Publicly held Islands in study site, by department

Level of Government	Responsible Department	Island Name	Length of Coast (kms)	Total Area of Land (Ha)
Federal	Transport Canada	Little Sambro Island, Sambro Island	3.37	14.56
Provincial	DNR	Pennant Island, Seven Islands	5.01	39.46
Provincial (Crown)	Unknown	The Little Islands, Little Island	0.51	0.99

The islands identified are all located in the southern portion of the study area (see appendix F). Information pertaining to the actual uses of these islands was not available with the exception of two: Sambro Island which is home to the oldest lighthouse in North America and is a registered national historic site and Little Sambro Island (managed by Transport Canada) which hosts a navigational light (VPI). The remaining 42 acres of Little Sambro Island are for sale for private ownership with “magnificent views seaward,



beautiful sand beaches and excellent anchorage nestled in a wonderful impressive white granite rocky coastline” (VPI, 2004).



Figure 12: Little Sambro Island
Source: http://www.vladi-private-islands.de/sales_islands/sites/3a_sambro.html

Although steep terrain can provide for dramatic vistas, it can make actually accessing the coastline treacherous and impractical. Some areas of this region meet the sea with a dramatic cliff. Using a digital elevation model a slope layer (indicating the percentage of slope) was created to quickly identify the pattern of topography in this site from flat ground to excessively steep cliffs (see appendix G) which could be used to understand landscape limitations to access. Table 5 outlines the classification system that was applied to classify the slope map into classes of steepness.

Table 6: Classification scheme for terrain slope, based on percent of slope

Class	Slope Gradient (%)	Description
I	0 - 6	Grade relatively level. Ideal gradients for walking and hiking.
II	6.1 – 8.0	Grade somewhat inclined. Accessible if trail exists and includes landings.
III	8.1 – 25	Grade significantly steep. Should only be considered in conjunction with stairs and landings.
IV	25 +	Grade excessively steep. Should not be considered for access even with stairs

Appendix G indicates that the site consists mostly of terrain falling into category I with slopes between 0 and 6% and most of these areas are found inland away from the coastline. According to the data, much of the land along the coast in this study area is



steep, falling within category III. This means some portions of this coastline will likely be impassable without some existing trail network in place. As category III covers slopes between 8 and 25% (the lower end likely being navigable, while the upper end being impassable), the slope conditions will best be judged on a case by case basis. The spatial resolution of this data is such that upon closer scrutiny passable routes may exist from one site to the next. A number of sections of the coast in this study site fall within class IV (in particular the area near York Redoubt and just south of Herring Cove).



Figure 13: Typical coastline near Herring Cove.
Source: <http://www.cis.upenn.edu/~mmcdouga/ns/scotia.html>

As these areas are all above 25% and given the typical rocky coastline of this study site, these areas will likely be impassable without stairs or climbing gear.

4.4.3 – Transportation Infrastructure

When analyzing accessibility to the coast the examination must also examine the existing road and trail infrastructure which will provide an understanding of where how people access the coast. As mentioned in the introduction, people in Nova Scotia have traditionally accessed coastal areas for various reasons including hiking, swimming or fishing; even across private property when necessary. With a smaller population and ample open space crossing private property was generally tolerated by property owners. However, with the provinces increasing population, increasing development pressures and increasing concern over personal liability and vandalism on private property along the coast many private property owners are becoming less inclined to allow the public to cross their property (VPTF, 2001).



Figure 14: No Trespassing near the coast in Kings County
Source: Author

Therefore, the trail network was examined in the study site to identify the quantity, pattern and distribution of the existing trail inventory, and to determine which are located on private land and which are on public land. Furthermore, the general accessibility options were examined to understand how and where people may access the coast in this area (Appendix H).

In total there are 203.69 km's of trails. Of this number 107.64 km's are considered foot trails, while 96.05 km's are considered tracks. According to the Service Nova Scotia and Municipal Relations information for this dataset the trails are defined as "Trail, portage, footpath (in parks) (not intended for passage by vehicles)", while the tracks are defined as being "prominent (having a destination, 2m and wider and minimum 200m long)" (SNSMR, 2004).

Based on a simple query, the length of trails located on public versus private land can be determined (see appendix H). Table 6 gives a break down of the results.

Table 8: Private versus Public Trails in the study site

Type	Total	Public	Private	% of Public Trails
Trail	107.64	29.25	78.39	27.17
Track	96.05	17.83	78.22	18.56

The results show that just over 25% of the trails within Eastern Chebucto Peninsula are located on public lands, while just over 18% of the tracks are located on public lands. As explained earlier, many of the traditional public access routes within the province are becoming fragmented and patchy as a result of the privatization, subdivision and



development of large tracts of land. The Eastern Chebucto Peninsula is similarly subject to this fragmentation effect as the analysis confirms. This could have a significant effect on the accessibility of coastal areas if private land owners begin to limit these access opportunities.

Vehicular roads follow almost the entire length of the coast, only occasionally moving inland. As very few sections of the coastline are not connected by a road it makes it easy for anyone to actually 'get to' the coast within the study area. However, with that said, even though most of the study area is accessible by car, this does not guarantee that the coastline can be accessed. In most cases, valued features and resources along the coast are becoming isolated as the land in this area falls into more and more private ownership. The presence of trails along the coast gives the best indication of coastal accessibility in the study area. Pennant's Point, located east of East Pennant and Strawberry Point/Ketch Head located east of Ketch Harbour are popular hiking areas for local residents and visitors. However, according to the data only a small portion of the trail on Pennants Point is publicly owned while none of the trail on Ketch Head is publicly owned. It is precisely this mix of spatial and tabular information which could allow decision makers to have a thorough understanding of the significance of the access issue in this (or any) area, an appreciation for the potential value of some of these locations for recreation and tourism while ensuring wise and informed decision making when it comes to the management of these access opportunities.

To this point the project has examined the Eastern Chebucto Peninsula from an overview perspective, looking at the general characteristics for the entire area. The following sections shall explore some of the coastal amenities (e.g. lighthouses, wharves, parks and beaches) found along the coast in closer detail. This will include a spatial analysis of some selected sites within the Eastern Chebucto Peninsula, an examination of the specific role of these sites play in coastal accessibility and some of the specific pressures facing those sites. Although it is difficult to clearly categorize all features into one class or another as some features may fall into multiple categories, features were placed into the category that was most appropriate. For example, a beach may fall into the beach category, but may also be protected by a park status, and hence could be in two classes.



4.4.4 – Beaches

A beach is defined as “a deposit of non-cohesive material (e.g. sand, gravel) situated on the interface between dry land and the sea” (UUGeog, 2003). The term beach is very subjective and as such for the purpose of this paper it will include any area adjacent to the ocean that is composed primarily of loose, unconsolidated material (fine and large grained material) that can be used for various recreational purposes.

Beaches represent a significant asset along the coast that many people including surfers, swimmers, sunbathers and beachcombers want to access. Although beaches are not necessarily in the public domain (except for that area between the high and low tide mark), these areas clearly represent a coastal resource that has traditionally been accessed by the public, whether it was across public or private land.



Figure 15: Swimming, Surfing and Hiking at
Lawrencetown Beach, Nova Scotia.
Source: Author

However, given the increasing trend of private property ownership along Nova Scotia's coast and the limiting of access in some locations, many of the beaches could by the nature of their location become private. When a beach is surrounded by privately owned property, and no public access roads or trails exist, this has the effect of creating a private beach for those property owners that happen to own the property adjacent to the beach. This has the effect of making the area within the public domain (between high and low tide) essentially private as well. Due to the lack of provincial legislation in Nova Scotia guaranteeing access across private property, coastal resources in the public domain (including the beaches) could ultimately become isolated due to their location. An examination of three different beaches within the Eastern Chebucto Peninsula can shed some light on how these features provide accessibility along the coast as well as the issue of 'beach privatization'.



The beach dataset provided by HRM for this project is derived from the Department of Natural Resources forest cover data and represents “that area of land between normal water line and the forest or non forest category (i.e. bog, etc.)”. This dataset was not originally intended to indicate the existence of recreationally valuable beaches, and as such does not indicate all spots that other sources (such as government NTS map sheets) identify as ‘beaches’. It represents sites along the coast where there are large section of non-forested land, such as ledges, cliffs, and beaches as derived from airphotos. As such, this data set is inconsistent for use in this project. However, for the purposes of this project three beaches were examined for access opportunities and the effect of beach privatization; Georges Beach and Cook Head and Crystal Crescent.



Figure 16: Georges Beach, Cook Head and Crystal Crescent Beach
Source: <http://gis2.gov.ns.ca/website/juan/>

Crystal Crescent Beach

Crystal Crescent Beach is the only site along the coast of the Eastern Chebucto Peninsula that is part of the Nova Scotia Provincial Parks. Given the beaches protected status this area represents a significant access opportunity for the residents and barring any unforeseen circumstances should remain so for a long time. The land use at this site is specifically intended for recreational use. The main feature of the park is a series of three crescent shaped white sand pocket beaches that extend along the coast (Appendix I).



Figure 17: Crystal Crescent Beach on a summer's day
Source <http://www.sambro.ca/beach.html>

The park which is located on Pennant Point offers a series of hikes which follow along the coast and further inland onto the peninsula. The area which is completely accessible to the public via a paved road and trails is a popular destination along this stretch of coast for locals and tourists.

Table 8 found in Appendix J indicates the spatial characteristics of this site. Crystal Crescent Beach is the largest publicly accessible site within the study area (just over 188 hectares) with one of the longest stretches of coastline (2.13 kilometres). The topography (Appendix K) in this area falls between class I and III potentially making some portions of this site inaccessible but offering ample opportunity for accessing most areas of this Park.

Georges Beach & Cook Head

While Crystal Crescent Beach is intended to be completely accessible to the public and hence does not suffer from the 'beach privatization' situation, the other two examples Georges Beach and Cook Head are a different story. These beaches are located on a small peninsula attached to the east side of Pennants Point and are exclusively in private hands, save for a small island just off the north tip (Appendix L). As the map indicates, many of these properties have buildings already constructed on them (and presumably more will be constructed), indicating that the area is inhabited. As mentioned many people living in the southern portions of the Eastern Chebucto Peninsula do so for privacy and seclusion. As such, it can not be expected that these property owners would allow the public to access the beach via their property. There is a public road accessing this area but it only provides access to the private lots and does



not provide access to either of these beaches. From the map two trails can be identified. One runs from the public road to Georges Beach; however it is entirely on private property. Therefore this cannot be considered public access. The eastern edge of the peninsula has been subdivided into a number of northwest-southeast trending properties and has a private road and a track crossing the properties. These two access options cannot be considered public either.

Table 8 found in appendix J provides the beach characteristics of these sites. Georges Beach is the larger of the two at 1.17 hectares in size while Cook Head is only 0.22 hectares. Combined these two beaches represent a total of 0.38 kilometres of coastline. The topography in this area (Appendix M), much like Crystal Crescent Beach falls between class I and III. More specifically, the slopes leading to Georges Beach are in category III, but given that a trail exists this beach would likely be accessible from the road. The slopes near Cook Head are mainly in class I, meaning that this site would be easily accessible, if a trail existed.

Although the only portions of these beaches that are considered public are between the high and low tide mark, they still offer the potential for recreational enjoyment; however, neither of the beaches has public access to them, and are instead completely surrounded by private property. Presumably the only access to these beaches would be for individuals to walk along the shore from Crystal Crescent Beach to reach them.

This situation is not unfamiliar in many parts of the province and is not strictly limited to beaches; other resources, such as lighthouses or archaeological sites can face a similar fate. Beaches represent one of Nova Scotia's greatest coastal and recreational resources and an important attraction for tourists and locals, but given the trend of private ownership along the coast, these resources could become increasingly more isolated.

4.4.5 – Lighthouses

Lighthouses are familiar features along the coast of Nova Scotia. On the Eastern Chebucto Peninsula there are a variety of lighthouses and lightstations dotting the coast. Mainly concentrated in the southern portion of the study area, these coastal amenities serve as excellent access points since many have public roads leading up to them. There are eight sites that have a full lighthouse (such as Sambro Island), a light station



(such as Pennant Harbour) or a simple front range light (such as Sandwich Point).

Appendix N indicates the location of these amenities along the coast of the study area.



Figure 18: Sandwich Point – 10 minutes from Halifax
Source: <http://www.dal.ca/~jmarchib/NS.pictures.html>

More specifically, there are two full lighthouses, one of which is located on an island far offshore, one light station which is located at Duncan's Cove and four shore lights. These lighthouses are all automated and are all accessible except for Sandwich Point which is located on the Department of National Defence Property near Herring Cove. There is fairly good distribution of these features along the coast of this study area with the majority being located in the southern portion. This is presumably because this is where the majority of the fishing communities are located. As well, given the nature of the coastline, which is scattered with islands and many small harbours, navigational aids are more necessary than in the northern area which has a smoother coastal profile.

One of Nova Scotia's most recognized icons is the lighthouse. With the decline in commercial fishing activities in many parts of Nova Scotia, these resources could prove to be invaluable for many communities as a way to draw tourism dollars. However, a recent trend has seen the federal government decommission and sell many of these facilities. In recent years as ship navigational technology has improved through the wider use of the Global Positioning System, many lighthouses have become obsolete and as a result Transport Canada and the Canadian Coast Guard have begun to divest themselves of many of these assets as a cost saving measure. Unfortunately, many of these resources are just as likely to fall into private hands as into the hands of community groups who may want to preserve them. A number of the lighthouses along



the coast were examined to understand their relevance to coastal accessibility and there status of ownership.

Pennant Harbour

The Pennant Harbour Light Station located on the north side entrance to Pennant Cove very close to the town of East Pennant is still under the management of Transport Canada and the Department of Fisheries and Oceans (Appendix O). This feature represents a significant access opportunity in this area, particularly since it is one of the few accessible sites located west of Pennant Point and is still in public hands.



Figure 19: Pennant Harbour Light station
Source: <http://www.lhdigest.com/home.cfm>

According to the table in Appendix J this site is fairly small compared to others in the study area at less than 1 ha and has a coastline of only 0.02 kilometres. However, the slope map (Appendix P) indicates that much of this site falls within class II and III which making most of this site accessible, particularly as a road runs from the main road to the lighthouse.

Given the nature of this site, as is evident from Image 19 the potential (with some modifications) exists for using this site as a kayak launch or for picnic day use. By providing an online inventory of accessible sites within the province, this site could draw people down to this area.

Sambro Island

The lighthouse located on Sambro Island is the oldest operational lighthouse in North America and as such has been designated a national historic site. This lighthouse, which is located on an off shore island is only accessible to those with a boat but represents a significant cultural (and coastal) resource. Although the lighthouse



structure itself is off-limits much of the grounds on the island are open to the public. (Appendix Q).



Figure 20: Sambro Island Lighthouse

Source: http://www.phsu.org/2002/NECC/Lighthouses/html10/L031-13014a_IMG.html

Given the historical significance of this lighthouse, this amenity represents a significant economic resource to the local communities. As this site is the oldest lighthouse in North America, it has the potential to attract people from all over. Locals could offer boat tours to the island, thereby creating access and creating jobs in the small communities along the Eastern Chebucto Peninsula.

According to the table in Appendix J the island itself is fairly small at just over 9 hectares, and has 2.24 kilometres of coastline. Much of the island is barren and has slopes in class III (Appendix R) and in adverse weather could be awkward and difficult to traverse. Despite this, with some trail design and other access amenities the island could be accessible.

Chebucto Head

The Chebucto Head/Duncan's Cove Light Station site is located within an area of the Eastern Chebucto Peninsula with little public access (Appendix S). The light station at Chebucto Head was recently decommissioned and sold to the Chebucto Head Lighthouse Society which intended to preserve the lighthouse and keeper's house. However, a fire in 2004 destroyed the light keeper's house, but the society is still active and intends to rebuild the structure.



Figure 21: Chebucto Head Lighthouse
Source: <http://www.nslps.com/lights/>

According to the table in Appendix J, the site is just over 7 hectares in size while the slope map (appendix T) indicates that terrain at this site, particularly near the coast is quite treacherous making the waterline virtually inaccessible. However, the views of Halifax and the Atlantic Ocean are breathtaking from this site.

This site is a popular day hiking spot for residents and visitors and as such there is a significant trail that runs along the coast from south of the site north past the lighthouse. However, from the trail map (appendix G) it is evident that the majority of it is in fact on private land.

In the case of Chebucto Head, the lighthouse was put in the hands of a community group that intends to protect the property for historical and preservation purposes. Because of this, access to this part of the coast will continue to exist for public. However, in some cases lighthouses are falling into private hands. In these situations, the owners are not obliged to provide continued public access to the site and are within their full rights to remove the structures. Furthermore, as these properties can often be on prime coastal property, they may be out of the price range for many local communities to purchase and preserve. Lighthouses, like beaches represent a significant coastal resource and access opportunity in Nova Scotia. For many of the smaller communities in this study site these facilities can represent a means of economic and tourism opportunity, but given the federal program of divestiture using these amenities for access and economic prosperity may not be an option for much longer.



4.4.6 – Wharves and Slipways

A number of government wharves and slipways also exist within the study area. There are seven such features ranging from full public wharves to simple floating docks (Appendix N). Public slipways are essential to communities and visitors and these resources offer some of the few locations for launching boats (and reaching some of the publicly held islands).

Within this study site there are three government wharves located in the communities of Sambro, Ketch Harbour and Herring Cove. There are two government slipways located in Portuguese Cove and Sambro as well as one commercial slipway (pay-as-you-go) located at Sambro Head. Finally there is one floating dock located in Sambro Basin. This facility would provide the opportunity for boats to tie up, but away from the coast. Again most of the wharf facilities are located in the southern portions of the study area. This could be expected as this is where the small fishing villages are located. These communities would require these facilities for launching and tying up boats as well as for unloading fishing catches. It is interesting to note that within the more urban northern area of the Eastern Chebucto Peninsula there are no public boat launches or wharf facilities. Private enterprises do exist, but given the dependency on the coast in Nova Scotia, a public facility could be expected in the more urban area as an attraction locals and tourists as well perhaps as a form of commuting.

