

East Smithville Secondary Plan Background Review

Phase 1- REVISED

East Smithville Secondary Plan
Township of West Lincoln

Date:

February 2021

Prepared for:

Township of West Lincoln

Prepared by:

MacNaughton Hermesen Britton Clarkson Planning Limited (MHBC)

540 Bingemans Centre Drive, Suite 200

Kitchener, Ontario

T: 519.576.3650

F: 519.576.0121

Our File 08234X

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1.0 Introduction

MacNaughton Hermesen Britton Clarkson (“MHBC”), along with C.F. Crozier & Associates Consulting Engineering (“Crozier”) was retained by the Township of West Lincoln, in association with the Region of Niagara, to undertake a secondary plan for the East Smithville lands to guide future growth in this area of Smithville. The subject lands comprise an approximate area of 34 hectares. The subject lands are located in eastern Smithville and are surrounded by existing commercial uses to the west, the Canadian Pacific Rail Line (“CP Rail”) and industrial uses to the north, primarily undeveloped agricultural land to the east, and residential/agricultural land uses to the south. It is the intent of the Township of West Lincoln that these lands be developed with a mix of uses and densities and that the Secondary Plan Area acts as a future gateway into the Settlement Area from the east. An aerial photo showing the limits of the subject lands and its surrounding area is included as **Figure 1**.

The subject lands are identified in the Township of West Lincoln’s Official Plan as being within the Smithville Urban Boundary but outside of the Built Boundary. Presently, the lands are designated to accommodate primarily employment and service commercial uses, with some medium density residential uses to the south of St. Catharines Street. The lands are also designated as “Greenfield Area” by the Township Official Plan.

The Township has observed that demand for new housing and related commercial development is rising within the urban boundary of Smithville. With a growing population and increased demand within the Urban Area, the Township has initiated an Urban Boundary Expansion Study for the Smithville Settlement Area. Along with the Urban Boundary Expansion Study, the Township has initiated a review of existing undeveloped parcels of land within the existing urban boundary and their current permissions. The East Smithville lands are one of the last remaining undeveloped Greenfield Areas within the Urban Boundary. Policy 5.10 (b) of the Official Plan states that *“All Greenfield Areas will require a Secondary Plan prior to development.”* As a result, the Township has commenced the process to develop a Secondary Plan for the subject lands prior to any future development to determine the best and most efficient type of development for the area to accommodate anticipated growth.

This Report represents the culmination of the first phase of the Secondary Plan process, which effectively reviewed and analyzed the current conditions of the subject lands and led to the preparation of preliminary land use concepts for the Secondary Plan area.

1.1 Purpose of Project

The purpose of this project is to determine the best land use pattern for the East Smithville Study Area in order to develop a Secondary Plan that will guide development.

The East Smithville Secondary Plan project is divided into three phases:

- **Phase 1** involves the preparation of a background research and analysis report, which summarizes the relevant studies, reports, policy documents and background information with which to consider in the formation of the secondary plan and identifies any preliminary gaps or opportunities that exist within the study area. This report represents the conclusion of Phase 1. This phase will also include a stakeholder consultation meeting and a public information meeting to discuss the goals and vision for the lands, and to review the preliminary land use options provided in this Report.
- **Phase 2** involves refining land use options through the public consultation process. Consultation with landowners and stakeholders will occur to obtain input on community design elements and identify options for the layout and design of the Secondary Plan. A preferred development option will then be developed and a draft secondary plan will be prepared based on the input received from stakeholders and the community.
- **Phase 3** involves the completion of the secondary plan and policy framework. The final recommendation report will be provided to Council for review and approval.

The project timeline is included in this report as **Appendix D**

1.2 Purpose of Report

This Background Report has been prepared as input to the future East Smithville Secondary Plan. The purpose of this report is to provide a review and analysis of the relevant studies, reports, policy documents and other background information with which to consider in the creation of a secondary plan. This report will provide an overall policy and context review to inform the study process and summarize key findings for considerations.

The Background Report includes the following:

- A review and analysis of the existing studies and policy and regulatory frameworks applicable to the Secondary Plan Area at the Provincial, Regional and Local level;

- A technical review of current conditions relating to land use, the natural environment; available municipal servicing infrastructure; and, transportation on the subject lands;
- A summary of existing constraints on the subject lands; and,
- A summary of potential land use options for the Secondary Plan Area.

Full technical reports are included as appendices to this document.

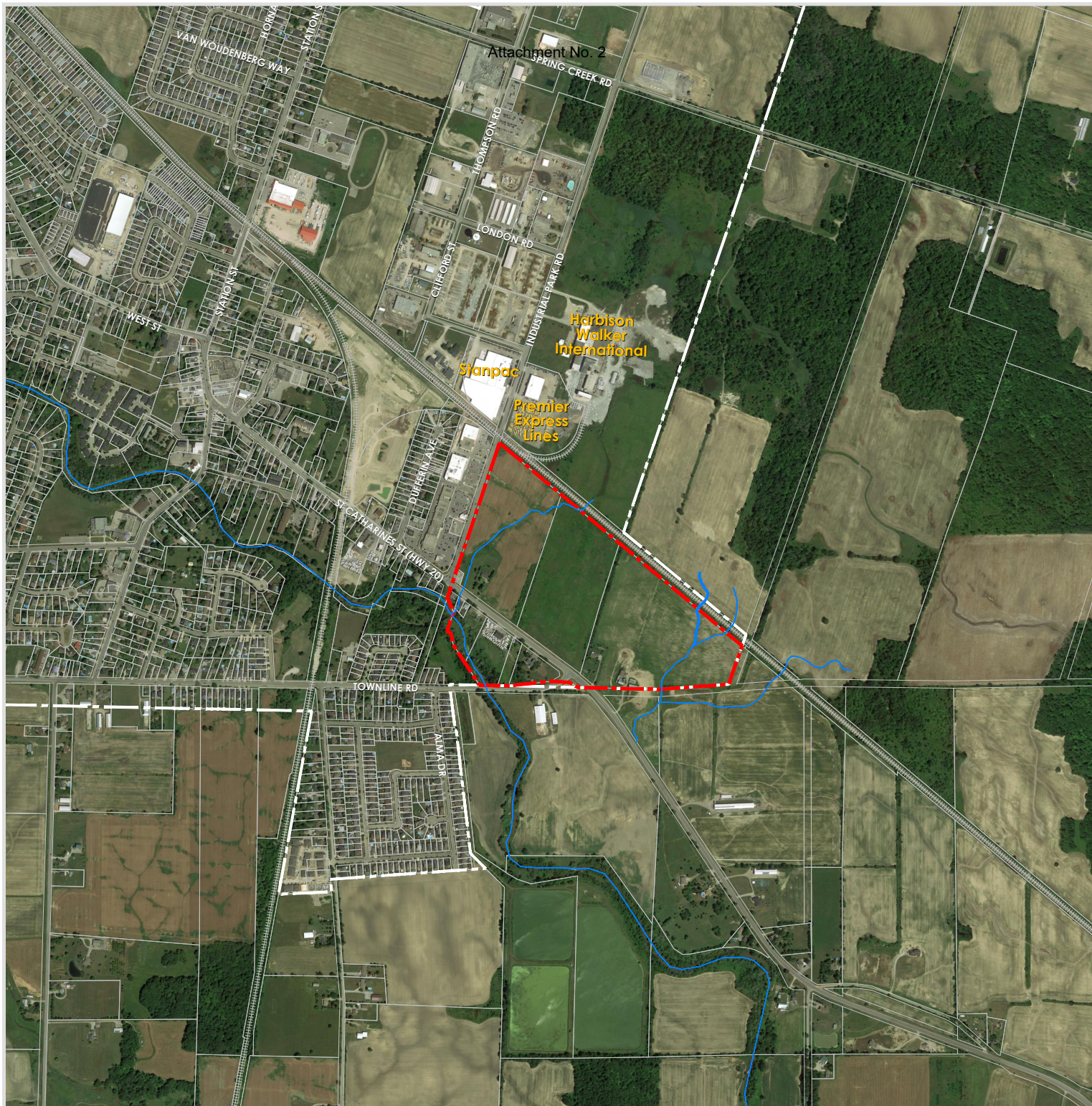


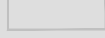

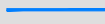


Figure 1
Location Plan

Legend

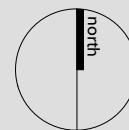
-  Smithville Urban Area Boundary
-  Secondary Plan Area Boundary
-  Parcel Fabric
-  Railway Lines
-  Watercourses

DATE: August 20, 2020

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DRN: JB



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1.3 Surrounding Context

The subject lands are identified in the Township Official Plan as being located within the Smithville Urban Area boundary. The majority of the subject lands are defined as being located outside of the Built Boundary, with only the small portion of lands south of St. Catharines Street being within the boundary. Located in the southeastern corner of Smithville, the subject lands act as the gateway into the Urban Area from the east. The following provides a brief description of the surrounding land uses bounding the subject lands:

North: The lands located to the north of the subject lands are separated by the Canadian Pacific Railway (“CP Railway”) that provides railway travel through the Urban Area. Lands immediately north of the CP Railway are identified on Schedule B-4 of the Township Official Plan as being designated primarily “Employment Areas” with a portion of the lands just north and south of Spring Creek Road being designated “Natural Heritage Systems”. The majority of the “Employment Area” lands north of the CP Rail are fully developed and consist of Class 2 and Class 3 industries. These industries form part of the Smithville Industrial Park.

East: The majority of the lands to the east of the subject lands are designated as “Agricultural & Rural Areas”. These lands consist primarily of agricultural fields. The properties to the east of the subject lands are outside of the Urban Area boundary.

South: The lands to the south of the subject lands are partially located within the Urban Area. The lands that are within the Urban Area are primarily comprised of residential designations including “Low Density Residential” and “Medium Density Residential” and are largely developed. A portion of the lands to the south are designated as “Natural Heritage System” as there is a watercourse that traverses the Urban Area from east to west, known as Twenty Mile Creek. The portion of the lands to the south that are located outside of the Urban Area are designated “Agricultural & Rural Areas” and are largely used for agricultural purposes.

West: The lands located to the west of the subject lands are located within the Urban Area boundary and are identified as being within the Built Boundary. These lands are comprised of urban area designations including commercial, residential and institutional type land uses. Immediately to the west of the subject lands and on the opposite side of Industrial Park Road is a commercial plaza with Low and Medium Density Residential uses to its immediate west.

The subject lands are some of the last remaining large undeveloped parcels of land within the Smithville Urban Area. Given the current need for additional residential and employment uses, the Secondary Plan area at the eastern edge of Smithville provides an opportunity for the Township of

West Lincoln to introduce a mix of residential and employment uses into the urban boundary. These lands have the potential to be developed into a complete community that is well connected to its surrounding areas. It also holds the potential to accommodate a range and mix of uses and housing types that will attract future residents and accommodate expected growth.

2.0 Current Conditions

2.1 Guiding Policies and Studies

This section of the report provides a summary of the applicable land use policy framework as it applies to the East Smithville lands, and identifies how future development must be consistent with and/or conform to, this framework. In addition, this section of the report provides a basis for recommended Secondary Plan policies which will seek to improve and complement existing policy direction.

2.1.1 Provincial Policy Statement (2020)

The 2020 Provincial Policy Statement ("PPS") was issued by the Province of Ontario in accordance with Section 3 of the *Planning Act* and came into effect May 1, 2020, replacing the PPS issued on April 30, 2014. The PPS provides policy direction on matters of provincial interest related to land use planning and development. All decisions affecting planning matters shall be consistent with the PPS. The PPS provides a vision for land use planning in Ontario that encourages the efficient use of land, resources, and public investment in infrastructure. It also supports the provincial goal to enhance the quality of life for all Ontarians.

The Provincial Policy Statement contains policies related to building strong communities, managing growth, and protecting natural and cultural heritage resources. The PPS focuses growth within settlement areas and away from significant or sensitive resources and promotes efficient land use patterns that support the long term economic prosperity of the Province and municipalities.

The most relevant policy directions in the PPS include:

- **Policy 1.1.2** states that sufficient land shall be made available to accommodate an appropriate range and mix of land uses to meet projected needs for up to 25 years. Within Settlement Areas, sufficient land shall be made available through intensification and redevelopment, and, if necessary, designated growth areas.
- **Policy 1.1.3.1** states that Settlement Areas shall be the focus of growth and development.
- **Policy 1.1.3.6** states that new development taking place within designated growth areas should occur adjacent to the existing built-up area and should have a compact form, mix of uses and densities that allow for the efficient use of land, infrastructure and public service facilities.
- **Policy 1.2.6.2** requires that the compatibility between existing industrial and manufacturing uses and the intro of sensitive land uses (i.e. residential uses).

- **Policy 1.3.1** provides that that Planning authorities shall promote economic development and competitiveness by providing for an appropriate mix and range of employment, institutional, and broader mixed uses to meet long-term needs.
- **Policy 1.4.3** encourages an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents.
- **Policy 1.1.6.1a)** states that planning for sewage and water services shall accommodate forecasted growth in a manner that promotes the efficient use and optimization of existing municipal services.
- **Section 1.6** relates to Infrastructure and Public Service Facilities that are to be provided in an efficient manner.
- **Section 1.6.6** provides policies relating to the planning of sewage and water services and guides developments on the preferred form of servicing for settlement areas.
- **Section 1.6.8** relates to Transportation and Infrastructure Corridors and their protection for the long term. The policies guide how development adjacent to existing or planned corridors are to be compatible and supportive of the long term purposes of the corridors.
- **Section 2.1** relates to the protection and enhancement of natural heritage features and areas.
- **Section 3.1** relates to natural hazards and how development shall generally be directed to areas outside of these hazardous lands.

2.1.2 Places to Grow: Growth Plan for the Greater Golden Horseshoe (2019)

Pursuant to the Places to Grow Act, 2005, the Growth Plan for the Greater Golden Horseshoe (the "Growth Plan") was approved and came into effect on May 16, 2019. The 2019 Growth Plan replaces the Growth Plan for the Greater Golden Horseshoe, 2017 that took effect on July 1, 2017. All planning decisions must conform to the Growth Plan. The Region of Niagara and the Township of West Lincoln are within the Greater Golden Horseshoe ("GGH"); therefore, the policies of the Growth Plan are to be considered as part of the proposed applications.

The most relevant policy directions in the Growth Plan include:

- **Section 2.2.1** directs new growth to built-up areas, and to strategic growth areas in particular. This section also provides the minimum intensification target that should be met for all residential development.
- **Section 2.2.5** directs municipalities to promote economic development and competitiveness by efficiently using employment lands and providing for employment growth to accommodate future growth. The following policies associated with Section 2.2.5 apply to the subject lands and are further discussed in Section 2.2 of this Report:

- **Policy 2.2.5.6** directs Upper-and single-tier municipalities, in consultation with lower-tier municipalities, to designate all employment areas in official plans and protect them for appropriate employment uses over the long-term. ;
- **Policy 2.2.5.9** states that the conversion of lands within employment areas to non-employment uses may be permitted only through a municipal comprehensive review where it is demonstrated that:
 - a) There is a need for the conversion;
 - b) The lands are not required over the horizon of this Plan for the employment purposes for which they are designated;
 - c) The municipality will maintain sufficient employment lands to accommodate forecasted employment growth to the horizon of this Plan;
 - d) The proposed uses would not adversely affect the overall viability of the employment area or the achievement of the minimum intensification and density targets in this Plan, as well as the other policies of this Plan; and,
 - e) There are existing or planned infrastructure and public service facilities to accommodate the proposed uses.
- Notwithstanding Policy 2.2.5.9, **Policy 2.2.5.10** states that until the next municipal comprehensive review, lands within existing employment area may be converted to a designation that permits non-employment uses, provided the conversion would:
 - a) Satisfy the requirements of policy 2.2.5.9 a), d) and e);
 - b) Maintain a significant number of jobs on those lands through the establishment of development criteria; and,
 - c) Not include any part of an employment area identified as a provincially significant employment zone.
- Furthermore, **Section 2.2.5.14** provides that outside of employment areas, development criteria should be established to ensure that the redevelopment of any employment lands will retain space for a similar number of jobs to remain accommodated on site.
- **Section 2.2.6** directs housing in municipalities to achieve the minimum intensification and density targets by providing a diverse range and mix of housing options and densities and to achieve complete communities.
- **Section 2.2.7** directs new development taking place within designated greenfield areas to be planned to support the achievement of complete communities, active transportation, and the integration and sustained viability of transit services.

2.1.3 Region of Niagara Official Plan (Consolidated 2015)

The Region of Niagara Regional Official Plan (ROP) was first submitted for approval in 1973. Since then, there have been numerous amendments and modifications to the plan. The most recent consolidation of the ROP was released in August 2015. The Regional Official Plan is the long-range community planning document that is used to guide the physical, economic and social development of the Regional Municipality of Niagara. It contains objectives, policies and mapping that implement the Region's approach to managing growth, growing the economy, protecting the natural environment, resources and agricultural land and providing infrastructure.

The Regional Official Plan implements the Niagara Growth Management Strategy (Niagara 2031) and the content within the Plan aligns with the Provincial Policy Statement, Growth Plan and Greenbelt Plan. The relevant land use and design policies to be considered for this project are described below.

Schedule A of the Regional Official Plan (**Figure 2**) identifies the subject lands as being located within an **Urban Area Boundary** and designated "**Designated Greenfield Area**".

The most relevant policies directions of the Regional Official Plan include:

- **Chapter 4** of the ROP provides policy direction related to managing growth, including residential intensification targets; population, household and employment forecasts for each lower tier municipality into 2031; phasing of development; and, urban design policies for creating complete communities.
 - **Section 4.C.5** states that Designated Greenfield Areas will be planned as compact, complete communities by permitting a range of land uses including residential, commercial and employment; making a significant contribution to the growth of the respective Urban Areas as a complete community; providing opportunities for mixed land uses; creating street patterns that are supportive of transit and active transportation.
 - **Policy 4.C.6.1** requires a minimum combined density target of 50 people and jobs per hectare across all Designated Greenfield Areas.
 - **Section 4.J** outlines the broad urban design policies for local municipalities to consider and encourages the inclusion of urban design analysis in the preparation of local secondary plans.
- **Policy 14.I.2.1 e)** states that the Region will require local municipalities to prepare secondary plans for significant Greenfield Areas which shall generally be of a size that allows for the creation of a complete community and implements local phasing strategy.

Additionally, amendments to the Growth Plan introduced new concepts around how municipalities plan for and manage growth, particularly with respect to Employment Areas. As a result of these changes to the Growth Plan, the Region of Niagara initiated Regional Official Plan Amendment 16 (“ROPA 16”) in accordance with Section 26 of the Planning Act. The purpose of this Amendment is to ensure that the Regional Official Plan is in conformity with section 2.2.5 of the Growth Plan (employment policies); to establish a schedule that shows Niagara Region’s identified employment areas, and; undertake technical edits to ensure consistent use of terms etc.

ROPA 16 provides that the subject lands are not included in Designated Employment Areas. Provincially Significant Employment land mapping identified these lands as outside of the Provincially Significant employment zones. Notwithstanding the unapproved status of ROPA 16, Regional planning staff have directed that for the purposes of this Secondary Plan, the East Smithville lands be considered as being located outside of a Designated Employment Area. The Region of Niagara has identified the lands to the north of the subject lands as a Regional Employment Area. As is shown on **Figure 3**, the subject lands have not been identified as a Regional Employment Area within the draft schedule. The proposed amendment differentiates Employment Areas and Employment Lands within the Regional Official Plan and removes the concept of prime employment areas. ROPA 16 will introduce permissions to allow for the conversion of Designated Employment Areas outside of a municipal comprehensive review. It is understood that lands that are not identified as Designated Employment Areas would not be required to meet the required conversion tests to convert employment areas to non-employment uses. Therefore, the policies of the Growth Plan, PPS, ROP, Township OP that apply to the conversion of lands within a Provincially Significant Employment zone do not apply to the East Smithville secondary plan area.

2.1.4 Township of West Lincoln Official Plan (Consolidated 2018)

The Township of West Lincoln Official Plan provides detailed development and land use policies for the Township and directs development where it will best contribute to the long-term social, economic and environmental stability of the Township. According to Schedule B-4 of the Official Plan (**Figure 4**), the subject lands are designated both “Employment Area”, “Service Commercial”, “Medium Density Residential”, and “Natural Heritage System” and are identified as being located outside of the Built Boundary. Schedule B-5 of the Official Plan identifies the subject lands as being designated “Greenfield Area”.

The “Employment Area” designation recognizes existing and future areas appropriate for a broad range of employment in traditional manufacturing, warehousing and distribution, as well as new industries and office type development. The “Service Commercial” designation permits uses including those which rely on vehicular traffic for their economic existences, as well as uses which require larger land areas that are not typically located in the downtown. The “Medium Density

Residential” designation is currently located on a portion of the subject lands south of St. Catharines Street. This designation permits a range of housing types and seeks to achieve a gross density of 20-40 units per hectare. Finally, a portion of the subject lands to the south of St. Catharines Street is also designated as Natural Heritage System and consists of an Environmental Conservation Area associated with the Twenty Mile Creek and the floodplain area around the creek. According to Section 10.7 of the Official Plan, development within flood plain areas are only permitted if it has been demonstrated that, over the long term, there will be no significant negative impact on the Core Natural Heritage System or adjacent lands and the proposed development is not prohibited by other policies of the Official Plan. However, development within this designation should be located, designed and constructed with the intent to maintain, and where possible, enhance the ecological functions of the natural system.

As a lower tier municipality in a two-tier system, the Township of West Lincoln Official Plan has adopted the population household and employment forecasts allocated to the Township by the Region of Niagara (Regional Official Plan Table 4-1) and the gross greenfield density target. Table 5.3 of the Township Official Plan contains the population forecasts assigned to West Lincoln and **Policy 5.10 a)** outlines the Township’s Greenfield Strategy which has adopted the Region’s target of 50 persons and jobs per hectare across all Designated Greenfield Areas.

Policy 5.4 of the Township Official Plan outlines the projected housing growth by unit type for the Township. The Township Housing Forecast, Unit Mix is identified in Table 5.4 of the Plan. These figures shall be used for undertaking long term planning studies and plans, including, but not limited to housing studies, land needs analysis, and infrastructure plans and studies. The housing mix identified in Table 5.4 is shown below:

Year	Low	Medium	High	Total Housing Starts
2006	N/A	N/A	N/A	N/A
2007-2011	136	1	6	143
2012-2016	178	9	12	199
2017-2021	289	25	27	341
2022-2026	253	36	36	325
2027-2031	214	49	44	307
2006-2031 Growth	1070	120	125	1315
2006-2031 Mix	81.4%	9.1%	9.5%	100%

West Lincoln Housing Mix (Township OP Table 5.4)

Policy 5.5 a) states that Notwithstanding the projected Township wide target housing mix shown above, the Township may use alternative housing mix targets on a secondary plan or site specific basis, depending on site characteristics and constraints, provided that the alternative mix does not

adversely impact the Township's ability to meet its overall housing mix. In order to ensure that a sufficient supply of medium and high density lands are available, the Township will monitor its land supply (by type) on an annual basis and include separate land use designations for low, medium and high density uses.

Policy 5.10 b) states that All Greenfield Areas will require a Secondary Plan prior to development. The lands within the East Smithville study area shall be developed as one secondary plan.

Policy 5.10 c) outlines the issues that are to be reviewed as part of a residential secondary plan process. As part of the development of the East Smithville Secondary Plan, the project team will ensure that the Secondary Plan aligns with this policy if applicable. The following are the issues to be reviewed:

- i. Conformity with the Provincial Growth Plan and Regional Policy Amendment 2-2009. Specifically, the Secondary Plan will need to identify and permit a range of housing types and densities, the intent of which is to achieve the Provincial requirement of 50 people and jobs per hectare and the gross density shall be 20 to 30 units per hectare in order to achieve population density requirements;
- ii. A sub-watershed plan prepared in accordance with the requirements of the NPCA and the Region;
- iii. Incorporating sustainable best practices into the development including:
 - a. Maximization of water conservation through water efficient landscaping and collection, and reuse of clean water;
 - b. The use of green roofs;
 - c. Provisions for the collection and storage of recyclable waste on site; and
 - d. Encouraging the provision of on-site renewable energy generation, co-generation, or district energy systems;
 - e. Options for water and sanitary sewer servicing;
 - f. Stormwater management;
 - g. The ability of the soils to support urban development due to hydrological and hydrogeological characteristics;
 - h. The identification of important natural features, and recommendations for their protections;
 - i. The mix, density and phasing of proposed land uses;
 - j. Affordability;
 - k. The need for new or expanded parks, schools or other community facilities;
 - l. Transportation including integration with existing roads and an assessment of pedestrian connections to trails and parklands of new development;
 - m. A phase 1 Archaeological Assessment; and,

- n. The preparation of urban design principles and an implementation strategy to provide guidance on the issues of accessibility, active transportation, and quality building and site design.

Land use patterns, development policies and design criteria for Smithville are addressed in **Section 6** of the Official Plan. The Official Plan distinguishes residential, commercial, employment; recreational and other service related uses and provides standards for development and design. The Official Plan defines low-density residential, medium-density residential, high-density residential and residential/mixed use land use types and the permitted uses within each type. Furthermore, **Policy 6.10.4** of the Official Plan outlines the policies applicable to lands within the Township that are designated "Employment Area".

