Draft Carruthers Creek Watershed Plan and Watersheds and Ecosystems Reporting App

Presentation to Natural Environment and Climate Change Collaborative
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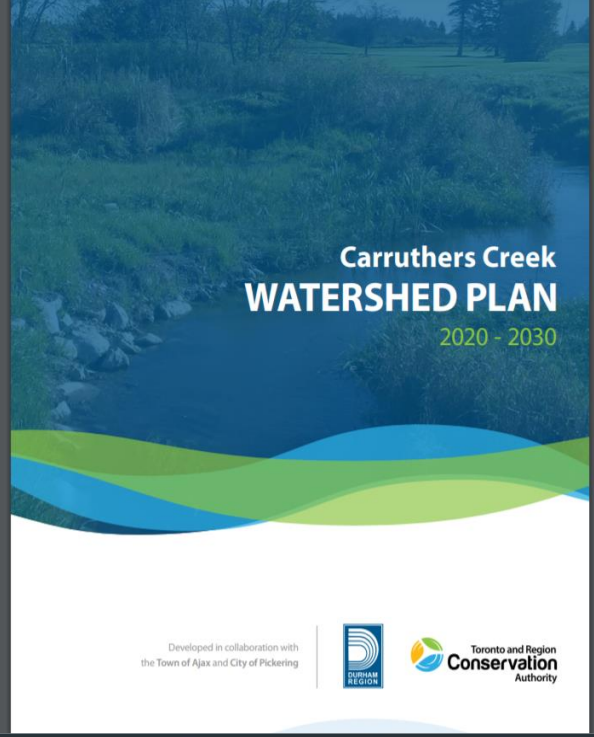
Toronto and Region Conservation Authority

Outline

- Overview of Carruthers Creek Watershed Plan
  - Process and content
  - NHS and considering climate change
  - Reception of plan
- Briefly highlight another project of interest underway
  - Watersheds and Ecosystems Reporting Web App

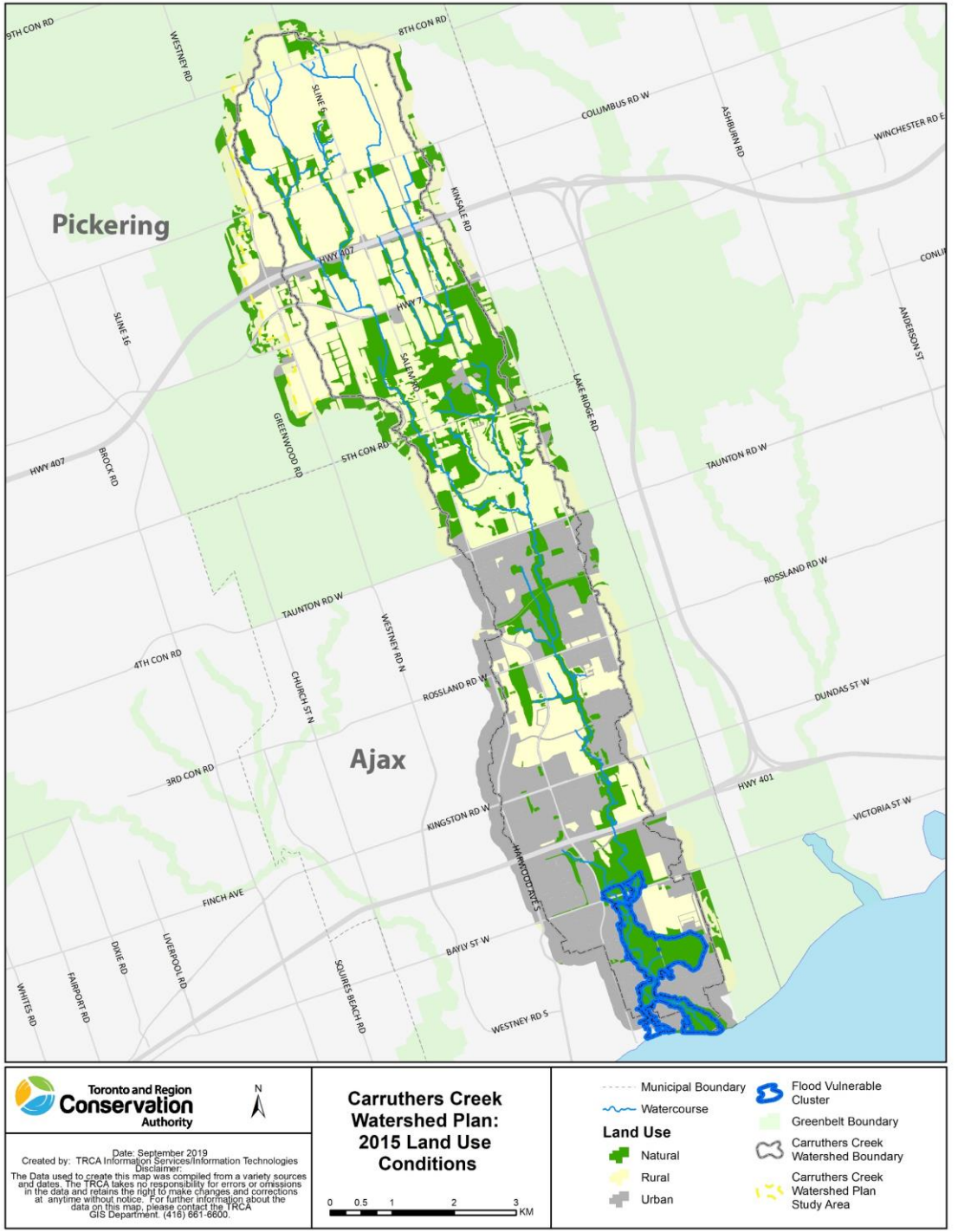


Carruthers Creek WP Project Introduction

- Multi-year collaborative process between TRCA and the Region of Durham, in consultation with Town of Ajax and City of Pickering:
  - Watershed characterization (existing conditions)
  - Scenario modelling and analysis
  - Management framework

- Draft Carruthers Creek Watershed Plan was posted online for public review on March 13, 2020.

- Public consultation, including in-person Open House, will resume once state of emergency is lifted by all levels of government.



Plan Organization

- The draft Carruthers Creek Watershed Plan is divided into nine sections:

	Section	Description
1	**Introduction and Background**	Overview of rationale and policy basis for watershed planning, the local context and considerations and key partners and stakeholders.
2	**Water Resource and Natural Heritage Systems**	Describes the key components of the Water Resource System and Natural Heritage System, including a description of how each system was delineated.
3	**Existing Watershed Conditions**	Also known as watershed characterization, describes the current conditions of the watershed organized into four themes: the Water Resource System, Natural Heritage System, Water Quality and Natural Hazards.
4	**Future Watershed Conditions**	Describes the three future land use scenarios that were modelled to predict the response of the watershed and associated implications.
5	**Management Framework**	Outlines what needs to be done to protect, enhance and restore the watershed's health. Organized into goals, objectives, indicators and management recommendations.
6	**Monitoring and Evaluation**	Describes the monitoring program that will evaluate implementation progress.
7 - 9	**Maps, Glossary and References**	Contain supporting resources.

