Appendix B

NATURAL HERITAGE DISCUSSION PAPER

March 13, 2019

ESSEX REGION CONSERVATION AUTHORITY

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1.0 INTRODUCTION

1.1 Background

Land use planning within the Town of Kingsville is guided by the Official Plan. As part of the five-year review of the Official Plan a review is needed ensure it is consistent with the latest provincial planning policies and the County of Essex Official Plan. There are also a number of other completed studies and strategies that will need to be reviewed and considered as part of the review of the Official Plan in order to articulate a clear, cohesive vision for the Town. The Town of Kingsville retained the Essex Region Conservation Authority to prepare a Natural Heritage Discussion Paper to inform its Official Plan Review. The purpose of this paper is to be used to inform the Official Plan Review process.

This discussion paper deals with Natural Heritage Features and the Natural Heritage System. The background information that informs this discussion paper is informed from several key documents, reports and policies. However, the history of natural heritage feature and natural heritage system studies in the Essex region has a longer history upon which this discussion paper draws. The following details some of the historical reports and key policy milestones that inform this current discussion paper:

- 1975 Essex Region Conservation Report (MNR, 1975)
- 1983 Ecological Significant Areas report (ERCA, 1983)
- 1994 Update to the Ecologically Significant Areas report (ERCA, 1994)
- 1998 How Much Habitat is Enough? (Environment Canada, 1998)
- 2002 Biodiversity Conservation Strategy (ERCA, 2002)
- 2005 Provincial Policy Statement (MMAH, 2005)
- 2013 Update to the Biodiversity Conservation Strategy, Essex Region Natural Heritage System Strategy (ERCA, 2013)
- 2014 County of Essex Official Plan (County of Essex, 2014)
- 2014 Provincial Policy Statement (MMAH, 2014)

Previous landscape based natural heritage estimates for the Essex Region illustrate the total natural areas coverage of the Town of Kingsville have changed dramatically over time. This figure was re-calculated and reported on in the Essex Region Natural Heritage System Strategy (ERNHSS, 2013) which determined that the total natural areas coverage across the municipality was only 5.81%.

This number is well below the 12 percent recommended by the United Nations Report of the World Commission on Environment and Development (United Nations, 1987). This figure was then endorsed federally as an aspirational goal through a commitment between the federal and provincial governments to complete Canada's network of protected areas. At that time, it was felt that in the Essex region, 12 percent was an attainable goal to reach if a commitment locally would be initiated.

This figure was endorsed locally and reflected in the 1995 ERCA Strategic Plan (ERCA, 1995). More recently, a global Strategic Plan for Biodiversity was adopted by Canada and other international parties to the Convention on Biological Diversity in 2010. A nationally identified series of goals and targets were agreed upon, including Target 1: "By 2020, at least 17 percent of terrestrial areas and inland water, and 10 percent of coastal and marine areas, are conserved through networks of protected areas and other effective area-based conservation measures" (Government of Canada, 2015).

It is recognized that an overarching target for terrestrial natural heritage protection may not be appropriate to be met at all scales and in all locations. For example, federal, provincial and territorial governments must work together to determine the most appropriate mechanisms to achieve these targets taking into consideration local contexts and in conjunction with public and private interest. In recognition of these constraints and by following the approaches recommended by local partnerships (as detailed in ERCA, 2002), provincial direction (Ontario Ministry of Natural Resources, 2010) and federal guidelines (Environment Canada, 1998, 2004 and 2013), ERCA arrived at a recommendation for local systems that takes into account the high level federal and provincial guidance in conjunction with local land uses and system. In 2002, ERCA and its partners recommended a two-pronged approach to the protection of existing features and the prioritized restoration of forests, wetlands, riparian corridors, and other uplands which, if fully implemented, would result in total natural area coverage of 15.5% (ERCA, 2002). This was presented as a long-term goal and a target that provided a science-based perspective on the proposed priority locations in the region where long-term protection and acquisition would be beneficial.

Natural heritage areas are a key component to any healthy community. The quality of life of a community is influenced by the quality of the natural environment. The health of natural heritage features and areas directly reflects the social, environmental and economic health and well-being of the whole community. It is a shared responsibility between municipalities, the County of Essex, the Province and the Essex Region Conservation Authority to provide a high quality natural environment for the community including a diverse and healthy natural heritage system.

Based on recent population forecasts, Kingsville is anticipated to grow to 24,400 people by 2031. This growth will have to be accommodated within existing settlement areas but will also place pressure on natural areas in some added pressures on the Town's natural heritage system and watersheds. Consideration of natural heritage features and the related natural heritage system will need to be planned for and protected during future planned development.

Urban development has the potential to affect biodiversity; the amount and quality of natural spaces; tree canopy cover; air quality, local temperatures and micro-climates; water quality; and the flora and fauna connections on the landscape. Every stage in the development process can be impactful – from the first breaking of ground to finished construction and over the long-term through occupation. Other types of land use and activities occurring on the land also have the ability to negative impact upon biodiversity, e.g., agricultural activities and recreational uses.

A key principle of accommodating new growth in Kingsville will be ensuring that it is sustainable. Sustainable growth requires consideration of economic, social, cultural and environmental considerations so that gains can be achieved in all areas. There is a strong link between sustainability and natural heritage protection and restoration. Economic, social and cultural sustainability is dependent on a sustainable and resilient natural environment.

Fifty years ago, few natural areas were incorporated into the urban fabric. Woodlands were removed, wetlands drained and filled, streams were channelized or conveyed through culverts and large-scale grading replaced natural landforms. In some cases, urban development took place within areas of potential natural hazards such as unstable slopes or floodplains. The establishment of development regulations to protect people and property from natural hazards along shorelines and watercourses has been put into place across much of Ontario. A greater consideration of the environment emerged in the late 1960s and into the 1970s when methods were developed to incorporate natural heritage features into urban areas. One approach used in Ontario involved the identification of valued natural heritage features, Environmentally Sensitive (or Significant) Areas (ESAs). In the Essex Region, ERCA completed two inventory reports and made planning policy recommendations for the protection of these features to local municipalities (Oldham, 1983; and Schmidt, Allsop and Lebedyk, 1994). These reports were completed at a time when current provincial policies on natural heritage and natural heritage system protection were not in place.

The relationship and location of ESAs to one another and other natural features that could act as connections and linkages, such as municipal drain, river and valley corridors, was not incorporated into early natural heritage systems or plans. As a result, some ESAs became isolated from other functioning natural features as development proceeded around the ESA feature, thereby creating a situation referred to as "Islands of Green". In such cases, the urbanized and developed land uses around individual ESAs were often inhospitable for all but a few resilient species of wildlife that can adapt to urban conditions (e.g. raccoons, skunks, squirrels, robins, house sparrows, etc.). Thus, ESAs in urban and rural areas essentially became islands amid unsuitable habitat for the species that reside in them. Many species cannot survive in these types of environments and the loss of diversity is often a predictable result. In these cases, the protection of the feature in isolation from other connected features results in a decline in the value and biodiversity of the feature.

Over time, the policy approach to natural heritage protection evolved from one characterized as "Islands of Green" to one that reflects a "Natural Heritage Systems" approach. This latter approach is recommended by conservation biologists, provincial ministries and other conservation agencies. It was first recognized in the 2005 PPS (MMAH, 2005) and more recently, the 2014 PPS (MMAH 2014). In essence, this approach requires that natural heritage systems be identified and requires that features of provincial significance be protected in the long-term.

1.2 Purpose and Scope

The purpose of this discussion paper is to:

- To explain the purpose of and how to develop a natural heritage system;
- To describe the features and functions of the natural heritage system in Town of Kingsville;
- To describe the existing policy contexts at the various levels of government;
- To identify policy gaps; and,
- To identify emerging issues.

2.0 NATURAL HERITAGE SYSTEMS

2.1 The Importance of Natural Heritage

Biodiversity, short for biological diversity, is the term used to describe the variety of life and all of the natural processes. This includes ecosystem, genetic and cultural diversity, and the connections between these and all species. The notion of biodiversity recognizes that species cannot be protected outside of the ecosystems they inhabit and that the genetic health of those species depends upon the maintenance of intact ecological processes. The protection and maintenance of species therefore, must be addressed through broad landscape scale conservation efforts such as the protection and establishment of natural heritage systems.

All life depends on healthy, functioning ecosystems. Removal of the species components of these systems amounts to a loss of integrity that could eventually lead to the collapse of the entire system. Biological systems that depend on these interrelationships would be at risk but also there would be a corresponding loss of ecosystem functions. Reasons for protecting our natural heritage range from recognizing the intrinsic value of nature, to the aesthetic and inspirational values it provides, and our responsibilities as global stewards. However, the simplest answer is that we depend on biodiversity to survive.

The Provincial Policy Statement (MMAH, 2014) defines natural heritage features and areas as those features and areas, including *significant wetlands*, *significant coastal wetlands*, other *coastal wetlands* in Ecoregions 5E, 6E and 7E, *fish habitat*, *significant woodlands* and *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River), *habitat of endangered species and threatened species*, *significant wildlife habitat*, and *significant areas of natural and scientific interest*, which are important for their environmental and social values as a legacy of the natural landscapes of an area.

Building on that definition, *natural heritage systems* are defined as a system made up of *natural heritage features and areas*, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural

functions, viable populations of indigenous species, and ecosystems. These systems can include *natural heritage features and areas*, federal and provincial parks and conservation reserves, other natural heritage features, lands that have been restored or have the potential to be restored to a natural state, areas that support hydrologic functions, and working landscapes that enable ecological functions to continue.

2.2 Ecological Goods and Services

There has been a growing sense of importance that the standard approach to saving natural areas – that is protecting them for the sake of nature or biodiversity – is failing, and that to reach these decision makers whose primary concern is the economy, one approach is to speak the same language. This has led to the concept of "natural capital" and attempting to place a dollar figure on the "ecological goods and services" provided to society by natural areas and the functions that they provide. Advocates of this approach argue that demonstrating the economic worth of nature is the only way to save it. Others believe that this approach is questionable ethically, that nature should not have to pay its way to be protected. Further, humans are only one species among millions and it is arrogant for us to judge the worth of nature for our sake alone. To some, placing a monetary value on ecological services sets a dangerous precedent because it reduces species and ecosystems to commodities that can then be bought and sold in the marketplace, or which may lose out in a cost benefit analysis.

Whatever the perspective, it is widely recognized that ecosystems provide us with a great variety of valuable services without which we could not survive. Typical "ecosystem services" that are described include things like provision of clean drinking water, the provision of food and fuel, and the availability of genetic resources. "Regulating services" can be identified as those services that help to regulate and moderate aspects and components of the natural environment. These typically include items such as pollination, climate change regulation, disease regulation, natural hazard protection, flood and erosion protection and water purification services. Other services that are identified can be grouped into a "cultural services" category and these can include spiritual and religious values, educational and inspirational values of nature, and recreational and aesthetic benefits. These services may be harder to quantify but, nonetheless, they are components which can be considered as providing valuable services to humans.

Although efforts have been made to estimate and quantify the economic values of these goods and services, no study has been done locally in the Essex Region. In a recent study completed for Southern Ontario, Troy and Bagstad (2009) included a total value estimate for southern Ontario of over 84 billion dollars per year (2008 Canadian Dollars). The Credit Valley Conservation Authority (located in the Mississauga area) completed a research study to estimate the value of the natural capital in the urbanized Credit River watershed (Kennedy and Wilson, 2009). The study took the approach that nature does for free what humans would otherwise have to pay millions of dollars to do through technology and infrastructure. One example used was for the replacement costs of a water intake system if groundwater supplies were compromised (estimated at $100 million dollars to pump water from Lake Ontario). Based on the other elements of the assessment, the study reported that the natural capital of

the Credit River watershed delivered an annual value of ecological goods and services of over $370 million dollars per year. This assessment included the value of wetland services, forests, and water benefits. Other studies have been done in Ontario and other jurisdictions in North American and the world and these can be informative when developing appropriate policies for investing in a robust framework for natural capital accounting, investing in natural capital, investing in education and awareness of these issues, and providing incentives for the conservation of ecological services. A comprehensive consideration of ecological goods and services is beyond the scope of this background paper.

2.3 The Natural Heritage System (NHS) Concept

The process of habitat loss and fragmentation of habitats has occurred over time with limited regard to other needs of species or the functions of natural ecosystems. As a result, natural functions across the landscape such as species dispersal have been compromised. To assist in protecting and restoring the health of the ecosystem it is necessary to identify and protect a natural system in a manner that can be balanced with human needs. Until the mid-1980s conservationists were using an "islands of green" approach, attempting to preserve the most valuable features in protected parks and reserves. In many cases, the lands surrounding such protected areas had been, or later became, converted to human use leaving the protected areas as isolated islands of natural habitat.

The new sciences of conservation biology and landscape ecology developed a more comprehensive approach to conservation that took into consideration wildlife populations and population genetics in relation to habitat and the structure of landscapes. Principles from each of these sciences are gradually being incorporated into provincial policies and municipal planning through a focus on natural heritage and the recognition of the need to define natural heritage systems.

Although there are many factors to consider, conservation biology theory suggests that recently isolated populations of species such as those in fragmented landscapes may have a reduced capacity to survive in the long term and are therefore of conservation concern. For example, a species may consume all available resources in a habitat patch and then go extinct from that patch. Or it can be easily lost to disease or disasters such as fire, or the introduction of new predators to that patch. A more insidious threat is that without interaction with other populations for genetic exchange, inbreeding and a reduction in species fitness within habitat patches is likely. In combination with all of the stresses on natural areas – over-use, high rates of predation and parasitism, invasive species, disease, pollution, and climate change – it can be argued that fitness and the ability for a species to adapt have never been more important.

The Natural Heritage Reference Manual (MNR, 2010) provides an overview of general concepts of natural heritage systems as well as considerations for establishing natural heritage systems. This approach takes into consideration all of the fundamental principles of conservation biology, landscape ecology, conservation genetics, and integrates it into a process for comprehensively planning for a natural heritage system. As indicated previously, this concept was first identified for use and application in Ontario by Riley and Mohr (1994) and referenced in the 2005 PPS. Natural Heritage Systems have been established through Provincial Plans for the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan. In other areas of Ontario, natural heritage systems have been identified on a County-wide basis (e.g., Middlesex County in the vicinity of London, Ontario). The Biodiversity Conservation Strategy (ERCA, 2002) and the Essex Region Natural Heritage System Strategy (ERCA, 2013) outline a proposed concept for a natural heritage system within the Essex Region. Of note, both of these publications took the approach of identifying these systems at a regional level which necessitated consideration of regional approaches to shared implementation.

The identification and subsequent protection of a natural heritage system can address all of the conservation issues discussed in this paper either directly or indirectly. As a network of connected natural areas the concept is fundamentally designed to support species populations by addressing habitat fragmentation. Although it cannot stop the negative impacts of invasive species, roads, aggregate extraction, urbanization, recreation, and pollution, a natural heritage system that defines a protected area, with the support of a policy framework that allows for improvements to the natural heritage system will lead to more robust and healthier ecosystems that have a heightened ability to resist the negative effects associated with other land uses. A natural heritage system has also been identified as being an approach to mitigate the impacts of climate change at a local level. The planting of trees to sequester carbon and more natural cover on the landscape, especially forest, regulates local climate by absorbing heat, retaining water and balancing the hydrologic cycle. Beyond this, a connected system of habitats means that species will have a better opportunity to move in response to climate change, which not only will reduce the risk of extinction, it will help to maintain tolerant or resistant ecosystems. To augment this connected system of habitats, it is also important to include within a natural heritage system those features that are worthy of protection even though they are not 'connected' to the remainder of the NHS.