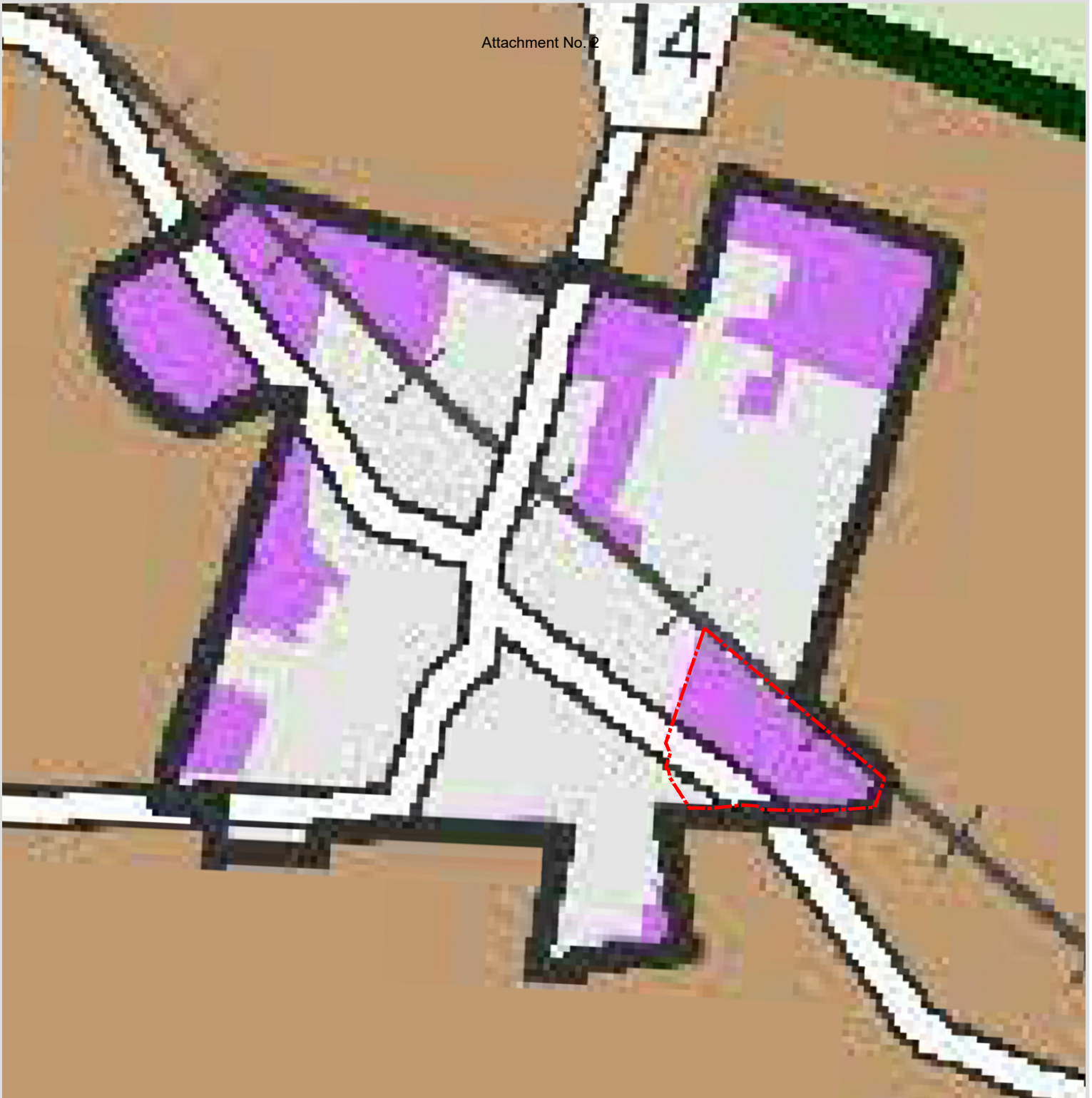


Figure 2:
Schedule A: Regional
Structure
Niagara Region Official Plan, 2018

Legend

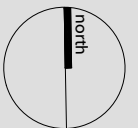
- Secondary Plan Area Boundary
- URBAN AREA BOUNDARY
- BUILT-UP AREA
- DESIGNATED GREENFIELD AREA
- GREENBELT PLAN AREA
- PROTECTED COUNTRYSIDE
- REGIONAL ROAD
- RAILWAY

DATE: July 15, 2020

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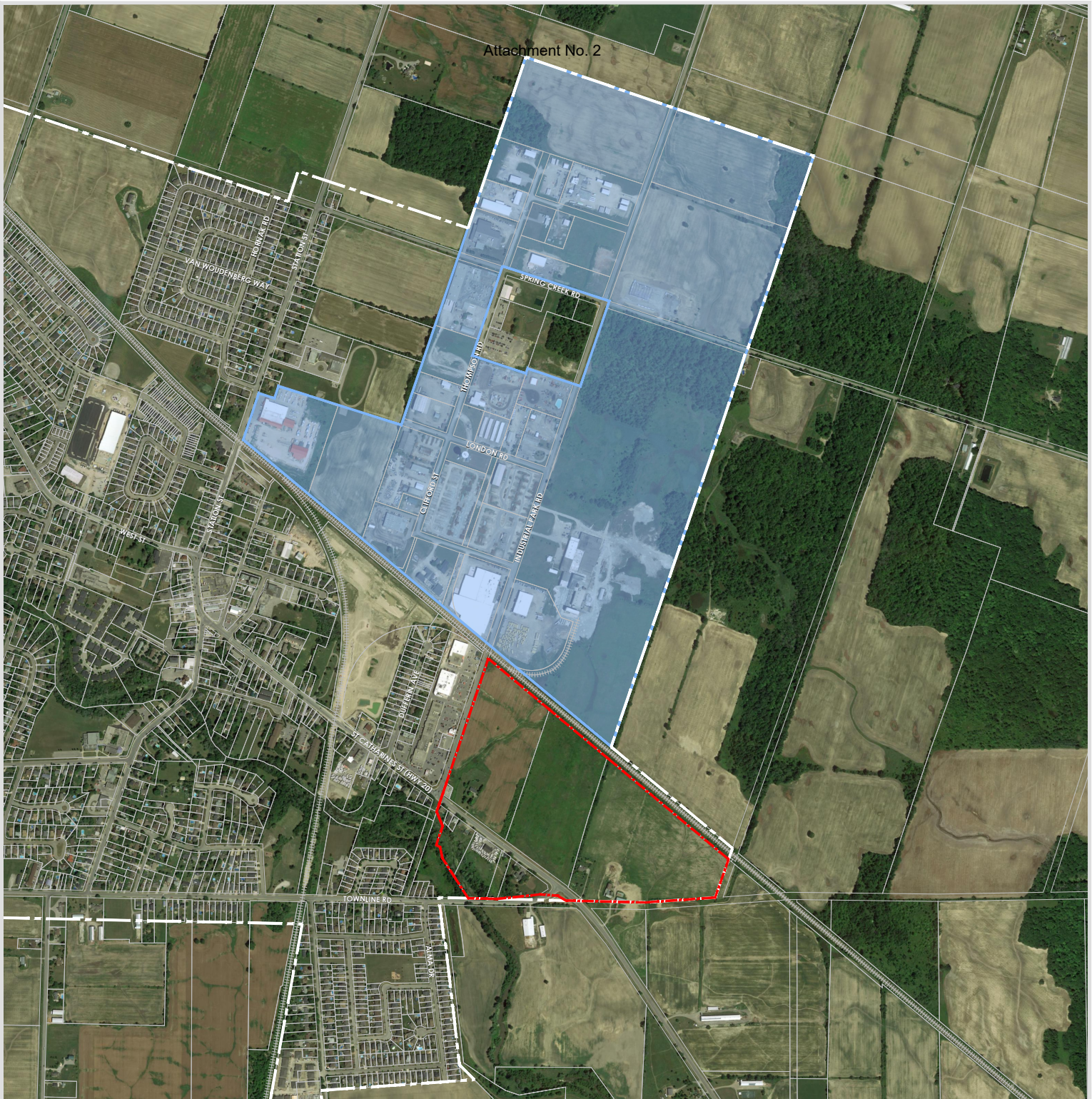


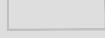

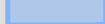


Figure 3: Draft Employment Area

Region of Niagara ROPA 16,
January 2020

Legend

-  Smithville Urban Area Boundary
-  Secondary Plan Area Boundary
-  Parcel Fabric
-  Railway Lines
-  Draft Employment Area

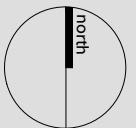
Source:
Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries -
Township of West Lincoln (2016)
Google Satellite Imagery

DATE: August 20, 2020

SCALE: 1:15,000

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DRN: JB



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**East Smithville
Secondary Plan**
Community of Smithville
Township of West Lincoln



**PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE**

200-540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9
P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM

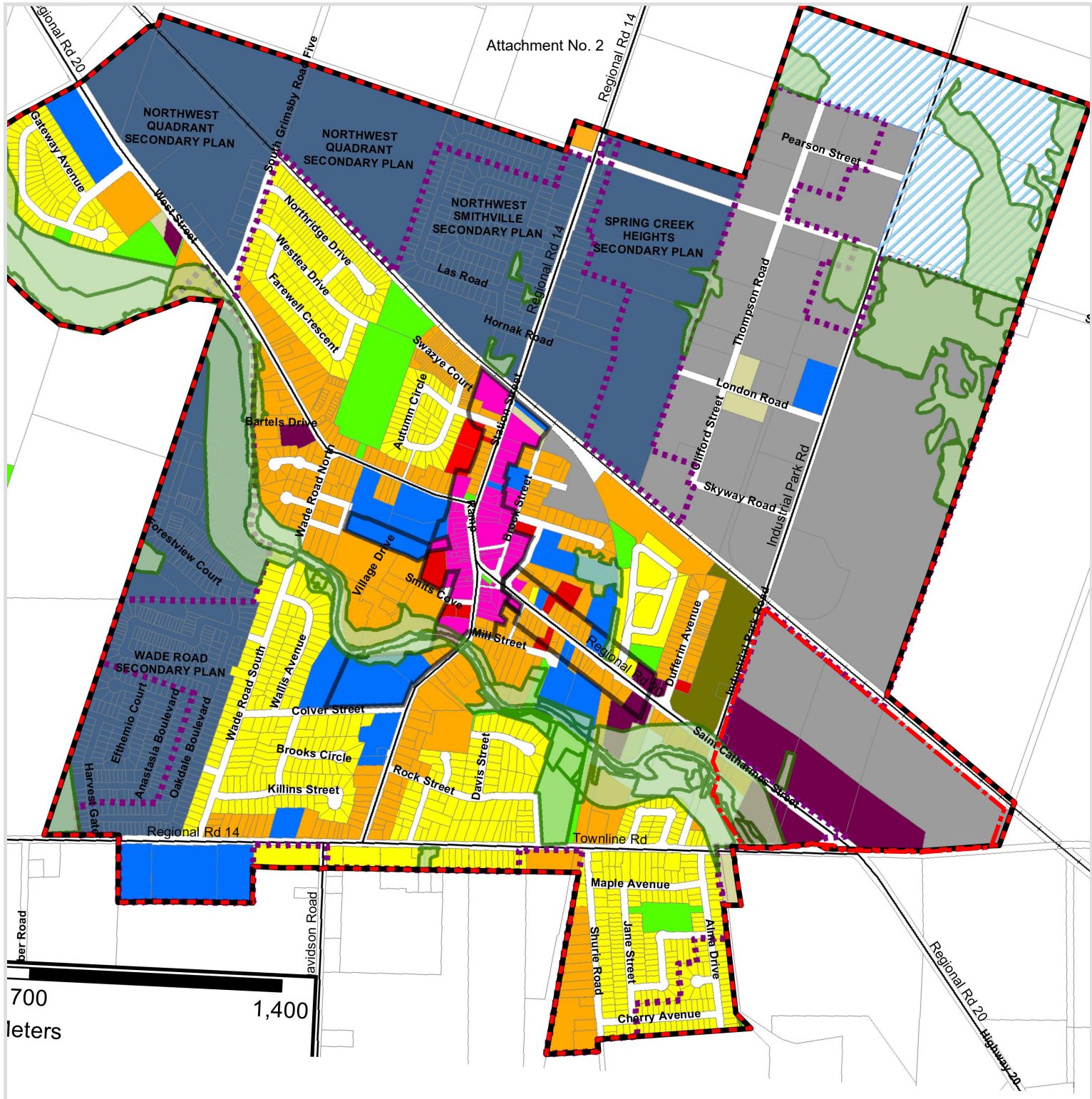


Figure 4:
Schedule 'B-4': Land Use - Smithville
Township of West Lincoln Official Plan, 2016

East Smithville Secondary Plan
Community of Smithville
Township of West Lincoln

Legend

- Secondary Plan Area Boundary
- Smithville Urban Boundary
- Natural Heritage System
- Urban Boundary Expansion - Employment
- Mixed Use Corridor
- Built Boundary
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Secondary Plan
- Commercial Core
- Commercial Plaza
- Service Commercial
- Employment Area
- Institutional
- Public Parks
- Public Use

DATE: August 14, 2020

SCALE: 1:15,000

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DRN: JB

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PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

MHBC

200-540 BINGEMANS CENTRE DR, KITCHENER, ON, N2B 3X9
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2.1.5 Parks and Recreation Master Plan

In 2010, the Township authorized the preparation of a Parks and Recreation Master Plan. The Plan provides recommendations and strategic actions to direct the delivery and development of parks and recreation facilities into 2031 and makes specific recommendations regarding the future use/direction of the Fairground and Leisureplex lands.

The Parks and Recreation Master Plan (2010) examines the community profile of the Township and analyzes demographic, socio-economic and cultural trends in the Township that are expected to influence the Township's role and involvement in the delivery of parks and recreation services. The Parks and Recreation Master Plan acts as a tool to determine the effective delivery of parks and recreation facilities within the Township and determine future directions or changes required to meet the recreational needs of the Township's residents. A detailed inventory and needs analysis of parks and recreation facilities within the Township is also included, with specific recommendations for each. Finally, the Plan identifies a series of actions for implementation with cost estimates for each based on high, medium and low priority actions over the short, medium, and long-term horizons.

Recommendations contained within the plan include:

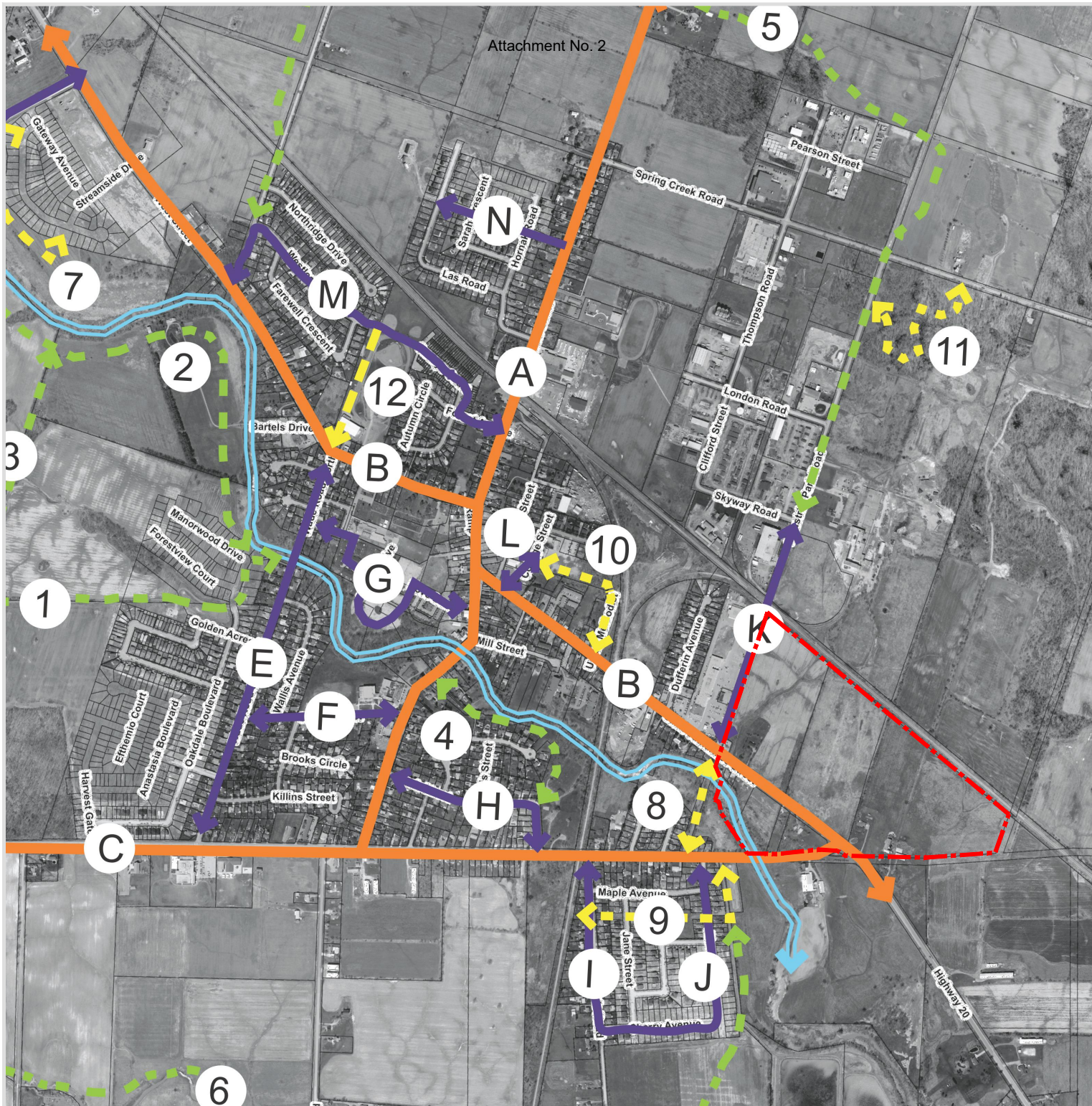
- The Township should consider encouraging active forms of parkland within an 800 metre radius of major residential areas;
- The Township should plan and provide for linear trails through development applications consistent with the Trails Master Plan. The Township's Urban Design Guidelines (when prepared) should incorporate this requirement as a way to encourage pedestrian connectivity;
- Incorporate natural features into the design of passive and active park space;
- Ensure that playgrounds are provided in newly developed or existing residential areas that offer access within an 800 m walking distance;
- Target at a minimum a parkland service level of 3 ha/ 1,000 residents throughout the municipality; and,
- The Township should improve pedestrian linkages to the Leisureplex through walking/ biking trails that are visible and easily accessible.

2.1.6 Trails and Corridors Master Plan

Smithville's Trails and Corridors Master Plan (TCMP) was completed in 2012. The trails and corridors master plan is intended to guide the future planning and development of a comprehensive interconnected trail and corridor system for Smithville that leads, in part, to a more complete community.

The Trails and Corridors Master Plan provides a detailed trail and corridor network for the planning horizon of the Official Plan (2031). In developing the network, the study examined various nodes, destinations, features and facilities within the system. Ultimately, the Master Plan provides a trail and corridor hierarchy featuring off-road primary and off-road secondary trails and on-road primary and off road secondary corridors to provide connections to major destinations and recreation opportunities in the Township. A primary on-road corridor and secondary on-road corridor is identified along the bordering streets of the Secondary Plan Area. A potential trail is also shown adjacent to the portion of the subject lands south of St. Catharines Street. Please see **Figure 5**. Potential trail connections to the trail network are identified on the proposed Secondary Plan concept options. More detailed location of trails within the Secondary Plan area would be developed in the next phase of this project

The TCMP includes a set of design guidelines, which are intended to be flexible to allow for site conditions, in order to assist the Township in designing, constructing and maintaining each type of trail or corridor within the hierarchy. The TCMP provides several recommendations for the Township for the implementation of a comprehensive trails and corridors master plan, including recommendations that the township utilize the design standards and specifications for trails and corridors as outlined in the plan and coordinate planning for future trails and links during the Secondary Plan process and/ or the subdivision process.



**Figure 5:
Trail and Corridor
Network**

Figure 3 - Township of West Lincoln
Trails & Corridors Master Plan, 2012

Legend

 Secondary Plan Area Boundary

- TWENTY MILE CREEK
- PRIMARY OFF-ROAD TRAIL
- - - SECONDARY OFF-ROAD TRAIL
- PRIMARY ON-ROAD CORRIDOR
- SECONDARY ON-ROAD CORRIDOR

(A) SEE TABLE E-1

(1) SEE TABLE E-1

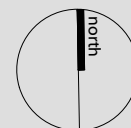
NOTE:
1. TRAIL LOCATIONS ARE CONCEPTUAL
2. TRAILS 2, 4, 8, 11 AND F SUBJECT TO NPCA PERMIT
3. TRAILS 1, 2, 3, 5, 6 & 11 ARE NOT IN TOWN OWNERSHIP. TO BE DEVELOPED THROUGH DRAFT PLAN OF SUBDIVISION PROCESS.

DATE: August 20, 2020

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FILE: 08234X

DRN: JB



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**East Smithville
Secondary Plan**
Community of Smithville
Township of West Lincoln

MHBC PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE
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2.1.7 Hemson Consulting - Land Needs Assessment Study 2019

Hemson Consulting Ltd. was retained by the Region of Niagara in 2019 to complete a review and update of population forecast allocations, and land needs assessment for the entire Region of Niagara. The purpose of the land needs assessment study is to assist upper-tier and single-tier municipalities in implementing the policies and targets of the Places to Grow – Growth Plan for the Greater Golden Horseshoe by evaluating the projected population growth within each of the municipalities that comprise the Region of Niagara in order to assess how much land is to be allocated within the Region and within each municipality for different land uses (i.e., residential, commercial and employment).

According to the results of the evaluation completed by Hemson Consulting Ltd. for the Township of West Lincoln, it was determined that to accommodate the projected growth through to 2041, the Township will require an additional 62 hectares of employment area land (jobs) and 148 hectares of community land area (residents and jobs).

As a result, the Township of West Lincoln has initiated an Urban Boundary Expansion Study to determine how to most efficiently expand the current Smithville settlement boundary to accommodate the additional lands that will be needed to accommodate the projected population and employment growth. The Township has initiated a review of existing undeveloped lands within the Urban Area to determine what policy changes, if any, can be made to encourage the development of these lands and to reduce the amount of additional land that is required. The East Smithville Secondary Plan area lands provide approximately 34 hectares of lands within the existing Urban Area that can be used to accommodate future growth.

2.2 Employment Lands Analysis

The objectives of the provincial, regional and local planning documents with respect to “Employment Areas” are aligned in that they seek to protect and preserve employment areas for current and future uses. As noted in section 2.1.3 of this report, the Secondary Plan area is not considered to be within an Employment Area. Therefore, the employment area conversion policies of the Growth Plan, Regional Official Plan and Township Official Plan do not apply. Instead, policy 2.2.5.14 of the Growth Plan which specifies that redevelopment of employment lands that are outside of Employment Areas is permitted provided that the lands will retain space for a similar number of jobs.

The proposed redesignation of the lands to accommodate a range and mix of uses, including residential and employment uses, will support the density and employment forecast targets set out by the provincial, regional and local policy framework applicable to the lands. The proposed

redesignation will support the development of a complete community and will not impact the overall Regional Employment Area located to the north of the CP Rail line.

2.3 Summary of Technical Reports

2.3.1 Natural Heritage Evaluation

Crozier was retained to undertake a Natural Heritage Constraints Analysis to support the proposed development of the East Smithville Secondary Plan for the Township of West Lincoln. The purpose of their study was to review and assess the natural heritage features and functions of the two areas (Area A and Area B), which comprised of two areas within the proposed Secondary Plan area. Please refer to **Figure 6**.

The technical memo prepared by Crozier, and attached hereto as Appendix A, provides a detailed description and background review of the physical and ecological characteristics of the natural heritage features on the subject lands. Both Area A and B within the subject lands are identified as being part of the Core Natural Heritage System by the regional and local Official Plan's. According to the description of the Core Natural Heritage System in both the regional and local Official Plan, these areas consist of Environmental Protection Areas or Conservation Areas, potential natural heritage corridors connecting the Core Natural Areas, or habitats for a range of species.

The following provides a summary of the natural heritage constraints that were evaluated as part of Crozier's review of the subject lands:

Area A

- A headwater drainage feature (unnamed tributary of Twenty Mile Creek) is present on site with multiple drainage pathways. All site drainage eventually enters Twenty Mile Creek which is located south of St. Catharines Street;
- Drainage on the property alternated between diffuse overland flow, more defined channelized flow and multi-thread channelized flow; and,
- No fish were observed with within the headwater drainage feature on the property. However, there is potential for fish to move upstream from Twenty Mile Creek into the subject property. It is anticipated that this is only possible under higher early-season flows.

Area B

- A vegetated area comprised of a total area equaling 0.5 hectares in size and located immediately east of Area A;

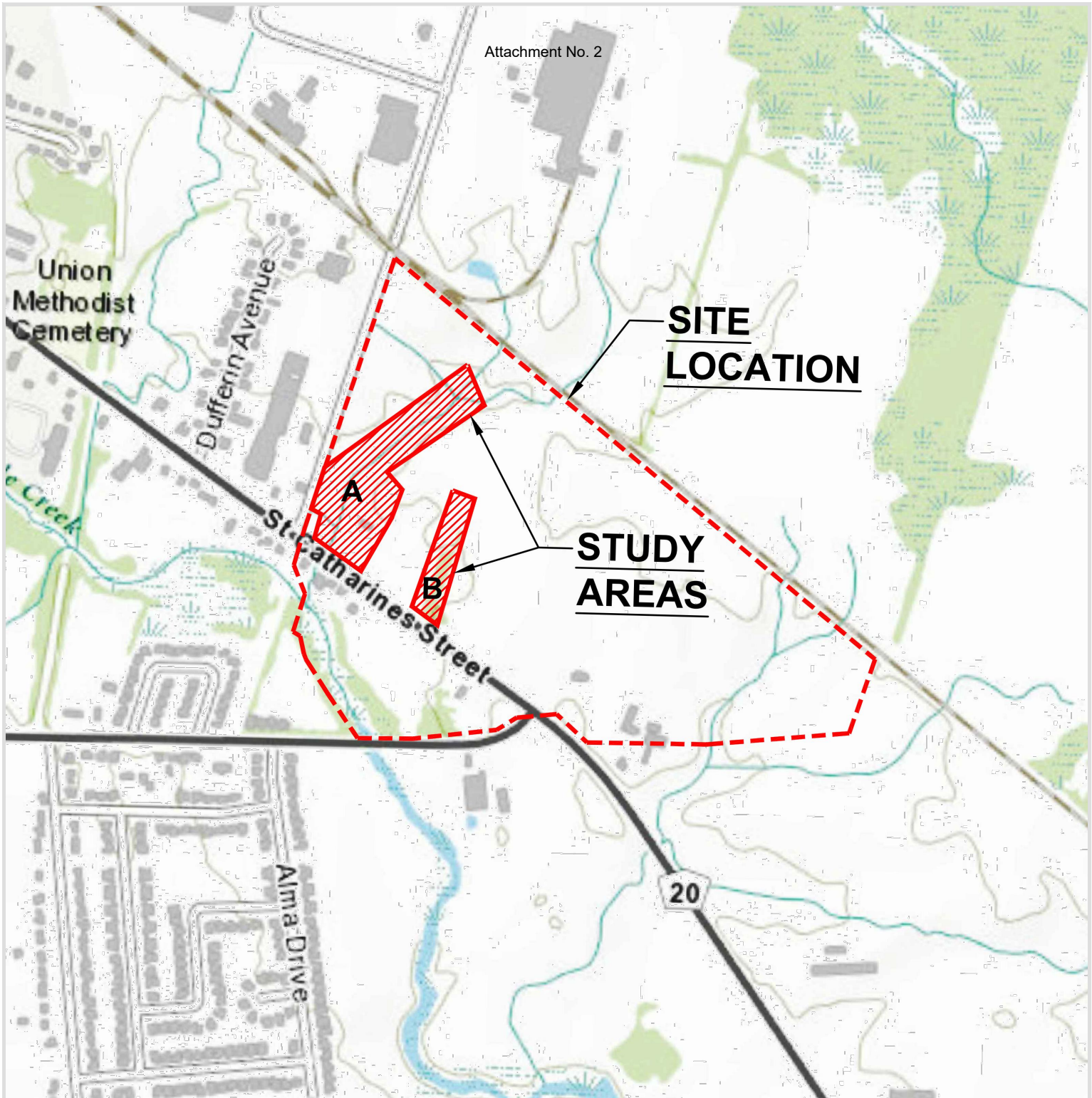
- Field tests completed by Crozier determined that this area would not function as a significant habitat for breeding amphibians and generally consists of a scattering of young/small tree cover.

According to the technical memo prepared by Crozier regarding the Natural Environment, the following was concluded:

- The subject lands do not contain any significant valleylands;
- The subject lands do not contain any significant wetlands;
- The subject lands are unlikely to provide a significant animal movement corridor because of the open and disturbed nature of the lands and adjacent lands and existing uses. The existing development in the area precluded the ability for any existing habitat connectivity or linkages;
- Rare vegetation communities apply to the maintenance of biodiversity and of rare plant communities. The subject lands contain no rare vegetation communities, nor are there any specialized habitats for wildlife found on the lands;
- No areas within the subject lands are qualified as significant habitat for any species of conservation concern; and,
- No Species at Risk were observed on the subject lands during the field test.

As a result of the investigation undertaken by Crozier on the subject lands, it was determined that no significant species or habitats were found to be existing, particularly within Area A or Area B. However, Area A does provide a contributing fish habitat to the receiving watercourse (Twenty Mile Creek). Area A should have the functions that it provides (drainage conveyance, contributing fish habitat to Twenty Mile Creek) maintained within the future Secondary Plan.

