5.0 EXISTING CONDITIONS – PART 2

5.6 Physical Environment

5.6.1 Physiography

The project area is located within the Lake Iroquois Sand Plain (Figure 5-1). Till plains are formed when a sheet of ice detaches from a glacier and melts in place, depositing the sediments it carried. This physiographic region is delineated by the Lake Iroquois shoreline, a prominent ridge that represents the former edge of a lake that existed approximately 10,000 years ago. South of the shoreline, the topography slopes towards Lake Ontario. The soils in this region are mostly sandy loam, with some loam close to Lake Ontario, where the underlying soils are finer grained (TRCA, 2018).

5.6.2 Water Flow Regime (baseflow conditions and storm conditions)

The project area is located within the Lower Humber River subwatershed, where river and valley form has been developed through sediment transport and a combination of fluvial and glacial land modification.

Urban development restricts sediment supplied from the valley and increases the flow regime. The Lower Humber River channel is very large and becomes a dominant feature in the landscape. Many reaches were realigned, channelized, or straightened in the past to facilitate urban development. Confinement of the river channel and increase in overall slope from a reduction in channel length has resulted in significant downcutting. As a result, a series of grade control structures have been built between Bloor Street and Lawrence Avenue to prevent further bed degradation and erosion (TRCA, 2008).

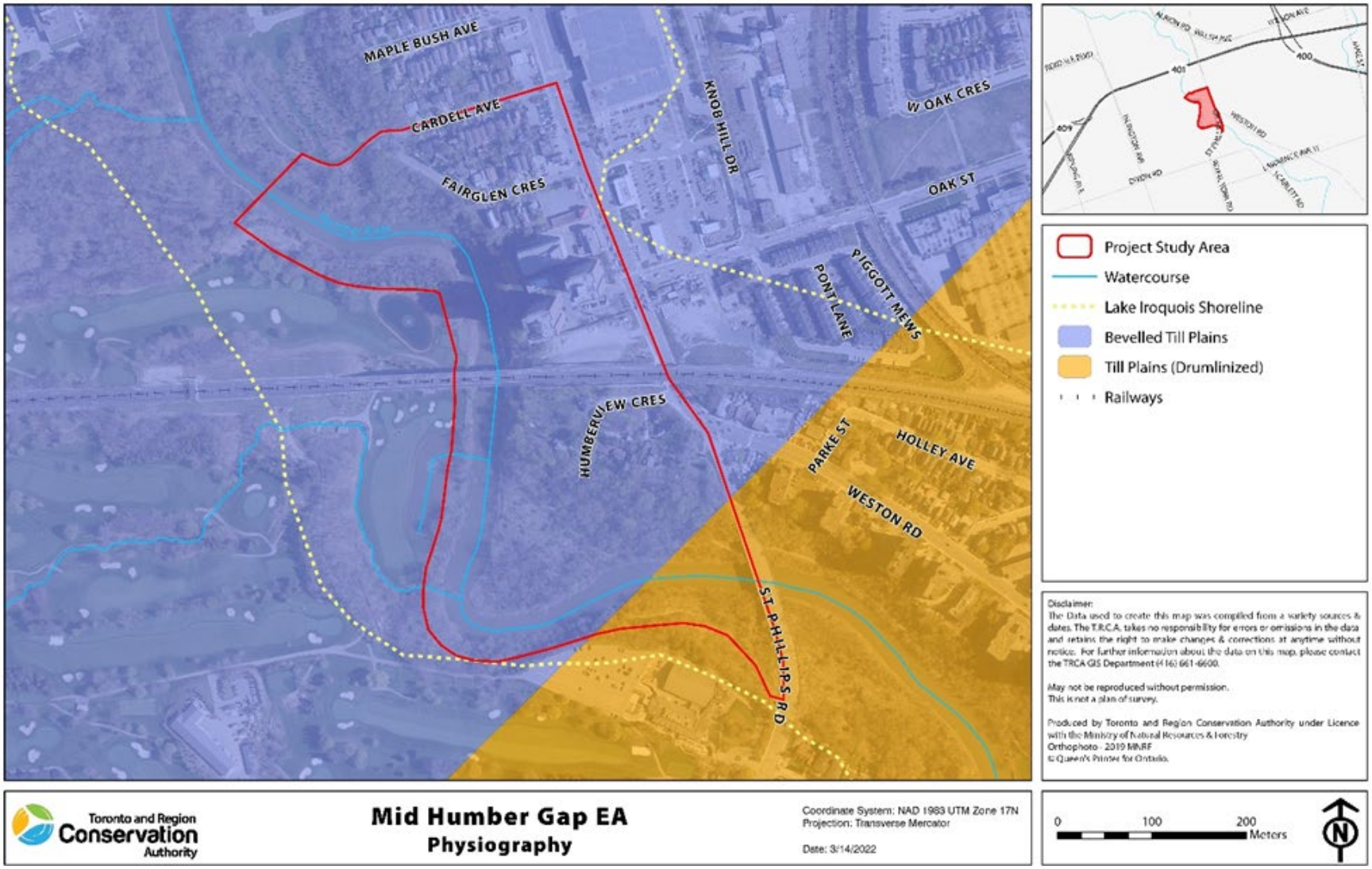

Figure 5-1: Physiography of the project area.

5.6.3 Geomorphology – Existing Conditions

Geomorphic resiliency, or stability, refers to a watercourse's ability to absorb changes to watershed conditions that influence geomorphic processes (e.g., changes to hydrology or sediment supply) while remaining functional. Understanding the existing channel migration and erosion rates helps provide insight into the placement and span of pedestrian-cycle bridges, which in turn can help reduce the risk of erosion to the structures and to watercourse destabilization.

A fluvial geomorphological and erosion assessment identified key factors related to channel stability, identified opportunities and constraints, and provided mitigation measures (where applicable) for avoiding negative impacts to the bridge crossings and river channel.

The assessment included a detailed investigation of the channel planform, valley characteristics and channel stability in the project area to gain an understanding of the existing fluvial geomorphic processes. A summary of the preliminary geomorphic assessment for the project area is provided in **Table 5-1**. Details describing the analysis methodologies and results are provided in Appendix D.