Table 1 Benefits of a Natural Heritage System Approach (modified from MNR, 2010).

Landscape fragmentation	Addresses *fragmentation* by identifying and protecting core areas, ecological linkages and landscape features that contribute to a system. This facilitates not only the maintenance of ecological function and biodiversity, but also the restoration and improvement of these things through stewardship (e.g., by identifying ecologically appropriate areas for enhancement and/or reconnection).
Biodiversity	With appropriate mechanisms for protection of the features and maintenance of the linkage aspects of natural heritage systems, biodiversity values can be protected for the long term.
Climate change	Protecting natural heritage systems – encompassing areas within which species can successfully carry out their life processes and potentially adapt, facilitating their movement to more suitable habitat, or enabling a destroyed habitat/population to be replenished – will improve species' ability to adjust to climate change.
Ecosystem health and healthy communities	To support resource demands (e.g., food, water and shelter) of local communities, planning authorities need to maintain the ecological health of the natural environment to ensure that it can withstand the stresses that present and future human populations place on it. By protecting a natural heritage system that includes surface- and groundwater features, planning authorities promote the resiliency of natural features to function for the long term and maintain overall ecosystem and human health. Healthy, resilient and diverse natural environments are important land use components that influence human activity, facilitate health and mental well-being and promote social interaction and inclusion (Ontario Ministry of Municipal Affairs and Housing and Ontario Professional Planners Institute, 2009).
Ecosystem services	Natural heritage systems deliver essential ecosystem services such as clean water and air, productive soils and flood attenuation. Degradation of ecosystem services can lead to unacceptable risks (e.g., soil erosion and flooding) to human well-being. Maintaining a natural heritage system is a *precautionary approach* that reduces risk and is more cost-effective than addressing problems after development has occurred and the ecosystem services are lost.
Planning processes and efficiencies	Can assist with the identification of the most important natural heritage features within a planning area (e.g., key features for achieving representation within the study area, key features that contribute to connectivity).

2.4 Approaches for the Creation of a Natural Heritage System

There are numerous approaches and methods for defining natural heritage systems at different landscape scales and contexts. These scales range from a small watershed, to international, such as the Algonquin to Adirondack project, to continental natural heritage system visions such as the Mesoamerican Biological Corridor. Contexts can be political, such as within a municipal boundary or natural, such as a watershed or geophysical region. The establishment of natural heritage systems can be recommended for smaller geographic scales, such as within a County or Regional Municipality. In Ontario, the approach was first described in Riley and Mohr (1994) and has been embraced in Provincial Policy since 2005 (Ontario Ministry of Natural Resource, 2010). In the Essex Region, this approach to implementing a natural heritage system was first depicted in the Biodiversity Conservation Strategy in 2002 (ERCA, 2002) and more recently updated as of 2013 (ERCA, 2013).

Some defined natural heritage systems are feature-based, that is they simply define and protect existing significant natural heritage features such as woodlands or wetlands. As they are often isolated, these features may have limited function as an interacting system. Defining and protecting significant valleylands as a feature can provide the function of connectivity by linking features together along a defined valley corridor. A more effective natural heritage system approach defines a functional system made up of core features and linkage areas, although these terms are not always used. Isolated natural features or patches that are not linked to the "system" via corridors may also be included and provided appropriate levels of protection.

The approaches for defining the natural heritage systems can be as simple as using set criteria to define a series of core areas and then defining potential corridors and linkages between them on a map, or they can involve complex computer models or decision support tools that make use of geographic information systems (GIS) software. The defined natural heritage system can be based entirely on what currently exists in the landscape, or it can also include areas identified as having potential to increase natural cover and improve ecological function (e.g., an open field located between two existing woodlots could be identified as a restoration opportunity). The process can be open and participatory, involving a wide range of stakeholders to determine criteria related to perceived priorities, or a natural heritage system can be defined first by conservation biology practitioners based on ecological principles, then presented for review and comment by stakeholders. All of these approaches have advantages and disadvantages and none can be considered to be the best or the correct process. In the Essex Region, the first approximation of a natural heritage system was created in 2002 by a large, diverse group of stakeholders. In 2013, this approach was revised and updated in the Essex Region Natural Heritage System Study (ERCA, 2013) and later, incorporated into the County of Essex Official Plan (County of Essex, 2014). This discussion paper will discuss how to reflect that natural heritage system approach into the Kingsville Official Plan Review.

2.5 Essex Region Natural Heritage System

The Essex Region Natural Heritage System Strategy (ERCA, 2013) was developed as a background report for the County of Essex Official Plan update. This report took the approach of establishing recommendations for a natural heritage system in the Essex Region that considered current provincial planning policies (PPS, 2005), current background literature and available biological information on natural heritage features in the region. The purpose of this report was to undertake a natural heritage system mapping and prioritization exercise. This report was an update to the work initially completed in 2002 (ERCA, 2002) and documented as the Biodiversity Conservation Strategy; however, it did not duplicate all analyses completed at that time. The Biodiversity Conservation Strategy employed a significant level of involvement of conservation ecology practitioners, interested stakeholders, and other municipal, provincial and federal government representatives through the formal establishment of a Technical Steering Committee. The primary value of the Essex Region Natural Heritage System Strategy is that it utilized current GIS mapping technology and data to produce an accurate depiction and prioritization of the natural heritage system.

Within the Town of Kingsville, the direction provided in the Essex Region Natural Heritage System Strategy is supported and strengthened by the work completed by the Town of Kingsville and ERCA in 2001 as detailed in the Natural Heritage Inventory (ERCA, 2011). Specifically, this work provided up to date vegetation classification and biological information on 38 core natural heritage features located within the municipal boundaries. It also provided a detailed scoring of the established evaluation criteria for each site.

3.0 LAND USE PLANNING POLICY CONTEXT

This section reviews the provincial, County of Essex and local municipal planning policies that govern the development of lands within the Town of Kingsville.

3.1 Planning Act and Provincial Policy Statement

Land use planning affects almost every aspect of life in Ontario. It helps decide where in our community homes, retail and industrial uses should be built; where parks and schools should be located; and where roads, sewers and other essential services should be provided. Land use planning also means managing our land and resources. It helps each community to set goals about how it will grow and develop and to work out ways of reaching those goals while keeping important social, economic and environmental concerns in mind. Land use planning balances the interests of individual property owners with the wider interests and objectives of the whole community. The *Planning Act*, R.S.O. 1990, c.P.13, as amended (*Planning Act*) is the principle piece of legislation that guides land use planning in Ontario.

The *Planning Act* (Part 1, Section 2) lists the matters of provincial interest that municipalities are required to "have regard to" in carrying out their responsibilities under the *Planning Act*. Five select items of particular interest related to natural heritage and natural heritage systems planning are:

> *"(a) the protection of ecological systems, including natural areas, features and functions;*
>
> *(d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest;*
>
> *(h) the orderly development of safe and healthy communities;*
>
> *(p) the appropriate location of growth and development; and*
>
> *(q) the promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians."*

The "…protection of ecological systems…" is a critical statement as it establishes the evolved Provincial direction for a broader systems-based approach to natural heritage protection and entrenches it into the planning process. The focus in Provincial legislation has moved away from a "features" based approach to a "systems" based approach. The importance of planning to protect not only individual features but also to recognize the value of linking and connecting features and systems together is fully recognized in the Planning Act.

The *Planning Act* authorizes the Province to develop policies on matters relating to land use planning. The *Planning Act* (Part 3, Section 5) requires that municipal decisions affecting planning matters "*shall*

be consistent with" policy statements issued under the Planning Act. The Provincial Policy Statement (MMAH, 2014) issued under section 3 of the Planning Act came into effect on April 30, 2014. This replaced the previously issued Provincial Policy Statement issued March 1, 2005. Section 2 of the Provincial Policy Statement, referred to hereinafter as the PPS, outlines policies related to the wise use and management of resources. Section 2.1 and 2.2 of the PPS focuses on the protection of natural heritage and water resources, respectively.

The PPS also specifies areas where development and site alteration are not permitted, such as within significant wetlands or, as per sections 2.1.6 (fish habitat) and 2.1.7 (habitat of endangered species and threatened species), where development and site alteration are not permitted unless it is done in accordance with provincial and federal requirements. The PPS also recognizes that there may be impacts from development and site alteration on adjacent lands to the proposed activities. Section 2.1.8 requires that the ecological function of the *adjacent lands* are evaluated and it can be demonstrated that there will be no negative impacts on the natural features or on their ecological functions prior to development taking place.

Although many of the PPS policies regarding natural heritage focus on individual features (e.g., significant wetlands, significant woodlands, and significant wildlife habitat) it also recognizes the importance of connections, linkages and systems. Section 2.1.2 of the PPS states that:

> *"The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features."*

The PPS goes further in Section 2.13 to state that: "Natural heritage systems shall be *identified* in Ecoregions 6E and 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas."

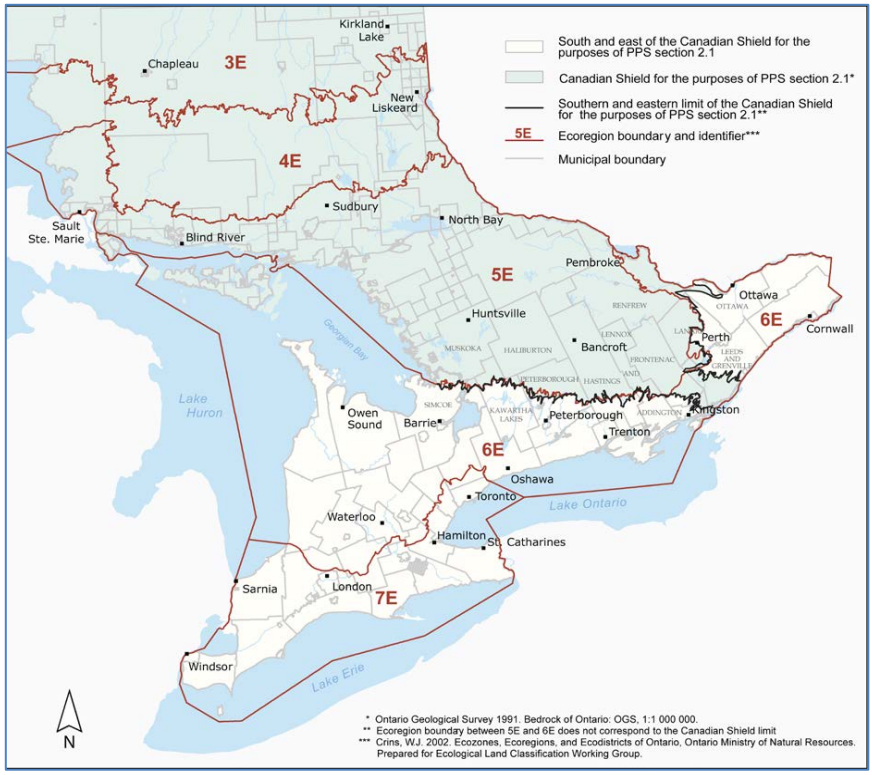


Figure 1 Ecoregions for the purposes of policies under Section 2.1 of the PPS (MNR, 2010).

It is important to note that the definition of natural heritage system (Section 6.0 Definitions, PPS 2014) includes "*lands with the potential to be restored to a natural state*" This is a crucial point, because it means that not only does the Province recognize the need to protect existing features, but also areas that have restoration potential to create an improved natural heritage system. Thus the PPS promotes protection and improvements of natural heritage features and systems and their ecological functions. The policies in the PPS represent minimum standards and the PPS is not meant to prevent municipal policy from going beyond the minimum standards for protection of a locally defined natural heritage system, but this protection must also be balanced with other land use needs.

While the province has delegated the responsibility for incorporating natural heritage and water-related planning decisions to planning authorities, it continues to provide supporting guidance materials to assist planning authorities in interpreting the respective policies. These materials have been provided to assist planning authorities in the identification and evaluation of these features and processes. The Ontario Ministry of Natural Resources has prepared the *Natural Heritage Reference Manual* (OMNR, 2010) to provide guidance in interpreting the PPS policies on natural heritage. The document includes an appendix outlining a recommended approach to natural heritage system planning. To help planning authorities identify Significant Wildlife Habitat as per the PPS, the *Significant Wildlife Habitat Technical Guide* provides provincial direction (OMNR, 2000). The Ontario Wetland Evaluation System Southern Manual provides the technical process for evaluating wetlands to determine their significance (OMNR, 2014). In addition, the technical direction provided for determining significance of natural features is also detailed in the Ecological Land Classification for Southern Ontario manual (Lee et. al. 1998).

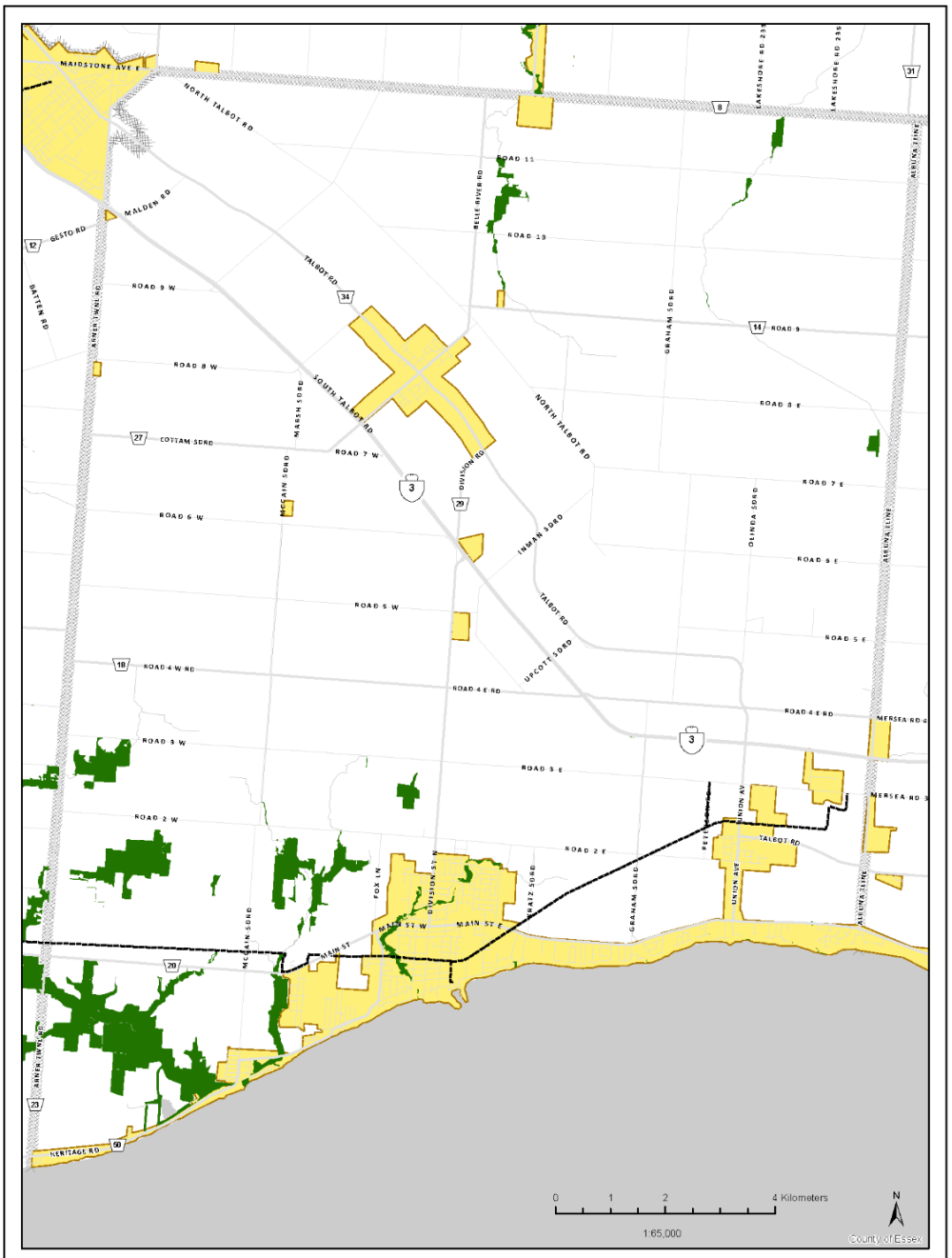
3.2 County of Essex Official Plan

The Official Plan for the County of Essex was approved by the Ministry of Municipal Affairs and Housing on April 28, 2014. The County Official Plan provides a policy framework that guides local municipalities and the County in planning land development and use, in support of long-term economic growth and sustainability. While local Official Plans, such as in the Town of Kingsville, will continue to exist and cover specific detail related to their respective municipalities, the County Official Plan addresses issues that cross municipal boundaries, such as natural and cultural heritage, and archaeological resources; mineral, mineral aggregate and petroleum resources; prime agricultural areas; transportation; economic development; and growth management.