It is recommended that a 15 metre buffer on each side of the centre line of the feature be provided for a total corridor equalling 30 metres. Area B has been determined to not be significant and should not be considered a part of the Natural Heritage System. As part of the future development of the subject lands, Area B can be removed from the landscape.



**Figure 6:
Site Location &
Study Areas**

Figure 1 - Natural Heritage
Constraints Analysis prepared by
Crozier Consulting Engineers, June
2020

Legend

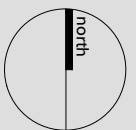
- Secondary Plan Area Boundary
- STUDY AREAS (A / B)
- MAJOR ROADS
- RAILWAY
- ~ WATER FEATURES
- NATURAL FEATURES
- BUILT FORM

DATE: August 20, 2020

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DRN: JB



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2.3.2 Drainage

A headwater drainage feature is present on the site, with multiple drainage pathways as shown in Figure 3 of Crozier's Natural Heritage Analysis report attached as Appendix A. All site drainage from this area eventually enters Twenty Mile Creek which is located approximately 52 metres to the south of St. Catharines Street. Overall, the drainage on the property alternates between diffuse overland flow, more defined channelized flow and multi-thread channelized flow.

Drainage was also identified to flow through area of vegetation in the northwest, north and central areas of the property. Water levels were ranging between 3 and 25 cm and generally increased as it moved towards St. Catharines Street.

It was identified that the primary substrate type on the subject lands was clay, with secondary silt substrate. Seepage was noted in two areas by Crozier: one at the northern property boundary, immediately south of the railway line and at the northern edge of the identified Area A. It is expected that the secondary branches off the main and east branches of the drainage feature will dry up as the season progresses.

Drainage/Stormwater Management – Water Pressure

Based on the review of the topographic survey for the subject lands, it was identified that the subject lands are generally sloping from north to south with contours ranging from 190 metres near the CP Railway to 183 metres adjacent to St. Catharines Street. Water is drained to the south where four assumed culverts located below the Railway convey external flows onto the subject lands. The drainage from the site is then picked up from two main draws which conveys the water towards the two assumed culverts near St. Catharines Street and flow below the road towards Twenty Mile Creek.

A 250 mm diameter storm sewer exists running along St. Catharines Street and terminated approximately 70 metres west of the intersection of Industrial Park Road and St. Catharines Street, however, based on street level images, it is suggested that the storm sewer continues west along St. Catherine's Street collecting drainage from the road through catch basins.

It is also anticipated that two Stormwater Management Facilities will required on the subject lands. One is to be located on the western side of the subject lands and the other on the eastern side. Preliminary discussions have located these facilities immediately adjacent to the tributaries that flow through the subject lands. These can be found in the land use options found in Section 4 of this Report.

2.3.3 Water and Waste Water

The 2016 Master Servicing Plan Update (MSPU) prepared by HM Blue Plan evaluated water and wastewater infrastructure for 11 municipalities within Niagara Region and included the Township of West Lincoln. The following conclusions were reported:

Wastewater – Town of Smithville

Wastewater flows within the Smithville Urban Area are conveyed by gravity to the Smithville Sewage Detention Facility/Pumping Station located 200 metres from the intersection of Industrial Park Road and St. Catharines Street and then subsequently pumped via a 300 metre force main along Industrial Park Road to the Baker Road Wastewater Treatment Plant in Grimsby. Potential capacity issues may exist within western and central portions of the Town's wastewater system when considering future growth projections.

As part of the 2016 MSPU, alternatives were evaluated with respect to sanitary servicing upgrades for the Town to help alleviate the capacity constraints. The following alternative was reviewed and selected as the preferred alternative and included upgrading of the Smithville Sewage Pumping Station; the implementation of twin existing force main and upgrade downstream sewers. Eventually, trunk sewer upgrades will also be required in Grimsby to accommodate greater capacity.

Presently, the closest sanitary sewer connection to the site is located at the southwest corner of the Secondary Plan boundary, at the intersection of Industrial Park Road and St. Catharines Street. It was determined that should significant future intensification of other areas outside the secondary plan occur, future capacity would need to be further analyzed for the perimeter sewers. Potential sewer connection points would likely require an extension of the sewer on St. Catharines Street as the subject lands fall in a southwesterly direction towards the Regional Road. Secondary connections directly to Industrial Park Road and/or Townline Road may also be contemplated. Crozier has identified that there is sufficient capacity in the current Township system to accommodate the future development on the subject lands. It is anticipated that the subject lands will be accommodated using gravity sewers.

Water – Town of Smithville

Water services in the Town of Smithville are currently serviced by the Grimsby water system and is supplied by the Grimsby Water Treatment Plant, which is a conventional surface water treatment plant. Lake Ontario serves as a source to the plant and services the local area municipalities via a water main network, pumping stations, and service reservoirs.

An existing 150 mm diameter watermain is located along Industrial Park Road, which is proposed to service the proposed Secondary Plan Area. Another 150 mm diameter watermain is also located on St. Catharines Street which currently terminates at the intersection of Industrial Park Road. A 200 mm diameter watermain branches off the 150 mm diameter watermain and cross the existing water course to service the residential subdivision and southern limits of Smithville. An extension of this watermain could be completed easterly along the southern frontage of the subject lands should a secondary connection be required to service the lands.

However, the existing watermain along Industrial Park Road should have sufficient capacity to support the development of the subject lands.

2.3.4 Transportation

Crozier prepared an evaluation of the existing traffic conditions, which can be found attached as Appendix B to this Report.

The boundary roads consist of Industrial Park Road and St. Catharines Street. Industrial Park Road is a north-south minor arterial road under the jurisdiction of the Township and is a two-lane roadway with a curb and gutter along the west leg of the road way. The eastern leg of the roadway consists of gravel and a ditch. St. Catharines Street is an east-west major arterial road under the jurisdiction of the Region of Niagara. Pedestrian sidewalks are currently available on the southern side of St. Catharines Street. There are currently no roadways that enter the subject lands.

Based on an evaluation of the current intersection operations undertaken by Crozier, it was determined that the intersections of St. Catharines Street at Industrial Park Road and St. Catharine's Street at Townline Road are operating at a Level of Service "C" during weekday a.m. and p.m. hours, with the exception of Industrial Park Road and St. Catharines Street, which operates at Level of Service "E" during p.m. hours.

An assessment of potential access locations were undertaken for the subject lands. Crozier has identified the following recommended access points be provided to the Smithville Secondary Plan area:

- One full move access to Industrial Park Road. The access is to be centred as best as applicable between the Railway and the intersection of St. Catharines Street and Industrial Park Road. The access should align with the "Village Square" commercial development on Industrial Park Road; and,
- A full moves access to create the fourth leg at the intersection of St. Catharines Street and Townline Road. This intersection is currently under construction to a single land roundabout.



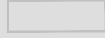
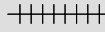


It is important to note that St. Catharines Street is a Regional Road and front lotting will not be permitted.

Additional analysis will be prepared as the preparation of the Secondary Plan continues. Future access locations to the subject lands will be further discussed during the available consultation periods. Please see **Figure 7** below to review the potential locations of the accesses to the subject lands.



**Figure 7:
Transportation -
Potential Access
Locations**

Legend

-  Smithville Urban Area Boundary
-  Secondary Plan Area Boundary
-  Parcel Fabric
-  Railway Lines
- Potential Access Locations**
-  Access 1
-  Access 2

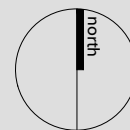
Source:
- Watercourses and setbacks from Natural Heritage Constraints Analysis, Crozier Consulting Engineers, June 2020
- Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries -Township of West Lincoln (2016)
- Google Satellite Imagery

DATE: Dec.11, 2020

SCALE: 1:7,500

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DRN: JB



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OPTION_11DEC2020.DWG

**East Smithville
Secondary Plan
Community of Smithville
Township of West Lincoln**

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2.3.5 Canadian Pacific Railway

The Canadian Pacific Railway presently acts as the northern boundary of the subject lands. It divides the subject lands from the existing Employment Area to the north. According to the Guidelines for New Development in Proximity to Railway Operations prepared for the Federation of Canadian Municipalities and the Railway Association of Canada, a setback from the railway corridor is a highly desirable development condition, particularly in the case of new residential development.

A setback from the railway corridor provides a buffer from railway operations and provides a buffer between residents and potential adverse emissions, noise and vibration. It also provides for a required safety barrier in the rare chance that a derailment was to occur.

The standard recommended building setbacks for new residential development in proximity to railway operations is 30 metres for both a Principle Main Line and a Secondary Main Line. These setbacks must be measured from the mutual property line to the building face in order to ensure that the entire railway right-of-way is protected for potential rail expansion in the future.

One of the key issues with residential development in proximity to residential development is the noise that results from the rail operations. It is typically recommended that noise be addressed in site-specific manners. A Noise Impact Study is typically important to assess the impact of all noise sources affecting the subject lands and to determine the appropriate layout and design of the control measures.

As a result of the existing rail operations, a setback distance of 30 metres from the rail line will be required to be incorporated with the future land use options for the subject lands. **Figure 8** below shows the extent of this setback on the subject lands.

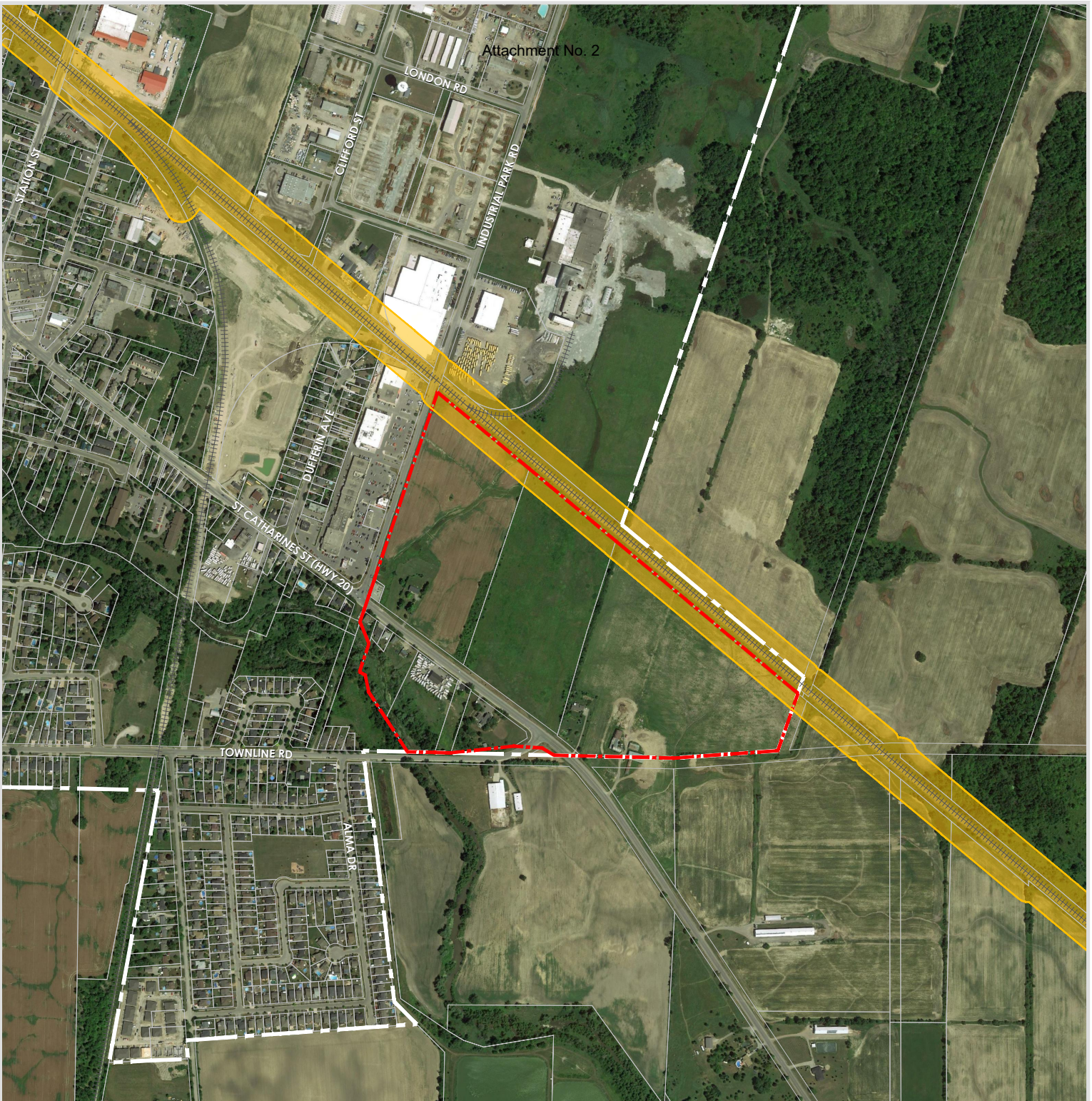


Figure 8:
Required 30 m
Railway Setback

Legend

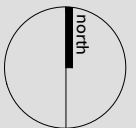
-  Smithville Urban Area Boundary
-  Secondary Plan Area Boundary
-  Parcel Fabric
-  Railway Lines
-  30 m Railway Setback

DATE: July 15, 2020

SCALE: 1:7,500

FILE: 08234X

DRN: JB



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3.0 Assessment of Constraints

As part of our review of the subject lands and the completion of various forms of analysis including of natural heritage, servicing, transportation and land use, a number of factors have been reviewed to determine whether any constraints to the future development of the subject lands in the future can be identified. Based on the technical work completed by Crozier and the review of the existing background information available for the subject lands, various factors including existing natural heritage features, surrounding industrial development, surrounding agricultural development, and the existing railway have the potential to cause limitations to how the lands can be planned and developed in the future.

As a result, the following section provides an analysis and summary of the constraints that were identified through the background review and the technical studies completed for the lands and provides a conclusion as to how the constraints may affect future development of the Secondary Plan area.

3.1 Natural Heritage

Crozier completed a Natural Heritage Constraints Analysis in order to determine the physical and ecological characteristics of the natural heritage features found on the subject lands. The following natural heritage constraints were encountered as a result of field investigations completed on the site in April 2020:

- A headwater drainage feature (tributary of Twenty Mile Creek) is located on the western half of the subject lands. A water course is also located on the eastern portion of the lands, which connects to Twenty Mile Creek;
- Fish habitat were not observed within the tributaries, however, based on the close proximity to the Twenty Mile Creek, there is potential for fish to move upstream onto the property;
- The lands located south of St. Catharine's Street and immediately north of the Twenty Mile Creek is partially located within an identified floodplain area;

As a result of the preliminary investigation completed by Crozier, it was determined that the existing tributaries found on the subject lands will require measures to be incorporated into the design of the Secondary Plan that will protect and enhance its features. As such, as part of the design of the preferred land use options for the Secondary Plan and future policy framework, appropriate buffering and setbacks will be recommended in order to ensure the protection of these watercourses and floodplain areas. A recommended buffer of 15 metres on either side of the

tributaries (total buffer of 30 metres) has been suggested by Crozier and included as part of the draft land use options for the subject lands.

3.2 CP Railway Setback

The subject lands flank the existing CP Rail Line at its northern property line and is considered the extent of the Secondary Plan Area to the north. The CP Rail is routed straight through the Smithville Urban Area and travels in an east-west direction. The location of the CP Rail line plays a role in the potential development of the subject lands for sensitive land uses. According to the “Guidelines for New Development in Proximity to Railway Operations” document, the standard recommended building setbacks for new residential development in proximity to railway operations is 30 metres. These setback distances must be measured from the mutual property line to the building face. This will ensure that the entire railway right-of-way is protected for potential rail expansion in the future.

Figure 8 demonstrates a 30 metre setback being located from the mutual property line southwards and should be incorporated into the future Secondary Plan as a required setback distance for any future development. It is important to note that the Guidelines do permit some forms of development within the 30 metre setback distance. Appropriate uses within this setback distance include:

- Public and private roads;
- Parkland and other outdoor recreational spaces;
- Garages and other parking structures; or,
- Storage sheds.

3.3 Archaeology and Cultural Heritage

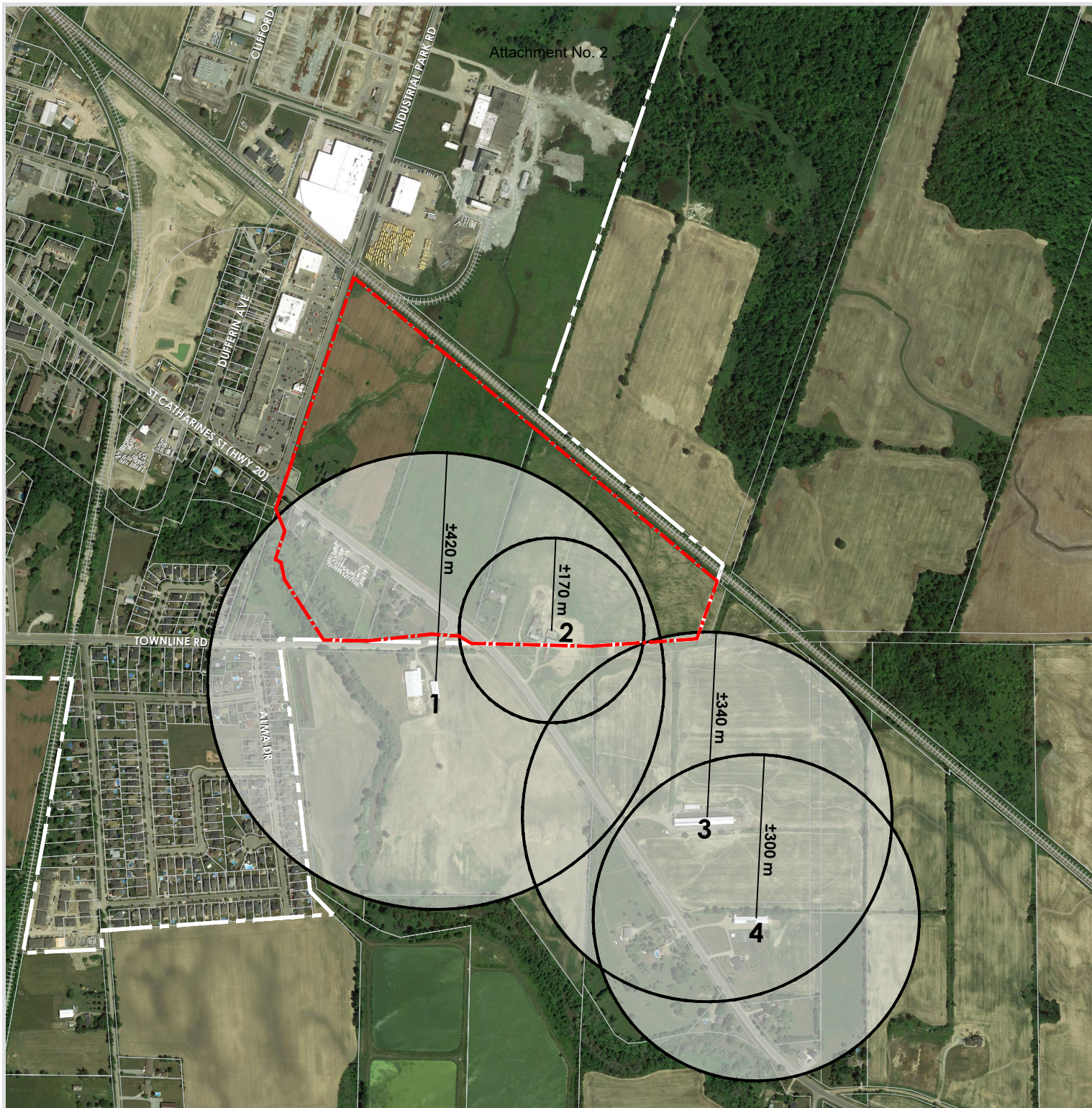
It is not known whether the lands have any archaeological constraints, however, an archaeological assessment would be undertaken as a requirement of a subdivision application. Policies of the secondary plan could incorporate these requirements. As it relates to cultural heritage, it is noted that there are no identified cultural heritage landscapes or built heritage resources on the lands.

3.4 Minimum Distance Separation

As it relates to compliance with the Ministry of Agriculture Food and Rural Affairs’ (OMAFRA) Minimum Distance Separation (“MDS”) formulae, an analysis of the potential impacts from the proposed future development of the subject lands on surrounding livestock operations has been completed to determine potential impacts and conflicts between non-farm and farm land uses. Within Rural and Prime-Agricultural Areas, non-farm land uses are required to meet the Minimum Distance Separation I (“MDS I”) formula as provided in “The Minimum Distance Separation Implementation Document: Formulae and Guidelines for Livestock Facility and Anaerobic Digester

Odour Setbacks, Publication 853 of the Ontario Ministry of Agriculture, Food and Rural Affairs, 2016. The MDS I formulae applies to all existing livestock facilities and empty livestock facilities. An empty livestock facility means a facility that is no longer used to house livestock but appears to be reasonably capable of housing livestock. The MDS I formulae is not applied to facilities that are in poor deteriorating conditions and is determined to not be suitable for housing livestock.

In 2007, Colville Consulting Inc. prepared the Smithville Strategic Growth Management Study for the Township of West Lincoln where they completed a review of the Minimum Distance Separation requirements for all of the existing livestock operations surrounding the Smithville Urban Area. Using the data collected by Colville Consulting Inc., it was determined that a total of four properties were in proximity to the subject lands **(see Figure 9)**. The MDS I formulae was applied to these properties in accordance with MDS Guideline No. 6.



**Figure 9:
Minimum Distance
Separation (MDS)**

Legend

-  Smithville Urban Area Boundary
-  Secondary Plan Area Boundary
-  Parcel Fabric
-  Railway Lines
-  Minimum Distance Separation (MDS)

Source:

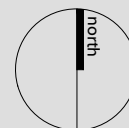
- MDS based on Figure 6: Minimum Distance Separation, Smithville Strategic Growth Management Study prepared by Colville Consulting Inc., Nov. 2007
 - Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries -Township of West Lincoln (2016)
 - Google Satellite Imagery

DATE: Aug. 13, 2020

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Property No. 1

The property identified on Figure 9 as No. 1 is located with frontage onto Townline Road. The property is an irregular shape and consists of three existing structures with an agricultural field to the rear. The three existing structures consist of an existing residential dwelling and two agricultural-related barns. Based on the information provided to us by the Township of West Lincoln Planning Staff, these barns are currently used as an existing livestock operation. As shown in Figure 9, the calculated MDS setback is 420 metres. Based on this calculation, the MDS setback encroaches well into the subject lands and includes a number of already existing properties north of the agricultural property and to its west.

As per MDS Guidelines No. 12, "Existing Uses that Do Not Conform to MDS", the MDS setback can be reduced "provided that there are four, or more, non-agricultural uses, residential uses and/or dwelling closer to the subject livestock facility than the proposed development or dwellings and those four or more non-agricultural uses, residential uses and/or dwellings are:

- Located within the intervening area between the closest part of the proposed development or dwelling and the nearest livestock facility or anaerobic digester;
- Located on separate lots; and,
- Of the same or greater sensitivity (i.e. Type A or Type B in accordance with Implementation Guidelines No. 33 and No. 34) as the proposed development or dwelling.

If all of the above conditions are met, the MDS I setback for the proposed development may be reduced such that it is located no closer to the livestock facility than the furthest of the four non-agricultural uses, residential uses and/or dwellings".

Based on review of the separation distance circles in Figure 9, and the calculations completed by Colville Consulting Inc. in 2007 for Property No. 1, a number of residential lots (exceeding four lots) exist within the MDS I setback circle. As such, based on Guideline No. 12, the MDS setback should be reduced to the current extent of the existing settlement boundary.

Due to the existing non-agricultural developments already located within the MDS setback, it is not anticipated that the future development of the subject lands for residential uses would cause any further adverse impacts on the livestock operation that are not already being experienced. Given the existing sensitive land uses surrounding the livestock operation, future expansion of the agricultural uses is not likely. As a result, the development of the subject lands would not cause a negative impact on the existing livestock operation.

Property No. 2

The property identified on Figure 9 as Property No. 2 is located within the Secondary Plan boundary and has frontage onto St. Catharines Street. The property contains a single-detached residential

dwelling and four barn structures with a silo. The physical condition of the barns are considered to be poor based on existing aerial images of the site.

It is anticipated that the existing agricultural structures will be removed in the future in order to accommodate the future growth of the Secondary Plan Area for urban area uses. As a result, there are no concerns that the future development of the subject lands will have an impact on this operation, given that these structures will be removed to accommodate future development.

Property No. 3

The property identified on Figure 9 as Property No. 3 is located to the south of the subject lands and outside of the Smithville Urban Area. The property is located with frontage onto Highway 20 and consists of two agricultural-related buildings and two silos. Based on review of the existing structures via aerial images, the structures appear to be in good condition.

Using the MDS I formulae, a MDS distance for the subject property was calculated as being 340 metres. As shown on Figure 9, when the 340 metre setback distance is applied from the existing livestock operation, the setback is shown as encroaching onto the south east corner of the subject lands. The effect of the encroachment is minor and is unlikely to significantly affect the development of the subject lands or the agricultural operation in the long term. As a result, there are no concerns that the proposed future development of the subject lands would have any form of negative impact on the agricultural operation on Property No. 3.

Property No. 4

Property No. 4 is located with frontage onto Highway 20. The property consists of one barn structure, a single family dwelling and one smaller shed building. The balance of the property consists of agricultural land. Based on review of the existing structures on the lands, it appears that the agricultural buildings are in good physical condition. Based on the MDS calculations completed by Colville Consulting Inc., it was determined that the subject lands are well separated from the Secondary Plan area. A setback of 300 metres is required from Property No. 4, which results in the setback distance being located south of the subject lands and nowhere near the existing boundary of the Urban Area.

As a result, there are no concerns that the future development of the subject lands for non-agricultural uses will have any adverse impacts on any of the existing agricultural operations in proximity to the subject lands.

3.4 Compatibility with Surrounding Industrial Uses

The D-6 Compatibility between Industrial Facilities Guidelines identifies the direct interest of the Ministry in recommending separation distances and other control measures for land use planning proposals to prevent or minimize adverse effects from the encroachment of incompatible land uses. The guidelines are intended to be applied only when a change in land use is proposed, however, it is typically expected that compatibility concerns should be recognized and addressed at the earliest possible stage of the land use planning process.

The D-6 compatibility guidelines are intended to be applied in the land use planning process to prevent or minimize future land use problems due to the encroachment of sensitive land uses and industrial land uses on one another.

The D-6 guidelines identify three classes of industrial facilities: Class I, Class II, and Class III. Based on case studies and past experience, the MOE has identified potential influence areas within which adverse effects may have been experienced from industrial uses. Both the D-1 and D-6 guidelines recommend separation distances or other mitigation measures based on the results of investigative studies. The mitigation can be implemented at the source, or could also be incorporated on the proposed development lands where industrial facilities are operating in compliance with the Ministry's requirements. Zones of influence relate to an overall area where an industrial facility's adverse effects may be experienced.

The guidelines recommend the following minimum separation distances for sensitive land uses from industrial uses:

Industrial Classification	Zone of Influence	Minimum Setback Distance
Class I (Light)	70 metres	20 metres
Class II (Medium)	300 metres	70 metres
Class III (Heavy)	1,000 metres	300 metres

Class I Industrial facilities are considered a business for a small scale, self-contained plant or building which produces/stores a product which is contained in a package and has a low probability of fugitive emissions. These businesses are typically solely daytime operations only, with infrequent movement of products and/or heavy trucks and no outside storage. Class II industrial facilities are for medium scale processing and manufacturing with outdoor storage of wastes or materials (i.e. contains a form of open process) and/or there are periodic outputs of minor annoyance. This classification of industry would see frequent movement of products and/or heavy trucks during daytime hours. Finally, Class III industrial facilities are considered large scale manufacturing or

processing and is characterized by its large physical size, outside storage of raw and finished products, large production volumes and continuous movement of products and employees during both the daytime and nighttime shifts. Typically, Class III industrial facilities provide for frequent outputs of major annoyance and there is a high probability of fugitive emissions.