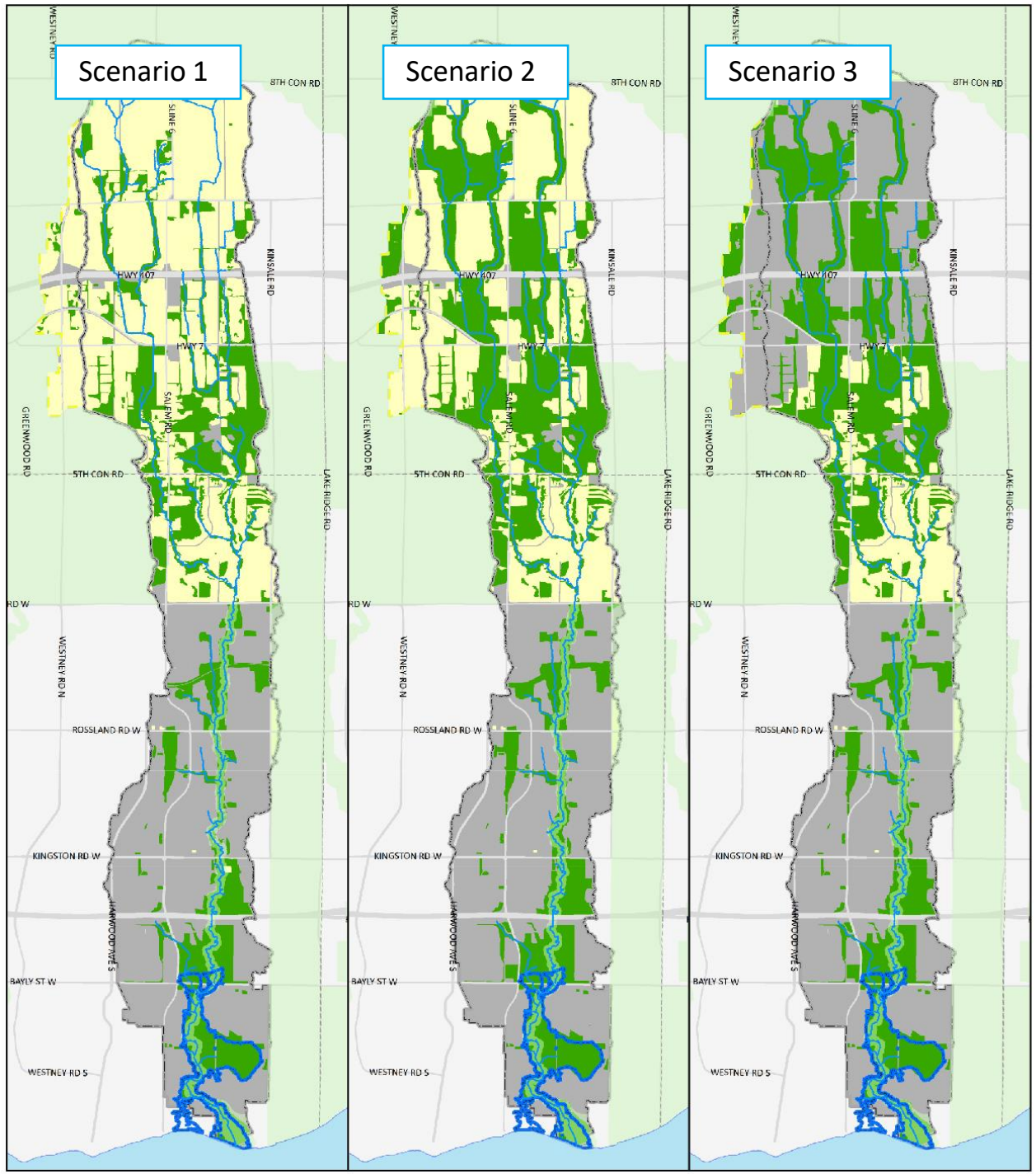
Existing Watershed Conditions

- Based on the technical assessments completed by TRCA, there are four key issues in the watershed:

Key Issue	Description
Water Resource System	The aquatic ecosystem is sensitive and near the level of land use development it can sustain long-term (without additional and improved mitigation).
Natural Heritage System	There is not enough natural cover, or good quality habitat, needed to maintain ecosystem resilience (i.e. capacity to respond to change) due to changing land use patterns and climate change.
Water Quality	Is impaired within the watershed, requiring improvements to stormwater management.
Natural Hazards	The flow of water through the watershed is out of balance and there are flooding and erosion issues.

Future Watershed Conditions

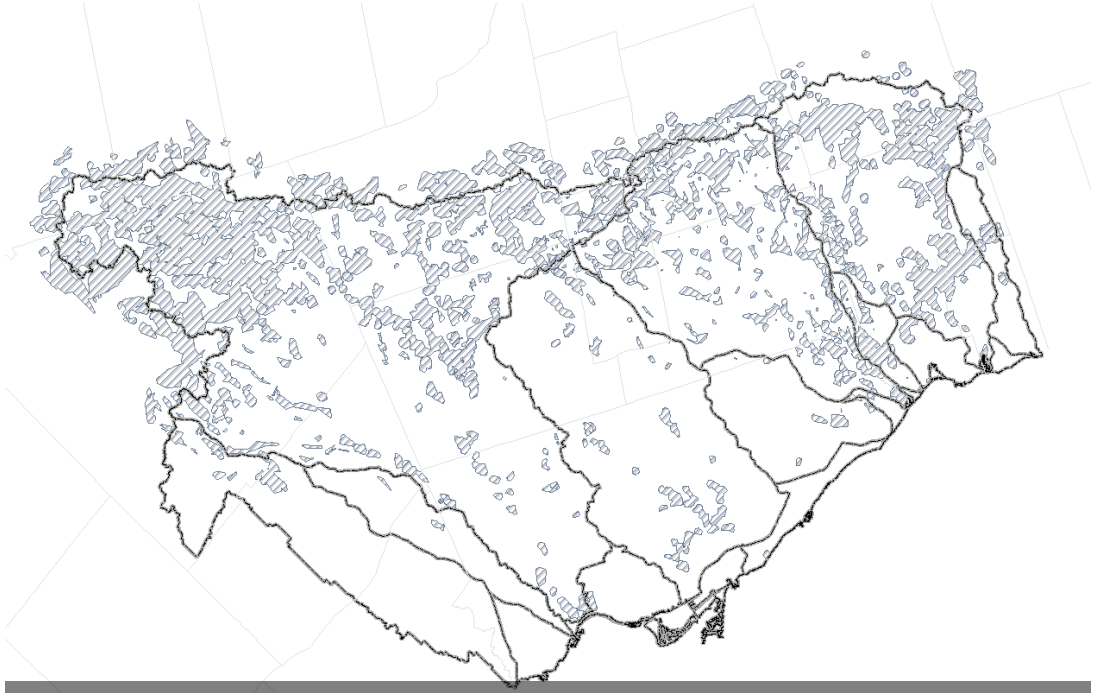
Scenario	Description
Scenario 1 (+ Official Plan)	Assumes all lands south of the Greenbelt are developed up to 2031 approved Official Plans. Provides insight into how watershed conditions will likely change as approved Official Plans are implemented.
Scenario 2 (+NHS)	Assumes same development as Scenario 1, but includes the enhanced Natural Heritage System (NHS). Provides insight into how watershed conditions will likely change with increased consideration of additional natural cover.
Scenario 3 (+Potential Urban)	Assumes post-2031 development in the headwaters of Carruthers Creek, outside the enhanced NHS. Provides insight into how watershed conditions will likely change if potential full growth is approved in the watershed.



