

## Memorandum

# Ecologically Significant Groundwater Recharge Areas in TRCA Jurisdiction: Policy Analysis for Updated Mapping

November 2019

## Introduction

At the TRCA Senior Leadership Team (SLT) meeting on October 3, 2019, SLT members identified a need to more fully understand the policy implications of the updated Ecologically Significant Groundwater Recharge Area (ESGRA) mapping. This memo presents tables and accompanying maps outlining portions of future growth areas that could be affected by the updated ESGRA mapping outside of areas with existing groundwater recharge requirements (see definitions in following section). This memo is intended to support internal discussions and decision making on the application of the updated ESGRA mapping; it is not intended for external use.

Identification of ESGRAs was first mandated by the province in the *Lake Simcoe Protection Plan* area in 2009, and was added as a component of the Water Resource System (WRS) under the *Growth Plan for the Greater Golden Horseshoe* and *Greenbelt Plan* in 2017. ESGRAs appear as a sub-type of Significant Groundwater Recharge Area (SGRA) in these policy documents. While conservation authorities have the technical expertise to identify the components of the WRS on behalf of municipalities, how the WRS is protected is to be determined by municipalities themselves. Rather than restricting development in ESGRAs, municipalities are more likely to require that groundwater recharge be maintained in these areas.

In the CTC Source Protection Plan which applies to the Toronto and Region Source Protection Area, policies are in place to maintain recharge in the Wellhead Protection Area – Quantity (WHPA-Q), which covers portions of York and Durham regions. One of these policies requires that predevelopment recharge be maintained to the greatest extent possible. TRCA works collaboratively with our municipal partners to implement this policy while using the Stormwater Management Criteria (*SWM Criteria*; 2012, Section 6.2.1) to support our technical comments. These criteria require the “maintenance of pre-development groundwater recharge rates and appropriate distribution, ensuring the protection of related hydrologic and ecologic functions”. TRCA also applies the same criteria to areas mapped as SGRAs (as per CTC Source Protection Plan), ESGRAs and High Volume Recharge Areas in the *SWM Criteria* document. The *SWM Criteria* document states that the groundwater recharge criteria outlined in Section 6.2.1 “represent a minimum requirement that may be superseded by the results of further studies and local constraints.”

It is important to note that the 5 mm precipitation on-site retention target outlined in the *SWM Criteria* document, which is in line with the requirements of most municipalities and neighbouring conservation authorities, will be sufficient to maintain annual groundwater recharge rates in most cases where this volume can be infiltrated. It is the opinion of TRCA technical review staff that, in such cases, little to no additional effort would be required for development and infrastructure proponents to meet the groundwater recharge criteria outlined in the *SWM Criteria* document, Section 6.2.1.

ESGRAs have been outlined in TRCA policy since their inclusion in the *SWM Criteria* document and have been used previously in watershed plans completed for the Rouge River (2007) and Humber River (2008) as well as in the draft Carruthers Creek Watershed Plan (2019). However, previous TRCA mapping of ESGRAs was completed only for the Rouge and Humber river watersheds and coverage was limited mostly to areas within

the *Oak Ridges Moraine Conservation Plan* boundary. The updated ESGRA mapping, covering the entire jurisdiction and utilizing a more precise modelling methodology, is distributed more diffusely and now includes some new areas overlapping with future urban development areas.

## Definitions

The following terms are used in the maps and tables presented in this memo:

**Future Urban Growth Area (FUGA):** This includes all areas between the existing urban development limit and the *Greenbelt Plan* boundary, plus Towns and Villages (as per *Greenbelt Plan*, 2017) and Settlement Areas, Rural Settlements, and the Palgrave Estates Residential Community (as per *Oak Ridges Moraine Conservation Plan*, 2017). Areas identified in municipal official plans as part of a natural heritage system have been removed from the Future Urban Growth Area for the purposes of this analysis. Municipal definitions for natural heritage systems vary but all include, at minimum, lands identified by the Province as forming part of the provincial natural heritage system.

**Existing Groundwater Recharge Policy Area:** All areas within TRCA jurisdiction mapped as either Significant Groundwater Recharge Areas (as per *Clean Water Act*, 2006; *Greenbelt Plan*, 2017; *Growth Plan*, 2019) or Wellhead Protection Areas - Quantity (WHPA-Q, as per *Clean Water Act*, 2006). Currently, these areas are subject to a requirement to maintain pre-development groundwater recharge rates and appropriate distribution, ensuring the protection of related hydrologic and ecologic functions, under TRCA's *SWM Criteria* and as per TRCA's role within the CTC Source Protection Authority.