The lands located immediately north of the existing CP Railway consist primarily of a range of industrial uses and is considered to be the major employment area within the Smithville Urban Area. An evaluation of the existing uses in proximity to the subject lands was completed to determine which class of industry is located within 300 metres of the subject lands and could lead to future incompatibility concerns with proposed future sensitive land uses. Located immediately north of the CP Railway and within proximity are three industrial/commercial businesses that were evaluated via a desktop review. These included the following:

- **Harbison Walker International:** This business is classified as a Class III manufacturing facility located immediately north of the CP Railway. They are a manufacturer of refractory products and are considered to be a heavy industrial use that would require a minimum of 300 metre separation distance from sensitive land uses.
- **Premier Express Lines:** This business is classified as a Class II facility as it contains the outdoor storage of large commercial vehicles including buses and trucks. The business is a licensed and bonded freight shipping and trucking company. This facility is considered to be a medium scale industrial business that would require a minimum separation distance of 70 metres from sensitive land uses.
- **Stanpac:** This business is classified as a Class I industrial facility as it is considered a self-contained warehouse which stores its products indoors and does not contain any outdoor storage. The company produces packaging supplies for the dairy, food and beverage industries. This facility is considered to be low scale industrial facility that would require a minimum separation distance of 20 metres from sensitive land uses.

Figure 10 and Figure 11 below shows the required setbacks from the industrial facilities to the north and demonstrates the encroachment of the setback buffer into the subject lands.

The setback buffer can be measured in two ways. The first option is to measure the setback from the existing property line. The second option is to measure the setback from the existing industrial facility. The setback buffer shown in Figure 8 was measured from the existing industrial facility and not from the property line. As a result, there is little impact on the Secondary Plan area and the majority of the lands could be developed with sensitive uses (e.g. residential). However, once sensitive land uses were developed, the expansion of industrial uses on the adjacent lands would be limited.

Figure 11 below demonstrates how the subject lands would be impacted if the industrial setback is measured from the property line. As shown, a Class II industrial facility on the lands to the north would have a minor impact on the lands. However, a Class III industrial facility, which requires a 300

metre setback distance would impact the majority of the subject lands. The resulting impacts from this setback option means that a majority of the subject lands would be limited to future development that is compatible with the industrial facilities to the north. Sensitive land uses such as residential development would not be permitted within the setback area as they would be exposed to potential adverse impacts from the industrial activities including noise, odour and vibrations. A measurement of the setback from the property line would only be necessary if the lands immediately adjacent to the railway on the northern side were developed for an industrial facility. Given the watercourse located on this portion of the lands, development of the vacant portion is unlikely.

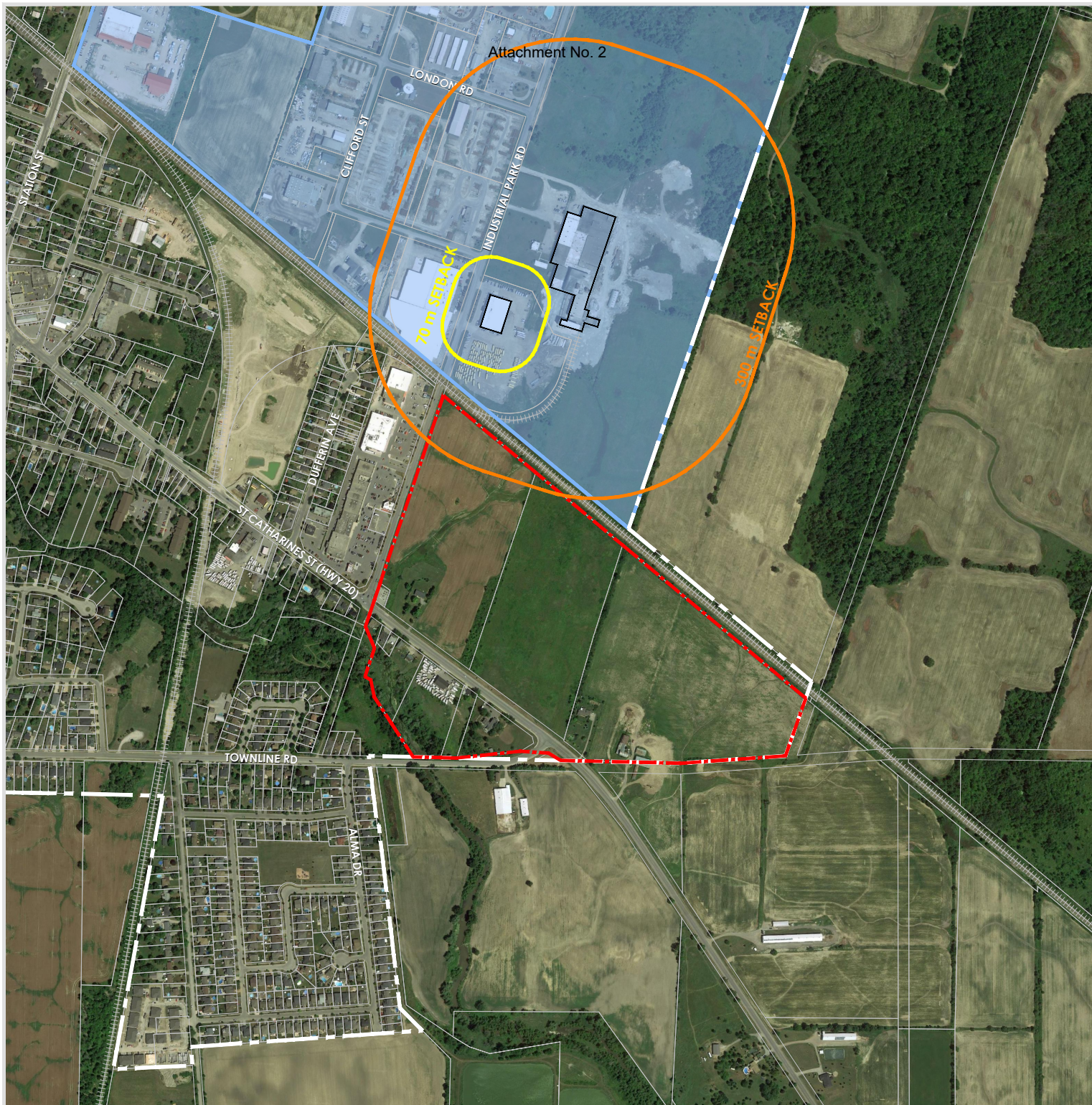
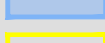


Figure 10:
**MECP Guidelines D1
 & D6 Minimum
 Recommended
 Industrial Setback
 Distances**

Legend

-  Smithville Urban Area Boundary
-  Secondary Plan Area Boundary
-  Parcel Fabric
-  Railway Lines
-  Draft Employment Area
-  70 m Setback from Trucking Business
-  300 m Setback from Manufacturing Business

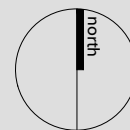
Source:
 Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries -
 Township of West Lincoln (2016)
 Google Satellite Imagery

DATE: July 15, 2020

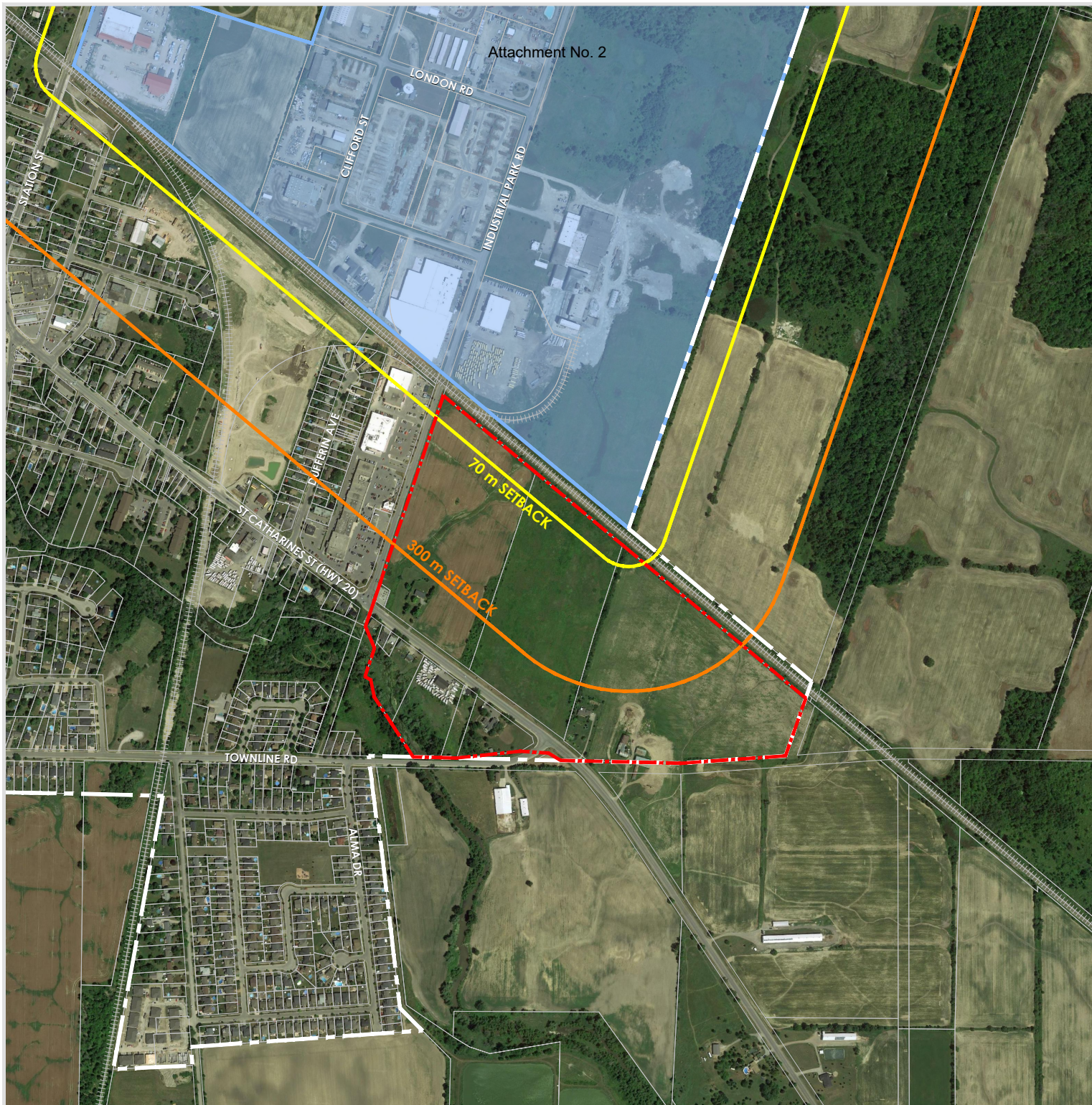
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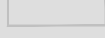

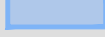
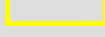

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 SETBACKS 2.DWG



**Figure 11:
MECP Guidelines D1
& D6 Minimum
Recommended
Industrial Setback
Distances**

**East Smithville
Secondary Plan
Community of Smithville
Township of West Lincoln**

Legend

-  Smithville Urban Area Boundary
-  Secondary Plan Area Boundary
-  Parcel Fabric
-  Railway Lines
-  Draft Employment Area
-  70 m Setback from Draft Employment Area
-  300 m Setback from Draft Employment Area

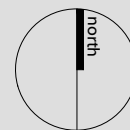
Source:
Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries -
Township of West Lincoln (2016)
Google Satellite Imagery

DATE: July 15, 2020

SCALE: 1:10,000

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SETBACKS.DWG



**PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE**

200-540 BINGEMANS CENTRE DR. KITCHENER, ON, N2B 3X9
P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM

4.0 Land Use Scenarios - Conceptual

The purpose of completing the background review and constraints investigation was to evaluate the existing conditions of the subject lands and surrounding area. The findings obtained from the technical analysis completed of the subject lands assisted in the preparation of three conceptual land use options for the East Smithville Secondary Plan Area. These land use options took into consideration the existing land use needs within the Smithville Urban Area, the technical analysis completed by Crozier for the subject lands, and the various constraints that were analyzed as part of this report. Further, the most suitable configuration of north-south and east-west collector road network, the required amount of parkland to serve the new neighbourhood, and potential trail connections have been conceptualized on each of the concepts, in accordance with the existing road network and trail network within this area of Smithville.

The following section provides a description of these conceptual land use options that will eventually be presented to the public for their review and feedback. The conceptual options being presented in this report are preliminary and are subject to further refinement through the development of the Secondary Plan. Therefore, high-level land uses were identified. Furthermore, the intent of the various options is to present the range of feasible configurations under consideration.

The first two land use options are fairly similar to each other with only minor land use differences depicted (primarily residential), whereas the third land use option provides a very different concept with respect to land uses and proposes a concept where the employment area is maintained primarily. This is important as it provides two drastically different land use options for the public and Council to review and consider for the area.

The goal is that through the evaluation process of these land use options, a preferred concept is selected which could represent a hybrid amongst the most desirable elements of each option, contributing to an overall community Plan. In order to assist in the evaluation of each concept option, with the consideration of Provincial density requirements, additional details relative to the anticipated density generation for each concept has been included which utilize PPU assumptions from the Region of Niagara Development Charge Background Study. In addition, the density generated and expected job creation for each concept option will be evaluated against the density and jobs that would be generated under the existing conditions of the lands. Under existing conditions, the lands would generate approximately 300 jobs, based on the average employment density of the Smithville Industrial Park. The lands would be designated almost entirely for employment, with the commercial/class 1 industrial lands along Industrial Park Road and the Mixed-Use lands south of St. Catharines Street.

Figures 12 to 14 below illustrate the land use options for the East Smithville Secondary Plan Area, which are anticipated to be presented to the public at Public Consultation Centre No. 2 in Winter 2021.

Land Use Option No. 1

Land Use Option No. 1 is identified on Figure 12. Option No. 1 proposes a primarily new residential community. The subject lands contain two main tributaries that flow north-south and eventually connect to Twenty Mile Creek to the south of the subject lands. These two tributaries are identified as being part of the Natural Heritage System. They are comprised of two 30 metre natural corridors that act as buffers to the existing watercourses. These tributaries are to be protected and enhanced as part of the future development of the subject lands. The lands to the west of the western tributary and located with frontage onto Industrial Park Road is identified as a new Commercial/Class I Industrial area. This land use also extends partially to the east of the western tributary and acts as a buffer between the industrial facilities located to the north of the CP Railway line. The Commercial/Class I Industrial land use is proposed to consist of approximately 5.38 hectares of the total land area.

The majority of the lands located east of the western tributary is identified as Low-Density Residential and would be the primary form of development for the East Smithville Secondary Plan. The Low-Density Residential land use is proposed to consist of approximately 12.22 hectares of the total land area. This land use would accommodate lower forms of residential density and primarily single-detached dwellings. It is also proposed that two stormwater management facilities would be located within this area. These two facilities are planned to consist of approximately 8-10 percent of the entire land area. In addition, a neighbourhood park has been conceptualized as a central location within the residential areas, which will also be considered as part of the development of the East Smithville Secondary Plan Area.

This land use option proposes a High Density Residential area along the entire northern frontage of St. Catharines Street and consists of approximately 3.8 hectares of the total land area. This area would accommodate higher forms of density and multiple residential housing forms. The portion of subject lands located to the south of St. Catharines Street is proposed to be a Mixed-Use area consisting of approximately 3.15 hectares of land. The High Density Residential and Mixed Use land uses along St. Catharines Street will provide for higher forms of density along a high-traffic roadway. It is intended that this area would provide the elements of a complete community with a range of residential options that enliven the area throughout the day and employment uses that support growing economic prosperity. It is the hope that St. Catharines Street would act as a gateway to the Smithville Urban Area from the east.

Land Use Option No. 1 addresses the various constraints discussed in this report as follows:

Industrial Compatibility

- Based on the setbacks shown in Figure 8 of this Report, the maximum setback for the Class III industrial facility is shown as impacting the subject lands primarily on the portion of lands west of the western tributary and partially along the northern property line to the east of the western tributary. As a result, sensitive land uses should not be developed within this area. Instead, uses that are considered compatible with Class III industries would be appropriate. Land use option 1 suggests that the impacted lands be designated for Commercial/Class I Industrial uses to ensure appropriate compatibility and to maintain separation of the sensitive land uses from the industrial facilities to the north.

Natural Heritage

- All three land use options have incorporated 15 metre setbacks on either side of the existing tributaries that flow through the subject lands. These buffers were recommended by Crozier based on their technical investigation and findings found in Appendix A and will contribute to the protection and enhancement of these natural features on the lands.
- Two stormwater management ponds have been proposed on the western and eastern sides of the lands to address quality and quantity control of stormwater on the lands. Potential Trail Connections have been identified along the stormwater management facilities, based on the existing trail network.
- Lands located south of St. Catharines Street and within the floodplain area associated with Twenty Mile Creek are proposed to be designated Mixed Use Area to allow for higher forms of density in a potential flooding zone. A Mixed Use zone within the floodplain significantly reduces potential impact from flooding on future residential dwellings.

Employment

- Land use option 1 includes proposed land uses that can accommodate commercial/Class I industrial uses and other forms of retail and personal service shops in the Mixed Use area. Although the primary employment area currently designated on the lands is being removed as part of this option, the Secondary Plan area will contribute to a suitable and needed mix of residents and jobs.
- This land use option is expected to generate approximately 300 jobs, with an expected density of greater than 50 people/jobs per hectare.

Minimum Distance Separation (MDS)

- As discussed in Section 3.3 of this Report, surrounding livestock operations will not be impacted by the proposed future development of the subject lands given the existing residential development surrounding the agricultural operations and the removal of the existing agricultural operation within the subject lands to accommodate future residential.

CP Railway

- A 30 metre setback has been incorporated from the railway line to protect adjacent uses from any adverse impacts associated with the active rail line.

4.2 Land Use Option No. 2

Land Use Option No. 2 is identified on Figure 13. Option No. 2 is similar to Land Use Option No. 1 as it proposes a primarily new low-rise residential community. The main differences seen between Option No. 1 and Option No. 2 is the elimination of the Commercial/Class I Industrial land use on the eastern side of the western tributary and the elimination of the High Density Residential area. The Commercial/Class I Industrial land use is solely maintained on the western side of the western tributary and will provide commercial and low scale industrial options with frontage onto Industrial Park Road. The portion of lands to the east of the western tributary is shown as being Low-Density Residential and will be an extension of the Low-Density Residential proposed for the majority of the subject lands. In this option, the Commercial/Class I Industrial land use comprises approximately 3.26 hectares of the total land area, while the Low-Density Residential land use area comprises approximately 14.32 hectares.

This option removes the potential buffer from the northern industrial uses. It is important to note that an existing 30 metre buffer is already in place as a result of the required setback from the rail line. Furthermore, based on the industrial compatibility setback of 300 metres shown in Figure 5, the Low-Density Residential land use area would not be significantly impacted by this buffer. As such, there would be no concerns with moving forward with this type of land use structure with respect to compatibility with the industrial facilities.

The final change associated with Land Use Option No. 2 is the removal of the High Density Residential strip and replacing it with a Mixed-Use land use, similar to the land use that is proposed for the lands to the south of St. Catharines Street. This option provides similar densities but increases the ability for the subject lands to accommodate employment uses. The total Mixed-Use land area on the subject lands in this option is approximately 6.9 hectares.

Land Use Option No. 2 addresses the various constraints discussed in this report as follows:

Industrial Compatibility

- Based on the setbacks shown in Figure 8, the maximum 300 metre setback associated with the Class III industrial facility is shown impacting the subject lands in the same manner as discussed above for land use option No. 1. The difference between land use option 1 and land use option 2 is the removal of the Commercial/Class I industrial use designation on the portion of the subject lands to the east of the western tributary. Lands on the western side of the tributary will continue to accommodate Commercial/Class I industrial uses in this scenario and will be compatible with the industrial uses to the north. The small encroachment of the industrial setback on the eastern side of the tributary appears to be located within the required 30 metre railway setback. No sensitive land uses are to be developed in this setback area, and as a result, there are no concerns with respect to adverse impacts on future residents from the facilities to the north in this option.

Natural Heritage

- All three land use options have incorporated 15 metre setbacks on either side of the existing tributaries that flow through the subject lands. These buffers were recommended by Crozier based on their technical investigation and findings found in Appendix A and will contribute to the protection and enhancement of these natural features on the lands.
- Two stormwater management ponds have been proposed on the western and eastern sides of the lands to address quality and quantity control of stormwater on the lands. Potential Trail Connections have been identified along the stormwater management facilities, based on the existing trail network.
- Lands located south of St. Catharines Street and within the floodplain area associated with Twenty Mile Creek are proposed to be designated Mixed Use Area to allow for higher forms of density in a potential flooding zone. A Mixed Use zone within the floodplain significantly reduces potential impact from flooding on future residential dwellings.

Employment

- Land use option 2 includes proposed land uses that can accommodate commercial/Class I industrial uses and other forms of retail and personal service shops in the Mixed Use areas located along the northern and southern frontages of St. Catharines Street. Although the primary employment area currently designated on the lands is being removed as part of this option, the Secondary Plan area will contribute to a suitable and needed mix of residents and jobs.
- This lands use option is expected to generate approximately 200 jobs.

- It is noted that if there was a greater incorporation of mixed-use land, that included office type development as a permitted use, the land use density generated would be higher.

Minimum Distance Separation (MDS)

- As discussed in Section 3.3 of this Report, surrounding livestock operations will not be impacted by the proposed future development of the subject lands given the existing residential development surrounding the agricultural operations and the removal of the existing agricultural operation within the subject lands to accommodate future residential.

CP Railway

- A 30 metre setback has been incorporated from the railway line to protect adjacent uses from any adverse impacts associated with the active rail line.

4.3 Land Use Option No. 3

Land Use Option No. 3 is identified as Figure 14. Option No. 3 provides a different outlook on how the East Smithville Secondary Plan Area could function in the future. Given the proximity of the subject lands to the Employment Area north of the CP Rail Line, and its current designation in the Township Official Plan as an Employment Area, it was considered appropriate to provide a land use option that maintained this type of development on the subject lands. Similarly to Option No. 1 and 2, the lands to the west of the western tributary found on the subject lands is proposed for Commercial/Class I Industrial land uses. The lands to the east of the western tributary are proposed to remain as Employment Area and would allow for uses classified as medium to heavy industrial classes. The ability to maintain this form of land use on the subject lands would remove any need to provide appropriate setbacks from the existing industrial uses to the north of the CP rail line as the proposed uses would be compatible with the surrounding area to the north.

The final change associated with Option No. 3 is the removal of the High-Density Residential or Mixed Use Strip fronting St. Catharines Street and replacing it with the Commercial/Class I Industrial land use. This strip has been increased in depth in this scenario to provide a higher separation distance from the proposed Mixed-Use land use area south of St. Catharines Street. The use of the Commercial/Class I Industrial land use along St. Catharines Street would allow for a commercial corridor along this high-traffic roadway. Travellers along St. Catharines Street would continue to have access to a range of commercial services.

Land Use Option No. 2 addresses the various constraints discussed in this report as follows:

Industrial Compatibility

- No concerns with respect to industrial compatibility with the industrial properties to the north as land use option 3 proposes compatible development options and no sensitive land uses, other than those located to the south of St. Catharines Street, and well outside of the setback requirement shown in Figure 8. Land use option 3 proposes to maintain the Employment Area designation on the majority of the parcel.
- Commercial/Industrial Class I uses will provide a separation between the proposed Employment Area and the Mixed Use area to the south of St. Catharines to avoid any adverse impacts on potential future residents. The Employment Area within this scenario should be limited to industries classified as Class I and Class II to avoid compatibility concerns with existing development in the surrounding area.

Natural Heritage

- All three land use options have incorporated 15 metre setbacks on either side of the existing tributaries that flow through the subject lands. These buffers were recommended by Crozier based on their technical investigation and findings found in Appendix A and will contribute to the protection and enhancement of these natural features on the lands.
- Two stormwater management ponds have been proposed on the western and eastern sides of the lands to address quality and quantity control of stormwater on the lands. Potential Trail Connections have been identified along the stormwater management facilities, based on the existing trail network.
- Lands located south of St. Catharines Street and within the floodplain area associated with Twenty Mile Creek are proposed to be designated Mixed Use Area to allow for higher forms of density in a potential flooding zone. A Mixed Use zone within the floodplain significantly reduces potential impact from flooding on future residential dwellings.

Employment

- Land use option 3 will primarily consist of Employment Area and Commercial/Industrial Class 1 uses. As a result, the conversion of employment uses to non-employment would not be necessary in this land use scenario.
- This lands use option is expected to generate approximately 300 jobs.

Minimum Distance Separation (MDS)

- As discussed in Section 3.3 of this Report, surrounding livestock operations will not be impacted by the proposed future development of the subject lands given the existing residential development surrounding the agricultural operations and the removal of the

existing agricultural operation within the subject lands to accommodate future employment uses.

CP Railway

- A 30 metre setback has been incorporated from the railway line to protect adjacent uses from any adverse impacts associated with the active rail line.