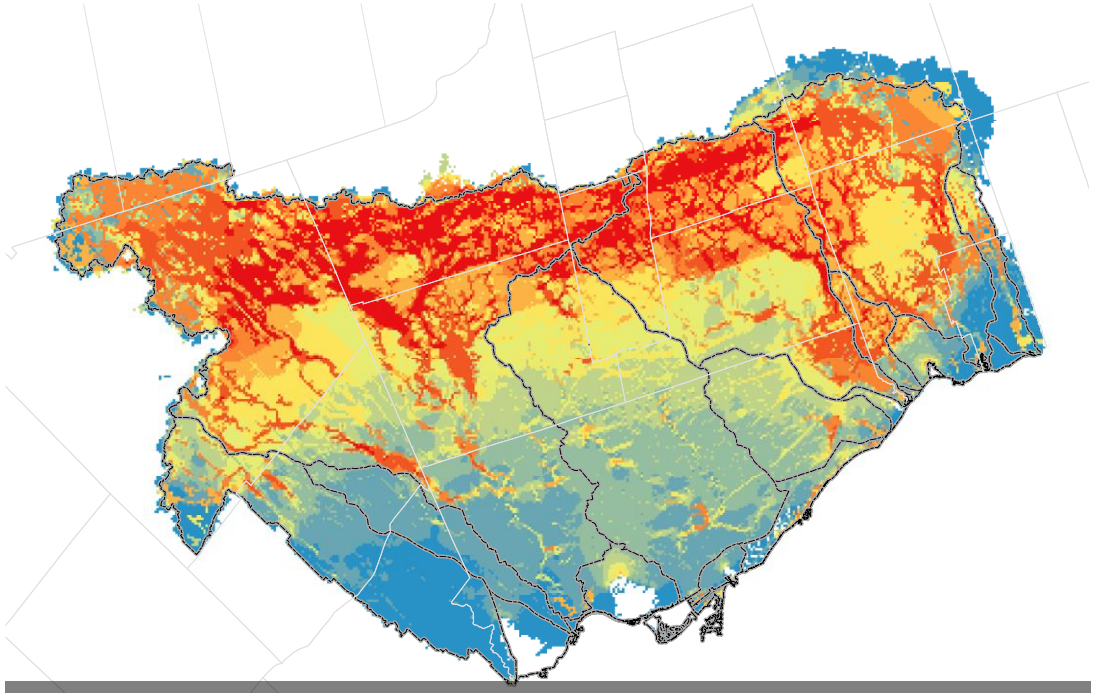
Developing an Enhanced Natural Heritage System

- Founded on TRCA Terrestrial Natural Heritage System (2007)
- Refined manually to reflect existing natural cover and land use
- Three major priorities guided the process (used scientific methods and expert knowledge)
    - Habitat connectivity
    - Climate change vulnerabilities
    - Habitat quality enhancements

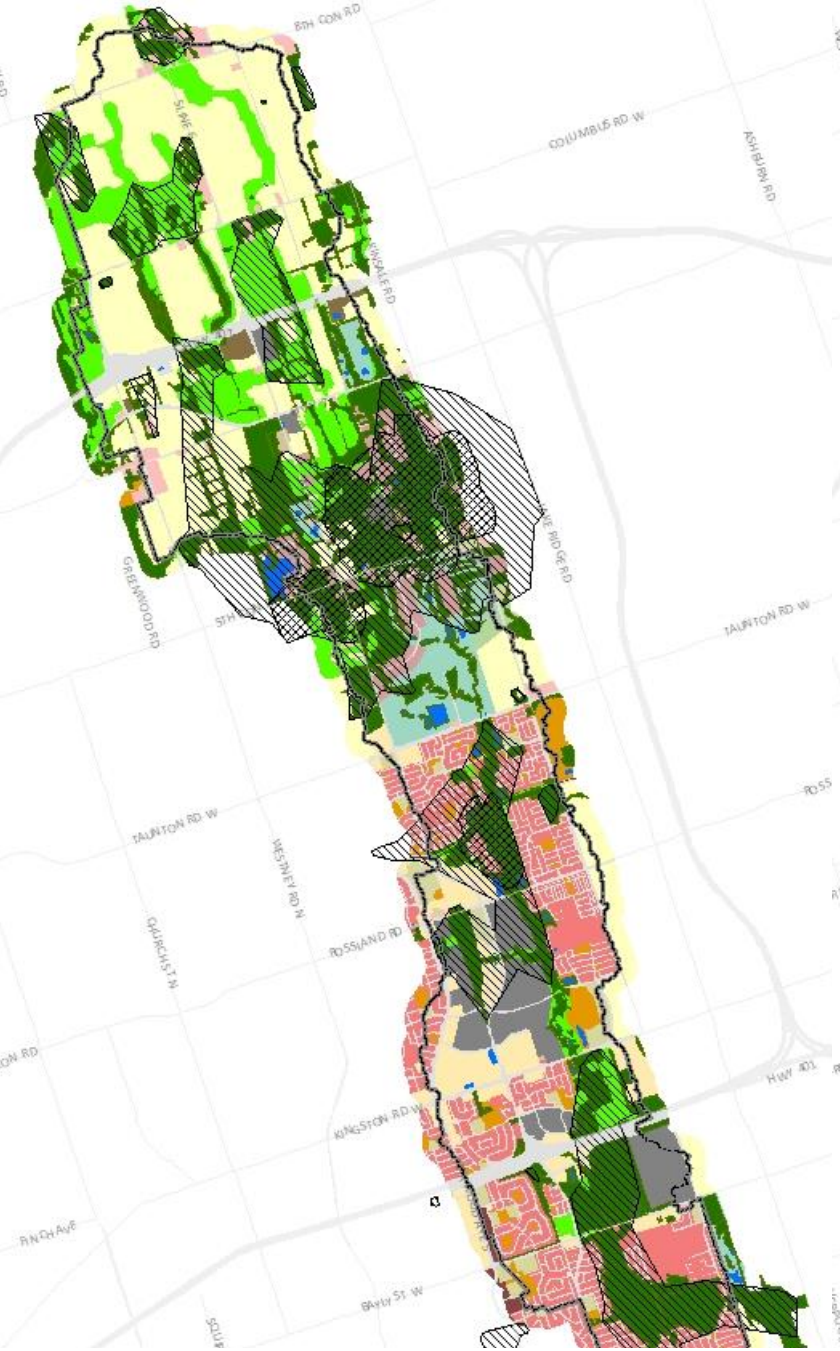
Habitat Connectivity Priority Information



Local connectivity (wetlands-forests)