## Summary of Policy Analysis Results

The analysis was restricted to the areas identified as Future Urban Growth Area (FUGA) on **Maps 1 through 7**. Since stormwater management criteria for development and infrastructure under Existing Groundwater Recharge Policy Areas are essentially identical to those that would apply within areas identified by updated ESGRA mapping, only those ESGRAs that are within the FUGA and outside of Existing Groundwater Recharge Policy Areas are considered to be "additional" areas. The results of the analysis are summarized in **Table 1** below, and in **Maps 1 through 7**.

- The Future Urban Growth Area (FUGA) was determined to be 36,234 ha in area, of which 56.2% is covered by an existing groundwater recharge policy. The updated ESGRA mapping would affect a total of 2,942 ha within the FUGA, representing an increase of 8.1% in the proportion of the FUGA covered by groundwater recharge policies.
- York Region is only marginally affected by this additional groundwater recharge policy area with an increase of 0.6%, or 105 ha, in the total area covered by a groundwater recharge policy. The remaining 2,837 ha of additional groundwater recharge policy area is distributed relatively evenly between the regions of Durham and Peel.
- At the local municipality scale, the majority of the additional area affected by updated ESGRA mapping falls within the Town of Caledon (1,052 ha) and the City of Pickering (1,403 ha), with the City of Pickering having the greatest increase in groundwater recharge policy area in both absolute and relative terms.
- The additional area affected in the City of Pickering is largely within the Seaton development area and the federally owned airport lands to the north. For the Seaton development area, 25.1% of the lands (299 ha) are affected by the updated ESGRA mapping, an increase in the total area covered by

a groundwater recharge policy of 25% from near zero. TRCA staff are completing a case study of this area to determine what the effects of the updated ESGRA mapping are for this area and the extent to which development is already meeting the groundwater recharge criteria through existing stormwater management criteria in the Seaton MESP and the *SWM Criteria* document.

While this analysis has been restricted to areas identified as FUGA, TRCA staff recognize that other areas are affected by the updated ESGRA mapping within the existing urban development limit. For these areas, TRCA staff envision that ESGRA mapping would be provided to municipalities and proponents of development on an advisory basis, to inform potential opportunities for enhanced on-site infiltration and recharge where there may be opportunities through redevelopment to do so.