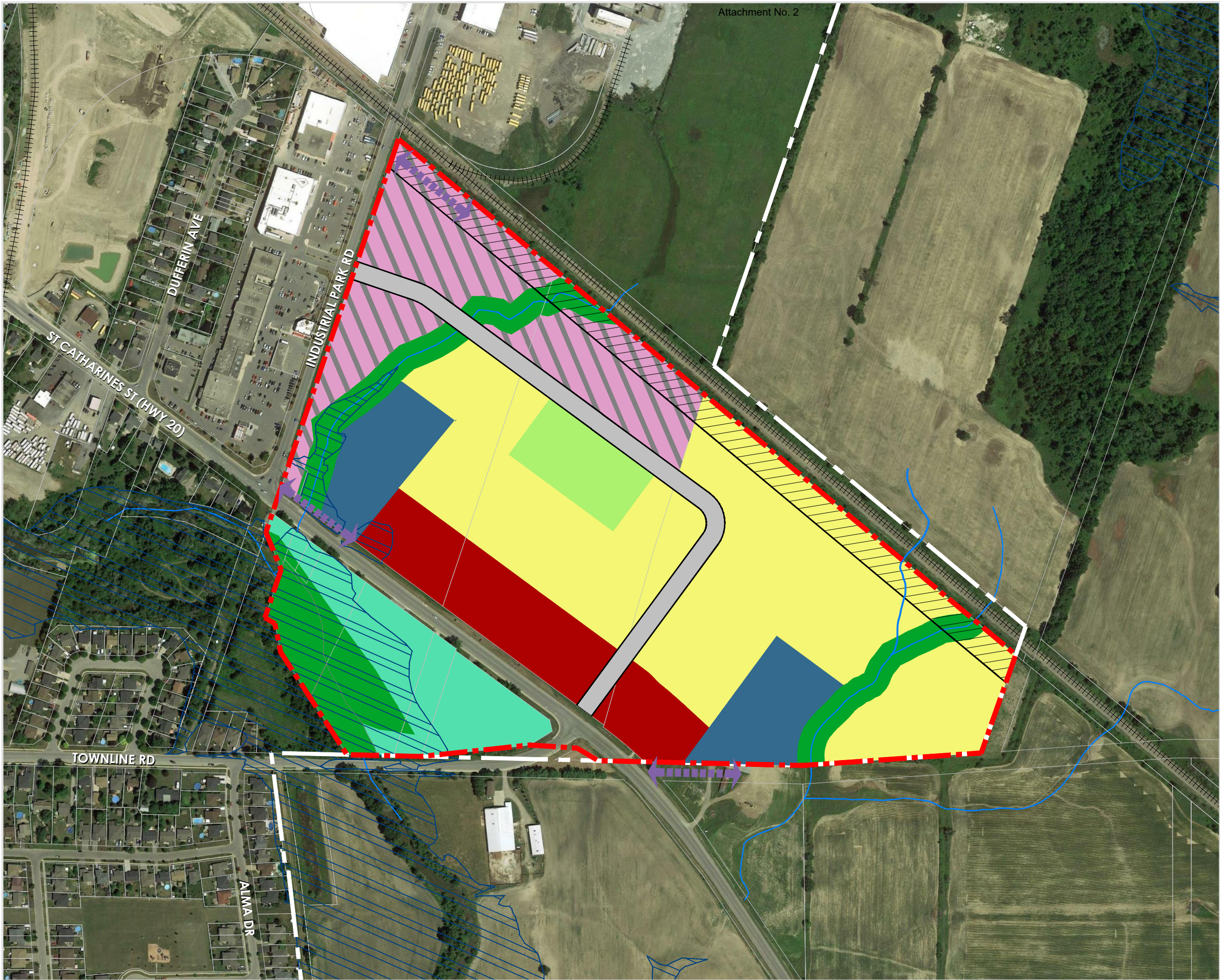


Figure 12:
Land Use Option 1

East Smithville Secondary Plan
Community of Smithville
Township of West Lincoln

Legend

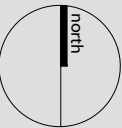
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- Secondary Plan Area Boundary
- Parcel Fabric
- Watercourses
- Railway Lines
- Railway Setback
- Floodplain (NPCA)
- Potential Trail Connections

Proposed Land Use

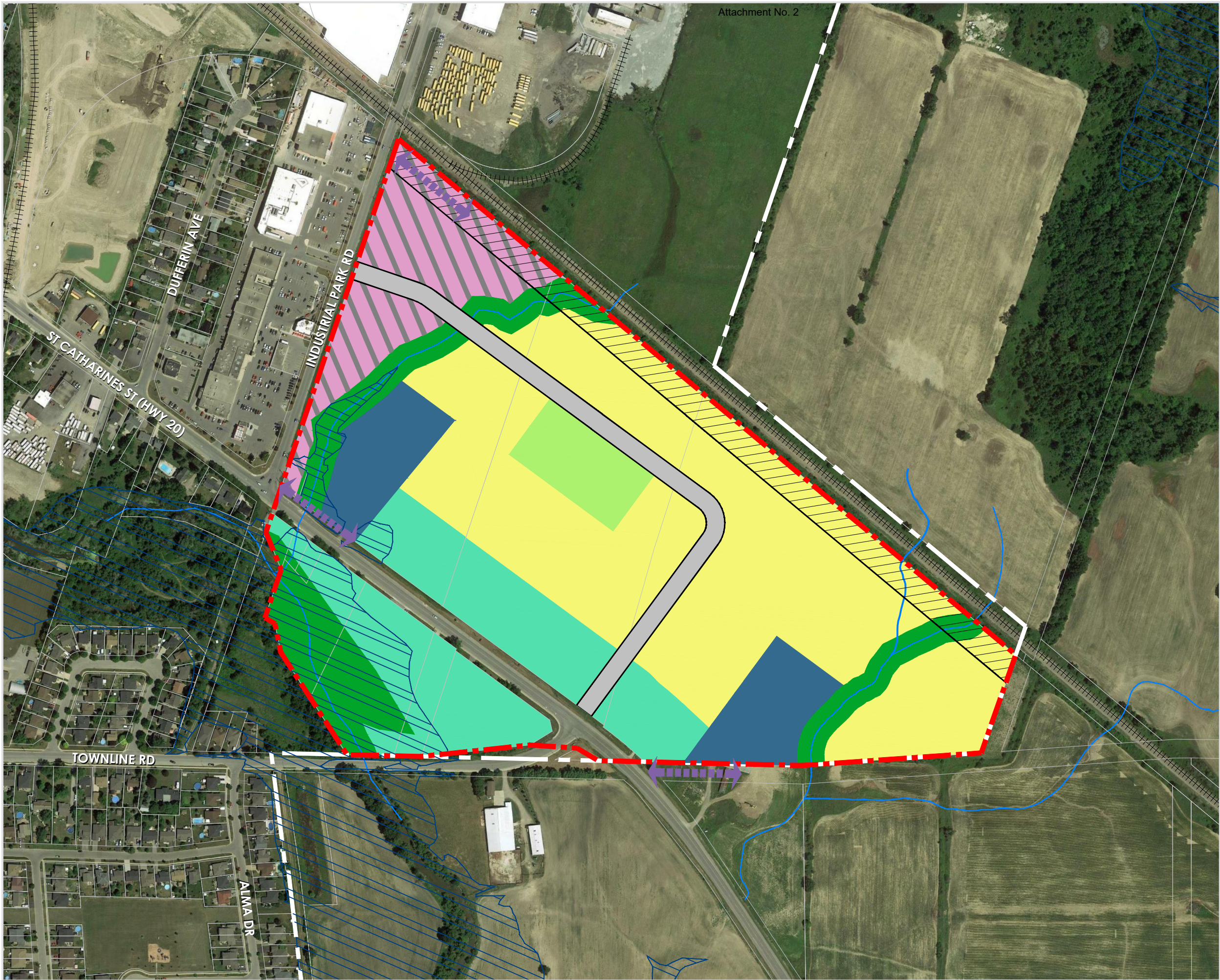
- Low Density Residential (±12.22 ha)
- High Density Residential (±3.15 ha)
- Commercial/Class 1 Industrial (±5.38 ha)
- Mixed Use (±2.43 ha)
- Natural Heritage System (±3.58 ha)
- Stormwater Management Facility (±2.43 ha)
- Park (±1.05 ha)
- Proposed Collector Road

Source:
- Watercourses and setbacks from Natural Heritage Constraints Analysis, Crozier Consulting Engineers, June 2020
- Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries - Township of West Lincoln (2016)
- Contains information licensed under the Open Government Licence - NPCA
- Google Satellite Imagery

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Attachment No. 2

Figure 13:
Land Use Option 2

East Smithville Secondary Plan
Community of Smithville
Township of West Lincoln

Legend

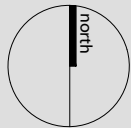
- Smithville Urban Area Boundary
- Secondary Plan Area Boundary
- Parcel Fabric
- Watercourses
- Railway Lines
- Railway Setback
- Floodplain (NPCA)
- Potential Trail Connections

Proposed Land Use

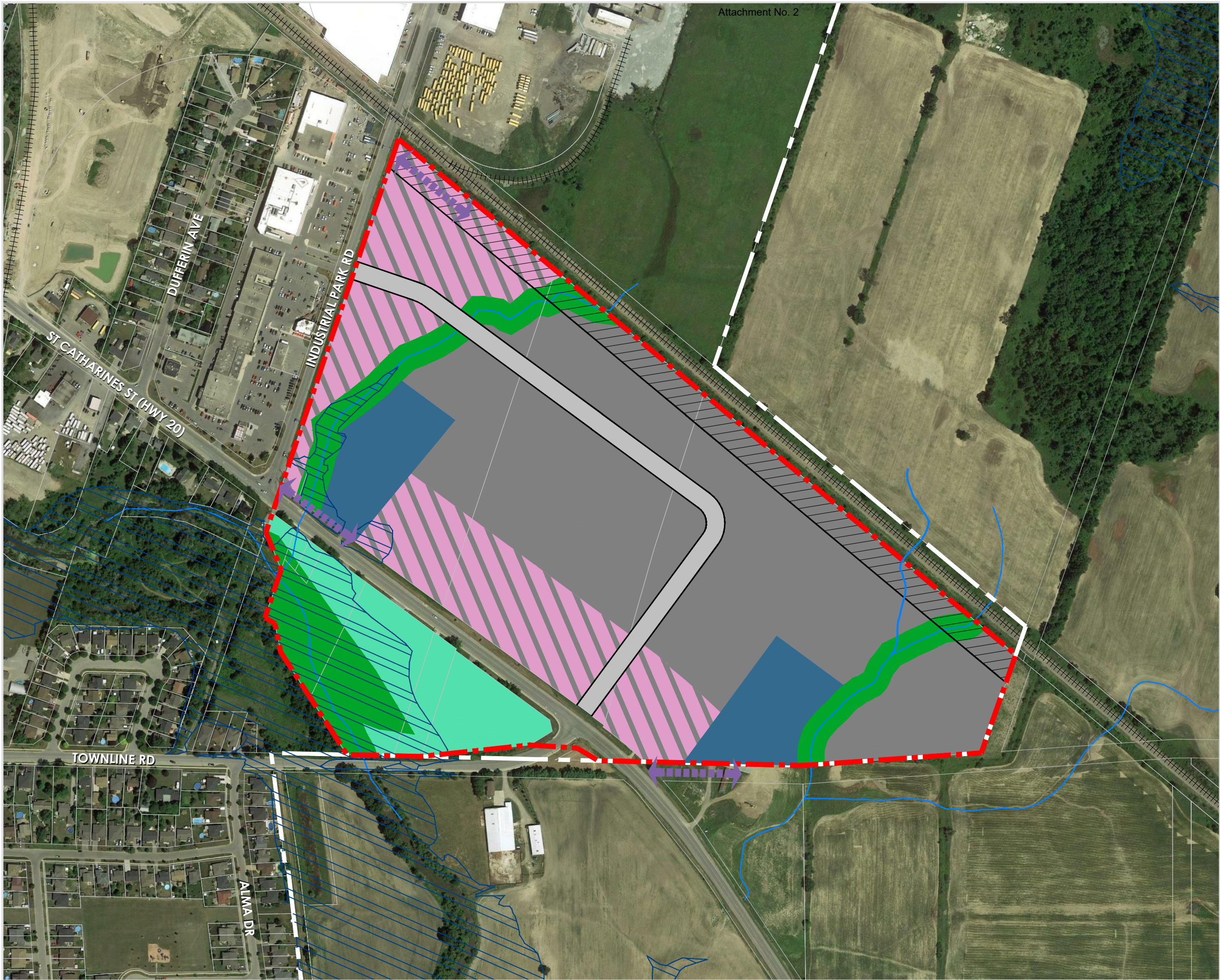
- Low Density Residential (±14.32 ha)
- Commercial/Class 1 Industrial (±3.26 ha)
- Mixed Use (±5.58 ha)
- Natural Heritage System (±3.58 ha)
- Stormwater Management Facility (±2.43 ha)
- Park (±1.05 ha)
- Proposed Collector Road

Source:
- Watercourses and setbacks from Natural Heritage Constraints Analysis, Crozier Consulting Engineers, June 2020
- Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries - Township of West Lincoln (2016)
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Attachment No. 2

Figure 14:
Land Use Option 3

East Smithville Secondary Plan
Community of Smithville
Township of West Lincoln

Legend

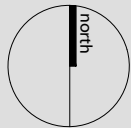
- Smithville Urban Area Boundary
- Secondary Plan Area Boundary
- Parcel Fabric
- Watercourses
- Railway Lines
- Railway Setback
- Floodplain (NPCA)
- Potential Trail Connections

Proposed Land Use

- Commercial/Class 1 Industrial (±7.26 ha)
- Employment Area (±14.55 ha)
- Mixed Use (±2.43 ha)
- Natural Heritage System (±3.58 ha)
- Stormwater Management Facility (±2.43 ha)
- Proposed Collector Road

Source:
- Watercourses and setbacks from Natural Heritage Constraints Analysis, Crozier Consulting Engineers, June 2020
- Parcel Fabric, Road Network, Municipal and Secondary Plan Boundaries - Township of West Lincoln (2016)
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Date: February 3, 2021
Scale: 1:4,000
File: 08234X
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5.0 Conclusion and Next Steps

The three land use options described above and shown in Figures 7 to 9 will be used as part of the initial consultation process in the development of a final Secondary Plan Area. As the process proceeds and additional information is gathered, an evaluation criteria will be developed to assist in assessing the potential options to produce one preferred solution that represents the most desirable development concept, balancing the needs of the Township, the public, landowners, and local residents. Evaluation criteria such as the Natural Environment, Land Use and Development Patterns, Socio-Economic considerations, Cost and Sustainability, and, Transportation may be included as factors in how to determine the most efficient form of development.

Building on the background research and high-level issues identified in this Report, the project team will meet with Township and Regional Planning Staff to confirm initial results and discuss next steps. The project team will begin to review the issues and opportunities, limitations, and restrictions for development of the East Smithville Secondary Plan and examine the opportunities for development of these lands.

In the process of developing land use design options, consultation and engagement is planned to occur in two stages; engagement with the landowners and engagement with the public. The East Smithville Secondary Plan area landowners group have been engaged early to assist in determining the vision and direction for the development of the subject lands and obtain their feedback prior to resuming the design stage. The public will be engaged to review the preliminary design options presented in this Report and to obtain feedback on a preferred scenario. It is anticipated that these public consultations will occur in Winter and Spring 2021.

Respectfully Submitted,

MHBC



Dan Currie, MA, MCIP, RPP
Partner



Michelle Baya, BES
Planner

Appendix A

**NATURAL HERITAGE CONSTRAINTS ANALYSIS
EAST SMITHVILLE SECONDARY PLAN EXPANSION**

TOWNSHIP OF WEST LINCOLN

PREPARED FOR:

MHBC PLANNING INC.

PREPARED BY:

**CROZIER CONSULTING ENGINEERS
40 HURON STREET, SUITE 301
COLLINGWOOD, ONTARIO
L9Y 4R3**

JANUARY 2021

CFCA FILE NO. 0529-5527

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



Revision Number	Date	Comments
Rev. 1	January 2021	Submission to MHBC

1.0 Executive Summary

C.F. Crozier & Associates Inc. (Crozier) was retained by **MHBC Planning Inc.** (the "Proponent") to undertake a Natural Heritage Constraints Analysis to support the proposed East Smithville Secondary Plan Expansion for the community of Smithville in the Township of West Lincoln.

The purpose of the study is to assess the significance of three natural heritage features within the proposed Secondary Plan expansion area. It is understood that further and more detailed natural heritage evaluations will be required for the proposed Secondary Plan expansion area, however these studies will be completed at future development stages.

The analysis contained within this report was prepared using field work, second source data and existing natural heritage policy applicable to the subject and adjacent lands.

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2.0 Introduction

CF Crozier & Associates Inc. (Crozier) was retained by **MHBC Planning Inc.** (the "Proponent") to undertake a Natural Heritage Constraints Analysis to support the proposed East Smithville Secondary Plan for the community of Smithville in the Township of West Lincoln.

The purpose of the study is to assess the significance of key features within the Secondary Plan area that have been identified within local Official Plans and Zoning schedules as natural heritage features. These features are noted as Areas A, B and C on Figure 1 herein. It is understood that further and more detailed natural heritage evaluations will be required for the proposed Secondary Plan expansion area, however these studies will be completed at future development stages.

2.1 Study Goals and Objectives

The purpose of this Constraints Analysis is to provide a detailed description and background review of the physical and ecological characteristics of the natural heritage features from the subject lands including the functions, significance and sensitivity in order to define constraints and opportunities for future land development including the potential for a Natural Heritage System (NHS).

The policies and technical requirements of the Official Plans for the Township of West Lincoln and Niagara Region and the 2020 Provincial Policy Statement (PPS) have been considered as part of this study.

The specific objectives that will be completed as part of this Constraints Analysis include the following:

- a) Provide an evaluation of the ecological features and functions of the subject lands through detailed background review and preliminary field investigations;
- b) Identify and map any and all significant features (i.e. any significant habitat for Species at Risk), key ecological attributes and sensitivities of the subject lands;
- c) Determine the need for buffers and/or for any and all natural features and provide recommendations for the mitigation and protection of natural heritage features and functions.

3.0 Natural Heritage Policy

Provincial and municipal planning policies guided the preparation of natural heritage constraints and opportunities for the proposed development on the subject lands. Existing background policy information sources were reviewed to identify any mapped natural heritage features that may occur on or adjacent to the subject lands. In addition, a review of background data from various sources pertaining to the subject and adjacent lands was also completed. These policies and background information sources include:

- a) Ontario Provincial Policy Statement (2020);
- b) Niagara Region Official Plan (2014);
- c) Township of West Lincoln Official Plan (2018);
- d) Niagara Peninsula Conservation Authority - Ontario Regulation 155/06 (2006)
- e) Ministry of Natural Resources Natural Heritage Reference Manual (2010) and the Significant Wildlife Habitat Technical Guide (2000);

- f) Ontario Natural Heritage Information Centre database (2020) (www.nhic.mnr.gov.on.ca);
- g) The Ontario Breeding Bird Atlas (www.birdsontario.org);
- h) The Species At Risk Public Registry (www.sararegistry.gc.ca);
- i) Ontario *Endangered Species Act* (2007);
- j) Aerial photographs.

3.1 Provincial Policy Statement (PPS)

The Provincial Policy Statement addresses the protection of Natural Heritage Features in relation to development.

According to the Provincial Policy Statement (2020), various provincially defined natural features shall be protected for the long term. Relevant sections state:

- “2.1.2 The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of *natural heritage systems*, should be maintained, restored or, where possible, improved, recognizing linkages between and among *natural heritage features and areas, surface water features and ground water features*.
- 2.1.4 *Development and site alteration shall not be permitted in :*
- a) *significant wetlands in Ecoregions 5E, 6E and 7E, and*
 - b) *significant coastal wetlands*
- 2.1.5 *Development and site alteration shall not be permitted in:*
- a) *significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;*
 - b) *significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);*
 - c) *significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);*
 - d) *significant wildlife habitat; and*
 - e) *significant areas of natural and scientific interest; and*
 - f) *coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b)*
- unless it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions.*
- 2.1.6 *Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.*
- 2.1.7 *Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.*
- 2.1.8 *Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.”*

3.1.1. Relevance to the Study Areas

Recommendations in this report shall be consistent with policy statements made under the Act.

3.2 Niagara Region Official Plan

Section 7B of the Niagara Region Official Plan details the policies of the Core Natural Heritage System. The Core Natural Heritage System contains of Core Natural Areas that are classified as either Environmental Protection Areas or Environmental Conservation Areas, potential Natural Heritage Corridors that connect the Core Natural Areas, Greenbelt Natural Heritage and water resources systems and fish habitat. The Core Natural Heritage System is identified on Schedule C of the Official Plan.

3.2.1. Relevance to the Study Areas

Areas A, B and C are identified as features on Schedule C, Core Natural Heritage. Areas A and C are identified as Fish Habitat and Area B is identified as Environmental Conservation Area (See Appendix A).

3.3 Township of West Lincoln Official Plan

The Township of West Lincoln's Core Natural Heritage System is described in Section 10.7 of the West Lincoln Official Plan. The Core Natural Heritage System consists of the following components:

- Environmental Protection Areas or Environmental Conservation Areas;
- Potential Natural Heritage Corridors connecting the Core Natural Areas;
- The Greenbelt Natural Heritage and Water Resources Systems;
- Fish Habitat.

Schedules C-1 to C-4 of the Official Plan show the above noted components of the Core Natural Heritage System. Schedule B-4 shows the land use for Smithville specifically.

3.3.1. Relevance to the Study Areas

Schedules C-1 and C-4 of the Official Plan both designate the tributaries in Areas A and C within the subject lands as fish habitat. Area A only is identified on Schedule C-2 as Floodplain (See Appendix B). Area B is designated on Schedule B-4 as a part of the Natural Heritage System (NHS) (See Appendix B).

3.4 Niagara Peninsula Conservation Authority (NPCA)

Ontario Regulation 155/06 is the Generic Regulation of the Conservation Authorities Act, which came into effect in May 2006, specific to the regulation of development, interference with wetlands, and alterations to shorelines and watercourses. Under this regulation, hazardous lands, wetlands, shorelines and areas susceptible to flooding, and associated allowances within the Authority are delineated by the "Regulation Limit" shown on maps that are filed by the NPCA.

Regulation 155/06, '**Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation**', requires that a permit be obtained from the Authority when undertaking any of the following:

- Straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse or interfering in any way with a wetland;
- Development adjacent or close to the shoreline of inland lakes, in river or stream valleys, hazardous lands, wetlands or lands adjacent to wetlands.

Development as defined by the Conservation Act includes:

- The construction, reconstruction, erection or placing of a building or structure of any kind, or changes to an existing building or structure to alter its size or purpose;
- Site grading;

- The temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere.

The intent of the permit process is to ensure that activities in these areas will not result in a risk to public safety or property damage and that the natural features are protected through the conservation of land. Ontario Regulation 155/06 also limits the amount of potential development in floodplains.

3.4.1. Relevance to the Study Areas

The tributaries in Areas A and C as well as a small portion of land along St. Catharine Street (Hwy. 20) are located within the NPCA's Regulation Limit Area (see Figure 2). A portion of the tributary in Area A is also described as Regulated Floodplain.

3.5 Endangered Species Act

The Provincial *Endangered Species Act* (2007) protects the endangered species that are listed on the regulations under the act. It specifically prohibits wilful harm to endangered species that are listed in regulations under the Act and the wilful destruction of, or interference with, their habitats. The Committee on the Status of Species at Risk in Ontario (COSSARO) assesses any Ontario species that might be experiencing declines based on research conducted by government staff or reports from other sources. Species are classified into categories based on the degree of risk that they face which include Extirpated, Endangered, Threatened or Special Concern. Only those species that are categorized as either Extirpated, Endangered or Threatened are afforded protection under the *Endangered Species Act*. A searchable online database of the species assessment reports is available at www.cossaroagency.ca/species.

The Natural Heritage Information Centre (NHIC) tracks and maintains data on Ontario's endangered species and was consulted as to the listed species on or within the one kilometre grid that includes the subject lands.

3.5.1. Relevance to the Development Proposal

The search of the NHIC in January 2021 found that there was one Natural Area within grid number 17PH1972.

4.0 Existing Natural Heritage Conditions

Preliminary field investigations of Areas A and B were completed by a qualified biologist on April 27, 2020. Area C identified on Figure 1 was not part of the field investigation but has been included in this study using second source data review.

4.1 Area A

A headwater drainage feature assessment was completed by Azimuth Environmental Consulting using the methodology in the Ontario Stream Assessment Protocol (MNR, 2017) and in accordance with the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA/CVC, 2014) and is included in Appendix C. The site visit did not capture early-spring conditions resulting from thaw/snowmelt, but was completed while conditions remained relatively wet prior to leaf out.

A headwater drainage feature (an unnamed tributary of Twenty Mile Creek) is present on the site, with multiple drainage pathways as shown on Figure 3 and site photographs in Appendix C. All site drainage eventually enters Twenty Mile Creek approximately 52m to the south of St. Catharines

Street.

Overall, drainage on the property alternated between diffuse overland flow, more defined channelized flow and 'multi-thread' channelized flow. Drainage was also seen to flow through areas of vegetation composed primarily of cattails, in northwest, north and central areas of the property. Along the main northeast-southwest branch of the drainage feature, water levels ranged between 3-25cm, and generally increased towards St. Catharines Street.

The primary substrate type was clay, with secondary silt substrate. No coarse sand, gravel or cobble was observed on the property. Although not yet growing, the dominant riparian vegetation class is the surrounding cropland with some sections of meadow. In-feature vegetation is expected to be abundant based on the large amount of dead herbaceous vegetation observed.

Seepage was noted in two areas: one at the northern property boundary, immediately south of the railway line (potentially the result of a buried culvert under the track conveying water from north of the track) and at the northern edge of Area A (Figure 3). Watercress, indicating potential groundwater inputs, was consistently observed in the southern portion of Area A within the main branch of the drainage feature (Figure 3). Other aquatic vegetation was also noted in the channel in the same section as well as in the east branch to the north.

It is expected that secondary branches off the main and east branches of the drainage feature will dry up as the season progresses (Figure 3). Flow permanency is unknown in the main and east branches which had much greater (albeit <0.5L/s) flows during the spring site visit.

No fish were observed within the headwater drainage feature on the property during the assessment or at the St. Catharines Street culvert. However, based on the close proximity to, and hydraulic connectivity with Twenty Mile Creek (and no obvious barriers downstream of St. Catharines Street visible from the road), there is potential for fish to move upstream onto the property from Twenty Mile Creek. It is anticipated (but unconfirmed) that this is only possible under higher early-season flows.

Any fish usage of the headwater drainage feature on the property would likely be limited to the deeper downstream section within approximately 80m of St. Catharines Street. Upstream of this point, flow conditions, channel measurements (or the lack of a channel) and in-feature vegetation (that had not yet come up during the site visit) would restrict fish passage. Even in the deeper downstream section on the property habitat quality is considered marginal, despite the presence of watercress. In the section of the channel downstream of St. Catharines Street (off property), the channel appears to have been historically altered given its straight alignment, the presence of a gabion retaining wall and what appears to be rip rap lining the channel. While fish passage from Twenty Mile Creek appears to be possible under the conditions observed on site, areas available to fish are very limited and habitat is of low quality.

Fisheries and Oceans Canada Species At Risk mapping indicates that there are records of Grass Pickerel (*Esox americanus vermiculatus*), a species of Special Concern under the Endangered Species Act/Species at Risk Act, in the Twenty Mile Creek watershed, including the unnamed tributary of Twenty Mile Creek on the property (DFO, 2019).

4.2 Area B

Limits of vegetation in Area B produces a polygon approximately 0.5ha in size (See Figure 3). Field observations by a qualified biologist on April 27, 2020 indicated limited pooling within Area B. These pool areas are likely to dry early in the season and hence would not function as significant habitat for breeding amphibians. The polygon has characteristics of a thicket overall as it has only a

scattering of young/small tree cover (tree cover <25%, shrub cover >> 25%) (see Appendix C).

4.3 Area C

Aerial photography identifies an unnamed tributary on the eastern portion of the Secondary Plan area (Area C). Although this tributary was not included as part of the field investigations, second source data and policy search was completed for this area. Official Plans for both Niagara Region and Township of West Lincoln identify the tributary as Fish Habitat. It is also included in the regulated area of the NPCA. Detailed natural heritage evaluations will be required for the proposed Secondary Plan expansion area, including Area C, however these studies will be completed at future development stages.

5.0 Significant Natural Heritage Features

5.1 Significant Valleylands

There are no significant valleylands on the subject lands.

5.2 Significant Woodlands

There are no significant woodlands on the subject lands.

5.3 Significant Wetlands

There are no significant wetlands in Areas A, B or C. An area of Provincially Significant Wetland (PSW) has been identified on a portion of Twenty Mile Creek within the Secondary Plan area. More detailed natural heritage evaluation of the PSW, including the determination of setbacks, will be required for the proposed Secondary Plan expansion area, however these studies will be completed at future development stages.

5.4 Significant Wildlife Habitat Assessment

Significant Wildlife Habitat can be difficult to appropriately determine at the site-specific level, because in many cases the assessment must incorporate information from a wide geographic area and consider other factors such as regional resource patterns and landscape effects. The following sections of the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF 2015) include the four components of Significant Wildlife Habitat. These are:

1. Seasonal Concentrations of Animals;
2. Rare Vegetation Communities or Specialized Habitats;
3. Habitats of Species of Conservation Concern; and,
4. Animal Movement Corridors.

