June 2024

Natural Asset Inventory & Natural Heritage Study

Recommendations Report

Prepared for

The Town of The Blue Mountains

green ANALYTICS

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Executive Summary

As a rapidly growing municipality comprised of beautiful agricultural and natural landscapes, the Town of The Blue Mountains it is an increasingly sought after location to live, work, visit and play. The natural environment is a defining character of the Town and there is a growing recognition of the role and value the natural environment plays in providing safe, healthy, and resilient communities, and in building resilience to climate change. It is therefore vital that the town appropriately balance and manage the requirements for growth with protection of its natural landscape through natural heritage planning and management of its natural assets.

This study sets a foundation for natural heritage planning and management of the Town's natural assets by mapping natural assets and assigning monetary values to the benefits they provide the Town, providing direction for the identification of a natural heritage system and providing recommendations for natural heritage policies.

This study is comprised of two distinct, but interrelated parts.

The **Natural Heritage Study** is a review of current policies and best practices to develop recommendations for management of natural environment features, areas, and functions through the identification of a natural heritage system, updates to and new natural heritage policies, and implementation tools (e.g., impact study guidelines). This work views and considers natural features and areas on the landscape through the lens of land use planning and management of natural features for their ecological form and function. This work primarily supports land use planning in the Town.

The **Natural Asset Inventory** is an inventory of natural features that provide benefits to the Town and its residents in the form of ecosystem services (e.g., flood mitigation). These services are assigned monetary value and potential risks to the assets providing these services are identified. The NAI recognizes natural assets as municipal assets as part of a holistic asset management approach for the Town. This work will support asset management in the Town and specifically, integration of natural assets into the Asset Management Plan.

While both parts consider natural features on the Town's landscape, their purpose and application are distinct. This report presents each as a distinct chapter, presenting an overview of key project components and outcomes.

Key outcomes from the Natural Asset Inventory include:

- Preparation of a natural asset registry, documenting and mapping natural assets across the Town's landscape including forests, wetlands, watercourses, and shoreline.

- A high-level assessment of the condition of natural assets across the Town using landscape level indicators of asset condition and function with natural assets in the Town being in overall good to very good condition. Assets in or near settlement areas are more likely to be in poorer condition than those in rural areas of the Town.
- Identification and application of hazards priorities which put the services (benefits gained from) of natural assets at risk.
    - Risk levels are relatively high for hazards which are present across the landscape such as invasive species, which already impact many of the Town's natural areas.
    - Risk associated with settlement areas (e.g., loss through development) are most acute in and near settlement areas where the highest pressure on land use change is observed.
    - Environmental risks such as drought are considered a lower overall risk due to infrequency and general resilience of the landscape.
- Services provided by natural assets can be assigned a monetary value (e.g., avoided costs if the service were lost / removed, willingness to pay to access a service, etc.).
    - Across the Town's landscape, natural assets are estimated to provide $86.5M to $103.5M in services. When considering town owned assets only, services were valued at between $15.5M and $16.6M.

The Town will continue to work to integrate natural assets into their Asset Management Plan and consider how best to prioritize natural asset management to protect important services and functions in the long-term.

Key outcomes from the Natural Heritage Study include:

- Different approaches to identifying / delineating a natural heritage system were described – a features-based approach, which uses the limits of features to define the system, and core-areas based approach, which uses groups of features or areas to define the system.
    - It is recommended that the Town use a core-areas based approach.
    - Core Areas provides the Town with opportunities to refine natural heritage policy and direct different levels of natural heritage protection or management to different areas. This flexibility can be used to support good land use planning and manage different pressures across the landscape through good land use planning practices.
- Overall Natural Heritage Target Options were presented and engagement on the Options was undertaken. The Overall Target provides the guidance and direction for goals and objectives of the Natural Heritage System.
    - Target Options considered were Maintaining Key Features, Maintaining a Natural Cover Target, or Net Gain (natural heritage).

  - Based on existing town strategic objectives and feedback through engagement, it is recommended that the Town consider Target Option 2 or 3 for informing natural heritage planning and management in the Town.
- Within the selected Overall Target, there remains flexibility for how large (i.e., how much of the landscape) is captured within a Natural Heritage System for the Town. Through this project, three general system options were presented. The options focused on three points along a spectrum from a 'smaller' system to a 'larger' system based on the total number of Key Features (i.e., significant and important natural features to maintaining the Towns ecological function).
  - Option 1 represented a 'minimum' system and Option 3 represented a large system. Option 2 is a 'moderate' system in terms of overall number of Key Features.
  - Based on engagement through this project, the preliminary recommendation is that the town go beyond a 'minimum' system. It is recommended that the Town consider identifying a natural heritage system more aligned with Option 2 or 3.
- Consideration was given to the County's Natural Heritage System and the potential option of adopting this system as the Town's system.
  - Based on the Town's existing strategic objectives and outcomes of engagement through this project, it is recommended that the Town identify its own natural heritage system.
- Recommendations for natural heritage policy, building from the County's NHS, were prepared to support each of the overall natural heritage targets considered.
  - Recommendations include updates to existing policies and new policies.
  - Policy recommendations vary based on the target chosen by the Town. This is to reflect the general approach required to support good land use planning and achieve the objectives of each target level.
- Recommendations were also made for implementation support tools.
  - These included by-laws, guidelines and standards, and strategies.
  - It is recommended that the Town consider prioritizing preparation of Environmental Impact Study and Tree Inventory & Preservation Guidelines in the short-term. These guidelines can be developed to support existing Official Plan policies to improve current land use planning processes (consistency, minimum standards, etc.). Minor updates may be required to reflect updated policies, when adopted in the future.

Most of the recommendations will be actioned through an update to the Official Plan and preparation of a Town-specific Natural Heritage System. To support interim updates and affect positive change for natural heritage management in the Town near-term opportunities were also identified which can be accommodated and addressed through the current Official Plan (p. 58).

Next steps for preparing a Town-specific Natural Heritage System focus on defining and delineating a Natural Heritage System and preparation of natural heritage policies which support the preferred system and targets for the Town. Generally, this work can be broken down into several main steps:

1) Refine System Options | Through this step, natural cover target(s) will be established, feature specific criteria for Key and Supporting Features that achieve the targets identified, and options for Core Areas prepared. General policy implications of options presented will be identified to inform evaluation and selection of a preferred system.
2) Define Preferred System + Draft Policy Development | Informed by engagement and further technical analysis, a preferred system will be identified. Draft natural heritage policy will be prepared. Presentation of the preferred system and focused engagement on mapping of Core Areas and draft natural heritage policy will occur in this step.
3) Recommended System + Policy | Final system refinements, if required, and refinement of natural heritage policy occur through this step with the outcome being finalized recommendations to council.
4) Adoption by Council | The recommended system and natural heritage policy will be presented to council for adoption.

Engagement through next steps should include open engagement sessions (e.g., open houses or facilitated public sessions) and focused meetings with Indigenous treaty holders and stakeholders (e.g., agricultural community, development community).

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Study Overview

There is growing recognition of the role and value the natural environment plays in providing safe, healthy, and resilient communities, and in building resilience to climate change. This includes appreciation and valuing of the services provided by natural assets and the ecological and hydrological functions they provide.

Municipalities, including the Town of The Blue Mountains are taking action to protect, effectively manage and, where possible enhance the natural environment to ensure these values and functions are sustained for current and future generations. These actions can include:

- Creating inventories of natural assets to better understand the services provided and their value to municipalities,
- Defining systems that maintain important ecological and hydrological functions for the long-term,
- Policies to protect and manage the natural environment,
- Processes to ensure adequate assessment of potential impacts,
- Guidelines and standards to support implementation of policies, and
- Promoting good land stewardship.

As a rapidly growing municipality comprised of beautiful agricultural and natural landscapes, The Town of The Blue Mountains is an increasingly sought after location to live, work, visit and play. The natural environment is a defining character of the Town. It is therefore vital that the town appropriately balance and manage the requirements for growth with protection of its natural landscape. Through this study, the Town is setting a foundation for continuing to undertake actions which support natural heritage planning and management of its natural assets and natural heritage by:

- Mapping natural assets and assigning monetary values to the benefits they provide the Town.
- Providing direction for the identification of a natural heritage system.
- Providing recommendations for natural heritage policies.

This study will guide and support ongoing work within the Town to address requirements for natural environment planning and support the long-term vision for the Town's character and the role the natural environment plays in it.

A Project of Two Parts

This project is comprised of two distinct, but interrelated parts, a Natural Asset Inventory and Natural Heritage Study.

The **Natural Heritage Study (NHS)** is a review of current policies and best practices to develop recommendations for management of natural environment features, areas, and functions through the identification of a natural heritage system, updates to and new natural heritage policies, and implementation tools (e.g., impact study guidelines). This work views and considers natural features and areas on the landscape through the lens of land use planning and management of natural features for their ecological form and function. This work primarily supports land use planning in the Town.

The **Natural Asset Inventory (NAI)** is an inventory of natural features that provide benefits to the Town and its residents in the form of ecosystem services (e.g., flood mitigation). These services are assigned monetary value and potential risks to the assets providing these services are identified. The NAI recognizes natural assets as municipal assets as part of a holistic asset management approach for the Town. This work will support asset management in the Town and specifically, integration of natural assets into the Asset Management Plan.

While both parts consider natural features on the Town's landscape, their purpose and application are distinct. This report presents each as a distinct chapter, presenting an overview of key project components and outcomes.

Engagement

The Natural Asset Inventory and Natural Heritage Study was initiated in October 2023. Engagement on the project included a project website and two public open houses.

Public Open House #1

Public Open House #1 was held on January 25, 2024. This open house presented initial steps of the Natural Asset Inventory – preparation of the asset registry and condition assessment and background and gap analysis for the natural heritage study.

Information presented at this open house set out a foundation for the basic content and approach for the study and obtained feedback from attendees on natural heritage, natural assets and the groundwork completed to date in the project.

Key messages heard from this open house included:

- Public interest and concern for the natural environment is high.

- Maintaining, protecting and where possible improving the natural environment are highly valued objectives.
- Interest in opportunities and supportive policies or programs for biodiversity improvements and overall greening (e.g., roadside seed mixes, best management practices, etc.).
- Management for trees in urban and settlement areas to support aesthetic and other functions was of interest to many participants.
- There was support and interest in seeing holistic management of the natural environment for the Town, supported through this study.
- High levels of interest in balanced land use planning with consideration for the natural environment, including where and how development should be directed.

Public Open House #2

Open House #2 was held on April 11, 2024. This second open house focused on discussion and feedback on draft project outcomes from the Natural Asset Inventory and options and directions for natural heritage planning, including:

- Approaches to identifying a Natural Heritage System
- Natural Heritage Target(s)
- Natural Heritage System Options
- Preliminary directions and recommendations for policies and implementation tools

Key messages heard from this open house included:

- Continued support for high levels of natural heritage protection and strong policies for management of these resources.
- There is concern for the long-term protection and permanence of features on the landscape.
- The majority of attendees chose Target #3 (Net Gain)
- The majority of attendees would like to see the town identify a large system (large number of key features).
- Interest was clearly stated for limited flexibility and more prescriptive and prohibitive policies to ensure protections can be upheld.
- Attendees were very supportive of implementation tools which provide clarity and a set of standards to which land use planning processes can be held.

Natural Asset Inventory

Natural Asset Inventory

Natural assets can include semi-natural features, such as urban greenspaces, and natural heritage features (e.g., woodlands, watercourses, wetlands) that provide vital ecosystem services.

A Natural Asset Inventory is the process of cataloguing where natural assets occur and how many are present on the landscape (e.g., total area), assessing the potential condition of these assets to inform their ability to provide ecosystem services, and identifying potential hazards that could affect the ability of assets to provide ecosystem services. Services provided by natural assets are assigned a monetary value to help quantify the benefits received and inform potential for managing natural assets.

Ecosystem Services include things such as flood attenuation (i.e., slowing down flood water), infiltration of precipitation, pollination, carbon sequestration, recreation, etc.

Why Manage Natural Assets?

The Town is taking action to identify and effectively mange its natural assets to ensure the services and functions they provide remain healthy and sustainable for the long-term. Climate change and biodiversity are increasingly important issues at local and international scales. Understanding the Town's natural assets and taking steps to ensure they are identified, and that policies and practices support their protection and appropriate management, are critical steps toward creating sustainable communities.

In addition, the 2019 Canadian Infrastructure Report Card found the country's built infrastructure to be at risk, with a considerable amount of infrastructure in poor or very poor condition. The state of Canada's infrastructure poses a financial challenge to municipalities. Natural assets provide a cost-effective, resilient, alternative to some built infrastructure. When managed properly, natural assets provide numerous valuable services including stormwater management, erosion control, urban heat reduction, air quality improvements, recreation, and more.

The Government of Ontario, through the Asset Planning for Municipal Infrastructure regulation (O.Reg. 588/17) requires municipalities to have an asset management plan for municipal assets which include natural assets. The Town's Asset Management Plan (A.M.P.) does not yet include natural assets. The natural asset inventory work completed as part of this project is needed to identify these assets in the Town. This will feed into the A.M.P. and inform management opportunity and future directions for managing the Town's natural assets as part of a holistic approach to asset management.

This work directly supports Bold Action 5 of the Community Sustainability Plan.

NAI Process

The Town of The Blue Mountains' Natural Asset Inventory was scoped to encompass six key steps or tasks. These are briefly described below with more detailed overview of work completed and key outcomes from each task summarized in the following sections.

Obtain and Review Data
Obtain and/or create spatial data that shows the distribution of natural features and areas within the Town.

Create the Asset Registry
Integrate the natural features and areas mapping into a natural asset "registry", a tabular depiction of the type, extent, and location of the natural assets under consideration.

Assess Asset Condition
Identify and apply indicators of potential asset function and condition using available datasets to create condition ratings for assets across the Town.

Assess Asset Risks & Vulnerabilities
Identify and rank priority hazards that may negative impact natural assets across the town to create an overall hazard risk rating for assets across the Town.

Natural Asset Valuation
Identify ecosystem services provided by natural assets in the Town and assign monetary values to the services derived from the natural assets.

Natural Asset Prioritization
Based on results of the previous tasks, develop a set of criteria to identify priority assets for management by the Town.

Obtain and Review Data

The Natural Asset Inventory (NAI) is built using spatial datasets which reflect the location and limits of different features (e.g., wetlands, woodlands) on the landscape. Many spatial datasets for natural features are available from common data sources. Some of these datasets could be used 'as is'. For others, gaps in the data (e.g., not available across the whole municipality), or outdated data needed to be addressed. A first step in the project was establishing this baseline data to ensure that the information being used for the study is consistent across the municipality and reflects the current landscape.

Where possible, data was used from existing sources. For this project, this included watershed, watercourse, land parcels and ownership, roads, and existing urban tree inventory datasets.

To support the Natural Asset Inventory, two key datasets were generated: Tree Canopy and Land Cover Mapping.

Tree Canopy

Tree canopy is the ground area covered by the structure of a tree (branches, leaves) when viewed from above. Tree canopy cover can include forests, tree groupings, and individual trees on the landscape. Trees, because of their height can be easily detected using a digital elevation data.

To create a tree canopy dataset for the Town, 0.5 metre resolution Light Detection and Ranging (LiDAR) was used to create a model of the height of different features (e.g., 5 metre tree, 15 metre building, etc.) from which tree canopies can be identified.

Accuracy of this work is ~95% for trees over 3 metre in height in urban areas. The results of this canopy assessment were used to inform land cover mapping and will support ongoing street tree inventory work being undertaken by the Town of The Blue Mountains.

Light Detection and Ranging (LiDAR) is a remote sensitive dataset, like a satellite image. LiDAR uses a pulsed laser to measure visible distances from the camera/receiver to the earth from a plane.

Land Cover

After review of available datasets, it was determined that updated land cover mapping was required in order to have a consistent and current dataset of land cover to use for the NAI and future natural heritage work for the Town. Land cover classes were mapped by using a combination of LiDAR (2022/2023) and orthoimagery datasets (2018, 2019, and 2020).

In total, 19 separate Aland cover classes were created and combined into a single dataset. Existing datasets from Land Information Ontario (LIO) were used as a reference for validating several land cover classes. The land cover dataset included both natural cover types (e.g., woodlands, wetlands) and non-natural areas (built-up areas).

Asset Registry

The natural asset registry catalogued the natural assets that occur on the landscape within the Town of The Blue Mountains. The registry describes the type, extent, and location of the natural assets. Natural Assets include area-based assets (i.e., those measured in terms of land cover [ha]), linear assets (i.e., those measured in terms of length [km]) and point based assets.

Area-Based Assets

The landcover dataset generated through the previous step was categorized based on the services and risks that may be associated with them. This is distinct from how different natural cover types may be assessed through natural heritage planning and policy processes. For the NAI, the following land cover categories were used:

Woodlands	Coniferous plantation, cultural woodland, deciduous plantation, Thicket, Treed Area, Woodland (coniferous, deciduous, and mixed forests).
Wetlands	Marsh, swamp
Meadow	Meadow, Meadow-Thicket (mixed)
Hedgerows	Hedgerows (Planted lines of trees or shrubs, typically associated with agricultural field edges)
Aquatic	Open aquatic areas (Ponds, lakes)

Two additional land cover categories were included in the asset registry as they provide some services similar to natural assets (e.g., infiltration). These include agriculture and built-up pervious areas.

Agricultural Lands	Active orchards, open agriculture (crop lands)
Built-Up Pervious	Areas such as lawns, sports fields, ski hills, etc.

Linear Assets

Two types of linear assets were included in the registry: watercourses and the Georgian Bay Shoreline.

Watercourses were identified using existing watercourses datasets and generally includes permanent, intermittent watercourses.

The Georgian Bay shoreline dataset was generated for the NAI. The shoreline is a dynamic feature; it will change over the course of seasons and years based on changes in water level. As such, the mapped linear feature is considered an approximation of this Town asset.

Point-Based Assets

Individual tree point data is included in the asset registry for this project. Tree point data was provided by the Town based on ongoing work being completed to document and assess street Trees within urban areas of the Town – Clarksburg, Thornbury and Swiss Meadows. Through the creation of a tree canopy dataset, additional point data of tree locations was also developed. This dataset has not been field verified and should not be considered as accurate as the existing tree point data. It is appropriate for use in the NAI work and to support ongoing work in cataloguing urban trees within the Town.

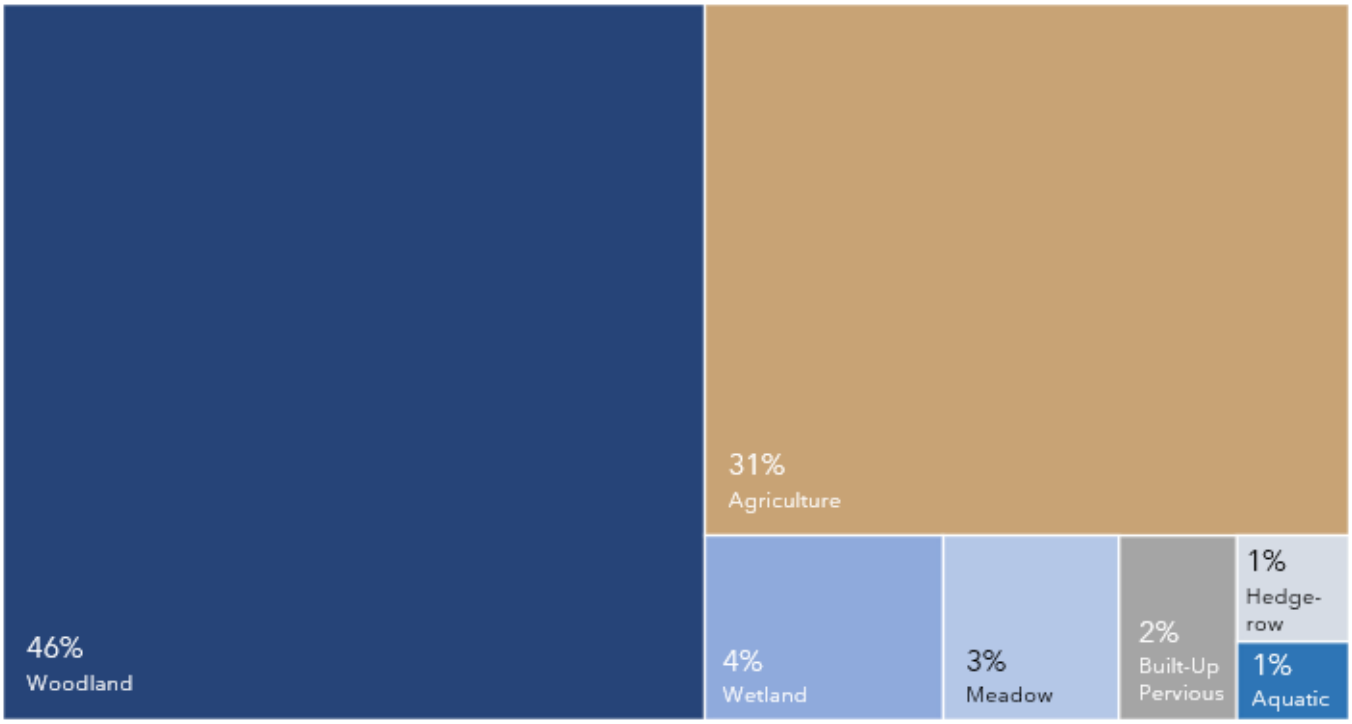
Asset Registry Outcomes

The Town of The Blue Mountains is approximately 28,650 hectares (287 square kilometers or 70,810 acres) in size and is rich in area-based natural assets. Natural features and areas represent approximately 55% of the land area in the Town, with Woodland being the dominant natural asset type. Agricultural land cover is also a substantial proportion of the land cover in the Town (~31%). Area based natural assets and other cover types (i.e., agricultural and built-up pervious) are summarized in **Figure NAI-1**.

The Town also has ~402km of watercourses and ~25km of shoreline. Canopy cover was calculated for the Town in urban and settlement areas. Average canopy cover in settlement and urban areas of the Town is 32.5%.

Maps illustrating the registry outcomes are provided in **Appendix A**. Based on knowledge of the Town's landscape, it is expected that wetlands are underrepresented in current mapping. Many of the Town's wetlands are forested swamps; due to the high tree cover and presence within contiguous forested areas of the Town, these have a higher potential for underrepresentation in wetland mapping.

Figure NAI-1: Composition of natural assets, agriculture and built-up pervious land cover types in the Town. Rectangle size illustrates the relative amount of each cover type on the Town's landscape.



Asset Conditions Assessment

Natural assets have the potential to provide beneficial services to the community. Assets in better ecological condition are presumed to have greater potential for service delivery – either a greater number of services or greater capacity for a specific service.

Ideally, a condition assessment would include field work to directly observe and evaluate the condition of each asset. However, undertaking field work is not possible at the scale of the Town's NAI due to cost, time, and practical issues such as site access. For a landscape scale NAI, an appropriate alternative is to complete the assessment through a desktop (computer) based analysis using ecological condition indicators and metrics that can be readily evaluated using available spatial datasets and some data processing. This approach has been used for this study.

Tables NAI-1 to **NAI-3** provide a brief description of the indicators and measures used to assess ecological condition for assets through the NAI. Assets were assigned a rating of Very Good, Good, Fair, Poor or Very Poor based on a set of scoring criteria. A consistent legend / colour is applied to each rating to support review of assessment outcomes (Legend below). Condition indicators were applied individually and then combined to generate an overall asset condition for each natural asset.

Legend: Very Good | Good | Fair | Poor | Very Poor

Table NAI- 1: Condition indicators used for Area-Based Assets (e.g., woodlands, wetlands).

(1) Natural Area Patch Size
Rationale: As patch size increases, the patch has greater potential to support larger populations of species that use that habitat type. A patch may include multiple feature types (e.g., woodland, wetland, etc.). **Scoring:** Total patch area > 50 ha | 30-50 ha | 20-30 ha | 10-20 ha | < 10 ha
(2) Natural Area Patch Shape
Rationale: Many negative effects from human land uses occur at feature 'edges'. Impacts at edges can include light and noise, access for invasive species, dumping, domestic animals and encroachment. Features with shapes that reduce the amount of edge are expected to have lower levels of potential edge effects. **Scoring**: Values are between 0 and 1 where 1 has the lowest possible edge to interior (a circle) and scores decrease as edge increases. 0.8-1.0 | 0.6-0.8 | 0.4-0.6 | 0.2-0.4 | < 0.2
(3) Interior Habitat
Rationale: Some species require larger blocks of habitat that are far away from edges. Species who need this 'interior habitat' are more sensitive to edge effects and / or require larger ranges to support their life cycle. Presence of interior habitat is an indicator that species with these habitat requirements are more likely to occur within a given patch. **Scoring**: The area of patch occurring more than 100m from an edge. >20 ha | 8-20 ha | 2-8 ha| >0-2 ha | 0, No Interior Habitat
(4) Proximity to Watercourse
Rationale: Proximity of a terrestrial natural asset to water, or having a hydrologic feature within a terrestrial asset, is generally considered positive. Natural assets receive benefits from being close to water. These can include hydrologic benefits, wildlife benefits (access to water, food sources), cooling effects and more. Furthermore, watercourses in urban or fragmented landscapes provide ecological connectivity. Natural areas that intersect or are near watercourses help improve broader landscape connections. **Scoring**: The distance (m) between a watercourse and an asset. Directly intersects | <30 m | 30-120 m | 120-240 m | >240 m

(5) Woodland Asset Proximity + (6) Wetland Asset Proximity

Rationale: Woodland and wetland assets benefit from being close to other woodlands and wetlands. Benefits from proximity can include functional connections for wildlife and plants, access to habitats required for life cycles (e.g., amphibians that need both wetlands and forests), hydrologic benefits and increased habitat variability to support greater biodiversity.

Scoring: The distance (km) between each woodland or wetland asset and 1) another of the same asset type 2) an asset of the opposite type.

Woodland Asset Proximity: <1km | 1-2 km | 2-3 km | 3-5 km | >5km

Wetland Asset Proximity: <0.5 km | 0.5-1.0 km | 1-2 km| 2-3 km | >3km

(7) Extent of Adjacent Complementary Land Uses

Rationale: Urban land uses which alter the natural flow of water and/or its quality can negatively impact an asset. Impacts can include increases or decreases in volume of water going to an asset, changes to infiltration, rate of flow (increased erosion), and water quality concerns. As the proportion pervious surface (i.e., water can infiltrate), natural cover (permanent or temporary vegetation), or less intensive uses increases, potential impact of human uses decreases. Complementary land uses include golf courses, parklands, agricultural lands, etc.

Scoring: Extent of complementary land uses within 120m of an asset, expressed as a % of the total land area within 120m of the asset.

50-100% | 31-50% | 16-30% | 1-15% | <1%

(8) Percent Woodland Cover in Watershed

Rationale: Woodlands are recommended to occupy 30-50% of the land area of watershed to minimize risk of biodiversity loss, support resilience and ecosystem functions provided by this asset type. While focused on the watershed (extends beyond the municipal boundary), where a woodland asset occurs within a watershed with higher woodland cover, the asset can be assigned a corresponding condition value.

Scoring: Total woodland cover (%) for each watershed is calculated; this value is applied to all assets within the municipal boundary that occur within the watershed.

>50% | 41-50% | 31-40% | 16-30% | <16%

(9) Percent Wetland Cover in Watershed

Rationale: Wetlands are recommended as occupying the greater of (a) 10% of each major watershed and 6% of each subwatershed, or (b) 40% of the historic watershed coverage. Wetlands are important to our water resource system – they store water, slow its flow, help it infiltrate and provide water quality benefits. Wetlands also provide important habitats for plants and wildlife specialized for these wet habitats. Similar to woodland cover, this metric is based on watershed scales, but can be applied to those wetland assets within the municipal boundary.

Scoring: Total wetland cover (%) for each watershed is calculated; the value is applied to all assets within the municipal boundary that occur within the watershed.

<10% | 7-10% | 5-7% | 3-5% | <3%

Table NAI- 2: Condition indicators used for Watercourses.

(1) Riparian Vegetation
Rationale: Riparian vegetation (i.e., naturally vegetated areas along the banks and immediately surrounding land) provides a buffering function – filtering litter, sediment, nutrients, etc. before water reaches a watercourse. Riparian cover also reduces erosion, which reduces sedimentation. **Scoring:** The percent of a watercourse with riparian vegetation. ● > 75 % | ● 50-74 % | ● 25-49 % | ● 15-24% | ● < 15 %
(2) Shading
Rationale: Watercourses benefit from shading to reduce or manage water temperatures. Water temperature directly affects the species that can be supported by a watercourse, with high temperatures having a negative effect on fish and other aquatic species. **Scoring**: The percent of a watercourse that is shaded by trees (using canopy cover data). ● > 75 % | ● 50-74 % | ● 25-49 % | ● 15-24% | ● < 15 %
(3) Permeability of Adjacent Land Uses
Rationale: Urban land uses which alter the natural flow of water and/or its quality can negatively impact an asset. Impacts can include increases or decreases in volume of water going to an asset, changes to infiltration, rate of flow (increased erosion), and water quality concerns. As the proportion pervious surface (i.e., water can infiltrate), natural cover (permanent or temporary vegetation), or less intensive uses increases, potential impact of human uses decreases. Complementary land uses include golf courses, parklands, agricultural lands, etc. **Scoring**: Extent of permeable land uses within 120m of an asset, expressed as a % of the total land area within 120m of the asset. ● 50-100% | ● 31-50% | ● 16-30% | ● 1-15% | ● <1%

Table NAI- 3: Condition indicators used for the Georgian bay Shoreline.