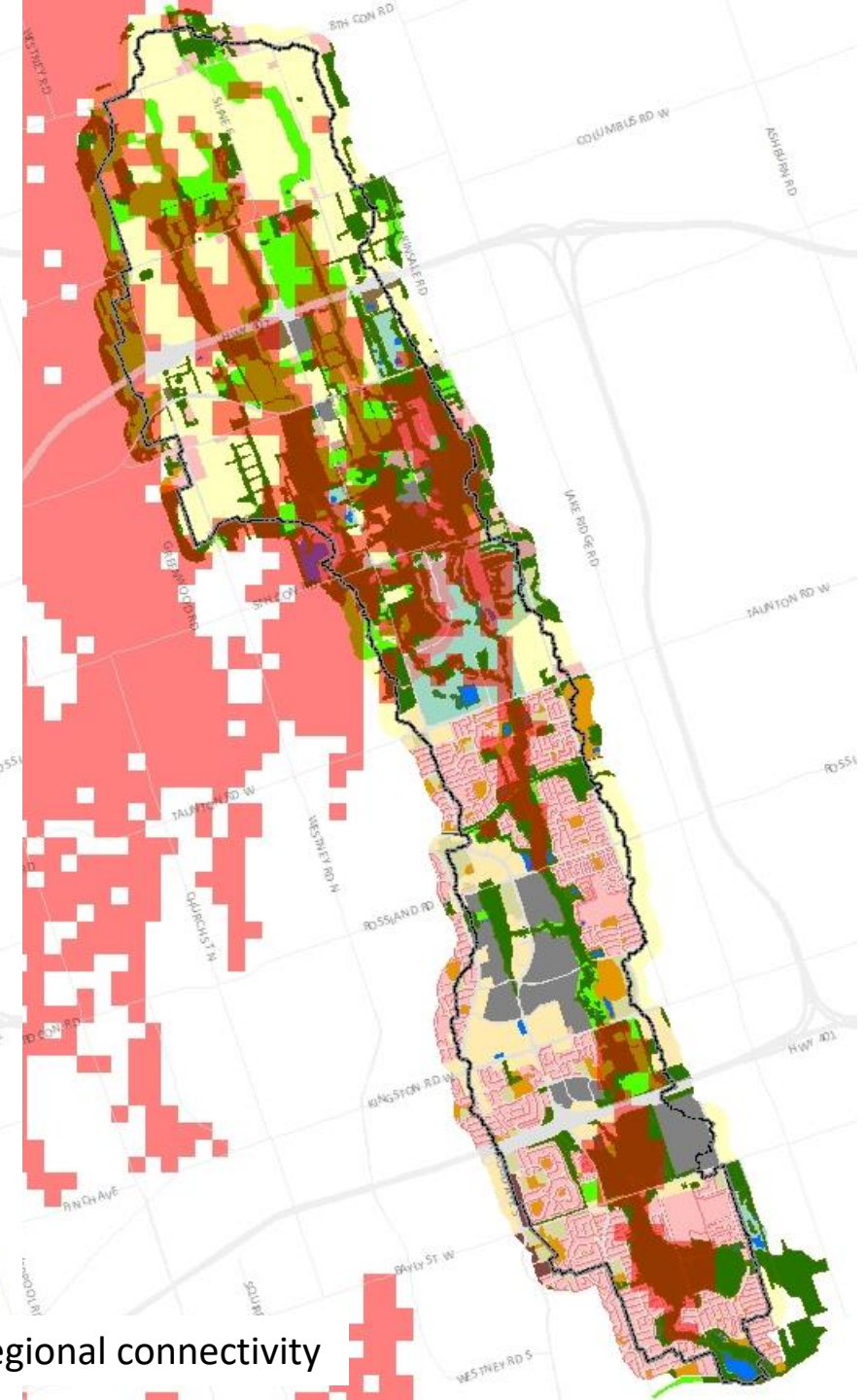


Regional connectivity



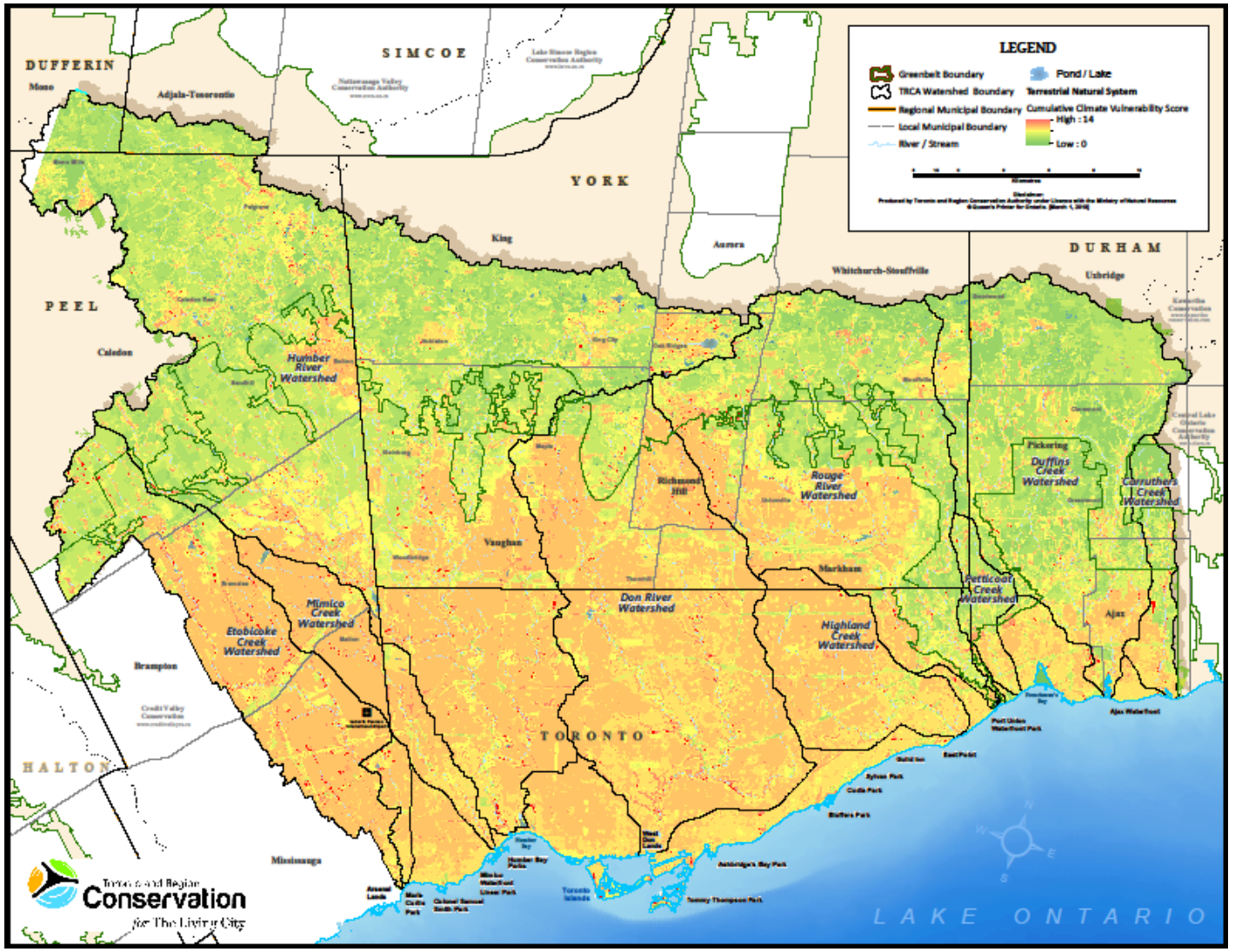
Local connectivity (wetland-forest and forest-forest)