5.4.1. Seasonal Concentrations of Animals

Some species of animals gather together from geographically wide areas at certain times of year. This could be to hibernate or to bask (e.g., some reptiles), over-winter (e.g., deer yards) or to breed (e.g., Bullfrog breeding and nursery areas). Maintenance of the habitat features that result in these concentrations can be critical in sustaining local or even regional populations of wildlife.

No seasonal concentrations of animals as defined in the Significant Wildlife Habitat Technical Guide (OMNR, 2000) were identified on the subject lands during the field investigations.

5.4.2. **Animal Movement Corridors**

Landscape connectivity (often referred to as “wildlife corridors”) has become recognized as an important part of natural heritage planning and a wide range of benefits have been attributed to the maintenance or re-connection of the undisturbed landscape. In essence, corridors are relatively protected passageways for animals to move between areas of high habitat importance. Conservation of distinct habitat types to protect species is not effective unless the corridors between them are also protected.

The subject lands are unlikely to provide a significant animal movement corridor because of the open and disturbed nature of the lands and adjacent lands and adjacent uses. All surrounding land use activities preclude any existing habitat connectivity/linkage or a potential for same.

5.4.3. **Rare Vegetation Communities or Specialized Habitats**

Rare vegetation communities apply to the maintenance of biodiversity and of rare plant communities (rather than individual rare species).

Specialized habitat conditions can include species of breeding birds that are associated with large blocks of wetland (generally >25 ha) that also include interior habitat (i.e., that which is more than 100 m from an edge).

Specialized habitats for wildlife can include habitat for species of breeding birds that are associated with large blocks of habitat (i.e., area-sensitive birds), old-growth forests, calving areas for moose, cliffs and a variety of other specialized habitats.

No rare vegetation communities occur on the subject lands.

There are no specialized habitats for wildlife found within the subject lands.

5.4.4. **Species of Conservation Concern**

This category is quite complex and includes species that may be locally rare or in decline but have not yet reached the level of rarity that is normally associated with Endangered or Threatened designations. The Significant Wildlife Habitat Technical Guide (MNR, 2000) suggests that the highest priority for protection be provided to habitats of the most rare species (on a scale of global through to local municipality) and that habitats that support large populations of a species of concern should be considered significant. The determination of Significant Wildlife Habitat under the Species of Concern category (and under other categories) is a comparative process that must extend across the jurisdiction of the planning authority to be considered definitive.

No areas within the subject lands qualified as significant habitat for any species of conservation concern.

5.5 **Karst Topography**

Ontario Geological Survey mapping indicates that the Secondary Plan area is located within ‘potential’ and ‘known’ karst areas (See Figure 4). It should be noted that much of this mapping is interpolated from individual karstic features located in Ontario. A detailed karst investigation will be required as part of an EIS prior to any development approvals within the Secondary Plan area.

5.6 **Resource Significance**

A search of the Natural Heritage Information Centre (NHIC) database was conducted on January 27, 2021 for element occurrences in natural areas, wetlands, ANSIs, natural areas and living legacy sites in proximity to the subject property. A search of the NHIC found that there was one Natural Area, within the 1km x 1km grid 17PH1972.

OGF ID 1016926 is for a Natural Area, the Lower Twenty Mile Creek Wetland Complex, which is downstream of the tributary located in Area A.

In addition to the NHIC records, the Region of Niagara website and other sources listed in the background data review were searched for environmental designations pertaining to the natural features on the subject property. The study areas do not contain any of the following environmental designations:

- Environmentally Significant/Sensitive Area (ESA)
- Life Science Area of Natural and Scientific Interest (Life Science ANSI)
- Earth Science Area of Natural and Scientific Interest (Earth Science ANSI)
- Endangered (END) or Threatened (THR) flora or fauna
- Special Concern (SC) flora

5.7 **Endangered Species Act (Species at Risk in Ontario – SARO)**

No Species At Risk were observed on the subject lands. A record for one Species of Special Concern was found through second source research on or adjacent to the study area (Areas A and C), however this fish species was not observed during the field visit. Only those species that are categorized as either Extirpated, Endangered or Threatened are afforded protection under the *Endangered Species Act*. A searchable online database of the species assessment reports is available at www.cossaroagency.ca/species.

5.8 **Fisheries Act**

No fish were observed in the channel during the field investigations. The Natural Heritage Information Centre (NHIC) and Conservation Ontario and DFO mapping were reviewed for potential on-site Critical Habitat or aquatic and fish Species At Risk. DFO Species At Risk mapping indicates that there are records of Grass Pickerel (*Esox americanus vermiculatus*), a species of Special Concern under the *Endangered Species Act*/Species at Risk Act, in the Twenty Mile Creek watershed, including the unnamed tributaries of Twenty Mile Creek on the subject lands (Areas A and C), however only those species that are categorized as either Extirpated, Endangered or Threatened are afforded protection under the *Endangered Species Act*.

6.0 **Natural Heritage System Recommendations**

Following a review of all secondary sources of information combined with the in-field assessment by a qualified biologist, it is confirmed that there are no significant species or habitats existing within the areas studied (Areas A, B and C). Areas A and C do however provide contributing fish habitat to the receiving watercourse, Twenty Mile Creek, which has records of Grass Pickerel within its watershed. Area B (thicket) is not significant, is small, isolated and should not be considered a part of the NHS. As a part of any future development plan it can be removed from the landscape (See Figure 5). Area A (Headwater Drainage Feature) should have the functions that it provides (drainage conveyance, contributing fish habitat to Twenty Mile Creek) maintained within future Secondary Plan considerations. The Area A feature can be considered for relocation so long as the ecological functions currently provided are maintained or enhanced within the plan. A 15m buffer on each side of the centre line of the feature should be provided (30m corridor) whether the feature is maintained in place or relocated (See Figure 5). Field studies were not completed for Area C however a 15m buffer on each side of the centre line of the feature has been provided for a 30m corridor (See Figure 5) until further study is completed as part of an EIS prior to any development approvals within the Secondary Plan area.

7.0 Conclusions

Based on the information gathered from second source data and from the site visit by a qualified biologist, there are no significant natural heritage features or functions located in either Areas A or B. Area A however, provides functional drainage and contiguous contributing fish habitat to Twenty Mile Creek and should be retained within a 30m corridor thus providing the basis for an NHS within the Secondary Plan area. No Species At Risk were observed on the subject lands. A record for one Species of Special Concern was found through second source research on or adjacent to the study area (Area A), however this fish species was not observed during the field visit. Second source data indicates that Area C is also contributing fish habitat to Twenty Mile Creek and a record for one Species of Special Concern has been recorded on or adjacent to Area C. As such, a preliminary 30m corridor has been provided until field investigations are completed as part of an EIS prior to any development approvals within the Secondary Plan area.

Respectfully submitted by,

C.F. CROZIER & ASSOCIATES INC.

A handwritten signature in black ink, appearing to read 'Michael J. Hensel', is written over a horizontal line. The signature is stylized with loops and a long horizontal stroke extending to the right.

Michael J. Hensel, OALA, CSLA
Senior Development Consultant

MH/sh

APPENDIX A

Niagara Region Official Plan, Schedule C



APPENDIX B

Township of West Lincoln Official Plan, Schedules B-4 & C1-C4

**TOWNSHIP OF WEST
LINCOLN
OFFICIAL PLAN**

**SCHEDULE 'C-1'
NATURAL HERITAGE
SYSTEM**

Legend

-  Smithville Urban Boundary
-  Hamlet Settlement Area
-  Greenbelt Lands
-  Environmental Protection Area
-  Environmental Conservation Area
-  Potential Corridors
-  Fish Habitat
-  Municipal Boundary

West Lincoln
Your Future Naturally

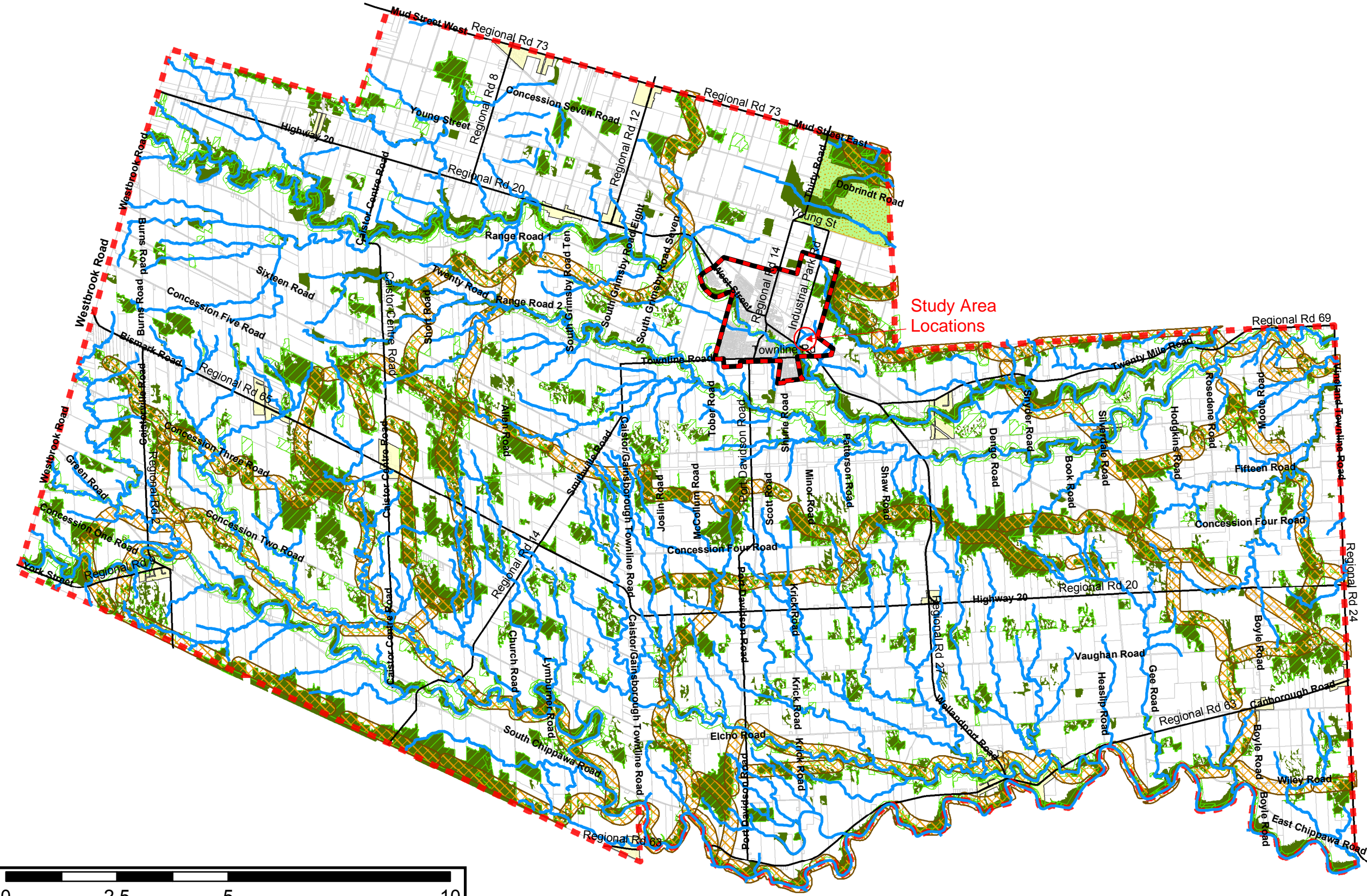
PLANNING DEPARTMENT



Note:
This Schedule forms part
of the Township's Official
Plan and must be read in
conjunction with the text.

Detail on some features
may be lost at this scale.





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**TOWNSHIP OF WEST
LINCOLN
OFFICIAL PLAN**

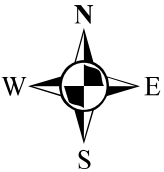
**SCHEDULE 'C-2'
NATURAL HERITAGE SYSTEM
ENVIRONMENTAL PROTECTION
AREA**

Legend

-  Smithville Urban Boundary
-  Hamlet Settlement Area
-  Areas of Natural and Scientific Interest
-  Greenbelt Natural Heritage System
-  Provincially Significant Wetlands (PSW)
-  Floodplain
-  Municipal Boundary

West Lincoln
Your Future Naturally

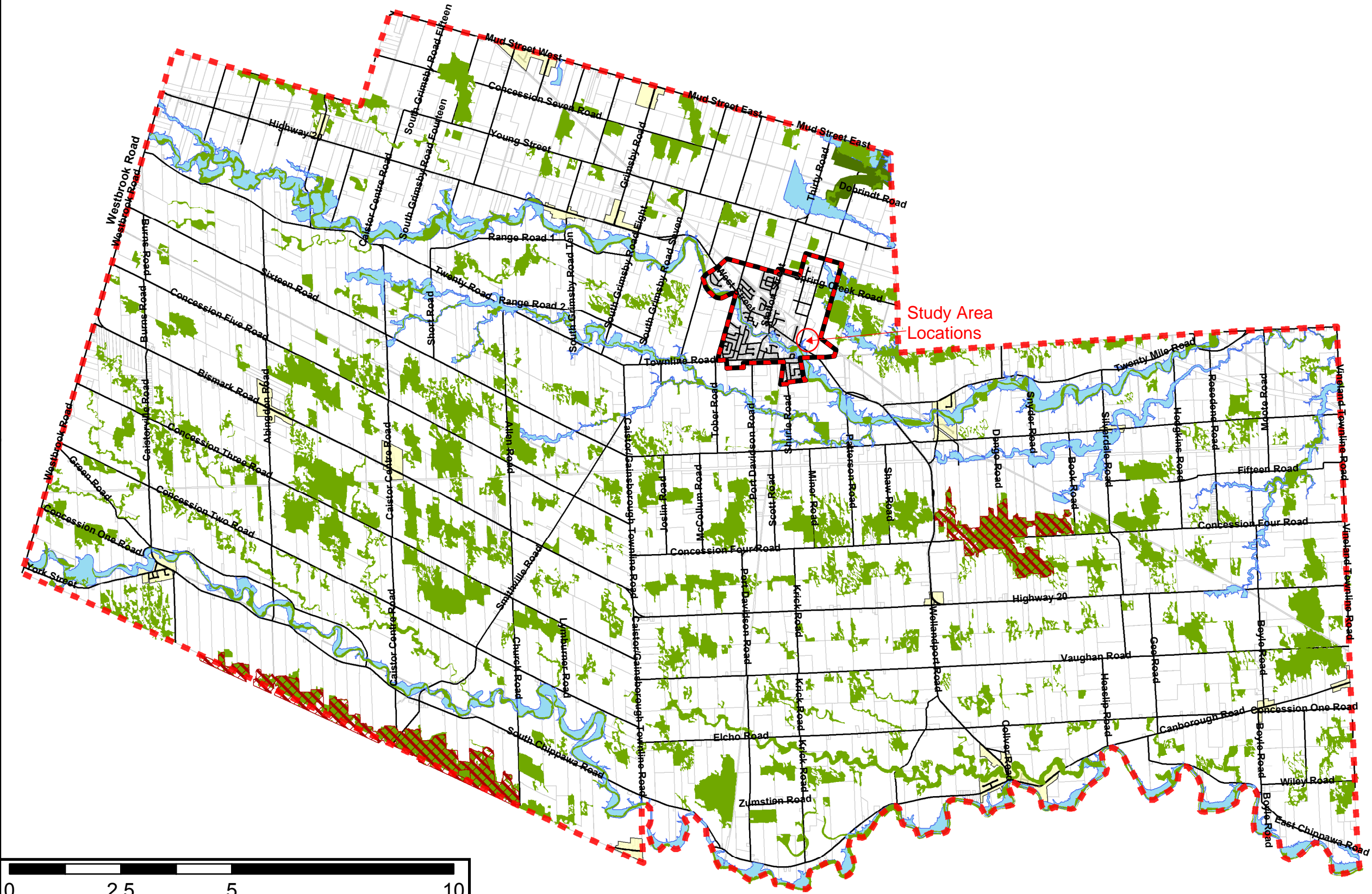
PLANNING DEPARTMENT



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Date: March 2014



TOWNSHIP OF WEST LINCOLN OFFICIAL PLAN

SCHEDULE 'C-3'
NATURAL HERITAGE SYSTEM
ENVIRONMENTAL
CONSERVATION
AREA

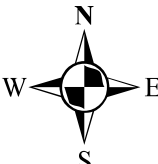
Legend

-  Smithville Urban Boundary
 Hamlet Settlement Area
 Regionally Significant Life Science ANS
 Other Evaluated Wetlands
 Significant Woodlands
 Public Conservation Land
 Valley Shoreline
 Municipal Boundary

Study Area Locations



PLANNING DEPARTMENT



Note:
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of the Township's Official
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Detail on some features
may be lost at this scale.

Date: March 2014



**TOWNSHIP OF WEST LINCOLN
OFFICIAL PLAN**

**SCHEDULE 'C-4'
NATURAL HERITAGE SYSTEM
OTHER FEATURES**

Legend

-  Smithville Urban Boundary
-  Hamlet Settlement Area
-  Greenbelt Lands
-  Core Natural Heritage Corridors
-  Fish Habitat
-  Municipal Boundary



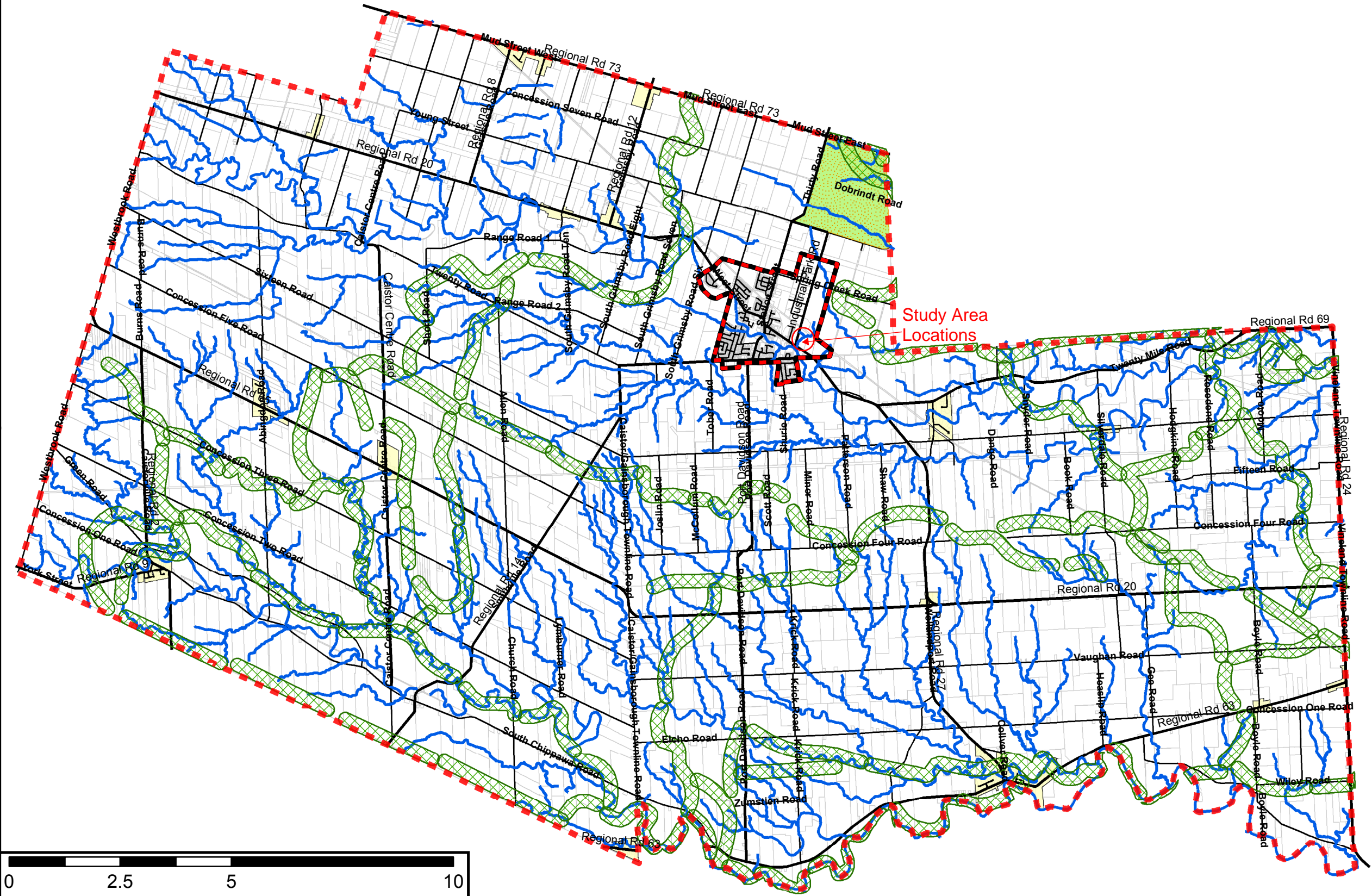
PLANNING DEPARTMENT

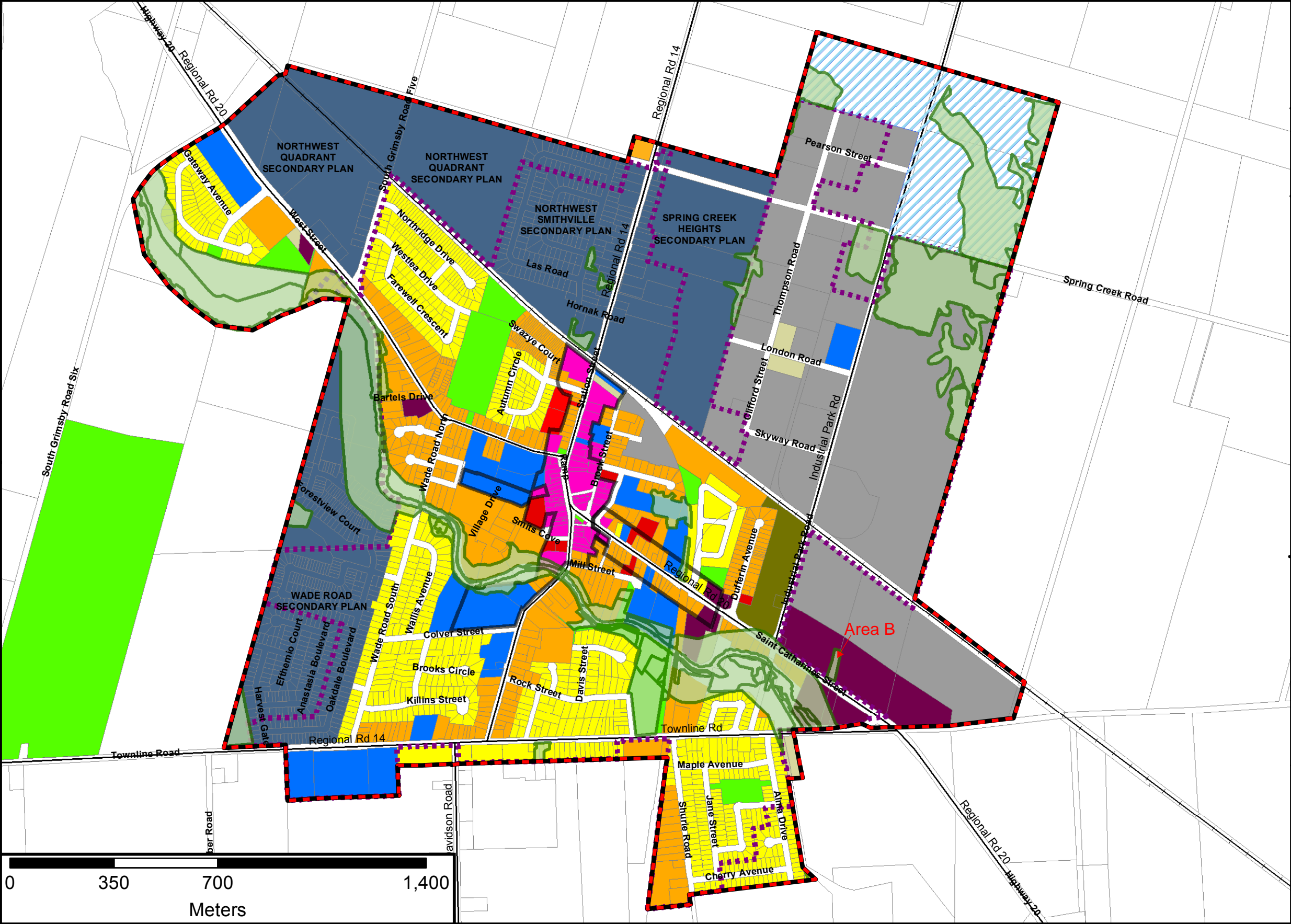


Note:
This Schedule forms part
of the Township's Official
Plan and must be read in
conjunction with the text.

Detail on some features
may be lost at this scale.

Date: March 2014





TOWNSHIP OF WEST LINCOLN OFFICIAL PLAN

SCHEDULE 'B-4' LAND USE SMITHVILLE

- Legend**
- Smithville Urban Boundary
 - Natural Heritage System
 - Urban Boundary Expansion - Employment
 - Mixed Use Corridor
 - Built Boundary
 - Low Density Residential
 - Medium Density Residential
 - High Density Residential
 - Secondary Plan
 - Commercial Core
 - Commercial Plaza
 - Service Commercial
 - Employment Area
 - Institutional
 - Public Parks
 - Public Use

Revisions:
OPA 49: ____ day of ____, 2019

PLANNING DEPARTMENT



Note:
This Schedule forms part
of the Township's Official
Plan and must be read in
conjunction with the text.

Date: June 2016

APPENDIX C

Headwater Drainage Features Assessment and Photographs from the Subject Lands

Technical Memorandum

To: Shelley Hensel, C.F. Crozier & Associates Inc.
Re: Property at Industrial Park Road & St. Catharines Street (Pt Lot 5,
Concession 9), Smithville, Ontario – Headwater Drainage Feature
Assessment
From: Mike Gillespie, Fisheries Ecologist, Azimuth Environmental Consulting, Inc.
Project: 20-168
Date: May 12, 2020

Azimuth Environmental Consulting, Inc. (Azimuth) visited the property on the northeast side of the intersection of Industrial Park Road and St. Catharines Street in Smithville (Township of West Lincoln) on April 27, 2020.

A headwater drainage feature assessment was undertaken using the methodology in the Ontario Stream Assessment Protocol (MNR, 2017), and in accordance with the Evaluation, Classification and Management of Headwater Drainage Features Guidelines (TRCA/CVC, 2014). The site visit did not capture early-spring conditions resulting from thaw/snowmelt, but was completed while conditions remained relatively wet prior to leaf out.

A headwater drainage feature (an unnamed tributary of Twenty Mile Creek) is present on the site, with multiple drainage pathways as shown on Figure 1, and site photographs below. All site drainage eventually enters Twenty Mile Creek approximately 52m to the south of St. Catharines Street.

Overall, drainage on the property alternated between diffuse overland flow, more defined channelized flow and ‘multi-thread’ channelized flow. Drainage was also seen to flow through areas of vegetation composed primarily of cattails, in northwest, north and central areas of the property. Along the main northeast-southwest branch of the drainage feature, water levels ranged between 3-25cm, and generally increased towards St. Catharines Street.

The primary substrate type was clay, with secondary silt substrate. No coarse sand, gravel or cobble was observed on the property. Although not yet growing, the dominant riparian vegetation class is the surrounding cropland, with some sections of meadow. In-feature vegetation is expected to be abundant based on the large amount of dead herbaceous vegetation observed.