The public wharves and slipways were originally established by the federal government to ensure that smaller fishing villages would have safe and secure facilities to tie up to and unload catches. However, with the fishing moratorium put in place in the early 1990's, many of these facilities have become underutilized and too expensive to maintain. As such, the federal government has begun a program of divestiture along with the lighthouses.

Transport Canada is aware of the role Canada's ports play in the national picture. In a statement released in 2002 they indicated that "The public port system supports the safe and efficient movement of vessels and cargo, and is integral to regional economic prosperity" (Transport, 2002). However, the National Marine Policy released December 14th, 1995 indicates the federal government's intention to "rationalize the Canadian marine transportation system", including the divestiture of these port facilities (Transport, 2003). As of 2002, the federal government had officially transferred ownership, demolished or removed the public harbour status of 79% of the 549 public ports and port



facilities in Canada (Transport, 2003). As of November 30, 2004 there were only 25 public wharf facilities remaining in federal ownership in the Atlantic Region. This number is quite significant when one considers that at the peak there were 262 (Transport, 2004).

According to Transport Canada's statement, the Port Divestiture program is intended to transfer the port facilities to communities and other interested groups, thereby placing the decision-making responsibility to "the people best placed to gauge local requirements" (Transport, 2003). Despite the best intentions of Transport Canada's program, the result of port divestiture can often produce unexpected consequences. Although not within the study area, the following example provides an excellent illustration of the unintended consequences of the federal government's port divestiture program.

According to a recent article in the Chronicle Herald (Medel, 2004), in 1999 Transport Canada gave the government wharf (as well as nearly 3 million dollars for upgrades) in Digby to the Maritime Harbours Society, a non-profit group who were to maintain the structure for the use of the Town. However, the Maritime Harbours Society has recently put the wharf up for sale for almost 8 million dollars. Many in the Town, as well as the federal government are afraid the wharf will fall into private foreign hands.



Figure 22: Digby Wharf up For Sale
Source: <http://www.ohcc.ns.ca/images/digblrg1.jpg>

The wharf which is home to nearly 75 full-time and 30 part-time fishing vessels producing nearly 42 million a year in fish landings is in a state of disrepair and as such the community purchasing it is out of the question. According to Reg Hazleton, chairman of the Digby Harbour and Ports Committee "we would like to see it go back in government hands and then have a local group manage it" (Medel, 2004, pg A2). The



federal government has stated that it will not purchase the wharf from the society, but did indicate that any sale of the wharf would require federal authorization. The matter is currently in an arbitration hearing to determine if there has been any mismanagement by the wharf's owners (Medel, 2004).

Herring Cove

The wharf located in Herring Cove (as in many small rural coastal communities) acts as a focal point for local residents, much like town squares in larger communities. The community is located about half way down the coast of the Eastern Chebucto Peninsula (see appendix C). This facility acts as a meeting and greeting spot, a place of economic activity, a place for community events and of course as access to the coast.



Figure 23: Polar Bear Dip, Herring Cove Wharf; Community Focal Point
Source: <http://www.cis.upenn.edu/~mmcdouga/ns/scotia.html>

The facility is located in the center of the community and has easy access to it from the Herring Cove Road, a major thoroughfare (see Appendix U). The government owned property database does not have a record for this property (only in point form) and as such indicating an exact area for this facility is not possible based on the data. From the appearance in Image 23, the wharf is not substantial in size. The table in Appendix J indicates that the length of coastline for this site is 0.01 kilometres, while the slopes at this site fall into class III (Appendix V), but given the nature of the facility slopes will present little hindrance as the wharf is flat and therefore accessible.

The wharves and slipways located in many of the coastal communities in Nova Scotia are a vital asset economically, socially and culturally. Like lighthouses, wharves are a



Nova Scotian icon that many people have come to associate with the provincial image. For example, Halls Harbour located in the Bay of Fundy has a world renowned, picture perfect wharf, that visitors travel long distances to see. As such, the community and government have invested in the significant amounts of money into this facility to ensure its vitality for locals and visitors.

It is clear, even from the study site that much of the coastline of Nova Scotia is dotted with these facilities, both public and private and in many cases they represent a significant community asset and the only public access points to the coast. Like lighthouses, these amenities represent potential economic opportunities for many of these communities, from mooring to offering boat cruises. As the Digby case proves, despite the federal government's best intention with its divestiture program, these wharves can often fall into the wrong hands and can have a dramatic effect on the vitality of these coastal communities as these facilities fall into disrepair. As the federal government continues to divest itself of these facilities and many of these communities are unable to secure them for local use the villages will slowly lose their access to the coastal areas.

4.4.7 – Parks

Parks play an important role in coastal accessibility in this site. There are numerous parks located along the coast of the Eastern Chebucto Peninsula including York Redoubt National Historic Site, Sir Sanford Fleming Park and as discussed previously Crystal Crescent Beach. These amenities which can draw visitors from all corners of the province are intended specifically to provide public access and as such generally have a solid road and trail infrastructure in place for visitors of all types. Given the nature of the land use in these sites, they are likely to remain publicly accessible for a long time. There is little pressure affecting these resources specifically as many of them were created and are protected legislatively. Parks represent the ideal form of secure, public access, although clearly not all existing access as identified in this paper can be granted this level of protection. The following will be a discussion of several sites within the Eastern Chebucto Peninsula that provide public access.



York Redoubt National Historic Site

Just north of Herring Cove is York Redoubt (Appendix W), a national historic site which was originally constructed in 1783 on a high bluff overlooking Halifax Harbour and was designed to serve as a key element in Halifax's defence (ParksCanada, 2004).

The site contains several historically significant artifacts and features such as naval batteries and other armaments. As a National Historic site, York Redoubt is well recognized by locals and visitors and serves as a catalyst for drawing people to this area.



Figure 24: York Redoubt: Coastal access and Look-Offs
Source: <http://spoon.org/pics/Places/York-Redoubt/>

According to the table in Appendix J, the site is relatively large at just over 70 hectares and offers almost one kilometre of coastline. The topography in this area is steep (Appendix X) and can often be treacherous when trying to access the coastline. According to the table in Appendix J the majority of the area falls within class I to III, however much of the area adjacent to the ocean falls solidly within class IV making parts of York Redoubt the most treacherous in the Eastern Chebucto Peninsula. The upper portion of the site is easily accessible and has a good trail network, while the coastline can be a little more difficult to access given the nature of the topography. However, despite this, York Redoubt has an asset that other sites in this study area lack: spectacular look-offs.



Sir Sanford Fleming Park

Fleming Park is park maintained by the Halifax Regional Municipality and is located on the Northwest Arm (Appendix Y). The Arm is a very a popular spot in Halifax to live with some of the highest housing prices in the city. As such, most of the area adjacent to the Arm (particularly on the peninsula Halifax side) has little in the way of public access to the coast, save for a few spots. Fleming Park is probably one of the best opportunities to access the Arm. The Park offers good coastal access to a significant number of people given its proximity to urban areas like Spryfield and Armdale. The park offers opportunities for recreation and small boating while offering a quieter, more secluded setting in the urban area. The park has good trails connecting the park to the nearby residential areas.



Figure 25: Coastal access along Northwest Arm in Sir Sanford Fleming Park
Source: http://www.mcniverse.com/July_2004_-_Dingle_Park.fa47.0.html

According to Appendix J, this park is about 48 hectares in size and has just over a kilometre of coastline with two major walking trails through four natural habitats: second-growth woodlands, a heath barren, a saltwater habitat and a frog pond (DNS, 2004). The park is also home to the Dingle Tower and a sandy beach providing access to the Arm.

The slopes within this area are almost entirely within class III except near the western edge of the park (Appendix Z). This slope should not prove too much of a challenge as the park has well developed trail infrastructure and a road leading through it. In fact there is 3.79 kilometres of trails running through the site.



This site is very well used by residents of the area and represents a significant access opportunity for the public.

Clearly parks represent one of the most secure forms of coastal accessibility in Nova Scotia. These sites are specifically designed for access by the public and with their park status can be assumed to remain accessible.

4.4.8 – Community of Sambro

Much has been said about the small coastal fishing communities located within the study area in this analysis. While much of the analysis to this point has examined the study area on a resource by resource basis, it will be useful to examine the access opportunities from a community perspective; that is what opportunities for access exists within these small communities.

The community of Sambro is located in the southern portion of the study area (Appendix AA) and, like many of the communities in this region has traditionally been dependent on fishing as its economic base. As many smaller, coastal communities are seeing a shift away from this primary industry, many of the coastal access sites that currently exist could be developed for other uses and utilized to their full potential.



Figure 26: Community of Sambro
Source: <http://sambro.ednet.ns.ca>

In Sambro, most of the public access facilities consist of lighthouses and wharves, which mean that given the federal government's trend of divestiture, this community could lose these facilities and thus many of their current access opportunities. From Appendix Z the community of Sambro has a good number of coastal access opportunities that



currently exist within the town, including lighthouses, wharves and boat slips. The Sambro Harbour Wharf is managed by three different departments from two levels of government (including DFO, Public Works Canada and the Nova Scotia Department of Transport and Public Works). Located on the east side of town, the wharf which has traditionally served as a facility for the local fishing industry serves as an excellent access opportunity for everyone (as in Herring Cove), as roads lead right to it. According to Appendix J the wharf is less than one hectare in size and has about 80 meters of coastline. Slopes in this area do not need to be considered as the roads and wharf negate any effect that slope presents.

The town also has a lighthouse which is located at Bull Point just east of the Town of Sambro and is still operational as a navigational beacon. Maintained by Transport Canada, the grounds at the lighthouse are fully accessible to the public. The slopes (Appendix BB) in this area falls into class I which means it provides for easy navigation and access on the site. This facility clearly represents a significant asset to the community as it can serve as an attraction for visitors and with its insignificant slopes could be used by kayakers for launching boats.



Figure 27: Sambro Harbour Lighthouse
Source: <http://www.lhdigest.com/home.cfm>

The community also has a boat slip located on the south side of the island and is maintained by Transport Canada. Boat slips, which are few and far between in this



study area, but represent a significant resource for any community. As mentioned many of the publicly held islands located within this study are located in the southern portion of this site very near to this community. This facility can be used by many day-boaters as a way of accessing these locations. Slopes at this location are negligible as the road and boat launch are designed to make for easy access.

Located at the entrance to the community is the Sambro-Ketch Harbour Elementary School. This property is managed by the Halifax Regional School Board and a small strip located in between the school and the harbour is managed by the Department of Natural Resources. The slope in this area is essentially flat (Class I and II) and represents little challenge for accessing the water.

As of this writing, the Community of Sambro has a significant number of access opportunities that can clearly benefit the community. However, as with other communities in the province, as the federal government continues to divest itself of these resources, this can have a dramatic effect on the vitality of these places. Securing some or all of these access sites in these locations should be of great interest to the municipality.

4.4.9 – Inaccessible Sites

Up to this point the sites discussed have represented areas which are accessible based on topography and/or land use. However, a number of sites within the Eastern Chebucto Peninsula are inaccessible based on both topography and land use. For example many of the sites are controlled by the Department of Natural Resources and so for security reasons are mostly off limits to the general public. A number of areas are similarly off limits based on topography. For example, near Herring Cove there are slopes exceeding 25% and so, would be completely inaccessible for most.

This section shall explore two such sites and consider how the role of land use and topography affect access along the Eastern Chebucto Peninsula.

Federal Telecommunication Towers

This site is designated as federal Crown land, is under the jurisdiction of the Department of Fisheries and serves a purely functional purpose as telecommunication towers (Appendix CC). According to appendix J, the site is just over 28 hectares in size and has a coastline of 1.5 km's. Despite its proximity to Crystal Crescent Beach, the site is essentially enclosed by fences and is off limits to the general public.



The landscape of this site (Appendix DD) falls between class I and III. Assuming that access existed, the site would be easily navigable and accessible.

Naval Damage Control Centre, Sandwich Point

This site, located just north of the community of Herring Cove is maintained by the Department of National Defence and serves as a naval training center (Appendix W). Despite being publicly owned property, the nature of the land use at this site makes it non-conducive to public access and hence essentially off-limits for use as a means of coastal access.

The Department of National Defence maintains a significant amount of property in Nova Scotia, much of it being along the coast. The Naval Shipyards in Halifax Harbour are managed by the Department of National Defence and occupy a significant amount of Halifax's harbour front, but are completely off-limits to the public.

The site is just over 52 hectares in size (one of the larger sites in this study area) and has 1.23 kilometres of coastline (Appendix J), but as this site is off-limits to the public, there is no trail system inside the property. The topography (Appendix X) in this area is some of the steepest in the study site, falling within class III and IV. Even though there is no access to this site, the topography would make accessing the coast almost impossible without proper infrastructure and so may not be a good location for public access anyway.

Based on land uses and topography many portions of the coast line are ultimately going to be off limits. These two factors should be given as much consideration as possible when selecting sites along the coast for uses that will effectively exclude public access.

4.5 – Final Access Map & Discussion

Given all the data considerations and limitations discussed above a final map has been prepared indicating those places within the Eastern Chebucto Peninsula that can be used for accessing the coast (appendix EE). To prepare this map, those properties that provide direct access to the coast were identified based on the above analysis and on a priori knowledge for the other sites, while those sites with a land use and/or topography that excluded public access were removed. Based on simple GIS queries, the following table was prepared to show the results of this analysis:



Table 9: Results of Final Access Map

	Area (km ²)	Percent of Total	Length (km)	Percent of Total
Total	155.72		115.82	
Public	6.18	3.96	24.92	21.51
<i>Accessible</i>	4.32	2.77	18.90	16.31
<i>Inaccessible</i>	1.86	1.19	6.02	5.19
Private	149.54	96.04	90.9	78.49

With the public lands that are inaccessible removed from the data there is a total 4.32 km² of land that is adjacent to the coast, topographically navigable and has a land use conducive to access. In total there are 18.9 kilometres of actual coastline that are publicly accessible. Given these numbers the percentage of publicly accessible land and coastline can be calculated. In total there is only 2.77% of the land in the Eastern Chebucto Peninsula that is publicly accessible. This number is only half of the estimated 5% of publicly owned coastal property suggested by the Department of Environment. Even when the inaccessible sites are considered there is only 3.96% of the area that is publicly owned. The percentage of coastline that is accessible is 16.31%.

The primary factor influencing this number is likely private ownership along this stretch of Nova Scotia's coast. As discussed this area is under intense development pressure from commuters in the urban area of Halifax and as such has likely had an effect on the total amount of accessible lands in the study area.

Another quick GIS query indicates that of all the trails that exist within this site, only 12.48 kms exist in the accessible coastal properties. A fairly low number when one considers that there are 203.69 kms in the entire site. This represents about 6.12% of the entire site. Trails will, in most cases provide the primary mode of access to coastal areas. Given the steep terrain in this area, with a lack of trails many sites may become inaccessible.

A number of other important trends can be identified from this map. By examining the map it is obvious that much of the accessible coastal land is located in the northern and southern portions of the study area, particularly near the Northwest Arm in the north and near Sambro, Pennant and Ketch Harbour in the south. Although, the quantity of access opportunities within this site are below the provincial average, the quality and distribution of access opportunities that exist seem to be good, with the exception of the stretch of coast from Herring Cove to Duncan's Cove. By examining the property parcels along that portion of the coastline, it can be inferred from their shape (small, long, narrow and extending away from the coastline) that much of this land has been subdivided.



Although much of this area is undeveloped, a string of 'for sale' signs dots this stretch of highway indicating that it is available for private ownership and development. Given these circumstances, it is likely that there will be little potential for access opportunities in this area in the future. This is one place the Halifax Regional Municipality could try and secure access easements to provide access to this area to create an even distribution of access within the Eastern Chebucto Peninsula.

Despite this one stretch of coast, many of the other areas appear to have adequate access opportunities. Three large well distributed parks exist within this site that provides a significant amount of secure long-term coastal access opportunities. Lighthouses and wharves are presently in fairly good abundance providing local residents and visitors with good opportunity for accessing coastal areas within many of the communities of the Eastern Chebucto Peninsula. However, given the trend of government divestiture and the increasing interest in private coastal ownership not securing these sites can have a dramatic effect on the local communities as well as any recreational, economic and tourism opportunities that rely on secure access to coastal areas.

Privately owned islands represent a unique situation that warrants discussion. Although these sites generally permit public access, due to the nature of their location they are inaccessible to those members of the public without access to a boat. Further compounding this situation is the lack of public boat slips that exist within this study area. With only a few in the study area, there is little opportunity for even those individuals with boats to access them. If these boat launch facilities are lost, what does that mean for these islands? They will likely become isolated and inaccessible to all those without long range boats.

Beaches also represent a unique situation that warrants attention. Although from a beach perspective the intertidal zone is generally the only part of the coast that is in the public domain, beaches represent a significant economic and recreational opportunity within Nova Scotia. However, given the lack of legislation guaranteeing public access across private property and given the continuing trend of private coastal development, many of these resources will suffer a fate similar to the islands; that is they could become isolated and inaccessible.

This simple, yet effective GIS analysis has brought to light a number of access issues facing the Eastern Chebucto Peninsula. This area, much like many regions of Nova



Scotia is susceptible to a loss of coastal access. Understanding the location, distribution and nature of accessibility options for a given region will clearly afford decision makers and planners with a powerful decision making tool for managing and planning for the coast. Developing a coastal access inventory is in the best interest of Nova Scotian's and its visitors. We rely on the coast for countless purposes including our economy, our culture and our recreation, and as such we should explore all methods that aid in the effective management of this area.

5.0 Recommendations & Conclusions

5.1 Recommendations

Given the small amount of existing coastal access within the Province of Nova Scotia coupled with increasing private coastal development as well as the changing attitudes of private land owners towards allowing access on their property, municipalities and provincial government should actively pursue a program of securing what access remains while identifying methods for securing more.