Land use planning decisions in the Town of Kingsville are required to conform to the County of Essex Official Plan (COP) and be consistent with the current PPS, 2014. The COP identifies and establishes policies for the protection of key natural heritage features and policies that need to be adhered to for development applications in proximity to natural heritage features. Linkages targeted for protection are identified, however the COP only includes policies for the identification, protection and enhancement of connectivity between features; including target areas but does not include the identification of a completed natural heritage system that has been established for the Town of Kingsville.

The COP sets the parameters for the lower tier municipalities to further refine the identified Natural Heritage System during the establishment of new Official Plans and updates. The COP also includes policies requiring the preparation of an Environmental Impact Study for development proposals within and adjacent to identified natural heritage features. The approach that the COP takes for natural heritage feature and natural heritage system identification is through the identification of natural heritage features for designation (as identified on Schedule A1 and B1), through the identification of natural heritage features to be protected from development unless it can be demonstrated that no negative impact on the feature will occur (as identified on Schedule B2), and the identification of restoration opportunities where connections and linkages can occur between natural features identified in Schedule A1 , B1 and B2.

Through careful consideration and planning, the establishment of a natural heritage system in Kingsville can be structured through the direction provided by the COP. It should be noted, however, that a lower tier Official Plan can go above and beyond what is identified in the upper tier Official Plan. The following maps are provided from the County of Essex Official Plan with specific reference to the Town of Kingsville.



Town of Kingsville Natural Heritage Background Discussion Paper

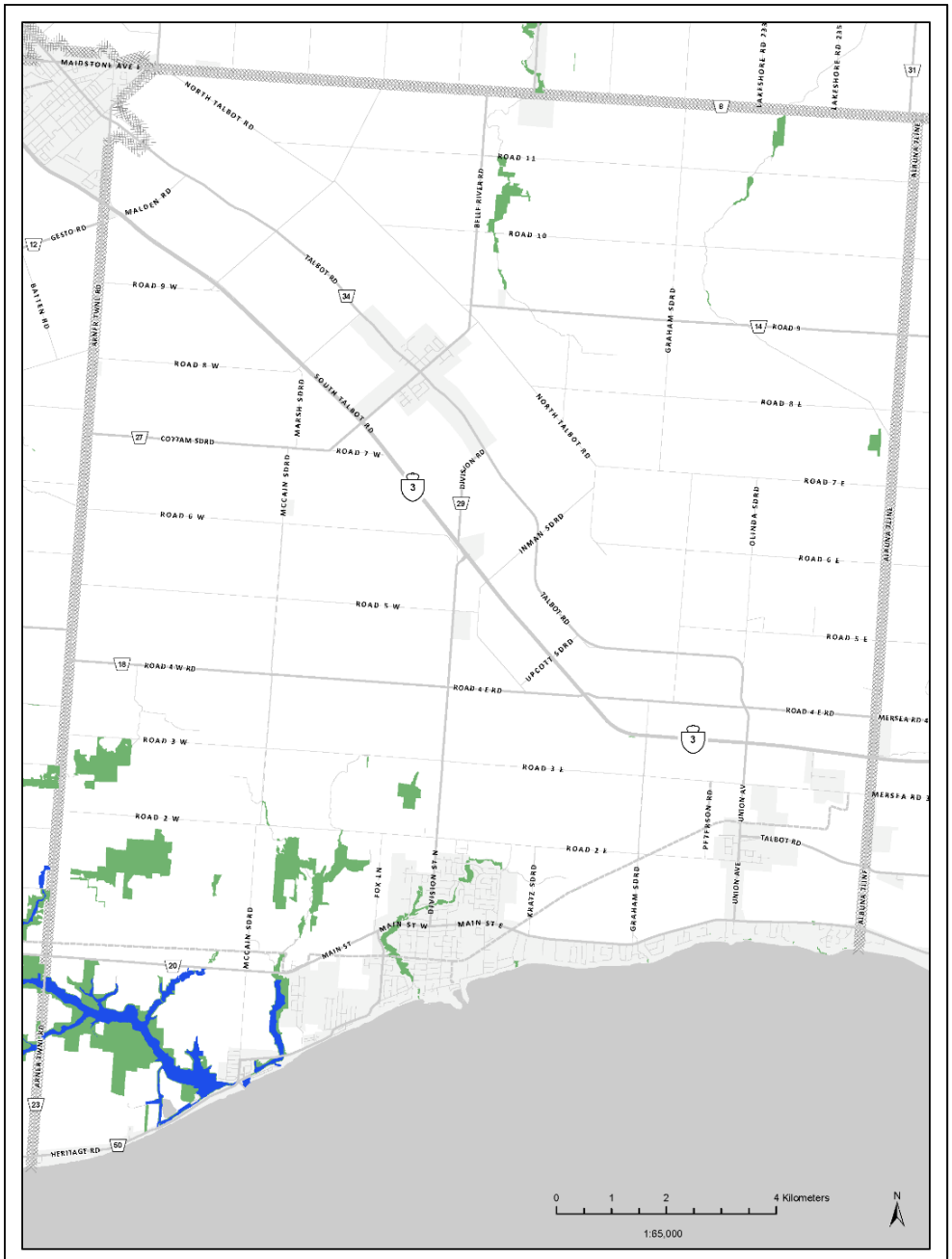
Figure 2

County of Essex Official Plan (2014): Schedule A1 – Land Use Plan

Natural Environment Designation
ANSI
Settlement Areas

Figure 2 County of Essex Official Plan Schedule A1 - Land Use Plan

Figure 2 depicts lands within the Town of Kingsville designated Natural Environment and protected from future development within the County of Essex Official Plan. Several key natural heritage features within Kingsville are designated: of note are the Cedar Creek wetland complex, Jack Miner Woods, and two large intact forest communities – Balkwill Woods and Arner Pin Oak Woods. All of these features have been identified as significant features in planning documents since the early 1980s.



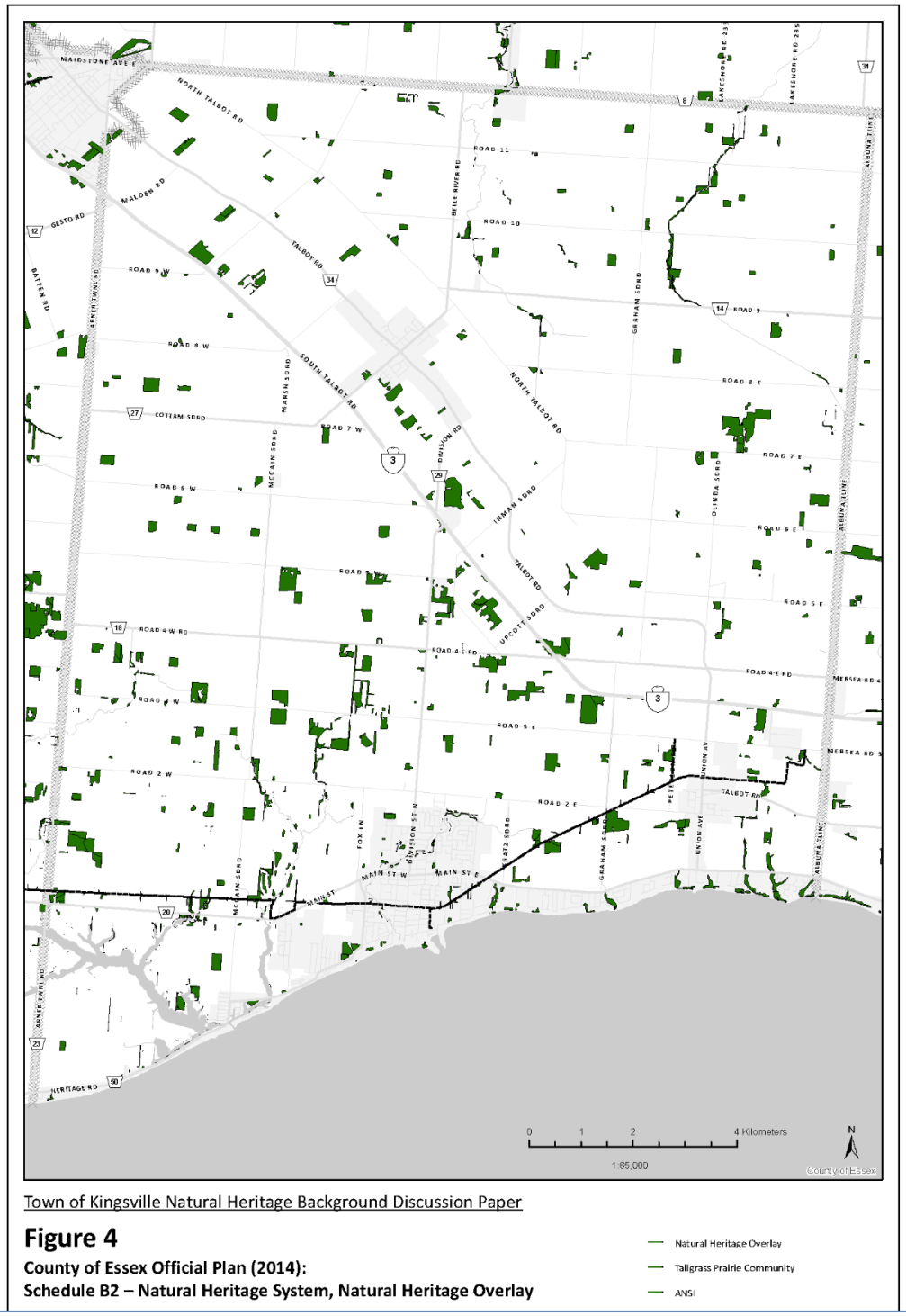
Town of Kingsville Natural Heritage Background Discussion Paper

Figure 3

County of Essex Official Plan (2014):
Schedule B1 – Natural Heritage System, Natural Environment Designation

Figure 3 County of Essex Schedule B1 - Natural Heritage System; Natural Environment Designation

Figure 3 provides additional detail for those features identified within the Schedule A1 Land Use Plan of the County of Essex Official Plan. All features that scored between 5 and 11 of a total of 11 criteria for significance in the Essex Region Natural Heritage System Study are reflected as Natural Environment designation in Schedule A1 of the Land Use Plan. Lands designated as Natural Environment in the County Official Plan are further categorized in Schedule B1 as being either a significant terrestrial feature or an evaluated Provincially Significant Wetland.



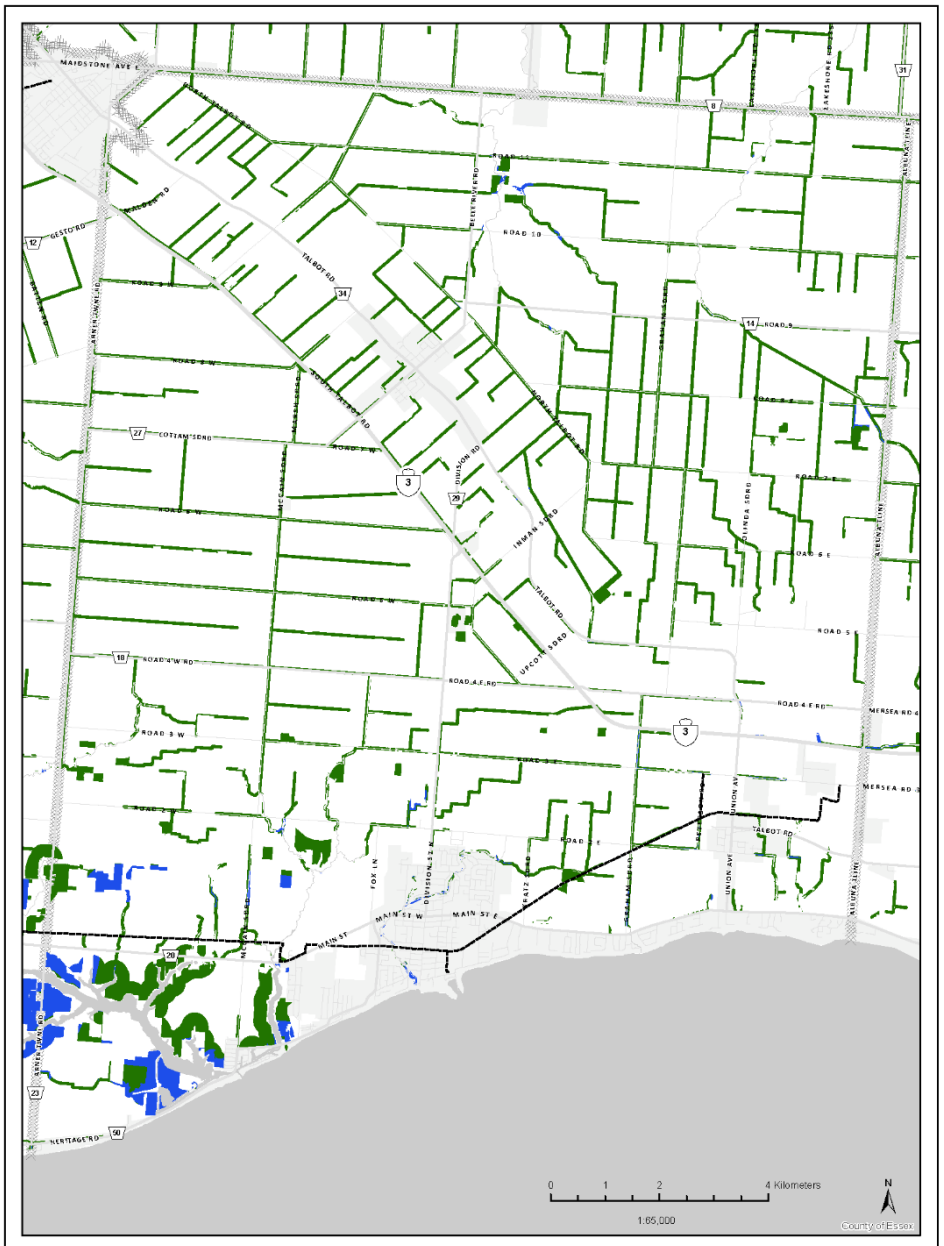
Town of Kingsville Natural Heritage Background Discussion Paper

Figure 4

County of Essex Official Plan (2014):
Schedule B2 – Natural Heritage System, Natural Heritage Overlay

Figure 4 County of Essex Official Plan Schedule B2 - Natural Heritage System, Natural Heritage Overlay

Figure 4 depicts the individual natural heritage features of the Natural Heritage System as identified in the County of Essex Official Plan. All natural heritage features that were identified in the Essex Region Natural Heritage System Study as scoring between 1 and 4 of the 11 criteria for significant are identified as features in the Natural Heritage Overlay of the County of Essex Official Plan. These features can be viewed as additional building blocks of a natural heritage system when combined with natural features from Figures 2 and 3.



