

**An Analysis of the Effectiveness of the
Niagara Escarpment Plan in Protecting
Georgian Bay Shoreline within the
Municipality of Northern Bruce Peninsula
Bruce County, Ontario**

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Background and Purpose

The purpose of the Niagara Escarpment Plan (NEP) is “*to provide for the maintenance of the Niagara Escarpment and land in its vicinity substantially as a continuous natural environment, and to ensure only such development occurs as is compatible with that natural environment.*” One of the more spectacular and ecologically significant parts of the Niagara Escarpment Plan Area is the Georgian Bay shoreline of the Bruce Peninsula.

Undeveloped shoreline on the lower four Great Lakes was already becoming increasingly rare by the time the Niagara Escarpment Planning and Development Act was enacted in 1973. Development pressures have continued since that time as more shoreline areas have been developed for cottages, permanent residences and commercial uses. In recent years awareness has increased regarding the ecological significance of undeveloped Great Lakes’ shoreline and the special habitats, such as alvars and fens, associated with them. The importance of protecting as much as possible of the remaining natural shoreline areas is now obvious.

The purpose of this study is to examine and evaluate the effectiveness of the NEP in protecting increasingly rare undeveloped Great Lakes’ shoreline. As one means of gauging the effectiveness of the NEP, the study will compare and contrast shoreline development in the Municipality of Northern Bruce Peninsula along Georgian Bay (within the NEPA) and along Lake Huron (outside the NEPA). Both the Lake Huron and Georgian Bay shorelines were included in the Niagara Escarpment Planning Area, which was established in 1974 as an area within which controls to protect the escarpment landscape could be developed. The NEPA, which is the area in which the Niagara Escarpment Plan has effect is 63% smaller than Niagara Escarpment Planning Area, and includes only the eastern part of the Bruce Peninsula.

Details on the study methodology are provided below.

Methodology

This study provides a quantitative analysis of the amount of new development (cottage subdivisions, commercial operations, roads, etc.) that has occurred along the Georgian Bay and Lake Huron shorelines within and outside the NEPA. It examines changes in the length of shoreline that has been developed since 1974. Factors such as public land ownership, access and environmental/physical constraints to development are considered in the analysis. Details on the specific aspects of the study design follow.

Study Area

The study area is the Lake Huron and Georgian Bay shoreline within the Municipality of Northern Bruce Peninsula. It is located in the northern part of the Bruce Peninsula, in the northern part of Bruce County. The Bruce Peninsula extends north from the Town of Wiarton almost 100 km and separates Lake Huron from Georgian Bay. The Municipality of Northern Bruce Peninsula consists of the former Townships of St. Edmunds, Lindsay and Eastnor, in order from north to south. These former townships will be referenced in our analysis of data to allow more detailed comparison. The map on the following page shows the location of the study area.