(1) Natural Shoreline
Rationale: Shoreline with natural vegetation or natural cover (e.g., natural beaches) provide better ecological condition by reducing erosion, providing habitat, and providing a buffering function for water quality. **Scoring:** The percent of the shoreline with natural cover in a given segment. ● > 75 % | ● 50-74 % | ● 25-49 % | ● 15-24% | ● < 15 %
(2) Permeability of Adjacent Land Uses
Rationale: Urban land uses which alter the natural flow of water and/or its quality can negatively impact an asset. Impacts can include increases or decreases in volume of water going to an asset, changes to infiltration, rate of flow (increased erosion), and water quality concerns such as salts or sediment. As the proportion of lands around an asset have higher amounts of pervious surface (i.e., water can infiltrate), are more natural (permanent or temporary vegetation), or are less intensively used, they reduce the potential impact of adjacent uses. **Scoring**: ● 50-100% | ● 31-50% | ● 16-30% | ● 1-15% | ● <1%

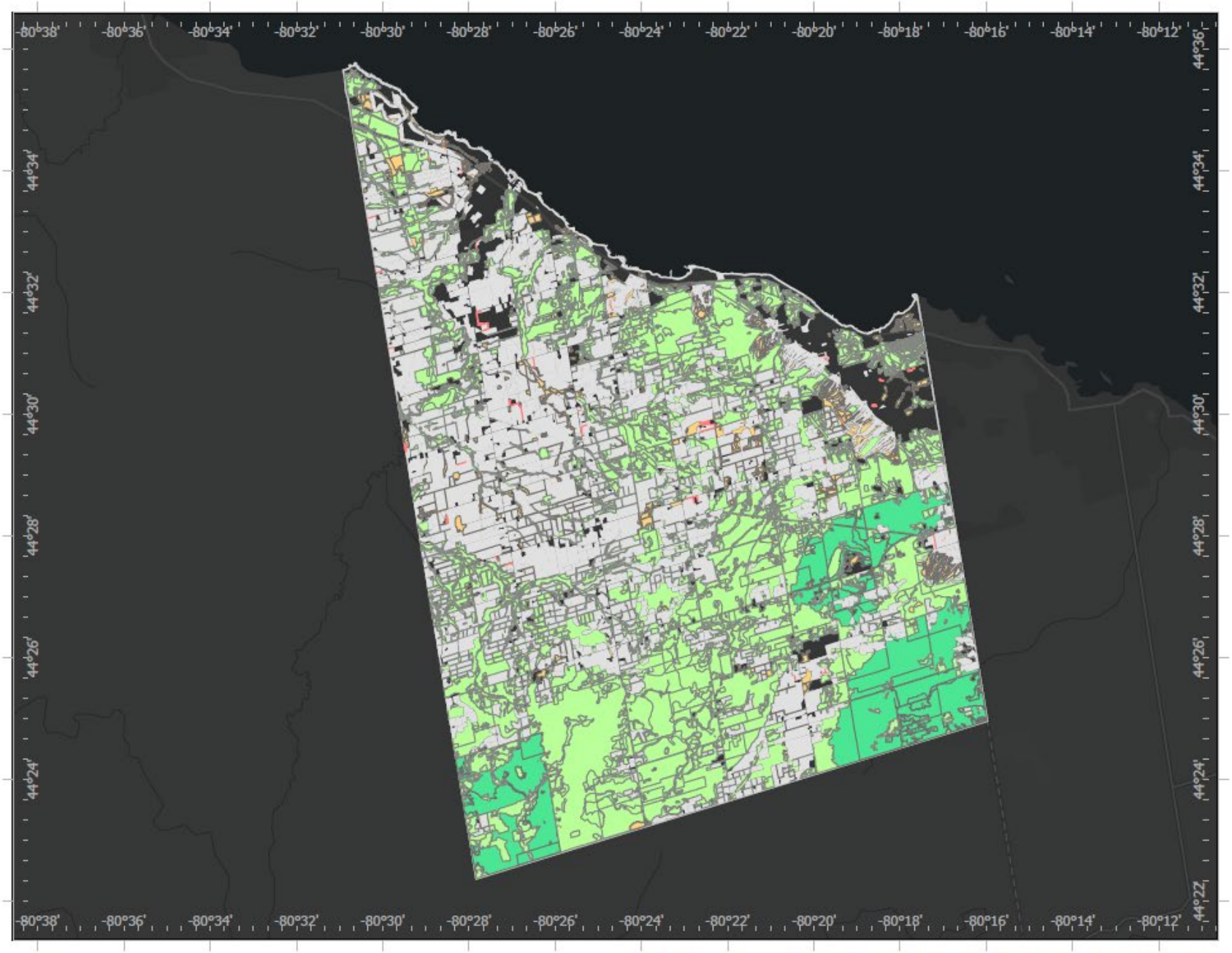
Asset Condition Assessment Outcomes

Overall, the Town's assets performed very well in the conditions assessment. Over 90% of the Town's natural assets received an overall condition rating of Good or Very Good (**Figure NAI-2**). The Town provides substantial interior habitat and has a substantial number of large natural areas (patch size). The landscape matrix (i.e., composition of the landscape) also supports general condition ratings for permeability of adjacent lands, and proximity to other assets (wetland, woodland, watercourse). Results across indicators varied, but assets still performed well with over 95% rated 'very good' in five (5) of the nine (9) indicators assessed (**Figure NAI-3**). Maps illustrating individual ratings for area-based assets are provided in **Appendix B**.

Generally, assets in urban and settlement areas have slightly lower scores than those in rural areas. This is an expected outcome as within these areas we inherently see an increase in impermeable surface (e.g., roads, paved areas, buildings, etc.), and an overall lower number and typically smaller sized assets present.

Patch shape did not perform well. This is a result of the complex shapes of many features across the Town's landscape. Many features contain bays, inlets, protrusions or 'cutouts' as a result of the land use history across the land. This does not mean poor function, only that there is a greater area affected by edge effects. This metric must be considered with patch size and the Town continues to provide substantial areas of interior habitat. Opportunities for management to improve patch shape scoring can include focusing recommendations for enhancement and restoration to filling gaps, bays and inlets to reduce edge effects and improve overall shape.

Town of The Blue Mountains – Overall Asset Condition Summary



Natural Asset Inventory

Overall Condition Rating

- Very Good
- Good
- Fair
- Poor
- No Condition Rating

- Town Boundary

Figure NAI-2

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

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0 3.5 7 14 Kilometers

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Figure NAI-3. Illustrative summary results of the condition assessment for area-based assets.

Watercourses across the Town also received very good condition ratings for both riparian vegetation and permeability of adjacent lands – over 90% of watercourses (by length). Watercourse shading provided slightly lower condition outcomes with 68% receiving a 'very good' rating and 14% receiving a 'good rating'. Riparian cover was generally observed as being lower near the shoreline and near built-up areas. Shading was more distributed across the landscape and is based on the presence of canopy cover (trees) (maps are provided in **Appendix B**).

Shoreline condition was considered based on permeability of adjacent lands. Generally, much of the shoreline is supported by adjacent permeable lands. Sections of shoreline with lower permeability are generally associated with settlement areas (map provided in **Appendix B**).

Asset Hazard Risk Assessment

The asset registry and condition assessment demonstrate that the Town of The Blue Mountains has a wealth of natural assets that are in good condition overall. These assets are part of the Town's identity and its economy.

Natural assets are vulnerable to hazards (e.g., fire). The asset risk assessment is the process of assigning risk scores to identify the most 'at risk' assets and areas of greater risk on the landscape to help prioritize and inform potential management directions.

The asset hazard risk assessment was undertaken through five steps.

Identify Hazards	There are many hazards which have potential to negatively affect natural assets. The selection of hazards for the risk assessment is informed by the types of assets present and typical hazards that could impact them, the ability to adequately assess the hazard potential, and identification of the hazards most relevant to the community. In consultation with the Town and through public engagement, priority hazards were identified for the Town's natural assets.
Rate Hazard Impact	The level of impact of each hazard for the Town was assigned (i.e., how significant the impact has been or is expected to be). Hazard impact ratings range from Very Low (1) to Very High (5) and were based on financial, socio-economic, and environmental considerations.
Rate Hazard Likelihood	Some hazards are more likely to occur or occur with greater frequency than others. Assigning a likelihood score informs the level of risk of a particular hazard affecting the natural asset(s). Hazard likelihood ratings range from Rare (1) to Almost Certain (5) and are based on return period (how often it might occur) and annual probability of occurring (%). Likelihood was assigned in consultation with the Town.
Calculate Risk Score	Risk Score = Hazard Impact x Hazard Likelihood The outcome of this calculation is a value representing the overall 'risk' to natural assets for each hazard.
Assign Risk Score	Hazards may apply to all, or some natural assets, or may affect asset types differently. For example, fire will have a greater effect on woodland than watercourses. Through this step the risk scores were applied to mapped assets in the Town to identify high risk assets or areas.

Hazard Risk Assessment Outcomes

Table NAI-4 presents the selected hazards for the Town's natural assets and the overall risk scores colour-coded to illustrate the relative risk posed by each hazard to the Town's natural assets. Hazards rated as having 'very high' risk outcomes generally include those which have broad applicability across asset types and the Town's broader landscape. They are also hazards which are known to be present and currently affecting features and areas of the Town to varying degrees. Hazards with a risk score of 'high' generally include those with a more defined geographic impact, but whose effects can be significant where they occur (e.g., water level fluctuations).

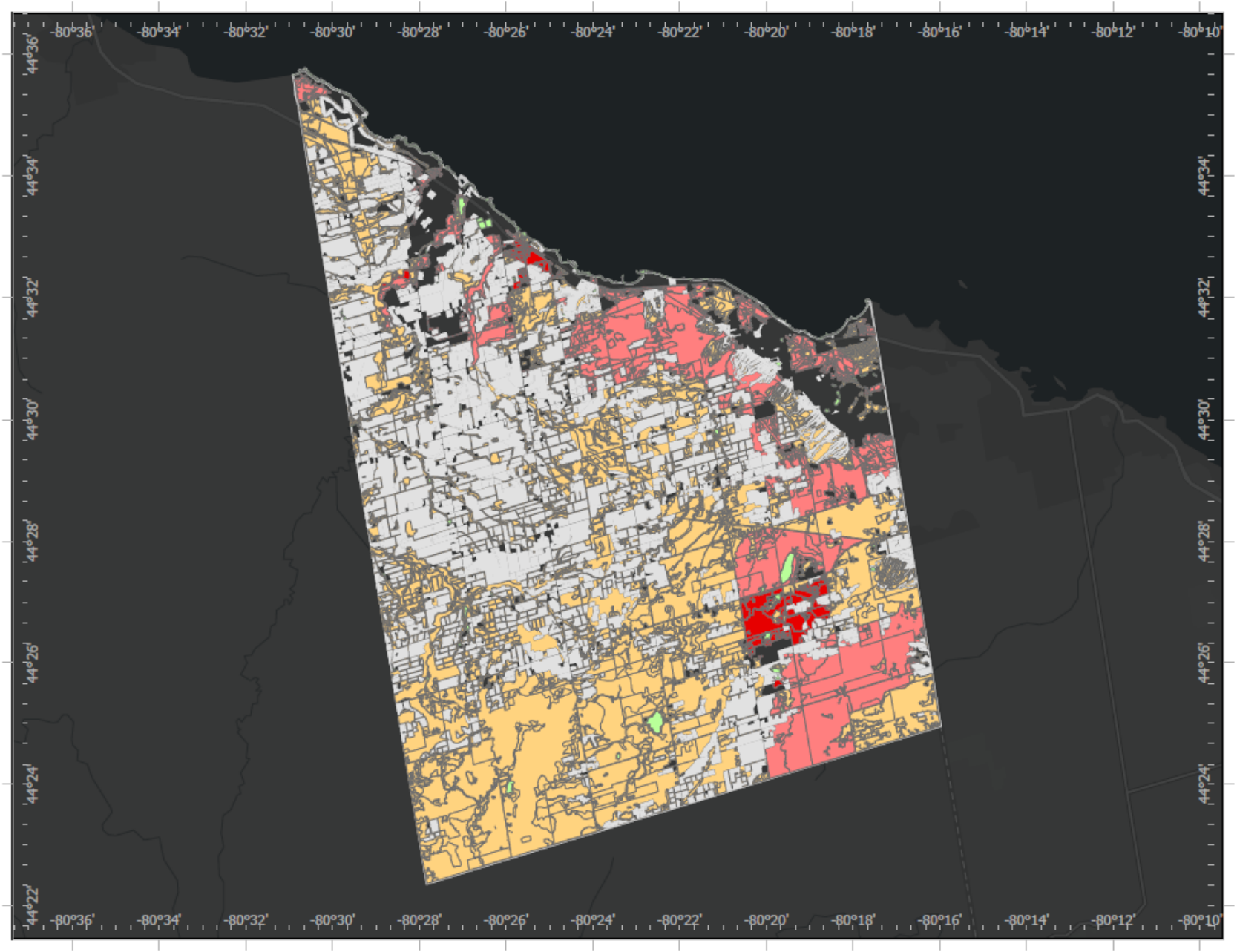
Hazards with 'moderate' and 'low' risk ratings include both discrete area impacts (e.g., erosion) and landscape level hazards (e.g., drought). Generally, these receive a slightly lower risk rating based on the perceived lower potential for them to occur and the frequency with which they are anticipated to occur.

Applied to natural assets on the Town's landscape, the majority of the Town's natural assets received a 'moderate' overall risk rating. This is largely driven by the hazards which have landscape-wide application (e.g., invasive species). The eastern portion of the Town includes a larger number of 'high' risk areas; this is the result of numerous overlapping hazard types increasing the overall level of risk for impact to the assets in these areas. It is also notable, but not surprising that features in urban and near-urban areas are generally at greater risk. A map of overall risk ratings is shown on **Figure NAI-4**. Maps for each hazard type are provided in **Appendix C**.

Table NAI-4. Summary of asset risk score outcomes.

Hazard to Natural Asset	Risk Score
Cumulative impacts from land use change Pests and diseases Invasive species	Very High
Contamination / pollution Unauthorized edge encroachments / disturbances Water level fluctuation – shorelines & rivers	High
Flooding Ice storms / freezing rain Extreme heat and drought During-construction impacts Erosion Extreme wind	Moderate
Fire	Low

Town of The Blue Mountains – Overall Hazard Summary



Natural Asset Inventory

Overall Risk Rating

- Low
- Moderate
- High
- Very High
- No Risk Rating

- Town Boundary

Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

Figure NAI-4

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

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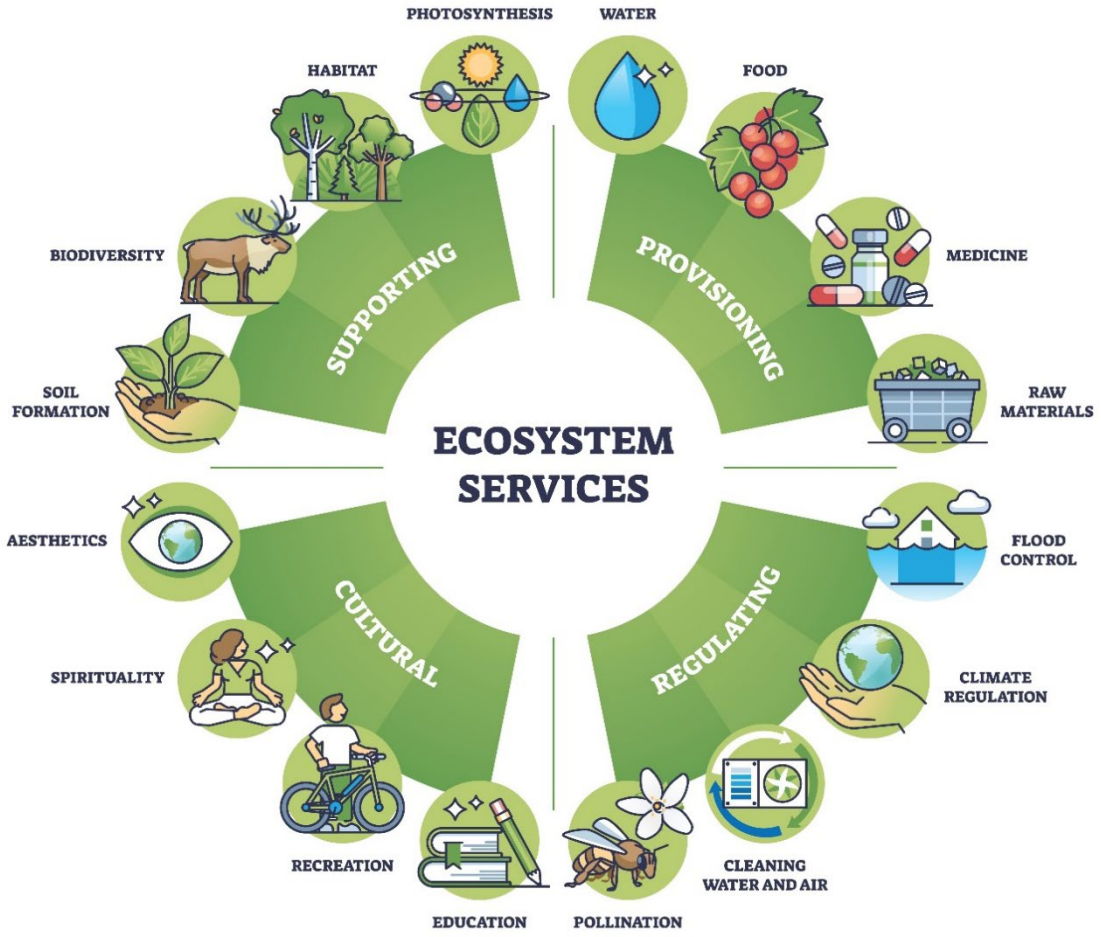
Ecosystem Service Valuation

Ecosystem services include a broad range of functions such as provision of food and raw materials (e.g., wood products), regulating air quality and climate, important supporting functions such as nutrient cycling, and cultural services such as recreation, aesthetic value, and mental well-being (**Figure NAI-5**). Specifically, ecosystem services are the benefits people obtain / receive from the functions and processes that occur within or are a product of natural assets on the landscape.

Figure NAI-5. Overview of ecosystem services obtained from natural assets[1].



[1] Under license from Shutterstock.com

The valuation of natural assets is therefore the process of assigning a monetary value to the services provided by an asset based on its equivalent value to people. For this project, values were assigned primarily based on avoided costs, contributing value, and willingness to pay for services provided by natural assets.

Avoided costs can consider a range of different services and values obtained from natural assets such as the avoided need for built infrastructure to replace functions (e.g., stormwater), or the avoided health care costs by mitigating heat effects (e.g., due to heat stroke).

Contributing values consider what value is gained from a natural process that contributes to a process or activity that a community or people gain value from (e.g., natural pollination in support of crop yields).

Willingness to pay considers the cost (on average) people are willing to pay to have access to a specific service offered by a natural asset (e.g., recreation) or the added value gained by proximity to or access to a natural asset (e.g., effect of aesthetic appreciation on real estate value).

Not all services can be readily valued. As such, a subset for which valuation could be completed were selected and used for this the Town's Natural Asset Inventory (**Table NAI-5**).

Table NAI-5. List of ecosystem services valued for the Town of The Blue Mountains and their benefit to people of the community.

Ecosystem Service	Benefit to People
Provision of recreation opportunities	Enjoyment of recreation activities.
Carbon sequestration	Avoided atmosphere carbon concentrations.
Air quality regulation	Avoided costs associated with health issues from air pollution.
Regulation of extreme heat events	Avoided health impacts associated with extreme heat provided by proximity to natural areas.
Regulation of stormwater	Avoided stormwater management infrastructure costs.
Preservation of habitat	Value people place on knowing certain areas (and associated biodiversity) are protected from development.
Contribution to crop productivity	Improved crop productivity generated from wild pollination.
Aesthetic appreciation	Increased property value resulting from the aesthetic benefits of proximity to nature.

Service Valuation Outcomes

The table below provides a high-level summary of the basis for valuing each service from **Table NAI-6** and the total annual value to the Town and its residents provided by natural assets for each service type. When all natural assets across the Town are considered, the annual value of ecosystem services in the Town of The Blue Mountains is approximately $86.5-103.5 million. When considering only those assets which occur on Town-owned lands, the total annual ecosystem services value is $15.5 to 16.6 million.

Table NAI-6. Services valued for the Town and their estimated annual value within the Town of The Blue Mountains.

Service	Basis for Valuation	Annual Value to Town
Provision of recreation opportunities*	Estimated average cost for an individual to engage in nature-based recreation, adjusted to 2023 CAD dollars[2] ($23) multiplied by the total length of mapped trails in the Town (285 km) and an estimated average number of users per year for each km of trail (1785).	**$11.7M**
Carbon sequestration	Tonnes of carbon sequestered is applied to forested and non-forested assets based on carbon budget models and available literature. Two values are applied to provide a range of value: 1) carbon price (Canadian Government pricing), 2) social cost of carbon.	**$5-21M**
Air quality regulation	Estimation of the avoided health care costs associated with exposure to air pollutants using a value per tonne of avoided pollution and applied based on the relative presence of assets and their rate of removing pollutants from the air.	**$351K**
Regulation of extreme heat events	Estimation of the avoided costs associated with mortality based on value of a statistical life[3]. Calculated based on the cooling effect provided by a natural asset, how many people live within the cooling effect area, and estimating the effect cooling may have on those neighborhoods to address health-associated impacts / mortality.	**$1.2-2.2M**[4]
Regulation of stormwater	Estimates the effect natural assets (woodlands, wetlands and open greenspaces) have on regulating stormwater. Regulation of stormwater is based on an estimation of how much water a natural asset holds, or slows down water from precipitation or snowmelt before reaching a receiver (e.g., streams) from	**$30M**

[2] Canadian Nature Survey (2012)
[3] Treasury Board Secretariat of Canada's (2022) Cost-Benefit Guide for Regulatory Proposals
[4] Range is based on the high and low estimates for the proportion of houses / spaced that have air conditioning.

Service	Basis for Valuation	Annual Value to Town
	precipitation events) and the cost to replicate that management as built infrastructure (e.g., stormwater ponds).	
Preservation of habitat	Estimated based on 'willingness to pay' for preservation of greenspaces. Values were applied based on existing literature for this benefit[5].	**$11M**
Contribution to crop productivity	Values the benefit gained from natural pollination for crop productivity by estimating the production value of crops that depend on insect pollination and are within the foraging distance of natural assets. Value is assigned based on the level of crop yield relies on pollination (e.g., Orchards – high to moderate, pasture – low).	**$16M**
Aesthetic appreciation*	Proximity to natural assets provide real estate value. Properties with, or near natural assets generally have a higher market value than those that are further away. In the Town of The Blue Mountains, this value is atypically high compared to many other municipalities. This is evidenced by home prices and the increased pressures and stated reasons for residents and visitors for coming to the Town – access to nature.	**$11.3M**
Total Annual Ecosystem Service Value (All Natural Assets)		**$86.5M** to **$103.5M**

*****Aesthetic appreciation and recreation are likely undervalued for the Town of The Blue Mountains in the assessment. A major draw for existing and potential residents is the desire to be close to natural areas; this has and continues to influence real estate values and is a driver for population growth in the Town. Similarly, access and availability of exceptional recreational opportunities (e.g., Blue Mountain, Kolapore, Georgian Bay) is a significant draw and value for existing and future residents as well as seasonal residents and visitors. Existing literature available to use in this assessment provide an average indication of value for these services. Due to the uncommon conditions within the Town, these values are expected to undervalue actual value provided through these two services. Detailed assessment would be needed to generate values specific to the Town and is beyond the scope of the current project. Values provided should be considered minimum values for the Town for these two services.

[5] Brander and Koetse (2011).

Natural Asset Prioritization

Prioritization of natural assets is used to support, inform, and focus asset management planning and actions. This project provides general guidance on asset prioritization for the Town. Work is ongoing internal to the Town to determine asset prioritization and support the integration and implementation of natural asset management.

Asset prioritization is based on a set of prioritization criteria. These criteria are informed by the Town's prioritization of management objectives, asset condition, and asset risk. This internal process is being undertaken in consultation with the Town's Asset Management team to inform the implementation of natural asset management as a key action stemming from this project. A summary of common management objectives and potential approaches to identifying priority assets are presented below.

Identifying Priority Assets

Natural asset management may be directed by one or more of the following objectives:

Improve poor condition assets | through this objective, management planning and/or actions focus on bringing up conditions to increase the services being provided. Actions focus on the addressing the source(s) or cause of the poor condition (e.g., patch shape through infilling of gaps).

Preserve good condition assets | management focus for this objective is on protection of existing assets to maintain their services. This may be achieved through policies, guidelines, and implementation tools (e.g., guidelines). Other options include limiting public access to certain assets or areas, formalizing trail systems and reducing trail density, land securement, monitoring, maintenance activities (e.g., pruning, invasive species management).

Maintain assets that provide high service levels | management prioritizes assets which provide the greatest / highest number of ecosystem services, or may focus on specific services which are priorities for the town (e.g., stormwater management). This may be achieved through policies, guidelines, and implementation tools (e.g., guidelines). Similar to 'preserving good condition assets', other options include limiting public access, managing for sustainable access to avoid impacting services, land securement, monitoring, maintenance activities (e.g., pruning, invasive species management).

Mitigate or manage assets with high risk-ratings | this objective focuses on management or mitigation of the hazards which pose risks to natural assets. More specifically, it prioritizes management of hazards where they will have the greatest impact to the services provided to the Town by natural assets. Management planning and practices may include policies and procedures, and undertaking on-site actions to manage or mitigate risks, targeted to specific areas or feature types (e.g., invasive species management).

Different management objectives may be prioritized for different assets (woodlands vs. wetlands), in different areas (ownership, geographic location), or at different times. Asset management must be adaptive to respond to current hazards, plan for potential hazards in the future and consider how best to manage natural assets to maintain prioritized services.

Informed by the selected management objective(s) and other criteria (asset condition and risk), priority natural assets for management will be identified. Priority assets may be identified based on the intersection of several factors. Some common examples of prioritization methods are provided below.

Intersection of Condition & Risk	Assets in good condition and at high risk may be prioritized over those in poor condition and at high risk for hazard management or mitigation.
Intersection of Condition and Service Values	Assets in good condition and providing high service value may be prioritized to maintain their current status. Assets in poor condition and with potential to provide high value services, may be prioritized for improvement.
Intersection of Service Values and Risk	Services that are identified as most important to the Town may be a priority for management. Where assets providing these services are at greatest risk from hazards, they may be prioritized for management or mitigation.

Selecting Management Actions

Asset prioritization will support the identification of priority assets across the Town's landscape. However, the Town must also consider mechanisms by which it can manage its natural assets to identify and select appropriate management actions. Selection of appropriate management actions, and determining where actions may occur will be informed by numerous factors, including:

- Asset type
- Hazard being managed
- Ownership of priority asset
- Management mechanisms and actions available
- Feasibility of undertaking management action(s)
- Effectiveness of available management action(s)

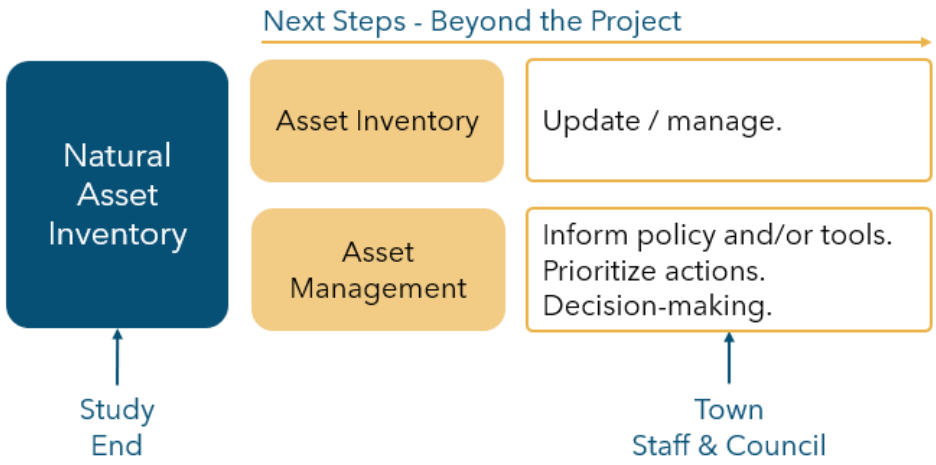
Identification and selection of management action(s) is work that will be ongoing for the Town and is not within the scope of the current project.