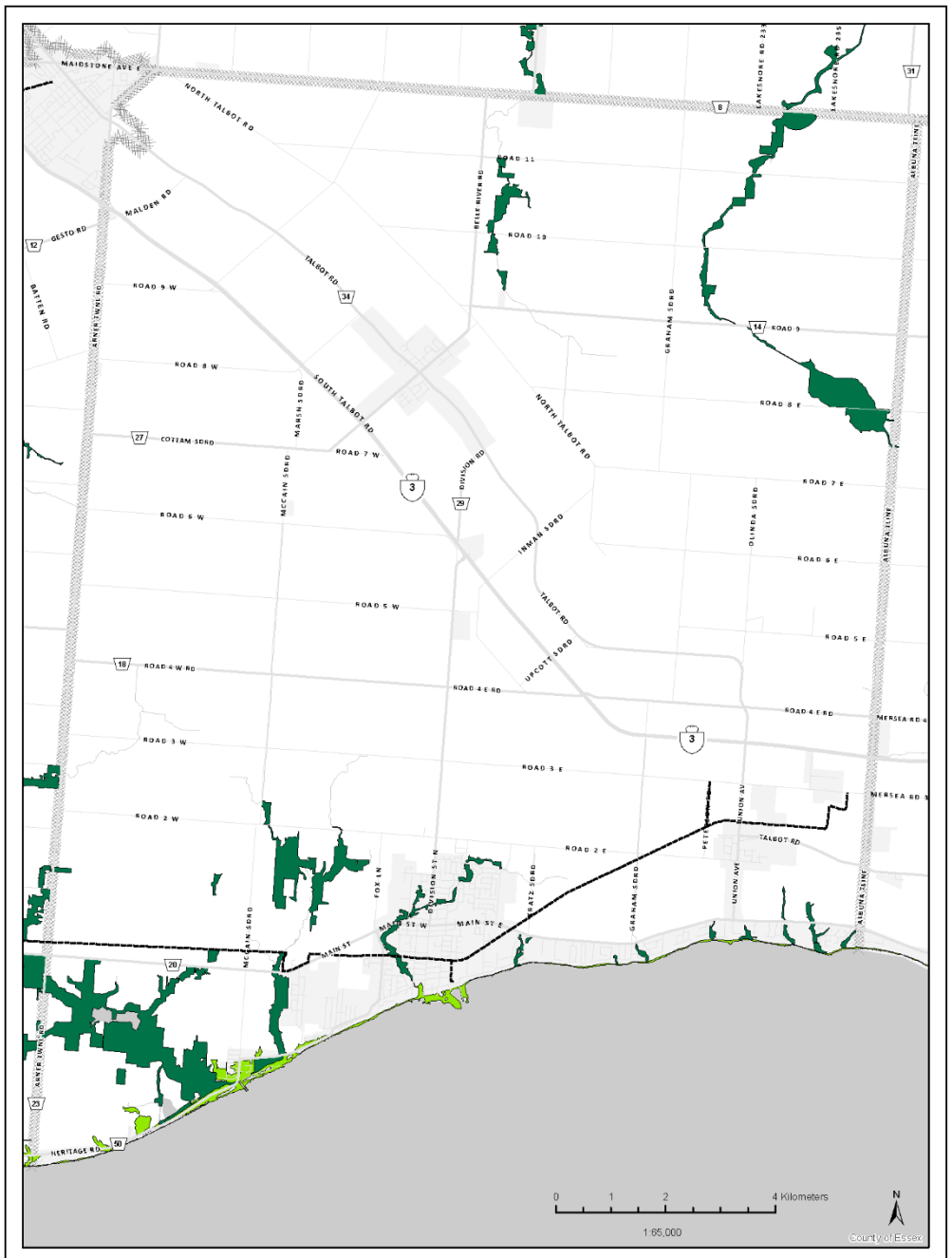
Town of Kingsville Natural Heritage Background Discussion Paper

Figure 5

County of Essex Official Plan (2014):
Schedule B3 – Natural Heritage System, Restoration Opportunities Overlay

Figure 5 County of Essex Official Plan Schedule B3 - Natural Heritage System; Restoration Opportunities Overlay

Figure 5 depicts the Restoration Opportunities Overlay of the Natural Heritage System as outlined in the County of Essex Official Plan. Restoration opportunities were identified along watercourses, as a restoration opportunity around the extent of existing Provincially Significant Wetlands, and surrounding specific natural heritage features where restoration or enhancement of existing natural features has been recommended in previous studies. In addition, those identified linkages and corridors were prioritized, using 5 criteria for significance, to assist partners in considering the most appropriate locations to establish corridors and linkages as a component of a Natural Heritage System. These prioritized restoration opportunities are provided to assist Kingsville and conservation partners in developing plans and restoration projects.



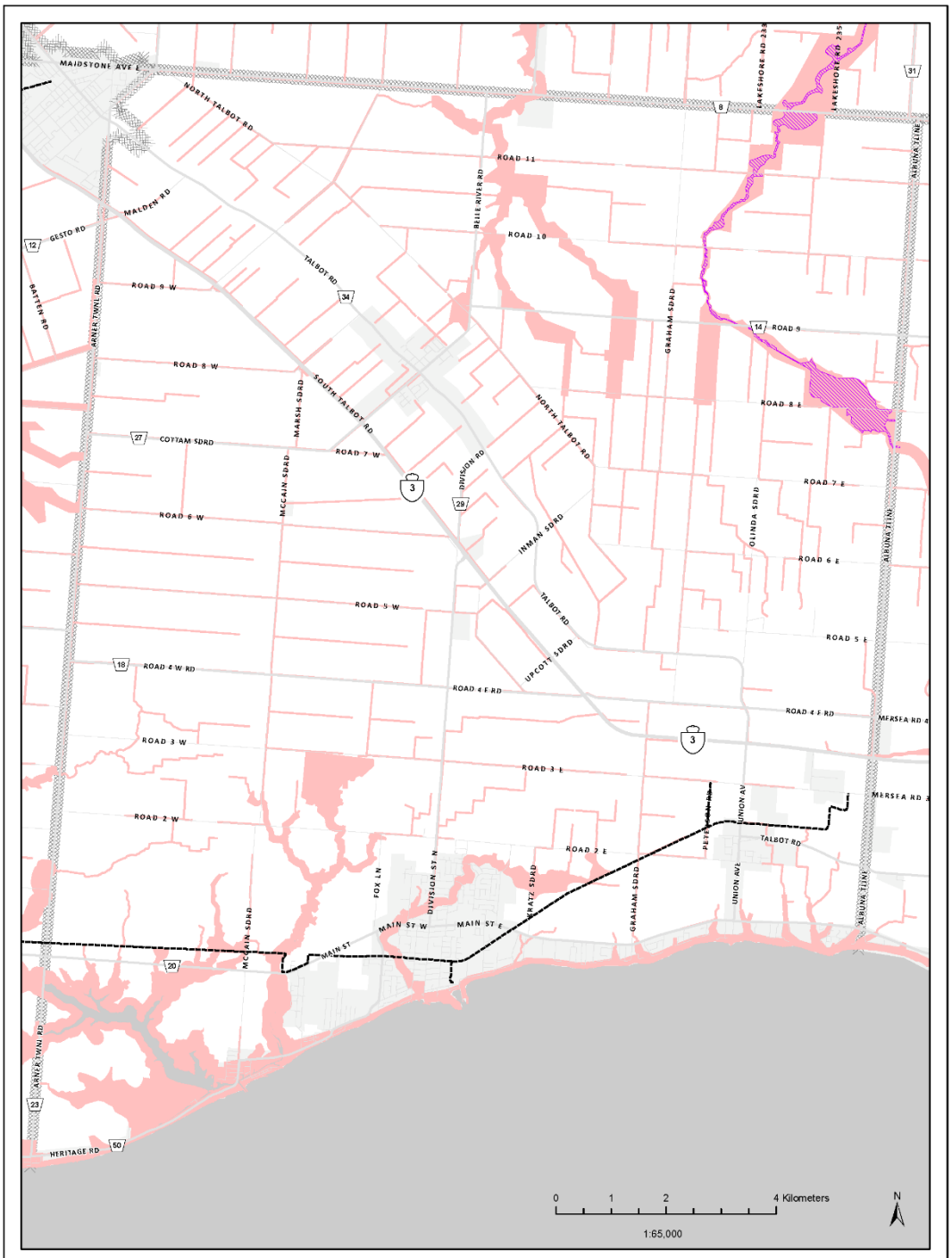
Town of Kingsville Natural Heritage Background Discussion Paper

Figure 6

County of Essex Official Plan (2014):
Schedule C1 – Areas Susceptible to Flooding

Figure 6 County of Essex Official Plan Schedule C1 - Areas Susceptible to Flooding

Figures 6 and 7 depict the current County of Essex Official Plan schedules for areas susceptible to flooding and areas regulated by the Essex Region Conservation Authority. A natural heritage system can build from these existing constraints as the responsibility of the land use planning authority is also to ensure development is generally directed to areas outside of natural hazards (PPS Section 3.1). These areas have been identified through engineering studies and modelling exercises. It should be emphasized that these constraint maps do not prohibit development unless the specific characteristics of the natural hazard and proposed development are incompatible.



Town of Kingsville Natural Heritage Background Discussion Paper

Figure 7

County of Essex Official Plan (2014):
Schedule C2 – Regulated Areas

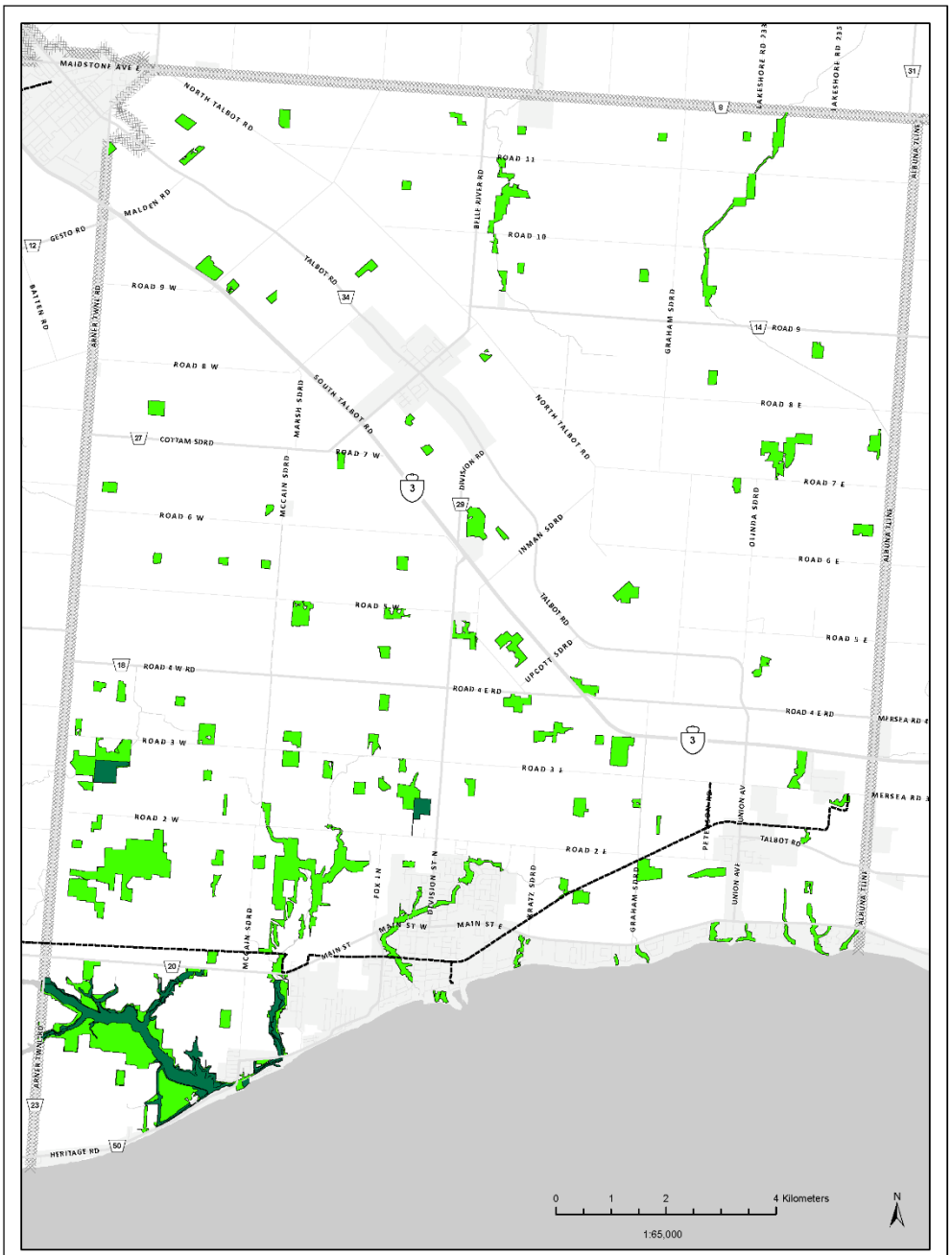
Regulated Areas under the Conservation Authorities Act
Max Flood (Exceeds the 100 yr Floodline)

Figure 7 County of Essex Official Plan Schedule C2 - Regulated Areas

3.3 Kingsville Official Plan

The existing Official Plan of the Town of Kingsville provides guidance on natural heritage policies and overall policy direction. The natural heritage policies of the existing Official Plan are outlined in Section 4.2 Natural Heritage Features and depicted on Schedule "B". Figure 8 is an illustration of the features and their corresponding land use classification policy approach.

Associated policies for Environmental Protection Areas and Environmentally Significant Areas are outlined in Section 4.2 of the Official Plan.



Town of Kingsville Natural Heritage Background Discussion Paper

Figure 8
Existing Town of Kingsville Official Plan
Schedule "B" Official Plan Natural Heritage Features

Environmental Protection Areas
Environmentally Significant Areas
NHF

Figure 8 Existing Town of Kingsville Official Plan Schedule "B" Official Plan Natural Heritage Features

4.0 THREATS TO NATURAL HERITAGE

To appreciate the need for defining and protecting natural heritage features and systems, it is necessary to understand some of the key conservation issues related to biodiversity and natural heritage. There are a great number of threats to biodiversity that result from human activities and different land uses including:

These threats affect the ecological function within individual ecosystems and across the landscape. For humans this means the loss or degradation of important ecological goods and services provided by these systems.

This section reviews these threats to biodiversity in southern Ontario, among the most significant of which is habitat loss and fragmentation. The impacts of habitat fragmentation and conservation concerns related to habitat patch characteristics, such as size and shape, in a fragmented landscape are discussed, followed by a review of some more general significant conservation issues. Implementing a natural heritage system approach addresses all of the major conservation problems outlined here, either directly or indirectly.

4.1 Habitat Loss and Fragmentation

Habitat loss is a concept that is easily understood and widely recognized as an environmental concern. Habitat loss can include the shrinkage of a particular habitat type by removal from an outside edge resulting in partial or complete loss, or the perforation of a habitat type by removal of internal sections. In contrast, habitat fragmentation is a process of breaking a whole into smaller pieces, such as through bisecting. For example if a section of a woodlot were removed that would be habitat loss. If a road was driven through the woodlot splitting it into two separate areas, that would be habitat fragmentation (as well as some habitat loss).