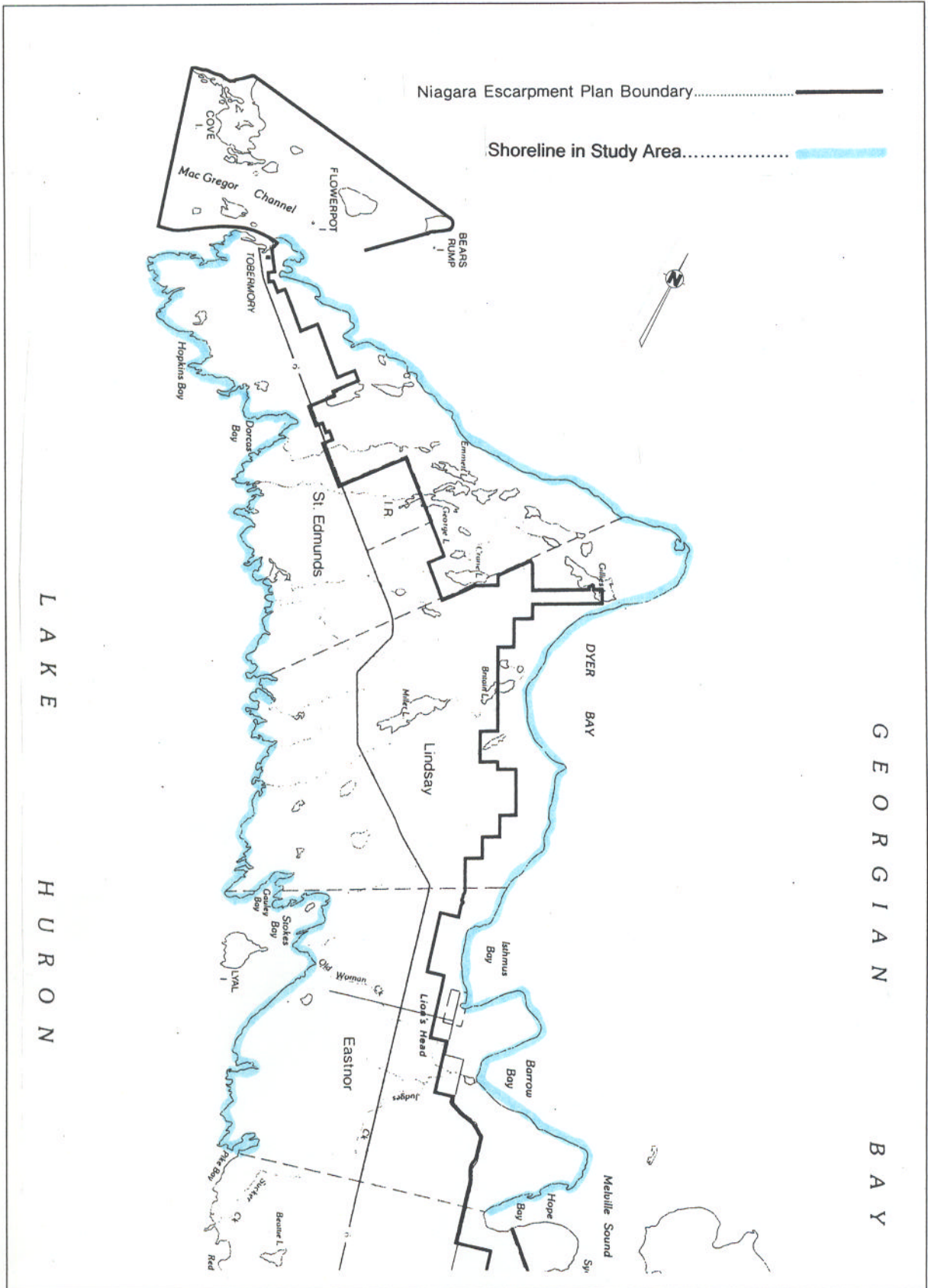
The study area includes parts of the largest woodland complex in south-western Ontario. This 50,000 hectare (125,000 acre) mega-woodland stretches from White Bluff, north of Lion's Head, to the Lake Huron Shore, to just south of Tobermory at the tip of the Bruce Peninsula. It includes a dozen provincially significant Areas of Natural and Scientific Interest (ANSIs) and habitat for many vulnerable, threatened and endangered species. Most of these ANSI include shoreline areas on Lake Huron or on Georgian Bay. The study area contains the highest percentage of natural vegetation cover of any municipality in south-western Ontario.

Excluded from the study area is the shoreline within the community of Tobermory that was developed by 1974 and that is located outside the NEPA. The excluded portion of Tobermory shoreline contains about 5.7 km of shoreline that was developed by the early 1970's; including Big Tub and Little Tub Harbours. Because this portion of Tobermory shoreline is part of a diverse year-round community that is immediately adjacent to the NEPA, this section of shoreline is atypical for the study area. Accordingly, it was deemed appropriate to exclude this section of shoreline from the study, since including it would inflate the percentage of developed shoreline outside the NEPA.