Table 5-1: Summary of geomorphic assessment for the project area

River	Morphologic Characteristics	Valley Characteristics	Channel Stability
Lower Humber River	well-defined, large glacial outwash valley, confines the channel to the valley limits	Confined valley, semi-alluvial	Channel is in a state of adjustment both widening and aggrading with some degradation observed at scour pools downstream of sewer outfalls

5.6.4 Hydraulic Design Considerations for Watercourse Crossings

The introduction of trails and structures around a watercourse creates the potential for new obstructions or 'footprints' that can alter not only flow paths of a watercourse, but also what areas may be affected by flooding during storm events. As identified by TRCA's Crossing Guidelines (TRCA, 2015), the purpose of hydraulic performance input to trail and structure design at early planning stages is to understand flooding risks and to identify design criteria to be used during engineering design of the water crossings to minimize potential risks.

Based on floodplain mapping provided by TRCA, a detailed hydraulic analysis was undertaken to ensure that all structures within the floodplain are carefully sided, sufficiently sized, and appropriately designed. Fluvial geomorphological considerations, such as bankfull

width and toe erosion allowances, were identified and assessed in conjunction with flood extent considerations to assess existing and future proposed conditions for the project area. Results of the hydraulic analysis on the preferred alignment are discussed in Chapter 8.5, while the full technical report is provided in Appendix E.

5.6.5 Climate Change

The Local Study Area experiences a continental climate moderated by the Great Lakes and is influenced by warm, moist air masses from the south, and cold, dry masses from the north, resulting in a wide range of weather conditions (TRCA, 2008).

Although specific changes cannot be accurately predicted, climate change models show that, overall, the average temperature in southern Ontario could increase by 5 – 10 °C by 2080 (TRCA, 2008). The impact that such a warming trend would have on weather patterns is unclear; some experts extrapolate that precipitation could increase by up to 20%, while others expect a decrease in rain and snowfall. Despite the differing interpretations of climate model outputs, climatologists generally agree that the weather in southern Ontario and the GTA would become more unpredictable, with an increasing incidence of temperature extremes, severe storms and periods of drought (TRCA, 2008).

The Mid Humber Gap intends to identify a preferred multi-use trail alignment for the remaining 800 m gap in the Humber River Trail. In general, as climate vulnerable areas are incorporated into the Natural Heritage System (NHS), they are likely to be more resilient to the impacts of climate change (TRCA, 2022).

5.6.6 Drinking Water Source Protection

The Mid Humber Gap is located in the Toronto and Region Source Protection Area and transects two types of vulnerable areas (Highly Vulnerable Aquifers, Event Based Areas) identified under the Clean Water Act, 2006 (Figure 5-2):

- A Highly Vulnerable Aquifer can be easily changed or affected by contamination from both human activities and human process as a result of its intrinsic susceptibility (as a function of the thickness and permeability of overlaying layers), or by preferential pathways to the aquifer; and,
- An Event Based Area is delineated if numerical modelling demonstrates that a spill from a specific activity may be transported to an intake and represents an activity that poses a significant threat to drinking water (Government of Ontario, 2006).

Under the Clean Water Act, 2006, a “prescribed threat” (hereafter referred to as “threat”) is defined as “an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water

and includes an activity or condition that is prescribed by source protection regulation as a drinking water threat" (Government of Ontario, 2006).

The province has identified 22 activities that, if they are present in vulnerable areas, now or in the future, could pose a threat. Twenty of these activities are relevant to drinking water quality threats, and nineteen of these activities could result in a moderate or low drinking water threat in a highly vulnerable aquifer. Since none of these activities are likely to occur during the establishment of the Mid Humber Gap, no policies in the Credit Valley – Toronto and Region – Central Lake Ontario Source Protection Plan would apply. Similarly, none of the activities determined to result in a significant drinking water threat to an intake on Lake Ontario are expected to take place during the development and operation of the Mid Humber Gap.

Given the nature of the Mid Humber Gap and the intended revitalization of the terrestrial environment, this initiative should further the protection of those sensitive water resources identified through the Drinking Water Source Protection Program..