Following European settlement, southern Ontario's extensive forests went through a profound period of habitat loss due to agriculture and urbanization. Since that time much of the habitat that remains has been further fragmented, splitting it into smaller and smaller pieces. A fragmented landscape is thus characterized by remnant patches of natural habitat surrounded by human land uses such as agriculture and urban areas.

The effects of habitat fragmentation on biodiversity are predominantly related to the size and shape of the remaining habitat patches, the degree of connectivity between them, the surrounding dominant land use, and their position in the landscape relative to each other. It is important to keep in mind that, while these concepts may seem complicated, they represent the basic principles behind the methodology to define natural heritage systems.

Ducks Unlimited Canada completed an analysis of wetland conversion since pre-settlement times (Ducks Unlimited Canada, 2010) and showed that in the Essex Region prior to European settlement the landscape was covered by greater than 60% wetlands. The study documented that in 2002 less than 5% remained in the entire Essex Region. This figure is supported by work that was completed by ERCA which estimated that the total land cover by wetlands in 2008 in Essex Region was only 7.86% (ERCA, 2013).

4.2 Size of natural heritage features

A basic principle when dealing with habitat patches, bigger is generally better. The larger a habitat patch is, the higher the diversity of conditions it is likely to contain (such as slope, vegetation types, tree maturity, etc.), and therefore the more species it is likely to support. In addition, it is easy to accept that a large patch of habitat is likely to have more resources such as food and shelter, and therefore could support more individuals of each species. Thus a large habitat patch is more likely to support a local *population* of that species which can be maintained through reproduction. In contrast, a small patch might only support a few individuals of that species. If all of them are of one sex or beyond breeding age, that species would eventually disappear from the patch.

Many species, including birds such as tanagers, some thrushes and numerous warblers, are "area-sensitive," that is, they require large blocks of habitat for an individual, a pair, or a population to survive. Larger patches are also more likely to maintain ecological functions and to be sheltered from negative external impacts.

Fragmentation reduces the size of habitat patches and therefore limits the ability of a natural area to support species populations, especially area-sensitive species. As species disappear due to habitat fragmentation, whole ecological communities are affected. This means that vital interactions for the ecosystem may be lost.

4.3 Shape of natural heritage features

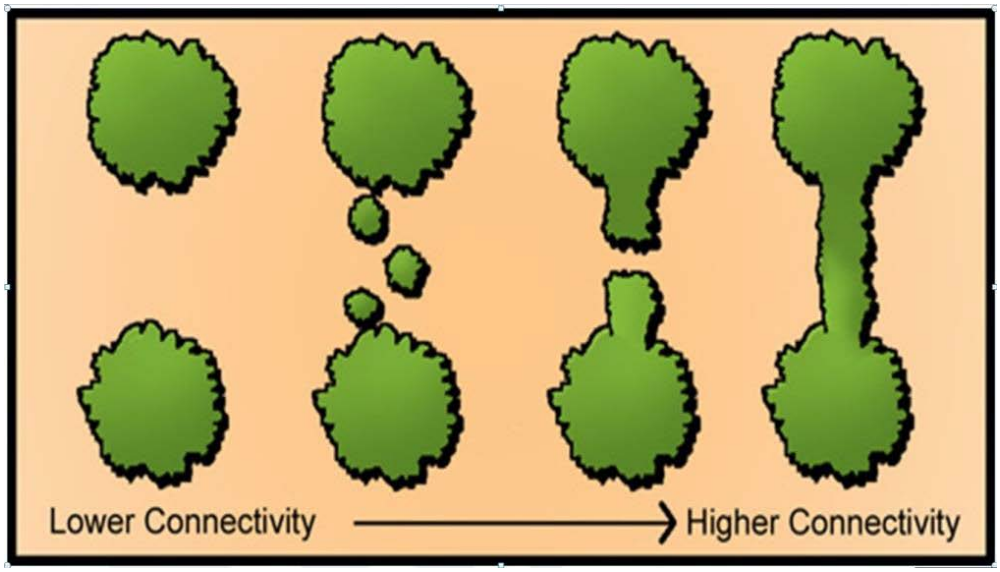
Habitat patch size and shape are closely related and the reciprocal influence of size and shape on biodiversity is not always clear or exclusive. Habitat patch shape is important for two main reasons. The first is in relation to the concept of interior habitat, which is of importance primarily for forests. Forest interiors tend to be darker, cooler and damper than areas near the outer edge. This is a specialized habitat required by many wildlife species, particularly birds such as thrushes. When forests dominated the landscape forest interiors would have been the norm and these birds would have been abundant.

Currently numerous forest bird species are experiencing population decline. Habitat fragmentation, with associated loss of forest interior, has been implicated as a factor in their decline (OMNR, 2010). Larger and more compact patches are likely to have more forest interior than smaller narrow patches.

Habitat patch shape is also important because of its exposure to negative external influences or "edge effects." These include higher temperatures, localized drought and storm damage caused by exposure to sunlight and wind, increased invasion by exotic species, and higher rates of predation and parasitism. Generally speaking, the more unevenly shaped a patch is, the more it is exposed to negative edge effects. Conversely, compact-shaped patches have less exposure. A square shape is good, but a circle has the lowest edge-to-area ratio and therefore the least exposure.

4.4 Connectivity between existing natural heritage features

Species that have limited mobility or that require very specific habitat types are particularly vulnerable to habitat fragmentation because they have difficulty moving from one habitat patch to another; some species of insects, snakes and rodents are particularly vulnerable. For example, a species with limited mobility may not be able to physically traverse the distance between patches or, the landscape between the patches is inhospitable, and therefore creates a barrier to movement. The more isolated the patches, the less opportunity there is for movement between them.



Generally speaking, isolated populations are more prone to extinction. For example, the population could use up all of the food resources in a habitat patch and have no means of moving to another location. Or, a species that requires more than one habitat type to complete its life cycle, such as an amphibian, may no longer have access to each habitat type.

Of particular concern is the fact that isolated populations, especially if they are small, have limited genetic diversity. By not breeding with individuals from outside populations they may be subject to inbreeding and the loss of genetic fitness. This can ultimately limit persistence because the options for adapting to environmental change or resisting disease have been diminished. This is a very significant

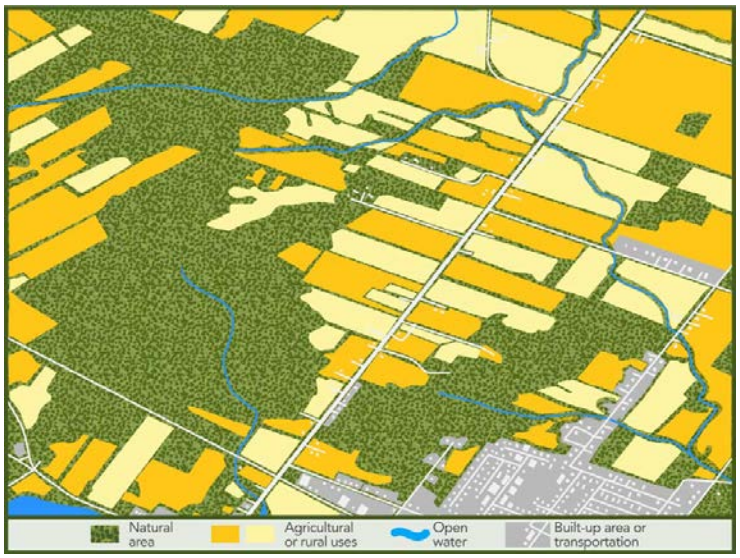
point in relation to biodiversity conservation because it means that the presence of a species in one or more habitat patches today does not guarantee that it will still be there in the future. The population may already be at risk.

The most obvious solution to dealing with the problems associated with patch isolation is to maintain or restore connectivity between isolated habitat patches. The Natural Heritage Reference Manual (OMNR, 2010) defines linkages and corridors as" :*...a linear area intended to provide connectivity (at the regional or site level), supporting a complete range of community and ecosystem processes, enabling plants and smaller animals to move between core areas and other larger areas of habitat over a period of generations*". Provincial legislation has recognized the need for this connectivity by supporting the creation of natural heritage systems instead of only requiring the protection of natural heritage features. They may also be referred to as wildlife movement corridors, biological corridors, and greenways. The idea is to provide an opportunity for wildlife to navigate safely from one habitat patch to another. By doing so additional resources may be available or there may be an improved opportunity for genetic exchange between populations, promoting fitness.

In general, species with specialized habitat requirements, or the more sensitive it is to predation, the more it will depend on continuity of the habitat(s) for movement across the landscape, and therefore would benefit from corridors. For example, an amphibian that needs to make use of water for part of its lifecycle and forest habitat for another will depend on these habitat features being connected. Other forms of connectivity may suffice for less specialized or more mobile species. For example the close proximity of patches can allow for some species to move between them provided the intervening habitat is not inhospitable and no barriers are in place. A series of patches in close enough proximity can provide a "stepping stone" function for some species as they move between larger patches in an otherwise inhospitable landscape.

4.5 Distribution of habitat across the landscape

The distribution and patterns of existing natural heritage features across the landscape is equally important to maintenance of ecosystem function. The proximity and direction of large versus small features of varying shape, habitat type and quality within the context of varying land use types has a profound influence on biodiversity. All of the habitat characteristics discussed previously (size, shape and connectivity) combined with habitat location determine the structure and interaction of the



individual subpopulations of species within each habitat feature and the total of all of those populations in the landscape.

To maintain a species that requires patch specific habitat type, it is critical that there is interaction between different habitat features to provide enough mixing of genetic diversity to support the population as a whole. For example, if all of the remaining habitat patches in an area are small, far apart and separated by urban lands and road crossings there will be little or no opportunity for species to move between them, and over time the subpopulations within each patch will start to disappear. Eventually the entire population throughout the whole landscape disappears. On the other hand, if small patches are in close proximity to a large patch separated by agriculture, then the large patch may be big enough to have a sustainable population of its own, and can perhaps maintain the subpopulations in the smaller patches because individuals can move between them.

Population theory in relation to habitat patch configuration can have profound implications for managing landscapes. For example, it is now apparent that habitats appearing to be healthy to the untrained eye may in fact have limited ecological integrity because they are losing species. More significantly, if achieving the goals of ecological health and integrity and sustaining these over the long term requires maintaining the full complement of biodiversity known to occur in a given area, then we may not only need to keep most of the remaining habitat, we will have to strategically add habitat to the landscape. Significantly, all vegetation community types should be represented in sufficient quantity and quality to support all of the native species components of the ecosystems.

In Kingsville, the distribution of habitats is relatively well dispersed with individual features located in isolation from one another. However, there are opportunities for connectivity – both in terms of connecting habitats together or in recognizing existing linkages (such as along drainage corridors) and enhancing them. Private landowner restoration projects have also played a large role in voluntary efforts to create habitat on the landscape.

In addition to issues related to habitat fragmentation and the resulting impacts on habitat size, habitat isolation/connectivity, and habitat location, there are a number of significant threats to biodiversity and the natural heritage of southern Ontario that are worth reviewing such as invasive species, roads, urbanization, agriculture, recreation and pollution and climate change . All of these threats occur in the Town of Kingsville. It is worth reviewing these threats first to raise awareness of their existence and extent, and second to point out that the identification of significant natural heritage features and protection of these features through land use policy is still no guarantee that natural heritage values (such as biodiversity) will be maintained.

4.6 Invasive Species

It is commonly accepted that, next to outright habitat loss, invasive species represent the greatest threat to global biodiversity (Vitousek et al. 1996). According to the *Invasive Alien Species Strategy for Canada* (Government of Canada 2004), invasive species are "harmful alien organisms whose introduction or spread threatens the environment, the economy, or society." Alien species are "species of plants, animals, or micro-organisms introduced by human action outside their natural past or present distribution" (Government of Canada 2004). In their new environment invasive exotic species generally lack the natural ecological controls (e.g. predation, herbivory or disease) that regulate populations of native species.

More than 185 invasive species have become established in the Great Lakes basin. Two invasive exotic insect species of potential concern in the Essex Region are the Emerald Ash Borer (*Agrilus planipennis*) and the European Common Reed (*Phragmites australis subsp. Australis*). The Emerald Ash Borer has recently spread to numerous parts of southern Ontario, and its effects on ash trees and forest ecosystems have been well documented. The impacts locally has been primarily through the loss of large, adult trees as well as a change in the overall structure of the canopies of many forests. The European Common Reed has also had a significant impact on a variety of ecosystem functions including potential risks to public safety (through reducing visibility along roadways and increasing the potential for fires), reductions in diversity of species found in areas where invasive species dominates, and reductions in the ability of wildlife to make use of existing habitats where invasive Phragmites dominates. Many invasive species have become well established in southern Ontario and with ongoing pressures from population growth and cross-border movement of goods, more species are likely to arrive in the future. Eradication of most species is not feasible; therefore control measures must be based on available funding and targeting priority areas, such as high quality natural areas or habitats which species at risk. Measures to address invasive species within existing natural habitats must consider the specific species and its specific biological attributes. An approach to address the negative impacts may best be undertaken from a regional perspective recognizing the mechanisms of spread of the species.

4.7 Roads

Road ecology is a rapidly expanding science concerning the impacts of roads on ecosystems. These impacts include habitat fragmentation (as discussed previously), creating barriers for wildlife movement, wildlife mortality, spreading of invasive species, increasing noise, artificial lighting, and the introduction

of pollutants into the environment (OMNR, 2010). One of the main concerns about roads is their impact on wildlife populations. For example, some small mammals (e.g., mice) are reluctant to cross wide openings created by roads because they risk exposure to predators. This restricts dispersal of individuals between populations, potentially reducing genetic diversity. Road kill also has a direct impact on the long-term sustainability of wildlife populations.

Amphibians and reptiles are vulnerable to road mortality because of their small size and rate of movement. Turtles are particularly at risk due to their slow speed. Complicating factors include mass migration of amphibians across roads to reach breeding pools under ideal weather conditions and the attraction of species such as snakes to the warmth retained by roads in early morning or evening. Identifying known crossing areas advises travellers that there are species at risk, and helps reduce road kill. Research completed (Choquette and Valliant 2016) documented the significant impacts of traffic mortality around the Ojibway Nature Reserve in Windsor. In total, through three years of systematic surveys of roads around the perimeter of this natural heritage feature researchers documented over 2,000 vertebrate mortalities of 49 different species. Of these 49 species, this included five species of snakes and six species of turtles.

The function of a natural heritage system is clearly compromised by the presence of roads and traffic. The use of mitigation measures such as underpasses or overpasses (collectively referred to as "ecopassages") is growing in North America. An assessment of roads as barriers to wildlife movement as well as of road mortality hotspots is recommended as a means of identifying priority areas for consideration of this as a mitigation measure (Ontario Road Ecology Group 2010). The best approach to mitigate future impacts from roads is the appropriate design and location of roads in association with natural heritage features and natural heritage systems. In general, there has not been a focussed study of high priority areas which would benefit from a road mortality study across the County or within the Town of Kingsville.

4.8 Urbanization

Urbanization is essentially the permanent conversion of natural or agricultural lands to human habitat that is characterized by dense road networks, housing and/or industry. Urbanization can have profound impacts on biodiversity that go well beyond habitat loss. For example, the human habitat that comprises urban areas is incompatible to most species that require a particular type of natural habitat. Instead, a suite of species that are highly tolerant of, or actually benefit from the urban environment thrive here, such as skunks and raccoons. Some species of wildlife can adapt to urban environments and these species become established – recent examples include coyotes, Virginia Opossum, and certain bird species.