Study Time Frame

It was necessary to establish an initial reference date against which subsequent development could be assessed. A date close to enactment of the Niagara Escarpment Planning and Development Act (1973) and the commencement of Niagara Escarpment Development Control (1975) was desirable. There are some planning records from the Niagara Escarpment Commission (NEC) and the County of Bruce that provide partial information regarding existing development in the 1973 to 1975 period. However, these records are incomplete and do not provide a clear picture of what development existed on the ground as of any specific date.

Study Area Location Map



The best source of information regarding existing development in the 1973 to 1975 era proved to be April 1974 aerial photography of the study area, access to which was generously provided by the Niagara Escarpment Commission's Thornbury office. Photos were available for the whole of the Bruce Peninsula and covered all of the Lake Huron and Georgian Bay shoreline. Because of the availability of this data, April 1974 was selected as the initial reference date for the study. This date also corresponds well with the approval of the Official Plan for the Bruce Peninsula Planning Area (December 1973), which was the first municipal planning document guiding development in the study area. Current development was assessed as of July 2003.

Data Sources

As mentioned earlier, April 1974 aerial photos at a scale of 1:15,840 provided the primary data source for determining existing shoreline development as of April 1974. NEC and municipal record were also consulted. Stereo pairs of aerial photographs, covering the entire length of shoreline within the study area were examined and roads and structures present or sites cleared for development were noted and plotted on Niagara Escarpment Plan maps. While it was not possible to determine the exact kind of structures present using aerial photography, it is known that the large majority of structures present along the Lake Huron and Georgian Bay shoreline within the study area, both in April 1974 and in July 2003, were seasonal cottages.

Current levels of development, as of July 2003, were determined primarily by on site inspection of the entire shoreline within the study area. Drive-by inspections were conducted for all shoreline areas with road access, while other sections were inspected on foot or from water by kayak. Some remote sections, which had been visited by the author within the last two years were not re-inspected, but it was confirmed with municipal and/or NEC staff that no new development had occurred in these areas since the previous inspections. Municipal assessment records, NEC mapping of development permits issued and the Municipality of Northern Bruce Peninsula Street Name and Address Range Map were useful in confirming existing development and directing on-site investigations.

Information on ANSIs was obtained through the report entitled Ecological Survey of the Niagara Escarpment Biosphere Reserve, published by the Ontario Ministry of Natural Resources and the Ontario Heritage Foundation in 1996; and from fact sheets and other information provided by Mr. Bob Gray, Area Ecologist for the Owen Sound office of the Ontario Ministry of Natural Resources.

Staff of the Ontario Ministry of Natural Resources Ecological Land Acquisition Program provided details on public land holdings. Public Works Canada staff (who are

responsible for land acquisition for the Bruce Peninsula National Park and Fathom Five National Marine Park) also provided information regarding lands acquired for the national parks. Staff of the Escarpment Biosphere Conservancy and the Federation of Ontario Naturalists provided information on lands owned by non-government conservation organizations. Details regarding most of the lands owned by public bodies and conservation organizations were confirmed at the Bruce County Land Registry Office.

Comprehensive Zoning By-Law Number 2002-54 of the Municipality of Northern Bruce Peninsula, provided information on current zoning and areas of planned future development. This information was clarified by consultations with staff of the Niagara Escarpment Commission and the Bruce County Planning Department.

Classifying Level of Development

Three categories were established to classify the level of development of each section of shoreline. To assess how to classify a section of shoreline, all structures located within 120 metres (394 feet) of the shoreline were identified. A fairly sizeable setback was required since the lake Huron shoreline features many areas with broad, flat open expanses of limestone between the water and the vegetation zone, where development is typically located. Based on on-site observations, it appears that structures located further than 120 metres from the shoreline are unlikely to have a significant impact on the ecology of the shoreline zone. In most cases, structures were much closer to the shoreline than 120 metres.