Seepage was noted in two areas: one at the northern property boundary, immediately south of the railway line (potentially the result of a buried culvert under the track conveying water from north of the track), and at the northern edge of polygon 'A' (Figures 1,2). Watercress, indicating potential groundwater inputs, was consistently observed in the southern portion of polygon 'A' within the main branch of the drainage feature (Figures 1, 2). Other aquatic vegetation was also noted in the channel in the same section, as well as in the east branch to the north.

It is expected that secondary branches off the main and east branches of the drainage feature will dry up as the season progresses (Figure 1). Flow permanency is unknown in the main and east branches, which had much greater (albeit $<0.5\text{L/s}$) flows during the spring site visit.

No fish were observed within the headwater drainage feature on the property during the assessment, or at the St. Catharines Street culvert. However, based on the close proximity to, and hydraulic connectivity with, Twenty Mile Creek (and no obvious barriers downstream of St. Catharines Street visible from the road), there is potential for fish to move upstream onto the property from Twenty Mile Creek. It is anticipated (but unconfirmed) that this is only possible under higher early-season flows.

Any fish usage of the headwater drainage feature on the property would likely be limited to the deeper downstream section within approximately 80m of St. Catharines Street. Upstream of this point, flow conditions, channel measurements (or the lack of a channel) and in-feature vegetation (that had not yet come up during the site visit) would restrict fish passage. Even in the deeper downstream section on the property, habitat quality is considered marginal, despite the presence of watercress. In the section of the channel downstream of St. Catharines Street (off property), the channel appears to have been historically altered given its straight alignment, the presence of a gabion retaining wall and what appears to be rip rap lining the channel. While fish passage from Twenty Mile Creek appears to be possible under the conditions observed on site, areas available to fish are very limited, and habitat is of low quality.

Fisheries and Oceans Canada species at risk mapping indicates that there are records of Grass Pickerel (*Esox americanus vermiculatus*), a species of Special Concern under the *Endangered Species Act/Species at Risk Act*, in the Twenty Mile Creek watershed, including the unnamed tributary of Twenty Mile Creek on the property (DFO, 2019).

References

Fisheries and Oceans Canada (DFO). 2019. Aquatic Species at Risk Mapping. Available from: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>

Toronto and Region Conservation Authority and Credit Valley Conservation (TRCA/CVC). 2014. Evaluation, Classification and Management of Headwater Drainage Features Guideline.

VuMap. 2020. First Base Solutions. Available from: <http://vumap.firstbasesolutions.com/vumap.php>

Figure 1: Drainage on property to northeast of Industrial Park Road and St. Catharines Street in Smithville, Ontario (VuMap, 2020) based on April 27, 2020 headwater drainage feature assessment.



Figure 2: Polygon 'A' that was assessed for fish habitat, and visible signs of groundwater.





Photograph 1 – Headwater drainage feature, main branch, facing south from St. Catharines Street (off property; April 27, 2020).



Photograph 2 – Headwater drainage feature, main branch, at St. Catharines Street culvert outlet (off property; April 27, 2020).



Photograph 3 – Headwater drainage feature, main branch, facing north towards property from St. Catharines Street culvert inlet (April 27, 2020).



Photograph 4 – Headwater drainage feature, main branch, facing south towards St. Catharines Street (April 27, 2020).



Photograph 5 – Headwater drainage feature, main branch, facing north (April 27, 2020).



Photograph 6 – Watercress along main branch of headwater drainage feature (April 27, 2020).



Photograph 7 – Headwater drainage feature, multiple channels of main branch, facing north (April 27, 2020).



Photograph 8 – Headwater drainage feature, multiple channels of main branch, facing south (April 27, 2020).



Photograph 9 – Headwater drainage feature, main branch, facing northeast (April 27, 2020).



Photograph 10 – Headwater drainage feature, multiple channels of main/east branches, facing southwest (April 27, 2020).



Photograph – Headwater drainage feature, main channel, facing northeast (April 27, 2020).



Photograph 12 - – Headwater drainage feature, main branch (multiple channels) at online wetland by railway track, facing northwest (April 27, 2020).



Photograph 13 – Headwater drainage feature, west branch along Industrial Park Road, facing north (April 27, 2020).



Photograph 14 – Headwater drainage feature, west branch, facing southeast (April 27, 2020).



Photograph 15 – Headwater drainage feature, east branch, facing southwest (April 27, 2020).



Photograph 16 – Headwater drainage feature, east branch, facing northeast (April 27, 2020).



Photograph 17 – Headwater drainage feature, additional seasonal drainage from west, facing east by southwest corner of property (April 27, 2020).

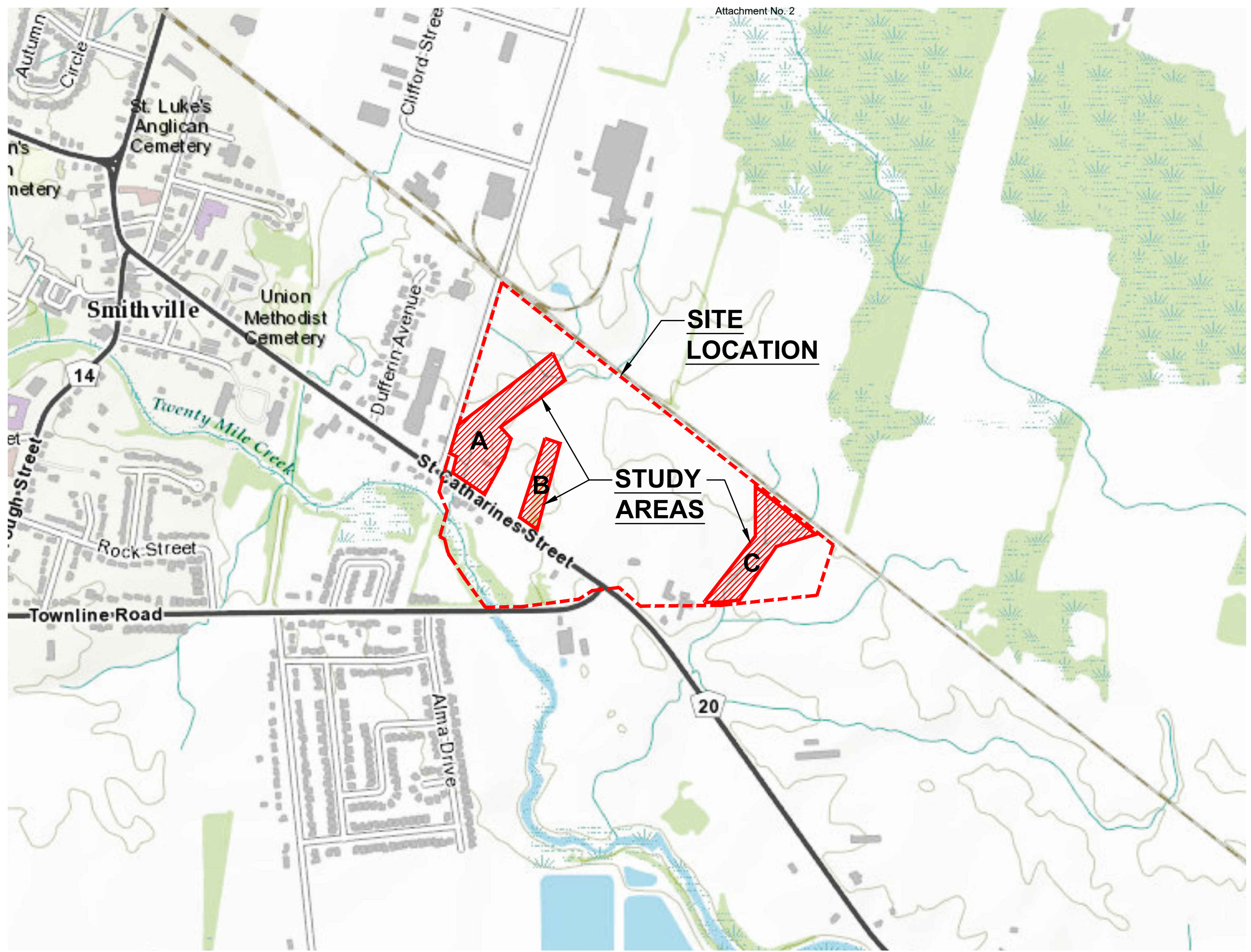


Photograph 18 – Additional seasonal drainage from east, facing west by southeast corner of property (April 27, 2020). Flows diffusely into St. Catharines Street ditch (dry during site visit) to connect to headwater drainage feature.

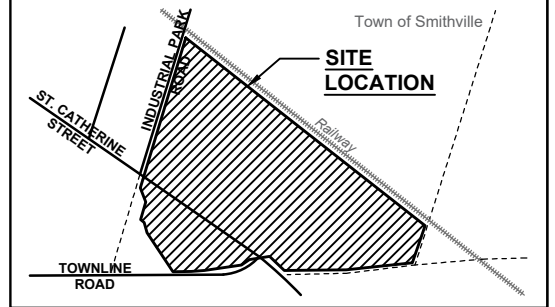
FIGURES

- Figure 1:** Site Location and Study Area
- Figure 2:** NPCA Regulation Limits
- Figure 3:** Existing Site Conditions
- Figure 4:** Karst Areas
- Figure 5:** Opportunities and Constraints

Date Plotted: January 29, 2021

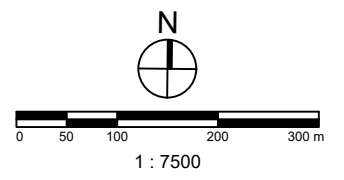


Attachment No. 2



KEY PLAN
SCALE: N.T.S.

- LEGEND**
- SMITHVILLE SECONDARY PLAN BOUNDARY
 - STUDY AREAS (A / B / C)
 - MAJOR ROADS
 - RAILWAY
 - WATER FEATURES
 - NATURAL FEATURES
 - BUILT FORM



Project
EAST SMITHVILLE
TOWNSHIP OF WEST LINCOLN, ONTARIO

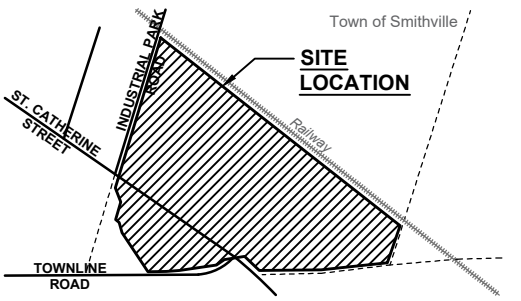
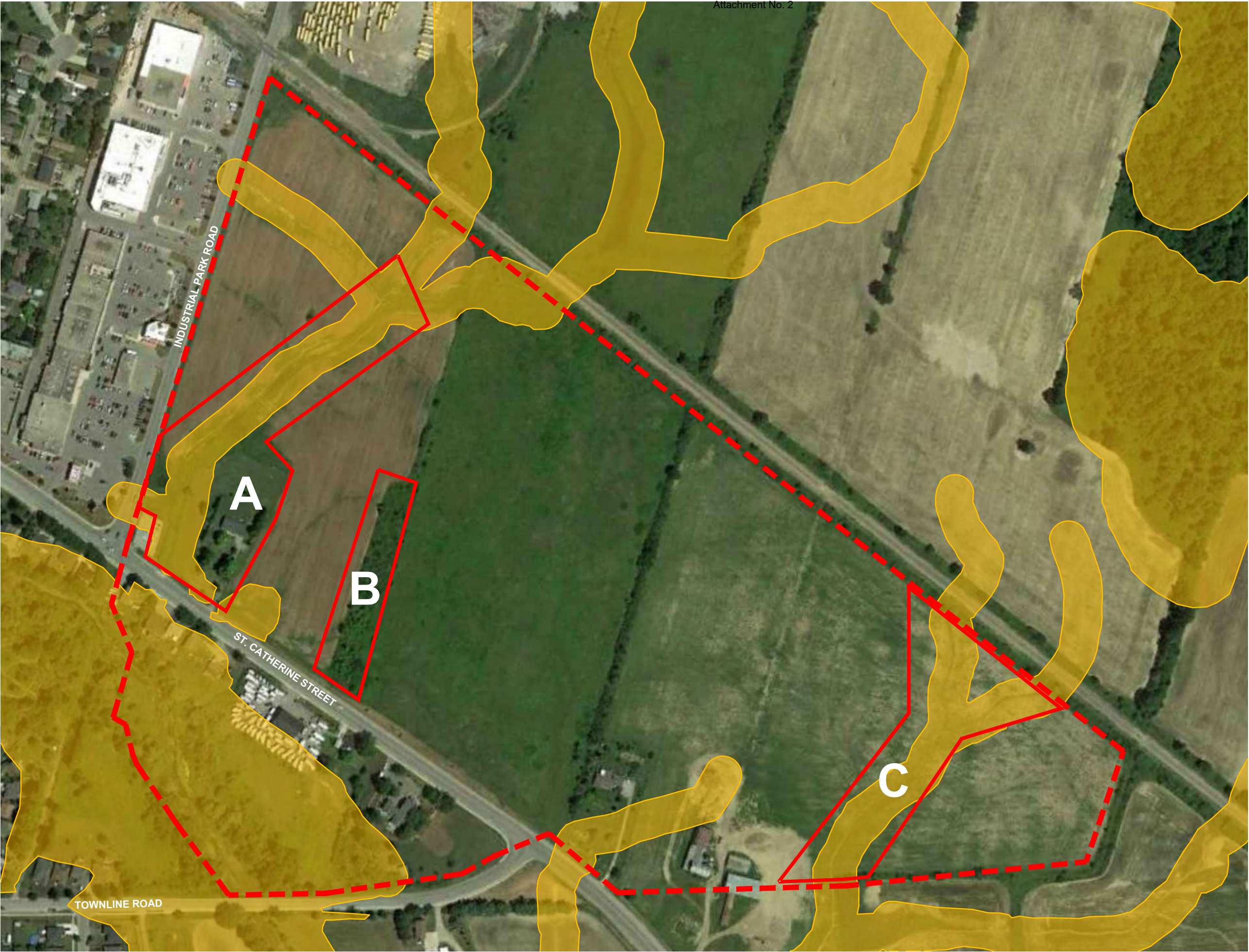
Title
SITE LOCATION
STUDY AREAS



CROZIER
CONSULTING ENGINEERS

The HarbourEdge Building,
40 Huron Street, Suite 301,
Collingwood, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
www.crozier.ca
info@crozier.ca

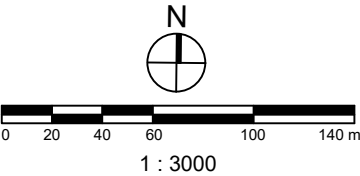
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Date	01/29/2021	Check By	M.H.	Scale	1:7500
				Drawing	Figure 1



KEY PLAN
SCALE: N.T.S.

LEGEND

- SMITHVILLE SECONDARY PLAN BOUNDARY
- STUDY AREAS (A / B / C)
- NPCA REGULATION AREAS
(Niagara Peninsula Conservation Authority)



Project
EAST SMITHVILLE
TOWNSHIP OF WEST LINCOLN, ONTARIO

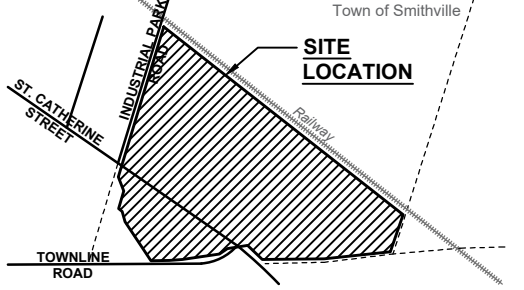
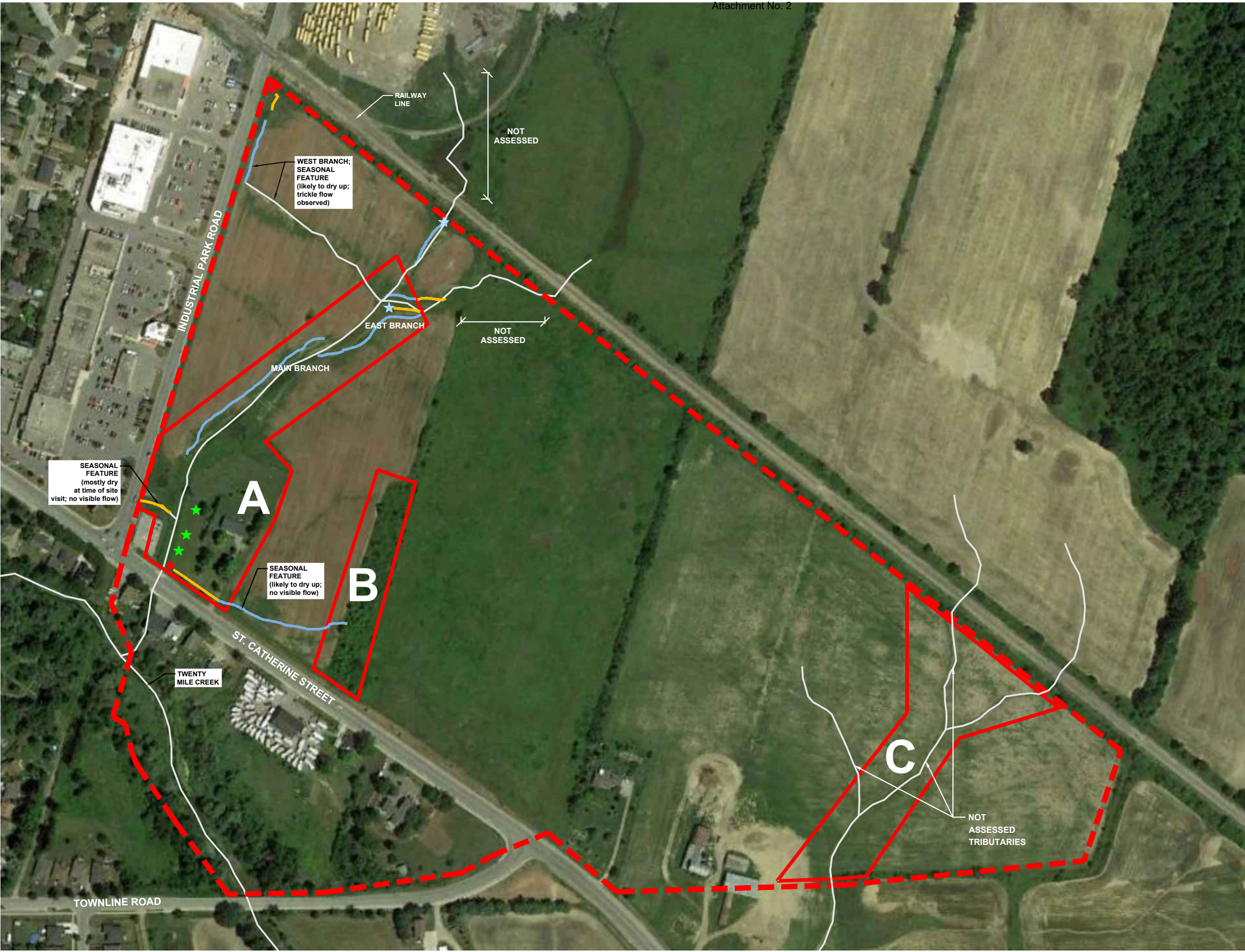
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NIAGARA PENINSULA CONSERVATION
AUTHORITY (NPCA) REGULATION AREAS



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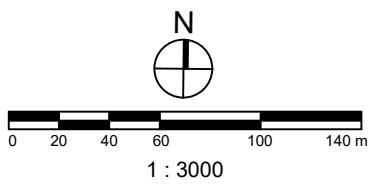
The HarbourEdge Building,
40 Huron Street, Suite 301,
Collingwood, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
www.crozier.ca
info@crozier.ca

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Date	01/29/2021	Check By	M.H.	Scale	1:3000
				Drawing	Figure 2



KEY PLAN
SCALE: N.T.S.

- LEGEND**
- SMITHVILLE SECONDARY PLAN BOUNDARY
 - STUDY AREAS (A / B / C)
 - ADDITIONAL DRAINAGE NOTED ON SITE (approximate location)
 - ADDITIONAL DRAINAGE NOTED ON SITE DRY AT TIME OF ASSESSMENT (approximate location)
 - WATERCRESS
 - SEEPAGE
 - CULVERT



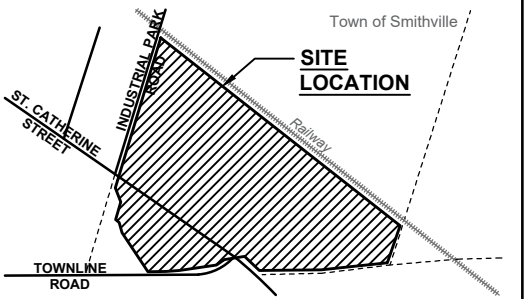
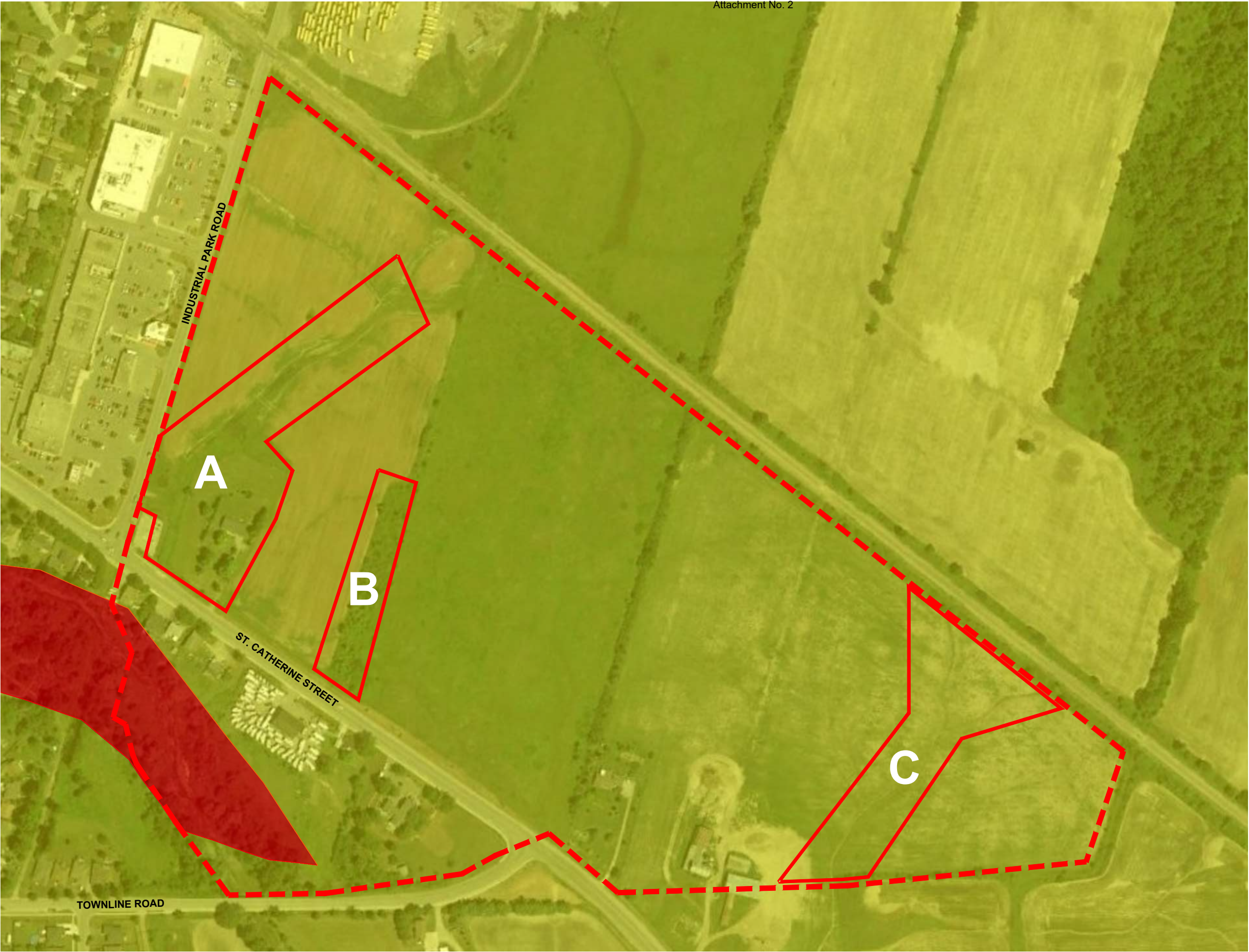
Project
EAST SMITHVILLE
TOWNSHIP OF WEST LINCOLN, ONTARIO

Title
EXISTING
SITE CONDITIONS

CROZIER
CONSULTING ENGINEERS

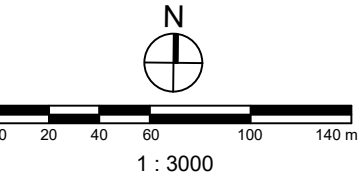
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40 Huron Street, Suite 301,
Collingwood, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
www.crozier.ca
info@crozier.ca

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KEY PLAN
SCALE: N.T.S.

- LEGEND
- SMITHVILLE SECONDARY PLAN BOUNDARY
 - STUDY AREAS (A / B / C)
 - KNOWN KARST AREAS
 - POTENTIAL KARST AREAS



Project
EAST SMITHVILLE
TOWNSHIP OF WEST LINCOLN, ONTARIO

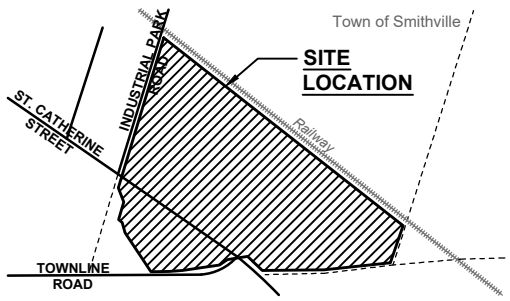
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KARST AREAS



CROZIER
CONSULTING ENGINEERS

The HarbourEdge Building,
40 Huron Street, Suite 301,
Collingwood, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
www.crozier.ca
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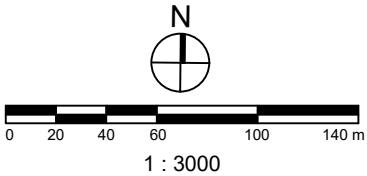
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Date	01/29/2021	Check By	M.H.	Scale	1:3000
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KEY PLAN
SCALE: N.T.S.

LEGEND

- SMITHVILLE SECONDARY PLAN BOUNDARY
- STUDY AREAS (A / B / C)
- WOODLOT AREA TO BE REMOVED
- WATERCOURSES
- 15m WATERCOURSES SETBACK



**EAST SMITHVILLE
TOWNSHIP OF WEST LINCOLN, ONTARIO**

**OPPORTUNITIES
AND CONSTRAINTS**



CROZIER
CONSULTING ENGINEERS

The HarbourEdge Building,
40 Huron Street, Suite 301,
Collingwood, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
www.crozier.ca
info@crozier.ca

Drawn By	D.C.	Design By	M.H.	Project	CR-EIS-SMITHVILLE
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Appendix B

EXISTING CONDITIONS BRIEF
SMITHVILLE SECONDARY PLAN
TOWNSHIP OF WEST LINCOLN
NIAGRA REGION

PREPARED FOR:

MHBC

PREPARED BY:

CROZIER CONSULTING ENGINEERS
57 JOHN STREET WEST, PO BOX 1011
BRADFORD, ON L3Z 2B4

JUNE 2020

CFCA FILE NO. 529-5527

The material in this brief reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



Smithville Background Info

With the preparation of the Master Community Plan for Smithville underway, the Township of West Lincoln is reviewing its land supply and land use designations in efforts to best meet the projected population growth to 2041. Currently, a portion of the lands within the East Smithville Secondary Plan is designated as 'Service Commercial' with the remainder as 'Employment', and 'Commercial Plaza'. The Secondary Plan process will determine the most efficient land use designation pattern for these lands within the Secondary Plan area than the current use. It is understood that to accommodate the projected growth, there is a need to review the existing municipal infrastructure and plan for adequate and appropriate municipal servicing (potable water, sanitary sewage and stormwater management) consistent with the proposed land use and surrounding area, which will include an analysis to support an option to convert the zoning to mixed use/ residential.