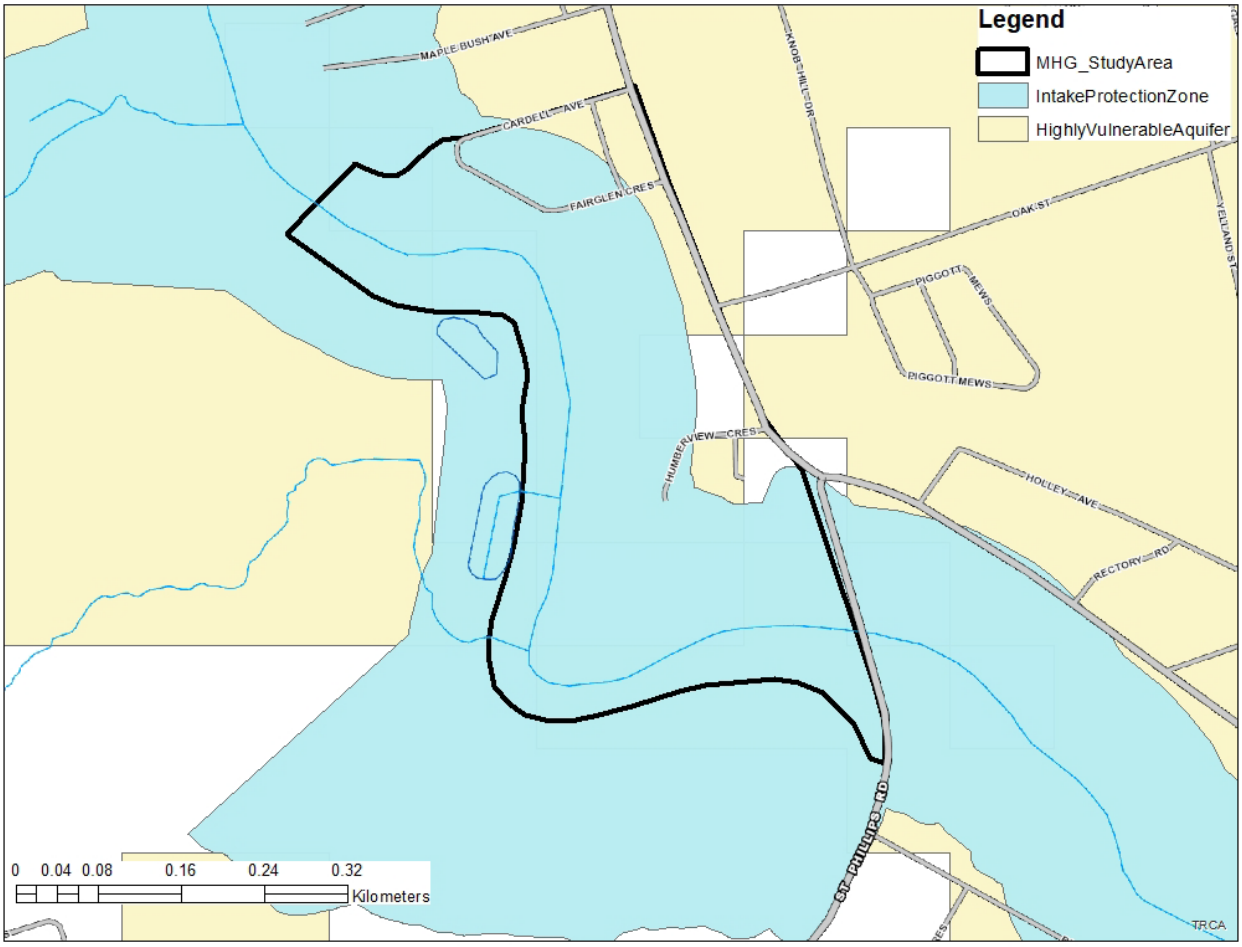

Figure 5-2: The Mid Humber Gap is located in the Toronto and Region source Protection Area and transects two types of vulnerable areas (Highly Vulnerable Aquifers, Event Based Areas) identified under the Clean Water Act, 2006.

5.6.7 Water Quality

Fertilizers (nitrogen) and road salt (chloride) are common sources of groundwater contamination. Concentrations of nitrate and chloride were measured in the Humber River watershed to inform the Humber River Watershed Report Card for 2018 (TRCA, 2018).

Nitrate levels throughout the Humber River watershed received a grading of excellent, indicating low concentrations (Figure 5-3). However, chloride levels became very poor closer to Lake Ontario, pointing to potential contamination by road salt and/or water softeners for septic systems.

Figure 5-4Figure 5-4 represents the surface water quality for phosphorus and Escherichia coli (E.coli) bacteria. Levels were found to be fair overall in the watershed, marking a stable level since the previous report card in 2013 (TRCA, 2018).

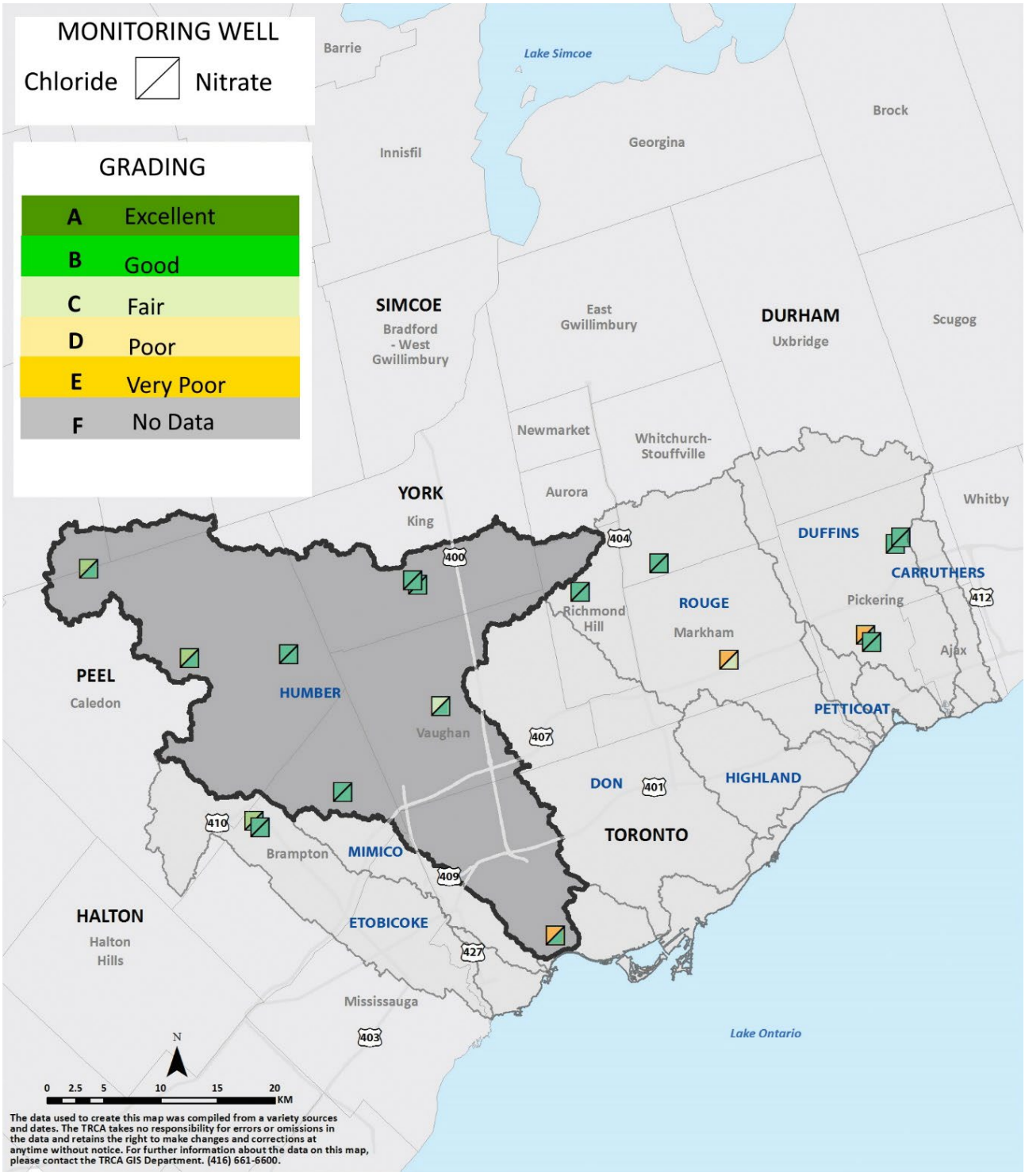

Figure 5-3: Ground water quality for the Humber River Watershed, general project location denoted by red star.