Shoreline areas with five or more cottages per km of shoreline were classified as ***developed shoreline***, even when the majority of lots may have been vacant. The actual length of shoreline between the last developments at either end of a section was measured, as opposed to classifying one kilometre sections as either developed or undeveloped. The rationale for this criterion is that at a density of five or more developed parcels per km, there are likely to be some significant impacts on the natural characteristics of the shoreline zone. In all of the sections of shoreline classed as developed, some form of road access was present close to the shore. In most areas classed as developed the density was far higher than five developed parcels per km. The length of developed shoreline within each of the former townships in the study area was measured and recorded.

The second category was ***undeveloped shoreline***, these areas were free of structural development. Any structure-free section of shoreline 500 metres in length or longer was classed as undeveloped, again with the actual length of each structure-free section being measured. The rationale for excluding shorter sections of undeveloped shoreline

was that such areas were unlikely to be free of the influence of nearby developments. The length of undeveloped shoreline within each of the former townships in the study area was measured and recorded.

A third category was ***isolated structures***, where fewer than four other structures (not including minor outbuildings) existed within one km in either direction of the structure. Shoreline with isolated structures was included in the measurements for undeveloped shoreline, but the number of isolated structures present was recorded for each former township in the study area.

Measurement

The length of shoreline falling into each category was determined by measurement from 1:50,000 scale Niagara Escarpment Plan maps. This scale of map was chosen because it provides sufficient detail to show most shoreline irregularities while requiring much less time to measure from more detailed 1:10,000 scale Ontario Base Maps or large scale aerial photos.

The shorelines of all bays and harbours accessible from Georgian Bay or Lake Huron by water at normal water levels were included in the study area and measured. Little Lake, near Georgian Bay at Barrow Bay, and Lake Scugog, in the southern part of the former Township of St. Edmunds, near Lake Huron, were excluded from the study as these were deemed to be inland lakes, not accessible by water from Lake Huron or Georgian Bay.

Since land ownership by public bodies or non-government conservation organizations would normally protect a section of shoreline from development, it was important to measure this factor to allow for a fair comparison between shoreline areas within and outside the NEPA. Accordingly, the length of shoreline on public lands or lands owned by conservation organizations was measured and recorded.

Similarly, designation of shoreline areas as provincially significant ANSIs could also influence the potential for development of these areas. The Ontario Provincial Policy Statement states that development and site alterations may occur in provincially significant ANSIs *“if it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area is identified.”* Under the Planning Act, municipalities are required to *“have regard to”* the Provincial Policy Statement, which effectively gives the policy statement the status of a non-binding guideline for planning decisions. The length of shoreline located within provincially significant ANSIs within and outside the NEPA was measured for each of the former townships.

The nature of the shoreline in many parts of the portion of the study area within the NEPA is more rugged than the areas outside the NEPA due to the presence of steep escarpment cliffs near the shoreline. To a lesser extent, there are areas on the Lake Huron shore where streams and wetlands would make shoreline development very difficult or impossible. It was recognized that to allow for a valid comparison between the portions of the study area within and outside the NEPA, the length of shoreline that would be either very difficult or impossible to develop needed to be considered in the analysis.

Topographical conditions in the study areas were reviewed with consideration of the potential to build on or near the shoreline and the potential to provide access for such development. It was assumed that those areas that were more difficult to develop than the most topographically challenging shoreline areas which have been developed to date in the study area should be classed as undevelopable. This was a subjective evaluation, based on the author's familiarity with the topographic characteristics of each section of shoreline and knowledge of the development and planning approvals process. No attempt was made to assess the practicality of development of a particular stretch of shoreline from an engineering or cost of development perspective. The figures regarding undevelopable shoreline are rough estimates only, intended to recognize and correct for topographic variability to improve the accuracy and reliability of the analysis.