In some cases, naturalization of existing residential properties can have benefits on wildlife species. However, even when wildlife attraction is the stated goal it is often a select group of species that people wish to attract because of qualities they find appealing. Under these circumstances, real benefits to overall biodiversity are limited. For example, most lawn and garden plants are exotic species, and some, such as Norway Maple, honeysuckles, English Ivy, and Periwinkle to name a few, are invasive, and have negative impacts if they spread into nearby natural areas. Urban areas also have concentrated sources of many pollutants. These include atmospheric pollutants such as carbon dioxide, and low-level ozone resulting from combustion of fossil fuels, as well as road salt and petroleum products like oils that wash into catch basins and make their way into streams and rivers. Pesticides and fertilizers used to maintain lawns and gardens also find their way into water bodies and natural areas and may have impacts on non-target beneficial species. Other issues that affect wildlife include high levels of noise and artificial lighting which can affect the natural behaviour of many species. Another key unintended consequence of urbanization can be the introduction of predators into a landscape – for example, the introduction of cats into wild areas can have serious detrimental impacts on native wildlife populations.

4.9 Agriculture

The establishment of farms following European settlement resulted in the loss of vast areas of habitat in southern Ontario. Today, habitat loss and fragmentation continues in areas such as the Town of Kingsville because agricultural operations are responding to the regional and global pressures to produce more food. In addition, there are also pressures for the conversion of agricultural land to other land uses as a result of increasing populations. In contrast, for areas with poor soils there may be an increase in habitat cover as farmland is abandoned. Agricultural lands can have both positive and negative impacts on terrestrial biodiversity, and best management practices can be implemented assist farming practices reduce negative impacts on water quality conditions, natural heritage features, etc. Hedgerows can be used to provide a connectivity function for small and large mammals while open cropland can be traversed by many animals, including amphibians migrating to and from forest to wetland. Some forms of agriculture, such as pastures and hayfields, provide habitat for wildlife, most notably grassland nesting birds. Impacts from runoff from agricultural lands can also be considered as impacts if the water contains excess concentrations of contaminants and associated pollutants.

4.10 Recreational Uses

There are numerous recreational uses of terrestrial natural areas (i.e. hiking trails) and a variety of impacts associated with them. In fact, as much as these activities may have human health benefits, no form of recreation is completely benign in relation to biodiversity. Even accessing natural areas on foot can disturb wildlife or result in the introduction and spread of invasive plants, the seeds of which may be clinging to boots, clothing, or pet hair. Well used trails can also result in trampling of vegetation, soil compaction and erosion.

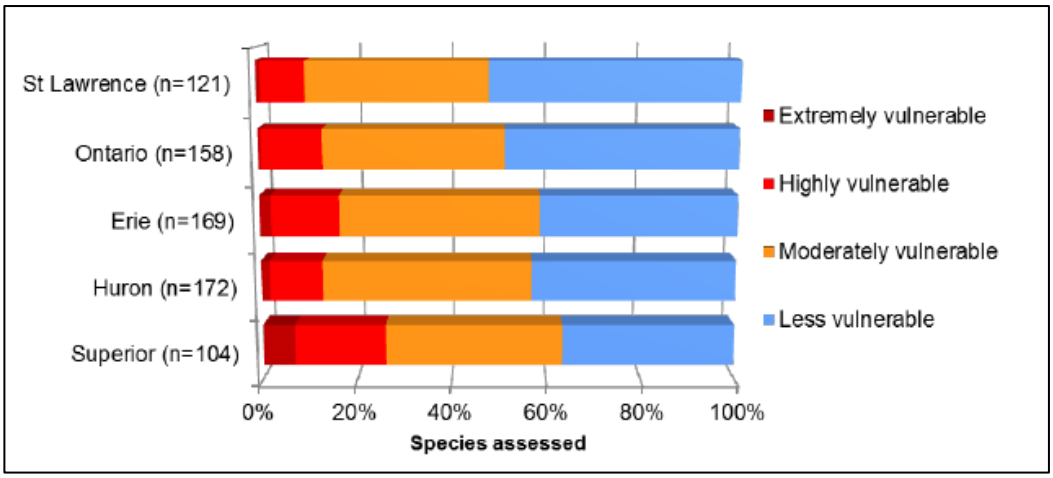
All of the above impacts are multiplied by growing public demand for recreation opportunities and the increasing use of off road vehicles such as mountain bikes, dirt bikes and all-terrain vehicles. Few natural areas are free of at least one of these activities, and the resulting damage is usually obvious. Both public and privately owned lands are affected by these uses, although the former tend to suffer from heavier use. In attempts to protect some highly sensitive areas, many agencies use mitigation measures such as controlling the number of visitors to a site, restricting access during a particular season, or restricting access to sensitive areas within a feature, such as a wetland.

In Kingsville, there is recognition of these pressures and an understanding that the location and design of recreational pathways and trails in public areas should be designed to minimize these negative impacts. There is also recognition of the multiple values of providing access to these natural features for the enjoyment and use of the public. One option that is used by many conservation organizations is to establish management plans for properties which integrate appropriate management actions to protect natural values of these properties while allowing certain activities (such as hiking, trail use) to continue.

4.11 Atmospheric Pollution and Climate Change

Natural areas are continuously subjected to various forms of atmospheric pollution including ground level ozone that contributes to smog. Plants that are sensitive to ground level ozone develop spotting on the leaves, giving them a brownish appearance. This restricts the ability of the leaves to undertake photosynthesis and therefore affects the health and resilience of the plants. Automobile exhaust and

airborne particles of fertilizers can lead to higher than normal atmospheric levels of nitrogen. Rainfall then deposits some of this nitrogen as nitrates in natural areas where it enters the soil. Native plants that are adapted to lower levels of nitrogen may then become stressed while plants that benefit from high nitrogen levels, including some invasive plants, thrive and gain a competitive advantage. The result can be a loss of biodiversity and a decline in ecological health of the entire vegetation community.



Vulnerability of species in Ontario to predicted impacts of climate change.

Global climate change will have unpredictable and possibly catastrophic impacts on ecosystems. All global climate change models predict a rate of global temperature increase that will occur over a much shorter period than at any time in the past. Many species, and plants in particular, are adapted to a given range of temperature and precipitation, thus if conditions surpass this range, those species will become stressed and eventually disappear. Although some models predict major geographic shifts in forest types, the reality is that the natural dispersal capacity of many trees and other species will not allow them to shift their ranges quickly enough. To make matters worse, fragmented landscapes already prevent the dispersal of many species, and therefore will exacerbate the problem. A provincial study assessed the vulnerability of species found within each Great Lakes watershed to predicted impacts of climate change (Brinker, Garvey and Jones, 2018).

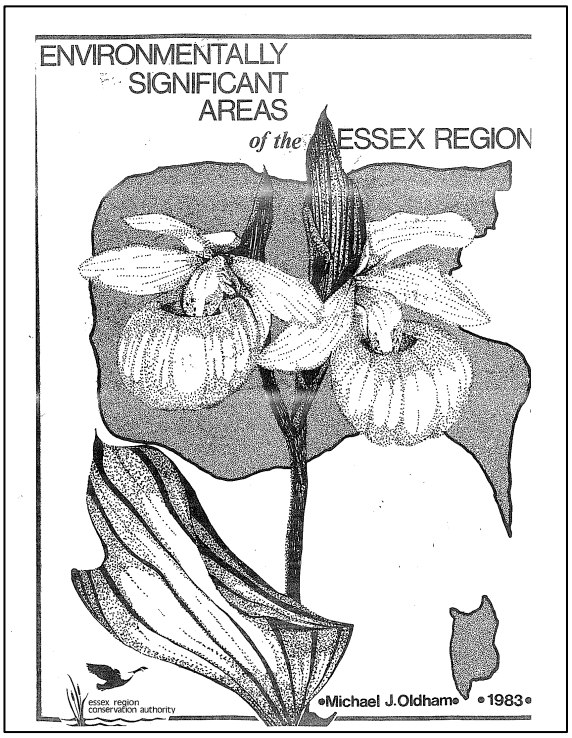
The Town of Kingsville has an important role to play to ensure that natural heritage systems are in place to reduce the impacts of fragmentation, to consider the global trends in climate change, and to provide opportunities for natural systems to adapt to these trends. This role cannot be done in isolation; partnerships with neighbouring municipalities and conservation organizations need to be established and maintained for a regional approach to natural heritage systems and natural heritage system protection to be effective.

5.0 CURRENT NATURAL HERITAGE CONDITIONS IN KINGSVILLE

The previous section of the report detailed the variety of threats to natural heritage features and systems and presented how these threats can be addressed by a natural heritage system approach. This section of the report with detail the natural heritage conditions in the Town of Kingsville and the larger region of the County of Essex and detail how previously completed studies have provided important background data and direction that can be used to inform the natural heritage system and natural heritage feature policies in the Official Plan.

Given that the Town of Kingsville is located in a part of Ontario where the landscape is highly fragmented, all of the threats to natural heritage outlined in the previous section are relevant, and can be best addressed through establishing a natural heritage system. A suite of previous studies have been completed in the Essex Region that can be used to present an historical context of the changes in natural heritage.

In 1983, ERCA completed a background report to the Essex Region Conservation Plan which detailed the Environmentally Significant Areas of the Essex Region (Oldham, 1983). At the time, Essex County had less than 3% of its total land area in forest cover and scrubland; which was at the time, the lowest percentage of any area in Ontario. This landmark report detailed a total of 33 sites of significance and made recommendations for their protection. This inventory of the significant areas was updated in 1994 with additional inventories of 15 significant sites in the region (Lebedyk and Allsop, 1994) and provided an up to date assessment of the most significant natural heritage features in the region. This report also was complemented by recommendations for natural heritage policies to incorporate into regional and local Official Plans. Of the five ESA sites identified in 1983 and 1994 all remain intact today which is a testament to the shared interests to advance their protection.



In 2002, ERCA published the Essex Region Biodiversity Conservation Strategy (ERCA, 2002) which was the first detailed inventory and habitat characterization of natural areas in the Essex Region. In addition, it was the first application of recently published habitat restoration guidelines for natural areas and habitat restoration guidelines (Environment Canada, Ontario Ministry of Natural Resources, and Ontario Ministry of Environment and Energy, 1998). This document, "A Framework for Guiding Habitat Rehabilitation in Great Lakes Areas of Concern" was developed to primarily be used in the Areas of

Concern but it was applied to the entire region. This assessment detailed that current habitat conditions were far below the guideline targets for healthy and sustainable ecosystems and further, they were highly fragmented and degraded and therefore, in need of restoration and protection. Part of the success of this report was that it detailed and prioritized areas in need of habitat restoration, habitat linkage, and enhancement. It was also the first time that a prioritized and idealized 'natural heritage system' would be identified as a target. At the time, Kingsville contained a total natural areas coverage of 2.13%.

Table 2 Natural Areas in the Essex Region in 1994 (ERCA, 2002)

Land Use	**Area (Ha)**	**Percent**
Developed Lands		
Agriculture, Urbanization	161, 489.65	93.77
Natural Habitat		
Forest	6,394.75	3.71
Wetland	4242.00	2.46
Tallgrass Prairie	79.00	0.05
Alvar	16.60	0.01
TOTAL NATURAL HABITAT	**10,732.35**	**6.23**
TOTAL LAND AREA	172,222.00	100.00

Table 3 Natural Areas Cover in the Essex Region by Municipality (ERCA, 2002).

Municipality	**Total Hectares**	**Natural Area (Ha)**	**Percent Natural**
Amherstburg	19107.46	2160.29	11.31
LaSalle	6617.27	704.60	10.65
Essex	27843.40	2077.32	7.46
Kingsville	**24819.54**	**1272.94**	**2.13**
Windsor	14602.50	713.22	4.88
Tecumseh	9545.99	338.40	3.54
Lakeshore	53292.84	1376.62	2.58

In 2013, ERCA completed a background report for the County of Essex Official Plan (ERCA, 2013). This report detailed and presented a proposed natural heritage system for the entire region. This work was built on the past biological inventory work as completed in Essex Region in 1983, 1994, 2002. It offered a recommended approach for prioritizing natural heritage features and restoration and linkage areas to establish a natural heritage system.

One of the products of this work was an updated reporting on the natural areas coverage by municipal jurisdictions (Table 4). Based on a revised assessment methodology, the total percent of natural areas within the Town of Kingsville was assessed at 5.81%. The Town of Kingsville supports a diverse assemblage of wetlands, swamps and forests.

Table 4 Natural Areas Coverage by Jurisdiction (ERCA, 2013).

Jurisdiction	Total Area		Natural Area		Percent Natural
	Hectares	Acres	Hectares	Acres	
Town of Amherstburg	19521.48	48238.44	3115.18	7697.75	15.96
Town of Essex	27826.60	68760.76	2486.30	6143.75	8.93
Town of Kingsville	24821.47	61334.93	1442.68	3564.93	5.81
Town of Lakeshore	53253.15	131590.87	1609.18	3976.35	3.02
Town of LaSalle	6805.10	16815.70	1112.61	2749.32	16.35
Municipality of Leamington	25359.67	62664.85	1285.51	3176.55	5.07
Town of Tecumseh	9538.60	23570.30	459.22	1134.76	4.81
County of Essex Subtotal	167126.06	412975.86	11510.69	28443.42	6.89
City of Windsor	14626.96	36143.86	866.21	2140.45	5.92
Township of Pelee	4169.53	10303.09	950.17	2347.91	22.79
Municipal Subtotal	185922.55	459422.80	13327.07	32931.79	7.17
Point Pelee National Park	1507.87	3726.02	1406.00	3474.28	93.24
Total	**187430.42**	**463148.82**	**14733.07**	**36406.07**	**7.86**

The distribution of natural features in the municipality appears to be relatively isolated from one another with a congregation associated with the southern boundary of the municipality (see Figure Existing Natural Features: Town of Kingsville). It is also important to note the relative distribution of natural features from adjacent municipalities. These adjacent natural features are of great significance in terms of establishing a regional natural heritage system that crosses municipal boundaries.