Natural Assets – Beyond the Study

The Natural Asset inventory delivers information. This study provides the Town with a registry of natural assets across its beautiful landscape, a snapshot of current condition and hazards which place these assets at risk and the value of ecosystem services provided to the Town and its residents by these natural assets. This work is a critical first step to supporting the Town in integrating natural assets into its Asset Management Plan.

The Town will continue work to integrate natural assets into its Asset Management Plan, identify priority assets and appropriate actions to support management of its natural assets in planning for a sustainable and resilient future. The figure below illustrates key next steps beyond the current study in the Town's efforts to effectively and appropriate manage its natural assets.

Figure NAI-6. Summary of next steps for natural asset management, beyond the conclusion of the current study.



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Natural Heritage Study

Natural Heritage Study

Natural heritage refers to the natural features and areas on the landscape including woodlands, wetlands, open country habitats (meadows, thickets), watercourses, and more. These features have been shaped and influenced by the legacy of historical land use practices, creating the network and distribution seen on the landscape today. Natural heritage planning considers how best to protect and manage natural heritage features and areas for their biodiversity and ecological functions to ensure the ecological integrity of natural features and areas are protected for the long term.

The natural heritage study is the Town's further supports the Town's natural heritage system and can inform important updates to natural heritage planning through policies of the Town's Official Plan, Zoning By-law and other policies. This study provides options and preliminary direction for the the Town's Natural Heritage System and includes recommendations for natural heritage policies that align with natural heritage options presented.

Through this study, the Town has engaged on approaches to identifying a natural heritage system, potential targets and overall direction for natural heritage system identification, planning and management within the Town.

Further work will be required, including further engagement, to identify the natural heritage system and support the preparation of draft policies that reflect the Town's preferred direction for natural heritage planning and management.

This study will guide and support ongoing work within the Town to:

- Protect and where possible, improve the Town's natural heritage.
- Manage the Town's natural heritage through balanced land use planning processes.
- Recognize the natural environment as a key element of the Town's character.
- Build resilience to a changing climate.

What is a Natural Heritage System?

A natural heritage system (NHS) is generally defined in the Provincial Policy Statement 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".

Why Identify a Natural Heritage System?

The Provincial Policy Statement (2020) directs 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."

The Town of the Blue Mountains is located within Ecoregion 6E and is therefore required to identify an NHS.

Additionally, the growing recognition of the role of, and our reliance on the natural environment for providing for safe, healthy, and resilient communities – including resilience to climate change, requires that municipalities act. Part of this action includes identifying, protecting, and managing natural heritage and resources on the landscape and to ensure that the functions present continue to function today and that they are present to continue providing these functions and services in the long-term.

Components of a Natural Heritage System

The definition for natural heritage systems from the Provincial Policy Statement provides guidance for the components of a Natural Heritage System. **Table NH-1** identifies components considered mandatory and those that are optional (i.e. per the definition, they "can" be included in an NHS).

Table NH-1. Natural heritage system components, per the Provincial Policy Statement (2020).

Mandatory Components of an NHS	Optional Components of an NHS
• Significant Woodlands • Significant Wetlands • Fish Habitat • Significant ANSIs • Significant Valleylands • Significant Wildlife Habitat • Habitat for Species at Risk • Linkages	• Federal and provincial parks and conservation reserves • Other Woodlands • Other Wetlands • Regional ANSIs • Other Valleylands • Open Country Habitats • Shoreline Areas / Features • Escarpment and Bluffs • Enhancement Areas

To assist with policies and approaches to managing a natural heritage system, components may be grouped based on their role within the system and/or the policies and guidance for management that may apply to them.

Key Features include those natural heritage features and areas of the landscape which are determined to be the most important to the protection of ecological form and function in the long-term through a natural heritage system identified for a planning area. Generally, Key Features include mandatory components of an NHS (excluding Linkages) and *may* include some optional system components (excluding Enhancement Areas), for example, Other Wetlands.

Non-key Features include natural heritage features on the landscape that do not meet criteria to be considered Key Features. Non-Key Features do not receive the same level of policy protection as Key Features and may not be addressed or managed through natural heritage policies.

Linkages represent conceptual connections and movement pathways for plants, animals, and genetic material throughout a natural heritage system required to maintain the form and function of the system in the long-term. To the extent possible, linkages should follow existing natural corridors (e.g., watercourses), but can and will include other portions of the landscape which not currently naturally vegetated. Multiple types or scales of linkages may be for a natural heritage system to ensure connectivity is maintained at various scales.

Natural Heritage System Approaches

There are two main approaches to delineating a natural heritage system:

A **Feature-Based Approach** uses features on the landscape as the system 'building blocks' and to define the 'edges' of the system. Features are then connected through linkages and made more robust/resilient through identification of enhancement areas (**Figure NH-1a**).

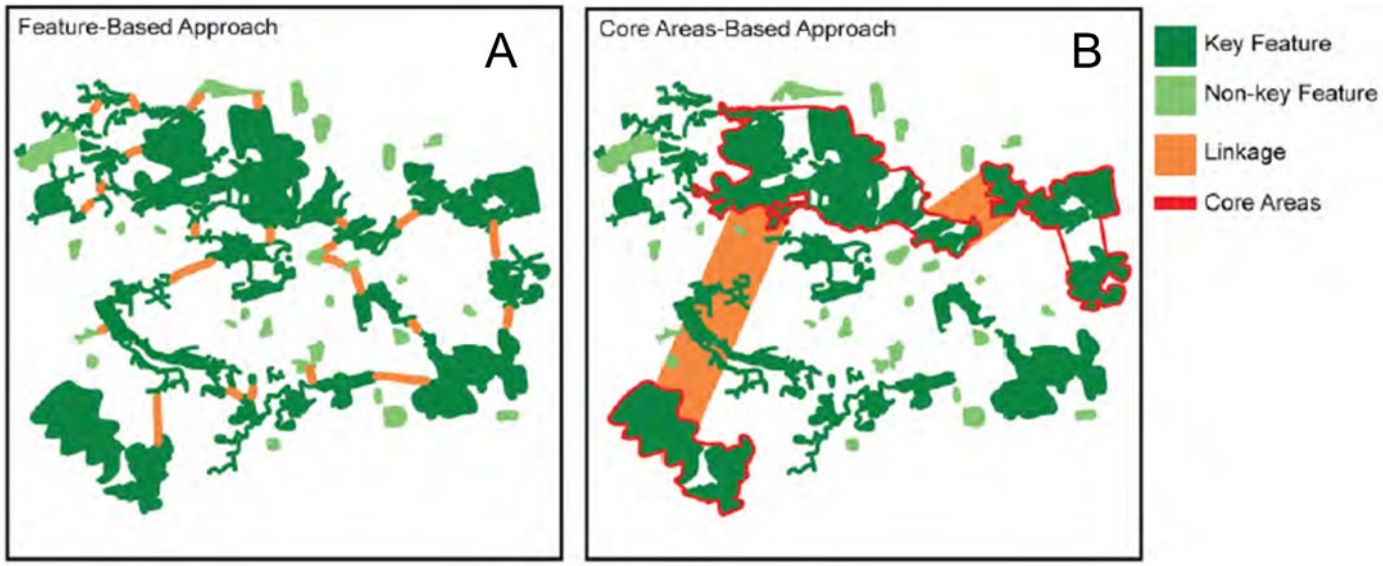
A **Core Areas-Based Approach** uses larger groupings of natural heritage features and areas on the landscape and the lands between them as the system 'building blocks' and to define the 'edges' of the system. Core Areas are then connected through linkages. Enhancements areas are integrated within Core Areas and are generally represented by lands that are not natural heritage features and areas (**Figure NH-1b**).

Both approaches are defensible and have been applied elsewhere in the province. The consistent requirement, regardless of approach is that the natural heritage system meet or exceed the minimum requirements for protection of significant features set out in the Provincial Policy Statement and other provincial plans (e.g., Niagara Escarpment Plan).

Both approaches represent a 'systems-based approach' to natural heritage planning. The Features-based approach is most used in areas of lower natural cover and/or where natural features are more fragmented across the landscape. Whereas the Core Areas approach is best applied where there is substantial natural cover on the landscape, or where a natural heritage system is being defined for a very broad geographic scale; it allows municipalities to differentiate policy or other implementation tools within and outside of these areas, providing additional flexibility for directing growth at a broad scale, and protection of natural heritage balanced with other objectives and needs (e.g., growth and development).

Notwithstanding the approach used to map the natural heritage system, the policies shall still provide protection to key features (i.e., natural heritage features and areas) within and outside of the natural heritage system. Key features (e.g., significant woodlands) will be identified across the landscape both within and outside of the NHS.

Figure NH-1. Figure 'a' illustrates the concept of a features-based approach to building a natural heritage system. Figure 'b' illustrates the concept of a core-areas based approach to building a natural heritage system.



Grey County's Natural Heritage System

Grey County has identified a natural heritage system on Schedule C of the Official Plan that consists of Core Areas and Linkages. As per section 7.1 of the County's Official Plan, "Core Areas [are intended] to protect the very large natural areas in the County, while recognizing continued private ownership and encourage landowners to continue to protect and manage these lands in an environmentally sustainable manner, including for farming and recreational purposes." "Linkages are designed to provide movement corridors for both plants and animals between Core Areas and provide and

protect biodiversity and the long-term viability of ecological systems". Section 7.1 of the County's Official Plan provides further description of Core Areas and Linkages with related policies for their protection.

The Town of The Blue Mountains must conform with the County's Official Plan. The Town may choose to adopt the County's NHS if it meets the Town's vision and targets for natural heritage. Alternatively, the Town has the option to go beyond the policies of the County to create a system that best reflects the Town's landscape, vision, and natural heritage planning objectives. It is recommended that natural heritage targets be set, and the County's NHS be assessed against these targets to inform the appropriate approach for conformity.

An assessment was completed to inform recommendations for addressing conformity with the County's Plan and whether the County's system may align with the vision and objectives for the Town's natural heritage system and long-term management of the natural environment. This was done by assessing how much of the Town's natural heritage features are 'captured' within the County's Natural Heritage System. A summary is presented in **Table NH-2**.

Table NH-2: Assessment of the County's Natural Heritage System overlayed on the Town's Natural Cover.

Feature Type	Land Area by Feature Type in the Town of Blue The Mountains (ha)	Area Captured in Grey County Natural Heritage System (ha)	Percentage (%) of Each Feature Type Captured in Grey County NHS
Hedgerow	315	1	<1 %
Open (meadow, Thicket)	2,551	51	2%
Open Aquatic	233	26	11%
Wetlands	1,156	567	66%
Wooded Area	11,570	4,779	40%
Total	15,825	5,424	34%

Natural Heritage Targets

Targets set direction. They communicate and provide clear guidance for policies and practices. Having established targets provides a benchmark that can be used to support planning processes and decision-making. Setting targets will support the town in its course of action in moving forward with next steps in the natural heritage planning process.

In choosing targets, the following must be considered:

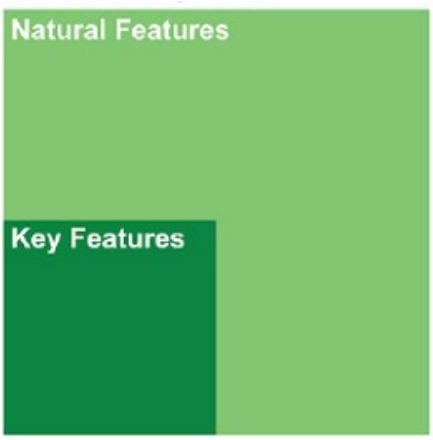
- **Targets reflect the vision**. Natural heritage or natural environment targets should reflect the vision and long-term objectives of a municipality for its landscape and how it will be managed.
- **Targets should be achievable**. Achievable relative to current conditions and in terms of implementation tools - planning mechanisms and tools available to the Town (existing or new – they must be within the Town's Authority).
- **Targets should have appropriate flexibility**. Natural heritage is one of several pillars the Town must consider in providing safe, healthy and vibrant communities. Natural heritage targets should support good land use and natural heritage planning at both broad-scale and site-specific planning levels.
- **Targets must inform decisions today and address the long-term**. Consistent with the planning horizon for the Official Plan, targets help support and implement the long-term vision for the Town's natural heritage. They must consider the needs of the community today while protecting for future generations.

The process of planning for the natural environment and preparation of associated policies is an opportunity to set the direction and course of actions for the Town's future. It is an opportunity, but one that should be done with care and thought to current needs and the Town's future.

Setting an Overall Natural Heritage Target

An overall natural heritage target provides direction for feature or function-specific targets (e.g., canopy cover, woodland cover, etc.) and sets the intention and direction for natural heritage policies and implementation tools. Through this project, three potential levels for an overall target have been identified for consideration and selection of a preliminary preferred direction for natural heritage planning. The options build upon one another, with each adding one additional element of natural heritage management.

Option 1 | Maintain Key Features and Functions



This target focuses policy and management of the Town's natural heritage on Key Features.

Key Features are a subset of the natural features and areas on the landscape. Key Features must include provincially *significant* features and areas and may include features and areas identified as being important to the Town.

Provincial direction sets out some minimum requirements, but the Town has flexibility to go beyond the minimum if desired to include a greater proportion of features on the landscape as 'key features'. This flexibility provides opportunity for this target to reflect a preferred natural heritage system for the Town (i.e., slightly more or slightly fewer Key Features).

The target, and thus **policies**, focus on features and areas which have been identified as 'key' to maintaining biodiversity and other ecological functions on the landscape. This means that:

- Policies must include direction for managing Key Features.
- Because focus is on those features deemed necessary to protect ecological form and function in the long-term, policies will provide very limited flexibility in the management of Key Features. Policies will be directive or prescriptive regarding acceptable or appropriate management practices (e.g., prohibitions, no negative impact).
- Policies may provide opportunity for compensation for impact(s) to Key Features. Compensation shall only be permitted where the test of no negative impact applies, and the test has been met while accounting for the proposed impact (i.e., the test must be met before compensation is applied).
- Policies may encourage maintaining and where possible enhancing non-key features but are not directive or prescriptive.

In practice, land use planning will generally address features in the following ways:

- **Key features** will need to be identified and assessed through land use planning processes. Due to focus on features considered to be 'key' to maintaining important ecological functions and services on the landscape, management of Key Features will prioritize protection in-place. Compensation (if permitted in policy) will not be permitted for all feature types and will be highly restricted in its application (where and when); policy test(s) outlined above will apply.

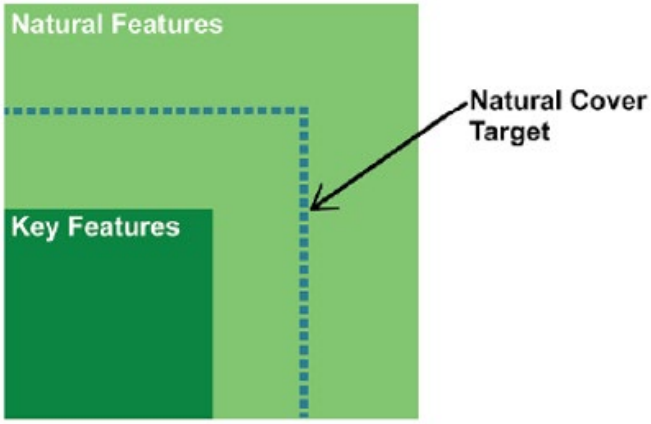
- **Non-key features** will be inventoried through the land use planning process but will generally have few or no policies directing their management. This means that there are no policy-based protections for non-key features and their presence and potential change or loss on the landscape is not directly managed. Compensation will generally not be required for impact(s) or removal of these features.

What Will Target Option 1 Mean?

- The proportion of the Town's natural features identified as Key Features has some flexibility (slightly more or slightly less); 'how much' of the Town's natural features are identified as Key Features will inform overall risk to natural cover and impact to development / land use planning.
- Key Features are constraints to development; limited opportunities for compensation for impacts to Key Features may be provided.
- Overall, there is an increased risk of reductions to total natural cover within the Town as there is no policy-based management of non-key features.
- Removal of non-key features and areas will generally be greatest in settlement areas and other areas where higher levels of land use change occur.

Option 2 | Maintain Natural Cover

This target builds upon Option 1, extending the target beyond Key Feature to focus on a natural cover target. This means that Key Features and a portion of non-key natural heritage features and areas must be managed to achieve this target.



Where the previous target (Option 1) was focused on Key Features as the primary objective, under this scenario, the Town sets a target natural cover and the definition of features of features which comprise the natural heritage system – both key and non-key, is based on the objective of maintaining or meeting this target. As with the previous target, there is flexibility in how Key Features are defined. Similarly, definitions for non-key features are also flexible and are primarily informed by the natural cover target and what portion of the target is met by Key Features (i.e., non-key features make up the 'balance' of the target cover).

In considering a natural cover target, the following general guideline for risk of potential erosion or degradation of natural functions on the landscape should be considered:

- <30% is considered higher risk
- ~40% is considered moderate risk
- >50% is considered low risk.

It is important to note that there are other factors which influence risk such as feature size and connectivity. The values above should be considered in the context of the landscape to identify an appropriate target.

The Town of The Blue Mountains currently has 55% natural cover. This means that 55% of the landscape within the Town is comprised of woodland, thicket, wetland, meadow, hedgerow, and open aquatic habitat types. Selection of natural cover target should be informed by the major pillars for land use planning in the Town, its interests and needs in the long-term. The selected target should be informed by what is considered an acceptable potential reduction in natural cover and the potential risk to ecological functions and services under that potential condition.

As this target considers Key Features and a portion of 'non-key' features on the landscape as part of a natural heritage system, **policies** must address management of both. Policies for Key Features are consistent with Target Option 1. Building upon Options 1, Option 2 also requires that:

- Policies will provide direction for appropriate management options for 'non-key' features. Management outcomes will be directed by policy and/or guidance documents and the cover target. Management options may include the following: protect in place, compensate, mitigate, no management required.
- Policies will provide opportunities for compensation for impact(s) to non-key features. Compensation is one possible management outcome; determination of when compensation is appropriate will be informed by policy and/or guidance documents.

This is required to support the target of maintaining natural heritage cover target. Policy and/or guidance documents need to set out the clear direction to support decision-making.

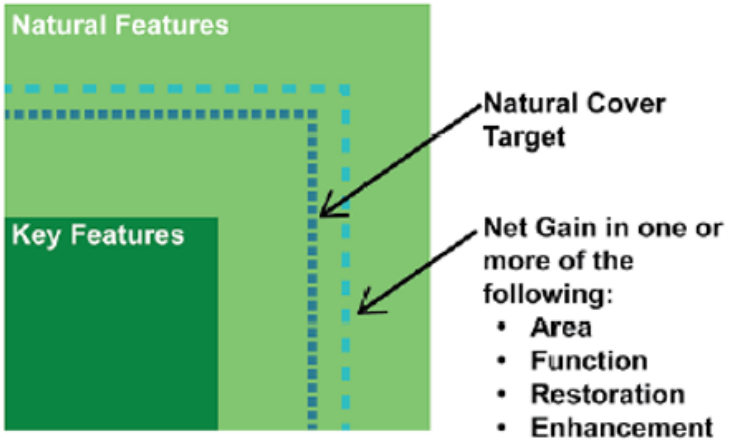
Management of **Key Features** is generally consistent with Option 1. Due to the holistic approach to this target, consideration may be given to a slightly smaller proportion of the landscape as Key Features to provide greater overall management flexibility. Flexibility may be applied to the Town as a whole or be targeted to specific areas where increased flexibility is desired to support other planning objectives (e.g., Settlement Areas). As with Option 1, compensation will continue to be restricted / limited for Key Features.

Non-key features are inventoried through the land use planning process and management for non-key features that are part of the NHS will be required. There remains flexibility in how these features are managed on the landscape (protect in-place, compensate, mitigate, no management required). Decisions on appropriate management outcomes will be informed by site-specific assessment and consideration of the feature(s) being assessed in the context of the NHS.

What Will Target Option 2 Mean?

- Flexibility for identifying Key Features is consistent with Target Option 1.
- Consideration may be given to identifying slightly fewer Key Features to provide greater overall management flexibility. This may be supportable due to the management of non-key features on the landscape.
- Key Features are constraints to development; limited opportunities for compensation for impacts to Key Features are provided.
- Non-key features which form part of the natural heritage system are managed on the landscape. Management outcomes for these features may include: protect in place, compensate, mitigate or 'no management required' as appropriate to the feature type, and site-specific context.
- There is a moderate to moderately low risk of reductions to total natural cover and lowered risk to ecological resilience compared to Option 1. Level of risk is informed by the cover target selected.
- Removal of non-key features and areas will be greatest in settlement areas and other areas where higher levels of land use change occur. These removals will be managed holistically (e.g., compensation, mitigation) as informed by site-specific study.
- There are opportunities to use compensation requirements to improve or enhance some areas of the system. For example, removal of a small, isolated feature in an urbanizing area and providing compensation for its removal in an area that fills a gap or provides habitat diversity in a different area of the system where it will provide greater ecological value.

Option 3 | Natural Heritage Net Gain



This target takes an additional step beyond a natural cover target to requiring that a net gain be achieved in land use planning practices.

Net gain essentially requires that for any given project or activity where policies associated with the natural environment apply / are triggered, it must demonstrate how the outcome adds to the natural environment system. Net gain is considered after other policy-based requirements have been addressed (e.g., demonstration of no negative impact, including, if applicable, compensation for impacts). A net gain may be met through a variety of actions – increase in natural cover, habitat diversification or enhancement, improvements to feature health (e.g., invasive species management), etc. Policy and guidelines should set out a framework for net gain for the Town.

Guidance for this target is consistent with Option 2 for Key Features and non-key features. This target builds upon Option 2 through the following additional considerations:

- Policies will require that an application must achieve a net gain and demonstrate how the net gain will be achieved.

Management of **Key Features** is consistent with Option 2.

Management of **non-key features** is consistent with Option 2.

What Will Target Option 3 Mean?

- This target takes an additional step beyond maintaining a target, toward building resilience and regeneration.
- Management for Key Features and non-key features is consistent with Option 2.
- Net gains should be scaled to reflect the project of activity being considered, the potential impacts and landscape / site context.
- There is a moderately low to low risk of reductions to total natural cover and further lowered risk to ecological resilience compared to Option 2. Level of risk is informed by the cover target selected and overall opportunities and approaches to achieving net gain.
- Removal of non-key features and areas will be greatest in settlement areas and other areas where higher levels of land use change occur. These removals will be managed holistically (e.g., compensation, mitigation) as informed by site-specific study. Net gain must be demonstrated.
- There are opportunities to use compensation and net gain requirements to improve or enhance some areas of the system. For example, compensation may be used to fill a gap in the system, the net gain may be through enhancements of a tributary riparian corridor on a development site.

Feature Specific Targets

In addition to an overall target to inform natural heritage planning, the Town may choose to identify feature-based targets to further refine and direct identification of features which comprise the NHS and inform policies and implementation tools. **Table NH-3** below provides preliminary directions on feature-specific targets for each overall target level.

Table NH-3: Preliminary direction for feature / function specific targets under each overall target option.

Feature / Function	Overall Target 1 Maintain Key Features	Overall Target 2 Maintain Natural Cover	Overall Target 3 Net Gain Natural Cover
Woodland	No net loss of key features	Maintain a specific cover (%) across the Town.	Maintain a specific cover + net gain through enhancements.
Wetland	No net loss of key features	Maintain a specific cover (%) across the Town.	Maintain a specific cover + net gain through enhancements.
Open Habitat	n/a	Maintain existing cover (%).	Maintain a specific cover + net gain through enhancements.

Feature / Function	Overall Target 1 Maintain Key Features	Overall Target 2 Maintain Natural Cover	Overall Target 3 Net Gain Natural Cover
Fish Habitat	No net loss	No net loss.	No net loss + habitat enhancement net gain.
SWH	No net loss	No net loss.	Use enhancements to increase areas providing significant wildlife habitat within the Town.
Urban Tree Canopy	n/a	Maintain existing canopy cover (%) in settlement areas.	Increase canopy cover in settlement areas.

Options for a Natural Heritage System

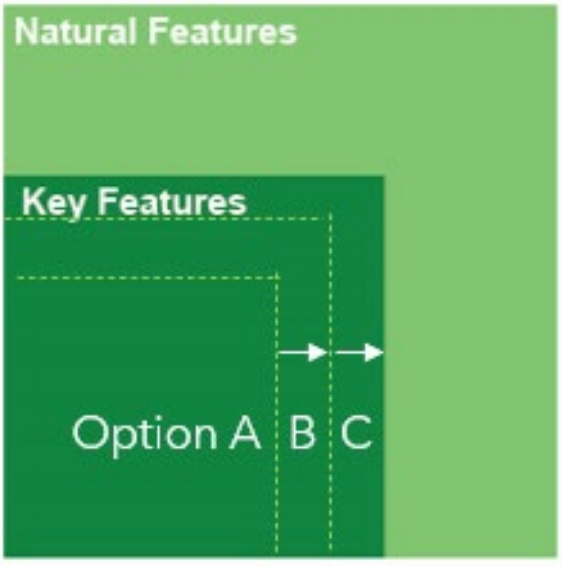
The Provincial Policy Statement provides flexibility for municipalities to tailor natural heritage systems (NHS) to meet their vision and reflect their local landscape as long as the system meets or exceeds the minimum requirements for protection of significant features set out in the Provincial Policy Statement and other provincial plans (e.g., Niagara Escarpment Plan).

Decisions with respect to mapping and managing an NHS are informed by the following:

- What proportion of the landscape (existing natural heritage) is to be managed.
- How those features are to be managed – Key Features only, or Key Features and non-Key Features (see Overall Target options)
- Whether the system should be consistent in size / extent and management within and outside of settlement areas.

Decisions regarding the above are informed by the target(s) selected, and consideration of other needs and priorities for the Town (e.g., economic, social).

Three basic natural heritage system options have been developed (A, B, C) to illustrate positions along a continuum of natural heritage planning. These options focus on how much of the Town's natural heritage is captured as Key Features. The incremental increase between options is illustrated conceptually on the figure to the right and a summary of each option is presented below.



Each system option can be aligned with the preferred overall natural heritage target (i.e., maintain key features,

natural cover target, net gain), illustrating the flexibility available to tailor a target and system to reflect the Town's vision for natural heritage.

In addition to Key Features, a natural heritage system must include Linkages. Linkages must be identified for a preferred system to connect its features and/or core areas at later stages of system planning and development. The preferred natural heritage system (regardless of how many key features are identified) may also include non-key features. Policies for these features would not be prohibitive.

System Option A | Least Key Features

This approach is more closely aligned with minimum requirements for an NHS. Consideration may be given to Key Feature criteria for other wetlands in addition Provincially Significant Wetlands, etc. Under this option, minimum protections are in place through an NHS and associated policies and practices.

Policies are generally the most directive, prohibitive, and/or prescriptive under this option as identified features include a smaller subset of natural cover considered the most critical for maintaining ecological functions on the landscape.

System Option B | Moderate Key Features

This approach increases the number of features identified as Key Features. Under this option the Town moves further beyond minimum system requirements. Constraints to development are increased slightly.

Policies are generally directive and/or prescriptive under this option but may provide greater flexibility to reflect more holistic approach to management of natural heritage on the landscape.

System Option C | Most Key Features

This approach has the greatest proportion of natural features identified on the landscape included as Key Features. There are greater constraints to development resulting from a larger portion of natural cover being identified as Key Features.

Policies are generally directive under this option but may provide greater flexibility to reflect more holistic approach to management of natural heritage on the landscape.

What Do the Different Options Mean?

The different system options provide flexibility for and/or may necessitate different policy and natural heritage management approaches for the Town to ensure that natural heritage is balanced with the other land use planning needs and responsibilities the Town has.

- Generally, under **Option A** (fewer key features), policies and planning processes will be more directive (i.e., prohibitions for development in key features) and provide less flexibility in management approaches (e.g., no opportunities for offsetting). With fewer key features, the system is smaller which means the relative importance of each feature on the landscape is increased to ensure the protection of the systems form and function in the long-term.
- As the amount key features increases (towards **Option C**), a larger portion of the landscape is included in the natural heritage system as Key Features and the system becomes more resilient (more habitat, more connections, etc.). This means that the system can support some change(s) without negatively affecting long-term maintenance of form and function. This resilience means that greater flexibility for land use planning is introduced; policies become less directive and provide greater flexibility for management to ensure good land use planning can be achieved (e.g., protect in place, some opportunities for compensation, etc.).

Decisions for management of key features is informed by the type of feature, the functions, and sensitivities it has and its location on the landscape. Any decisions regarding offsetting must have regard for and conform to policy tests (e.g., prohibitions or no negative impact, as applicable based on the feature type and associated policies).

Management outcomes for non-key features, are addressed through site-specific planning and in consideration of the system overall. Management outcomes could include 'protect in place', opportunity for offsetting, and 'no management' in some circumstances.

Bringing Target and System Options Together

Decisions regarding the Town's preferred direction for natural heritage planning and management must consider the broad range of responsibilities the Town has for its residents: social, economic, and environmental.

Three overall target options and three natural heritage system options have been presented. These can be combined to create a matrix of options and opportunities to refine natural heritage planning in the Town in order to reflect its vision and objectives for the natural environment (**Table NH-4**). Each position within this matrix comes with opportunities and limitations that should be considered.