Results and Analysis

Detailed results regarding the length of developed and undeveloped shoreline within and outside the NEPA for each of the former townships in the study area and for the study area as a whole are provided in the chart on the following page. Results are shown for both April 1974 and July 2003. Also shown on the chart are: the number of isolated structures; the measured length of shoreline owned by public bodies or non-government conservation organizations; the length of shoreline within provincially significant ANSIs; and, the length of shoreline where physical constraints would make development extremely difficult or impossible.

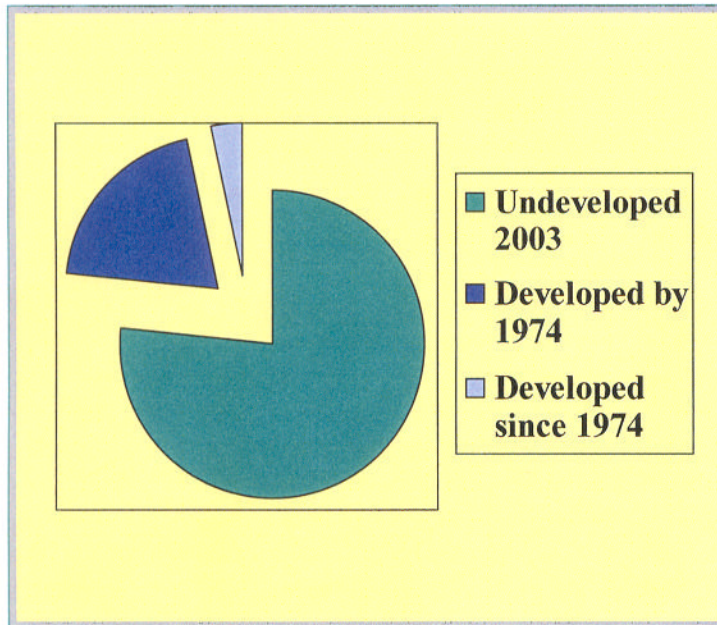
Pie charts showing the length of shoreline developed in 1974; the length that has been developed since 1974; and, the length that was undeveloped as of July, 2003, are included on page 10. These provide a simpler and more visually meaningful illustration of some of the results.

Summary comments and information on shoreline areas already identified for future development are provided at the end of this section.

