



**City of Belleville**

# **Loyalist West Secondary Plan Update**

**Interim Report**

**July 2022**

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## Introduction

A Secondary Plan is a policy document that details the long term vision for the growth and development of a specific area within a municipality. It is usually considered to be a part of the Official Plan (OP) for a municipality and is typically introduced by way of amending the OP. While an OP outlines the broader goals for developing the municipality as a whole, a Secondary Plan can help to address community needs at a finer scale by establishing area-specific policies to guide: land use; built form; environmental protection and open space; hazard lands; heritage; and infrastructure and servicing.

The Loyalist Secondary Plan set the policy framework for the growth and development of an area immediately west of the built-up area of Belleville to the year 2030. This land is east of Wallbridge-Loyalist Road, south of Highway 401, and north of the Bay of Quinte, in what was formerly the Township of Sidney and the City of Quinte West.

**Figure 1** (on the following page) shows an aerial map of the study area outlined in red.





Figure 1: Aerial map (true north orientation) of the study area (outlined in red).



**CITY OF BELLEVILLE**  
LOYALIST SECONDARY PLAN UPDATE

**STUDY AREA**  
FIGURE 1

**Legend**

Study Area



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNR  
MAP CREATED BY: ZJB  
MAP CHECKED BY: CE  
MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 21-2538  
STATUS: DRAFT  
DATE: 2022-06-10



The Loyalist Secondary Plan was adopted as an amendment in 2010, as part of the OP from 2002. It contains policies on:

- Land use, specifically residential, employment, institutional, and recreational;
- Development and development phasing;
- infrastructure and utilities;
- Transportation; and,
- Implementation.

The Loyalist Secondary Plan also has five key maps, known as Schedules A through E, to help implement these policies. These Schedules cover land use (Schedule A; refer to **Appendix A**), the water distribution system (Schedule B), the sanitary sewer system (Schedule C), the stormwater management system (Schedule D), and the transportation and trail system (Schedule E; refer to **Appendix B**).

The purpose of this project is to update the Loyalist Secondary Plan, which will be referred to as the Loyalist West Secondary Plan (LWSP), moving forward. The LWSP needs to be updated to make sure it conforms to the City's New OP<sup>1</sup>, which sets the policy framework for Belleville's growth and development to the year 2038. As part of this update, the mapping schedules from 2002 will also need to be updated, and new secondary plan policies may need to be drafted.

## 1.1 Purpose of this Interim Report

The purpose of this Interim Report is to summarize the work that has been completed to date in the first two phases of the project. Phase 1 ("Project Launch") began in September of 2021, and it involved coordinating with the City of Belleville to receive background information and available data on the LWSP area.

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<sup>1</sup> The City's OP was adopted by Council in November of 2021, and it was written to conform to the 2020 update to the Provincial Policy Statement (PPS). When this Interim Report was written, the OP was pending approval by the Ministry of Municipal Affairs and Housing.

Phase 2 (“Existing Conditions”) began in October of 2021 and has consisted of tasks required to better understand the LWSP area and its existing conditions. Such tasks have included:

- a review of background data received from the City;
- a site visit to become more familiarized with the LWSP area;
- a review of and update to the flood limits of Potter’s Creek; and,
- a Public Information Centre (PIC) to consult the public on how they would like the LWSP to be updated to better respond to their local needs—to address rising costs and housing affordability concerns, to focus on community health and wellness, to reflect emerging mobility options, and to identify new approaches to work and prosperity. For a ‘What We Heard’ Engagement Summary of this PIC, please visit the project website at <http://www.belleville.ca/LSPUpdate>.

## 1.2 Background Documents and Data Reviewed

In addition to the Loyalist Secondary Plan (2010), the project team reviewed the following background documents and data:

- Provincial Policy Statement (PPS, 2020);
- County of Hastings OP (2018);
- City of Belleville OP, Council-adopted (2021);
- City of Belleville OP (2002);
- City of Belleville Transportation Master Plan (2014);
- City of Belleville Urban Design Guidelines;
- City of Belleville’s Public Transit Map;
- Aerial and roadside photography and satellite imagery (GoogleEarth, GoogleMaps Street View);
- Significant Wildlife Habitat (SWH) Technical Guide (Ministry of Northern Development, Mines, Natural Resources and Forestry, or MNDMNRF, 2000), including the Eco-region 6E Criterion Schedule (MNDMNRF, 2015); and,
- Online datasets include the following:
  - City of Belleville Online Mapping Application, GeoPortal;
  - eBird Species Maps (2020);
  - Fisheries and Oceans Canada (DFO) Aquatic Species at Risk (SAR) Mapping (2021);



- Government of Canada, SAR public registry website (2019);
- iNaturalist Species Observation Map (2020);
- MNDMNRF Natural Heritage Information Centre (NHIC);
- MNDMNRF Land Information Ontario (LIO);
- Ministry of Environment, Conservation and Parks (MECP) SAR website;
- QC Online Mapping Application, GeoPortal;
- The Ontario Breeding Bird Atlas (OBBA); and,
- The Ontario Reptile and Amphibian Atlas (ORAA).

A summary of what has been learned to date is presented in the following sections.

## 2.0 Summary of Existing Conditions

### 2.1 Site Visit

Some members of the consulting team attended a site visit to better understand the on-the-ground conditions of the LWSP area. They held a brief meeting with some of the project team members from the City, to gather additional insight into existing conditions and potential plans for the LWSP area. Listed below are these insights:

#### **With respect to residential land uses:**

- With respect to the segment of Bell Boulevard within the LWSP area, the City has had discussions around the potential to develop residential areas in pockets rather than in a ribbon arrangement. The arrangement and density of residential uses, however, would be dependent on the findings of Bell Boulevard/North Front Street Corridor Study that is running concurrently with this project.
- At all scales of development, a goal for the City is to create attractive, welcoming streetscapes that are designed to encourage social interactions and connections among those in the community.