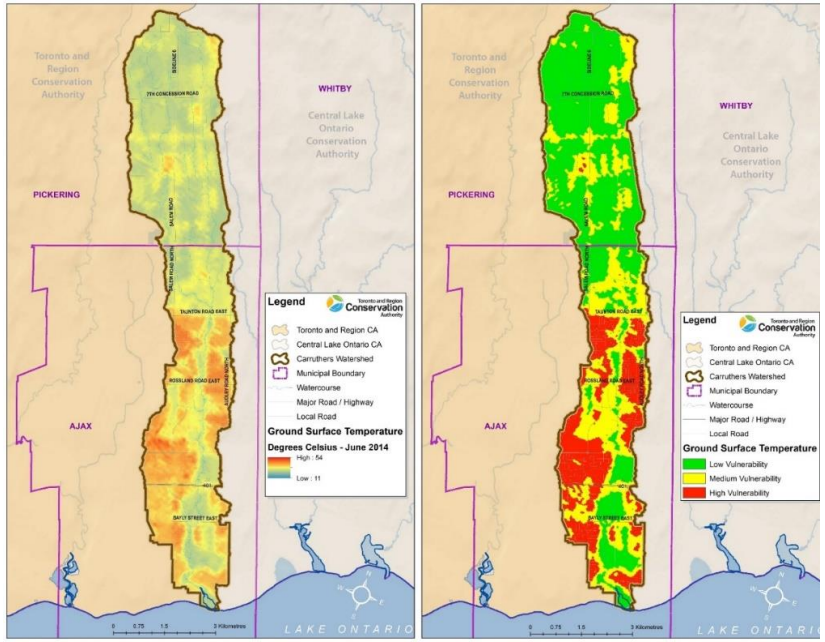
Watershed connectivity

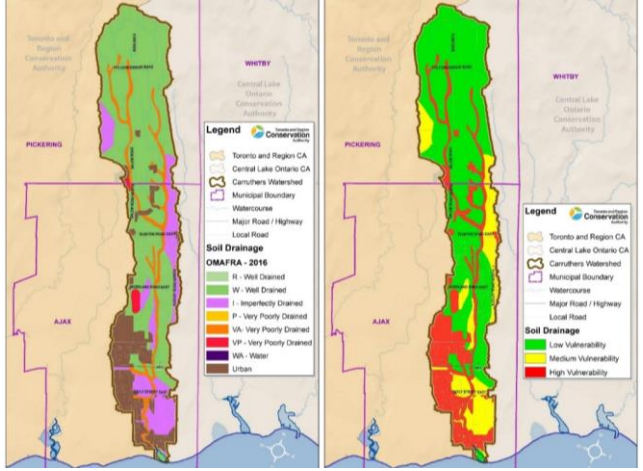


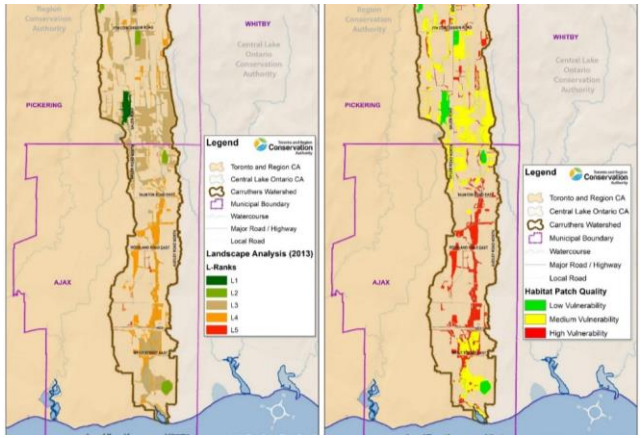
Regional connectivity

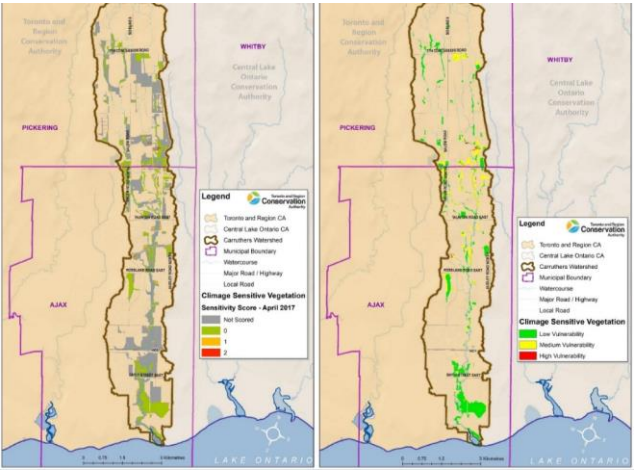
Climate Change Vulnerability Priority Information

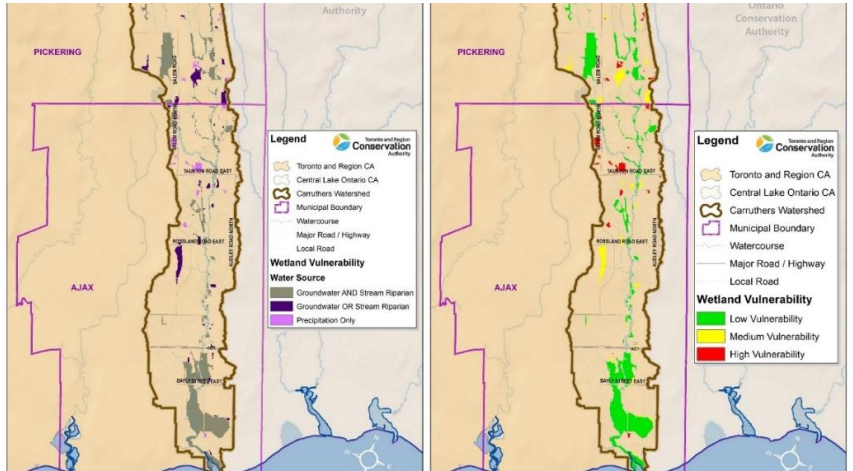






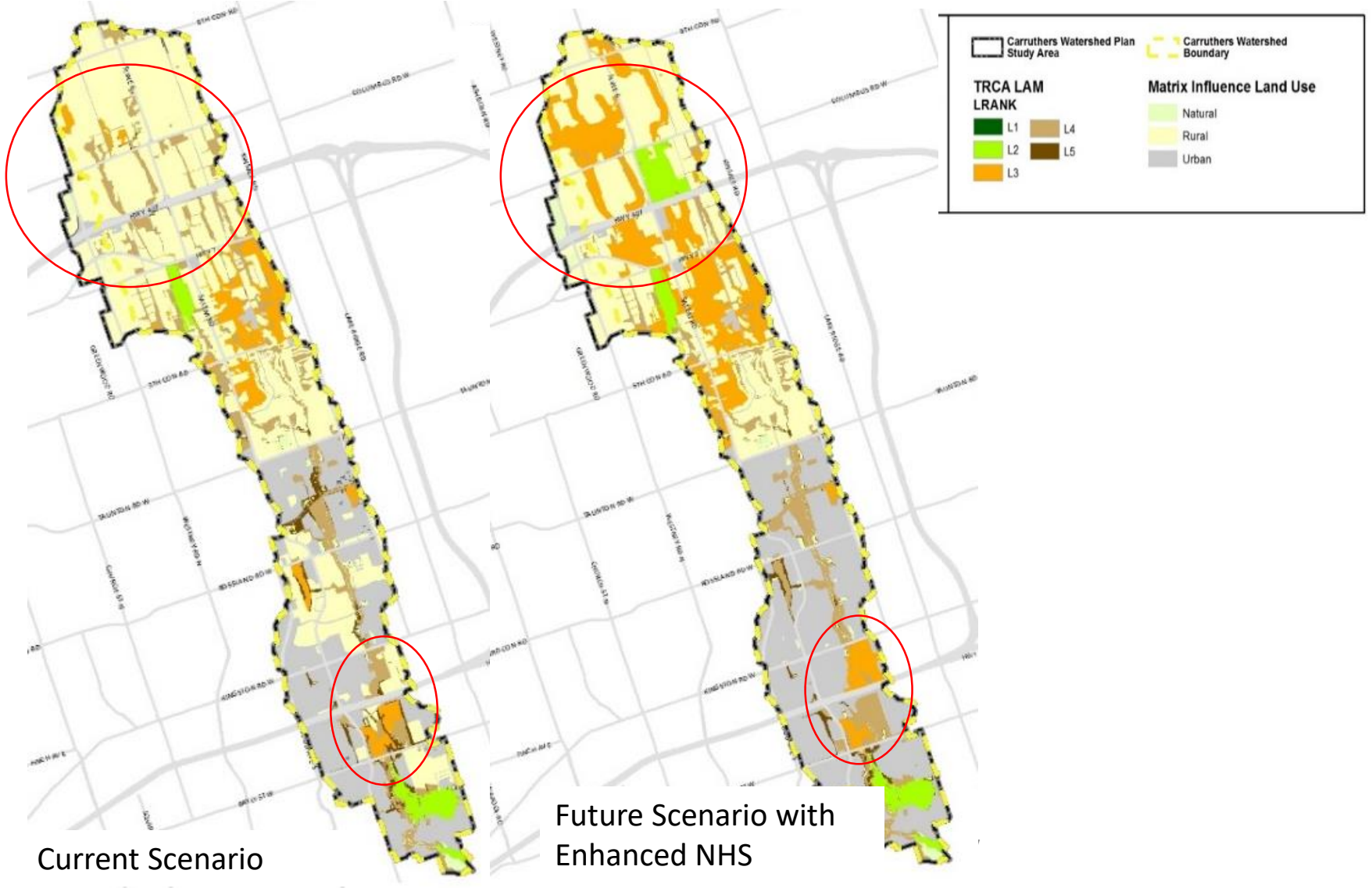






- Habitat patch quality
- Wetland vulnerability
- Climate sensitive vegetation communities
- Soil drainage
- Ground surface temperature