A number of recommendations can be developed from this analysis, and can be examined in two sections. First, will be recommendations specific to the Eastern Chebucto Peninsula and will be directed at securing access within this area. Of course, as many of the issues that are facing the Eastern Chebucto Peninsula are common too much of the HRM, these recommendations can be considered for the entire region. Second will be a number of more long term recommendations that have developed from this project that can be aimed at securing coastal access within individual municipalities or the entire province of Nova Scotia.

5.1.1 Eastern Chebucto Peninsula (and HRM)

There are a number of factors affecting coastal access within the Eastern Chebucto Peninsula, including government divestiture of lighthouses and wharves, increasing private ownership of coastal property resulting in the fragmenting of traditional access routes and the 'privatization' of many parts of the coastline. Presumably, these phenomena are not limited strictly to this area, but are in fact affecting many areas of the Halifax Regional Municipality. As such, the HRM must consider the role of coastal



access in their current Plan Review and develop a specific policy, strategy or by-law to ensure that where economically and logistically feasible existing access can be secured.

To ensure continued access in the Eastern Chebucto Peninsula, the Halifax Regional Municipality should make every effort to identify and secure the existing (and in particular the vulnerable) access within this site. First, HRM should examine the findings of the inventory used in this report and from there identify any other resources or access opportunities that exist within the Eastern Chebucto Peninsula. For example other resources not considered in this project might include and identification of the various types and locations of beaches, other existing or potential kayak or boat launch sites, valuable view planes or look-offs and other existing trail infrastructure. This would provide the municipality with the knowledge necessary to develop a strategy for securing the vulnerable existing and potential access opportunities. Although the findings indicate that access within this site is below the provincial average, many prime access opportunities do still exist. However, it is up to HRM to act on these recommendations to ensure that the more vulnerable access opportunities will continue to exist in the future. Light houses and wharves should be given particular attention as these features represent a significant asset to many of the communities in this area. Given the federal divestiture program these facilities are perhaps more vulnerable than others within this site. By developing a strategy now, the HRM can avoid potential loss of access issues in the future.

As outlined in this report, one of the major factors affecting coastal access within the Eastern Chebucto Peninsula is the subdivision and development of private lots, particularly along the stretch from Herring Cove to Duncan's Cove. Given this trend, HRM should develop a policy or by-law which addresses this major cause of declining coastal access. A simple solution would include a reworking of the existing subdivision by-laws in HRM. As it exists now, the subdivision by-law states that when a property is subdivided, 10% of that property must be given over to the municipality for use as parkland or cash in lieu. HRM could ensure public access to the coast by including a clause in the land use by-laws which goes beyond the current rule and states that when a property adjacent to the coast is subdivided, the 10% given to the municipality must provide for a connection to the coast for public use. This planning tool has recently been used by the HRM in a number of developments along the coast, but it is not official policy.



Halifax Regional Municipality should take every step necessary to ensure that coastal access continues to exist in the future. Just like most regions of Nova Scotia, HRM's economy, culture and recreation are inextricably tied to the coast. HRM's current Plan Review offers an excellent opportunity to acknowledge, understand and secure more coastal access. A number of the policies and goals have outlined the importance of protecting coastal resources, but to ensure that these resources are available in the future, HRM must act on them. Each year increasingly more tourists, visitors and residents come to enjoy the coastal areas of HRM and they expect to be able to get to the coast. Imagine an HRM with no coastal access.

5.1.2 – Long Term Strategies

The issue of coastal access is a province wide problem, and therefore any action on this matter must include the provincial government. This paper has shown that any loss of coastal access is a major concern for all, including many businesses and local residents who use the coast. To effectively secure existing and potential coastal access requires the preparation of a provincial policy or Provincial Statement of Interest on access which could lead to the development of a framework for municipalities in Nova Scotia to secure more access opportunities. Any strategy should include the following aspects.

First, the province and municipalities should undertake to educate the general public and private property owners of their rights when it comes to public access across private property. One of the main issues brought up by the Voluntary Planning Task Force indicated that the general public lack any understanding as to what rights they had when it came to crossing private property or accessing the coast. An education campaign could enlighten all members of society, while potentially avoiding conflicts such as the Sperry's Beach situation before they happen.

The provincial and municipal governments should also explore the options outlined in the Voluntary Planning Task Force's Report for securing more coastal access across private property. As discussed, private property owners represent an easy and affordable means for government to secure more coastal access in Nova Scotia. The following tools should be explored:



-
1. Tax Incentives – Tax incentives could encourage owners of properties which represent a significant contribution for recreational or ecological protection to allow public access through easements.
 2. Financial and Administrative Obstacles – The removal of all obstacles which discourage private land conservation for ecological or recreational purposes.
 3. Vandalism and Littering Laws – Strengthen the enforcement of existing laws involving vandalism and littering to encourage access across private property.
 4. Liability Laws – Simplify liability laws, while educating private property owners willing to open up their property to public access.

Finally, Coastal 2000 and the Voluntary Planning Task Force as well as numerous community groups have indicated there is a need for the development of a single, consistent inventory of coastal access and resources in Nova Scotia. Providing such an inventory online would be an effective way of disseminating this data and it would be invaluable tool for the appreciation of coastal access in Nova Scotia and would provide a mechanism for effective and informed decision making along the coast. Although the details of developing such an inventory are beyond the scope of this project, such an inventory would provide a tool not only for planners and decision makers, but for residents and visitors to understand exactly where access exists. The United Kingdom Online Public Access model, as discussed in this paper could be used as the framework for developing such an inventory in Nova Scotia. Development of such a system has far reaching potential for the management and enjoyment of Nova Scotia's coastal areas, and in the future could be an inventory and repository for much more than just access opportunities. It could be an entire coastal zone management system.

Nova Scotia's coastline is a very dynamic and unique location with many different pressures affecting it. These recommendations, if followed will provide HRM and the Province of Nova Scotia with a means of securing and identifying more coastal access opportunities for the future while ensuring that many of the economic, recreational and cultural opportunities that rely on access can continue to thrive.

5.2 – Conclusions

Nova Scotia is a province which is economically, culturally and recreationally dependent on coastal access and coastal resources. As most people in Nova Scotia live within a short distance of the coast and as the population is forecasted to continue to



grow over the next several decades, the development pressures on the coast will also continue to grow. Nova Scotians have traditionally enjoyed access to most coastal areas in the province, even when that access depends on crossing private property. However, as the research has indicated situations are becoming more and more common in which private property owners are limiting that access. Furthermore, as the government continues to divest itself of many of its coastal amenities the opportunities for access will further be diminished.

Despite the warning signs the province has to this point done little in the way of creating a coastal access strategy to ensure that public access and the many resources that serve as public access will continue to exist in the future.

The two reports commissioned by the government (Coastal 2000 and Voluntary Planning Strategy on Non-Resident Ownership) have both indicated the need and attempted to outline the steps for a strategy to ensure an integrated planning and management strategy for the coastal zone of Nova Scotia. In both documents securing coastal access is specifically mentioned as an integral part to any successful plan. As well, both have indicated that an inventory of coastal zone resources, including access points is required before effective management can happen.

Halifax Regional Municipalities current plan review has outlined a number of important goals and principles which relate to the coast. From the spatial analysis of the Eastern Chebucto Peninsula it is obvious that although many prime access opportunities do currently exist in this area, given the trends of divestiture and private ownership many of these resources are in jeopardy. Where HRM goes from here will determine the fate of some of these coastal resources for the future. Adopting a strategy for securing access opportunities while implementing the coastal subdivision by-law can have a dramatic effect on the future of this resource.

To ensure the health and well-being of coastal access in Nova Scotia for the future requires the adoption of a strategy that is specifically designed and tailored for coastal areas. Our coastline is still relatively healthy and natural, but continuing an approach of ad hoc management and planning may result in a congested, crowded and inaccessible coastline that is present in other places of the world.

"We stand at a crossroad. Either we continue to adopt a piecemeal approach to problem solving, or we can begin to make rational choices within a strategic framework and start building our coastal communities. Economic prosperity with environmental



integrity does not have to be an elusive dream. (NSLUPC, 1994, pg i)."



6.0 – Appendices

- A – United Kingdom, Countryside and Rights of Way online Access Database
- B – Eastern Chebucto Peninsula Location Map
- C – Community Map
- D – Government Owned Property
- E – Government Owned Coastline
- F – Government Owned Islands
- G – Slope Map
- H – Road & Trail Infrastructure
- I – Crystal Crescent Beach
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- K – Crystal Crescent Beach – Slope
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- O – Pennant Harbour Light
- P – Pennant Harbour Light – Slope
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- Y – Community of Sambro
- Z – Community of Sambro – Slope
- AA – Federal Telecommunication Tower
- BB – Federal Telecommunication Tower – Slope
- CC – Final Access Map – Eastern Chebucto Peninsula

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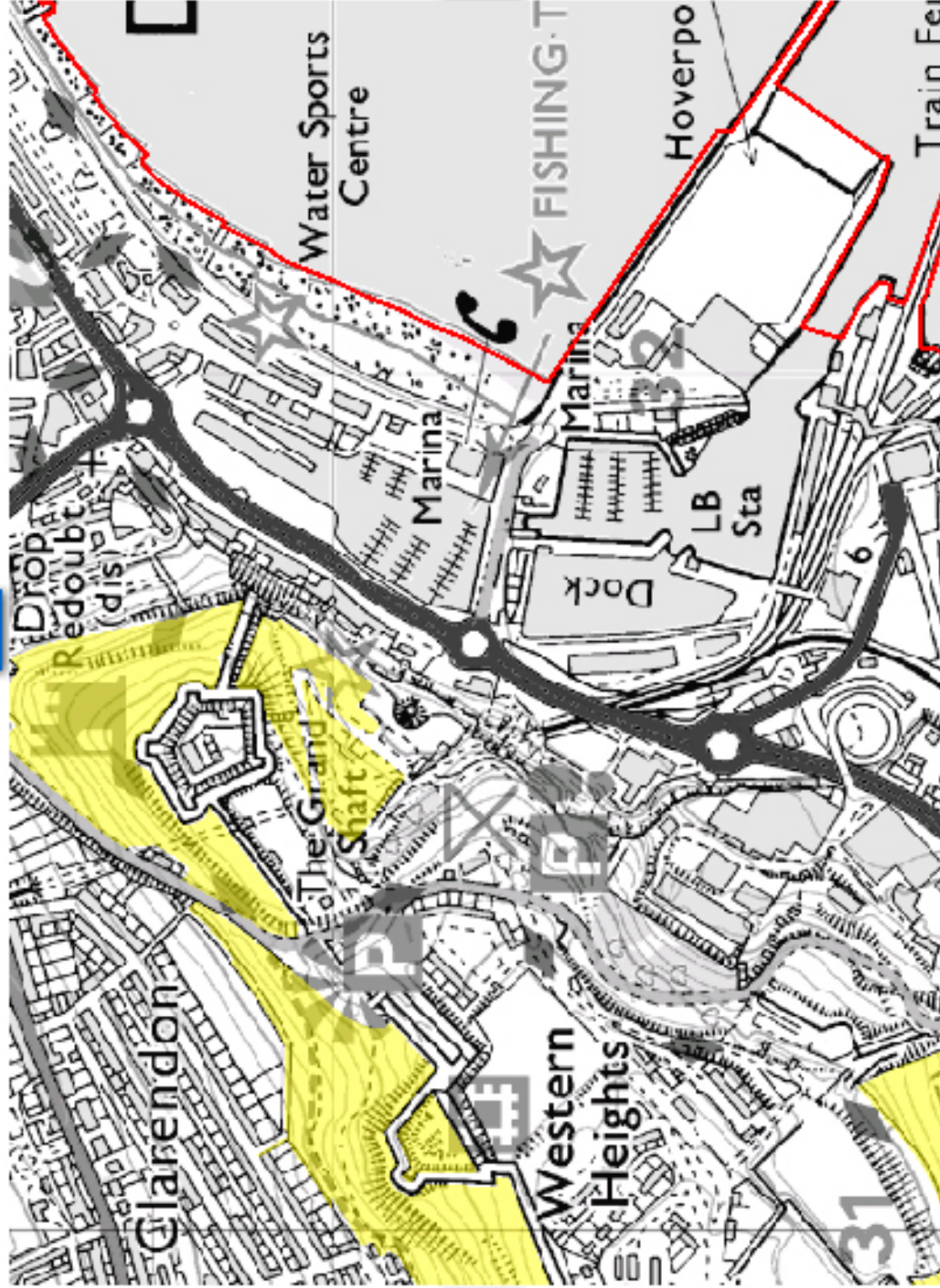


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Map centre is within Map Sheet No. TR24.

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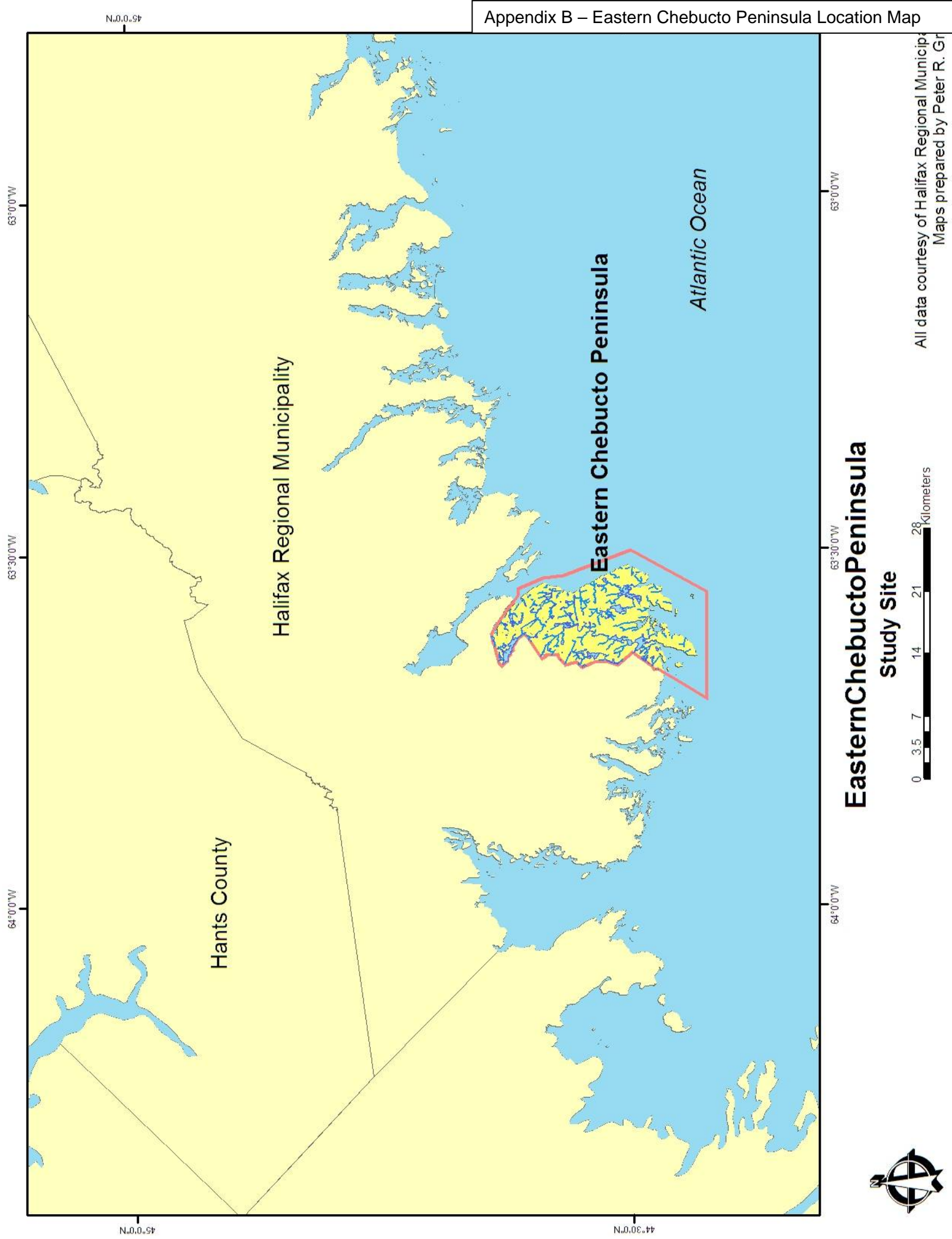