#### **With respect to transportation/mobility issues and opportunities:**

- The City would like to add more roads and pathways, where feasible, to improve connectivity through the interior of the LWSP area.
- The City is considering a connecting road between Bridge Street and Avonlough Road, with intentions of continuing that connecting road to Loyalist College. However, an easement would be required for the portion of the road between Avonlough Road and Loyalist College, given that the connecting road would run through the college's land.
- The City has constructed a connection from Harbour Drive up to Potter's Creek. They are also looking to design a cycling path along the hydro corridor's west side, from Hamilton Road to Bell Boulevard. An intersection is already in place, although it is not currently in use; it is blocked with barriers, and beyond these barriers is an undeveloped field.
- As part of the update to the TMP, the City would like to explore the provision of a pedestrian trail along the north side of Potter's Creek.

- There is a possibility of extending the trail network along the waterfront; however, negotiations for an easement would be required in favour of those who own these waterfront lands.
- The City hopes to establish railway crossings to improve north-south connections within the LWSP area.



**Figure 2: An at-grade crossing of the CP rail line.**

**With respect to wastewater/sewage-related servicing:**

- The segment of Moira Street West within the LWSP area is currently not serviced.
- The segment of Dundas Street West within the LWSP area, which is characterized by vehicle dealerships on its north side and two cemeteries on its south side (**Figure 3**), is 60% developed; however, the sewers are at 90% capacity in wet weather. The City has retained a consultant to look at the Palmer pumping station to assess its capacity, although the City has had internal discussions around whether this area should remain within the Urban Serviced Area.



**Figure 3: St. James Cemetery (left image); vehicle dealerships along Dundas Street West (right image).**

- A new sewage pumping station, expected to be completed in 2025/2026, will provide services to the area that lies north of Potters Creek and south of Bell Boulevard. Currently, everything south of Potter’s Creek (e.g., Potter’s Creek subdivision) is serviced with gravity sewers to the Dundas pumping area, while everything north of the new pumping area is serviced with gravity sewers to Bell Boulevard.
- The Susanna Mooney School pumping station is an active pumping station, although it currently only serves Loyalist College. This pumping station is soon to be replaced and expanded in its capacity.
- The lands north of Moira Street West and south of Highway 401 could be serviced over a very long-term planning horizon (e.g., longer than 20 years) and would need appropriate phasing-in.

**With respect to recreational uses:**

- The Parks and Recreation Master Plan identified the need for a new indoor recreation facility.
- The City would like to connect recreational trails to stormwater ponds that are accessible to the public and offer opportunities for passive recreation.
- There is an opportunity to increase the amount of open space within the LWSP area. Some areas are currently designated as Environmental Protection, however they could be designated as Open Space, if they are found to be unconstrained. These areas were discussed but not identified, therefore further investigations would be required.



**With respect to archaeology/cultural heritage:**

- Where there may exist archaeological potential within the LWSP area, an Archaeological Assessment (AA) would be a requirement prior to developing a site.
- Correspondence had been received from a local First Nations community, the Huron-Wendat, which indicated an interest in participating in all future archaeological fieldwork for the project area including Stage 2 AAs, as well as receiving copies of any draft reports for review and comment. This comment may be relevant to other First Nations with an interest in this Secondary Plan, going forward.
- Policies in the update to the LWSP should be drafted to ensure that developers reach out to these local First Nations communities, prior to submitting an application package.
- Lands designated as Environmental Protection will be of interest to MBQ, and development applications near or within these lands should instantly trigger an archaeological assessment.
- The City suggested that a Schedule map be prepared to set the boundary around the land that will require an archaeological assessment, regardless of the type of development.

**2.2 Planning and Urban Design****2.2.1 Land Use**

The land use policies of the Loyalist Secondary Plan address the following land uses: Residential; Non-Residential (e.g., small-scale commercial uses within residential areas); Employment (Commercial Employment; Industrial Employment; Special Employment, where Special Employment policies are for a specific area along the Bell Boulevard corridor); Community Facility; Open Space; and Environmental Protection (Floodplains; Steep Slopes and Other Hazardous Lands; Woodlands, Valley-lands, and Fish and Wildlife Habitat; Environmental Impact Studies and Natural Heritage Study; Pedestrian/Cycling Trail). For the actual land use policies of the Loyalist Secondary Plan, please go to <https://www.belleville.ca/en/do-business/loyalist-secondary-plan.aspx#Section-3-Land-Use>.

Schedule A to the Loyalist Secondary Plan (**Appendix A**) details the land use plan. Land uses for the LWSP area include Residential (symbolized in yellow); Employment Area (symbolized in red); Community Facility (symbolized in blue); Open Space (symbolized in light green); and Environmental Protection (symbolized in dark green). The Schedule also identifies stormwater management facility locations.

In November 2021, Council approved the City’s new OP, which set a new framework for the growth and development of Belleville. With the Loyalist Secondary Plan having been written to align with the 2002 OP, its policies are outdated and no longer reflect the current vision for the City. The Loyalist Secondary Plan was developed at a time when the needs of Belleville and perspective on planning were remarkably different than they are today. The pace of development has increased; however, the Loyalist Secondary Plan was intended to build out at a modest pace of growth. While a certain amount of development has taken place in the LWSP area under the timeframe of the 2002 OP, this update offers an opportunity to responsibly plan and develop the LWSP area in light of rising costs and housing affordability concerns, impacts of climate change, emerging mobility options, new approaches to work and prosperity, and focus on community health and wellness.

## 2.2.2 Proposed and Approved Developments in the Study Area

### 2.2.2.1 Residential Development

Up to 987 residential dwelling units are expected in the LWSP area in the near future, where: the draft of subdivision and rezoning for the Village of Avonlea will provide 695 units; Phase 9A of the Potters Creek subdivision will provide 261 units; and 31 units will be developed as individual dwellings on Dewal Place, Sienna Avenue, and Lehtinen Crescent.

The recently approved Village of Avonlea subdivision is bounded by Potter’s Creek, Avonlough Road, the rail line, and Quinte Christian High School lands on Wallbridge-Loyalist Road. It will provide a total of 695 units, where:

- 260 units will be single-detached dwellings;
- 36 units will be semi-detached dwellings;
- 91 units will be townhouse dwellings;
- 68 units will be horizontal multiple attached dwellings;

- 96 units will be distributed in eight (8) low-rise apartment buildings; and,
- 144 units will be distributed in three (3) high-density apartment buildings.