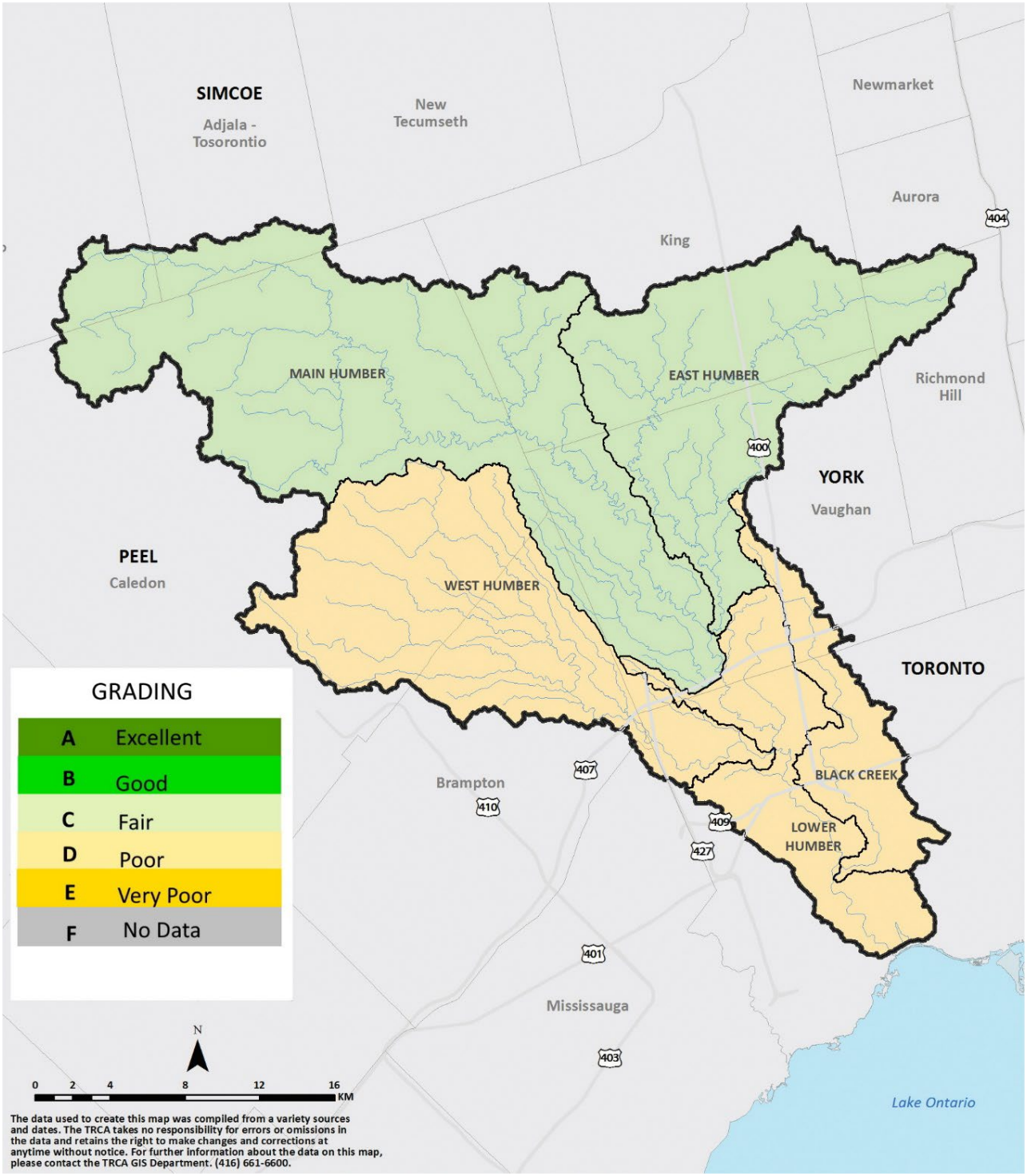

Figure 5-4: Surface water quality for the Humber River watershed, general project location denoted by red star.

5.6.8 Air Quality

At a local scale, no significant sources of air pollution exist within or immediately surrounding the project limits. No component of the project is anticipated to significantly degrade air quality or be influenced by local or regional sources of air pollution. Any impacts from equipment used as part of the construction phase will be temporary and insignificant.

5.6.9 Noise Levels and Vibration

The project area is primarily located adjacent to recreational and low to medium-density residential areas. There are no significant sources of noise or vibration within the area other than rail and vehicle traffic. Construction activities will be monitored for vibration in accordance with City of Toronto Municipal Code Chapter 363-3.6 Construction Vibrations.

The project area is located within the City of Toronto, which is responsible for noise regulation (i.e., unwanted sound). All construction activities will follow By-law No. 476-2002. This By-law restricts the times and places of construction and other activities that generate unwanted sound.

5.6.10 Soils

The project activities are not expected to have a major impact on the local subsurface conditions. As a result, a detailed investigation will not be carried out, except for geotechnical analysis at the proposed boardwalk and pedestrian/cycle bridge locations to inform detailed design.

5.7 Cultural Environment

5.7.1 Indigenous Communities

There are no Indigenous reserves or communities within the project limits; therefore, there will be no impact to Indigenous reserves or communities due to these works.

5.7.2 Heritage River Systems

Designated in 1999, the Humber River is the only Canadian Heritage River System (CHRS) in the GTA and one of only 40 such designated rivers across Canada.

The Toronto Carrying-Place Trail, a travel and trade route along the Humber River utilized by First Nations, connected the Toronto area north to the Holland River and beyond the upper lakes. The multi-branched Toronto Carrying-Place Trail was also referred to as the Humber Portage and the Toronto Passage. After Governor Simcoe commissioned the construction of a straight road from Lake Simcoe to Lake Ontario (Yonge Street), the portage was slowly abandoned. The Carrying Place Trail is one of the oldest established transportation routes in Canada and is the highlight of the Humber's CHRS designation.

5.7.3 Weston Canadian National Rail (CNR) Bridge

Designed and built by Sir Casimir Gzowski (circa 1856), this bridge was one of the highest and longest bridges on the Grand Trunk Railway system. Original decking was wooden as metal was not available and it is believed the superstructure was replaced with steel circa 1890.