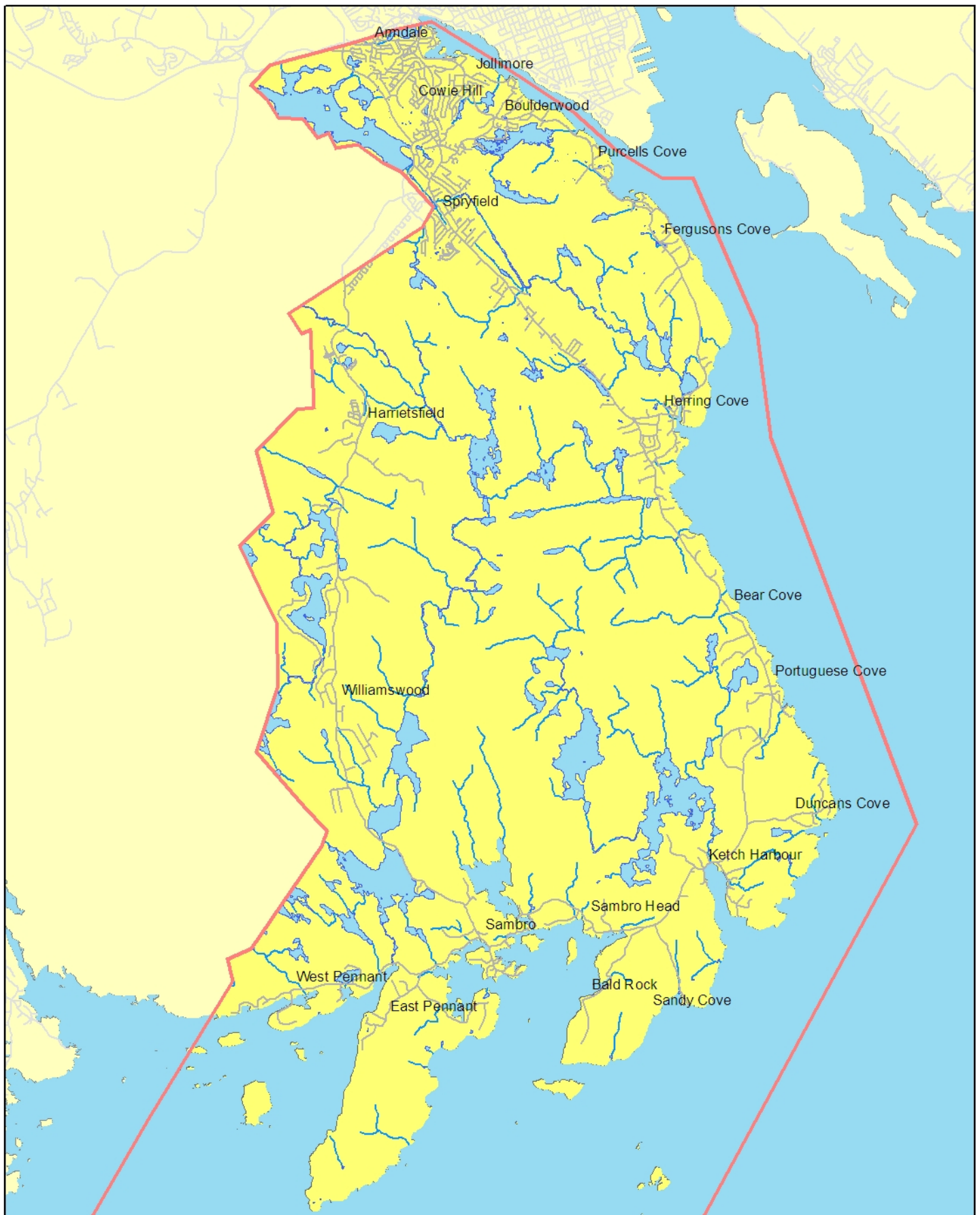
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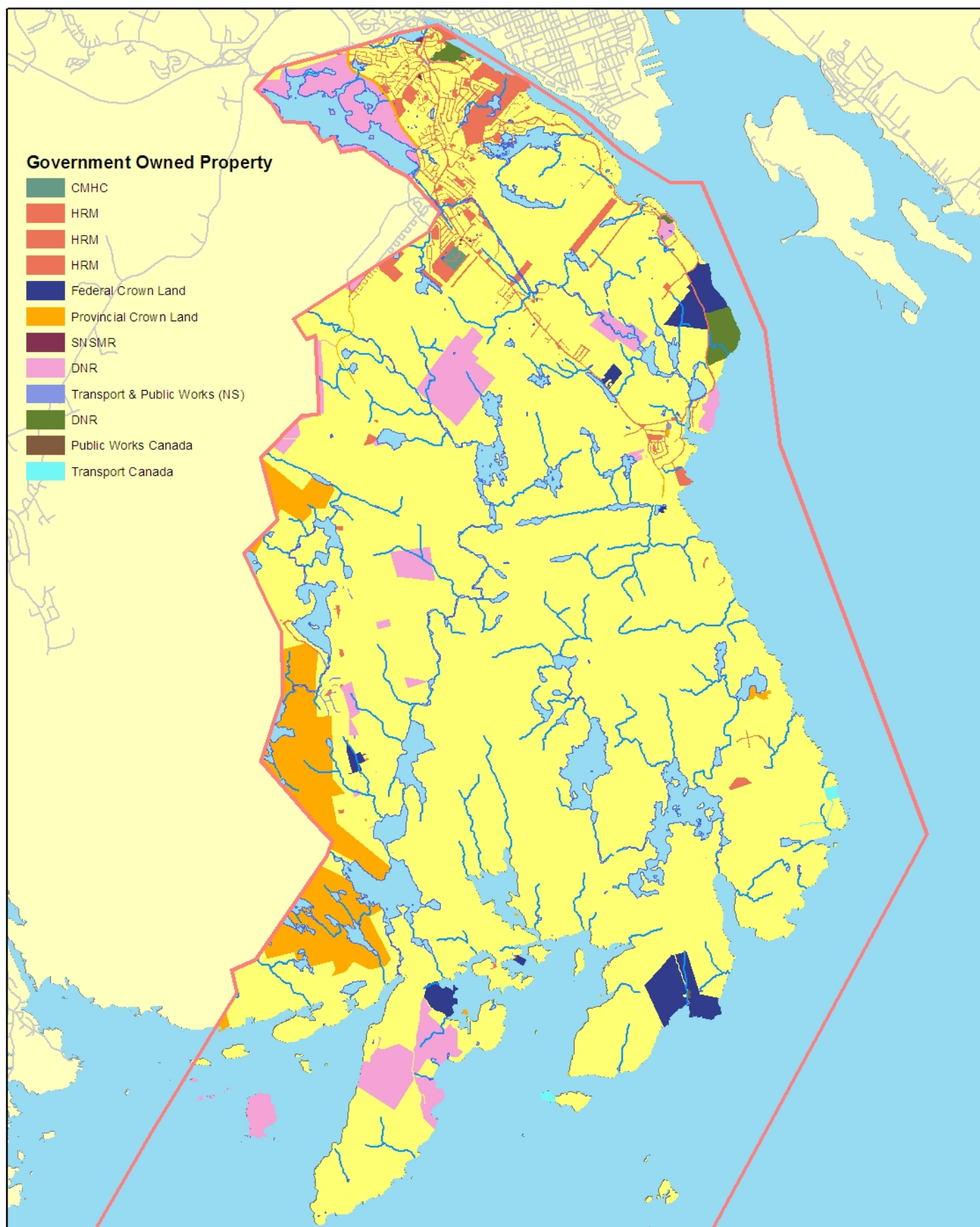


Eastern Chebucto Peninsula Communities



0 0.5 1 2 3 4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



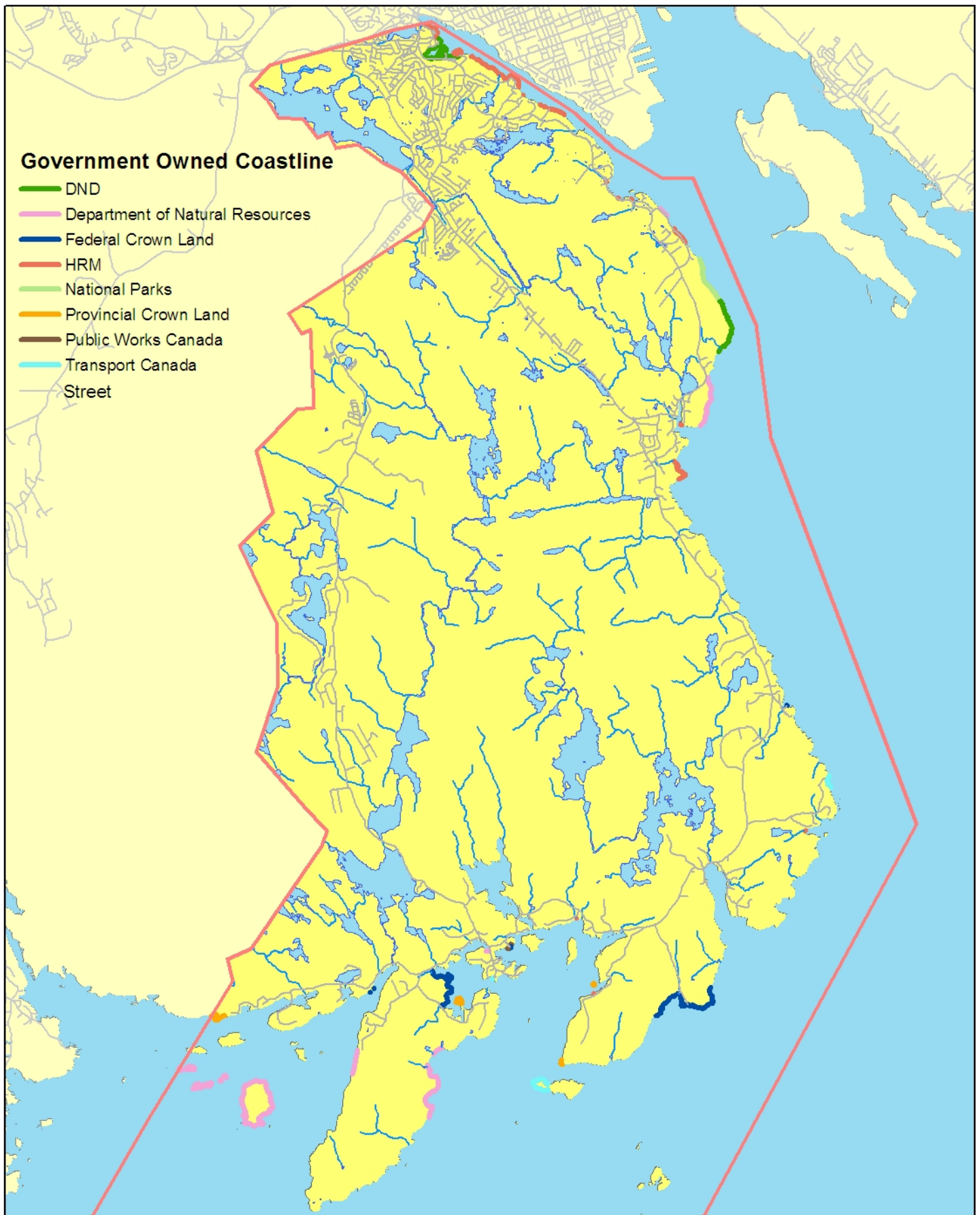
Eastern Chebucto Peninsula

Government Owned Property



0 0.5 1 2 3 4 Kilometers

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Map prepared by:
Peter Green



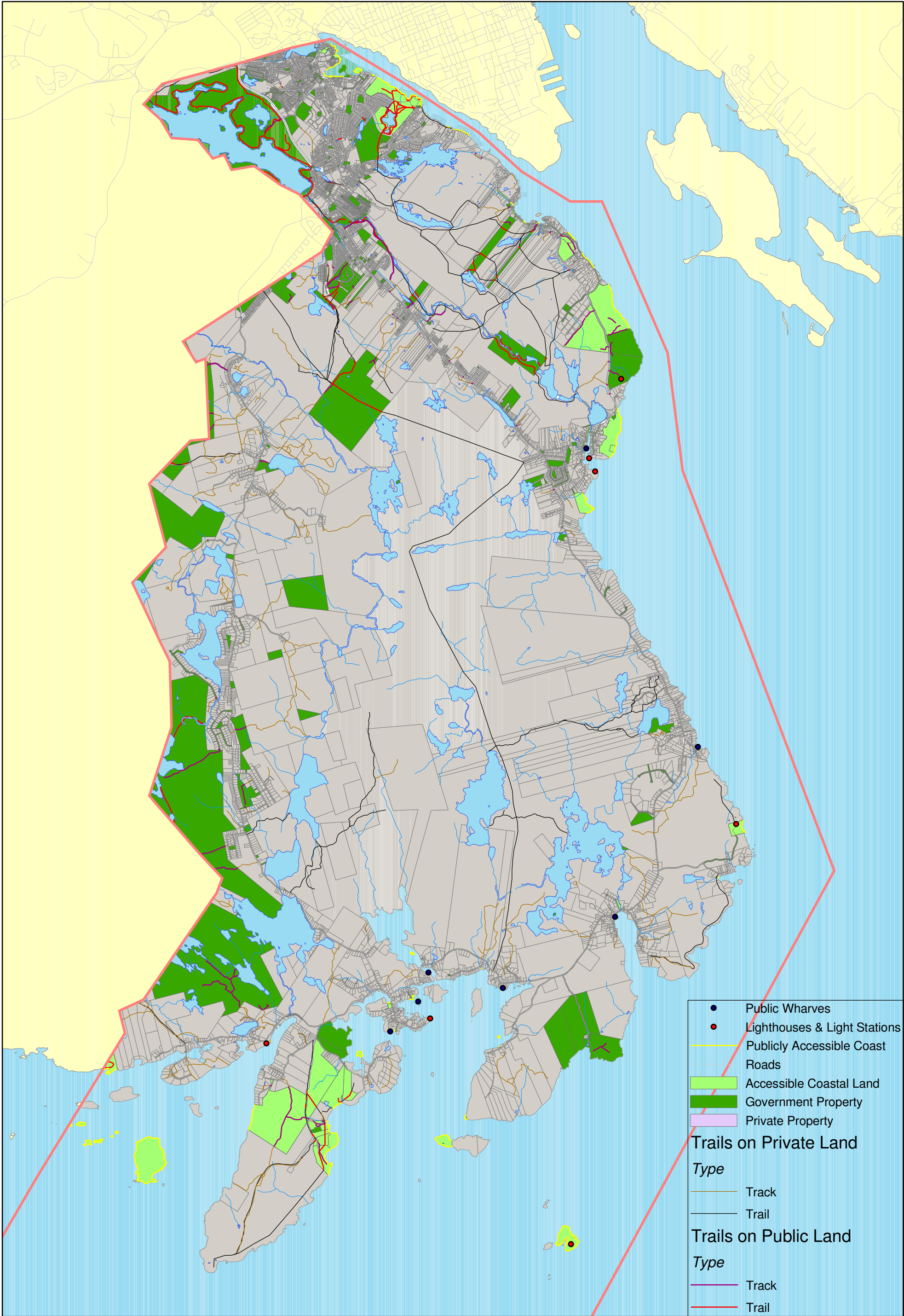
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Government Owned Coastline



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Halifax Regional Municipality
Map prepared by:
Peter Green