The Potters Creek subdivision (**Figure 4**) is located in the southwest end of Belleville along Dundas Street West/Highway 2. Phase 9A of the Potters Creek subdivision was recently approved and will provide a total of 261 dwelling units, where:

- 82 units will be single-detached dwellings;
- 14 units will be townhouse units; and,
- 165 units will be three (3) four-storey apartment buildings.



**Figure 4: View of the Potter's Creek subdivision, in progress.**

The project team also reviewed building permits from January, 2021 to February, 2022. A breakdown of 31 residential units that have received building permits are provided in **Table 1** below:

**Table 1: Total Number of Residential Units by Type and Location**

Dwelling Type	Total Number of Units by Location
Single-detached dwelling	<ul style="list-style-type: none"> <li>• Dewal Place: 10 units</li> <li>• Sienna Avenue: 11 units</li> </ul>

Dwelling Type	Total Number of Units by Location
	<ul style="list-style-type: none"> <li>Lehtinen Crescent: 1 unit</li> </ul>
Semi-detached dwelling	<ul style="list-style-type: none"> <li>Dewal Place: 2 units</li> </ul>
Three-unit townhouse	<ul style="list-style-type: none"> <li>Dewal Place: 3 units (i.e., one three-unit townhouse)</li> </ul>
Four-unit townhouse	<ul style="list-style-type: none"> <li>Dewal Place: 4 units (i.e., one four-unit townhouse)</li> </ul>

### 2.2.2.2 Non-Residential Development

There may be up to a total of 22,862 square feet (approximately 2,124 square metres) of non-residential development developed in the near future for the LWSP area:

- a permit has been provided to allow for the construction of a 16,404 square foot building for the Quinte Humane Society and installing its septic system on Wallbridge-Loyalist Road;
- an OP Amendment to the Loyalist Secondary Plan and rezoning have been approved to permit a public facility (proposed to be approximately 6,458 square feet) consisting of offices, meeting rooms, co-working space, a conference room, and potential training space; and,
- a rezoning has been approved to permit a retail distribution business for recreational vehicle products, including the assembly and manufacturing of boat docks and accessories, within the existing building at 902 Wallbridge-Loyalist Road.

### 2.2.3 Urban Design

With respect to urban design, there are no existing urban design guidelines that are specific to the LWSP area; however, the City is currently undertaking an exercise to prepare urban design guidelines that are intended to be applied in a city-wide context. These guidelines will be used to inform the urban design of the LWSP area.



## 2.3 Transportation

### 2.3.1 Roadways

Highway 401, a provincial highway under the jurisdiction of the Ministry of Transportation Ontario (MTO), is immediately north of Bell Boulevard and runs east-west through the LWSP area. While located outside of the LWSP area, Sidney Street connects and runs perpendicular to Highway 401, which offers vehicular connections to three main east-west connections across the LWSP area, namely Bell Boulevard, Moira Street West, and Dundas Street West.

On Schedule C to the OP, existing roadways that run through the LWSP area are planned as follows:

- Bridge Street West, Dundas Street West, Moira Street West, and Wallbridge Loyalist Road are planned as arterial roads; and,
- Bell Boulevard, Avondale Road, Avonlough Road, Palmer Road<sup>2</sup>, and Sienna Avenue are planned as collector roads.
- Sienna Avenue is not pictured, as it did not exist when the Loyalist Secondary Plan was adopted.

Schedule E to the Loyalist Secondary Plan (**Appendix B**) details the transportation and trail system. On Schedule E, the transportation network is similar to what is on Schedule C to the OP, in that:

- Bridge Street West, Dundas Street West, and Moira Street West are planned as arterial roads; and,
- Avonlough Road is planned as a collector road.

In contrast to the transportation network on Schedule C to the OP, on Schedule E to the Loyalist Secondary Plan:

- Bell Boulevard is planned as an arterial road, rather than a collector;

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<sup>2</sup> While Palmer Road is not in the LWSP area, it lies immediately outside of the study area's eastern boundary and may connect to future roads within the LWSP area.

- Wallbridge-Loyalist Road is not included within the boundary for the secondary plan area;
- Sienna Road is not symbolized as a collector or arterial road;
- Marshall Road is planned to extend towards the easement for Bell Canada, connect to Avonlough Road, and continue to intersect Wallbridge-Loyalist Road, immediately north of the CP rail line.

### 2.3.2 Active Transportation

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#### 2.3.2.1 Pedestrian Connections

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With respect to pedestrian connections, there is a 450-metre multi-use (pedestrian and cycling) pathway and bridge that was recently built and connects Loyalist College to Avonlough Road (**Figure 5**). This route was recommended in the Transportation Master Plan as part of a Bridge Street West cycling route that would provide a direct link for cyclists and students to the College (for more information, please go to Loyalist College’s article titled [“Loyalist College to Build Pedestrian/Cyclist Path and Bridge Across Potter’s Creek”](#)).



**Figure 5: View of the pedestrian/cycling path that connects Loyalist College (pictured) to Avonlough Road.**

For arterial roads and collector roads, the OP (Section 6.5 e) encourages sidewalks on both sides of the road. For example, the segment of the Dundas Street West arterial that falls within the LWSP area boundary has no sidewalks to encourage walking, meaning that sidewalks will need to be implemented during the lifespan of the OP.



**Figure 6: Dundas Street West, facing east**

With respect to off-road trails, there is none within the LWSP area itself. However, immediately west of Wallbridge-Loyalist Road are roughly 7 kilometres of trails within Potter’s Creek Conservation Area, and these trails extend as far south as the Bay of Quinte and as far north as Loyalist College (for Quinte Conservation’s map of Potter’s Creek trails, go to <https://www.quinteconservation.ca/en/outdoor-spaces/resources/Documents/Potters-Creek.pdf>).