To assist in considering the options presented, it is recommended that natural heritage planning be considered based on three key considerations.

Natural Heritage Risk

As the number of features and areas on the landscape providing ecological functions increases, the system and its functions gain resilience and redundancy (more areas providing similar functions). This means there is less risk of losing important functions and services if one part of the system were to fail (e.g., through fire, invasive species, features loss, etc.), because there's 'back-up'. Conversely, as the number of features and areas is reduced, risk to the system increases – there are fewer system redundancies or 'back-ups'. It is important to note that this description is used to illustrate a concept. The number of key features does not directly result in an immediate change to the Town's landscape. Rather, decisions regarding the size of a system and/or the type of target (e.g., to focus on key features, manage non-key features, or require a net gain), will affect the certainty of having a certain proportion of features maintained on the landscape in the long-term. Natural heritage risk is reduced as the number of features protected features increases (key features) or the proportion of the land being managed increases (overall target options).

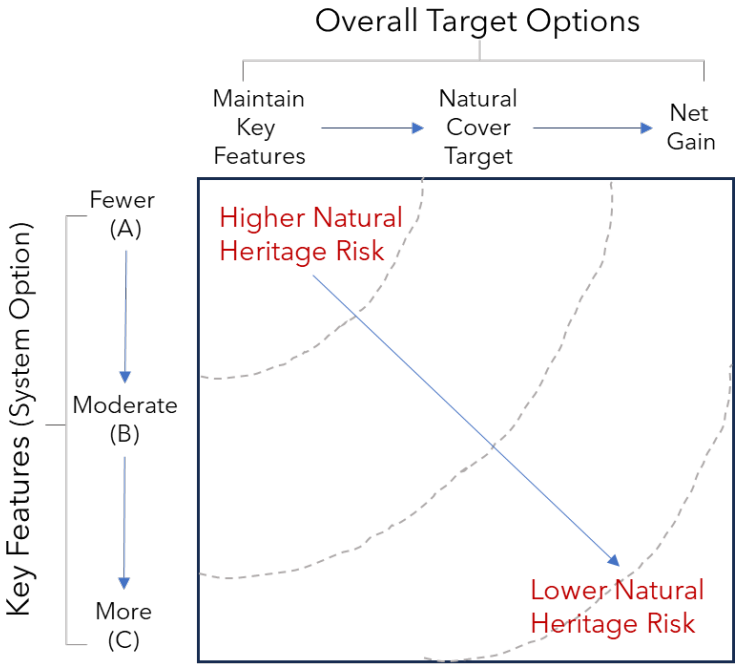


Figure NH-2: relationship between system options, overall target options and natural heritage risk.

Effect on Land Use Planning Processes

Natural heritage choices affect other areas of land use planning and it is important that these are considered in the decision-making process. System size (options a, b, c) can affect how much of the land is protected, creating constraints to development. This can affect where development can occur and what lands are available for development planning. System target affects how much of the land is managed through policy. As the area being managed or management expectations increase, so too can the processes and requirements to support lands use planning and other activities.

Management and protection of features through land use planning is important. It is equally important that the Town ensure it finds the appropriate level of management to suit the pressures it faces, and long-term vision for the Town.

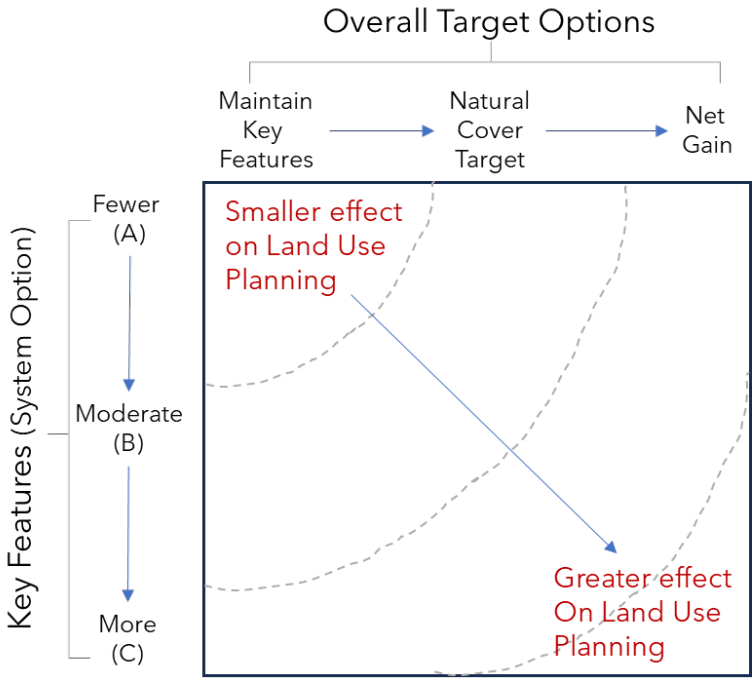


Figure NH-3: relationship between system options, overall target options and effects on land use planning processes and activities.

Policies and Management

Choices regarding an overall natural heritage target and system option will also influence the natural heritage policies the Town will need to consider preparing and implementing. A smaller system and target focused on more *critical* areas to maintain ecological functions means that each feature in that system has an elevated level of importance to protecting and maintaining the long-term function of the system. As such, a small system must be paired with more prohibitive and prescriptive policies to ensure they are adequately protected and managed.

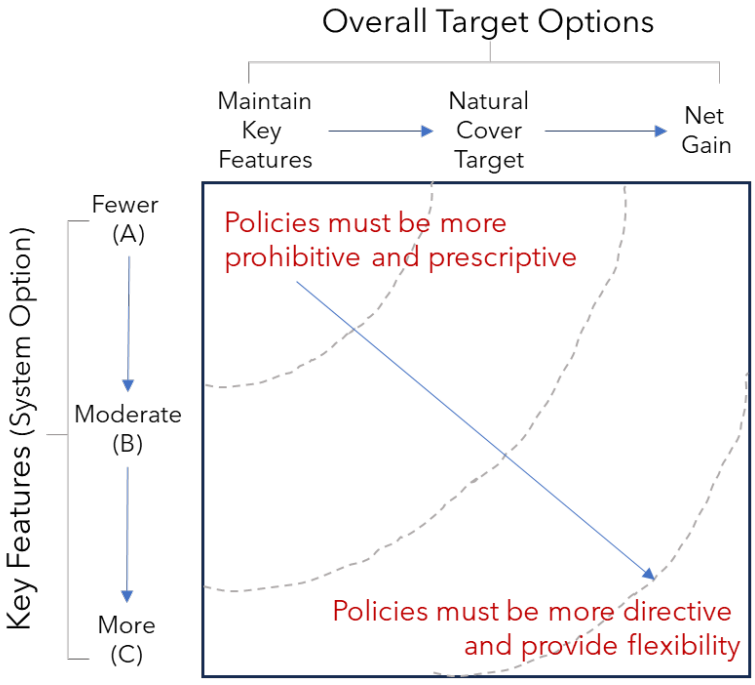


Figure NH-4: relationship between system options, overall target options and direction for natural heritage policies.

As the size of a natural heritage system is increased and a target with greater level of management across the landscape and/or net gain is chosen, the system includes redundancies and is more resilient to some level of change or impact. This means that policies can include more flexibility and options for overall natural heritage management. It is important to note that building in flexibility and directive vs. prescriptive or prohibitive policies becomes increasingly important as more of the landscape is managed to ensure that other land uses and good land use planning can continue to occur for the Town.

Table NH-4: matrix of options and opportunities available based on combining overall target options and system options.

	Overall Natural Heritage Target 1 Maintain Key Features	Overall Natural Heritage Target 2 Maintain Natural Cover	Overall Natural Heritage Target 3 Net Gain
Natural Heritage System Option 1 Fewer Key Features	**Natural Cover** Greatest risk of potential for loss of natural cover over time. Fewest key features of all system options and focus is on Key Feature management under this Target. Relative to other targets and system options, this combination provides the lowest level of natural cover management through policy and land planning processes. Losses will be most acute in areas of land use change. **Land Use** Least constraining. Key features are constraints to development. No management required for non-key features. This option has fewer key features covering a smaller area within the Town and is therefore the least constraining relative to other system options.	**Natural Cover** Some reduction in risk for loss of natural cover as some non-Key are managed under this target. Risk remains relatively high as there is more management flexibility for non-Key Features and thus risk to ecological functions remains slightly elevated under this option. **Land Use** Constraints remain low. Potential for additional management requirements for non-Key Features are introduced (e.g., protect in place, compensation, no management required).	**Natural Cover** Generally consistent with Target 2. Some reduction in risk associated with requirement for a net gain. Risk is largely related to changes in locations of natural cover (e.g., loss in urban and near-urban areas). **Land Use** Constraints remain low. Potential for additional management requirements for non-Key Features are same as Target 2. Additional requirement for development associated with achieving net gain. Flexibility in how net gain is achieved is provided.
Natural Heritage System Option 2 Moderate Key Features	**Natural Cover** Risk to natural cover is slightly reduced because more of the landscape is managed as Key Features compared to System Option 1. Potential for loss of natural cover over time remains relatively high due to focus on Key Features. Consistent with Option 1 losses will be most acute in areas of land use change. **Land Use** Constraints are higher as more of the landscape is captured as 'Key Features' over Option 1 but remain moderate. Key features are constraints to development and a greater proportion of features will be identified as Key Features. No management required for non-key features.	**Natural Cover** Risk to natural cover is moderately reduced as more features are key features and some non-Key Features are managed (over Option 1). Risk remains present for non-key features but is moderated through general management requirements. **Land Use** Constraints remain consistent with Target 1 for Key Features. Additional management requirements for non-Key Features are introduced (e.g., compensation).	**Natural Cover** Generally consistent with Target 2. Reduction in risk over Target 2 with requirement for a net gain. Risk is largely related to changes in locations of natural cover (e.g., reduced natural cover in urban and near-urban areas). Overall risk reduced as greater portions of the landscape are managed as Key Features. **Land Use** Constraints remain consistent with Target 1 for Key Features. Management for non-Key Features is consistent with Target 2. Increase in requirements for development associated with achieving net gain.
Natural Heritage System Option 3 More Key Features	**Natural Cover** Risk is further reduced over Option 2 due to increase in Key Features compared to other system options under this target. Potential for loss of natural cover over time remains consistent for non-key features. General risks and locations for greatest effect are consistent with Option 2. **Land Use** Greatest increase in constraints to land use planning due to increased Key Features on the landscape. No management required for non-key features.	**Natural Cover** Risk to natural cover is further reduced due to increase in Key Features and management of non-Key features is introduced. Due to flexibility in management of non-Key Features, some risk to ecological functions remains under this option, although it is moderated due to larger number of Key Features. **Land Use** Constraints remain consistent with Target 1 for Key Features. Additional management requirements for non-Key Features are introduced (e.g., compensation).	**Natural Cover** Lowest risk to natural cover loss over time. Reduction in risk over Target 2 with net gain requirement. Risk is largely related to changes in locations of natural cover (e.g., reduced natural cover in urban and near-urban areas). Greatest portion of the landscape is managed. **Land Use** Constraints remain consistent with Target 1 for Key Features. Management for non-Key Features is consistent with Target 2. Increase in requirements for development associated with achieving net gain.

Preliminary Recommendations – Target and System Options

Through this project, engagement sought to understand how natural heritage is valued, what key concerns for the long-term management of natural heritage were, and desired direction(s) for natural heritage planning and management in the Town from participants. Engagement also specifically sought feedback on the overall natural heritage target options and system options presented above to provide preliminary direction to the Town for next steps.

Participants in the Open Houses highly value natural heritage within the Town. There is a sense of pride, strong public stewardship, and hope for the Town's future in managing these valued resources. There was recognition of, and concern for, the pressures on natural areas from a range of sources (e.g., climate change, development, recreation, invasive species, etc.). Opportunities to maintain, protect and where possible enhance the natural environment were identified as highly valued objectives for this study and the Town's direction for managing natural heritage.

Based on the Town's existing Official Plan strategic objectives, as well as direction heard throughout this project from Council, staff, and those engaged through this project, we provide the following preliminary recommendations to inform next steps of natural system and natural heritage planning:

Recommendation 1: That the Town exceed minimum requirements for natural heritage planning.

- Consider adopting Target Option 2 or 3 including setting a specific natural cover target reflective of the Town's existing character and long-term vision.
- Identify a larger natural heritage system (greater number of key features), generally aligned with Option 2 or 3.
- Opportunities to refine these options to reflect the 'right fit' for the Town can occur through subsequent stages of work.

Recommendation 2: The Town should identify its own Natural Heritage System (build from the County's Natural Heritage System).

- Based on existing strategic objectives and directions heard, the County Natural Heritage System will not support the Town in achieving its strategic objectives and is not aligned with Target Options 2 or 3, or System Option 2 or 3.
- The Town should map the County's Natural Heritage System as an overlay through future Official Plan updates to support conformity and recognize the features and areas which have been identified as important at the County scale.

Recommendation 3: It is recommended that the Town use a core areas approach to mapping their Natural Heritage System.

- The Town boasts a very high natural cover. A core areas approach would be appropriate in this landscape.
- Key features and non-key features should be mapped across the Town's landscape.
- Identifying Core Areas provides the Town with opportunities to refine natural heritage policy and direct different levels of natural heritage protection or management to different areas. This flexibility can be used to support good land use planning and manage different pressures across the landscape through good land use planning practices.

Recommendation 4: The Town conduct engagement through next stages of work (refer to Natural Heritage Beyond the Study section for further information) to ensure representation from all major stakeholders in natural heritage planning (agricultural community, residents, development community, recreational businesses, etc.)

Policy Review, Gaps and Recommendations

The Town's Official Plan provides short-term and long-term guidance for wise and efficient management of land and resources. It guides the Town through setting goals and objectives about how it will grow and develop and to work out ways of reaching those goals while attempting to balance important social, economic and environmental values. Ultimately, the goals and objectives are based on a set of guiding principles which are derived from a clear vision for the municipality.

The Town began the process of undertaking an Official Plan update in 2022 through the preparation of various background papers and by receiving public input through surveys and workshops. To provide recommendations to the Town and the public for considerations on updates to the Official Plan and other implementation tools to inform natural heritage planning, a detailed review of current policies against the Provincial Policy Statement (2020) and the County's Official Plan (2018) was undertaken. In addition, the review evaluated the goals and objectives of the Town's Official Plan against the target objectives for natural heritage to provide recommendations to revise, remove and add objectives and policies that would support the target for the natural environment. The related material would be further refined and advanced for consideration with any proposed changes to the OP.

The following provides a summary of key recommendations for updates to objectives, policies and implementation tools for consideration as part of the Town's Official Plan review process.

Recommendations From Review of Existing Policies

The following provides a summary of recommendations on the Town's existing Official Plan natural heritage policies for consideration as part of future updates the Town's Official Plan. These recommendations support conformity with the Provincial Policy Statement (2020) and alignment of natural heritage policies with the Town's existing natural heritage strategic objectives.

1	The natural heritage system to be identified by the Town should consider how to incorporate Grey County's natural heritage system mapped in the County's Official Plan.
2	Policies pertaining to Threatened and Endangered Species Habitat should be updated to be consistent with the PPS and defer to federal and provincial legislation without additional considerations or direction.
3	Where policies identify the requirement that an Environmental Impact Study be prepared, additional language should be included to ensure these studies are completed "to the satisfaction of the Town" or that the studies are "accepted" by the Town.
4	Policies that provide criteria for natural heritage features and areas (e.g., significant woodland, significant valleyland, etc.) and karst should be updated, ensuring the criteria and policies are consistent with or meet the minimum requirements of the County's Official Plan.
5	Fish habitat policies should be consistent with the County's policies that prohibit development within 30 m of the banks of a stream, river or lake unless an EIS concludes setbacks may be reduced.
6	It is recommended that the Town consider identifying a water resource system, or at a minimum, have policies consistent those of section 2.2 of the PPS, particularly to recognize the interdependency of natural heritage features and areas, surface water and groundwater features and hydrologic functions.
7	It is recommended that all wetlands of a minimum size (to be determined through the work program to identify the natural heritage system) be protected in policy, subject to the test of no negative impact, to ensure alignment with targets, goals and objectives for the protection of "other wetlands".
8	Update policies related to the completion of an Environmental Impact Study, with reference to completing an Environmental Impact Study consistent with Town or County guidelines, when available, and to the Town's satisfaction.
9	The definitions in the Town's Official Plan should be reviewed against those of the 2020 PPS to ensure consistency, such as "negative impact". Additional definitions or updates to definitions will be required following an update to natural heritage policies and the identification of components to be included within the Town's natural heritage system.

Policy Recommendations to Achieve Overall Natural Heritage Targets

The Town's Official Plan includes a series of strategic objectives that form the basis for natural heritage policies. Upon a review of the strategic objectives against the overall natural heritage target options identified through this project, the following recommendations have been provided to revise existing, or develop new policies to support the strategic objectives and chosen target for the natural heritage system.

Policy Recommendations to Support Target Option 1 (Maintain Key Features)

Should the Town pursue Overall Natural Heritage Target Option 1 (Maintain Key Features), the following policy recommendations should be considered in the updated Official Plan.

1	Include a policy that requires buffers from significant natural heritage and hydrologic features to "protect" their associated habitats and ecological functions.
2	Include a policy that requires the restoration of significant natural heritage features and areas where there has been unauthorized removal (e.g., significant woodlands and significant wetlands).
3	Develop policies that require the identification, assessment and protection of linkages that are sufficient to maintain the ecological functions of an interconnected natural heritage system. Be clear that where linkages are identified in mapping, they are not intended to interfere with normal farming practices
4	Include stewardship policies to encourage protection of existing forest, encourage reforestation, and encourage planting of riparian buffers along watercourses. Support the agricultural community to create riparian buffers to watercourses which can enhance natural linkages.
5	Include policies that "promote" the replacement of forested areas, including those that are not "significant woodlands" at a 1:1 ratio to maintain forest cover. This may be in the form of an offsetting policy.
6	Include a statement that the Town will develop a greening strategy to support reforestation and identify areas where forest cover can be increased.

Policy Recommendations to Support Target Option 2 (Natural Cover Target)

The following recommendations would apply in addition to those identified for Target #1 or are modified from those identified in Target #1 where they go beyond the policy recommendations. These recommendations would apply should the Town pursue Overall Natural Heritage Target Option 2 (Natural Cover Target).

1	Include additional policies to protect other natural features and areas not currently identified as significant or protected under current policy.
2	Include a policy that require the replacement of the area and ecological function of significant natural heritage features and areas (after the test of no negative impact has been met) and other natural features to maintain natural heritage cover. This may be in the form of an offsetting policy.
3	Include a policy that requires enhancement natural heritage features and areas, escarpment slopes and related landforms.

Policy Recommendations to Support Target Option 3 (Net Gain)

The following recommendations would apply in addition to those identified for Target #2, or are modified from those identified in Target #2 where they go beyond the policy recommendations. These recommendations would apply should the Town pursue Overall Natural Heritage Target Option (Net Gain).

1	Include additional policies to protect other natural features and areas not currently identified as significant or protected under current policy.
2	Include a policy that requires the replacement of the area of natural heritage features and areas and ecological functions (after the rest of no negative impact has been met) and other natural features and areas with a requirement to achieve a "net gain" in area and ecological function. This may be in the form of an offsetting policy.
3	Include policies that where development is proposed adjacent to provincially significant wetlands and the habitat of endangered and threated species, it is required that enhancements to the ecological function and habitat be provided as part of development applications, where possible.

Recommendations for Implementation Tools

There are various tools that support implementation of natural heritage policies of the Town's Official Plan, including zoning by-laws, guidelines, strategies, and Town standards. The following provides a list of recommendations for updates to existing implementation tools or new tools for consideration as part supporting the Town implement natural heritage policies through the work program to review the Town's Official Plan.

Zoning and By-laws

By-laws are intended to implement the policies of the OP and inform day-to-day decisions. While policies can be directive and inform planning, by-laws are legally enforceable.

Comprehensive Zoning By-law 2018-65

The Town's Comprehensive Zoning By-law 2018-65 includes a wetland (W) and Hazard (H) zone within which certain activities are restricted. Both the H-zone and W-zone are identified on Schedule 'A' which correspond to the wetland and hazard designations on Schedule 'A' of the Official Plan. The wetlands designation includes provincially significant wetlands. The hazard designation includes rivers and streams (i.e., watercourses), waterbodies, flooding hazards, erosion hazards, dynamic beach hazard limits, setbacks, and other identified wetlands.

It is recommended that the Town consider include other components of the natural heritage system within settlement areas, including Key Features, linkages, buffers and enhancement areas, within an "Environmental Zone" that applies appropriate restrictions that achieve the objectives and policies of the Town's new OP.

By-laws will need to be prepared as they relate to a Natural Environment zone and a Natural Heritage System overlay, to implement the natural environment objectives and policies of the Town's new OP.

Tree Preservation By-law (2010 – 68)

The tree preservation by-law has recently undergone a review to expand protection for trees and align with overall objectives related to tree preservation. As part of the review of the tree preservation by-law, the following recommendations should be considered:

- the review consider the goals, objectives and policies related to the target for woodlands.
- the by-law may consider including a prohibition from selective tree removal that results in the reduction in stem density below that which defines a woodland under the Forestry Act.
- the update to the tree preservation by-law may include requirements for tree compensation and woodland restoration, whether the tree removal was permitted as per the by-law or

approved under a Planning Act application, or a requirement as part of an unauthorized removal of trees.
- penalties for infractions should be increased to ensure deterrence and support municipal tree planting and woodland enhancement efforts.
- prepare a supplementary guidance document for the preparation of a Tree Inventory and Preservation Plan (see section below).

Guidelines for Implementation of Policies

Guideline documents are important tools to provide clear direction for the preparation and submission of studies required by the Town. The benefit of guidelines to both the proponent and the Town is improved efficiency in review and reduced resubmission requirements resulting from consistency in content and quality of submitted materials. The following guideline documents should be considered for preparation to support the Town in interpreting and implementing policies. These documents should be prepared in consultation with or lead by other partner agencies (e.g., the County may lead the preparation of an EIS guideline document that can be used by all lower-tier municipalities).

Tree Inventory and Preservation Plan Guideline

In order to complement the tree preservation by-law, the Town should develop a separate guidance document for the preparation of a Tree Inventory and Preservation Plan. This would ensure consistency in content and quality of reports submitted to the Town as part of development applications. In addition, the Town should consider development a guidance document to develop a Woodland Restoration Plan for authorized or unauthorized removal of trees that form part of a woodland.

Environmental Impact Study Guidelines

A guideline document for the preparation of an Environmental Impact Study (EIS) typically provide best practices for the preparation of an EIS. An EIS guideline should provide a clear outline of what is expected through the EIS process and requirements for content of an EIS with the intent of facilitating the consistent application of relevant natural heritage policies.

The EIS guideline should achieve the following:

- Establish a standardized set of study guidelines specific to natural heritage features and areas, and other components of the natural heritage system;
- Avoid conflicts between proposed development and natural heritage features and areas through a constraints analysis prior to establishing a development layout;
- Provide a planning tool that can be used by the applicant to address environmental consideration throughout the development process;

- Ensure high quality, consistent studies and reporting methods; and
- Facilitate and expedite the environmental review process by the reviewing agencies.

As a means to make the EIS process efficient for both the Applicant and the Approval Authority, several tools should be created as part of the EIS Guideline, including:

- EIS Project Screening Tool – The screening tool supports and documents initial screening of a proposed project / application either at pre-consultation, or upon submission, as applicable for the type of project.
- EIS Scoping Assessment Tool - The scoping tool facilitates review of eligible development and site alteration projects to determine if the requirement for a standard EIS may be waived in accordance with the policies of the Town's OP.
- EIS Terms of Reference Checklist Tool – an EIS Terms of Reference checklist form serves two purposes: 1) Scoping. Through preparation, review and approval of this form, the study requirements (e.g., field work) for an EIS are established; and 2) Terms of Reference.
- EIS Comment and Response Template Tool – this comment and response tool is simply a table that should be completed used by the approval authorities and the applicant to track comments and responses as part of documenting progress on addressing comments.
- EIS Final Submission Checklist Tool – this tool is simply a checklist to determine that the EIS has been completed in accordance with the approved TOR and that the study requirements were completed in accordance with the approval agencies EIS guidelines.

Offsetting Guidelines

Ecological offsetting guidelines are intended to achieve the objectives and policies related to preventing the reduction in area and ecological function of the natural environment, which may be tied to the objective of either "no net loss" or "net gain".

Ecological Offsetting must follow a hierarchy to be considered as an acceptable outcome. This hierarchy would include the following:

1. First seek to avoid impacts, including meeting the test of "no negative impact", where required in policy. Note: Offsetting is not considered an approach to be used to meet the test of 'no negative impact'.
2. Where an impact results in the partial removal of a natural heritage feature and area, or through an Environmental Assessment the result is a partial or whole removal of a natural feature, ecological offsetting must be provided.
3. Where appropriate and achievable, ecological offsetting must be accommodated on the subject lands. Where this is not appropriate or achievable, ecological offsetting must be provided to the natural heritage system within the Town.
4. Where ecological offsetting in the form of habitat recreation is not possible or desirable, financial compensation can be proposed to permit the Town and/or County to implement

ecological offsetting with the objective of either avoiding a reduction in area and ecological function to the natural heritage system, or to achieve a net gain in area and ecological function.

5. The decision to permit financial compensation is considered a last resort.
6. Compensation ratios will vary depending on the type of habitat being impacted. For example, a 1:1 ratio may be appropriate for a young, small, isolated wetland, whereas a ratio of 3:1 may be required for the removal of a portion of an older or higher functioning woodland.

Greening Strategy

A Greening Strategy is intended to provide strategic direction to enact the objectives and policies set out in the Official Plan, including the municipality's vision and goals for the natural environment, which may include maintaining or enhancing natural cover. Achieving the goals of a Greening Strategy depends on collaboration between the municipality and all stakeholders such as the development community, environmental groups, and the agricultural community.

A Greening Strategy should be developed that will identify programs that support the vision and goals for the natural environment and provide a set of actions that can be implemented to support the goal for the natural environment, such as tree planting programs, schoolground naturalization and pollinator garden programs, and planting of riparian vegetated buffer strips with the support of the agricultural community.

Beyond identifying programs and actions to support the goal for the natural environment, a Greening Strategy can also include a set of priorities to identify areas within the natural heritage system where enhancement should be implemented.

Coordinating with the County

Several of the recommended guidelines and tools align with potential interests at the County level. The Town should consult with the County and consider opportunities to align efforts and approaches to streamline and create consistency where possible.

Near-Term Natural Heritage Management Opportunities

There are several opportunities the Town can pursue in the near-term which would provide clarity for interpretation of current Official Plan natural heritage policies and support implementation through land use planning processes. These updates will support the Town in affecting positive change in natural heritage management in the near term and support future work to develop a Town-specific Natural Heritage System.

Recommendation 1: That the Town review and update their natural heritage objectives to align with the direction and guidance of the Grey County Official Plan and reflect the desired direction of council for natural heritage planning and management. Specifically, it is recommended that consideration be given to inclusion of ecological offsetting and, if natural heritage target #3 is the preferred direction, an objective for natural heritage net gain.

Recommendation 2: That the Town undertake minor policy updates to their current natural heritage policies to reflect language and direction of the Grey County Official Plan. These housekeeping updates will provide alignment between municipal plans applicable to the Town.

Recommendation 3: That the Town update definitions of the current Official Plan for Significant Woodlands, Other Woodlands, and Other Wetlands. These definitions will provide clarity on how to interpret and implement its natural heritage policies.

Recommendation 4: That the Town prioritize preparation of the Environmental Impact Study Guideline and the Tree Inventory and Preservation Plan Guideline

- As guidelines, these can be undertaken at any time. They can provide support for implementation of the current Official Plan in the immediate / short-term.
- These guidelines are informed by existing standards of practice and would support consistency in the interpretation and standards for submission of studies which support land use planning processes.
- Minor updates may be required after the Official Plan has been updated to reflect other directions for natural heritage policies, however these would generally be anticipated to be minor in nature and should not detract from the opportunity to prepare these guidelines in the short term.

It is also recommended that these guidelines receive council endorsement once prepared.

- Council endorsement provides further support for enforcing adherence to these guidelines as standard expectations for land use planning practices in the Town.

Natural Heritage – Beyond the Study

The Natural Heritage Study delivers recommendations to support initial decisions for the direction of natural heritage planning in the Town. Recommendations provided in this study reflect directions found in the current Official Plan and feedback heard through engagement for the future of natural heritage planning for the Town of The Blue Mountains. The recommendations in this study are the first steps to identifying a natural heritage system for the Town.

Next steps focus on defining and delineating a Natural Heritage System and preparation of natural heritage policies which support the preferred system and targets for the Town. Generally, this work can be broken down into several main steps:

Refine System Options | Through this step, natural cover target(s) are established, feature specific criteria for Key and Supporting Features that achieve the targets identified, and options for Core Areas prepared. General policy implications of options presented will be identified to inform evaluation and selection of a preferred system.