Habitat Quality

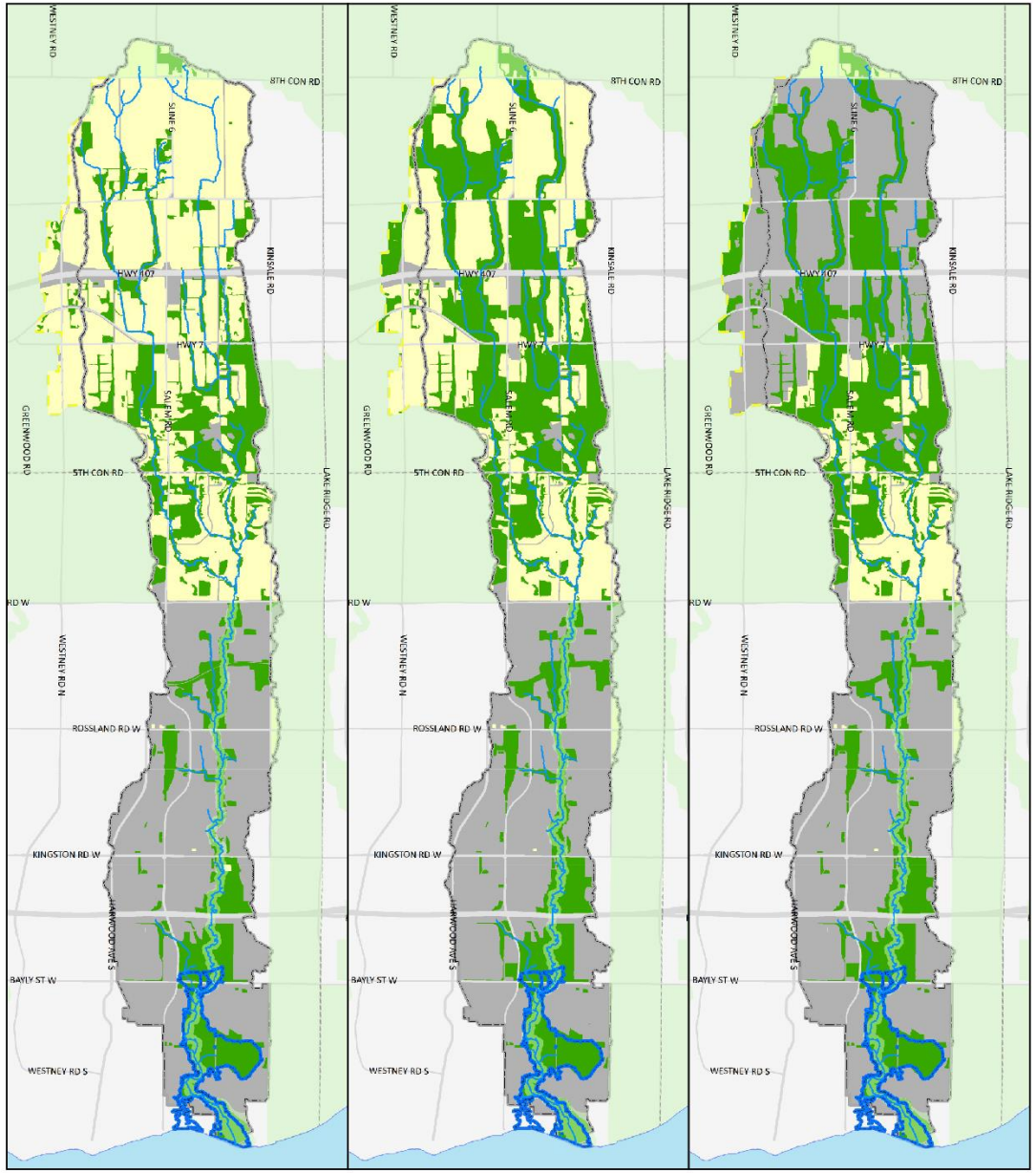


Current Scenario

Future Scenario with Enhanced NHS

Existing Natural Cover = 25%

Target Natural Cover = 36%



Future Watershed Conditions

		Scenario 1 (+OP) (Compared to Current Conditions)	Scenario 2 (+NHS) (Compared to Scenario 1)	Scenario 3 (+ Potential Urban) (Compared to Scenario 1)
Water Resource System	% change	↓ -6%	= +1%	↓ -12%
Natural Heritage System	% change	= +1%	↑ +7%	↑ +6%
Water Quality	% change	It is difficult to draw a conclusion on the percent change for water quality solely.		
Natural Hazards	% change	= -2%	= 0%	↓ -77%

Legend

Green Up Arrow: >+5% change
Indicates watershed conditions improve from a hydrologic or ecological perspective

Equal Sign: 0 to +5% or 0 to -5% change
Indicates a roughly equal comparison from a hydrologic or ecological perspective

Yellow Down Arrow: -6% to -10% change
Indicates watershed conditions deteriorate from a hydrologic or ecological perspective

Purple Down Arrow: >-10% change
Indicates watershed conditions significantly deteriorate from a hydrologic or ecological perspective

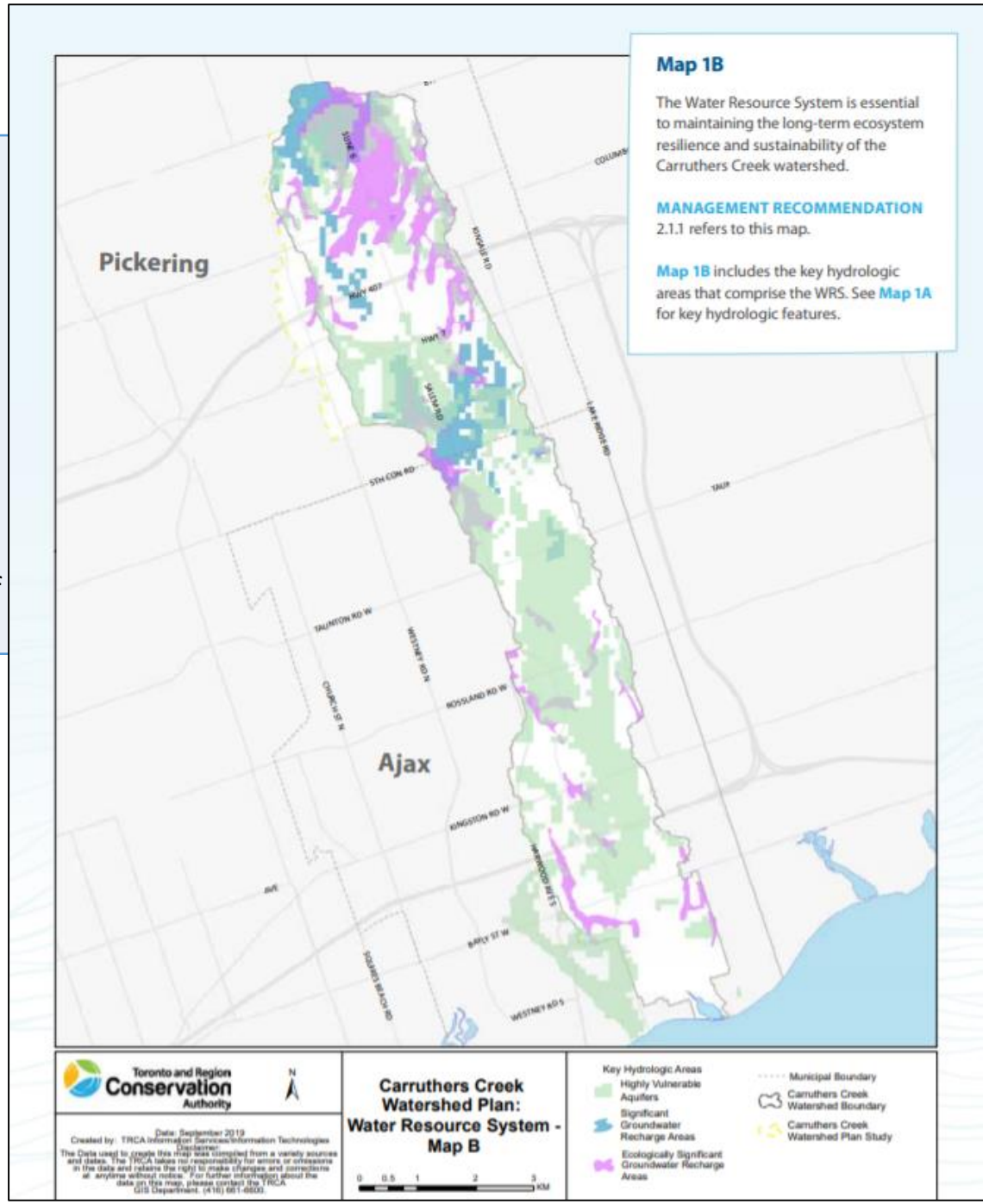
Management Recommendations

Water Resource System – Objective 1

2.1.1

The Region of Durham and lower-tier municipalities, in collaboration with TRCA, to ensure the protection of the Water Resource System (map 1A and B) and its functions, by:

a. updating Official Plans and zoning bylaws to adequately protect the Water Resource System
b. assessing existing standards and guidelines for land use and infrastructure development to ensure they reflect current provincial policy direction to protect, enhance and restore the quality and quantity of water
c. avoiding development near key hydrologic features through the establishment of appropriate buffers
d. requiring the implementation of appropriate mitigation measures where avoidance of key hydrologic areas is not possible, in order to maintain hydrologic function