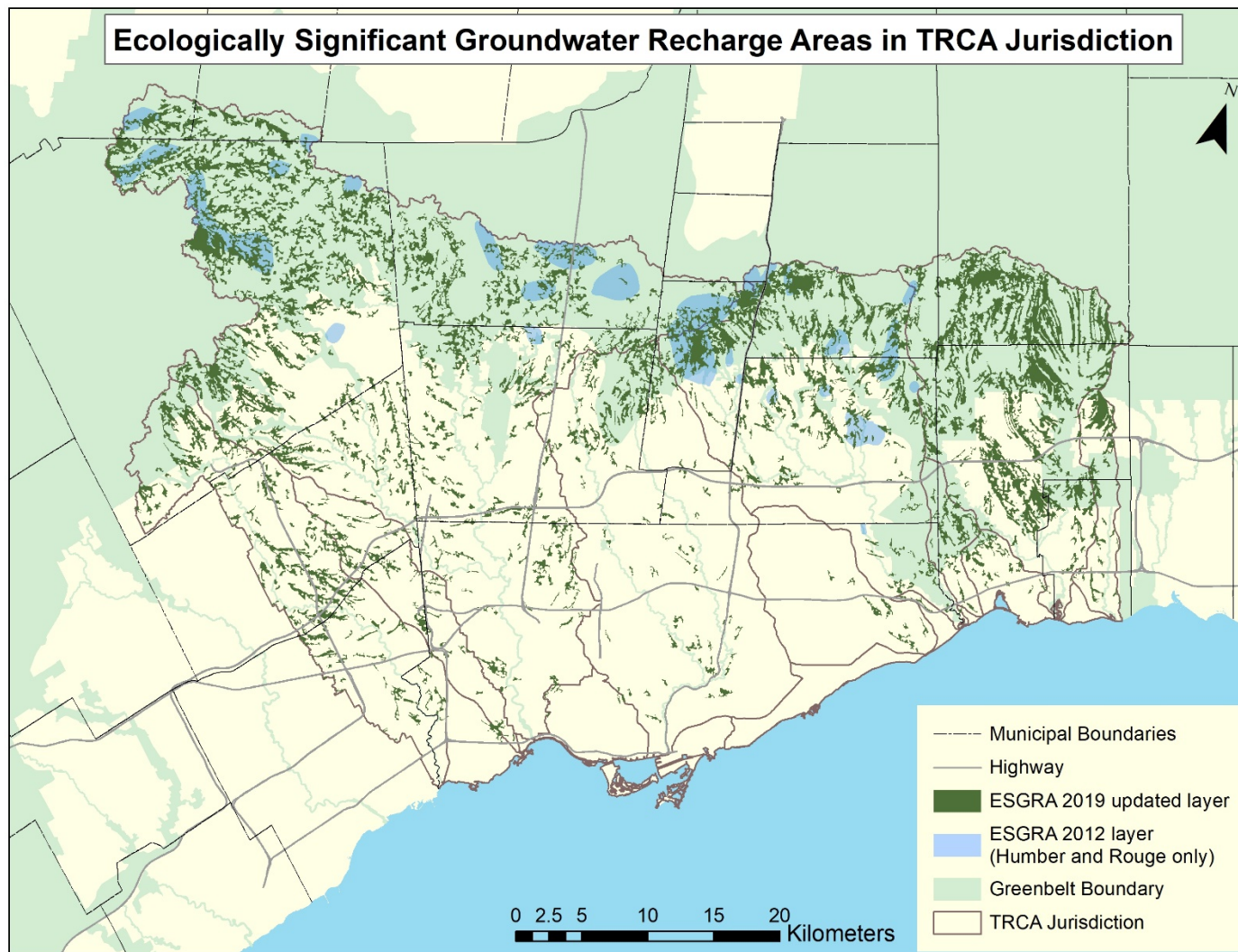
## Intended Applications

TRCA staff outlined the following intended applications of this updated ESGRA mapping in the presentation to SLT on October 3, 2019, for which they were seeking SLT approval:

1. Water Resource System mapping as part of Growth Plan and Greenbelt Plan requirements for watershed planning and municipal planning processes, including consultation with municipal staff currently undertaking these processes;
2. TRCA technical staff review of development and infrastructure applications, as per existing policies; and
3. Other TRCA strategies and initiatives (e.g. use in Integrated Restoration Planning, Natural Heritage System planning, prioritization of stormwater retrofit opportunities, etc.)