Define Preferred System + Draft Policy Development | Informed by engagement and, if required, further technical analysis, a preferred system will be identified. Draft natural heritage policy will also be prepared through this step, to align implementation with system criteria and mapping. Presentation of the preferred system and focused engagement on mapping of Core Areas and draft natural heritage policy will occur in this step.

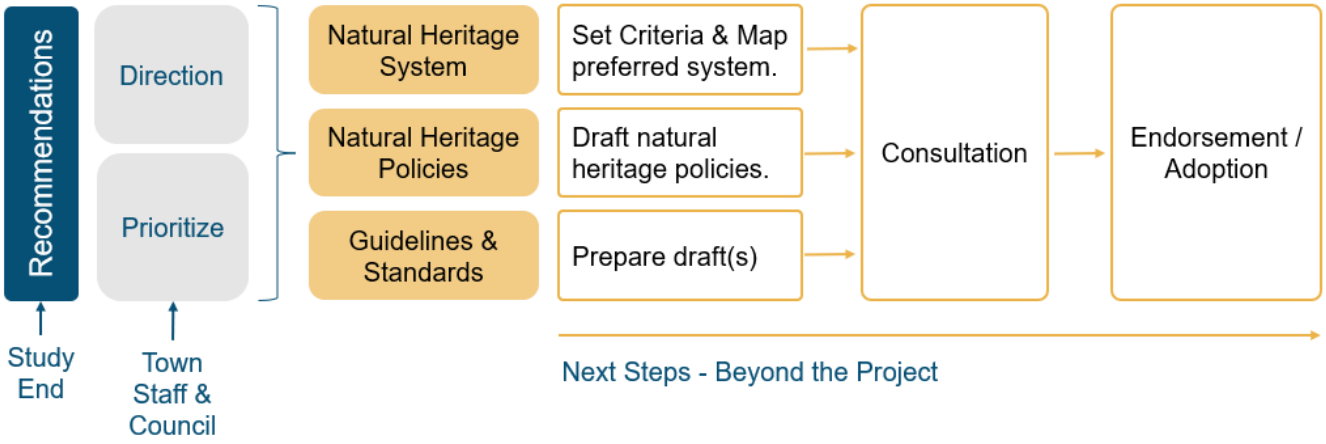
Recommended System + Policy | Final system refinements, if required, and refinement of natural heritage policy occur through this step with the outcome of finalized recommendations to council in this step.

Adoption by Council | The recommended system and natural heritage policy will be presented to council for adoption.

Engagement through next steps should include open engagement sessions (e.g., open houses or facilitated public sessions) and focused meetings with Indigenous treaty holders and stakeholders (e.g., agricultural community, development community).

As the Town works towards these larger works in support of natural heritage planning, it may choose to proceed with preparation of guidelines and standards which could provide support for management of the natural environment within the current Official Plan as a near-term opportunity.

Figure NH-5: Illustrates general next steps to move natural heritage planning forward for the Town beyond the current study's conclusion.



APPENDIX A | Natural Asset Inventory – Asset Registry Maps

MAPS PROVIDED UNDER SEPARATE COVER

APPENDIX B | Natural Asset Inventory – Asset Condition Maps

MAPS PROVIDED UNDER SEPARATE COVER

APPENDIX C | Natural Asset Inventory – Risk Assessment Maps

MAPS PROVIDED UNDER SEPARATE COVER

June 2024

Natural Asset Inventory & Natural Heritage Study

Recommendations Report - APPENDICES

Prepared for

Town of The Blue Mountains

North-South Environmental Inc. • 101B King Street West • Cambridge, Ontario • N3H 1B5

Project Study Team

North-South Environmental Inc.

North South Environmental were the overall project lead and primary consultant for the Natural Heritage Study.

Kristen Harrison, Senior Ecologist, Project Manager
Sal Spitale, Senior Ecologist
Grace Pitman, Ecologist
Benjamin Meinen, GIS Specialist

Green Analytics

Green Analytics were the primary consultant and lead for the Natural Asset Inventory. Maps in this appendix were produced by Green Analytics.

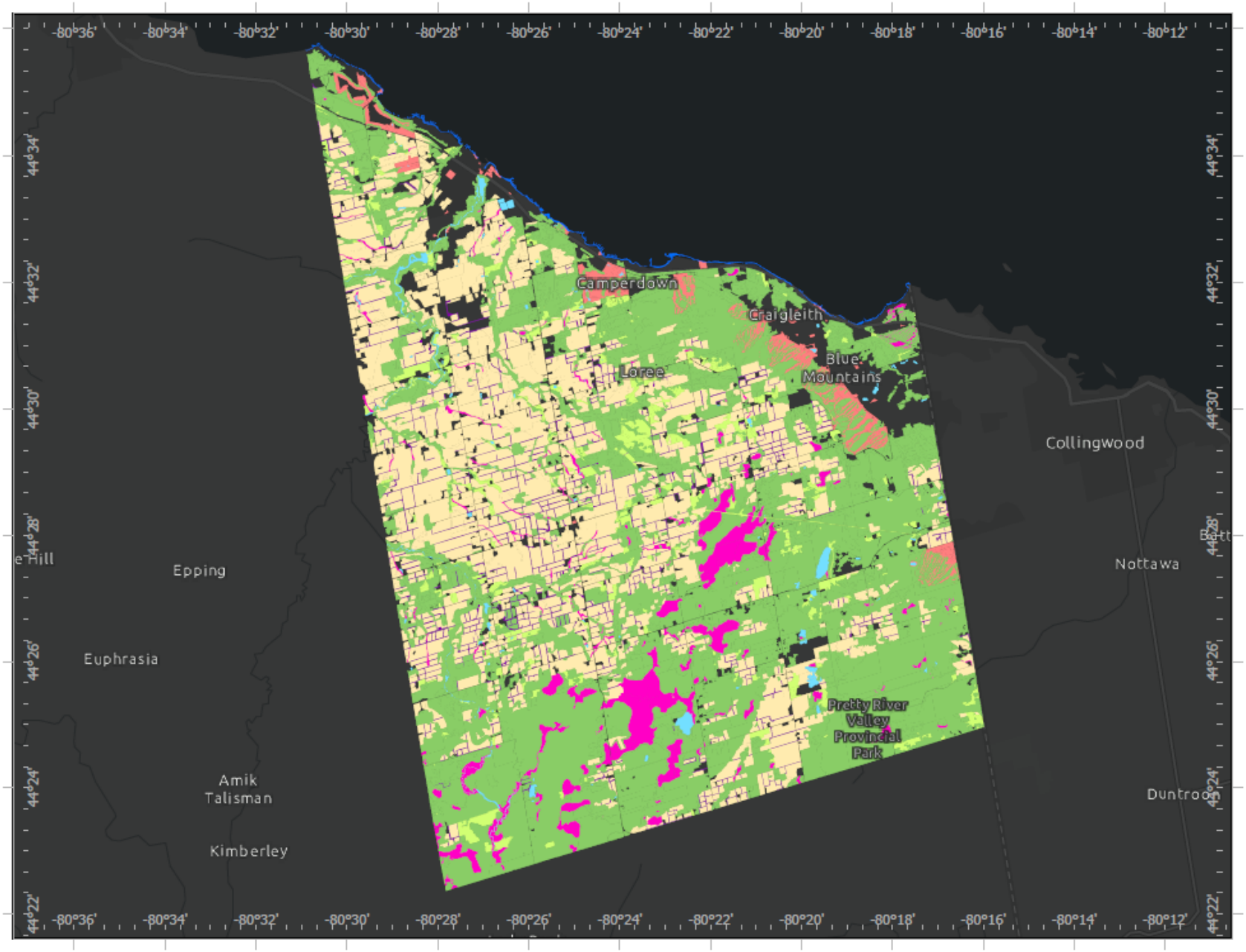
Amy Taylor, CEO
Jeff Wilson, Senior Economist
Kevin Horrocks, Technology and Spatial Analysis Lead

All photos in this report were provided by and are the property of The Town of The Blue Mountains. They are used in this report with permission.

List of Appendices

APPENDIX A | Natural Asset Inventory – Asset Registry Maps

Town of The Blue Mountains – Natural Asset Inventory



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

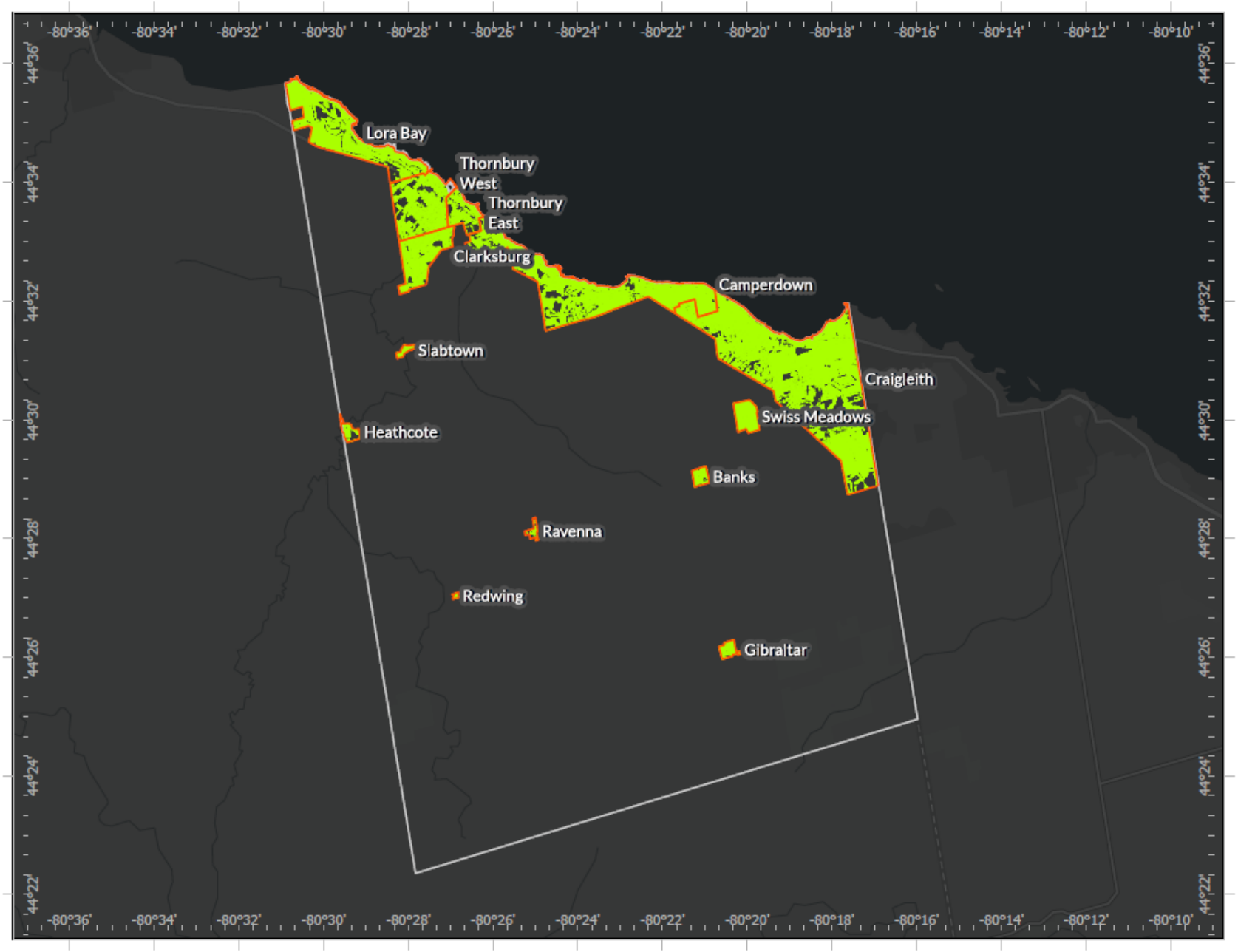
Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Settlement Area Canopy Cover



Settlement Boundary

Town Boundary

Canopy Cover

Spatial Reference
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PCS: WGS 1984 Web Mercator Auxiliary Sphere

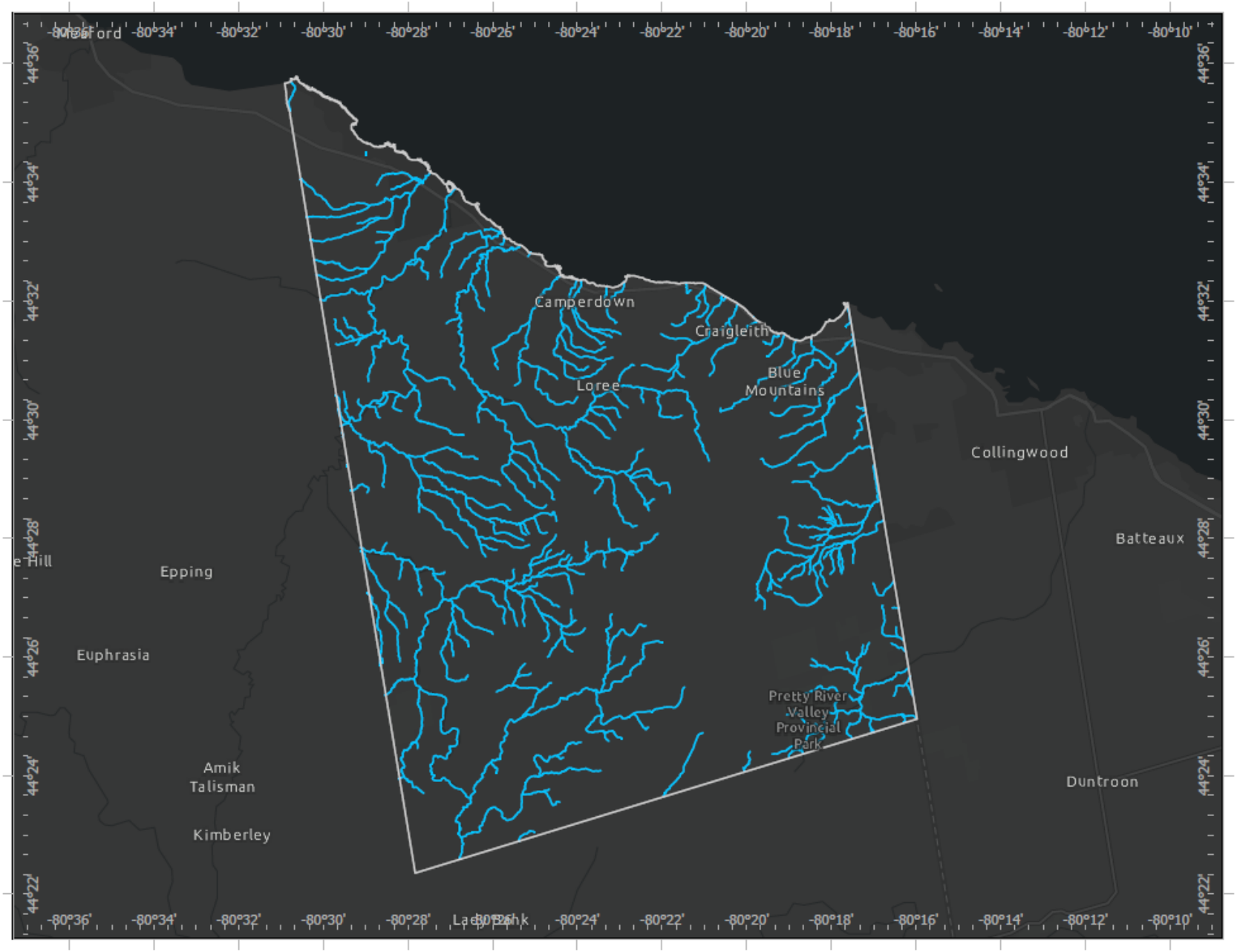
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.75 7.5 15 Kilometers

green ANALYTICS

Town of The Blue Mountains – Watercourses



Town Boundary

Watercourse

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

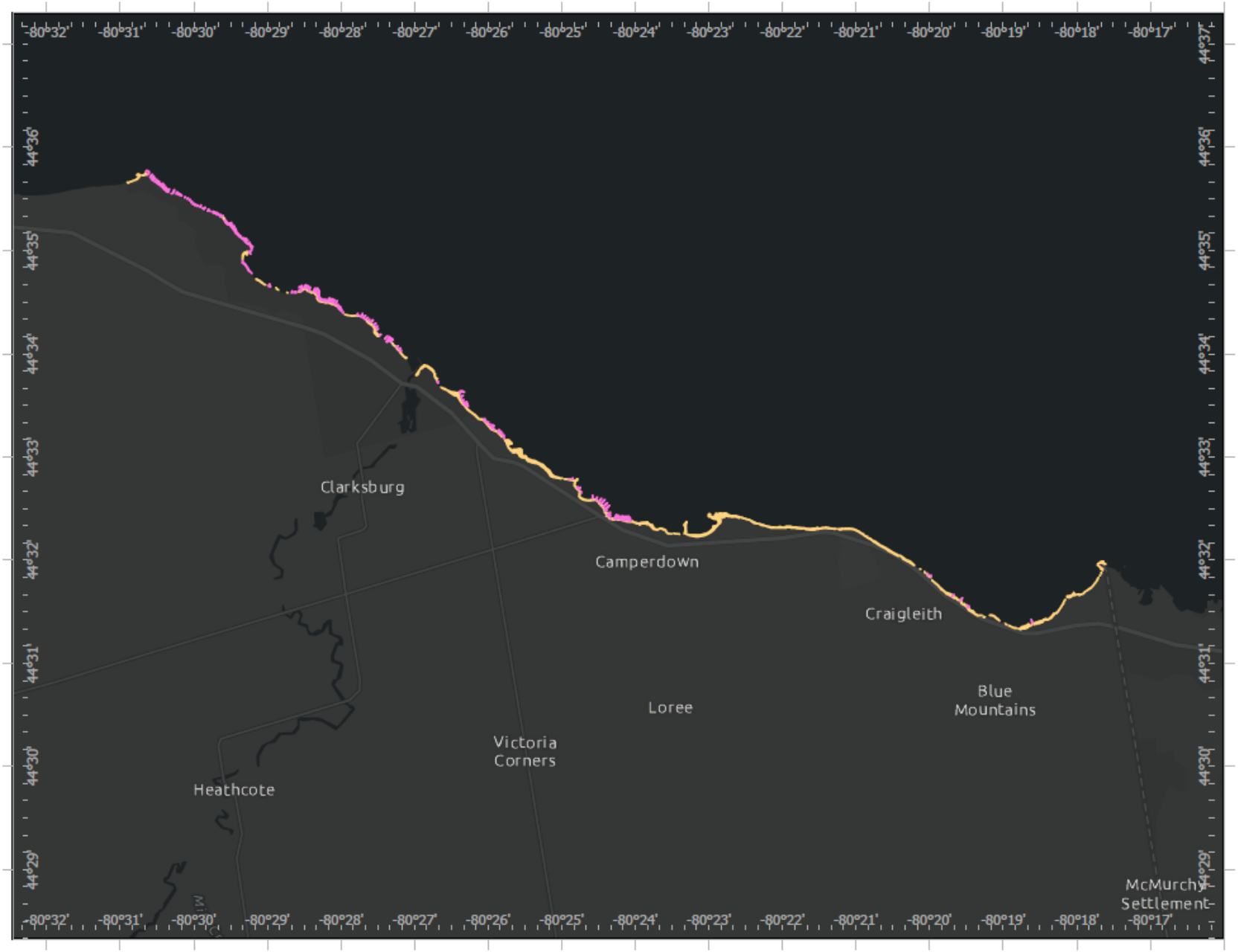
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.75 7.5 15 Kilometers

green ANALYTICS

Town of The Blue Mountains – Shoreline Classification



Shoreline Type

- Beach
- Rocky

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc,

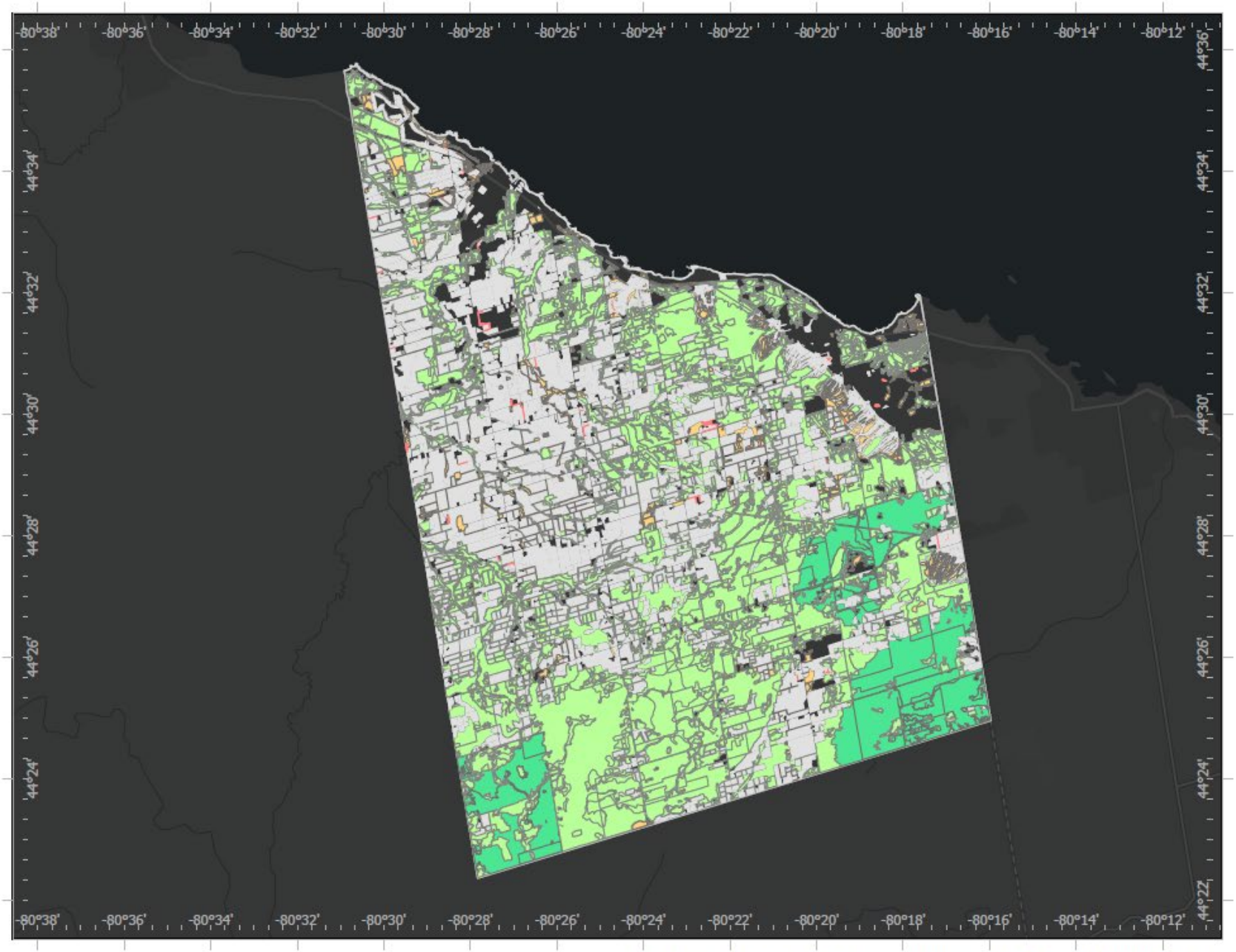
N

0 2 4 8 Kilometers

green ANALYTICS

APPENDIX B | Natural Asset Inventory – Asset Condition Maps

Town of The Blue Mountains – Overall Asset Condition Summary



Natural Asset Inventory

Overall Condition Rating

- Very Good
- Good
- Fair
- Poor
- No Condition Rating

Town Boundary

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

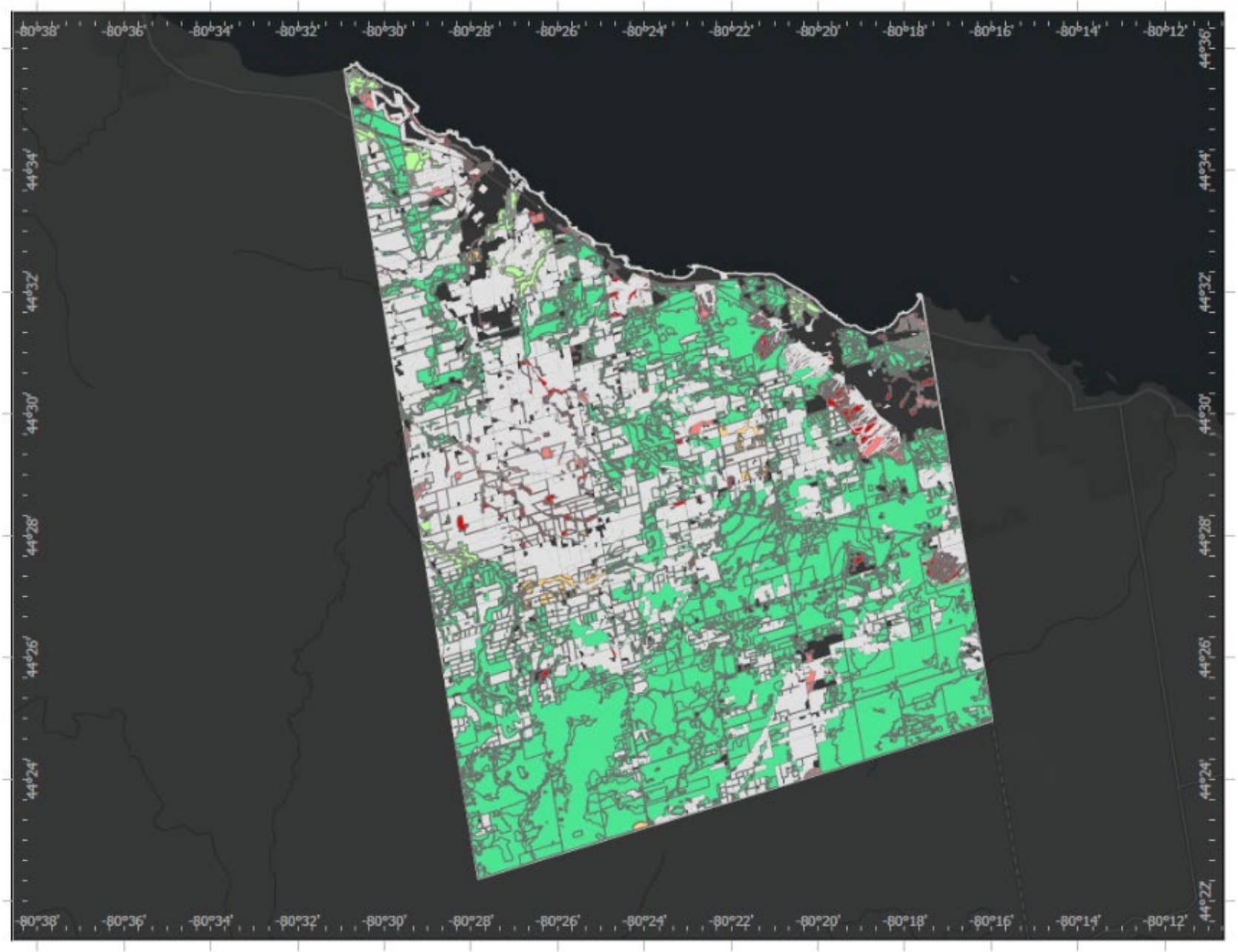
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Interior Habitat Condition



Natural Asset Inventory

Interior Habitat Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor
- No Condition Rating

Town Boundary

Spatial Reference
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PCS: WGS 1984 Web Mercator Auxiliary Sphere