The supporting piers were constructed of brick on stone foundations but were encased in concrete in 1910. Opened on July 1st, 1856, it is one of the oldest functioning railway bridges in Ontario (TRCA, 2011).

5.7.4 Archeological Resources, Built Heritage Resources, and Cultural Heritage Landscapes

The potential for archaeological resources within the project area is assessed by examining the historical and cultural context of populations that lived within and adjacent to the project area.

In 2021, TRCA archaeology staff undertook a Stage 1 Archaeological Assessment of the project limits to determine potential impacts to existing archeologic or heritage resources from the proposed works. TRCA conducted the assessment in accordance with standards and guidelines set out by the Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI). TRCA's stage 1 archaeological investigation included a thorough examination of historical land use, geographic and cultural features within the vicinity of the project area. The following recommendations have been made:

- A Stage 2 archaeological assessment is required in all areas identified before any ground-disturbing activities begin;
- Portions of the project area identified as disturbed and holding no archaeological potential due to built features (e.g., human-made disturbances) must be subject to on-site visual survey; and
- Portions of the project area identified as having low or no archaeological potential due to physiographic features (e.g., permanently wet areas, steep slope) must be subject to on-site visual survey.

Please refer to the Stage 1 Archaeological Assessment for the Mid Humber Gap (June 2021) in Appendix F for a complete account of the assessment.

An additional investigation was undertaken by the City of Toronto's Heritage Planning Office to assess built cultural heritage resources within the project area. Based on the assessment, it was determined that given no buildings or structures, including the Weston CNR rail bridge, will be impacted by any of the proposed trail alignments, no concerns were raised on impacts to the area's heritage potential.

5.7.5 Traditional Land Uses

This project is located within the Traditional Territories and Treaty Lands of the Mississaugas of the Credit First Nation, Six Nations of the Grand River, the Haudenosaunee Confederacy, and the Huron Wendat Nation. No adverse effects to traditional land uses were identified during consultation with Indigenous communities.

5.7.6 Outstanding Native Land Claim or Treaty Rights

The project is located within the boundaries of the Nanfan and Toronto Purchase Treaties. No impacts to treaty rights were identified during consultation with Indigenous communities.

5.8 Socio-Economic Environment

5.8.1 Surrounding Neighbourhoods and Communities

As shown in Figure 5-5, the project area encompasses two wards, including Ward 1 – Etobicoke North and Ward 5 – York South-Weston. Notifications were also circulated to the adjacent Ward 2 – Etobicoke Centre and Ward 7 – Humber River-Black Creek for engagement/consultation activities.

There are three prominent neighbourhoods within the project area that include Weston, Kingsview Village-The Westway, and Pelmo Park-Humberlea. The fourth neighbourhood, Humber Heights-Westmount, is adjacent to the project area in the south as shown below in Figure 5-6.

5.8.2 Recreational or Tourist Uses of a Waterbody and Adjacent Lands

Mallaby and Crawford-Jones Memorial Parks are located within the project limits, both of which are actively used by the public for recreational purposes. The City will notify the public of any temporary restrictions and/or construction timelines once known.

5.8.3 Parks

There are three main parks within or near the project area, including Crawford-Jones Memorial Park, Mallaby Park, and Cruickshank Park, as shown in Figure 5-1.

- Crawford-Jones Memorial Park is located at the northern limit of the project area and is situated east of the Humber River. The park can be accessed from Dee Avenue or Cardell Avenue. This forested park is the northern termination point for the HRTwithin the project limits;
- Mallaby Park is situated further south at Weston Road and St. Phillips Road. This forested park is the second termination point for the HRT within the project limits; and
- Cruickshank Park is south-east of the project area and is the largest of the three public parkland spaces and has more amenities, including outdoor fitness equipment and a playground. The HRT in this area serves to connect this park to Mallaby Park.