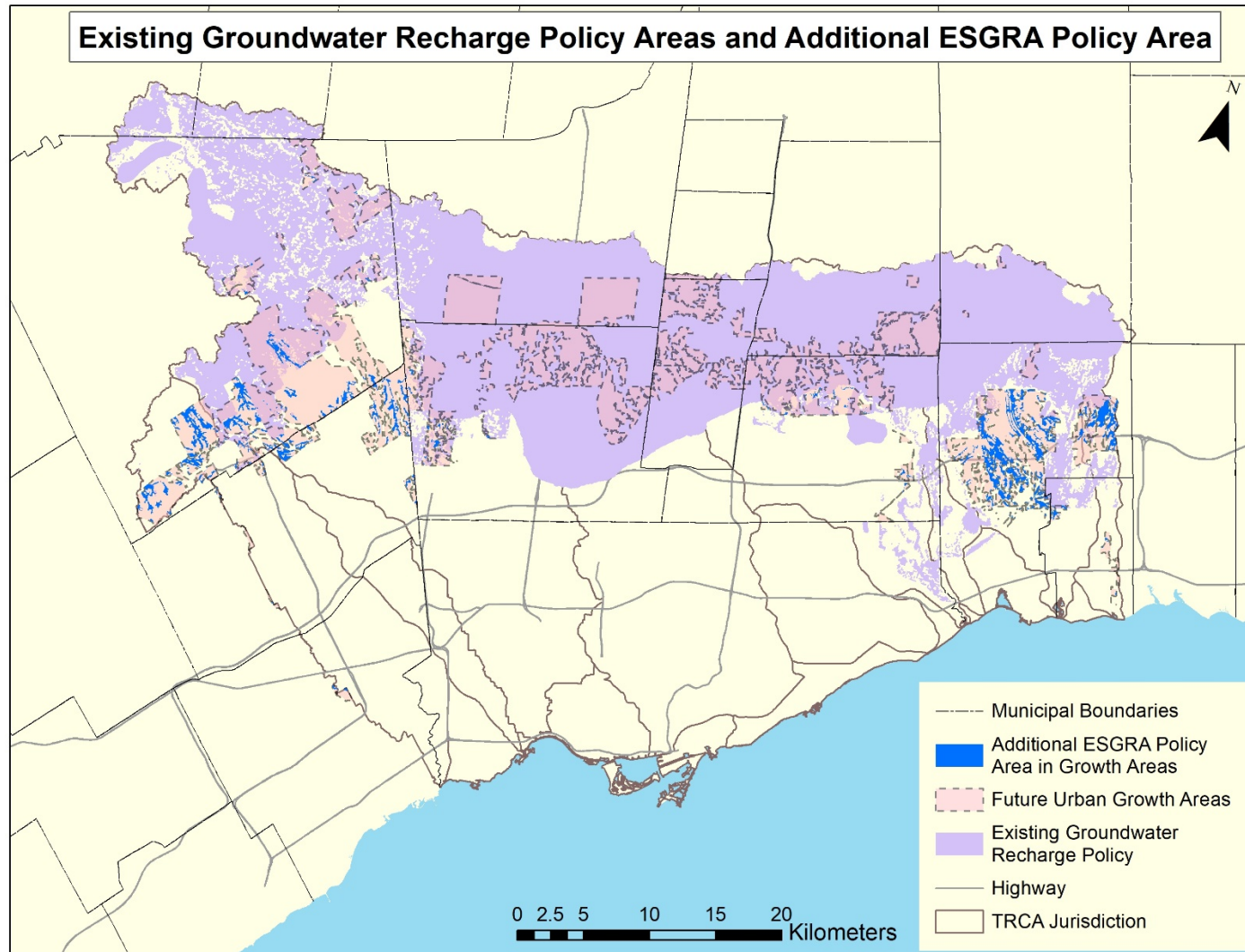
**Table 1:** Area covered by existing groundwater recharge policies and the additional area implicated by a groundwater recharge policy under the updated ESGRA mapping.

Municipality	Future Urban Growth Area (FUGA) (ha)	Existing groundwater recharge policy in FUGA (ha)	Existing groundwater recharge policy (% of FUGA)	Additional groundwater recharge policy area in FUGA with ESGRA (ha)	Additional groundwater recharge policy area with ESGRA (% of FUGA)
<b>Jurisdiction</b>	36,234	20,369	56.2%	2,942	8.1%
<b>Peel Region</b>	13,939	4,997	35.8%	1,401	10.0%
Brampton	1,852	0	0.0%	340	18.3%
Caledon	12,012	4,997	41.6%	1,052	8.8%
Mississauga	76	0	0.0%	9	11.5%
<b>York Region</b>	16,231	14,747	90.9%	105	0.6%
Aurora	125	125	100.0%	0	0.0%
King	2,949	2,949	100.0%	0	0.0%
Markham	3,186	2,437	76.5%	51	1.6%
Richmond Hill	2,714	2,714	100.0%	0	0.0%
Vaughan	5,275	4,542	86.1%	54	1.0%
Whitchurch-Stouffville	1,981	1,981	100.0%	0	0.0%
<b>Durham Region</b>	6,058	619	10.2%	1,437	23.7%
Ajax	214	12	5.7%	34	15.8%
Pickering	5,764	526	9.1%	1,403	24.3%
Uxbridge	80	80	100.0%	0	0.0%
<b>Seaton Development Area Case Study</b>	1,190	1	0.1%	299	25.1%