### 2.3.2.2 Cycling Routes

On Schedule D to the OP, the majority of the bike routes in the LWSP area are planned within its southern half (i.e., south of Moira Street West). Most of these routes are planned to be built with development. An example of this type of route is one that is proposed to be developed along Potter’s Creek, which would begin at the intersection of Dundas Street West and Wallbridge-Loyalist Road, extend northbound to the creek, and then connect to Moira Street West via Avonlough Road and Marshall Road. This route would connect with two other routes: one that is proposed to be developed along



the waterfront over the long term (to 2031), as well as one that is proposed to be developed along Dundas Street West, beyond 2031.

While Schedule E to the Loyalist Secondary Plan (refer to **Appendix B**) does not provide the phasing of its trails, it does compare to that of Schedule D to the OP. On both schedules, a pedestrian/cycling trail is planned to start at the south end of Avondale Road and run westbound along the waterfront. It would then travel north along Wallbridge-Loyalist Road and towards Potter's Creek, where the trail would then run along the south side of the creek and cross Bridge Street West. However, in contrast to Schedule D to the OP, Schedule E to the Loyalist Secondary Plan shows that this trail would extend up Marshall Road to Moira Street West, while Schedule D to the OP shows that the trail would branch into two trails, where Potter's Creek branches into two of its tributaries. These two trails would both extend to Moira Road West via Avonlough Road and Marshall Road, respectively.

### 2.3.3 Public Transit Services and Infrastructure

Belleville Transit has routes that run through the LWSP area or along its boundary:

- Route 4 is predominantly outside of the LWSP area, but it extends along Bell Boulevard to Shorelines Casino;
- Route 6 is predominantly outside of the LWSP area, but parts of the route travel along Palmer Road, Dundas Street West, and Avondale Road (to Harder Drive);
- Route 7 (**Figure 7**) travels along Dundas Street West, Wallbridge-Loyalist Road, and Moira Street West; and,
- Route 10 travels along Bridge Street West to Marshall Road, Moira Street West, and Wallbridge-Loyalist Road (to Loyalist College only).

Loyalist College is a main stop for Routes 7 and 10, with Route 7 connecting users to the transit terminal downtown, at City Hall. Route 10 would also connect users to Quinte Mall and the Walmart, both of which are north of Bell Boulevard and outside of the LWSP area.

With respect to transit infrastructure in the LWSP area:

- transit stop signage is the same (a small orange square with a black bus in the centre and “bus stop” at the bottom, as pictured on the transit shelter in **Figure 7**, right image), regardless of the route number;
- there are no vehicular lanes dedicated to public transit;
- some stops have space designated for on- and off-boarding (**Figure 7**, left image), while others do not; and,
- some major stops (e.g., Loyalist College) have transit shelters with seating (**Figure 7**, right image).



**Figure 7: A Route 7 bus stop on Wallbridge-Loyalist Road near Dundas Street West, facing north (left image); a transit shelter at Loyalist College (right image).**

#### 2.3.4 Railways

Two rail lines run through the LWSP area. A CN rail line runs parallel with Moira Street West (**Figure 8**, left image), and a CP rail line also runs along the waterfront, south of Dundas Street West (**Figure 8**, right image).



**Figure 8: Westerly view of Moira Street West, with the CN rail line running parallel along the road's south edge (left image); easterly view of the CP rail line that runs South of Dundas Street West (right image).**

## 2.4 Natural Heritage

The PPS (2020) sets forth a vision for Ontario's land use planning system by managing and directing land use to achieve efficient development and land use patterns, wise use and management of resources, and protecting public health and safety. Section 2 of the PPS provides for protection and management of natural heritage resources, which include:

- Significant wetlands;
- Significant woodlands;
- Significant valleylands;
- SWH;
- Significant areas of natural and scientific interest (ANSIs);
- Fish habitat;
- Habitat of Endangered or Threatened species (species listed provincially under the Endangered Species Act (2007) as identified on the SAR in Ontario list);
- Sensitive surface water features; and,
- Sensitive ground water features.

### 2.4.1 Approach

Dillon understands that the update to the Plan must include an appropriate ecological due diligence approach that captures and assesses the variety of Natural Heritage

Features (NHF) that may occur within the LWSP area. Dillon conducted a desktop review of mapping, available aerial imagery and relevant background information in the fall of 2021 for the LWSP area (**Figure 1** on page 6) to identify the potential for significant NHFs. The results of the background review were used to assist in scoping the 2022 field program and helped form a Terms of Reference (TOR). The TOR was finalized on January 11, 2022, based on comments and reviews from the City and Quinte Conservation (QC). The TOR identifies the appropriate environmental studies that are required in the preparation of a Natural Heritage Report (NHR) in support of the LWSP update.

#### 2.4.2 Background Review Results

A review of the City's Loyalist Secondary Plan reveals that the LWSP area is primarily designated as Residential with Employment Areas concentrated along the north and south extents of the LWSP area associated with being in proximity to Highway 401 and Dundas Street West. As stated in Section 2.2.1 above, Environmental Protection areas occur in association with Potter's Creek, which meanders through the LWSP area:

The LWSP area is located primarily within the Potter Creek Watershed, which drains a 31-square-kilometre area in the City of Belleville and adjoining Township of Sidney (Moir River Conservation Authority, 1994). Six tributaries flow into Potter's Creek before it discharges into the Bay of Quinte near the community of Bayside. Potter's Creek and its associated tributaries likely contain fish and provide fish habitat.





**Figure 9: View of Potter's Creek running adjacent to Avonlough Road, facing north.**

Based on a review of aerial photography and secondary sources, woodlands and unevaluated wetlands align with the Environmental Protection areas identified in the City's Loyalist Secondary Plan and occur adjacent to the alignment of Potter's Creek, which meanders and trisects the center of the LWSP area to form the main corridors of the natural environment within the central and southern portion of the LWSP area. In addition, a mosaic of unevaluated wetlands and coniferous plantation occur as large tracts within the northeast portion of the LWSP area. With the exception to one Non-Significant Provincially Evaluated Wetland (NSPEW) that occurs east of Avonlough Road and west of Marshall Road, all of the wetlands within the LWSP area are currently considered unevaluated wetlands. The remaining natural areas occur as agricultural fields, likely used for perennial and annual row crops, while the southern portion of the LWSP area has been developed for commercial, residential, and industrial uses. Other potential NHFs such as valleylands or Areas of Natural and Scientific Interest (ANSI) were not identified within the LWSP area. A review of the City's draft OP indicates that wetlands, including the proposed Significant Wetlands and the extent of the proposed

Natural Heritage System, align with the areas described above and those that are designated as Environmental Protection under the City's Loyalist Secondary Plan.