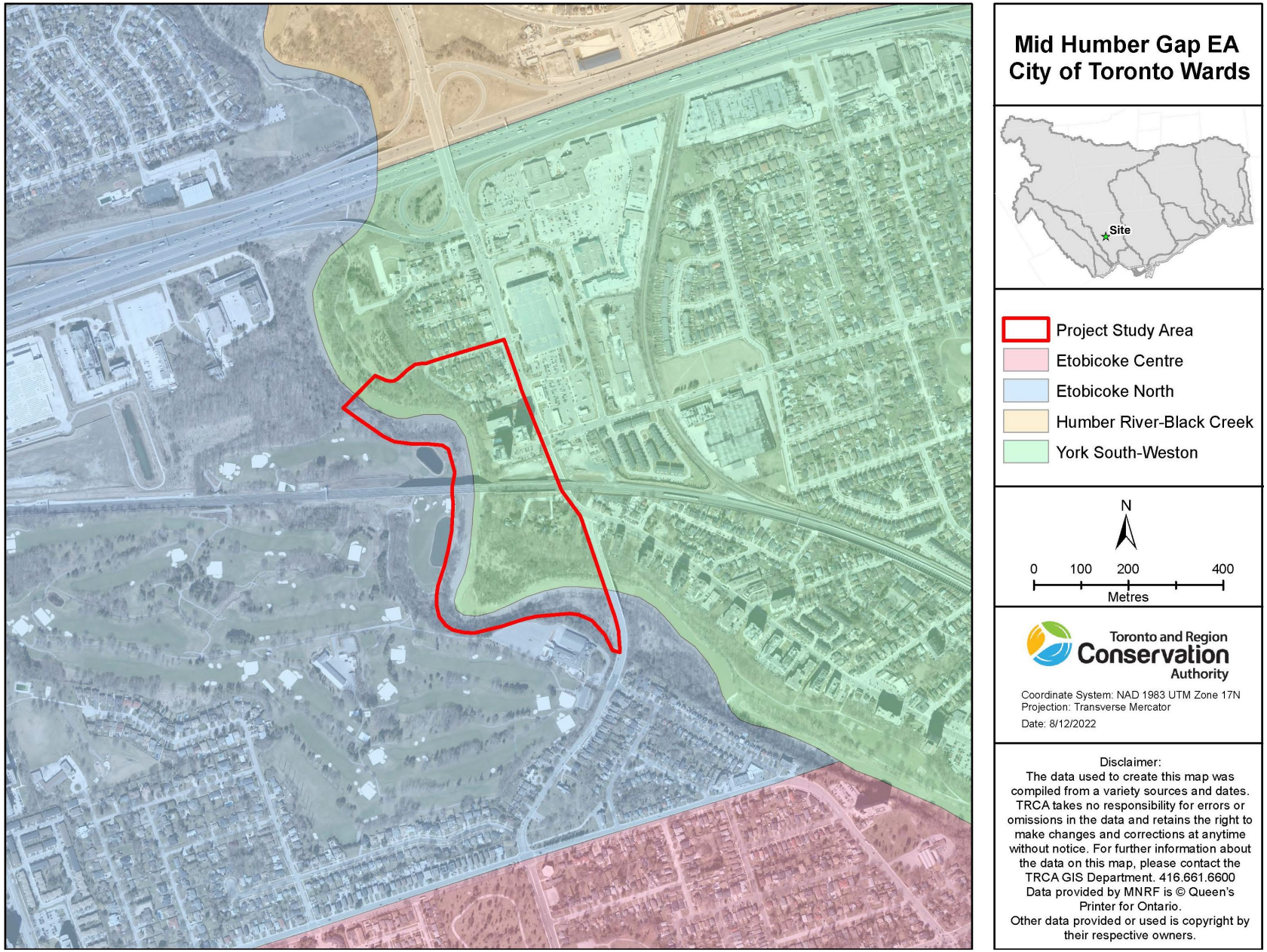

Figure 5-5: City of Toronto Wards within and adjacent to the project area.

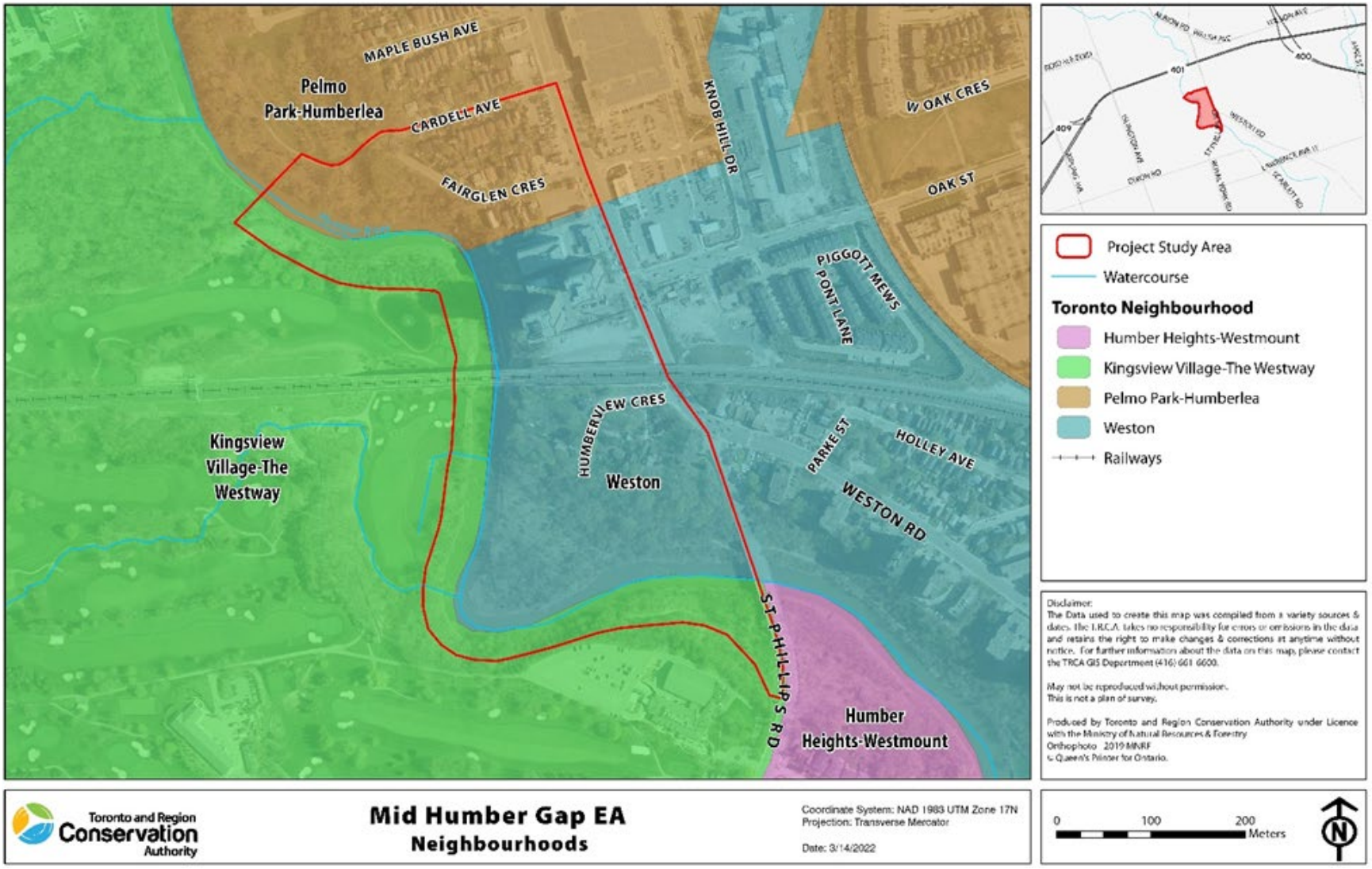

Figure 5-6: Surrounding neighbourhoods in the project area.

5.8.4 Land Uses

In 2022, land use within the Humber River watershed was approximately 54% rural, 33% urban and 32% natural cover. The general land use pattern in the City of Toronto portion of the Humber watershed is urban. South of Steeles Avenue to Lake Ontario, watercourses tend to be in well-incised valleys.

Land uses within the project area include commercial, industrial, high-density residential, recreational open spaces, and roads as shown in Figure 5-7.

5.8.5 Toronto Water Infrastructure, Support Services and Facilities

Within the project limits, there are several existing buried sanitary sewer lines that serve surrounding areas, as shown in Figure 5-8. Construction activities will temporarily cross over infrastructure segments during implementation; however, there will be no impacts to the infrastructure resulting from this activity.