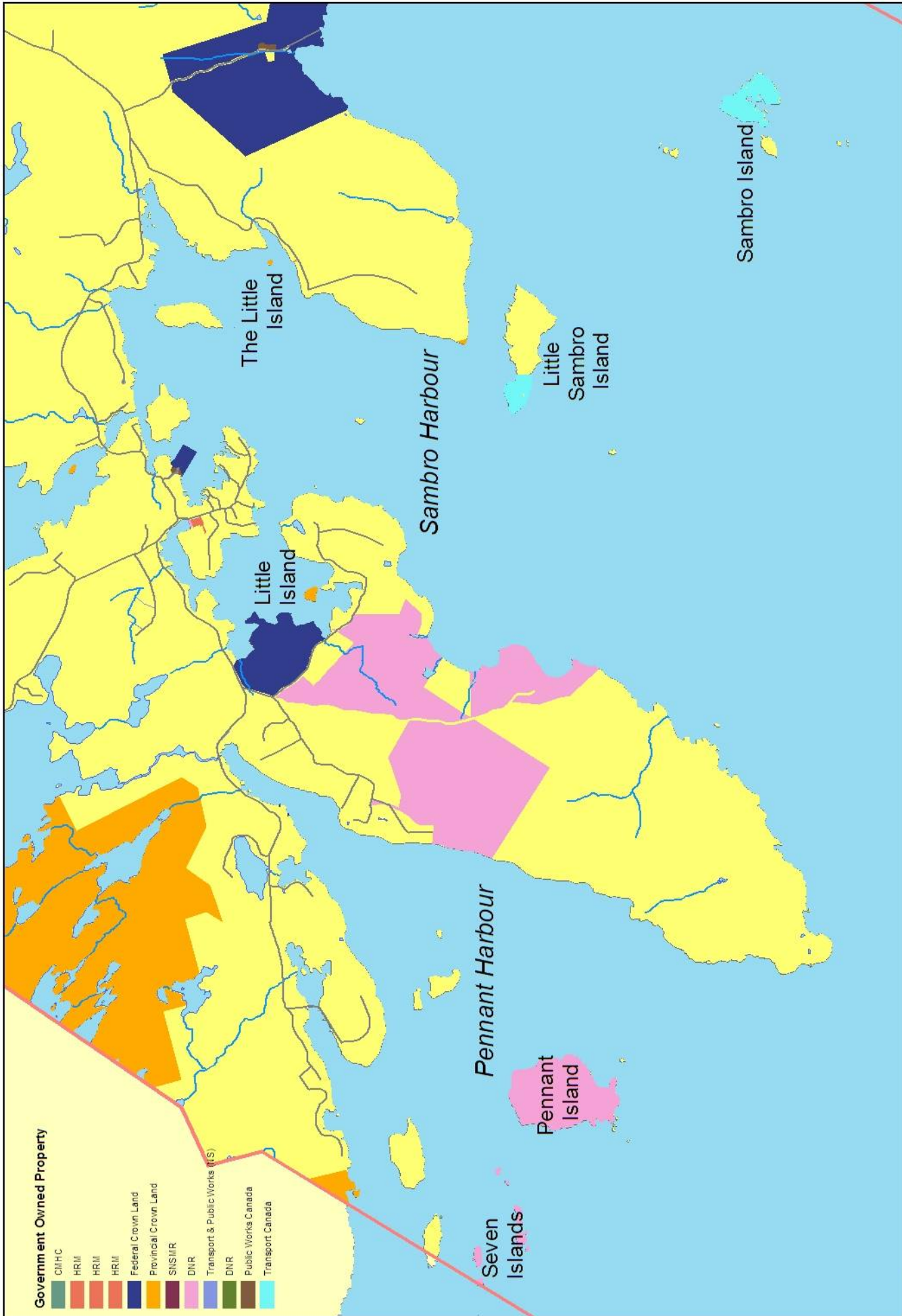
Eastern Chebucto Peninsula

Coastal Access Opportunities



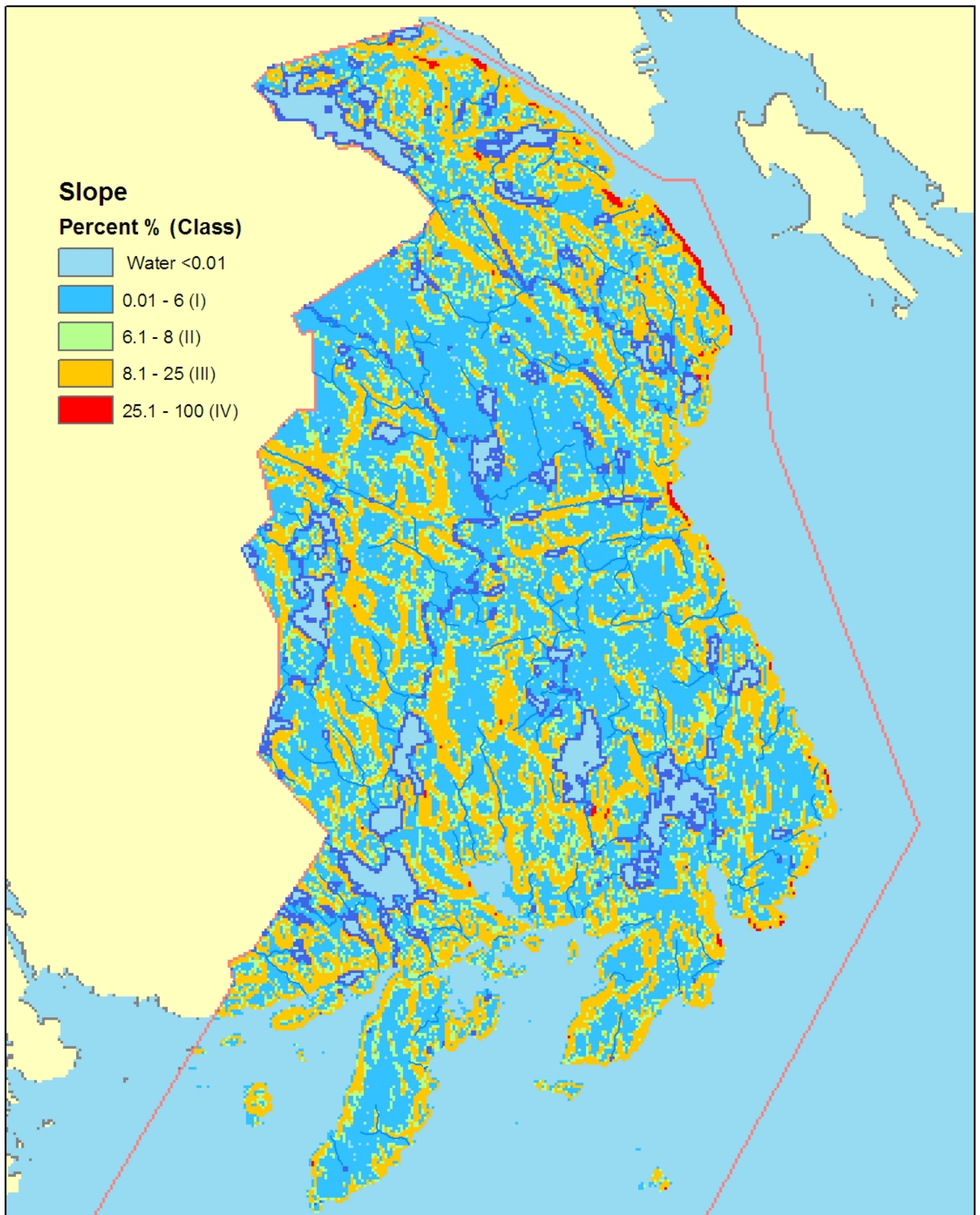
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Map prepared by:
Peter Green



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Map prepared by:
Peter Green





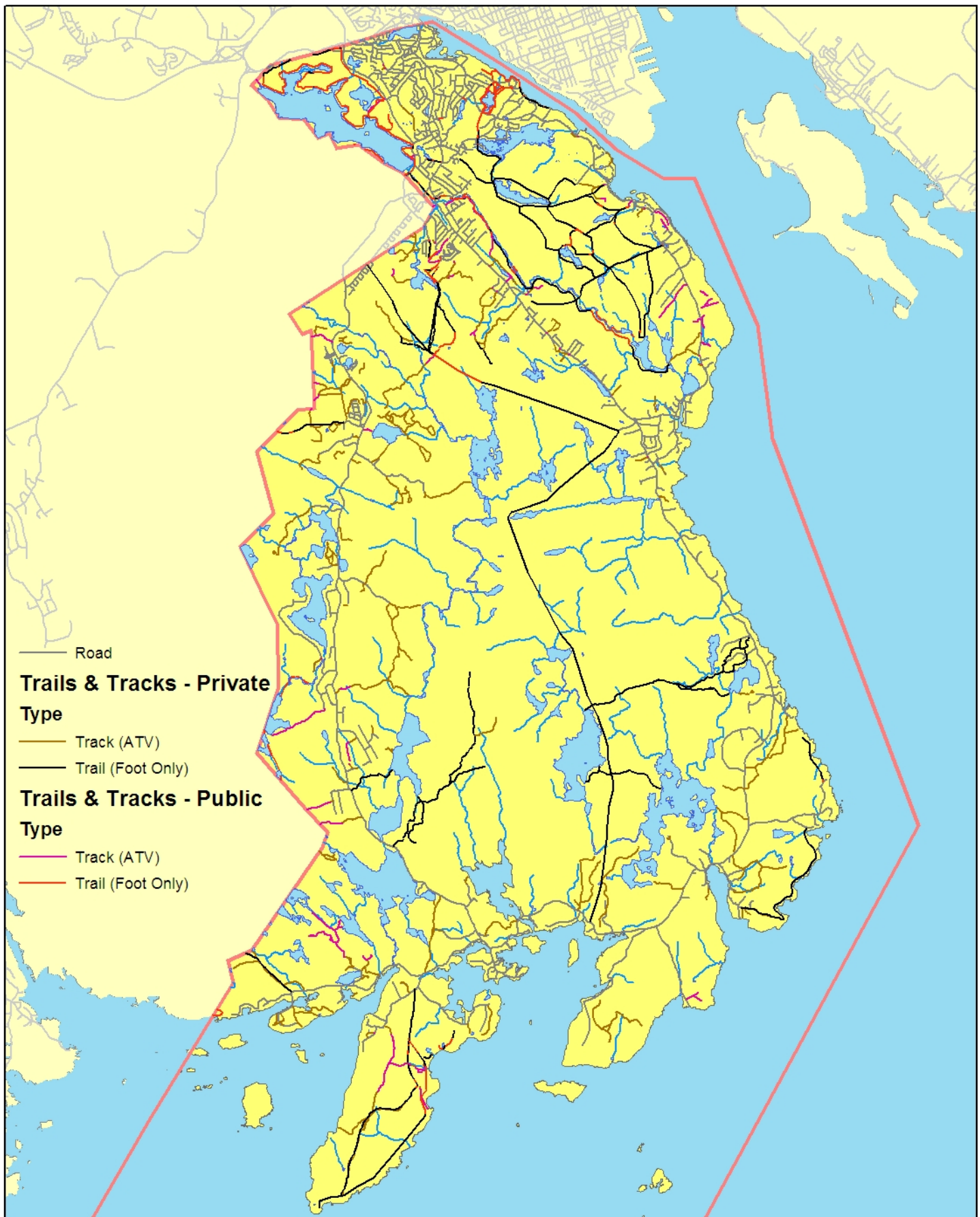
Eastern Chebucto Peninsula

Percent Slope



0 0.5 1 2 3 4 Kilometers

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Map prepared by:
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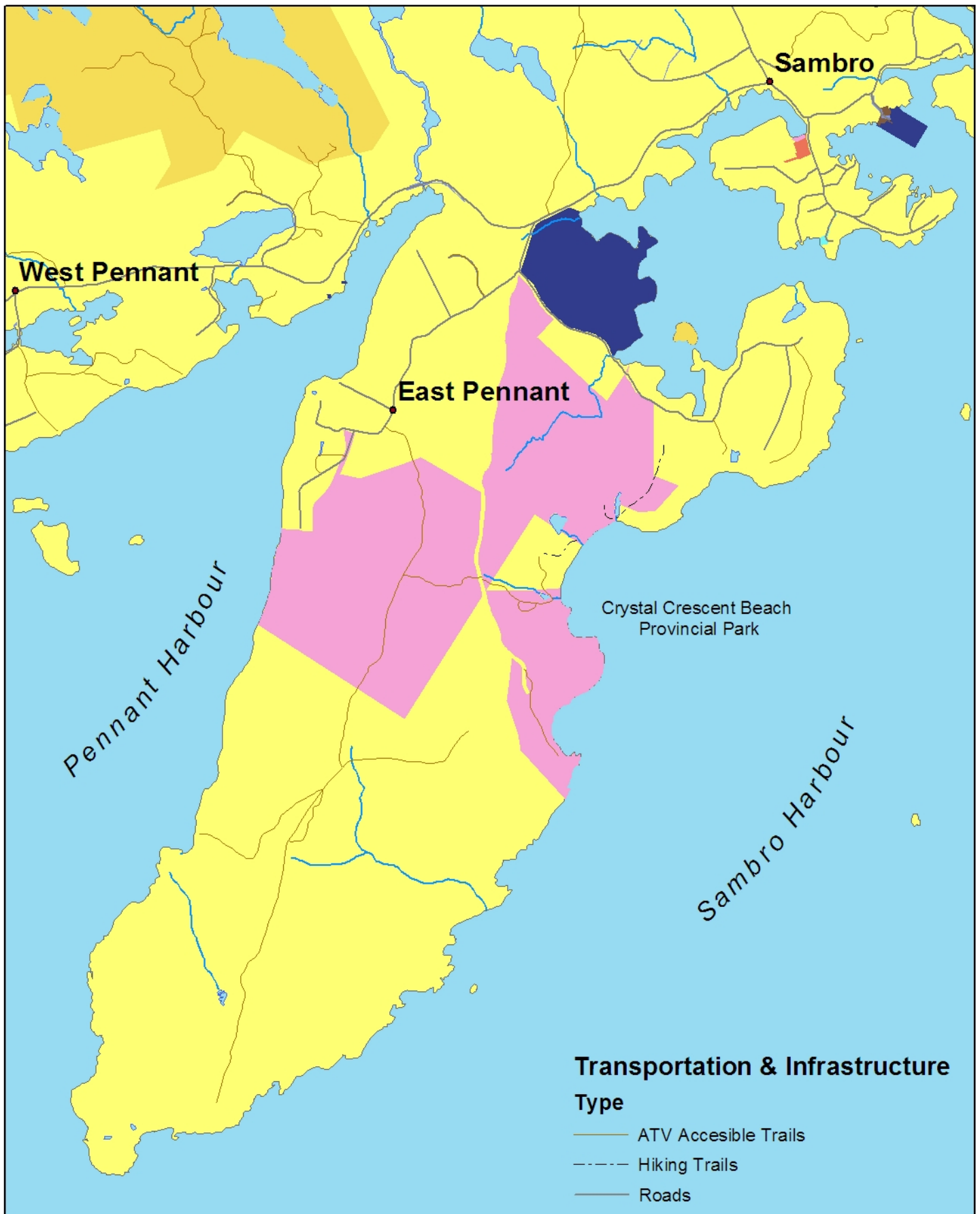


Eastern Chebucto Peninsula Transportation Infrastructure



0 0.5 1 2 3 4 Kilometers

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Halifax Regional Municipality
Map prepared by:
Peter Green



Eastern Chebucto Peninsula

Crystal Crescent Beach



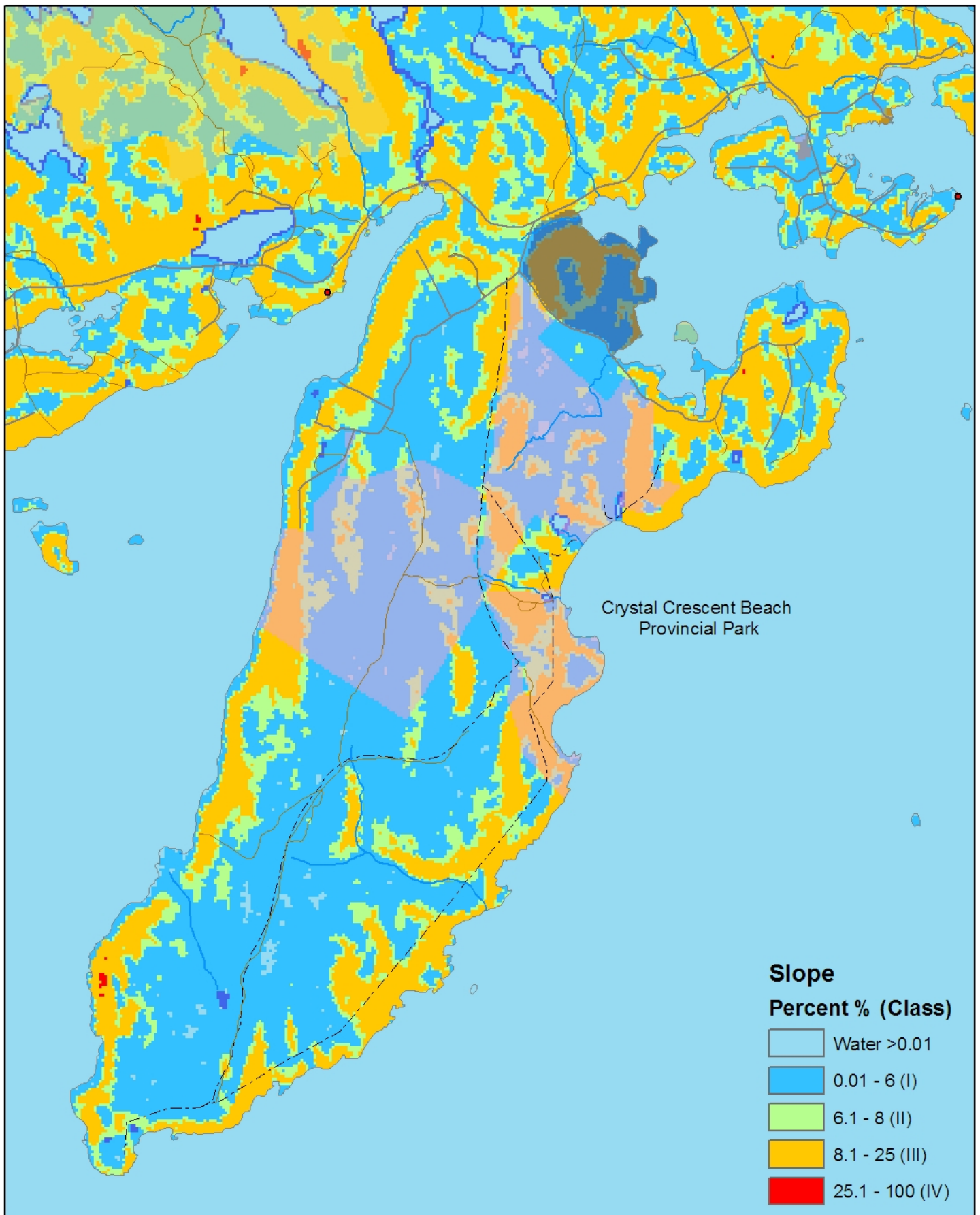
0 0.125 0.25 0.5 0.75 1 kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



Appendix J: Table 8 – Selected Site Characteristics

Site Location	Accessible	Area (Ha)	Coastline Length (km)	Site Interest	Managing Responsibility	Slope Class	Appendix
Georges Beach	No	1.17	0.16	Beach	Private	III	L/M
Cooks Head	No	0.22	0.22	Beach	Private	I	L/M
Pennant Harbour	Yes	0.07	0.02	Lighthouse	DFO, Transport Canada	II and III	O/P
Crystal Crescent Beach	Yes	188.21	2.13	Beach, Hiking, Park	DNR	I, II and III	I/K
Pennant Point Federal Communications Tower	No	28.14	1.5	Telecommunications Tower	DFO	I, II and III	CC/DD
Sambro Island	Yes	9.93	2.24	Lighthouse	Transport Canada and Coast Guard	I, II and III	Q/R
Chebucto Head	Yes	7.85	2.83	Lighthouse	Chebucto Head Lighthouse Society	III and IV	S/T
Naval Damage Control Center	No	52.83	1.23	Naval Training Centre	DND	III and IV	W/X
York Redoubt National Park	Yes	72.78	0.98	National Park – Historic Naval Defences	Parks Canada	I, II, III and IV	W/X
Sir Sanford Fleming Park	Yes	48	1.22	Municipal Park, Dingle Tower	HRM	III	Y/Z
Community of Sambro	Yes	2.77	0.10	Wharf	DFO, Public Works Canada, NS Department of Transport and Public Works	NA	AA/BB
Community of Sambro	Yes	0.24	0.04	Lighthouse	Transport Canada	I	AA/BB
Community of Sambro	Yes	0.21	0.04	Boat Slip	Transport Canada	NA	AA/BB
Community of Sambro	Yes	0.74	0.06	School	HRM, DNR	I	AA/BB
Community of Herring Cove	Yes	NA	0.01	Wharf	Transport Canada	NA	U/V