Summary Chart of Study Results

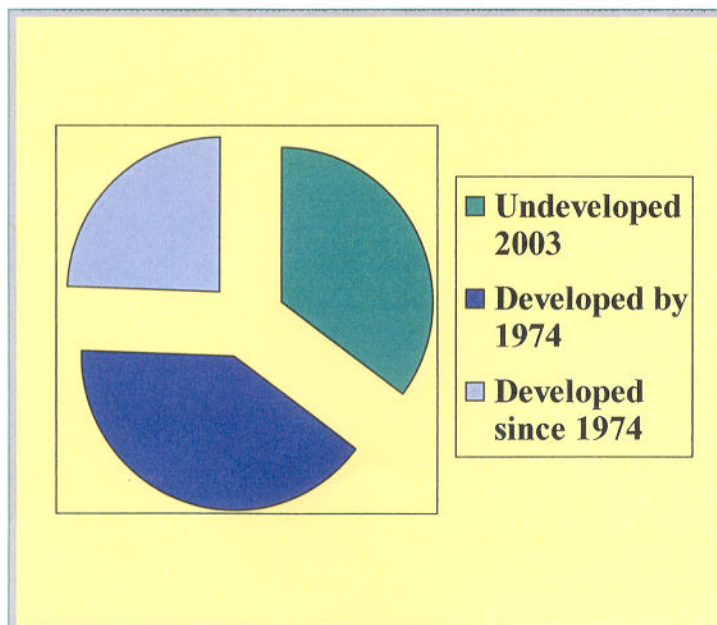
<i>Location</i>	<i>Total Length of Shoreline</i>	<i>Shoreline Developed - 1974</i>	<i>Isolated Structures - 1974</i>	<i>Developed Since 1974</i>	<i>Undeveloped - 2003</i>	<i>Isolated Structures - 2003</i>	<i>Public or Conservation Land</i>	<i>Provincially Significant ANSI</i>	<i>Undevelopable</i>
St. Edmunds - Within NEPA	35.9 km	2.0 km (5.5%)	7	0.5 km (1.4%)	33.4 km (93.0%)	12	21.4 km (59.6%)	27.1 km (75.5%)	14.8 km (41.2%)
St. Edmunds - Outside NEPA	86.7 km	40.6 km (46.8%)	7	22.9 km (26.4%)	23.2 km (26.8%)	3	5.6 km (6.5%)	31.3 km (36.1%)	7.2 km (9.1%)
Lindsay - Within NEPA	34.0 km	8.0 km (23.5%)	3	1.8 km (5.3%)	24.2 km (71.2%)	3	19.0 km (55.9%)	19.3 km (56.8%)	6.8 km (20%)
Lindsay - Outside NEPA	44.3 km	8.5 km (19.2%)	4	4.7 km (10.6%)	31.1 km (70.2%)	7	0.8 km (1.8%)	26.7 km (60.3%)	3.3 km (7.4%)
Eastnor - Within NEPA	38.0 km	11.7 km	1	1.3 km (3.4%)	25.0 km (65.8)	2	13.4 km (35.3%)	14.9 km (39.2%)	11.9 km (31.3%)
Eastnor - Outside NEPA	49.7 km	23.7 km (47.7%)	2	16.8 km (33.8%)	9.2 km (22.7%)	0	2.3 km (4.6%)	2.2 km (4.4%)	0 km
Entire Study Area - Within NEPA	107.9 km	21.7 km (20.1%)	11	3.6 km (3.3%)	82.6 km (76.6%)	17	53.8 km (49.9%)	61.3 km (56.8%)	33.5 km (31.0%)
Entire Study Area - Outside NEPA	180.7 km	72.8 km (40.3%)	13	44.4 km (24.6%)	63.5 km (35.1%)	10	8.7 km (4.8%)	60.2 km (33.3%)	10.5 km (5.8%)

Shoreline Development – Municipality of Northern Bruce Peninsula, Within NEPA



- 107.9 km of shoreline
- 21.7 km developed by 1974 (20.1%)
- 11 isolated structures in 1974
- 3.6 km developed since 1974 (3.3%)
- 17 isolated structures in 2003
- 76.6% undeveloped in 2003

Shoreline Development – Municipality of Northern Bruce Peninsula, Outside NEPA



- 180.7 km of shoreline
- 72.8 km developed by 1974 (40.3%)
- 13 isolated structures in 1974
- 44.4 km developed since 1974 (24.6%)
- 10 isolated structures in 2003, 5 new since 1974, 8 from 1974 are now in developed areas
- 35.1% undeveloped in 2003

The pie charts on the preceding page provide a useful summary of the raw data on changes in shoreline development within and outside the NEPA since 1974. The charts illustrate the effectiveness of the Niagara Escarpment Plan in limiting new shoreline development and preserving natural shoreline characteristics. They show clearly that much more shoreline development has occurred outside the NEPA than within it. This is true both in absolute terms, 44.4 km developed outside NEPA since 1974 versus 3.6 km within NEPA, and as a percentage of the shoreline as a whole (24.6% developed since 1974 outside NEPA, 3.3% developed within NEPA).

The shoreline areas within the NEPA have a higher percentage of shoreline that is owned by public agencies; shoreline located within provincially significant ANSIs; and shoreline that is undevelopable due to physical characteristics. Many areas satisfy two or more of these characteristics. All of these factors are reasons why one would expect a higher percentage of new development since 1974 outside the NEPA, than inside it. However, these factors alone, or taken together, do not explain the extent of the difference in the level of development within and outside the NEPA, as the figures below show.