The City, in partnership with TRCA, will be working with Toronto Water to ensure any permanent structures (e.g., boardwalk, bridge abutments) are designed and implemented to mitigate all risks and to allow full access to infrastructure for scheduled maintenance or in the event of an emergency.

There are no ambulance stations, fire stations, cultural spaces, places of worship, police stations, schools, retirement homes, or homeless shelters/drop-in centres within the project limits.

5.8.6 Property Values and Land Ownership

The Toronto Real Estate Board (TREB) stated that the continuation of tight market conditions resulted in a 33.3 % increase in the Multiple Listing Service (MLS) Home Price Index Composite benchmark. The average selling price in Toronto was up in 2021 by 28.6%, to an average of $1,242,793 (TREB, 2022).

The majority of the land within the project area is privately owned, as shown in Figure 5-9. The area along the west side of the project area is primarily owned by the WGCC, and sections to the east are also privately owned. In select sections of the project area, the land and infrastructure fall within TRCA, City of Toronto, and Metrolinx ownership.

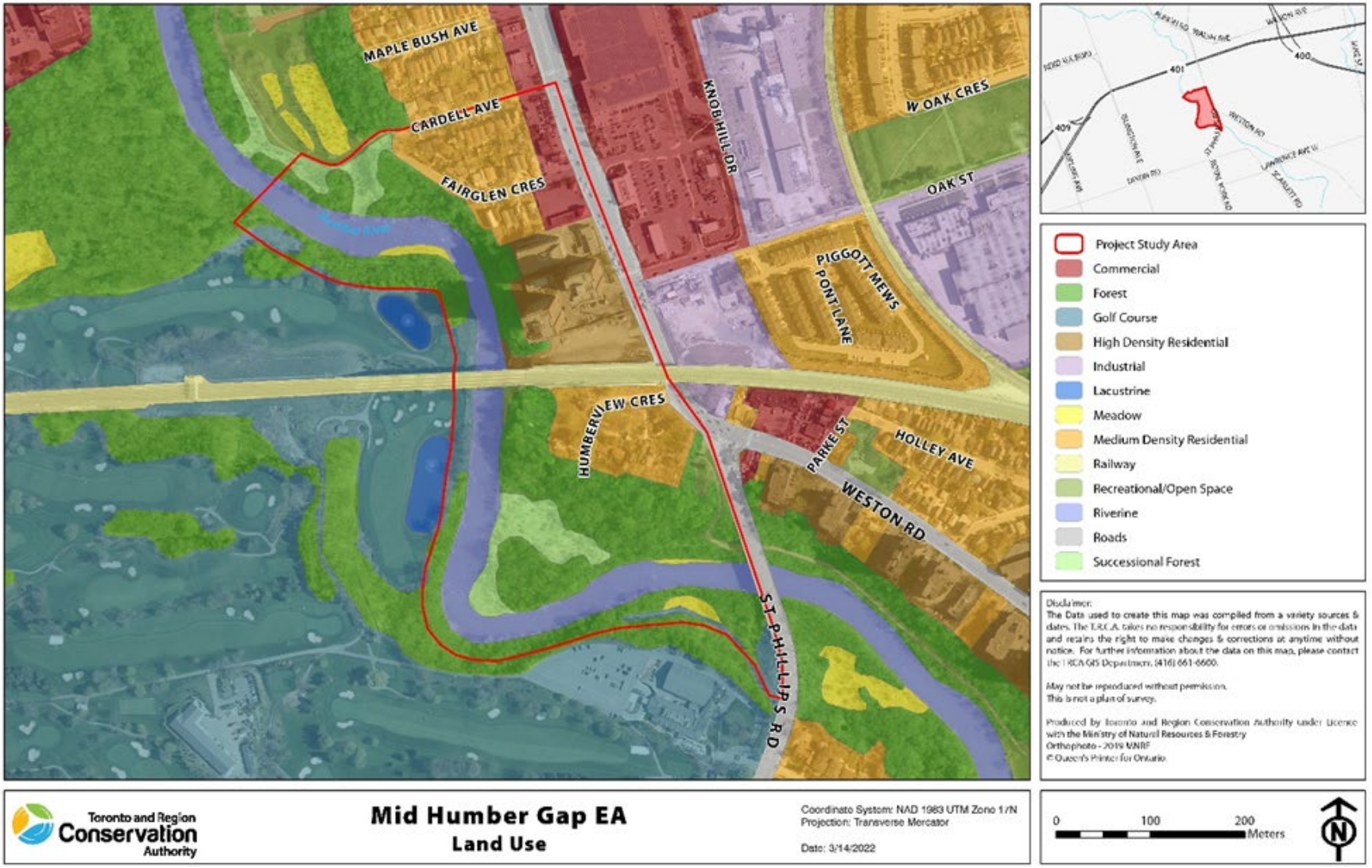

Figure 5-7: Land use within the project area.