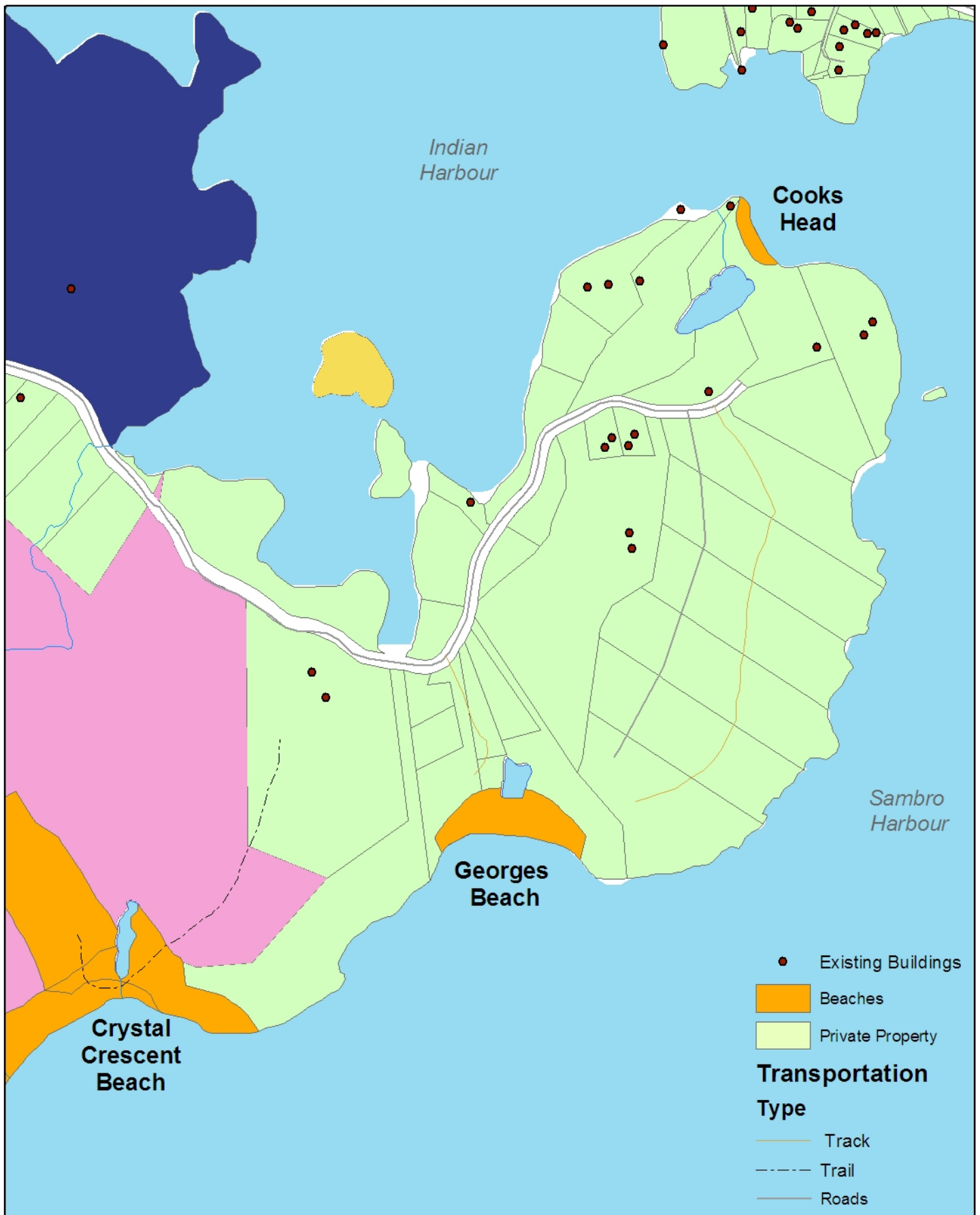
Eastern Chebucto Peninsula

Crystal Crescent Beach Slope



0 0.125 0.25 0.5 0.75 1 kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



Eastern Chebucto Peninsula

Beaches



0 50 100 200 300 400 Meters

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



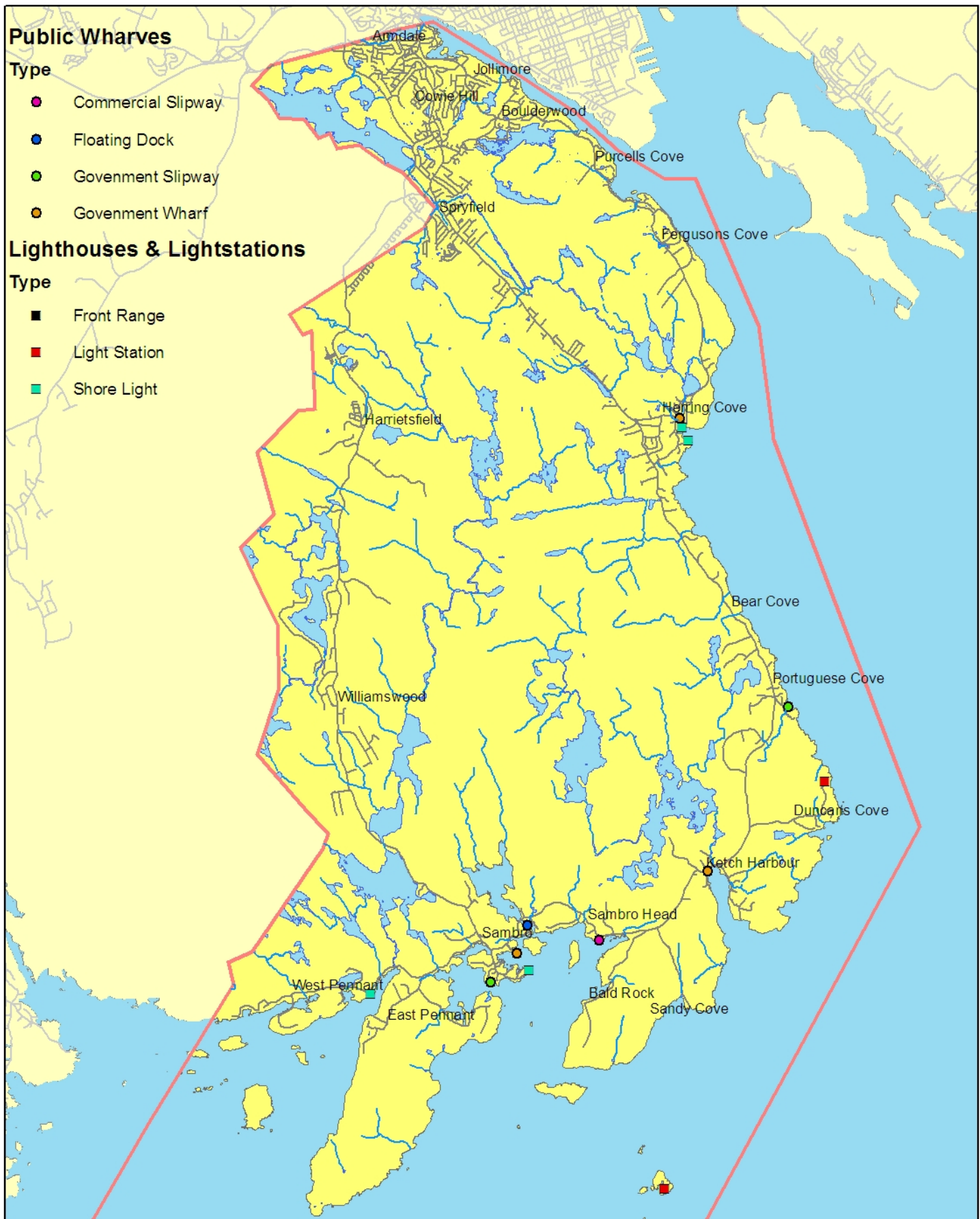
Eastern Chebucto Peninsula

Beaches - Slope



0 50 100 200 300 400 Meters

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



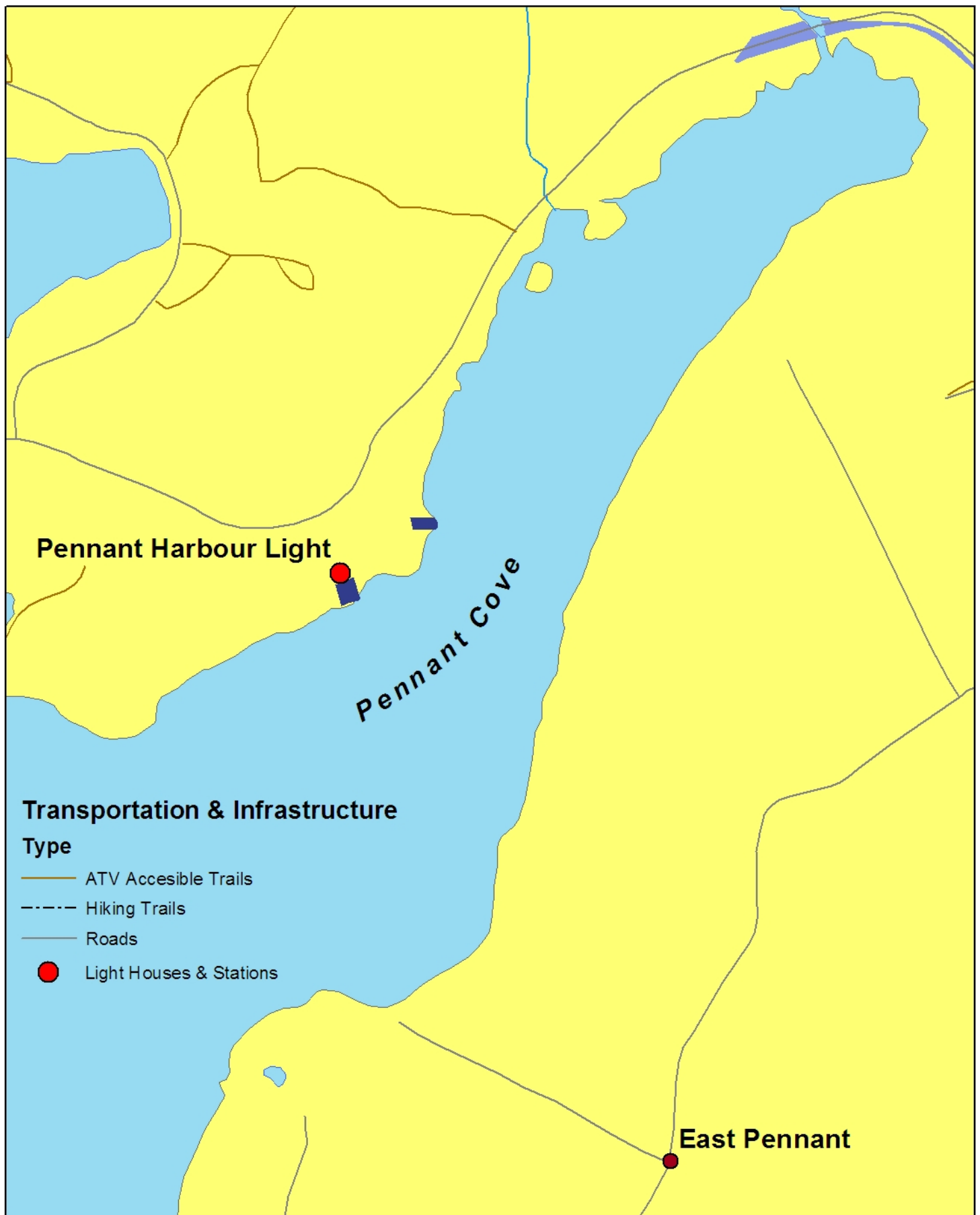
Eastern Chebucto Peninsula

Wharves, Lighthouses & Lightstations



0 0.5 1 2 3 4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green

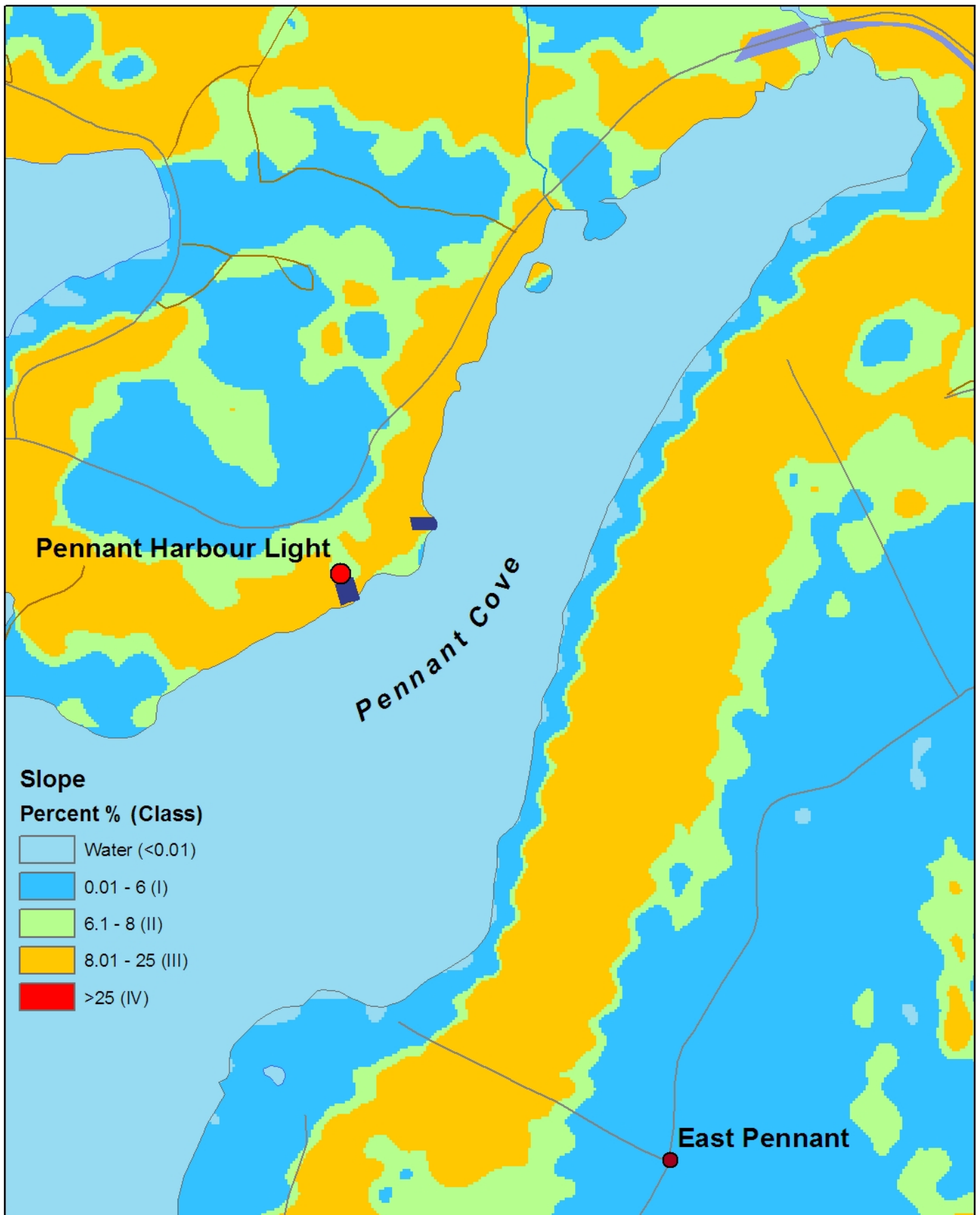


Eastern Chebucto Peninsula

Pennant Harbour Light Slope

0 0.025 0.05 0.1 0.15 0.2 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green