#### 2.4.3 Species of Conservation Concern and Species at Risk

The Significant Wildlife Habitat Technical Guide (MNDMNRF, 2000) defines Species of Conservation Concern as globally, nationally, provincially, regionally, or locally rare (S-Rank of S1, S2, or S3) as well as federally endangered and threatened species, but they do not include SAR (listed as endangered or threatened) under the ESA. Through background review, several Species of Conservation Concern and SAR have been identified with the potential to occur within the vicinity of the LWSP area. Due to the presence of meadows, woodlands, and wetlands, the LWSP area has the potential to contain a variety of candidate SWH and/or SAR and SAR habitat. The potential for SWH and SAR and SAR habitat will be examined through the field program proposed for the spring of 2022.

#### 2.4.4 Next Steps

The results of the background review were used to assist in scoping the 2022 NHR field program. In order to further investigate and characterize the presence and extents of NHFs within the LWSP area, baseline field studies detailed in the January 11, 2022 TOR are proposed.

The 2022 field studies program is anticipated to commence in February 2022 and conclude in the fall of 2022, followed by the preparation of the NHR. The NHR will summarize the results of the field studies program, which will ultimately be incorporated into the Draft Secondary Plan Background Study for the Loyalist Secondary Plan Update's OP Amendment and Urban Design Guideline Assessment as part of the requirements needed to fulfil the Municipal Class EA process.

### 2.5 Stormwater Servicing Infrastructure

The LWSP area is currently predominately agricultural/vacant land, although there are low density residential subdivisions and commercial properties scattered throughout the LWSP area and Loyalist College. A high level review of existing stormwater servicing has been conducted to gain an understanding of existing conditions and if there is potential for existing infrastructure to support future development. Background

information available for Dillon’s review includes as-built drawings for roadways within the LWSP area, as well as publicly available information such as maps and street view.

Based on this review, the major thoroughways, such as Avonlough Road and Moira Street do not have storm sewers and are serviced by roadside ditches and culverts. Some local residential roads appear to include storm sewers, which have been reviewed utilizing the as-built drawings available. Based on the diameter of these storm sewers as shown in these drawings, they do not appear to have been sized in consideration of future development servicing. The existing storm sewers typically outlet into nearby open channels or the Dundas Street West storm sewer, which convey stormwater to Potters Creek and/or ultimately into the Bay of Quinte.

## 2.6 Water and Wastewater

### 2.6.1 Source Water

The LWSP area source water is within the QC area (Quinte Bay). This conservation authority published the Quinte Region Source Protection Plan (2019) (Protection Plan), which is used to protect municipal drinking water from overuse and contamination, to help ensure the quality of the drinking water. It does so through area identification to inform municipalities where appropriate Zoning By-laws and restrictions are to be followed.

To the City of Belleville specifically, there are four (4) types of vulnerable drinking water areas identified for protection in the Protection Plan. The four types of vulnerable drinking water areas include:

- Surface Water Intake Protection Zones;
- Wellhead Protection Areas;
- Highly Vulnerable Aquifers; and,
- Significant Groundwater Recharge Areas.

Schedule G in the Protection Plan illustrates the designated vulnerable areas and highlights that the LWSP area is part of the highly vulnerable aquifers.

## Municipal Servicing

The water supply system for the City of Belleville (City) includes water treatment plants (WTP), an elevated water storage tank, in-ground reservoirs, a series of transmission mains, and booster pumping stations. The City draws source water from the Bay of Quinte and is serviced by two WTPs. The majority of water is treated at the Gerry O'Connor Water Treatment Plant, which has a capacity of 72,000,000 litres per day. The Point Anne Water Treatment Plant services a small neighbourhood in the City and is unlikely to service the LWSP area. Water is distributed to three areas: the city's urban area, Ward 2 (Thurlow), and Prince Edward County.

The Belleville Wastewater Treatment Plant (WWTP) is owned by the City of Belleville and operated by Ontario Clean Water Agency (OCWA). The WWTP is a conventional activated sludge system with a rated daily flow (ADF) capacity of 54,500 cubic metres per day, a rated peak daily flow (PDF) capacity of 163,400 cubic metres per day through primary treatment and 92,000 cubic metres per day and secondary treatment.

Wastewater is collected by a gravity sewer collection system which is supplemented by pumping stations and pressurized sewers based on the City's topography which OCWA also operate.

Existing water distribution and wastewater collection sewers service the area to the east of the LWSP area. An Infrastructure Phasing Strategy Report is currently in progress and will help inform future servicing for the LWSP area, where it will be reviewed and incorporated into the upcoming work for the LWSP update.



## 3.0

## Potter's Creek Flood Limit Update

Regulatory floodplain limits are one of several environmental hazards that are used to establish development limits within the secondary plans. These study limits are located within the Potter's Creek Watershed, in which the Potter's Creek Master Drainage Plan was adopted in 2008. Since the adoption of the latest master drainage plan, regional intensity-duration-frequency (IDF) curves have been updated with more recent data to reflect changes in climate. As part of this study, the hydrologic model adopted as part of the Potter's Creek Master Drainage Plan has been updated with latest IDF information available, and the results of this update are to be used to assess the floodplain limits.

To assess the floodplain limits, the updated hydrologic model results will be used in the hydraulic floodplain model. As the existing model is in HEC-2 format – a modelling software no longer commonly used – a HEC-RAS model is being prepared for this analysis. The results from this modeling will be used to better understand the existing floodplain extents and to determine approximate development limits. The following subsections provide an update on the hydrologic and hydraulic modeling progress.

## 3.1

### Background Information Collection and Review

The following documents were reviewed to assist with the development of the hydrologic hydraulic model:

- DEM derived from LiDAR (LEAP 2009 6e15 DEM) was provided by QC, and used to create cross sections within the 1D hydraulic model (HEC-RAS);
- HEC-2 hydraulic model was used to provide crossing information, and low flow channel shape, and slope;
- OSIM inventory sheets were used to provide crossing information;
- HEC-HMS hydrologic model was used to develop the hydrology for the LWSP area;
- MTO IDF lookup was used to obtain the most recent IDF information for the LWSP area.