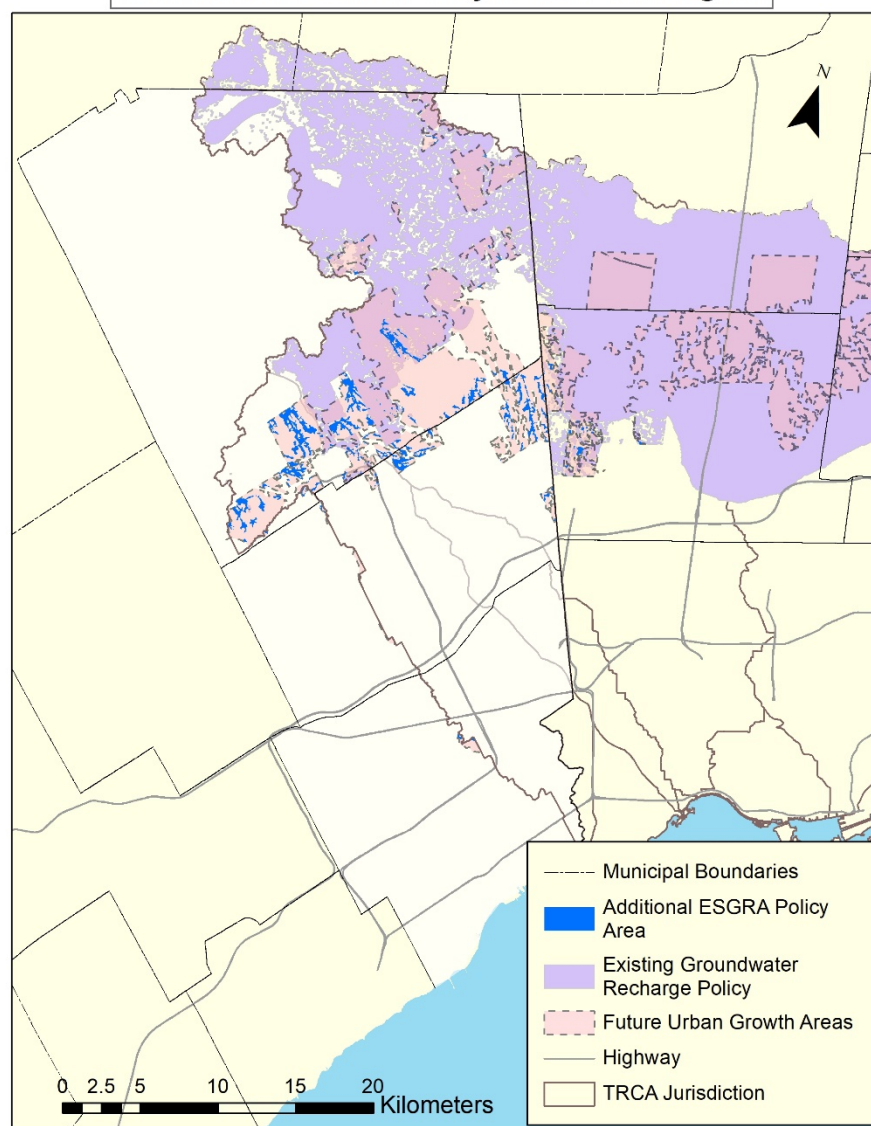
**Map 1:** Updated ESGRA mapping with previous 2012 ESGRA layer and *Greenbelt Plan* boundary