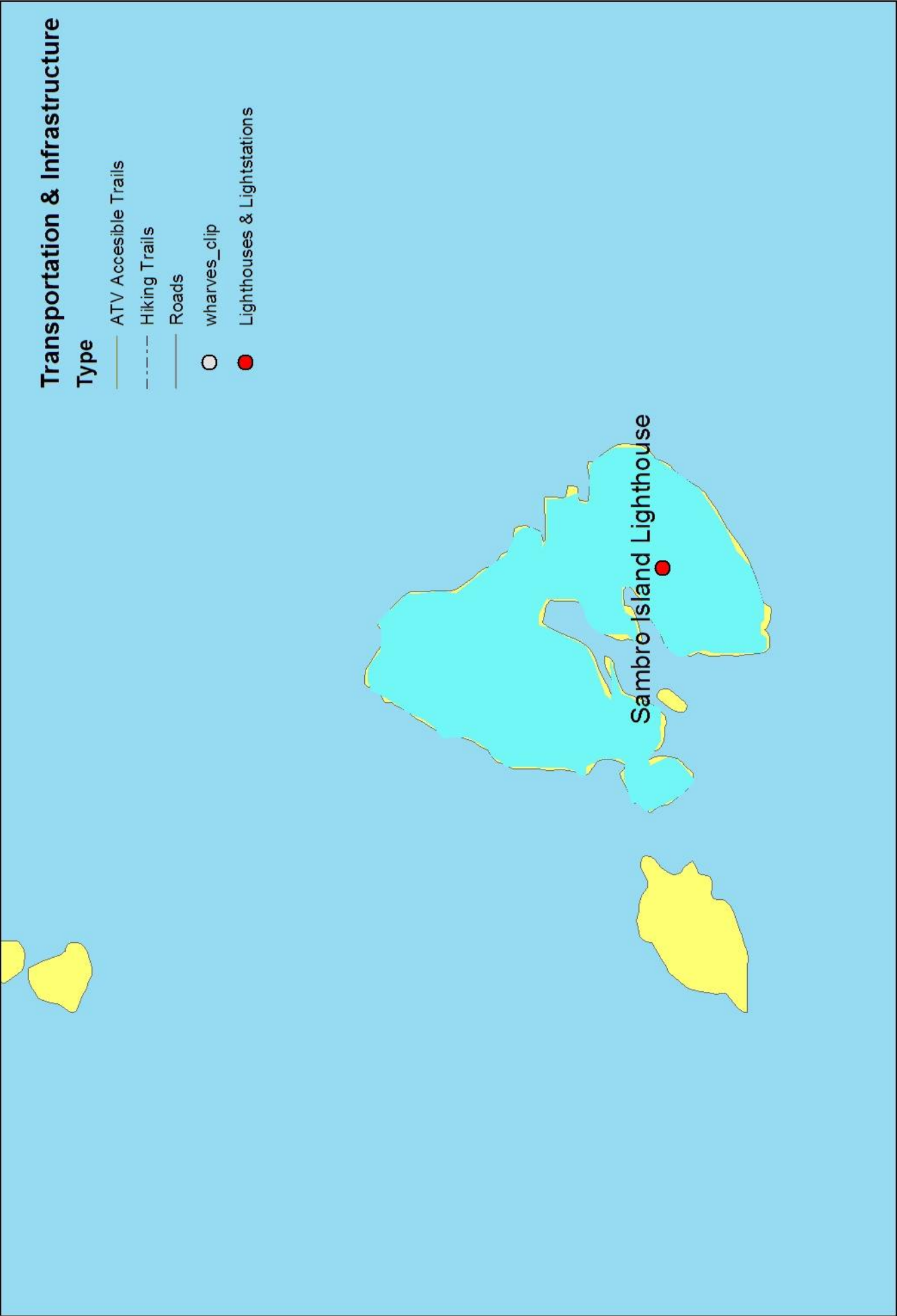


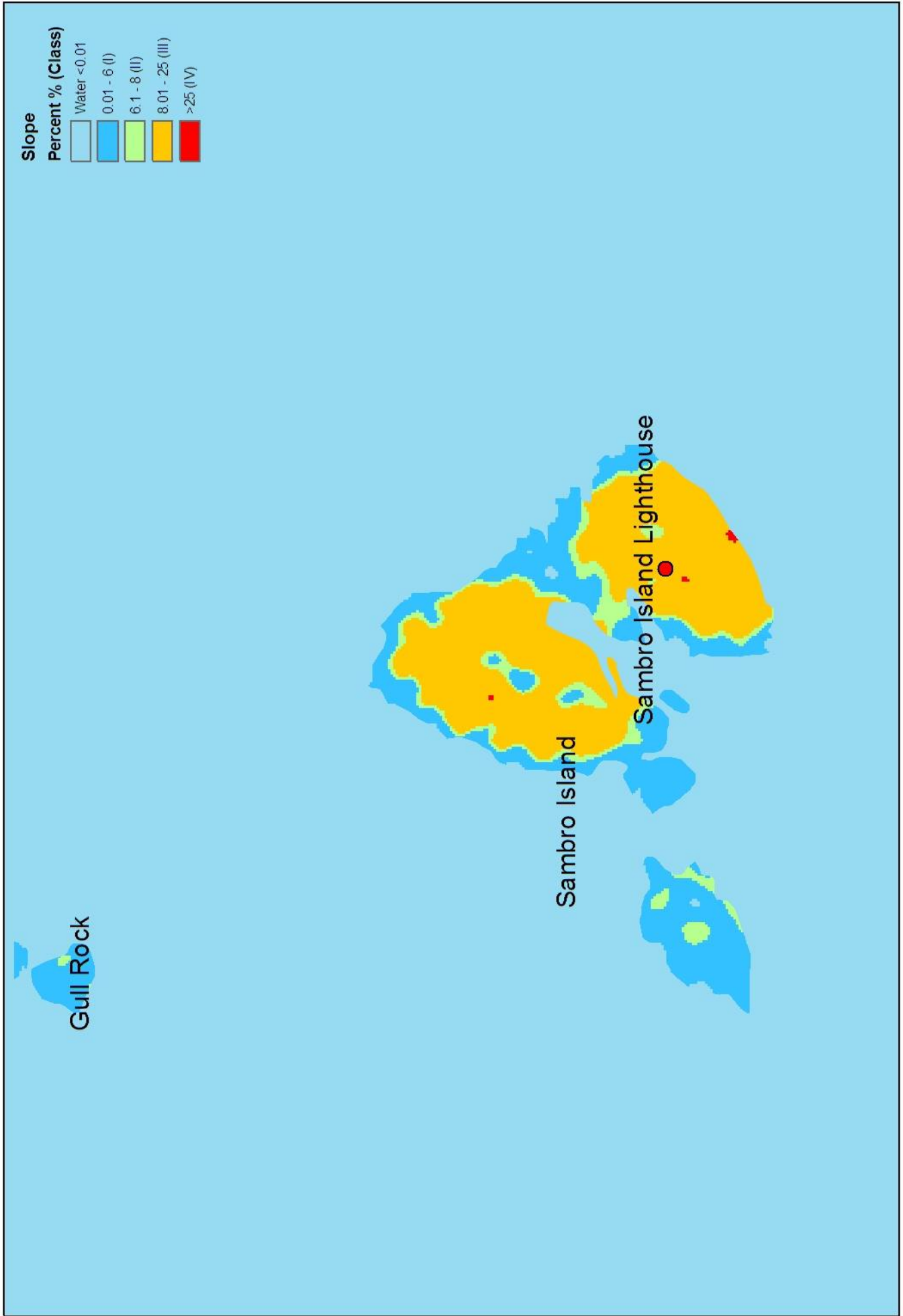
Eastern Chebucto Peninsula

Pennant Harbour Light Slope

0 0.025 0.05 0.1 0.15 0.2 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



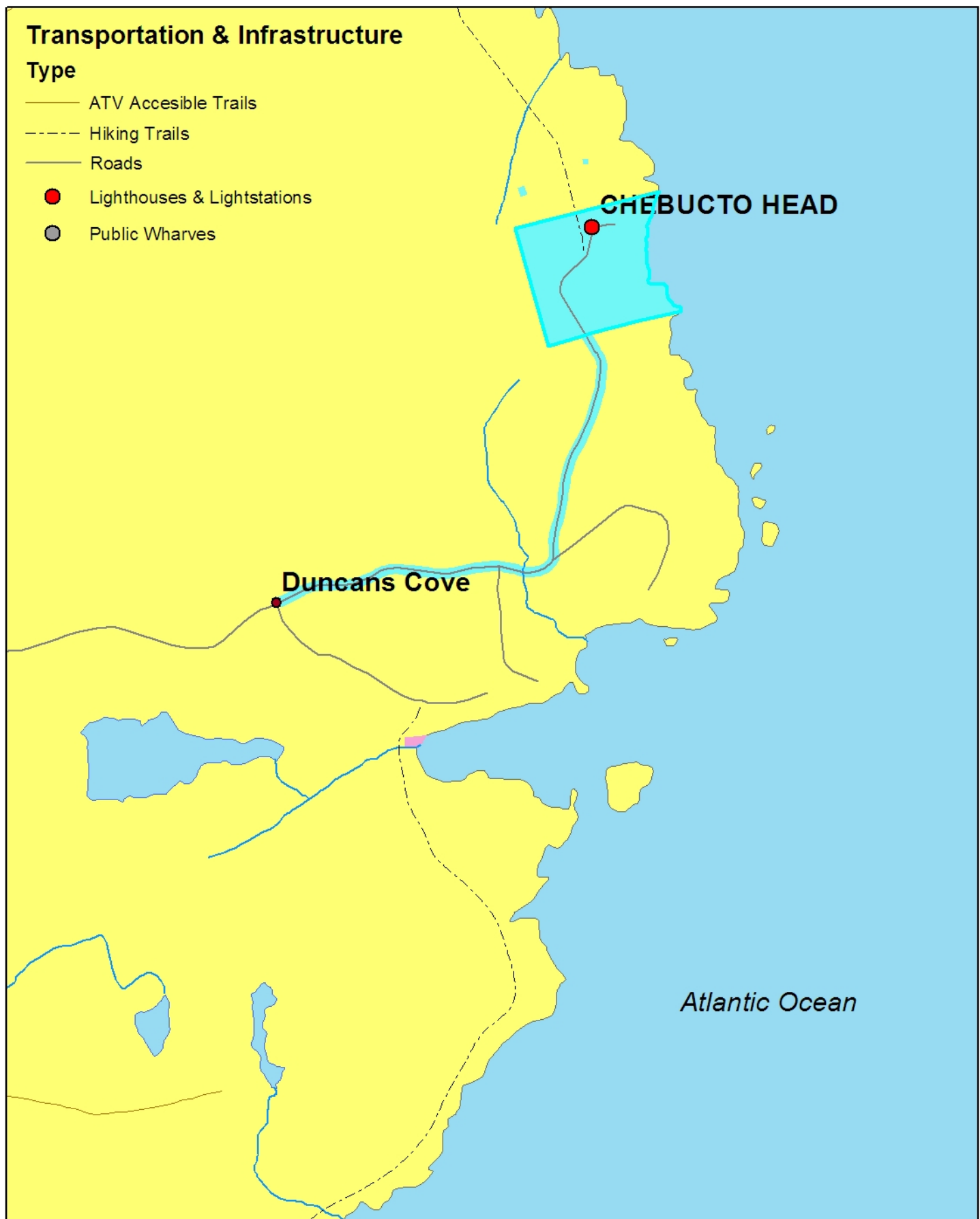


Eastern Chebucto Peninsula

Sambro Island Lighthouse - Slope

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green





Eastern Chebucto Peninsula

Chebucto Head Lighthouse - Duncan's Cove

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green

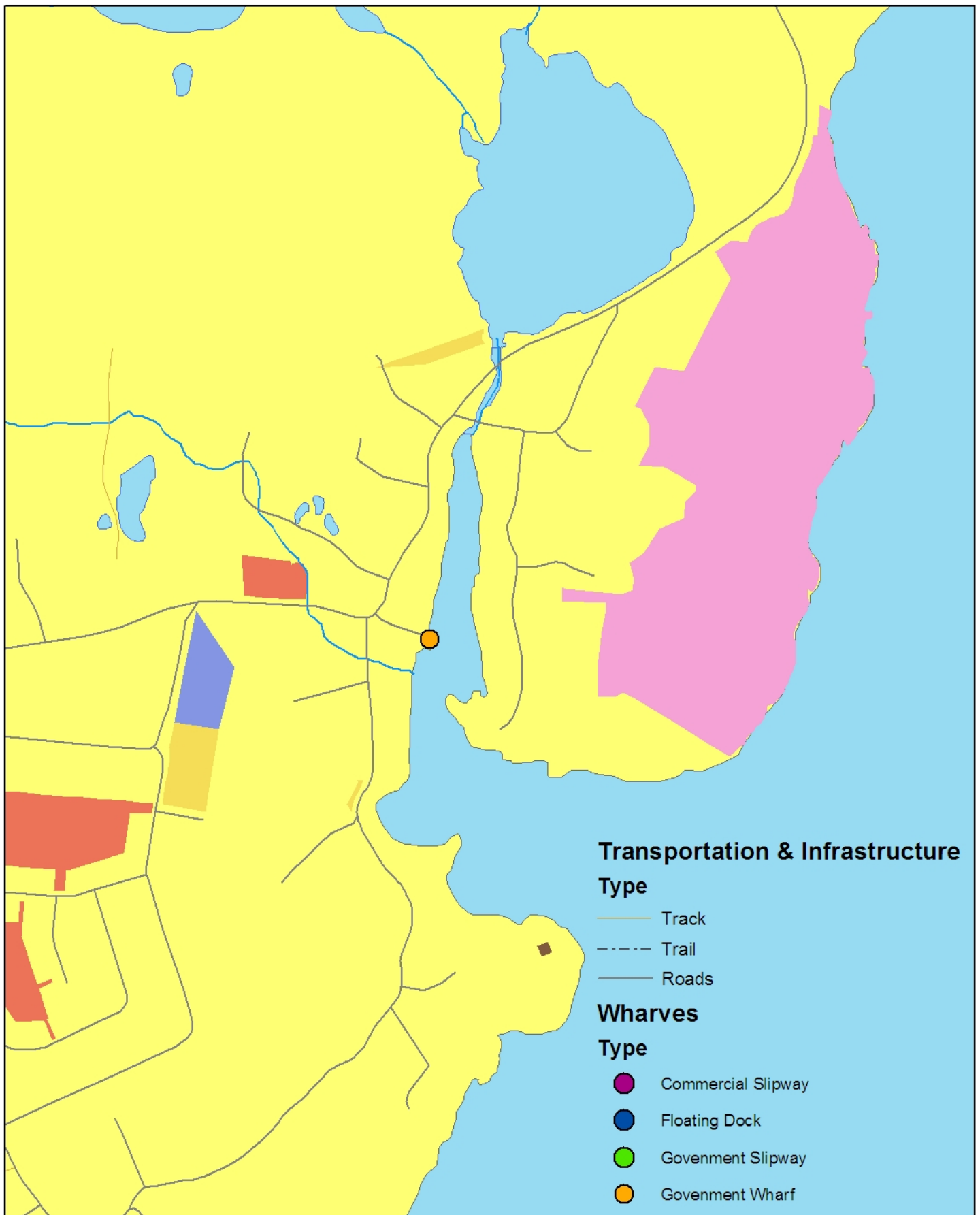


Eastern Chebucto Peninsula

Chebucto Head Lighthouse - Duncan's Cove - Slope

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



Eastern Chebucto Peninsula

Herring Cove Wharf



0 50 100 200 300 400 Meters

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



Eastern Chebucto Peninsula

Herring Cove Wharf Slope



0 50 100 200 300 400 Meters

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green

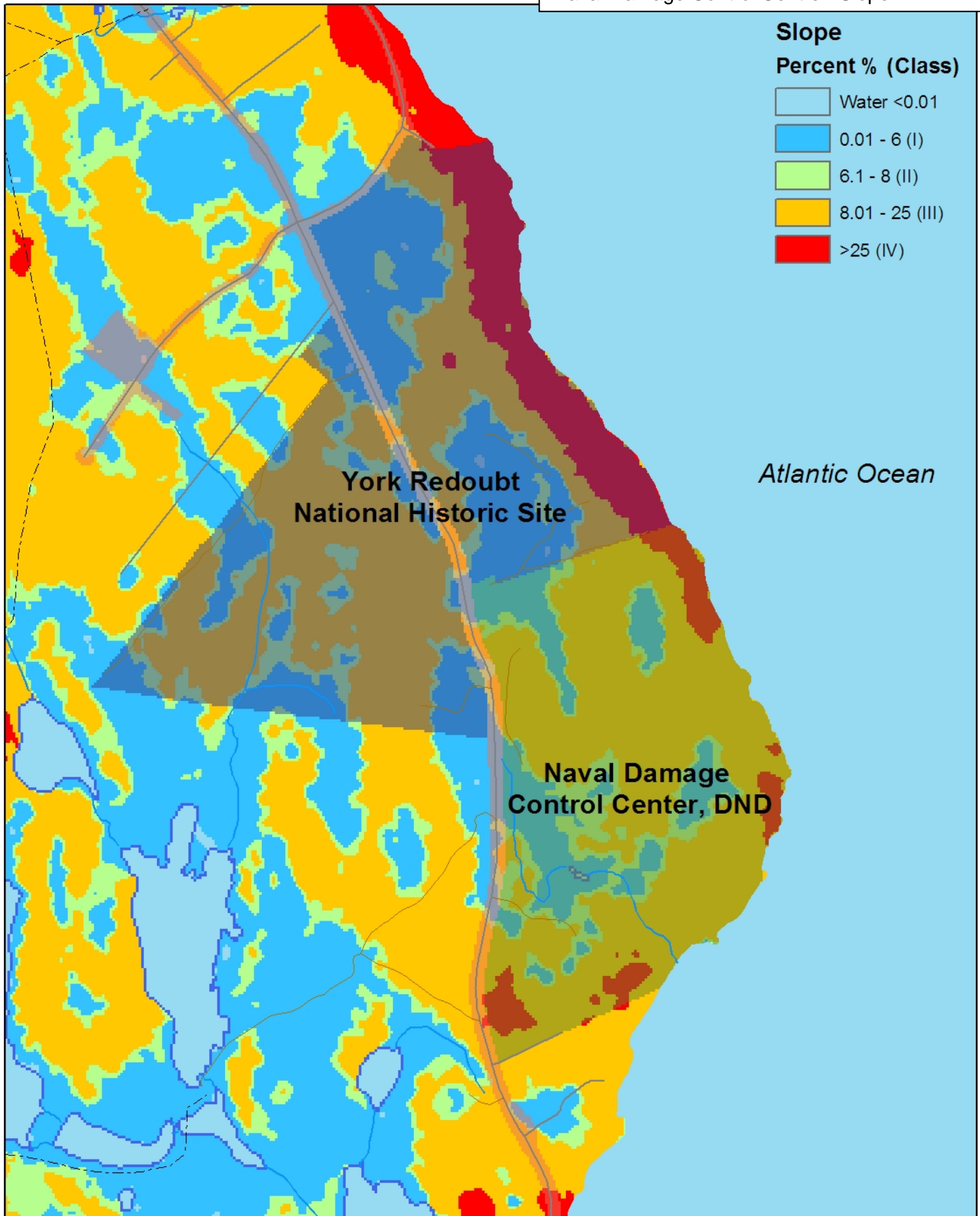


Eastern Chebucto Peninsula

Naval Damage Control Center, DND
York Redoubt National Historic Site