## 3.1.1

**Remaining Data Gaps**

The following data gaps still remain:

- River channel geometry was not confirmed in the field, instead, the HEC-2 model was used to estimate the low flow channel shape and slope; and,
- Several watercourse crossings are missing information; in HEC-2 all crossings were modelled as bridges and did not provide appropriate geometry for culverts.

## 3.2

**Hydrologic Modelling Approach**

The previous hydrologic model used a 30% AES 12-hour storm distribution with a total of 78.12 millimetres of precipitation for the 1:100 year event. Based on the updated 2021 MTO IDF curves, a 12-hour 1:100 year storm would have a total of 98.4 millimetres of precipitation. The model was updated with current precipitation data and resulted in increased flows throughout the watershed. A summary of the changes in flow rate are presented in **Table 2**; refer to **Figure 10** for comparison point locations.

**Table 2 - Summary of Flow Information**

<b>Location</b>	<b>Previous Peak Flow Rate (cubic metres/second)</b>	<b>Updated Peak Flow Rate (cubic metres/second)</b>	<b>Increase/(decrease) in Peak Flow Rate (cubic metres/second)</b>
PCT-R1-1	5.2	6.0	0.8
TB-R1-1	11.4	19.7	8.3
TA-R1-1	2.3	1.2	(1.1)
PC-R4-1	21.4	31.9	10.5
PC-R3-1	32.6	51.0	18.4
PC-R3-2	33.5	52.3	18.8
PC-R3-3	37.6	53.6	16.0
PC-R2-1	38.0	56.5	18.5
PC-R1-1	39.5	58.8	19.3

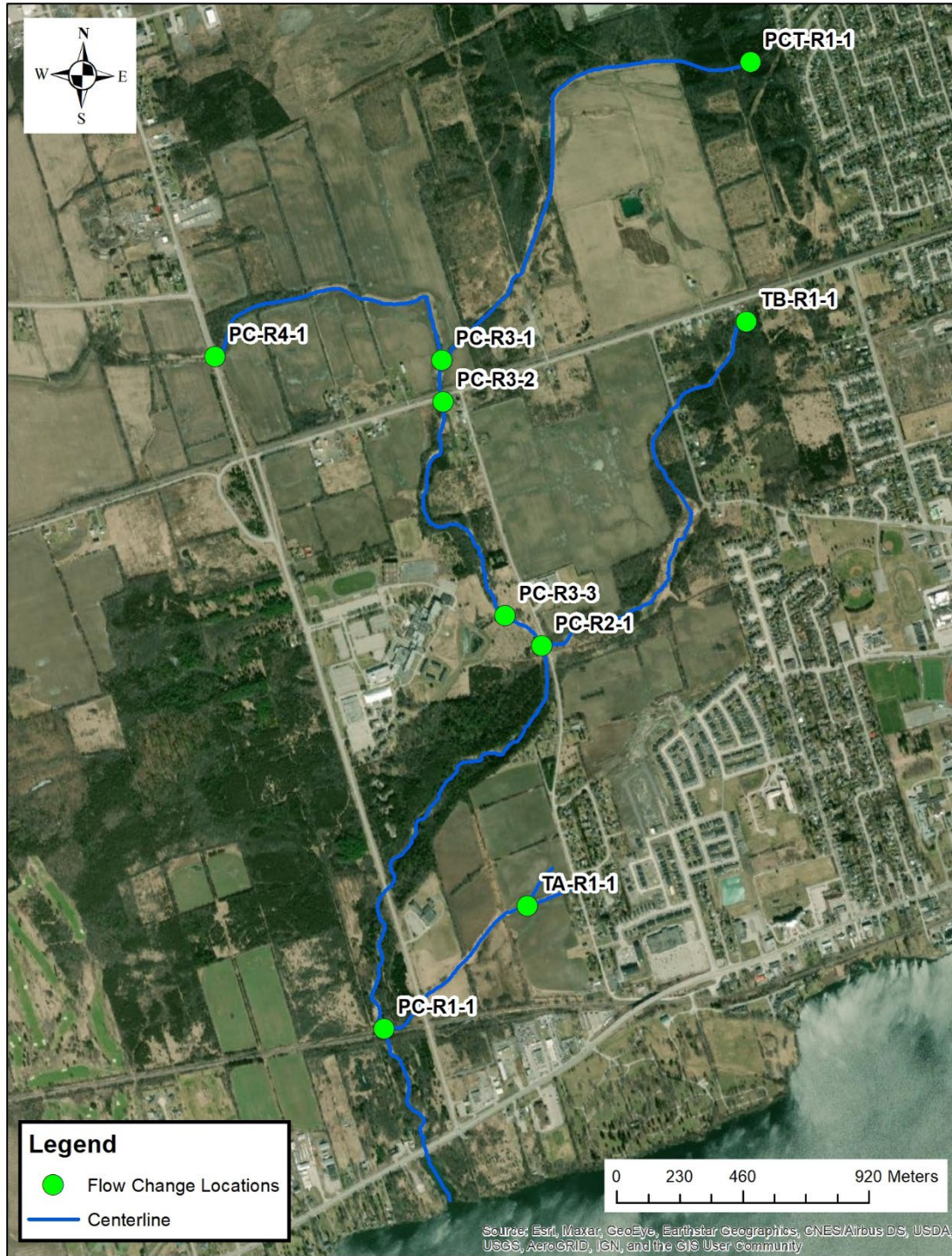


Figure 10: Flow Change Locations

### 3.3 Hydraulic Modelling Approach

HEC-RAS version 6.1.0 was used to create a new hydraulic model for Potter Creek watershed. A digital elevation model (DEM) derived from LiDAR was used to create a terrain file within HEC-RAS RAS-mapper. Since LiDAR does not penetrate water, the terrain modification tool was utilized to add low flow channels to the terrain file. A combination of trapezoidal and triangular channel shapes was used based on the geometry data from the HEC-2 model. The assigned slope for each low flow channel was based off of the HEC-2 model. All elevations from the HEC-2 model were shifted to match the datum of the LiDAR; CGVD2013.