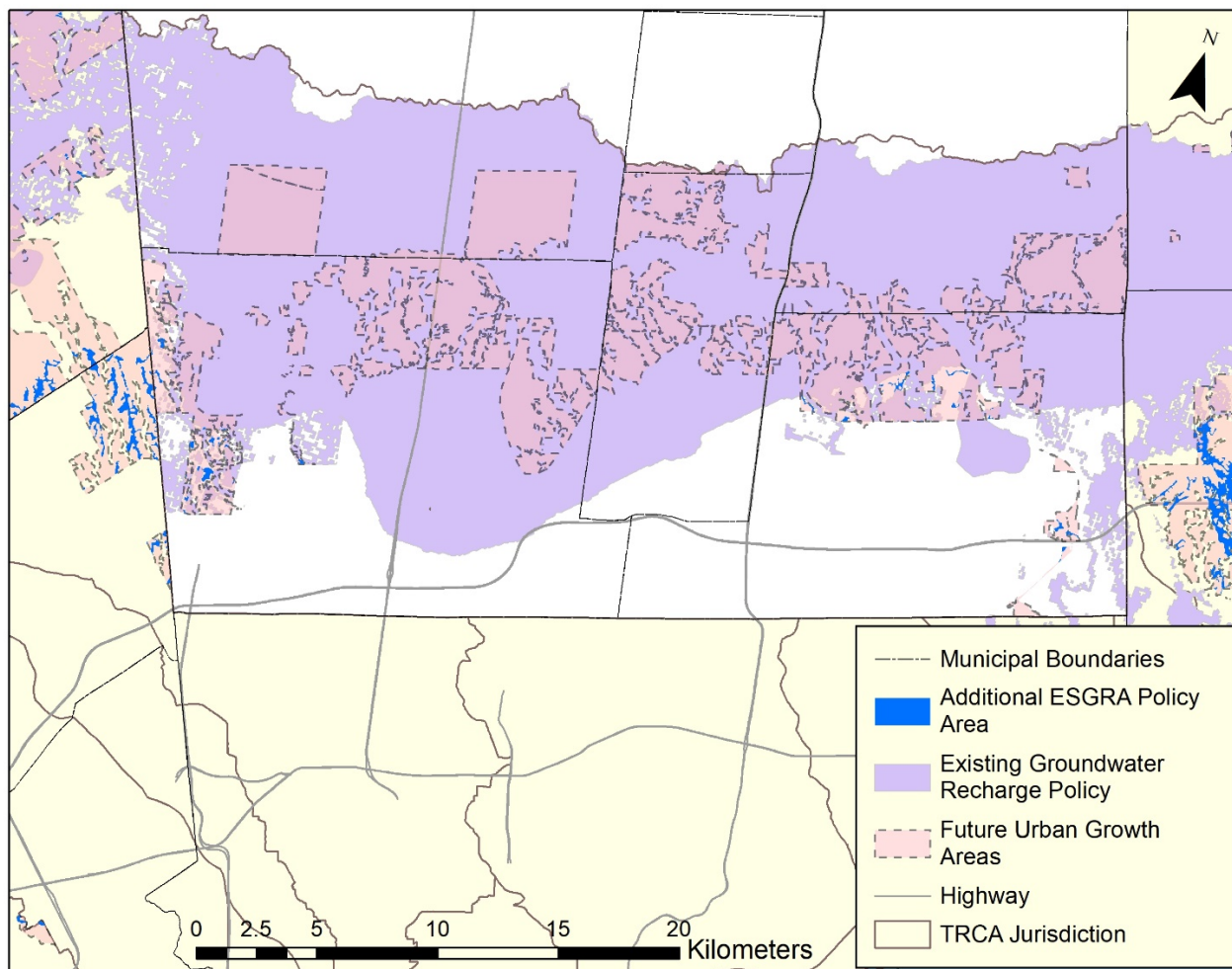
**Map 2:** Future Urban Growth Areas overlaid with Existing Groundwater Recharge Policy Areas and ESGRAs within the FUGA that are outside the existing policy areas

**Additional ESGRA Policy Area: Peel Region**



**Map 3:** Detail of Peel Region

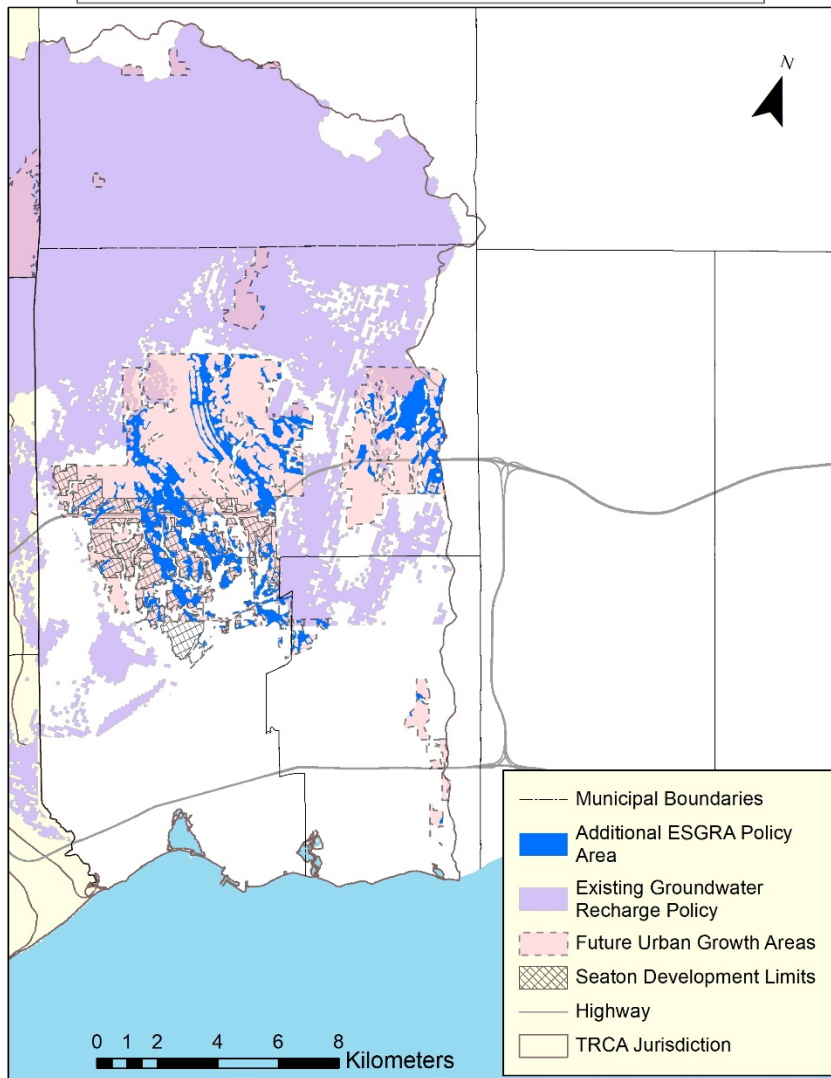
### Additional ESGRA Policy Area: York Region