Excluding undevelopable shoreline areas, 4.8% of the remaining shoreline has been developed since 1974 within the NEPA, compared with 26.1% outside the NEPA.

When Provincially Significant ANSIs are excluded, 7.7% of the shoreline within the NEPA has been developed since 1974 compared with 36.8% outside the NEPA (more than 4.3 km of new development has occurred in ANSIs outside the NEPA, as we will discuss later).

When shoreline areas owned by public agencies or non-government conservation organizations are excluded, 6.7% of the remaining shoreline within NEPA has been developed since 1974, compared with 25.8% outside the NEPA.

There is considerable overlap between areas within provincially significant ANSIs, areas that are undevelopable and areas that are owned by public agencies or non-government conservation organizations. When shoreline areas that fit into any of these three categories are excluded, 8.5% of the remaining shoreline within the NEPA has been developed since 1974, compared with 36.8% outside NEPA.

It is probably not fair to exclude public and conservation organization lands entirely, since a positive aspect of the Niagara Escarpment Plan is to promote the creation and completion of the Niagara Escarpment Parks System (NEPOSS). With Provincial funding for Niagara Escarpment Park and Open Space System Acquisitions, federal support for acquisitions for the Bruce Peninsula National Park, and money raised by non-government organizations such as the Bruce Trail Association, over 20 km of

shoreline has been acquired since 1974. Over 1.5 km of the shoreline areas protected by these acquisitions were in the Escarpment Recreation Area designation, and would almost certainly have been developed with cottages, if not acquired as part of the NEPOSS. Similarly, many acquisitions by public agencies and conservation have protected shoreline areas against the less intensive development which may be permitted in shoreline areas with road access located within the Escarpment Natural Area designation. For example, The Bruce Trail Association (BTA) protected 2.7 km of shoreline south-east of Barrow Bay in the former Township of Eastnor through two property purchases, one of which had provincial funding support. The province also financed another 3 acquisitions by the BTA near the Devil's Monument, south of Dyer's Bay in Lindsay Township. These purchases protected 1.5 km of shoreline and led to the creation of a new access park.

Non-government conservation groups such as the Escarpment Biosphere Conservancy and the Federation of Ontario Naturalists have been active in acquiring significant natural areas along the Lake Huron shore in recent years. The Federal Government has also acquired some Lake Huron shoreline properties within the former Township of St. Edmunds for the Bruce Peninsula National Park. However, since 1974, significantly more shoreline has been protected through acquisition by government bodies or conservation organizations within the NEPA than outside the NEPA, due in large part to provincial funding support through the Niagara Escarpment Program.

Looking beyond the statistics themselves, it is worth noting that almost all of the new shoreline development that has occurred within the NEPA since 1974 has been located within the Escarpment Recreation Area designation. This designation is specifically intended to recognize existing areas developed with shoreline recreational uses, primarily cottages; and, to accommodate future planned development and limited expansion of existing cottage areas.

Two examples where new shoreline development within the NEPA has occurred outside the Escarpment Recreation Area were identified. The most recent example dates from 2000. It involves a three acre parcel created through the merger of two 1.5 acre parcels located on the shoreline north of White Bluff in the northern part of the former Township of Eastnor. This property is located within the Smokey Head – White Bluff provincially significant ANSI and is surrounded by public land within the Niagara Escarpment Park and Open Space System. Here, the NEC permitted development above the brow of the escarpment in a location close to an existing cottage that predates the Niagara Escarpment Plan. This development was allowed even though the only access to the property was via a long right-of way across adjacent public lands. The development location is about 100 metres inland from the high water mark. The shoreline area remained undeveloped, as it is inaccessible from the portion of the property above the escarpment. The development itself is unlikely to impact the shoreline portion of the

property, but it is included in the analysis because it met the criteria of being within 120 metres of the shoreline.