Cross sections were generated within HEC-RAS based on the modified terrain file described above at approximately 50-metre intervals. Additional cross sections were added and moved as needed. Manning's roughness values were assigned to each cross section based on land use. The values used are summarized in **Table 3**.

**Table 3 - Summary of Manning's n Values Used in Hydraulic Model**

Land Use	Manning's n
Low Flow Channel	0.045
Short Grass	0.030
Mature Row Crops	0.050
Forest	0.100

Structures were added based on available information from both the HEC-2 model and the OSIM inventory sheets. Placeholders were added where information about structures was incomplete. Once the required data is obtained, these placeholders will be updated with field verified data.

### 3.4 Floodplain Mapping Next Steps

- Collect missing watercourse crossing data and incorporate to the hydraulic model;
- Delineate updated floodplain limits based on the final existing conditions model; and,
- Later stages of the project: Review future conditions of the current hydrologic model and compare them to future conditions of the secondary plan. If required, update future conditions hydrologic model based on the secondary plan.



## Conclusion

This interim report sets the ground work for the LWSP update as it relates to understanding the area's existing conditions. This ground work will help to inform the next steps in the project that may have implications to the Secondary Plan, where the next steps include:

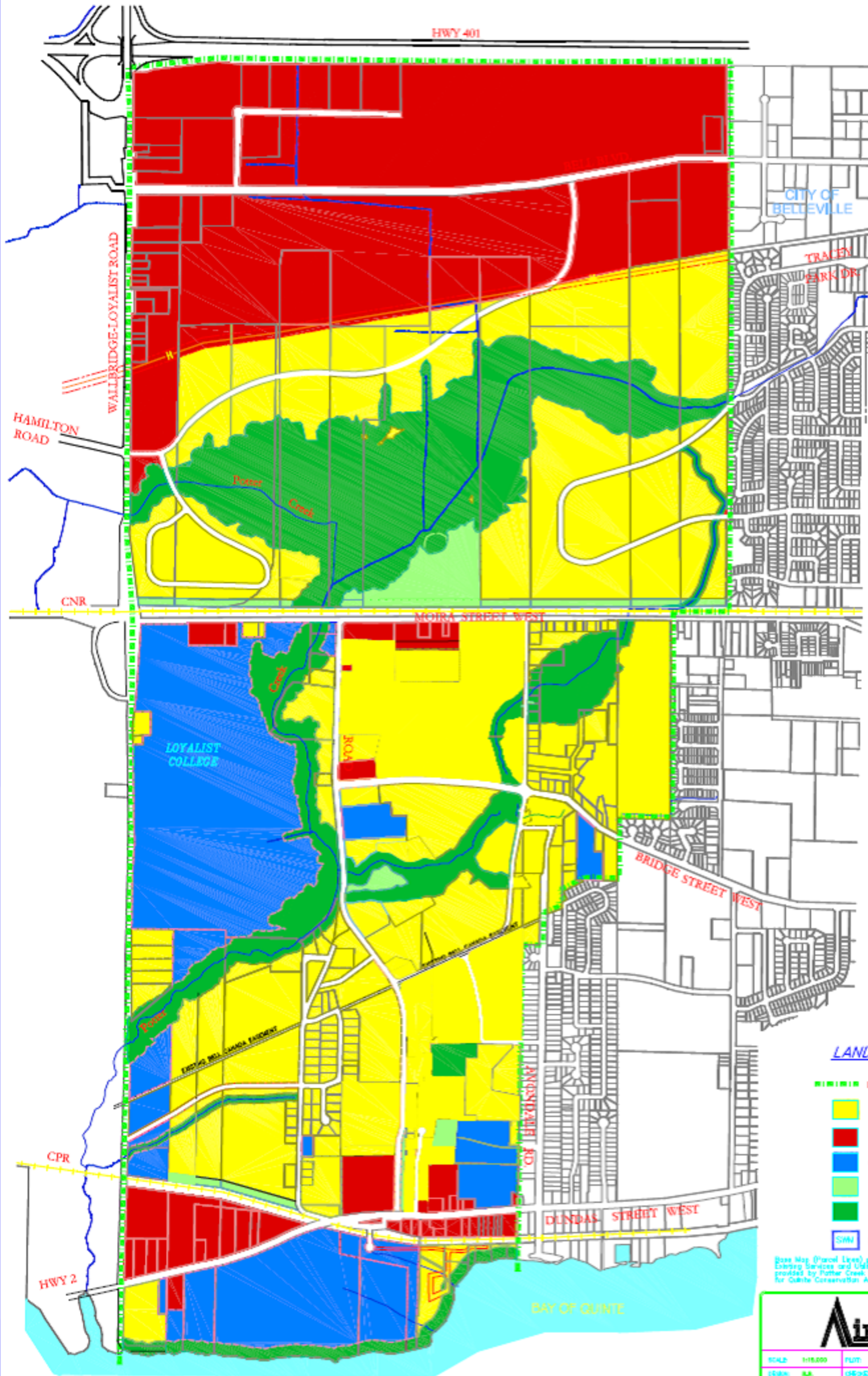
- posting this interim report to the project's website for its review by the public and stakeholders, where the feedback received would be incorporated into a Vision Statement for the update to the LWSP;
- preparing a set of criteria to inform the development of the preliminary concept plans for the LWSP area, which consider the anticipated future conditions for the LWSP area, including updated floodplain mapping;
- preparing the preliminary concept plan for the LWSP area;
- refining the preferred preliminary concept, based on input received from the TAC and stakeholders; and,
- hosting another public engagement event to present the preliminary land use concept to the public and gain feedback.

As the Loyalist Secondary Plan was adopted at a time when growth was intended to be more modest, its update is intended to account for a faster pace of development, as well as respond to other pressures that the City is facing today (rising costs, housing affordability concerns, climate change impacts, etc.). The LWSP update, therefore, offers an opportunity for the City to better align the secondary plan's policies with those of Belleville's recently adopted OP, in a way that would facilitate the responsible planning and development of the LWSP area.