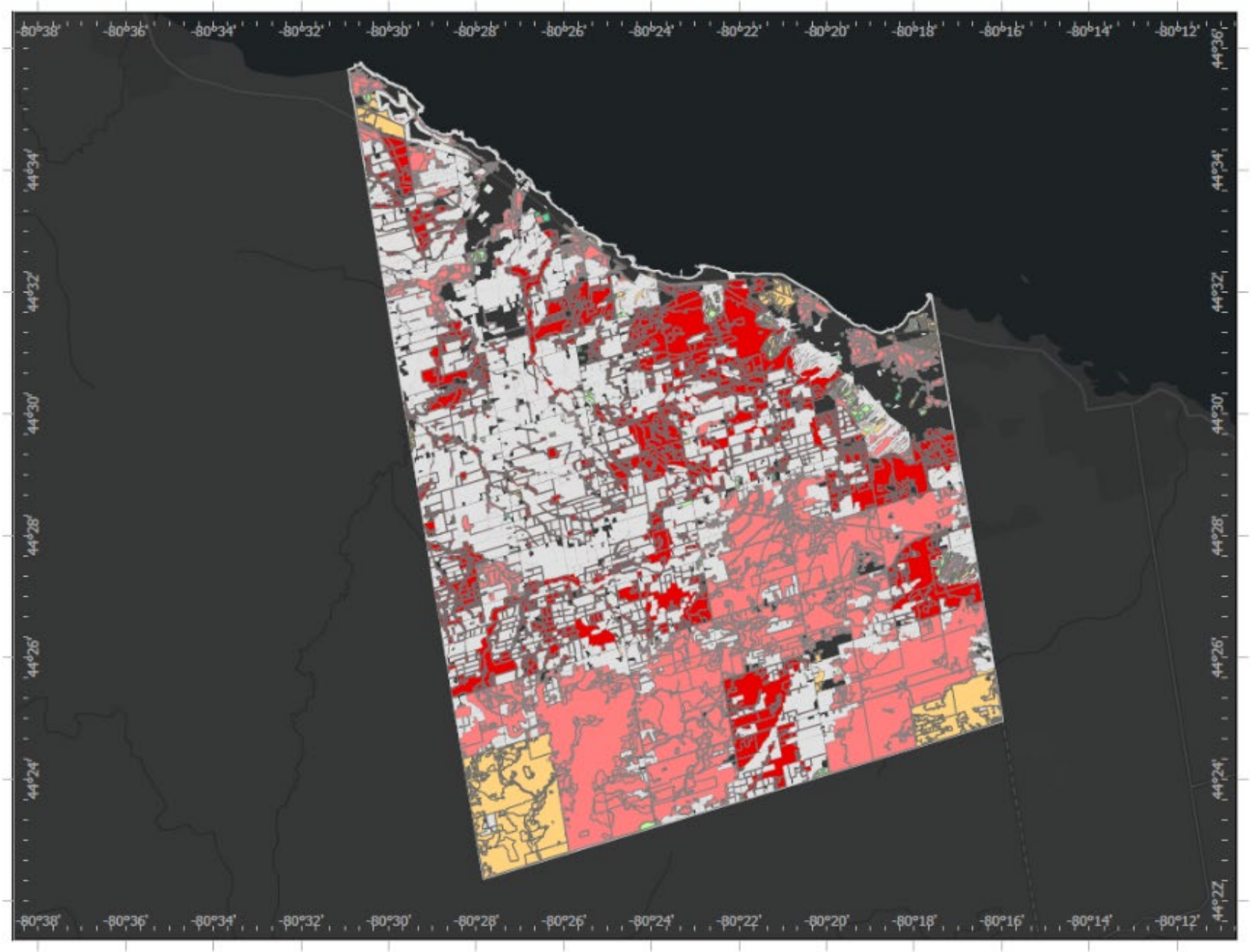
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains - Patch Shape Condition



Natural Asset Inventory

Natural Patch Shape Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor
- No Condition Rating

Town Boundary

Spatial Reference
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PCS: WGS 1984 Web Mercator Auxiliary Sphere

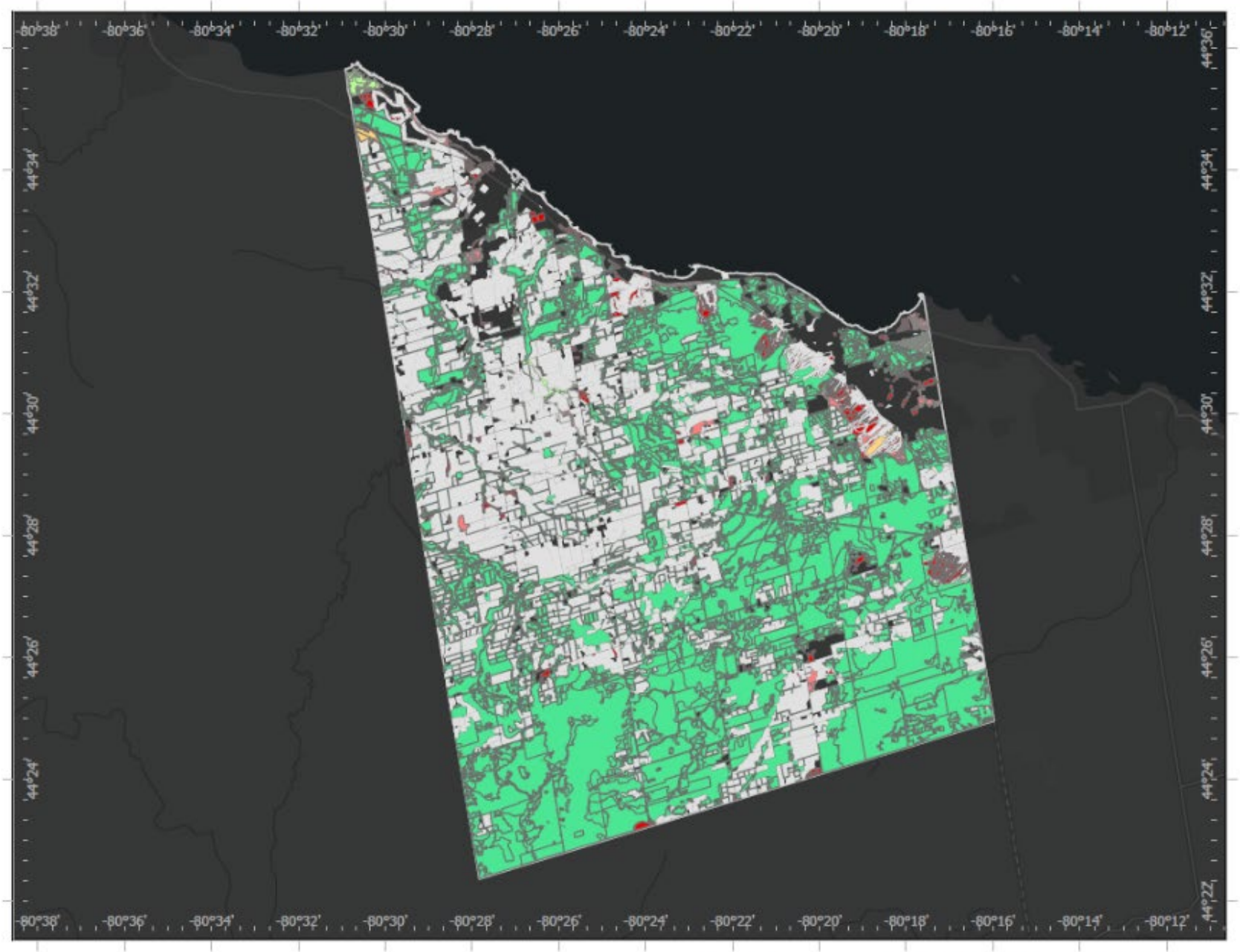
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Patch Size Condition



Natural Asset Inventory

Natural Patch Size Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor
- No Condition Rating

Town Boundary

Spatial Reference
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PCS: WGS 1984 Web Mercator Auxiliary Sphere

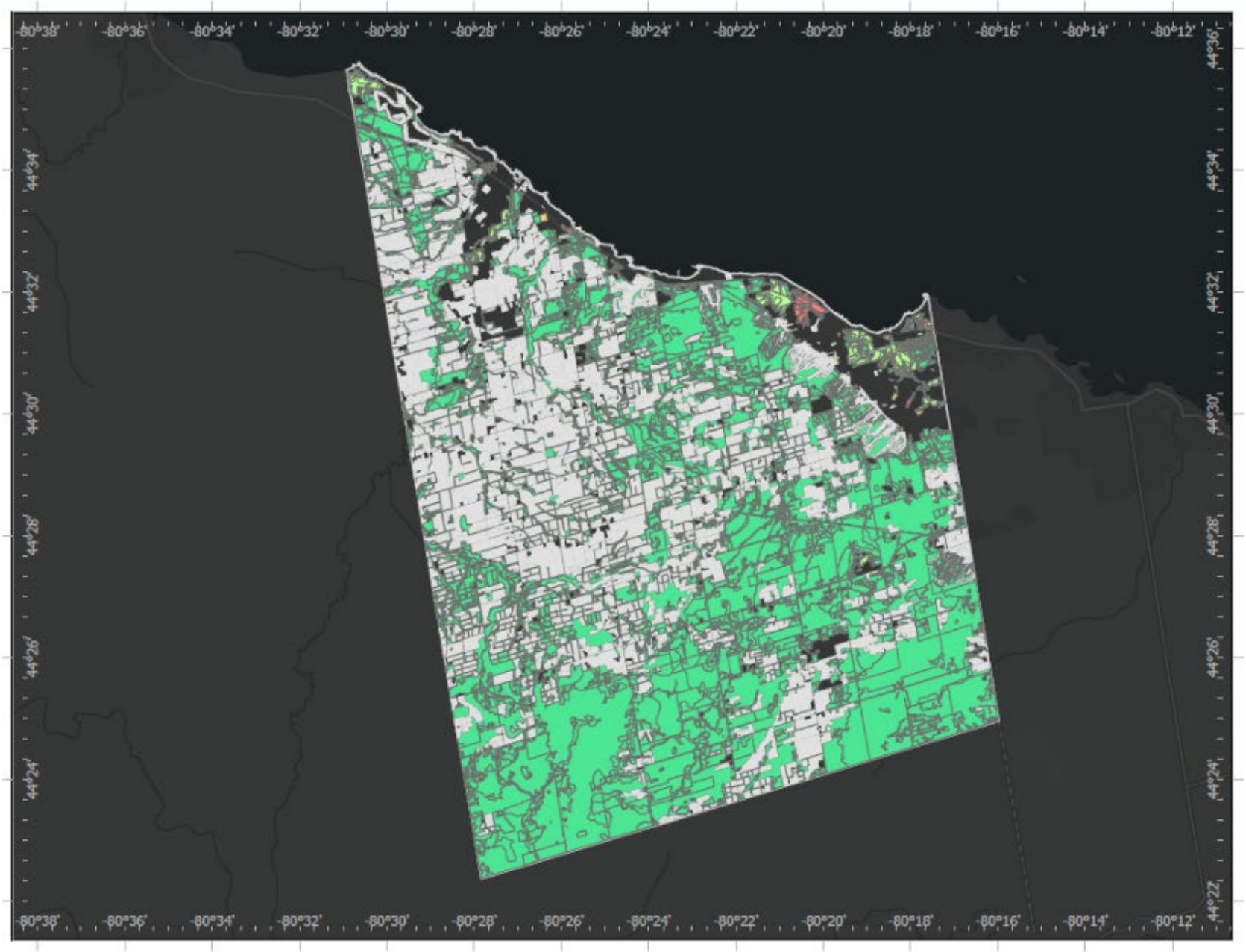
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Permeability of Adjacent Land Use Condition



Natural Asset Inventory

Permeability of Adjacent Land Rating

- Very Good
- Good
- Fair
- Poor
- <Null>

Town Boundary

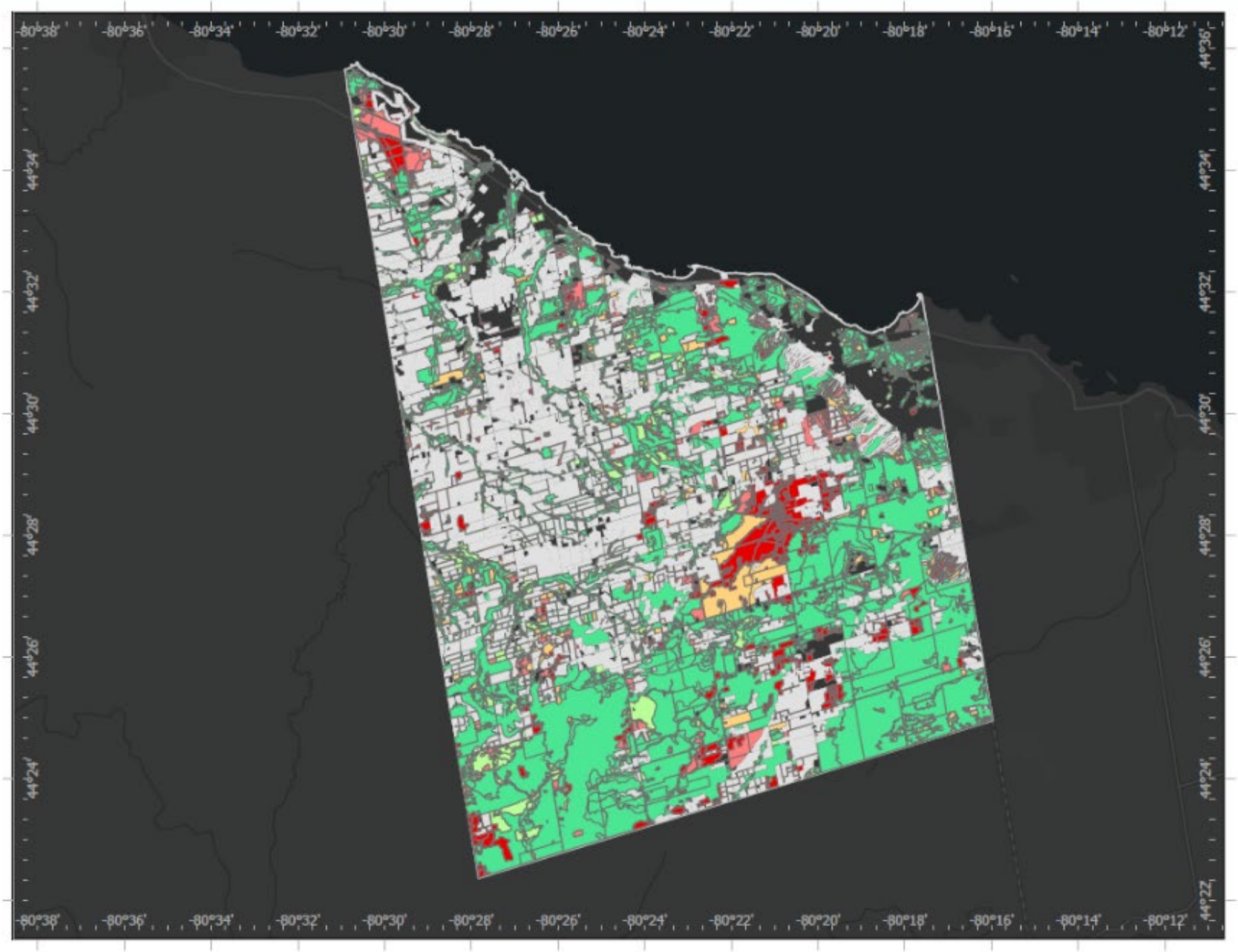
Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Proximity to Watercourse Condition



Natural Asset Inventory

Watercourse Proximity Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor
- No Condition Rating

Town Boundary

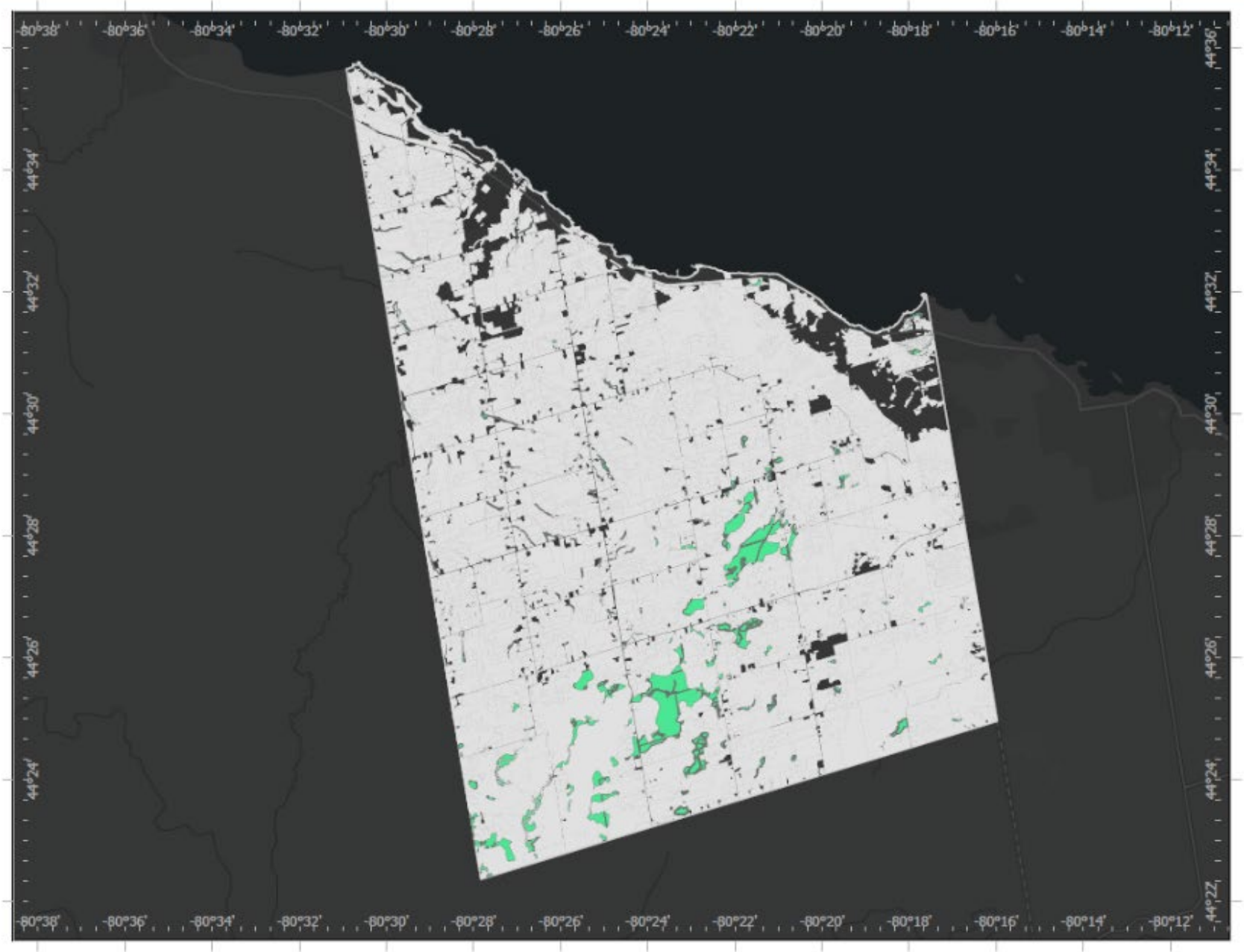
Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains - Wetland Proximity Condition



Natural Asset Inventory

Wetland Proximity Rating

- Very Good
- No Condition Rating

Town Boundary

Spatial Reference
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PCS: WGS 1984 Web Mercator Auxiliary Sphere

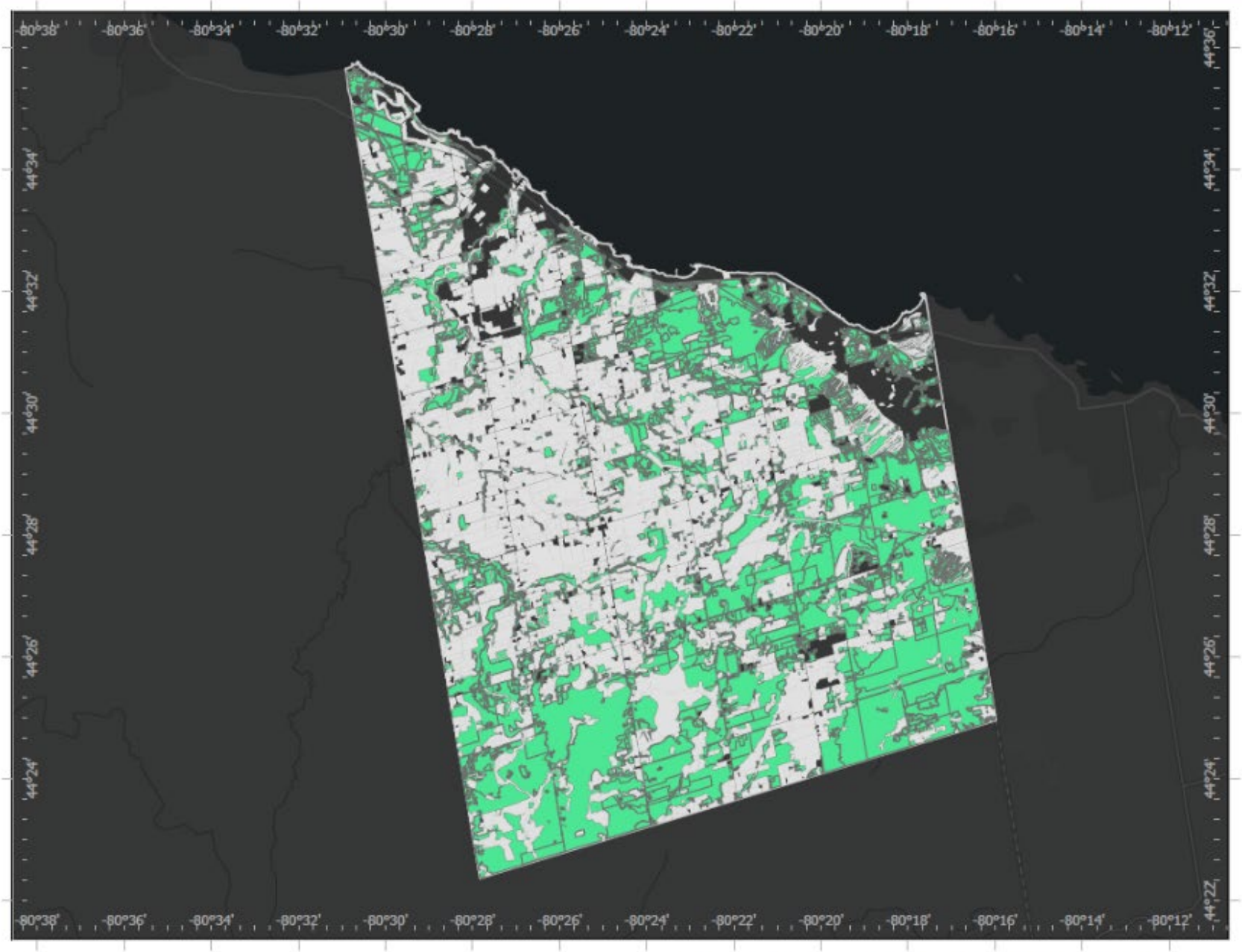
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Woodland Proximity Condition



Natural Asset Inventory

Woodland Proximity Rating

- Very Good
- No Condition Rating

Town Boundary

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

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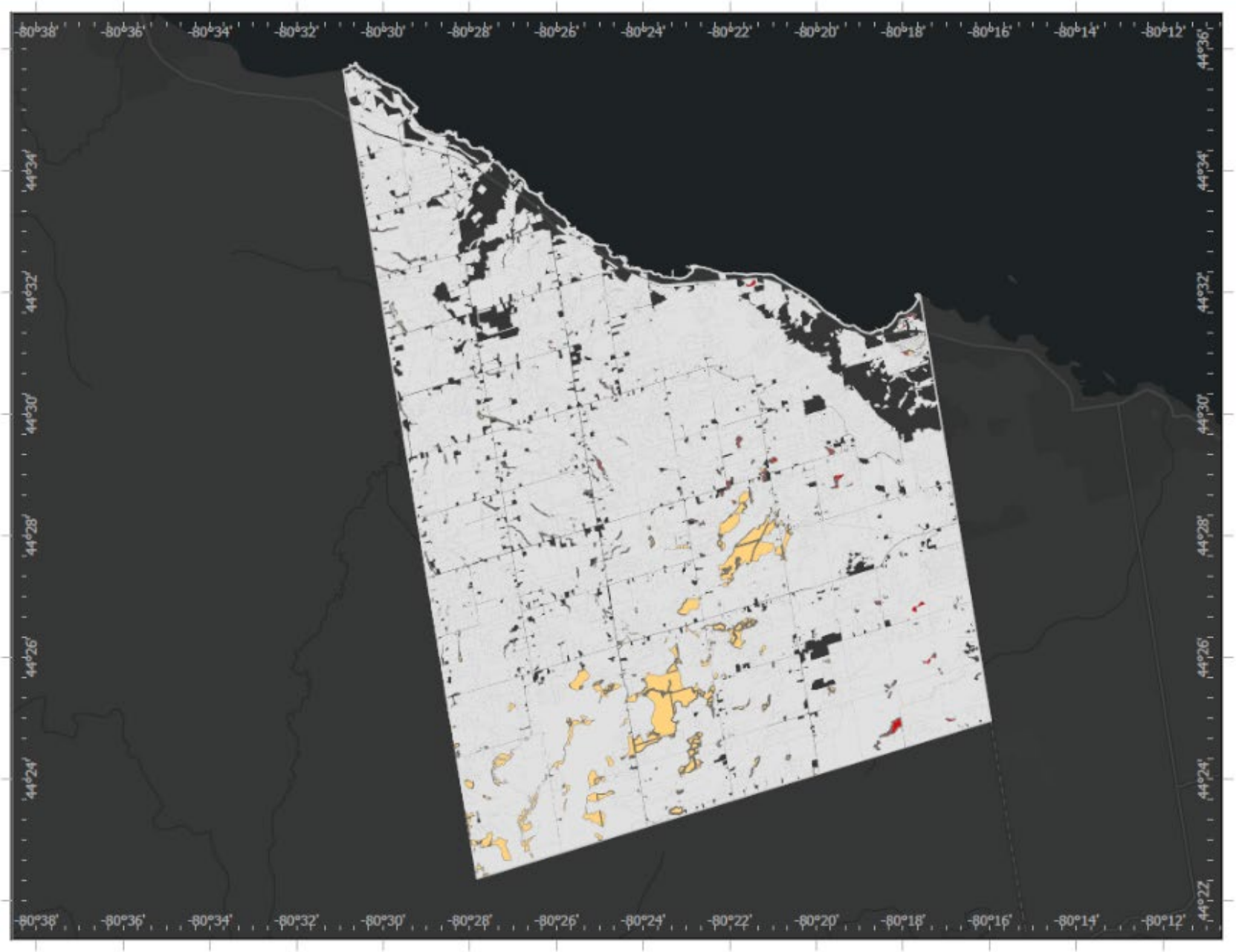
0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains –Subwatershed Wetland Cover Condition



Natural Asset Inventory

Subwatershed Wetland Rating

- Fair
- Very Poor
- No Condition Rating

Town Boundary

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

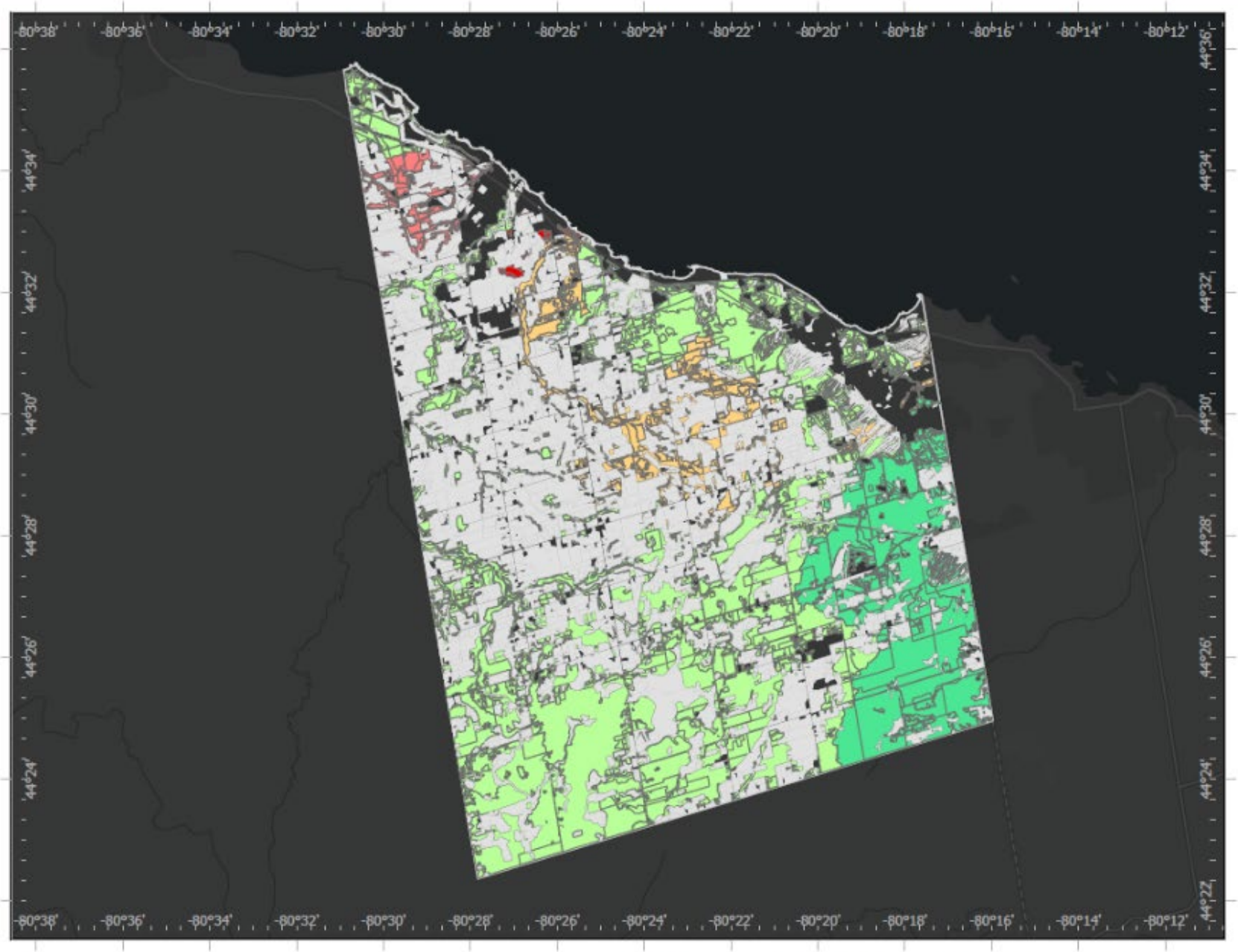
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Subwatershed Woodland Cover Condition