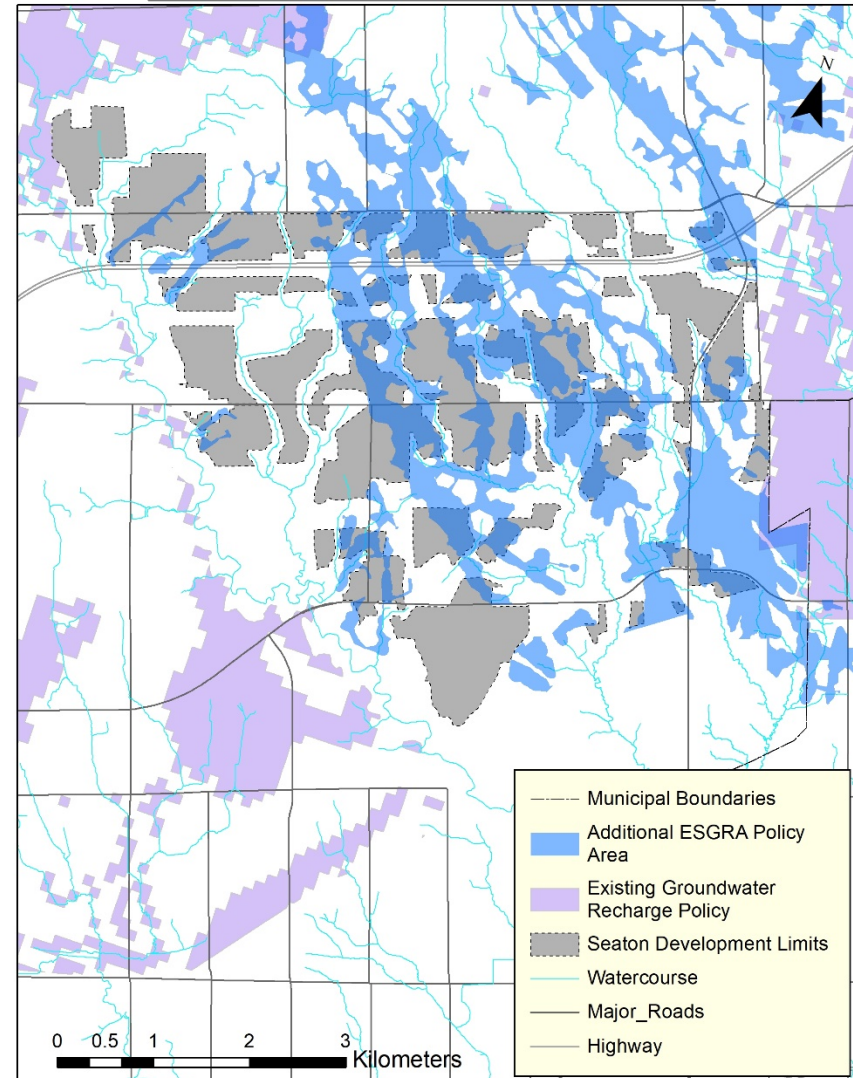
**Map 4:** Detail of York Region



**Additional ESGRA Policy Area: Durham Region**

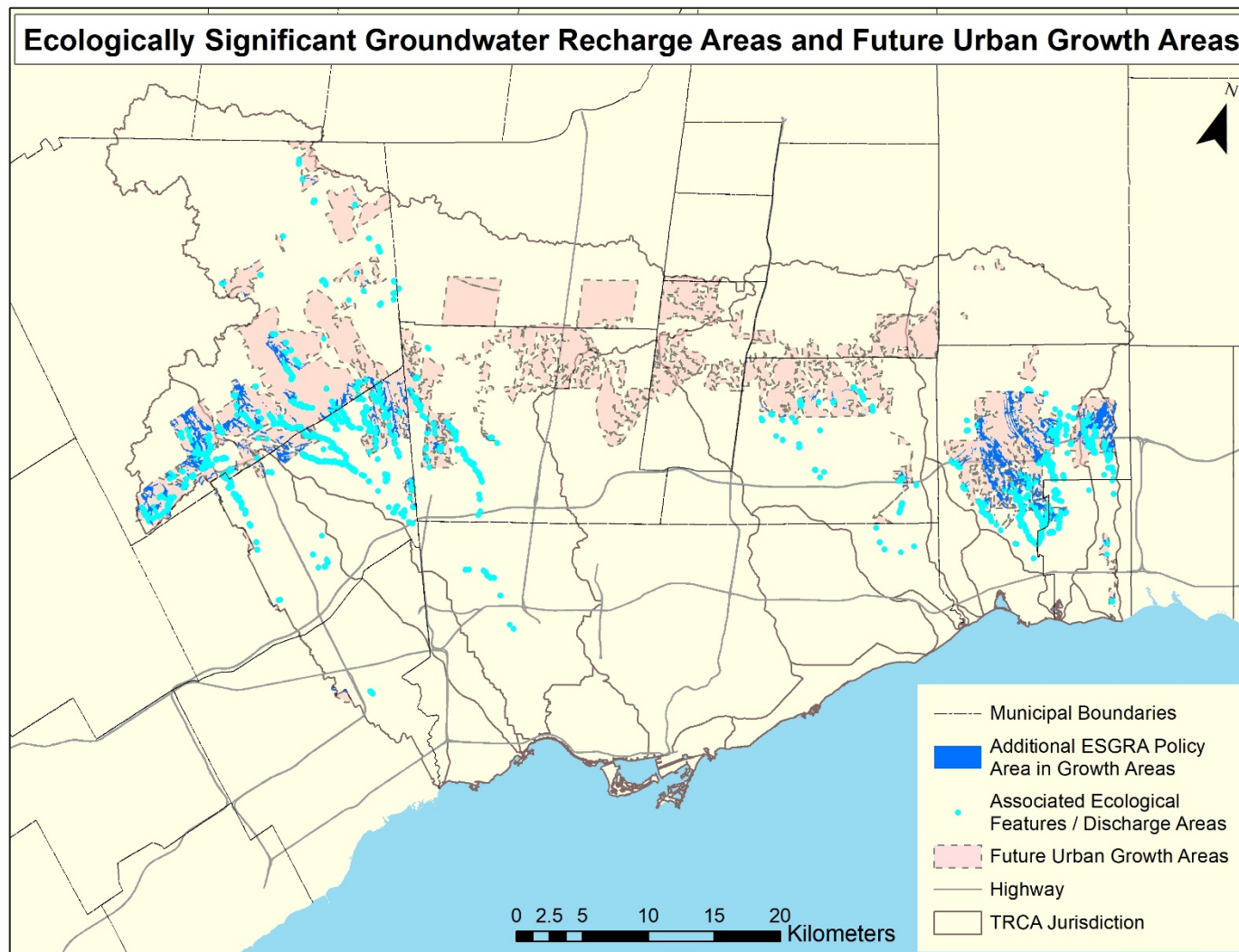


**Additional ESGRA Policy Area: Seaton**



**Map 5 (left): Detail of Durham Region**

**Map 6 (right): Detail of Seaton Development Area case study showing known development limits**



**Map 7:** Map showing connections between the ESGRAs that are within Future Urban Growth Areas and the associated locations where recharge is predicted to emerge within watercourses and wetlands.