## **Appendix A**

### **Schedule A to the Loyalist Secondary Plan**

# LOYALIST SECONDARY PLAN SCHEDULE A - LAND USE



### LAND USE LEGEND

- LOYALIST SECONDARY PLAN AREA
- RESIDENTIAL
- EMPLOYMENT AREA
- COMMUNITY FACILITY
- OPEN SPACE
- ENVIRONMENTAL PROTECTION
- SWM
- STORMWATER MANAGEMENT FACILITY

Base Map (Parcel Lines) provided by City of Belleville 2004.  
Existing Services and Utilities, Environmental Protection Areas  
provided by Potter Creek Subwatershed Plan, which was prepared  
for Ontario Conservation Authority in November of 1994.

**Anley** CONSULTING ENGINEERS PLANNERS

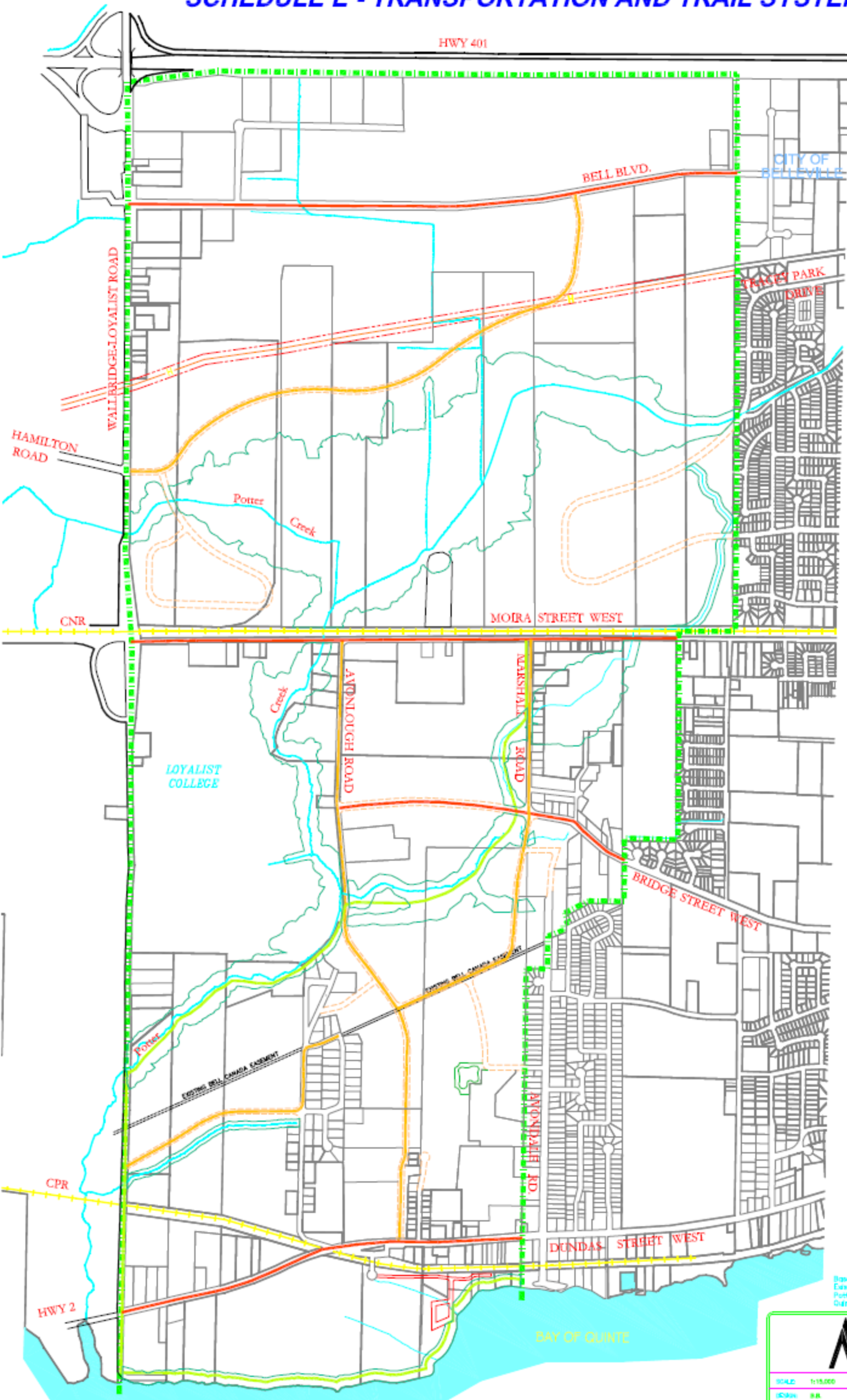
SCALE: 1:15,000	PLOT: 1/40	JOB NO: 24519-1
DESIGN: S.B.	DRAWN: W.B.	DWG. 24519-1
DATE: NOV.	DATE: AUG 22, 2007	

# Appendix B

## Schedule E to the Loyalist Secondary Plan



# LOYALIST SECONDARY PLAN SCHEDULE E - TRANSPORTATION AND TRAIL SYSTEM



### LEGEND

- ▬▬▬▬▬▬ LOYALIST SECONDARY PLAN AREA
- ~ WATERCOURSE
- ▬▬▬▬▬▬ PEDESTRIAN/BICYCLE TRAIL
- ▬▬▬▬▬▬ ARTERIAL ROAD
- ▬▬▬▬▬▬ COLLECTOR ROAD
- ▬▬▬▬▬▬ H ——— EXISTING HYDRO LINE
- - - - - HYDRO RIGHT-OF-WAY

Base Map (Parcel Lines) provided by City of Belleville 200- Existing Services and Utilities provided by Potter Creek Subwatershed Plan, which was prepared for 4 Quate Conservation Authority in November of 1994.

**Ainley** CONSULTING ENGINEERS PLANNERS

SCALE: 1:15,000	PLOT: 1/12	JOB NO: 24519-1
DESIGN: S.B.	DRAWN: R.B.	DWG. 24519-1
DRAWN: M.W./C.S.	DATE: AUG. 22, 2007	