Natural Asset Inventory

Subwatershed Woodland Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor
- No Condition Rating

Town Boundary

Spatial Reference
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PCS: WGS 1984 Web Mercator Auxiliary Sphere

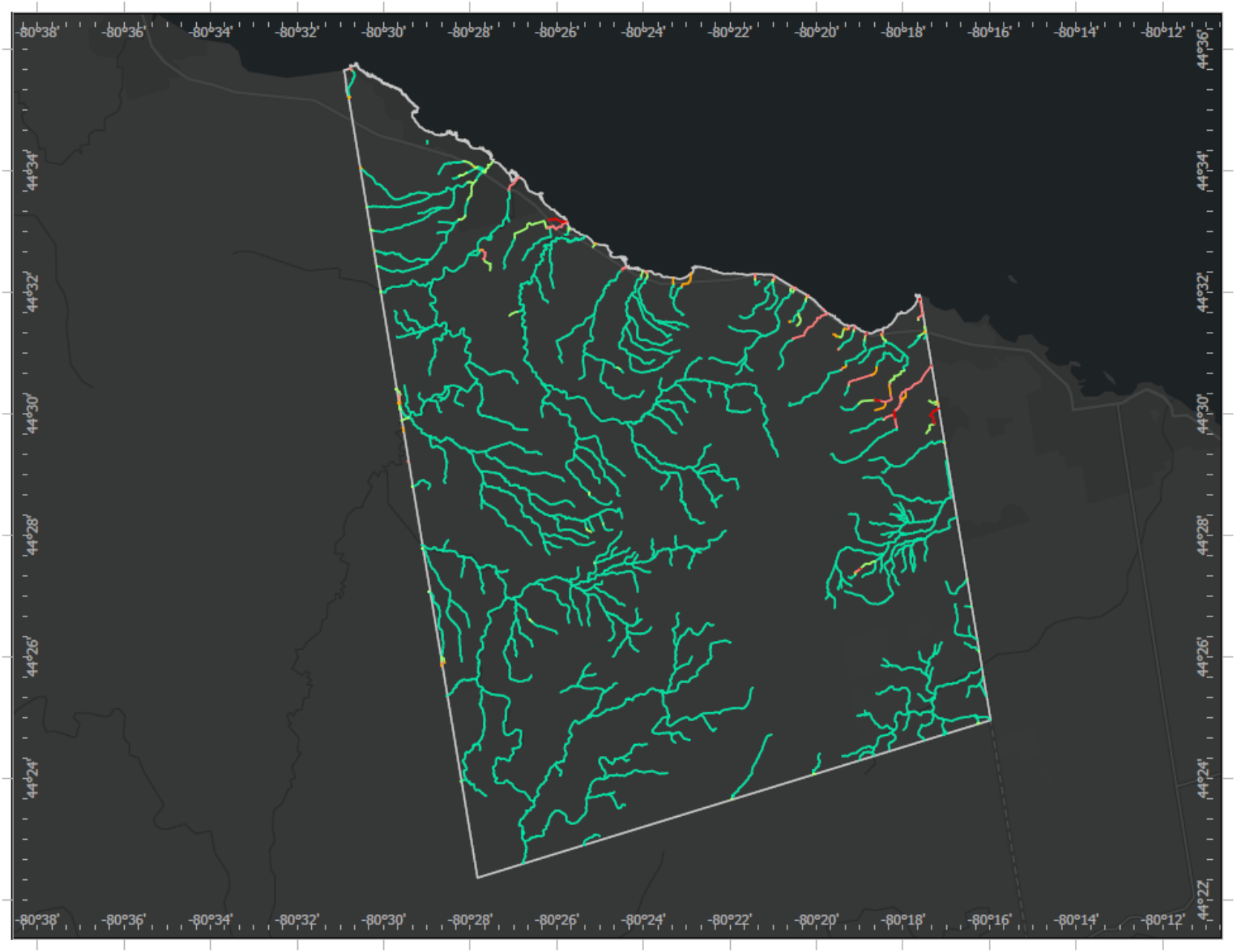
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains –Watercourse Permeability of Adjacent Land Condition



Town Boundary

Watercourse Inventory

Permeability of Adjacent Land Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor

Spatial Reference
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PCS: WGS 1984 Web Mercator Auxiliary Sphere

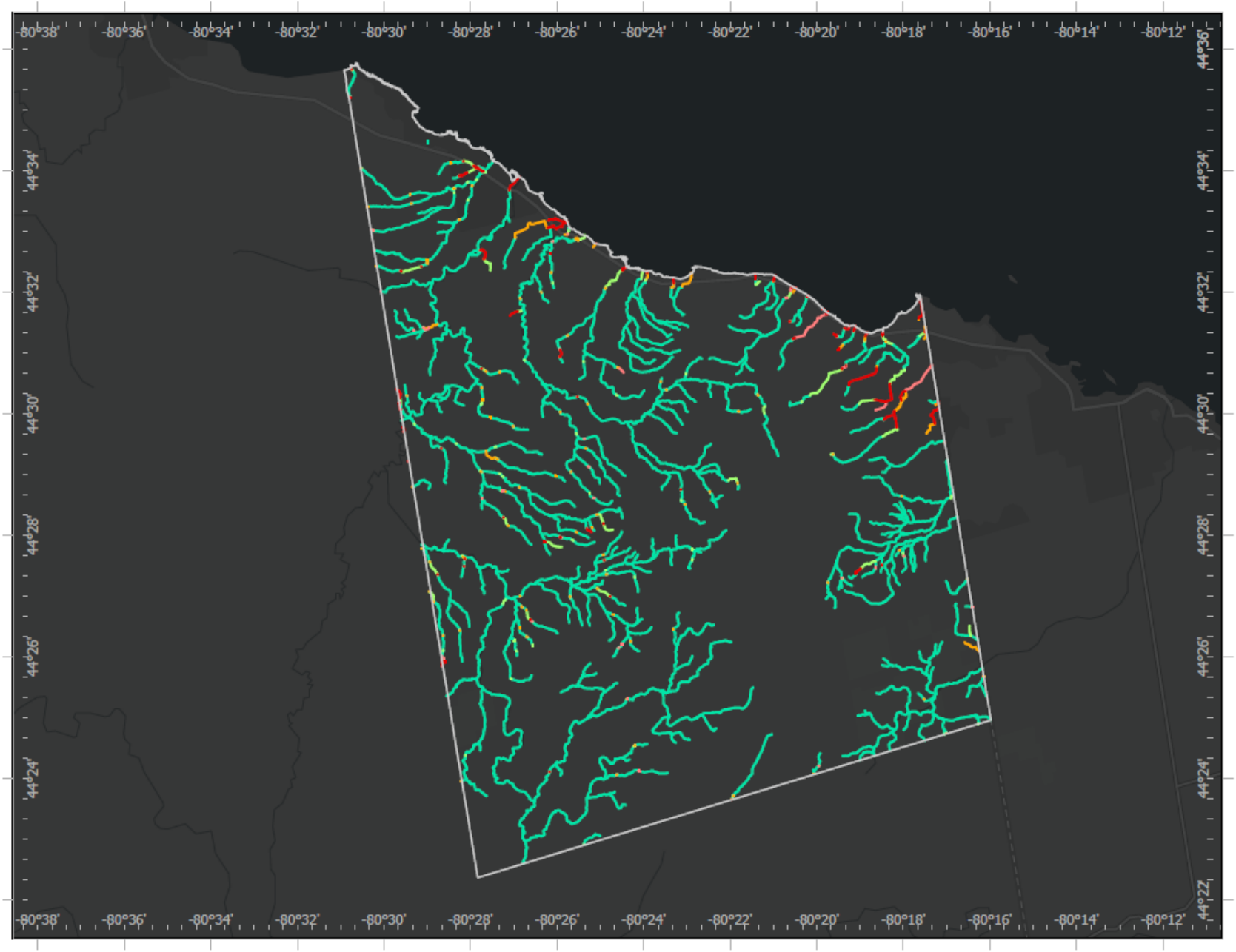
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains –Watercourse Riparian Vegetation Condition



Town Boundary

Watercourse Inventory

Riparian Vegetation Cover Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

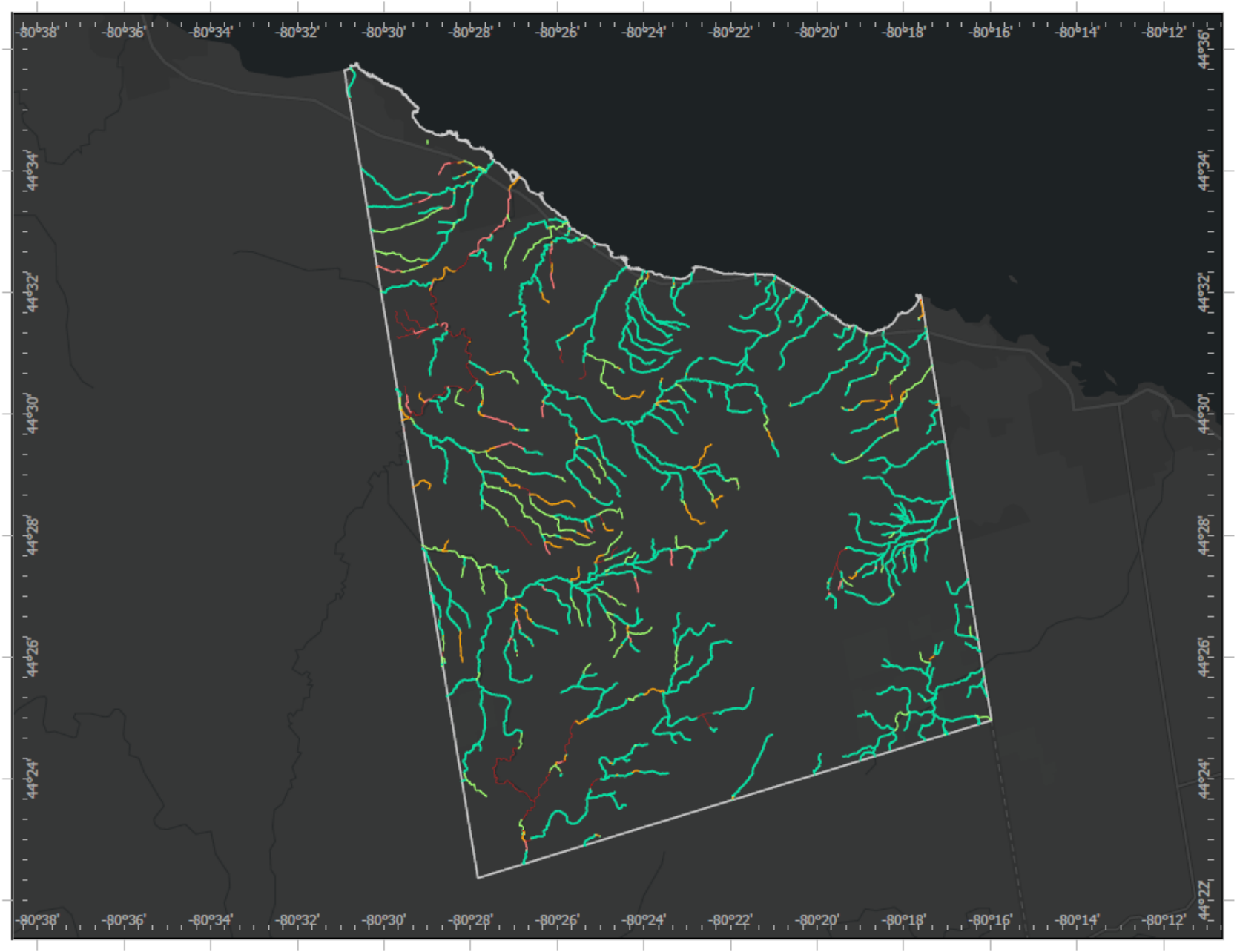
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains –Watercourse Shading Condition



Town Boundary

Canopy Shade Rating

- Very Good
- Good
- Fair
- Poor
- Very Poor

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

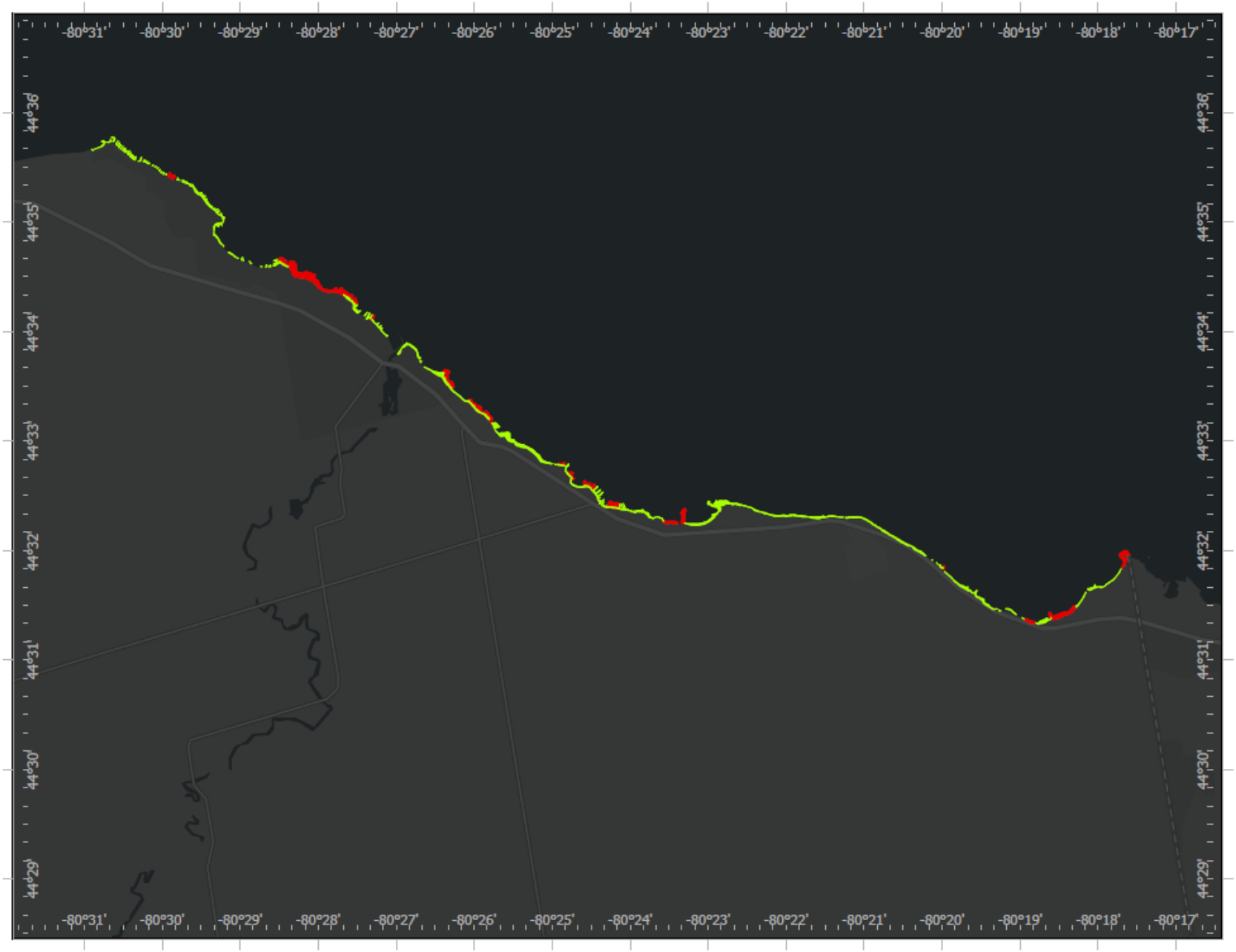
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains –Shoreline Permeability Condition



Permeability Assessment

- Non-Permeable Adjacent Land
- Permeable Adjacent Land

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc,

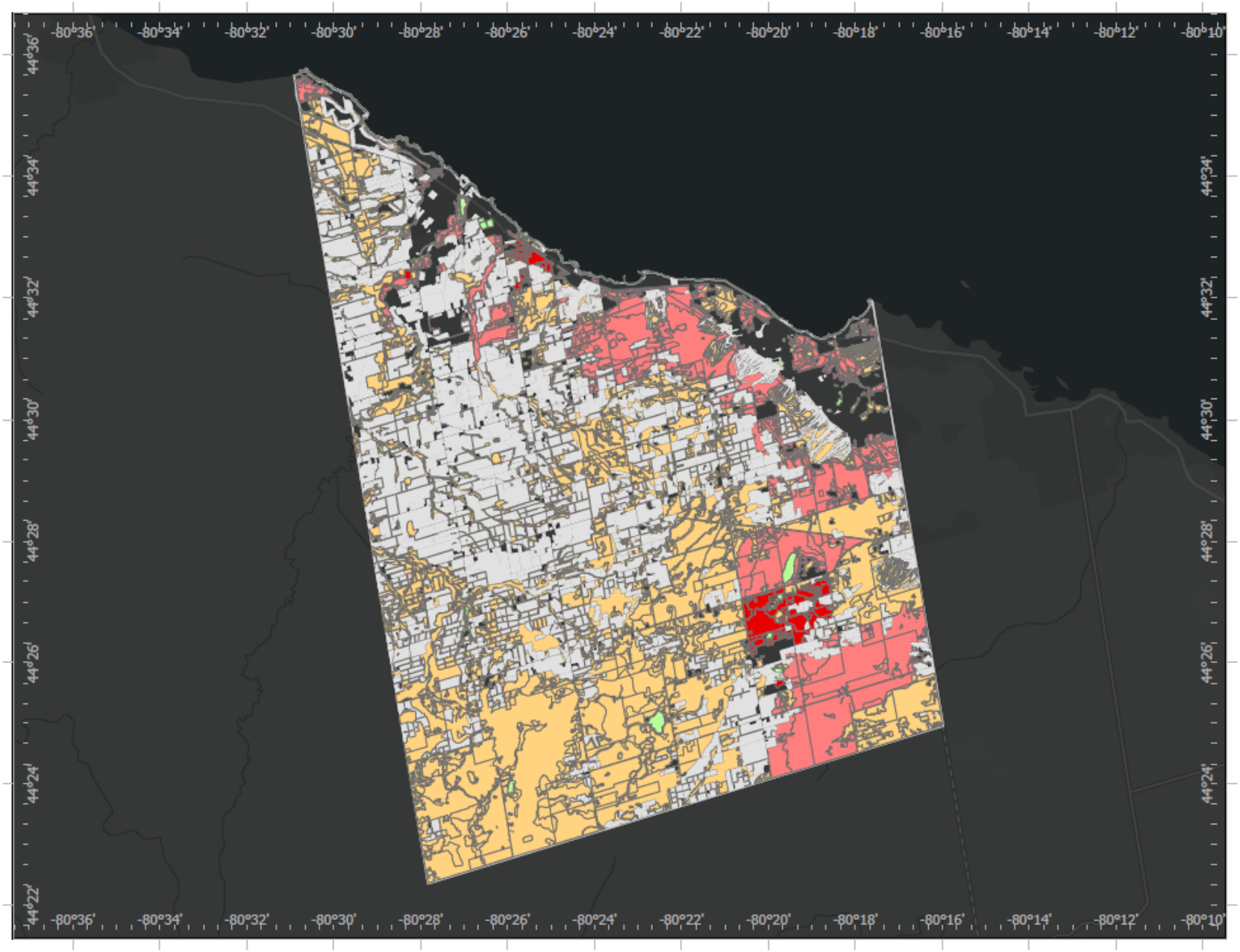
N

0 2 4 8 Kilometers

green ANALYTICS

APPENDIX C | Natural Asset Inventory – Risk Assessment Maps

Town of The Blue Mountains – Overall Hazard Summary



Natural Asset Inventory

Overall Risk Rating

- Low
- Moderate
- High
- Very High
- No Risk Rating

Town Boundary

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

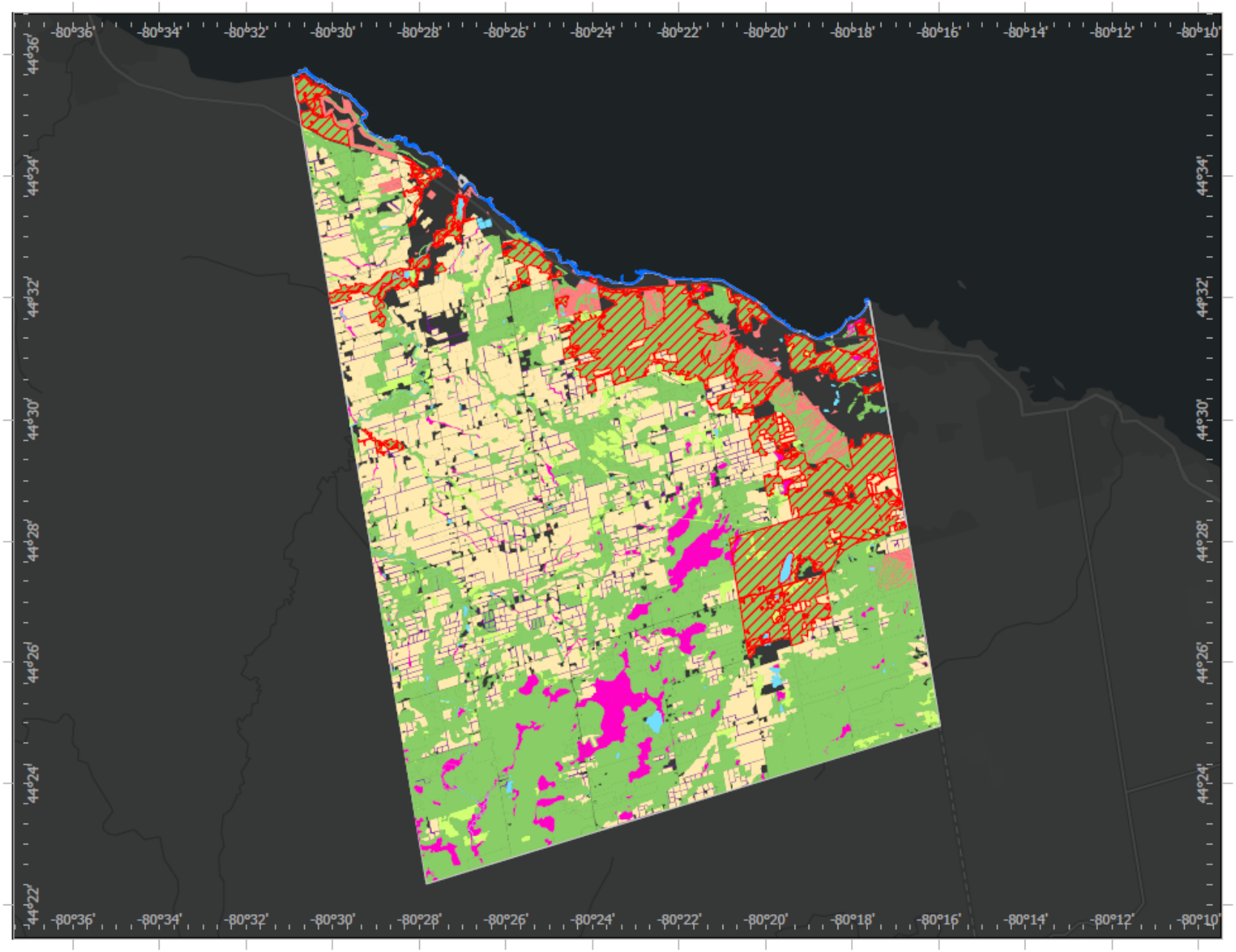
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Construction Impact Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Construction Impact Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

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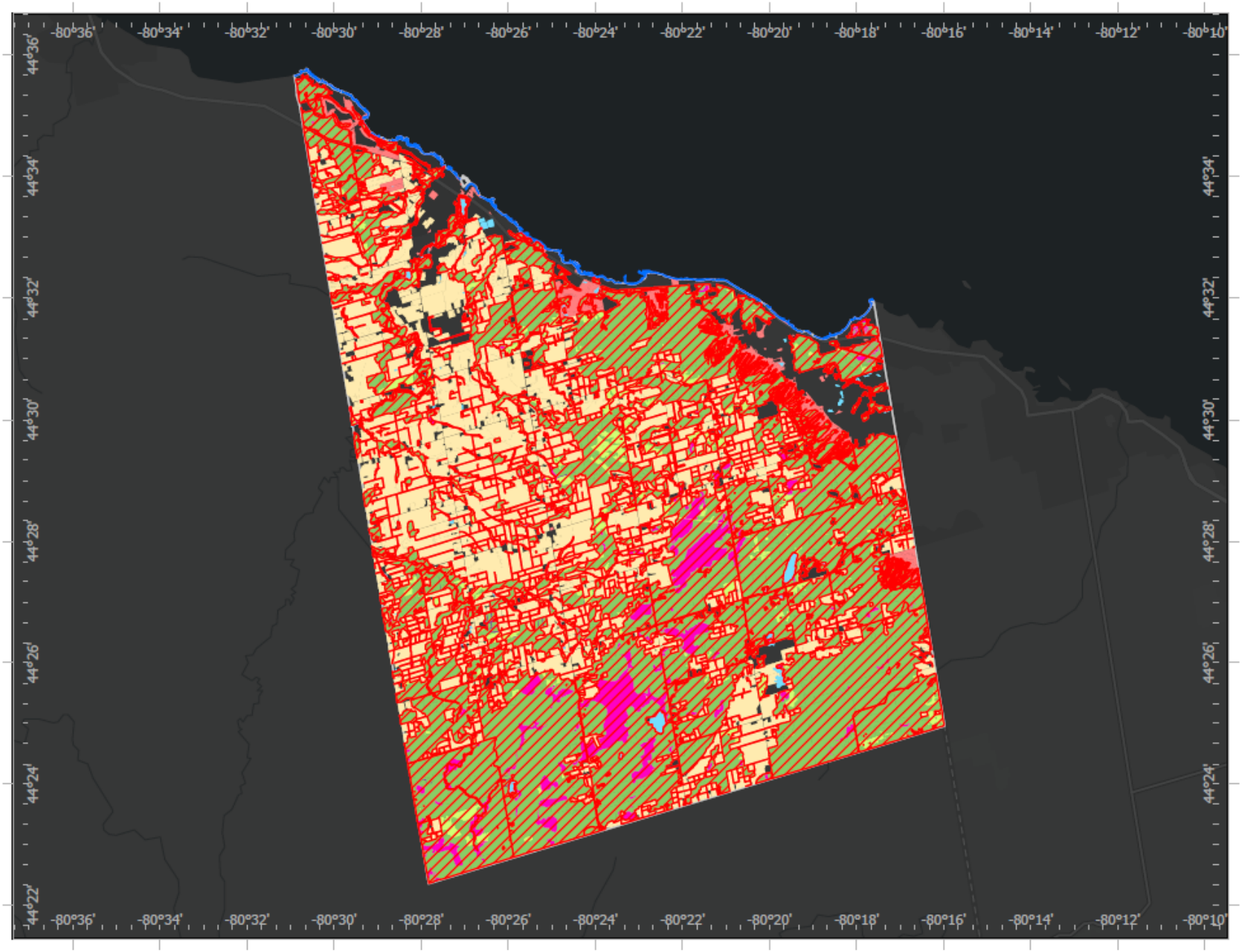
Town of The Blue Mountains – Contamination / Pollution Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Contamination / Pollution Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