Development was permitted on the condition that two existing lots were merged and a third nearby 1.5 acre lot transferred to the Province of Ontario for inclusion within the Parks System. While it can be argued that this development failed to comply with both the specific provisions and the intent of the Niagara Escarpment Plan, the decision to allow development in this location can perhaps be partially justified by the fact that the conditions of approval ensured that two other nearby lots would not be developed.

A second, more significant example occurred in 1986, near the shoreline at Driftwood Cove in the former Township of St. Edmunds. The property in question was part of a very large holding that stretched from Highway 6 to Georgian Bay and included about 2.5 km of undeveloped shoreline. The shoreline area was within the Little Cove – Cave point provincially significant ANSI and part of a 30 km stretch of undeveloped shoreline, with no isolated structures, the longest in the study area. This holding included lands within the Escarpment Natural Area designation (near the shoreline) and the Escarpment Protection Area designation, as well as lands closer to Highway 6 that were outside the NEPA altogether. The Niagara Escarpment Plan (2.2, 2.) directs development to the least restrictive designation on a property, and should have resulted in development on the property being located away from the shoreline and outside the Escarpment Natural Area and the ANSI. However, despite this criterion, approval was given by the NEC for development of a large cottage near the shoreline, along with an access drive from Highway 6 that was more than 3 km long.

Notwithstanding these two examples where the development of single cottages has been permitted in locations which appear to conflict with the intent of the Niagara Escarpment Plan; overall, the record of the Niagara Escarpment Commission and the Niagara Escarpment Plan in protecting and conserving the natural environment of the Georgian Bay shoreline is good. In the NEPA, only two isolated cottages have been permitted outside the Escarpment Recreation Area and within provincially significant ANSIs since 1974. By comparison, outside the NEPA over 4.3 km of shoreline within provincially significant ANSIs has been developed, much of it with shoreline subdivisions, and another 5 isolated developments have occurred. Clearly the Niagara Escarpment Plan has been a much stronger tool for protecting ecologically significant shoreline areas than the Planning Act, the Provincial Policy Statement and municipal policies and planning decisions have provided outside the NEPA.

Comprehensive Zoning By-law Number 2002-54 of the Municipality of Northern Bruce Peninsula was approved in October, 2002. This document identified shoreline areas considered suitable for future development and zones such areas as either Planned Development or Residential. Areas zoned Planned Development, still require specific

proposals and site specific studies before development can occur and some parts of these areas may be excluded from development, although in the past such exclusions have tended to be minor in nature. The new zoning bylaw designates another 23.5 km of shoreline outside the NEPA for future development, including all but 300 metres of the existing undeveloped shoreline in the former Township of Lindsay. By comparison, only 1.2 km of currently undeveloped shoreline within the NEPA is approved for future development, and all of that is located within the Escarpment Recreation Area designation.

Conclusions

The Niagara Escarpment Plan has been highly effective in protecting undeveloped shoreline areas within the NEPA. Only two failures to provide adequate protection for shoreline areas outside the NEPA were identified. Both of these could be linked to decisions by the NEC that, it may be argued, did not follow the letter and intent of the Niagara Escarpment Plan.

In the Municipality of Northern Bruce Peninsula the amount of shoreline development within the NEPA since 1974 has been only a small fraction of what has occurred for portions of shoreline located outside the NEPA in the same municipality. The Niagara Escarpment Plan has also provided much stronger protection for ecologically significant shoreline areas than provincial ANSI designations and policies intended to protect ANSI have accomplished outside the NEPA.

The Niagara Escarpment Plan should continue to provide strong protection to shoreline areas within the NEPA, as long as the Niagara Escarpment Commission does not adopt overly permissive or flexible interpretations of the Plan. In contrast, much of the remaining undeveloped shoreline outside the NEPA is zoned for future development. Outside the NEPA effective long-term protection would appear to depend upon acquisition by conservation organizations or public bodies. This study suggests that there is much to be learned from the success of the Niagara Escarpment Plan in protecting increasingly rare Great Lakes' shoreline within Southern Ontario.