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green

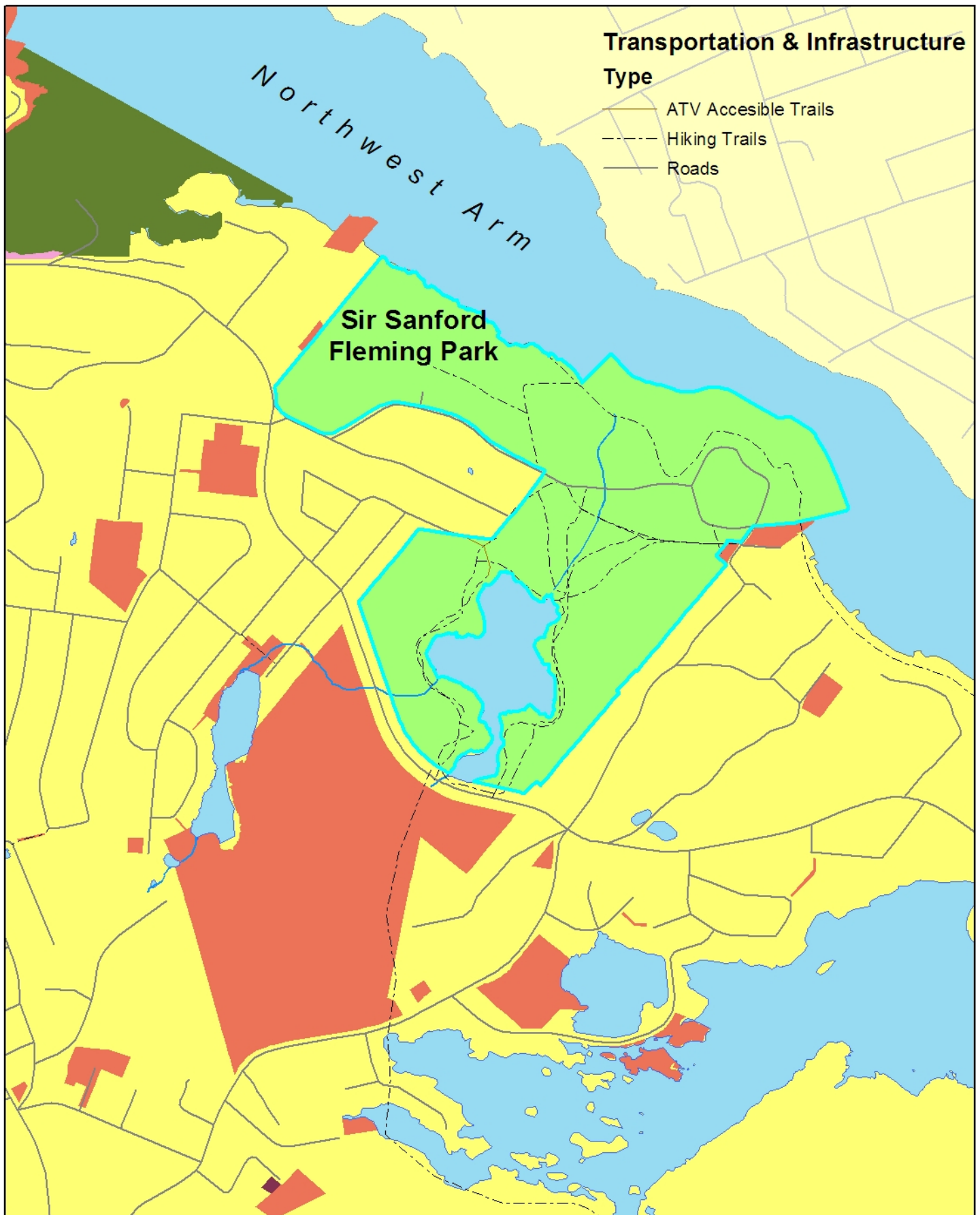


0 0.05 0.1 0.2 0.3 0.4 Kilometers

Eastern Chebucto Peninsula

Naval Damage Control Center, DND
York Redoubt National Historic Site

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green

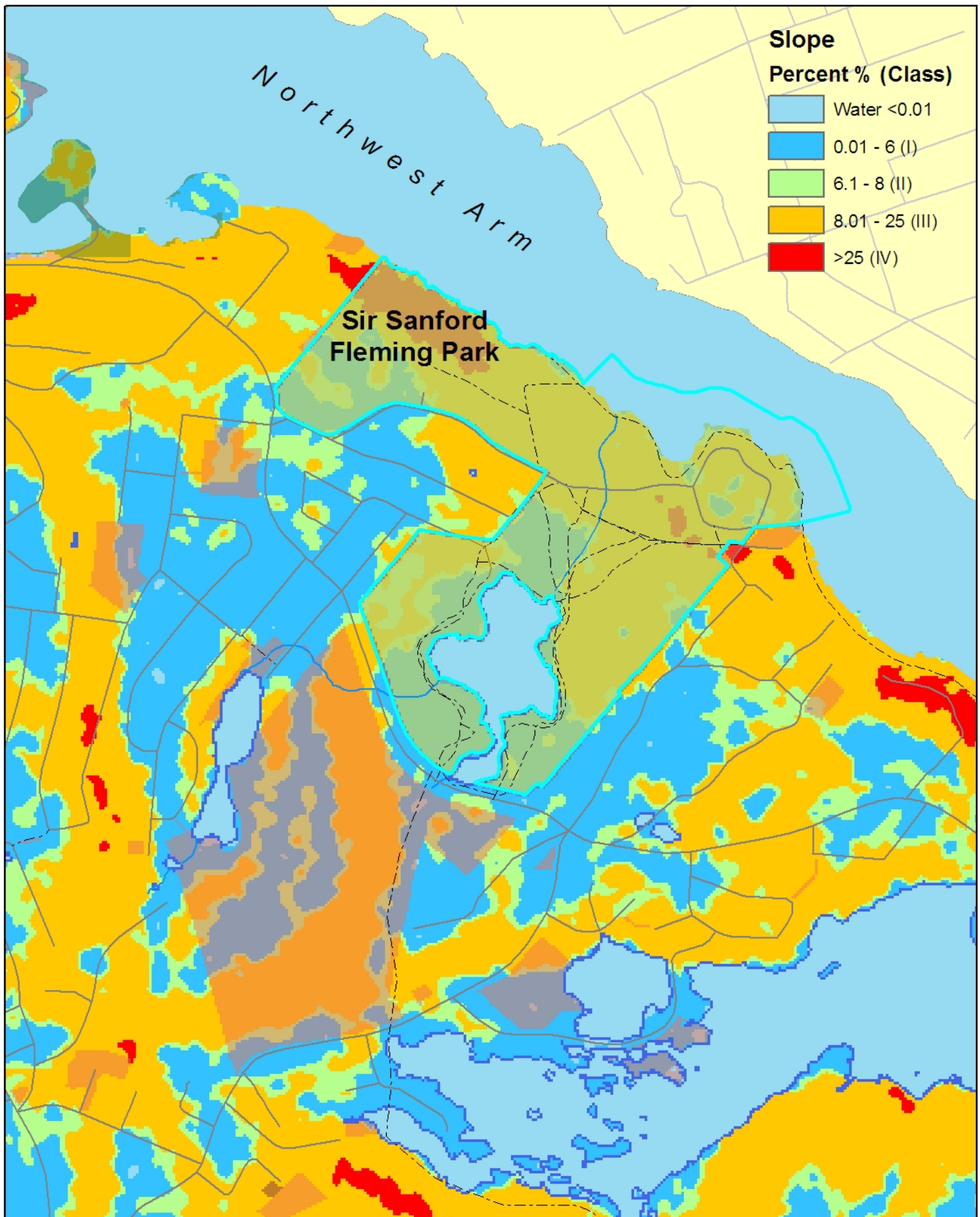


Eastern Chebucto Peninsula

Sir Sanford Fleming Park

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green

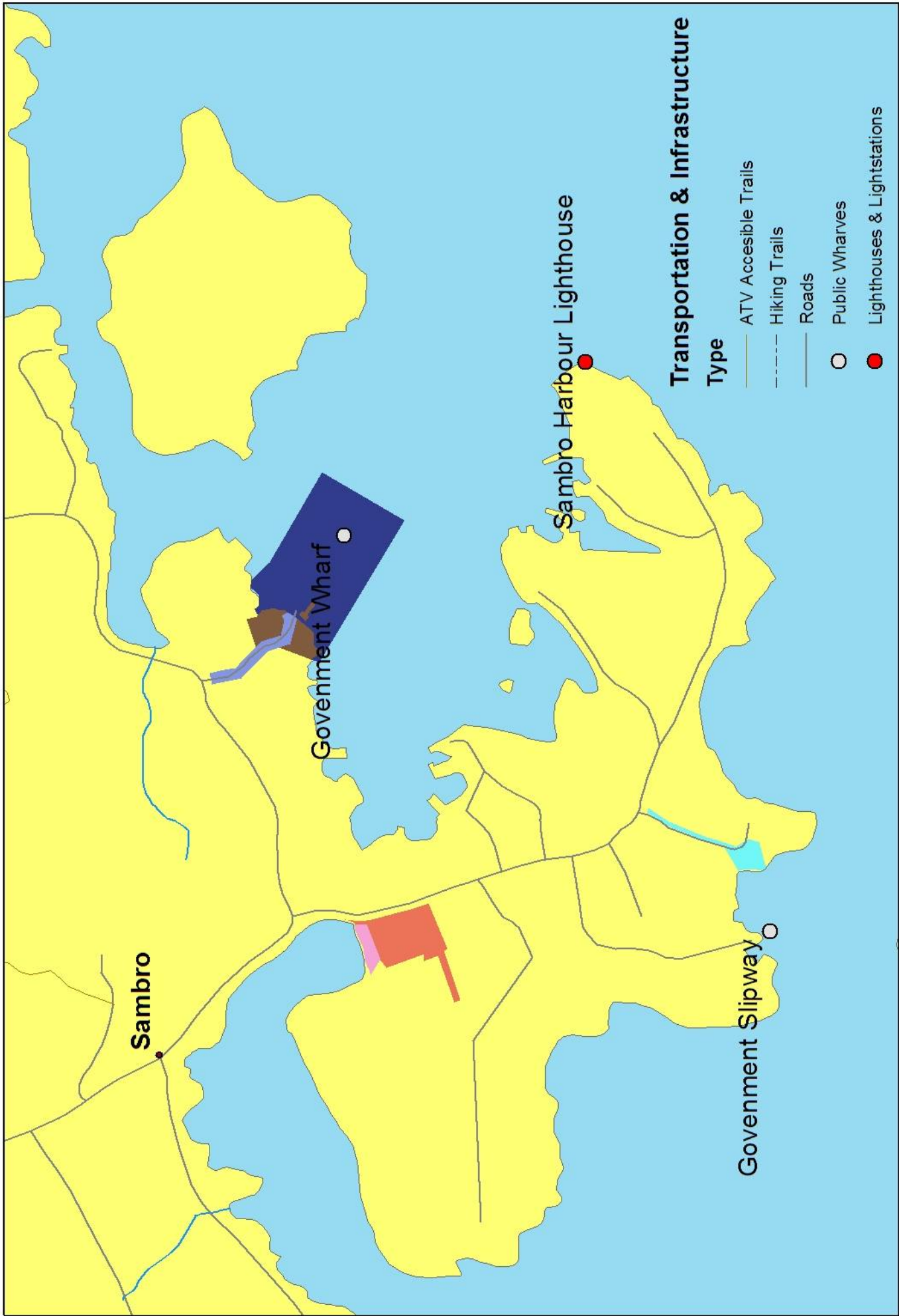


Eastern Chebucto Peninsula

Sir Sanford Fleming Park - Slope

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



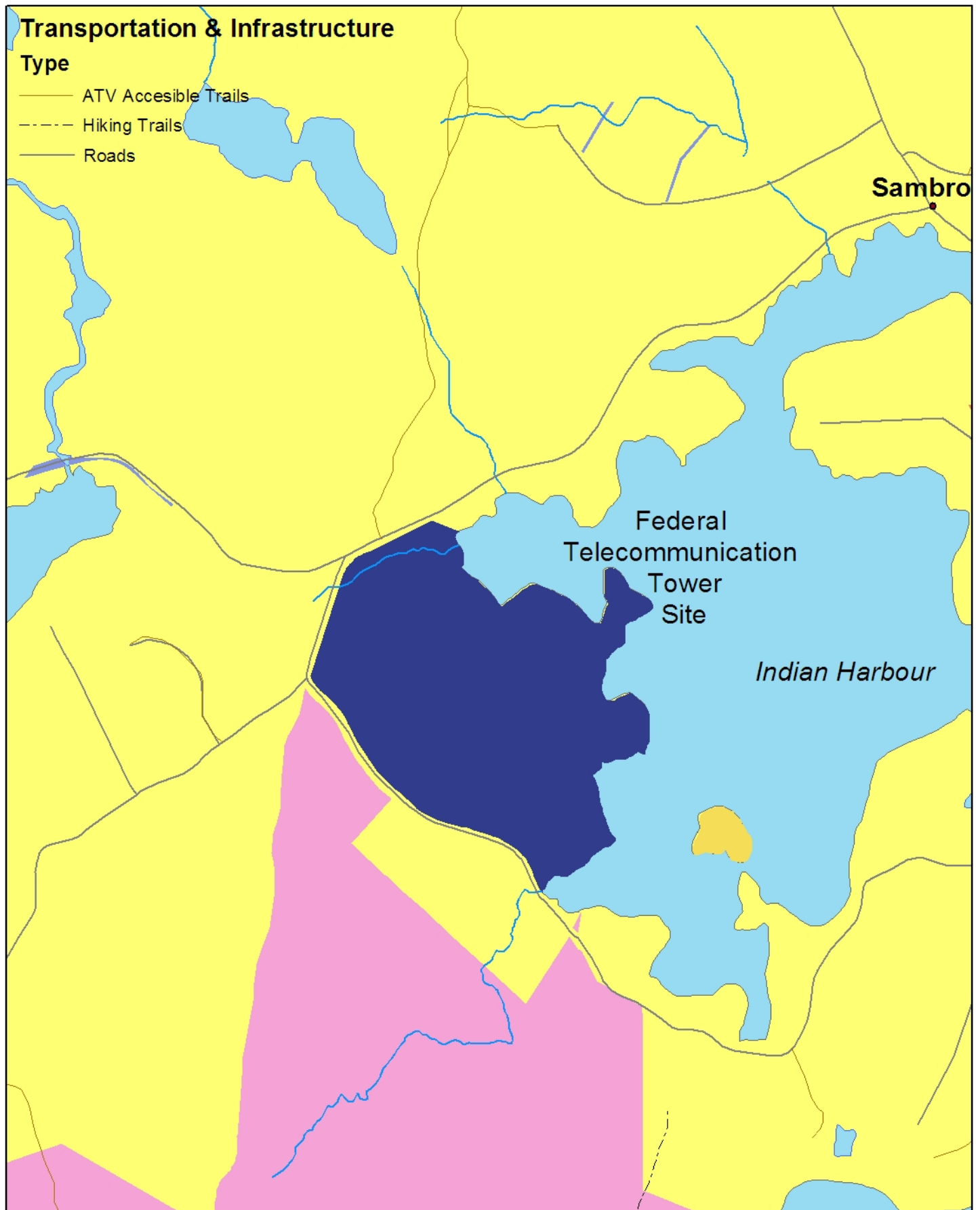
Eastern Chebucto Peninsula

Sambro - Public Access Opportunities



Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



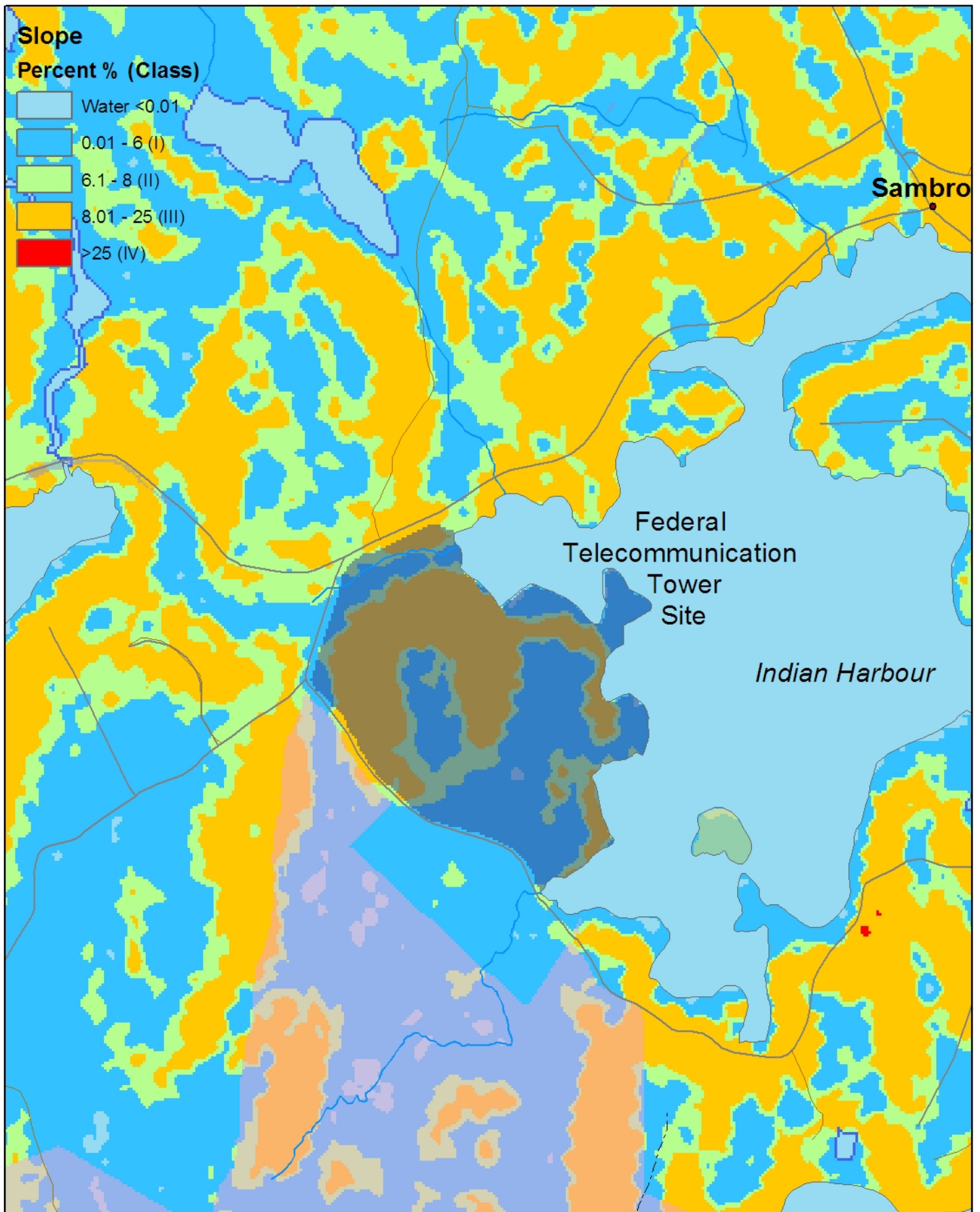


Eastern Chebucto Peninsula

Federal Communication Tower

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green



Eastern Chebucto Peninsula

Federal Telecommunication Site

0 0.05 0.1 0.2 0.3 0.4 Kilometers

Data provided by:
Halifax Regional Municipality
Map prepared by:
Peter Green





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