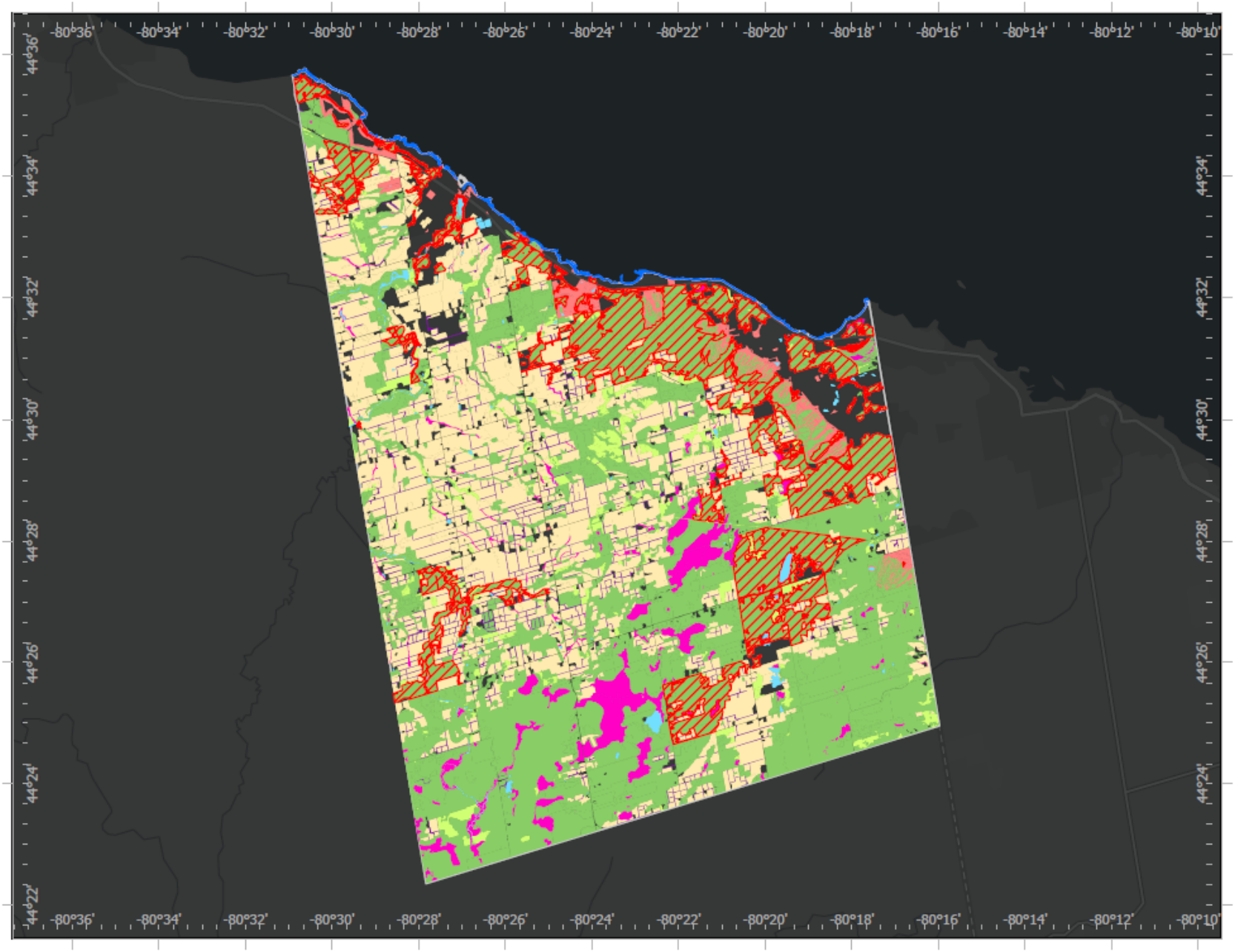
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Edge Encroachment / Disturbance Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Unauthorized Encroachment and Disturbance Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

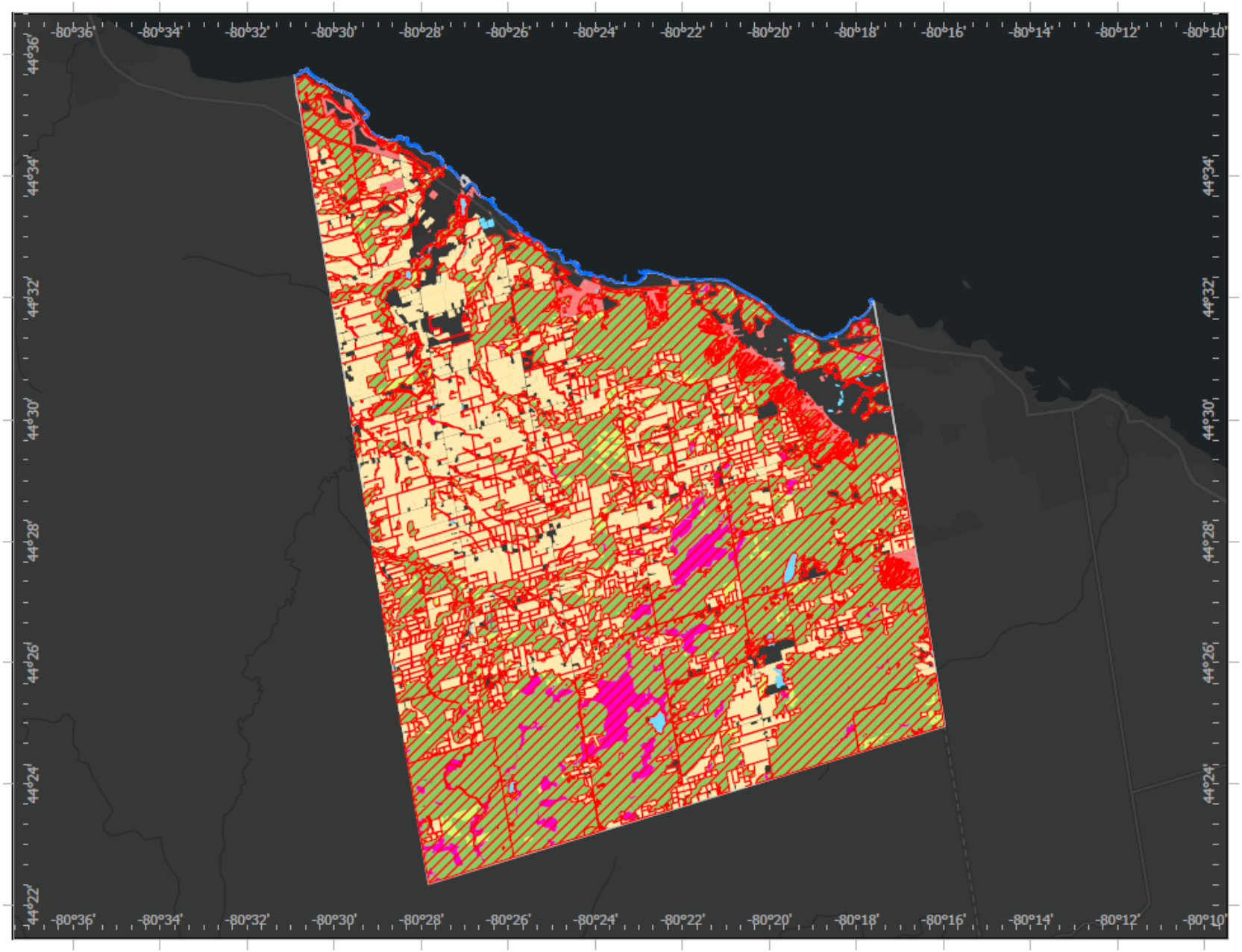
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Extreme Heat / Drought Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Extreme Heat / Drought Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

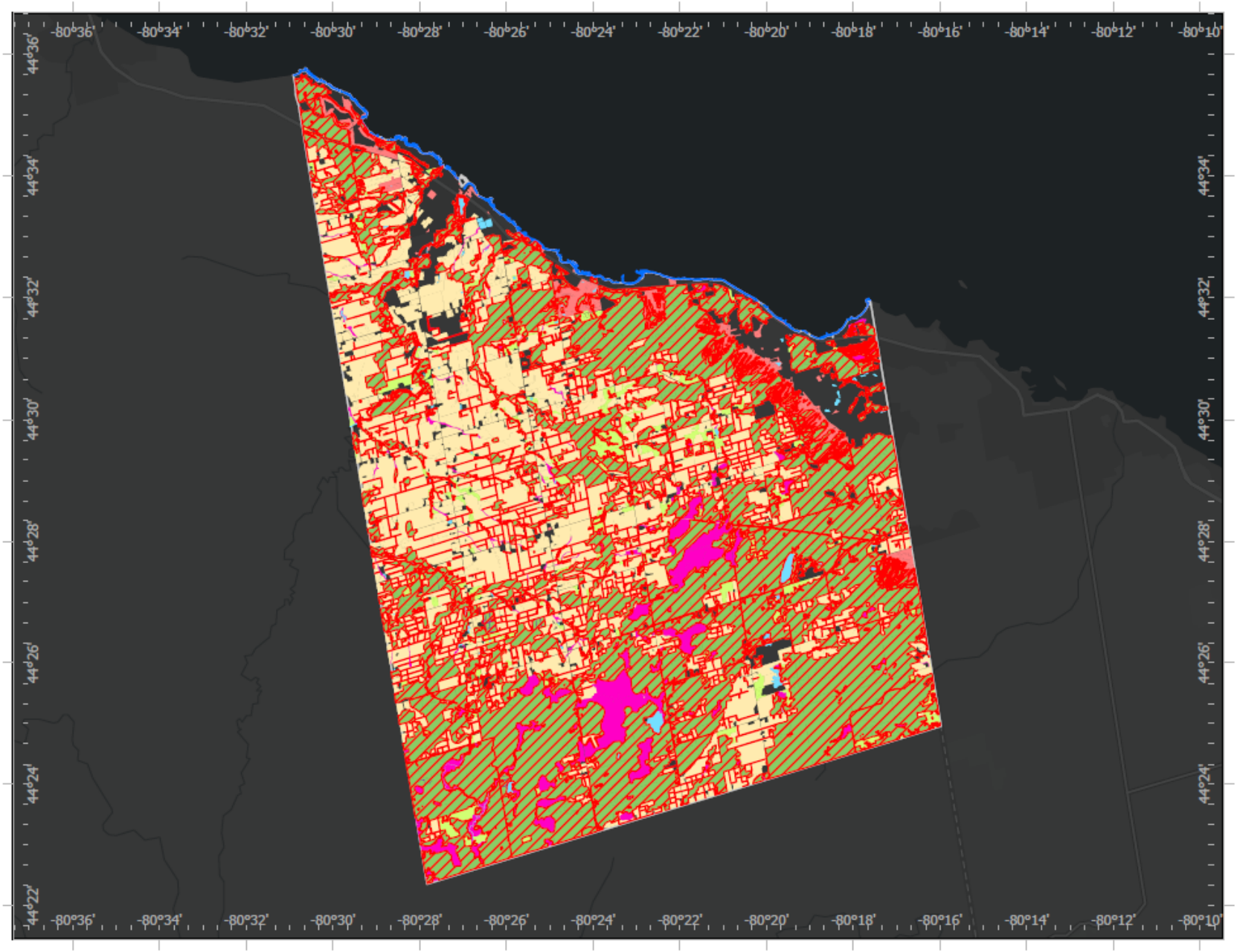
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Extreme Wind Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Extreme Wind Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

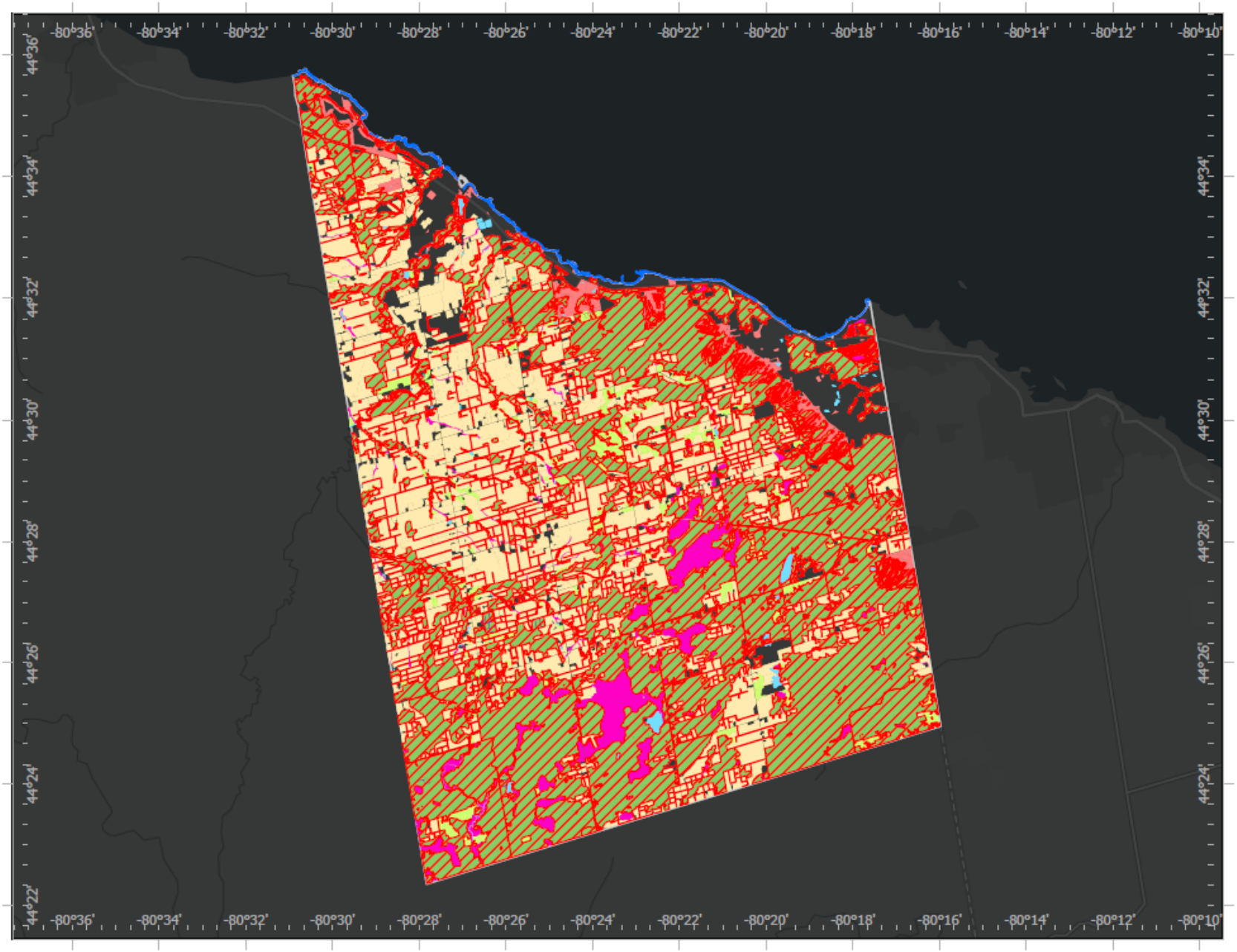
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Ice Storm / Freezing Rain Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Ice Storm / Freezing Rain Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

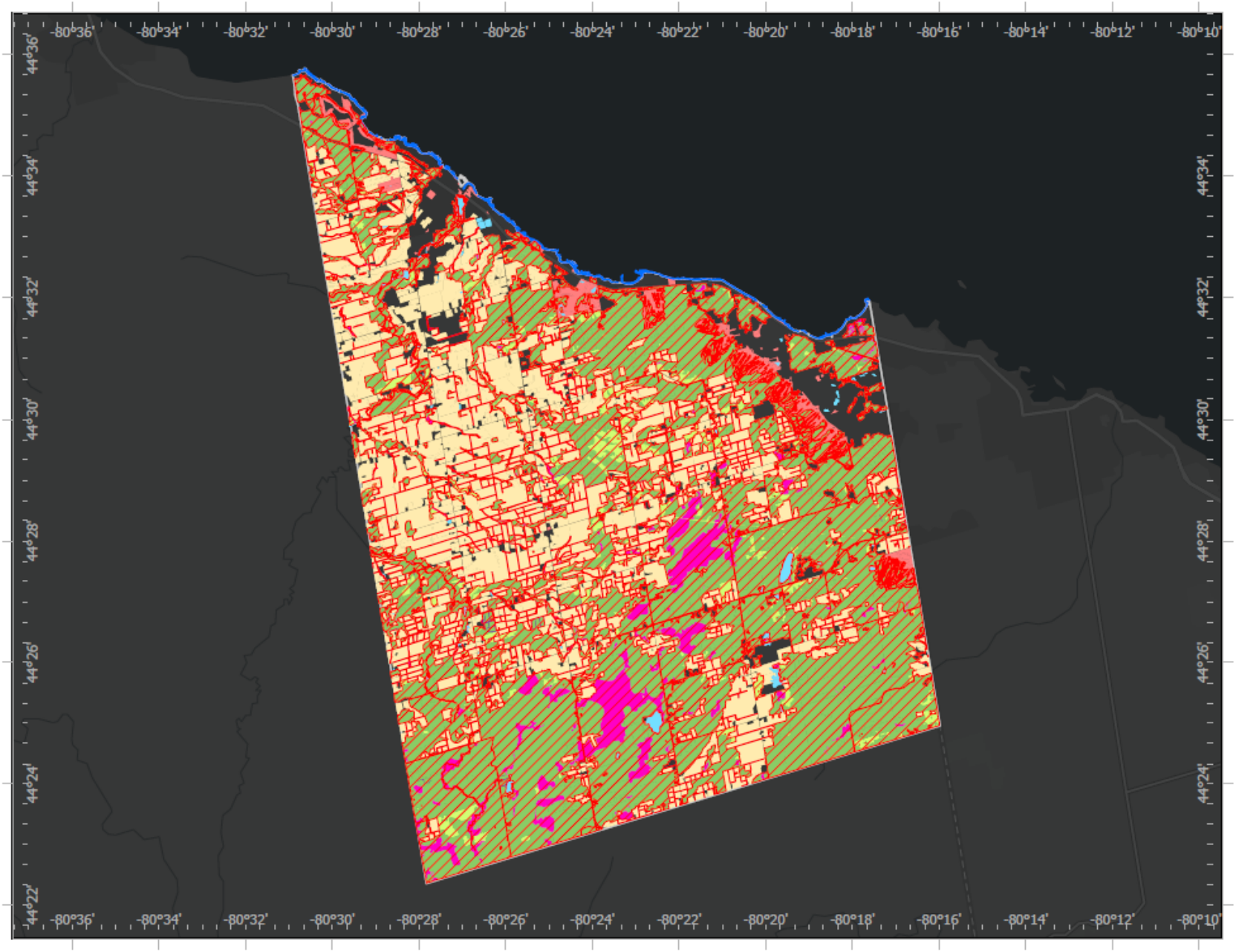
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Invasive Species Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

- Town Boundary
- Invasive Species Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

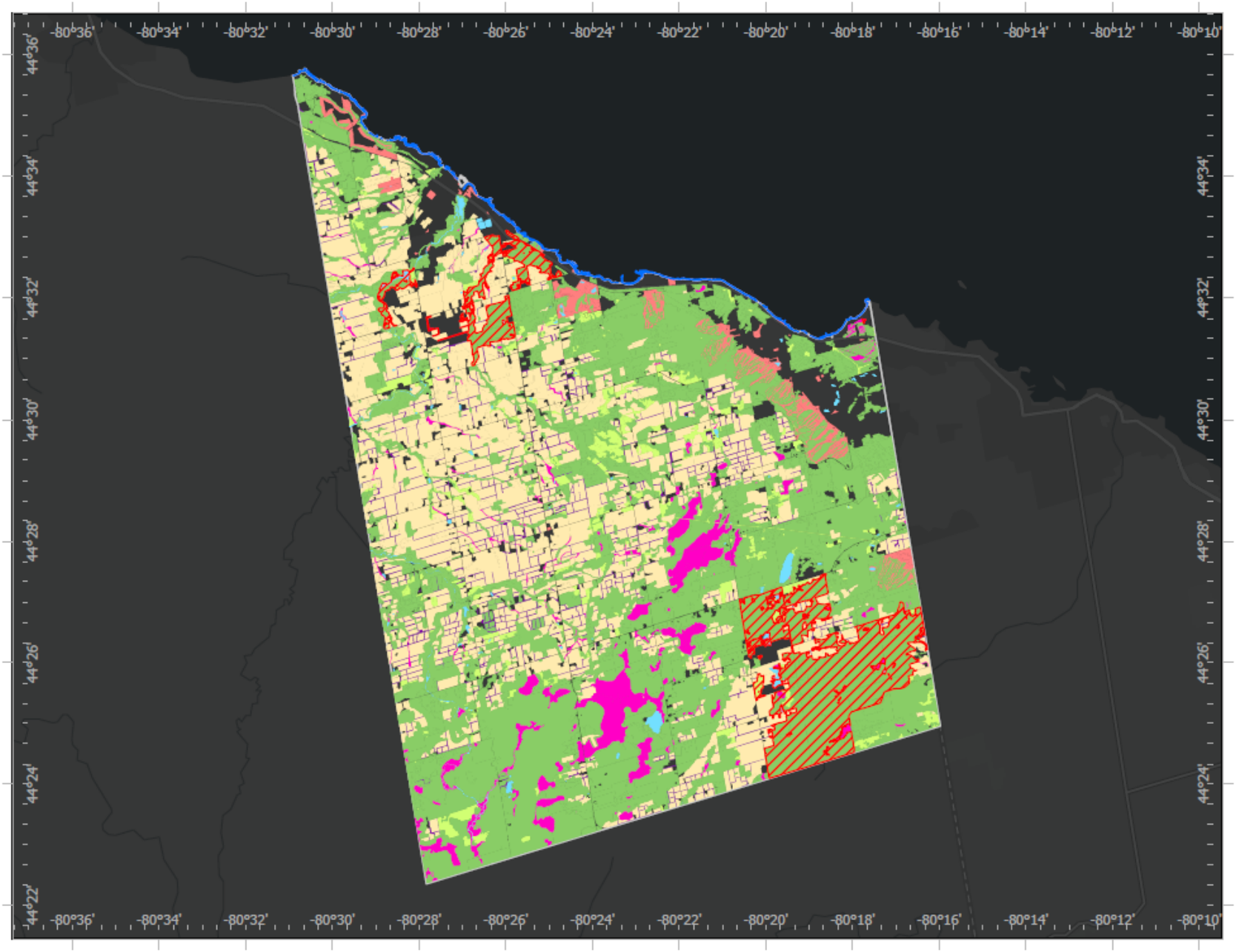
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Land Use Change Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Land Use Change Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

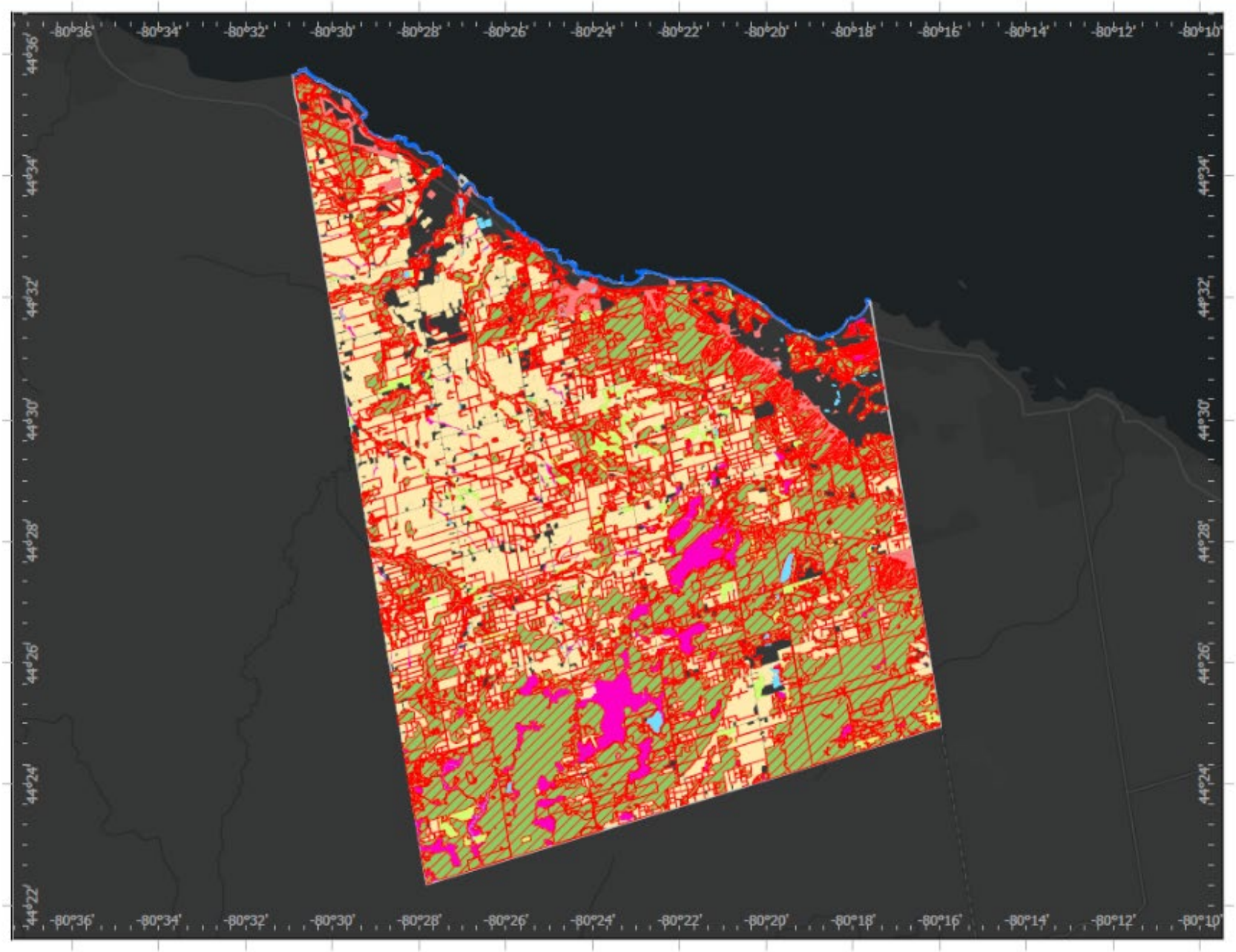
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Pests and Disease Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Pests and Disease Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

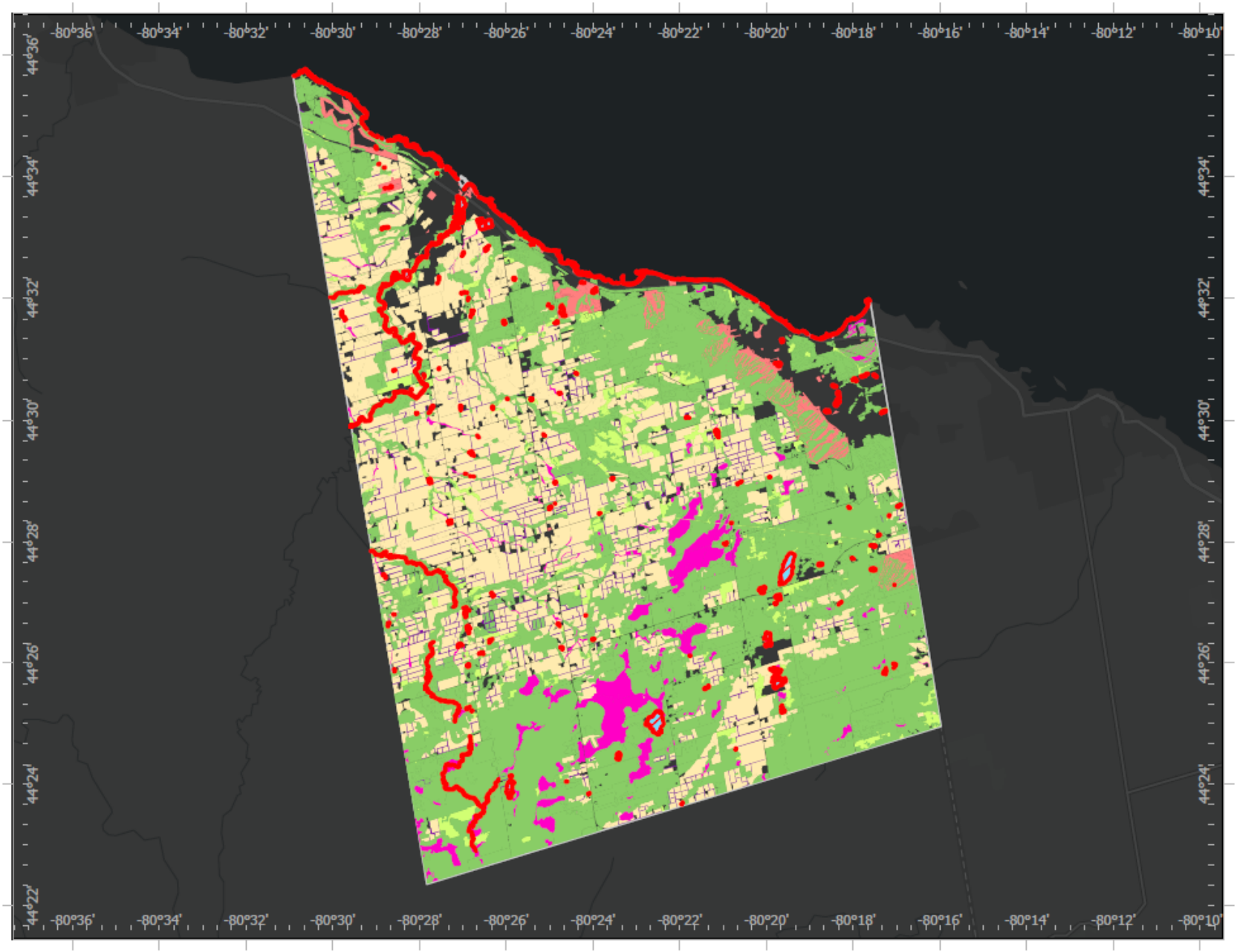
Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS

Town of The Blue Mountains – Water Level Fluctuation Risk Area



Natural Asset Inventory

Asset Type

- Agriculture
- Aquatic
- Built-up Pervious
- Hedgerow
- Meadow
- Shoreline
- Wetland
- Woodland

Town Boundary

Risk Area

Water Fluctuation Risk Area

Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere

Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS,

N

0 3.5 7 14 Kilometers

green ANALYTICS