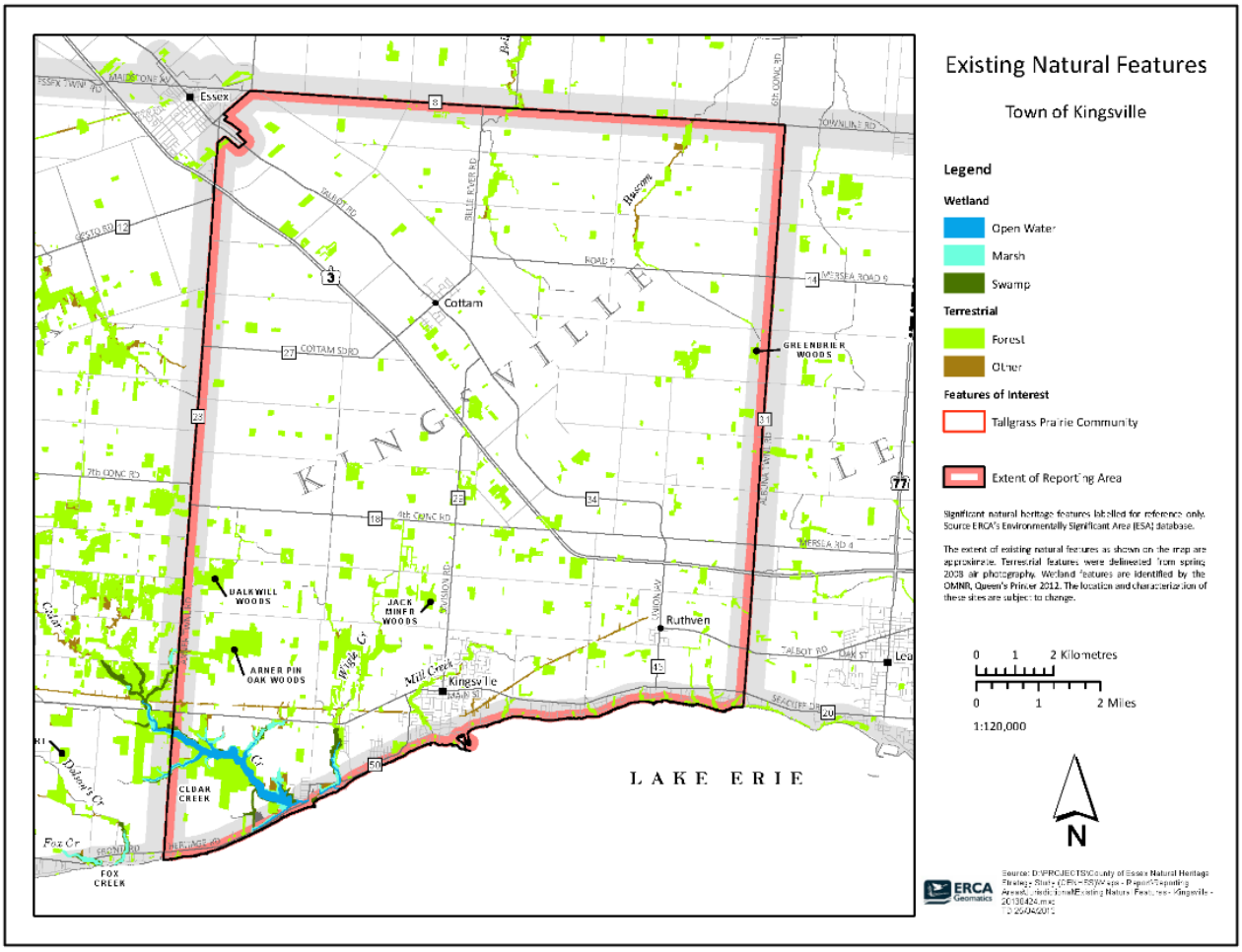


Figure 9 Existing Natural Features in the Town of Kingsville (ERCA, 2013).

5.1 Forest

Forest cover identified in the ERNHSS study refers to features which were identified through aerial photography interpretation as natural features with tree cover. These features not only include vegetation communities which meet the definition of a "forest" based on the Ecological Land Classification (ELC) system – a treed community with greater than 60% tree cover, but also include features which meet the ELC definition of a "woodland" – a treed community composed of between 35% and 60% tree cover (Lee et. Al., 1998). In addition, this layer also includes features which were readily identifiable from aerial photography as containing greater than approximately 10% tree cover, which is now referred to as "sparsely treed" communities in the most recent version of the ELC manual.

Within the Town of Kingsville approximately 5.81 percent is can be considered forest based on the ERNHSS assessment. This figure is well below the 30 percent forest cover guideline recommended as a

minimum (Environment Canada, 2014); the national and provincial goal and target of 17% of natural areas being protected; and the locally endorsed target of 12%. Although the guidelines from Environment Canada were designed to address Great Lakes Areas of Concern (e.g., Detroit River, St. Clair River, Hamilton Harbour), they have been widely used for other landscapes because they are science-based. It is recognized, as stated previously in this report that based on local context and historical lands development patterns, that striving for each local jurisdiction to meet goals that are far above and beyond that which is practically attainable is not productive. Further, that guidance is provided which encourages local jurisdictions to develop their own goals and targets based on the local situational context.

5.2 Other Terrestrial Features

The ERNHSS study also documented and reported on the distribution and presence of other terrestrial natural heritage features (ERCA, 2013). Other natural features include meadows, grasslands, tallgrass prairie, alvars, and shrub thickets and some open water features but are not explicitly described as such in the GIS database. Features within this layer were identified as natural features through past natural heritage inventories and evaluations, Environmentally Significant Areas studies but are not already included within the forest or wetland layers, or which were otherwise discernible through aerial photography interpretation. In the Town of Kingsville, as reported on in the 2013 ERNHSS report, (ERCA, 2013), only 65.46 hectares of the 1442.68 hectares of natural heritage lands were identified as 'Other Terrestrial Features'.

5.3 Wetlands

At the time of the publication of the Essex Region Natural Heritage System (ERCA, 2013) there were 169.98 hectares of provincially evaluated wetlands in the Town of Kingsville. This included wetland features that had been evaluated using the Ontario Wetland Evaluation System methodology (MNR, 2014). Not all potential wetlands in the Town of Kingsville have been evaluated; therefore, there may be additional provincially significant wetlands that would be confirmed only through site-specific inventory. As mentioned above, all features known to be swamp forest were included in the wetland calculations. In most cases, these potential wetlands will be identified in the interim as an existing natural feature.

6.0 PROPOSED NATURAL HERITAGE SYSTEMS APPROACH

6.1 Defining the Approach – A Combined Natural Heritage System

There are three basic definition and policy approaches to natural heritage systems and the following section explains each method. It should be noted that the PPS, 2014 provides policy support for the protection of natural heritage features and it also provides policy direction requiring the identification of a natural heritage system, which includes those connecting linkages and corridors.

A features approach protects all natural features, however, unless the individual features are physically linked, they remain isolated. This approach does not provide for natural linkages needed for wildlife movement if they do not already exist. Further, it does not assist in achieving restoration or providing enhancements to existing natural areas and therefore can lead to the loss and/or degradation of features.

A systems approach establishes a linked natural heritage system comprising of features and corridors or linkages between the features. A systems defined approach has a greater ability to sustain itself compared to the feature approach. A systems approach includes protection for areas that may not currently support natural features but are protected for future corridor and restoration/enhancement purposes. However, the systems approach may not provide protection for isolated features located outside of the natural heritage system that still provide ecological benefits. For example, an isolated woodlot that is not connected to an identified natural heritage system, such as along a valley corridor, would not receive individual feature based protection. In this approach, the priority is on the identification and protection of natural heritage features that are a functional component of the natural heritage system. If a natural heritage feature is isolated and not contributing to the functioning of the natural heritage system this approach may not provide protection for the feature.

A combined approach includes protection for both a natural heritage system as well as natural features that are located outside of the system. This approach allows for restoration and enhancement within a natural heritage system and also provides for protection of features outside of this system. A combined approach provides the most robust approach to protecting valued natural features. Provincial policies support this combined approach to natural heritage planning by its ability to provide protection to natural heritage features and the added requirement to identify a natural heritage system. Essentially, the PPS establishes policies that restrict development within key natural heritage features and key hydrological features within the natural heritage system, whereas with features outside of the system (except provincially significant wetlands and habitat of endangered species and threatened species) development may be permitted provided it is demonstrated that there will be no negative impact.

The combined approach was the approach selected in the development of the Essex Region Natural Heritage System (ERCA, 2013). This study detailed not only existing features and proposed restoration opportunities to create linkages and corridors to connect existing features, but also prioritized the existing features and restoration opportunities in recognition of the important decisions required to protect and establish these features in the landscape. The application of policies for protection, establishment and enhancement of these features is of paramount importance to the establishment of a fully functioning natural heritage system.

6.2 Defining the Components

The identification and delineation of a natural heritage system within the Essex Region and the Town of Kingsville requires an approach that is consistent with the provincial direction provided in the PPS, 2014

and the County of Essex Official Plan. The following sections outline the current approach to natural heritage policies in the current official plans in the Town of Kingsville, the approach taken in the County of Essex Official Plan, and the proposed policy direction for the Town of Kingsville Official Plan.

6.2.1 Significant Wetlands

The PPS defines significant wetlands as wetlands identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time. Criteria described in the Ontario Wetland Evaluation System for Southern Ontario (MNR, 2014) are used by the province to determine whether or not a wetland is considered provincially significant. Criteria include biological, social, hydrological, and special features components. If wetlands achieve a score of 600 points or more, or 200 points in the biological or special features component, it is considered to be of provincial significance. Although a wetland may achieve a lower score, it can still be considered a feature worthy of protection. Municipalities have the ability to define what it considers to be a wetland worthy of protection, including wetlands that may not have been evaluated.

Current Approach

The County of Essex Official Plan and Town of Kingsville Official Plan contains policies that do not permit development and site alteration in significant wetlands; namely: "*Development and site alteration shall not be permitted*". In addition, the County of Essex official plan has a policy for unevaluated wetlands which prohibits development and site alteration until the significant of the feature has been evaluated using the Ontario Wetland Evaluation System. The rationale for this approach is that a policy that protects all wetlands is more likely to ensure that all wetland values are maintained and the intent of the provincial policies are adhered to.

Proposed Policy Direction

It is recommended that all evaluated wetlands that that are provincially significant continue to receive protection from future development. In 2014, the Ministry of Natural Resources and Forestry updated the wetland file for the Cedar Creek Wetland Complex (ER 15). This update to the existing provincially significant wetland included some potential features that, in the opinion of ERCA, do not meet the definition of provincially significant wetlands. ERCA has been engaged with staff from the provincial Ministry of Natural Resources and Forestry since 2014 to express our concerns and attempt to solicit feedback and review of the potentially erroneous evaluated features. However, to date, the concerns that our office has expressed has not resulted in any changes to evaluated wetland boundaries. It is our recommendation that for the land use schedules depicting the extent of provincially significant wetlands that the Town of Kingsville contact the Ministry of Natural Resources and Forestry and County of Essex, as the Official Plan approval authority, to arrange for further discussions on an appropriate direction for the Official Plan Review.

It is recommended that unevaluated wetlands should be identified and detailed in the land use planning schedules and these features should receive policy treatment as outlined in the County of Essex official plan. These features should be identified as being a component of the natural heritage system. Detailing what features would be considered unevaluated wetlands can be identified through a sub-watershed study or site-specific criteria using direction and guidance provided by the Natural Heritage Reference Manual (OMNR, 2010).

6.2.2 Significant Woodlands

Significant woodlands as:

- an area which is ecologically important in terms of features such as species composition, age of trees and stand history;
- functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or
- economically important due to site quality, species composition or past management history.

The Natural Heritage Reference Manual (OMNR, 2010) identifies criteria for evaluating the significance of woodlands which includes size, ecological functions (interior, proximity to other woodlands/habitat, linkages, water protection, and/or woodland diversity), uncommon characteristics and economic and social values. The ERNHSS study further refined this definition in the Essex Region to be: "*....treed features that are greater than 2 hectares in size*". This definition was reflected in the County of Essex Official Plan.

Current Approach

The County of Essex Official Plan provides an approach where natural features that are greater than 2 hectares in size are considered to be significant woodlands. Smaller woodlands may be considered significant if they exhibit composition, age or quality that is uncommon in the municipality or the region. The policy approach for significant woodlands is: *Development and site alteration shall not be permitted unless is has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*. The existing Town of Kingsville Official Plan has the same land use classification policy approach.

Proposed Policy Direction

It is recommended that the same land use planning policy approach used in the County of Essex Official Plan and the existing Town of Kingsville Official Plan. This would result in significant woodlands that satisfied between 1 and 4 criteria in the Essex Region Natural Heritage System Strategy receiving policy protection that prohibits future development and site alteration unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. These features should be identified as being included in the natural heritage system. It should be noted that some natural features that satisfied between 5 and 11 criteria in the Essex Region Natural Heritage System

Strategy were recommended to receive a higher level of policy protection that prohibits further development and site alteration. It is therefore possible that some significant woodlands, by their ecological value and potential proximity to other features, may be recommended for a land use classification approach equivalent to the Environmental Protection Area of the existing Town of Kingsville Official Plan.

6.2.3 Significant Valleylands

The PPS defines valleylands as a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year (PPS, 2014). The fact that it is "a natural area that occurs in the valley" suggests that it is not the landform itself that is the subject of the policy, but the natural feature within the landform. Significant valleylands are ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of the natural heritage system. The existing provincial guideline (Natural Heritage Reference Manual OMNR, 2010) outline that significant valleylands are based on the following features:

1) More or less continuous natural areas providing connections within the watershed;
2) Contains a diversity of native species, natural communities and landscapes; and,
3) Provides ecological function such as habitat, passage, refuge, hydrological flow, and buffering from adjacent areas.

Current Approach

The County of Essex Official Plan provides an approach where significant valleyland features are to be identified and evaluated as per existing guidelines. ERCA has completed this assessment and all significant valleyland features are reflected in the ERNHSS study (ERCA, 2013). The policy protection for these features in the County of Essex Official Plan is: "*Development and site alteration shall not be permitted unless is has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*" The existing Town of Kingsville Official Plan also provides similar protection for significant valleylands and they receive equivalent land use policy treatment.

Proposed Policy Direction

It is recommended that the approach used in the County of Essex Official Plan and existing Town of Kingsville Official Plan continue to be used. Significant valleyland features that satisfied between 1 and 4 criteria in the Essex Region Natural Heritage System Strategy should receive policy protection that prohibits future development and site alteration unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. It is recommended that these features should be identified as being contained within the natural heritage system. It should be noted that some natural features that satisfied between 5 and 11 criteria in the Essex Region Natural Heritage System Strategy were recommended to receive a higher level of policy protection that prohibits further development and site alteration. This approach was taken to reflect the relative significance of these

features in the region and to identify and reflect other potential constraints to development such as natural hazards, watercourses, or significant surface water features.

6.2.4 Significant Wildlife Habitat

The PPS defines wildlife habitat as: "...specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual life cycle; and areas that are important to migratory and non-migratory species". Significant wildlife habitat is defined in the PPS as "...ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of the natural heritage system". Provincial direction that details the approach that must be taken to map and delineate significant wildlife habitat is provided in the Significant Wildlife Habitat Technical Guide (OMNR, 2000). This document also provides planning authorities with guidance in the identification of significant wildlife habitat. The four categories of significant wildlife habitat are:

- Habitats of seasonal concentrations of animals
- Rare vegetation communities or specialized habitat for wildlife
- Habitat of species of conservation concern (excluding the habitat of endangered and threatened species)
- Animal movement corridors

Municipalities are encouraged to identify significant wildlife habitat or to protect areas that qualified as significant wildlife habitat through Official Plan policies. This approach is described in the revised Natural Heritage Reference Manual which recommends and outlines a new process for identifying and confirming the occurrence of significant wildlife habitat as part of development applications. The Natural Heritage Reference Manual states that "*...while MNR can recommend criteria and a process for identifying significant wildlife habitat, the planning authority has the ultimate responsibility for protecting significant features. To ensure protection of the habitat, the planning authority will need to undertake the necessary studies or establish policies for proponents to identify and evaluate significant wildlife habitat.*"

<u>Current Approach</u>

The County of Essex Official Plan provides an approach where significant wildlife habitat is to be identified per existing guidelines. The existing Town of Kingsville Official Plan contains supportive policies to require evaluation of features that may meet the criteria if the feature is assessed. Some significant wildlife habitat can be identified through existing and previous studies, e.g., some rare vegetation communities may be identified in completed natural heritage inventories, environmental assessments or environmental impact assessments. The policy protection for these features in the County of Essex Official Plan is: "*Development and site alteration shall not be permitted unless is has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*". The County of Essex Official Plan did not proceed to undertake a regional exercise to assess and map

significant wildlife habitat as a specific component of the natural heritage system. However, it is recognized that significant wildlife habitat is found within many natural heritage features.