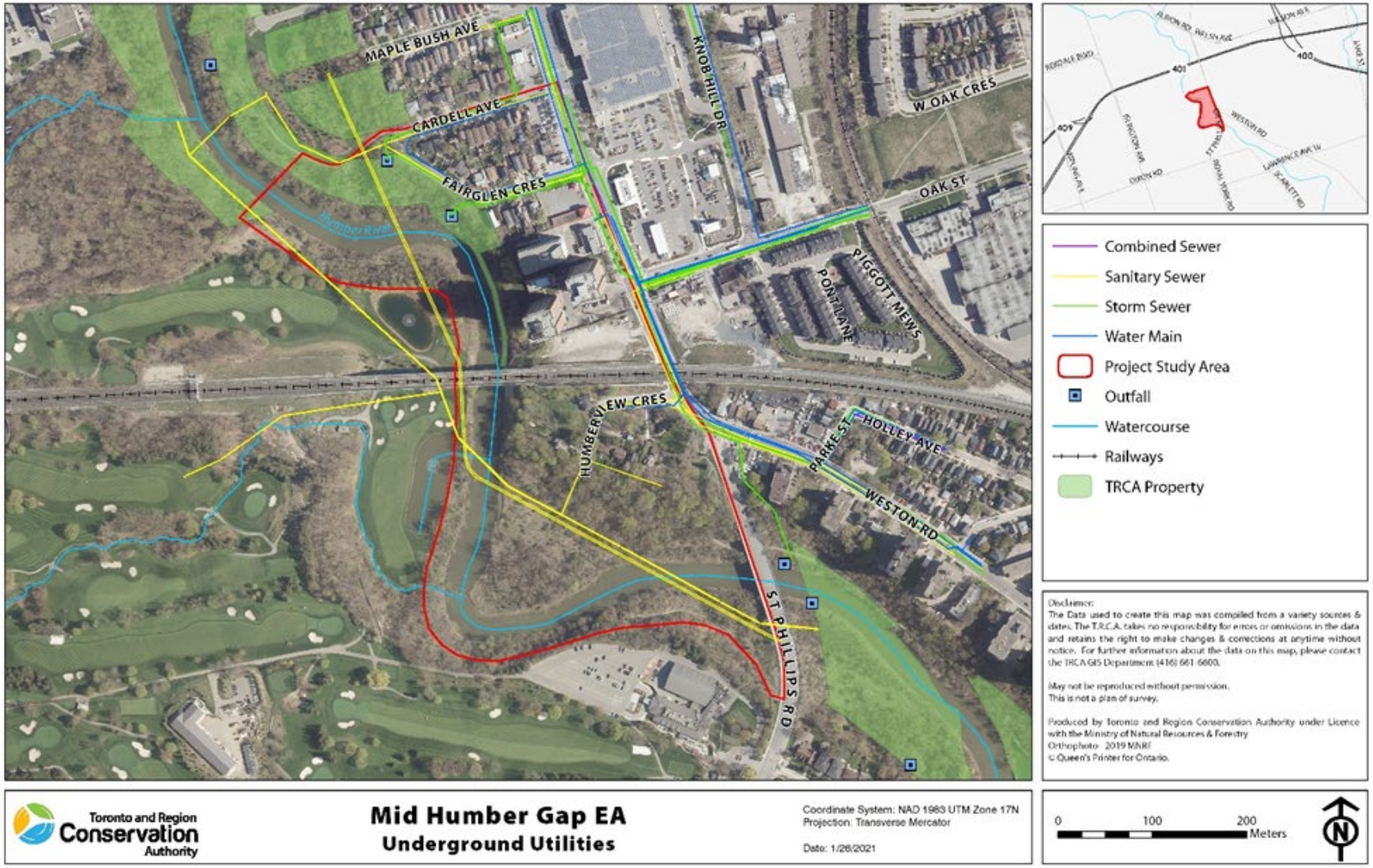

Figure 5-8: City of Toronto infrastructure in the project area.

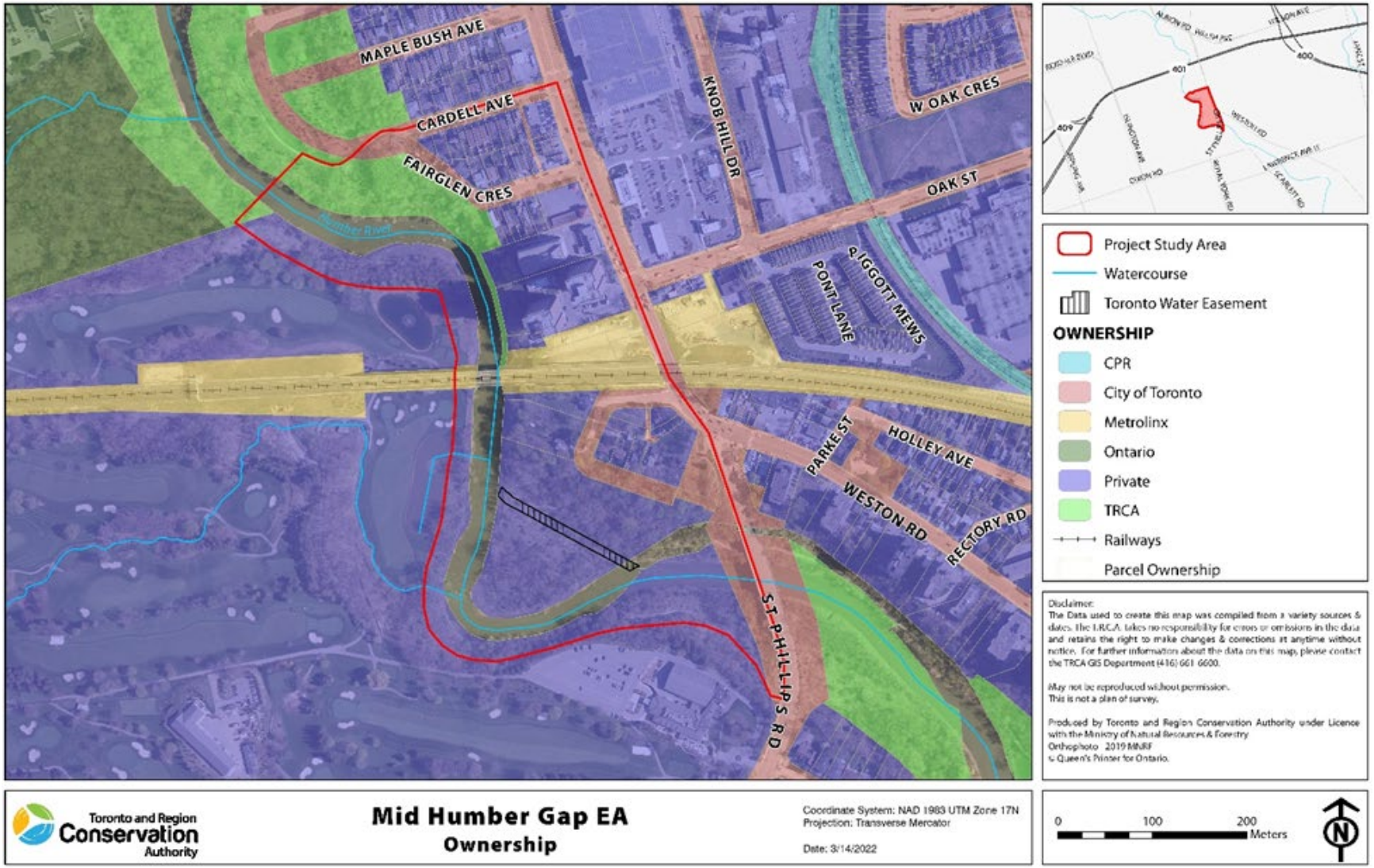

Figure 5-9: Land ownership within the project area.