Management Recommendations

Natural Heritage System – Objective 1

3.1.1

The Region of Durham and lower-tier municipalities, in collaboration with TRCA, to ensure the protection, enhancement and restoration of a Natural Heritage System consistent with the goals and objectives of this watershed plan (map 2 for recommended NHS) by:

a. **updating Official Plan policies and associated zoning bylaws to protect a municipally adopted enhanced Natural Heritage System**

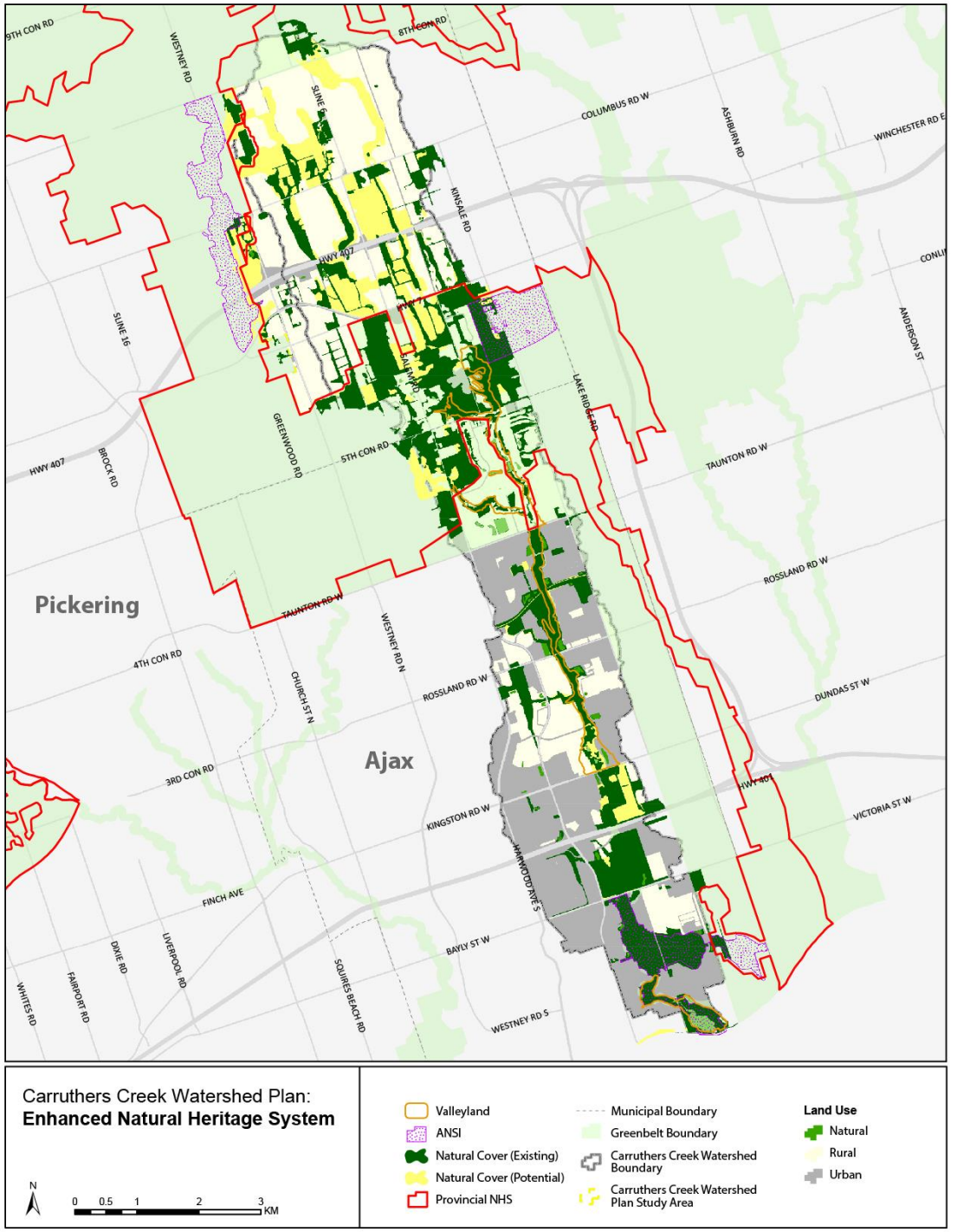
b. assessing existing standards and guidelines for land use and infrastructure development to ensure they reflect current provincial policy direction to maintain, restore or enhance the municipally adopted Natural Heritage System

c. avoid infrastructure development (i.e. buildings and structures) and minimize infrastructure linear feature crossings, in a municipally adopted enhanced Natural Heritage System

d. adopting municipal policies for ecosystem compensation, in accordance with TRCA's Guideline for Ecosystem Compensation, where development in a municipally adopted enhanced Natural Heritage System is unavoidable

e. applying a minimum 30 metre vegetation protection zone along features at the boundary of a municipally adopted enhanced Natural Heritage System to protect ecological function

f. requiring development and redevelopments be designed and approved to prevent encroachment into a municipally adopted enhanced Natural Heritage System.



Management Recommendations

Headwaters Management

1.1.3

If it is determined that a Settlement Area Boundary Expansion is required in the headwaters of Carruthers Creek, in accordance with Growth Plan policies, the Region of Durham, in collaboration with lower-tier municipalities and TRCA, to develop a Terms of Reference outlining requirements for further studies in support of subwatershed planning that includes, but is not limited to:

a. a hydraulic assessment
b. how natural hazards will be assessed and mitigated (i.e. the risk of flooding will not increase)
c. how the Natural Heritage System and Water Resource System will be protected, enhanced and restored
d. how water quality and quantity will be protected.

1.3.3

Implement appropriate flood mitigation measures for the Flood Vulnerable Cluster in the Town of Ajax, which could involve:

a. reopening, or initiating, a new environmental assessment to provide a more comprehensive list of alternatives to offset impacts associated with potential development in the headwaters
b. the application of regional control in the headwaters of Carruthers Creek, if developed and required by updated flood modelling.