Proposed Policy Direction

It is recommended that the approach used in the County of Essex Official Plan and existing Town of Kingsville Official Plan continue to be used. Existing natural features that support significant wildlife habitat that satisfied between 1 and 4 criteria in the Essex Region Natural Heritage System Strategy should receive policy protection that prohibits future development and site alteration unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Where known, features that comprise significant wildlife habitat should be included as a component of the natural heritage system. The land use planning policy approach should reflect all significant wildlife habitat as a component of the natural heritage system. As noted in other features, it is possible that a feature that satisfies the criteria for significant wildlife habitat receives a higher level of protection as a result of it meeting between 5 and 11 criteria in the Essex Region Natural Heritage System Strategy.

It is recommended that the Town enable updates without an amendment to the Official Plan schedules should additional information be made available that would necessitate updating the mapping schedules (e.g,. through data collected under other processes). The identification and protection of significant wildlife habitat is provided for through site specific environmental impact assessments and as information becomes available.

6.2.5 Significant Areas of Natural and Scientific Interest

The province of Ontario established a program of assesssment and prioritization of areas of geological or ecological features that are representative provincially, regionally or locally. Features that met criteria for ecological significance area referred to as Significant Areas of Natural and Scientific Interest. Areas of Natural and Scientific Interest (ANSI) play an important role in the protection of Ontario's natural heritage, since they best represent the full spectrum of biological communities, natural landforms and environments across Ontario outside of provincial parks and conservation reserves.

Life science ANSIs are significant representative segments of Ontario's biodiversity and natural landscapes, including specific types of forests, valleys, prairies, savannahs, alvars and wetlands, their native plants and animals, and their supporting environments. They contain relatively undisturbed vegetation and landforms and their associated species and communities. Provincially significant life science ANSIs include the most significant and best examples of the natural heritage features in the province, and many correspond to other significant features and areas such as wetlands, valleylands and woodlands. Regionally significant life science ANSIs are also important components of natural heritage features in a particular life science region. Within Kingsville, there is one identified provincial ANSI (Cedar Creek) and one identified regionally-significant ANSI, Ruthven Rocky Woods.

Current Approach

The County of Essex Official Plan provides an approach where significant areas of natural and scientific interest is to be identified in accordance with the natural and scientific interest confirmation process that is completed by the Ministry of Natural Resources and Forestry. The policy protection for these features in the County of Essex official plan is: "*Development and site alteration shall not be permitted unless is has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*" The existing Town of Kingsville Official Plan provides for an equivalent land use planning approach for ANSIs. The current County and Town approach is only to provide protection for provincially significant ANSIs and not for regionally significant ANSI features.

Proposed Policy Direction

It is recommended that the existing approach used in the County of Essex Official Plan and Town of Kingsville be modified to afford a higher level of protection for regionally significant ANSI features. These regionally significant natural heritage features should receive policy protection that prohibits future development and site alteration. In Kingsville, this currently would affect only a single natural heritage feature located at the southwest corner of the Highway 3 and Graham Sideroad intersection (Ruthven Rocky Woods regional ANSI). It is recommended that all provincial and regional ANSI features are identified to form a component of the natural heritage system.

It is recommended that the Town of Kingsville Official Plan reflect a policy to allow for an amendment to the Official Plan should new information on the location of ANSIs be made available by the Ministry of Natural Resources and Forestry.

6.2.6 Fish Habitat

The PPS defines fish habitat in accordance with the federal Fisheries Act; namely, "....means spawning grounds and any other areas, including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes". Fish habitat does not only include the watercourse – it must take into account the associated habitat located away from the water. One categorization of this essential area is ensuring there is adequate width and quality of riparian corridors. If this is accomplished it can achieve multiple targets such as:

- Protecting and enhancing sensitive fish habitat such as spawning areas,
- Protecting and improving the thermal regime (water temperature) of the watercourse,
- Capturing sediment and nutrients before reaching the watercourse,
- Providing essential food supply sources from overhanging vegetation,
- Supporting biodiversity and wildlife movement,
- Providing ground water recharge opportunities,
- Reducing erosion or stream banks, and
- Providing for flood storage capacity.

Riparian corridors, defined as all of the land within 30-metre of either side of a watercourse, is well documented as providing protection to natural features, functions and conditions that support fish life processes and protect fish habitat. Watercourses can be permanent, intermittent, and ephemeral and can include headwater drainage features, lakes and ponds.

Current Approach

The County of Essex Official Plan provides an approach where fish habitat is to be identified through consultation by the Conservation Authority and Fisheries and Oceans Canada. The existing Town of Kingsville Official Plan has supportive policy that requires that development in and adjacent to fish habitat is only permitted through an authorization with the federal Department of Fisheries and Oceans and consultation with ERCA. There is no specific fish habitat or priority fish habitat areas of fish habitat identified in land use planning schedules.

Proposed Policy Direction

It is recommended that the same policy approach used in the County of Essex Official Plan and existing Town of Kingsville Official Plan be taken. Existing natural features that support fish habitat should receive policy protection that requires: "*Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements*." The identification and protection of fish habitat is provided for through the requirement for consultation with Fisheries and Oceans Canada.

It is recommended that the Town of Kingsville identify and map fish habitat features and characteristics at a detailed scale, such as within a stream reach or intermittent stream, or along Lake Erie, to be available for the screening and review of individual development proposals. This direction is in keeping with provincial guidance where no detailed fish habitat mapping is available – through the provincial Natural Heritage Reference Manual (MNR, 2010). Specifically, fish habitat should be identified on land use schedules in the Town of Kingsville Official Plan. Fish habitat can be associated with municipal drains, streams, rivers, creeks, ponds, wetlands, and identified ground water features and surface water features.

6.2.7 Significant Habitat of Endangered Species and Threatened Species

Defining significant habitat of endangered species and threatened species are provincial responsibilities. The role of the Municipality is to address the protection of these natural features and habitat through Official Plan policies. The PPS outlines that no development or site alteration shall be permitted in significant habitat of endangered or threatened species except in accordance with provincial and federal requirements. The exact locations of these species and their associated habitats may not be appropriate to identify in municipal planning documentation as in some cases, this information is considered sensitive. The province determines what information and processes are

required to confirm that this policy in the PPS can be satisfied. The protection of significant habitat of endangered and threatened species, especially habitat essential for reproduction or for survival at critical points in the life cycle, is fundamental for the recovery of species at risk. Protection is necessary to prevent the extirpation of species from Ontario and to assist with their recovery.

Current Approach

The County of Essex Official Plan and existing Town of Kingsville Official Plan provide an approach where habitat of endangered species and threatened species is to be identified through consultation with the Ministry of Natural Resources and Forestry. The policy approach for these features, if they are identified, in the County of Essex Official Plan is: "*Development and site alteration shall not be permitted.*"

The identification of habitat varies considerably from species to species, depending on the individual species' habitat needs. Currently, and proposed to remain, are the policies related to significant habitat of threatened and endangered species; the precise configuration of the significant habitat area should be determined by an individual with expert knowledge of the requirements of the species, taking into consideration local topographic features and other factors. No mapping of this has been provided in either the current Town of Kingsville Official Plans or the County of Essex Official Plan.

Proposed Policy Direction

It is recommended that the same approach used in the County of Essex Official Plan, as updated by changes in the PPS, 2014, be used in the Town of Kingsville. Changes resulting in the specific provincial policy wording to: "*Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements*" should be reflected in the Town of Kingsville land use planning policy approach.

6.2.8 Water resource systems – surface and ground water features

Surface and ground water features and their hydrological functions are important components of a natural heritage system. The consideration of surface and ground water features is consistent with a watershed-approach to land use planning and the current provincial policy statement that establishes watersheds as a component of the regional land use planning context. Specific components that should be considered in this systems approach include the surface water catchment areas of wetlands necessary to maintain the integrity and health of the area, the species that depend on the feature, and the functions that the feature provides including water balance, flood attenuation, and temperature mitigation. Some natural heritage features and their interrelationships with their associated surface and ground water features may be sensitive to development. Identified significant groundwater recharge areas and highly vulnerable aquifers that were identified through provincial initiatives are important components of the water resources system that may require additional protection and consideration with associated features in the natural heritage system.

Current Approach

The County of Essex Official Plan and existing Town of Kingsville Official Plan provide an enabling approach that reflects identified significant groundwater recharge areas and highly vulnerable aquifers. County of Essex Official Plan policies reflect the requirement of a groundwater impact assessment to be completed when a development proposal is within an identified feature.

Proposed Policy Direction

It is recommended that the Town of Kingsville enable a supportive policy approach that considers and requires environmental impact assessments to be required for development within and adjacent to significant groundwater recharge areas and highly vulnerable aquifers. The Town of Kingsville should also as a component of the Official Plan review process, consider revising and reviewing the background information that was used to inform the location and extent of significant groundwater recharge areas and highly vulnerable aquifers. The background work was completed in 2001 and has not been revised or reviewed since its completion.

It is recommended that the Town of Kingsville update and map the presence of surface water and ground water features as a component of watershed-based studies or other appropriate studies. The current information available is insufficient to fully identify water resource systems in the Town of Kingsville. This work can be informed by existing reports (e.g., Dillon and Golder, 2004) but should also reflect additional information following the direction of the PPS, 2014 – specifically:

> *Section 2.2.1 e) 2. protect, improve or restore vulnerable surface and ground water, sensitive surface water features and sensitive ground water features, and their hydrologic functions;*

6.3 The Combined Approach

As described at the beginning of this section, the Town of Kingsville's natural heritage system is proposed to be defined using a combined approach, which not only delineates those features that are linked together, i.e. woodlots located along connected watercourses, but also the features that are geographically isolated from the linked system, i.e. a woodlot that is separated from another feature by an agricultural field.

Using the available information provided from Essex Region Conservation Authority and the Town of Kingsville, background reports, environmental assessments and the specific methodologies identified in this report, the Town of Kingsville should proceed with a natural heritage system that takes into consideration all of the available natural heritage information. Further, the identification of those proposed connections and linkages between natural heritage features should be identified at a municipal level. These existing features and restoration opportunities can then be combined together create a proposed natural heritage system. The recommended approach for defining a Town of

Kingsville natural heritage system and associated supportive Official Plan policies in this discussion paper will lead to the creation and establishment of a natural heritage system that is in conformity with the policies of the PPS, and the County of Essex Official Plan.

7.0 OFFICIAL PLAN POLICY RECOMMENDATIONS

It is proposed that the approach taken in the Essex Region Natural Heritage System Strategy (ERCA, 2013) and the County of Essex Official Plan be reflected in the Town of Kingsville natural heritage policies of the Official Plan Review. This approach supported the establishment of complementary policies for the protection of natural heritage features as outlined in both the County of Essex Official Plan and the PPS, 2014.

7.1 Implementing the Natural Heritage System: A Target Natural Heritage System

The combined approach to natural heritage systems as outlined in this background discussion paper includes protection for both significant natural heritage features and the requirement to identify a natural heritage system. This is the approach reflected in the County of Essex Official Plan and as required by the PPS, 2014.

A combined approach provides a robust method for protecting valued natural features and to establishing a functioning natural heritage system. The policies in the PPS, 2014 support the application of a combined approach to natural heritage planning by providing a tiered level of protection to both a natural heritage system and to natural heritage features. The next step for Kingsville to take is to initiate development of a target natural heritage system by refining the work of the Essex Region Natural Heritage System (ERCA, 2013) to better identify the location of restoration opportunities within the proposed natural heritage system, determine appropriate priorities for the existing natural heritage features and recommend how the existing system can be created, maintained and improved.

It is important to emphasize that the target areas represent lands that have been identified by the model as having the greatest potential to improve ecological function. However, because most of the lands are privately owned, these targets should not be viewed as having been "set in stone." Instead they are guidelines to help set stewardship priorities, or to identify areas that should be taken into consideration during proposed land use changes, in which case protection or mitigation measures, and possible compensation opportunities should be discussed.

It is recommended that the following policy issues be incorporated into the Town's Official Plan Review:

- Establish supportive policies that are consistent with the PPS, 2014 and the County of Essex Official Plan for natural heritage system identification and protection. The approach of a land use designation and land use overlay approach to natural heritage feature and natural heritage

system identification and protection that meets the County of Essex Official Plan and PPS, 2014 requirements is recommended.

- Consideration should be given to going above and beyond the PPS policy 2.1.3 that requires for the identification of natural heritage systems. Specifically, the Town of Kingsville should consider affording policy protection for the natural heritage system features and linkages in addition to the existing protection provided to existing natural heritage features. This is in keeping with the combined approach to natural heritage system identification.

- Establish policies that address the need to conduct an Environmental Impact Assessment (EIA) for any applications that have the potential to negatively impact the natural features in the natural heritage system. The terms of reference for the EIA should be developed in consultation with the Essex Region Conservation Authority and, where appropriate, in consultation with the Ministry of Natural Resources and Forestry (for habitat of endangered species and threatened species issues) and Fisheries and Oceans Canada (for fish habitat issues).

- Review and potentially revise the restoration opportunities mapping identified in the Essex County Natural Heritage System Strategy (ERCA, 2013). The ERNHSS study did not develop the linkages and corridors for the study in consultation with Town of Kingsville staff or after receiving input from residents. Input from additional sources and stakeholders may help to refine and revise the locations for future location of the natural heritage system. For example, the information from the Parks and Recreation Master Plan may identify utility corridors, inland watercourses and recreational trails that could be used as physical linkages between remaining natural heritage features.

- Protect the natural heritage system from impacts of public infrastructure projects wherever possible, primarily limited to crossings (i.e., gas line, electricity lines, etc.). Infrastructure may be permitted within the natural heritage system provided impacts are minimized and sensitive features are avoided to the extent possible. This would only be allowed based on the specific environmental impact study for the project with the goal to ensure that infrastructure projects are only built within the Natural Heritage System as a last resort and the only viable alternative;

- Consider mechanisms for how to create the natural heritage system where existing features do not currently exist. A suite of options including stewardship outreach, financial incentives, partnerships with conservation organizations (including ERCA), and policies that support the establishment of restoration opportunities as a component of the natural heritage system need to be put into place.

- Consider supporting the development of biodiversity offsetting policies and land banks as potential mechanisms to encourage the development of natural heritage systems. In some situations where protection of a natural features is not possible, the policy environment that

enables appropriate compensation through approved defensible policies and approaches can assist with long-term natural heritage system implementation and maintenance.

- Incorporate a monitoring policy into the new Official Plan that would serve to require reporting on the status of the implementation of the natural heritage system as well as including a requirement that individual natural heritage features within the system are periodically assessed for their relative health and function.

- Support the development of communications tools to inform residents on the availability of programs and tax incentives that recognize the value of private landowner stewardship of natural areas. The province already provides tax incentive programs for public and private landowners who protect and manage natural heritage features. This could be jointly written by ERCA with input from the Ministry of Natural Resources and Forestry and could be used to support the implementation and protection of the natural heritage system.

- Support the development and review of a municipal land securement strategy to be linked to long-term securement of the natural heritage system. ERCA already has established internal policies and strategies to direct land securement activities and this could be used to support and inform Town of Kingsville initiatives. Policies should reflect the importance of other opportunities to acquire funding and access programs to support private stewardship and land acquisition activities that establish and maintain the natural heritage system.

- Support the development of environmental impact assessment guidelines and appropriately reflect the guidelines in Official Plan policies.

- Support the development of hydrogeological assessment guidelines for use in completing groundwater impact assessments and environmental impact assessments in significant groundwater recharge areas and highly vulnerable aquifers. Appropriately reflect the guidelines in Official Plan policies.

- Support the development of habitat compensation guidelines to be used in conjunction with environmental impact assessment guidelines to provide policy support for approved losses of natural heritage features through environmental assessments or other equivalent planning processes. ERCA can provide a supporting role in recommending planning approaches and considerations.

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