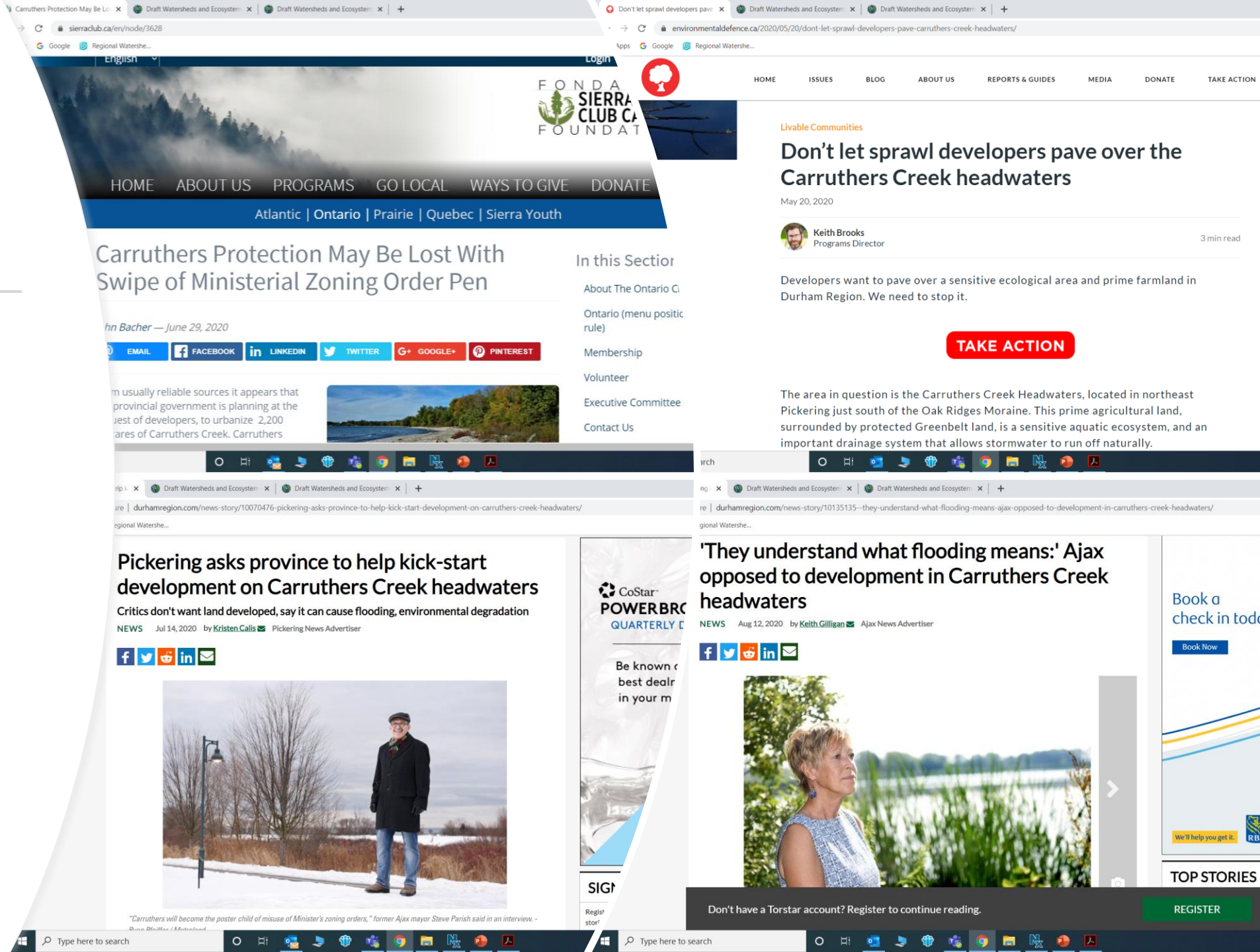
2.1.4

If it is determined that a Settlement Area Boundary Expansion is required in the headwaters of Carruthers Creek, in accordance with Growth Plan policies, the City of Pickering, in collaboration with the Region of Durham, Town of Ajax and TRCA, as part of secondary planning to demonstrate through a subwatershed plan (or equivalent) that:

a. key hydrologic features will be protected
b. where avoidance of key hydrologic areas is not possible, appropriate mitigation measures are to be implemented to maintain downstream hydrologic function, and
c. there will be no negative or adverse downstream effects, such as increased flooding, erosion, or deteriorated water quality.

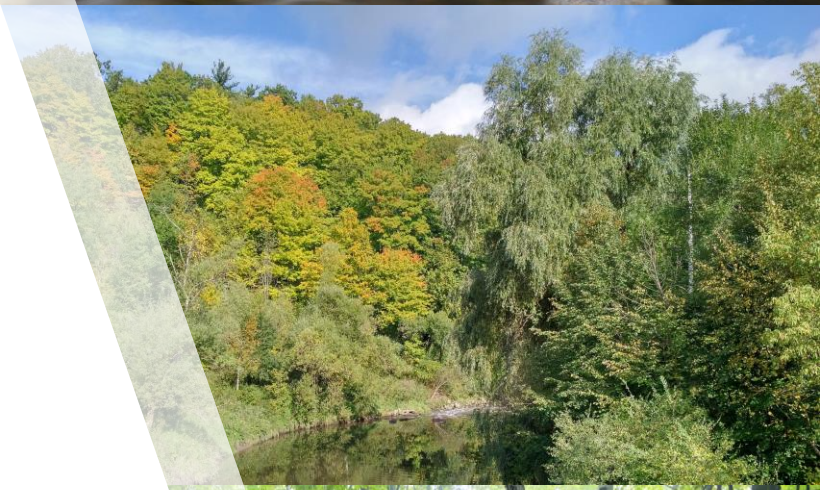
Stakeholder Response to CCWP

- Ajax/public/NGOs – very supportive of Plan
  - Presentation to Ajax Council
  - ENGO outreach campaigns
- MZO request, support by Pickering Council
- MZO not supported by Durham or Ajax

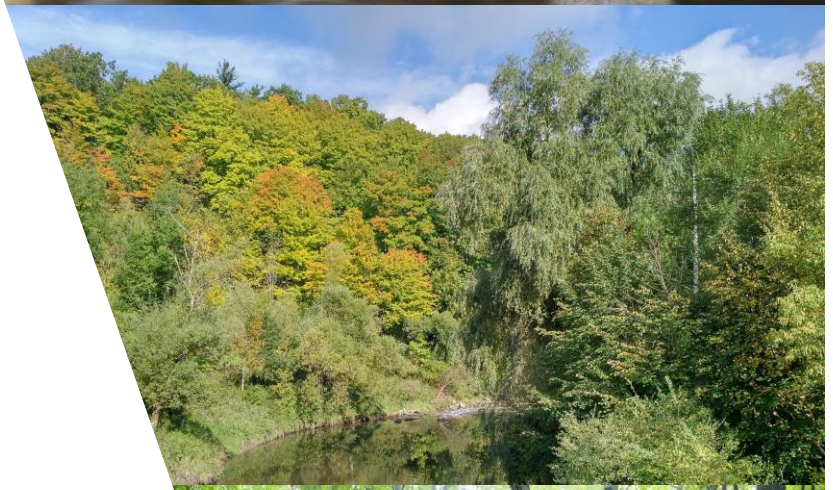


Other projects - Watersheds and Ecosystems Reporting Web App

- TRCA issues the Living City Report Card (LCRC) and Conservation Ontario Watershed Report Cards every 5 years.
- Desire from TRCA's BOD and partners for more frequent and less technical reporting.
- TRCA is developing an online reporting platform, which will be the modern version of the LCRC (April 22, 2021 launch [Earth Day]).



Benefits



The web application will:

- Enable continuous updates to watershed and waterfront condition reporting.
- Enable tracking of progress against watershed plan implementation.
- Be interactive to allow users to view data at various scales e.g. municipal data.
- Provide users with plain language orientation to the results of a broad array of TRCA monitoring data.
- Provide useful information to TRCA staff for their own projects, plan review, etc.

Draft Content & Indicators

Climate Change

1. Future Temperatures
2. Future Precipitation

Land Use

1. Low Impact Development Implementation

Natural Hazards

1. Riverine Flooding
2. Shoreline Flooding
3. Riverine Erosion
4. Shoreline Erosion

Water Resources System

1. Fish Communities in Streams
2. Benthic Communities in Streams
3. Fish Communities in Lake Ontario
4. Groundwater Levels

Natural Heritage System

1. Natural Cover Quality
2. Natural Cover Quantity
3. Urban Forest Cover
4. Forest Vegetation
5. Forest Birds
6. Wetland Vegetation
7. Wetland Birds
8. Frogs and Toads
9. Meadow Birds

Water Quality

1. Water Quality Index in Streams
2. Phosphorus in Streams
3. Chlorides in Streams
4. Total Suspended Solids in Streams
5. Bacteria in Streams
6. Chlorides in Groundwater
7. Nitrates in Groundwater
8. Nearshore Phosphorus
9. Nearshore Bacteria

Each Section Contains:

- Context
- Reporting Indicators
  - **Targets:** Where do we want to be?
  - **Current Conditions:** Where are we now?
  - **Trends:** How are conditions changing?
  - **Dashboards:** Dynamic visualization of the data
  - **Reporting Key:** Scoring details

Web Application Demo

Questions