The East Smithville Secondary Plan land covers an area of approximately 34 ha and currently consists of open fields, limited single detached homes, a hydro substation, and a commercial/retail (RV sales center) located on the south side of St. Catharine's Street (Regional Road 20). The subject area, located in an employment zoned neighborhood, is bounded by a Canadian Pacific Railway corridor to the north, St. Catharine's Street/Townline Road to the south, agricultural lands to the east and Industrial Park Road to the west. Twenty Mile Creek cuts through the southern portion of the Secondary Plan area, flowing southeast, ultimately discharging to Lake Ontario to the north. As such, a portion of the lands south of St. Catharine's Street are within the regulated floodplain limits of the Niagara Peninsula Conservation Authority (NPCA).



Figure 1: Township of West Lincoln Official Plan Boundary



Figure 2: East Smithville Secondary Plan Area

Existing Conditions – Water and Wastewater

Per the 2016 Master Servicing Plan Update (MSPU) prepared by GM BluePlan, water and wastewater infrastructure was evaluated for 11 municipalities within Niagara Region, which included the Township of West Lincoln, containing the subject East Smithville Secondary Plan area being studied as part of this report. The 2016 Master Servicing Plan Update provides a review, evaluation and development of water and wastewater servicing strategies for all servicing within the urban areas of the Region. The 2016 Master Servicing Plan Update uses updated population and employment growth forecasts based on a 2041 planning horizon.

It is understood AECOM is currently completing a Community Master Plan study, which includes a town wide analysis of existing and future sanitary and water capacity, including an analysis of the existing sewers/watermains adjacent to the Secondary Plan Area on Industrial Park Road and St. Catharines Street. This study should be referred to in conjunction with the information contained in this report to support the development of the Secondary Plan Area.

Wastewater – Town of Smithville

Wastewater flows within the Community of Smithville are conveyed by gravity to the Smithville Sewage Detention Facility/Pumping Station located approximately 200m west of the intersection of St. Catharines Street and Industrial Park Road and then pumped via a 300mm forcemain on Industrial Park Road that ultimately connects directly to the Baker Road Wastewater Treatment Plant located in Grimsby. Based on the assessment completed by AMEC for the 2015 Smithville Wastewater Servicing Report it was concluded that the exiting wastewater system showed that there are potential capacity issues primarily located within western and central portion of the Town's system, based on future growth projections. It is noted that wastewater is operated as a two-tiered system where the local municipality owns and maintains the local sewer collection system and trunk infrastructure connecting between the town and downstream treatment plant is owned and operated by the Region, including forcemains and the treatment plant itself.

As part of the 2016 MSPU there were three alternatives considered with respect to sanitary servicing upgrades for the Town of Smithville to alleviate the capacity constraints in the system. Sanitary servicing for the Secondary Plan Study area will consider the recommendations of the MSPU and servicing information contained within the 2015 AMEC Report. As part of the MSPU, the following alternatives were reviewed:

- 1) Maintain existing servicing configuration with the implementation of the following:
 - a. Upgrade Smithville Sewage Pumping Station
 - b. Twin existing forcemain
 - c. Upgrade downstream sewers
- 2) Same as alternative 1, except include utilization of existing abandoned parallel forcemain instead of twinning the existing forcemain
- 3) Construct new West Smithville Sewage Pumping Station and new West Smithville to service future growth area (2041 buildout).

Alternative 1 (refer to MSPU Figure 4.A.9 below) was selected as the preferred alternative as it allows for a phased implementation of sanitary infrastructure, allowing upgrades to be staggered in parallel with future community growth and the ability to scale back planned upgrades if future growth targets are not met based on current population projections. In summary the Smithville Sewage Pumping Station will require an expansion from its existing capacity at 120 L/s to 375 L/s, which would require new twin 400mm forcemains downstream of the station.

It is noted in the 2016 MSPU that trunk sewer upgrades are also recommended in Grimsby downstream of the Smithville forcemain. As noted above, Smithville sanitary flow is directed north to the Baker Road Wastewater Treatment Plant located in Grimsby. To meet the 2041 projected growth targets, the treatment plant itself will also require an additional treatment capacity expansion of 16 MLD. Through discussions with Niagara Region staff it is understood that no recent expansions to the treatment plant have been completed as of June, 2020.

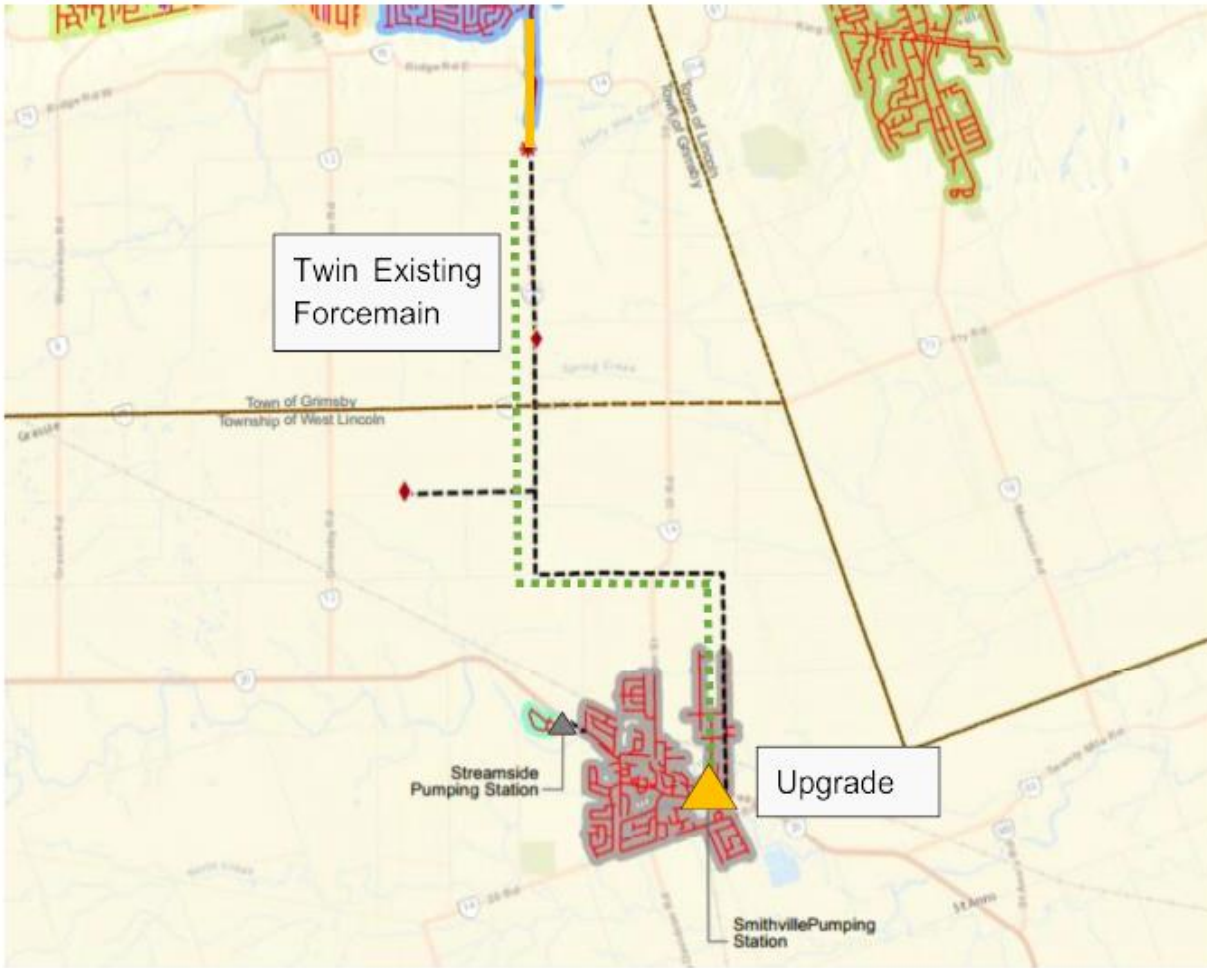


Figure 3: Town of East Smithville Preferred Sanitary Upgrades (Niagara Region Wastewater Master Plan)

Wastewater - Secondary Plan Area

The closest sanitary sewer connection to the site is located at the southwest corner of the Secondary Plan boundary, at the intersection of Industrial Park Road and Regional Road 20 (St. Catharines Street). Based on the 2015 Amec Wastewater Servicing Report completed for the Town of Smithville, sewer capacity ranged from 50% - 75% on St Catharines Street and between 35% - 57% on Industrial Park Road indicating there is sufficient capacity within the existing system to accommodate potential intensification concepts within the Secondary Plan area. Should significant future intensification of other areas outside the secondary plan occur, future capacity would need to be further analyzed for these perimeter sewers. Refer to the **Existing Servicing Figure 103** showing the existing sewers in proximity to the site.

Potential future sewer connection points would likely require an extension of the sewer on St. Catharines Street/Regional Road 20, as the Secondary Plan lands fall in a southwesterly direction towards the Regional Road. Secondary connections directly to Industrial Park Road and/or Townline Road will also be contemplated based on proposed Secondary Plan development concepts.

As part of the AMEC Servicing Report, the following design parameters were used for determining sanitary flow generation rates for the Secondary Plan Area:

Table 1: Sanitary Sewer Design Criteria (AMEC Servicing Report)

Design Criteria for Wastewater Sewage Flows		
Land Use Type	Equivalent Population Density	Design Flow Factor*
Residential, Low Density	60 pers/ha	320 lpcd ⁽¹⁾
Residential, High Density	90 pers/ha	
Commercial	125 pers/ha	275 lpcd ⁽²⁾
Institutional	25 pers/ha	
Industrial	125 pers/ha	20 m ³ /ha/day ⁽³⁾

1. Residential – 320 lpcd consists of 275 lpcd based on Region of Niagara technical specifications plus 45 lpcd for inflow and infiltration;
2. Employment and commercial – 275 L/employess/day based on Region of Niagara technical specifications;
3. Industrial – design calculations using 15 and 28 m³/ha/day are included in Appendix D. The design flow factor of 20 m³/ha/day was used in the wastewater system analysis.

The East Smithville Secondary Plan land covers an area of approximately 34 ha and currently is designated as Service Commercial and Employment areas to the north of St. Catherine's Street. The area of the secondary plan to the south of St. Catherine's Street is currently zoned as Medium Density Residential and Natural Heritage area, as a significant portion of these southern lands resides within the floodplain.

The following is a breakdown of the existing zoning areas:

Table 2: Smithville Secondary Plan Existing Land Uses

Zoning	Approx. Area (ha.)
Service Commercial	7.6
Employment	21.5
Medium Density Residential	1.5
Natural Heritage / Flood Plain	3.4

According to the corresponding population density and design flow factors, the Smithville Secondary Plan Area was anticipated to generate the following flows per the existing zoning for a full build out condition.

Table 3: Smithville Secondary Plan Anticipated Sanitary Flows

Zoning	Area (ha.)	Population Density	Population	Design Flow Factor	Flow L/d	Flow L/s
Service Commercial	7.6	125	950	275 lpcd	261,250	3.02
Employment	21.5	125	2687.5	20 m ³ /ha/d	430,000	4.98
Medium Density Residential	1.5	80	120	320 lpcd	38,400	0.44
Natural Heritage / Flood Plain	3.4					
Total	34				729,650	8.45

However as noted in the AMEC report, a full buildout of the entire Smithville settlement area, including the Secondary Plan lands will increase sewage flows by 93 % resulting the SPS operating over its current capacity limit of 100 L/s thus reinforcing the need for a pumping station upgrade and twinning of force mains to the Baker Road WWMP.

Water – Town of Smithville

The Grimsby water system services the areas of Grimsby, Beamsville in the Town of Lincoln, and the Smithville area in the Township of West Lincoln. The system services an existing population of 43,719 and 14,793 employees. The system is supplied by the Grimsby Water Treatment Plant, located on 300 North Service Road in Grimsby. The plant is a conventional surface water treatment plant with zebra mussel control, travelling screens, coagulation, flocculation, sedimentation, filtration, and disinfection processes. Lake Ontario serves as a source to the plant. The plant has a rated capacity of 44.0 MLD (509 L/s). The system supplies local area municipalities via a water main network, pumping stations, and service reservoirs. The supply area is divided into eight pressure zones. The existing water system including max day demand/fire flow and projected 2041 fire flow demand is shown in the MSPU figures below and existing system facilities overview in the table below.

Table 3.A.3 Storage Facilities Overview

Storage Facility	Location	Storage Type	Volume (ML)	Top Water Level (m)	Fire Supply Zones	Maximum Day Demand Supply Zones
Grimsby Water Treatment Plant Reservoir	300 North Service Road, Grimsby	Pumped Reservoir	5.0 (10.0)*	81.8	154	All
Park Road Reservoir	83 Park Road South, Grimsby	Pumped/ Floating Reservoir	3.4	158.8	154 Floating, 210 Pumped, 225 Pumped	154 Floating, 210 Pumped, 225 Pumped
London Road Reservoir	6247 London Road, Smithville	Pumped Reservoir	7.7	193.7	239	239
Smithville Elevated Tank	6247 London Road, Smithville	Elevated Tank	2.3	239.0	239	239
Hixon Street Reservoir	3991 Hixon Street, Beamsville	Pumped/ Floating Reservoir	10.0	163.4	148 Floating, 163 Floating, 193 Pumped, 216 Pumped	148 Floating, 163 Floating, 193 Pumped, 216 Pumped

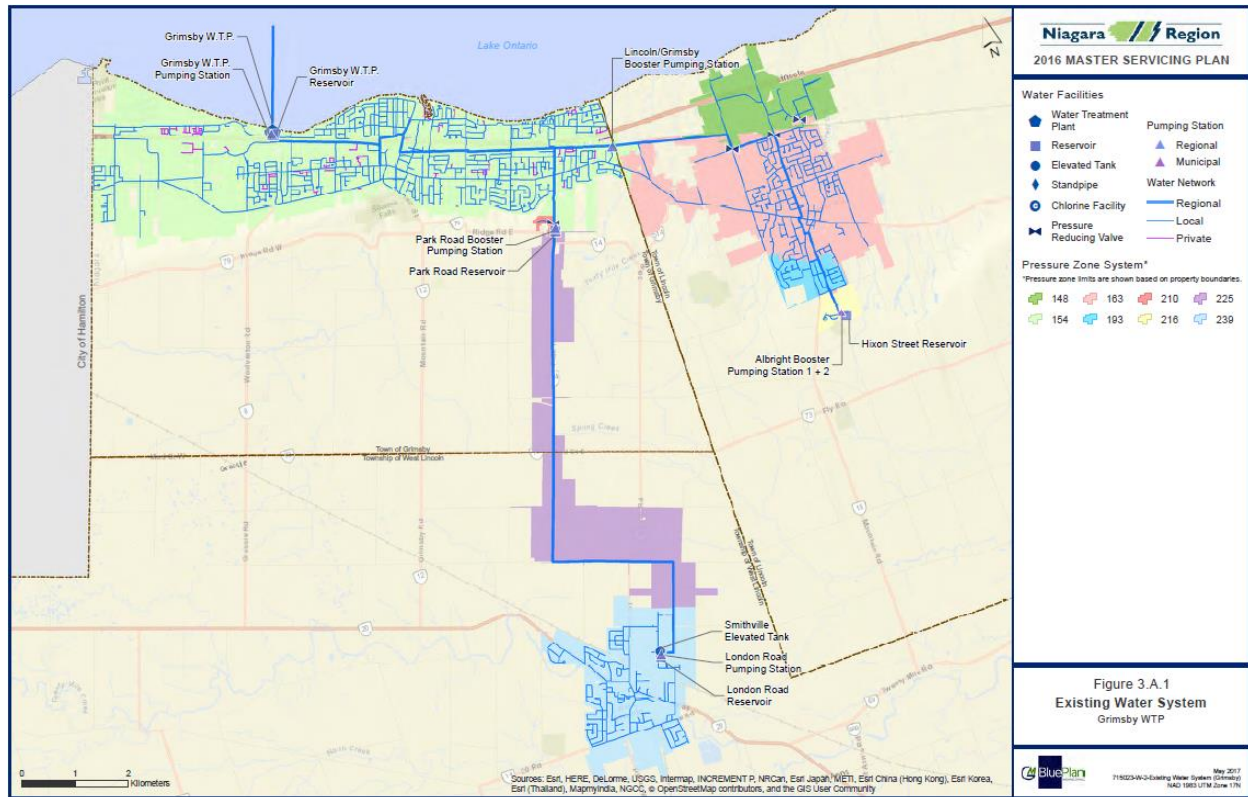


Figure 4: Grimsby Existing Water System (Region of Niagara Water Master Plan)

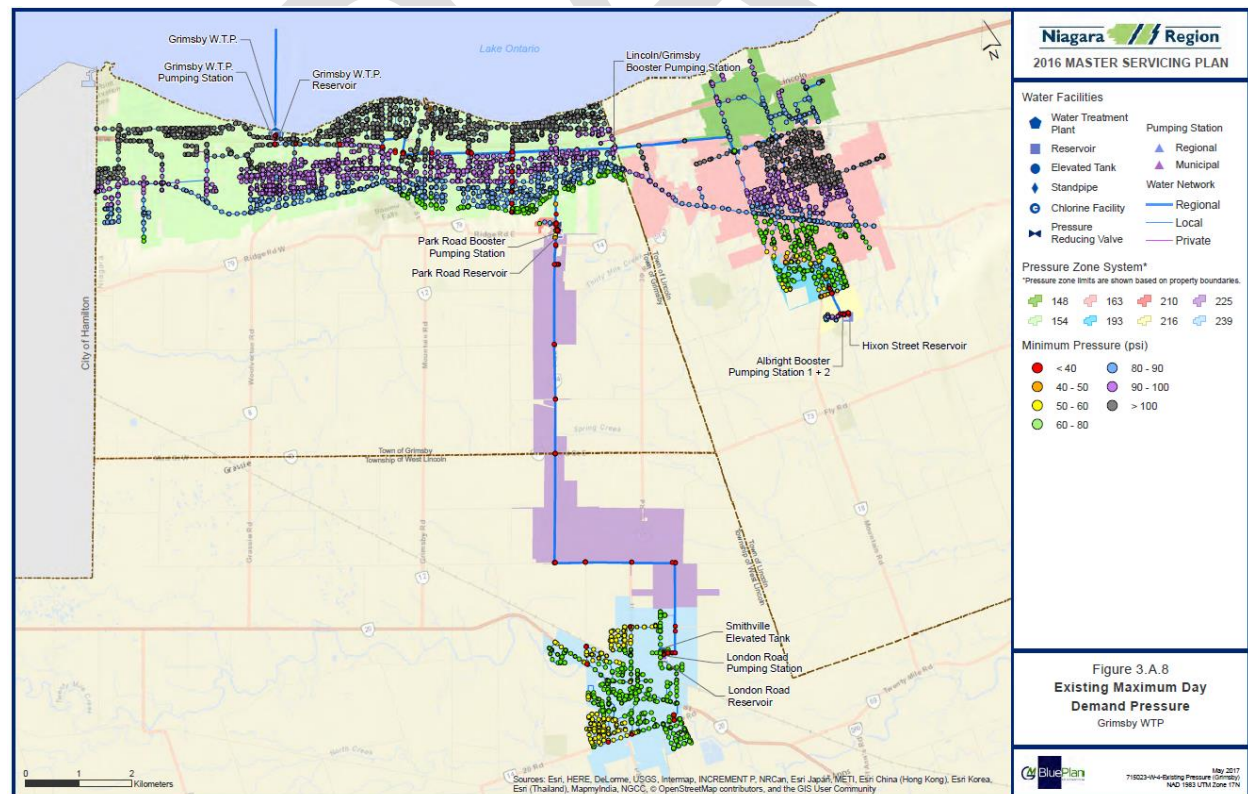


Figure 5: Grimsby Existing Maximum Day Demand Pressure (Region of Niagara Water Master Plan)

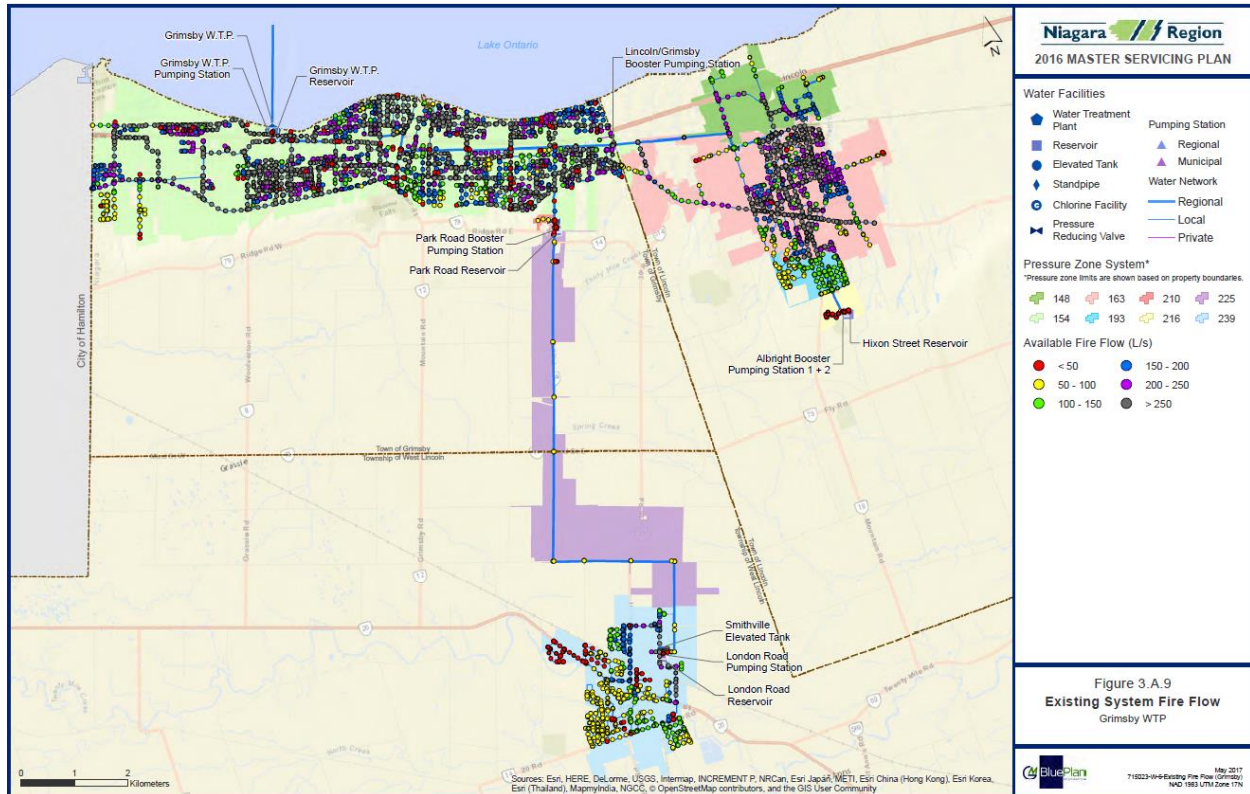


Figure 6: Grimsby Existing Fire Flow (Region of Niagara Water Master Plan)

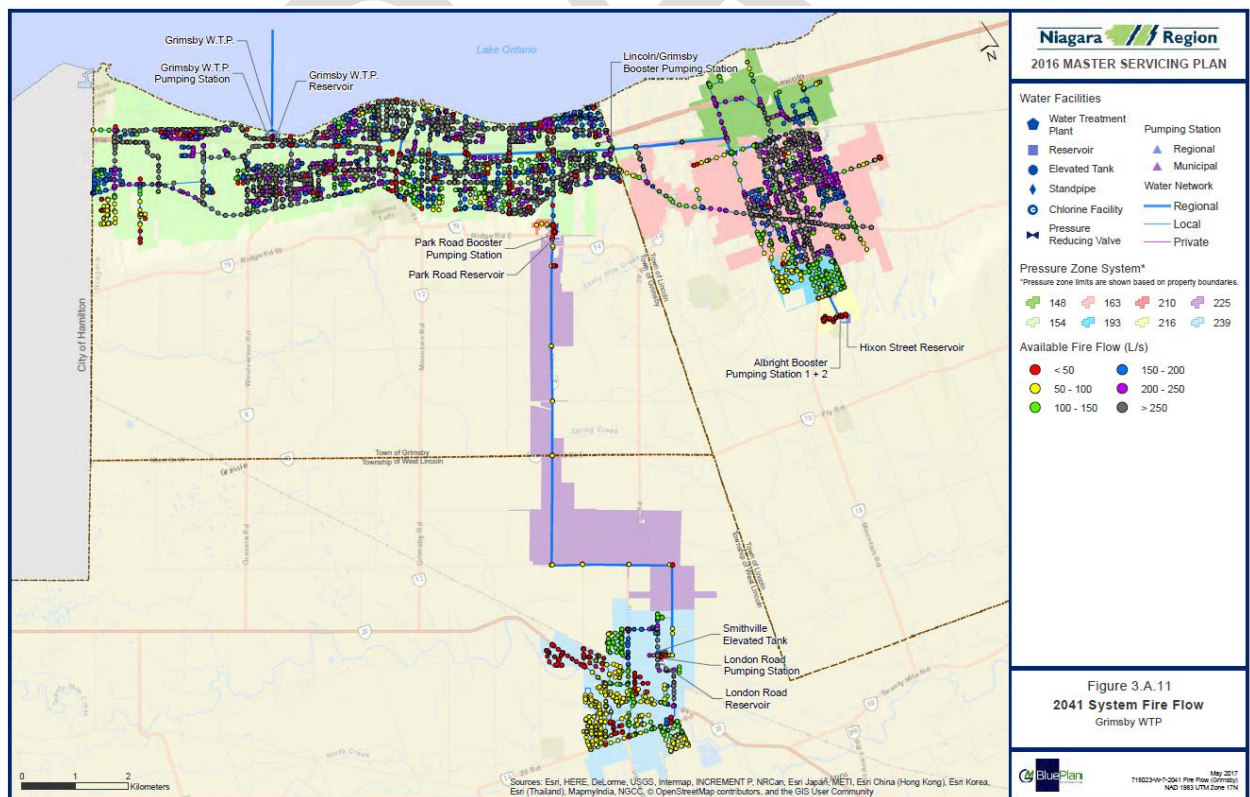


Figure 7: Grimsby 2041 System Fire Flow (Region of Niagara Water Master Plan)

Based on the level of growth on the system, the Grimsby Water Treatment Plant will require additional water treatment capacity. The location of water storage to optimize pumping costs and provide equalization and emergency storage to the system has been addressed. A new storage facility to support the Grimsby and Smithville service areas has been established. The new location results in decommissioning the existing reservoir and pumping station. To support the new storage location and to provide additional water transmission capacity through the Grimsby system, a new feedermain across Grimsby and a new feedermain from the Grimsby Water Treatment Plant are required. The level of growth in the Smithville area requires additional trunk watermain capacity through the network. Additional pumping capacity is required to support the Lincoln service area growth.

Per the Town of West Lincoln Website, the Status of the water main upgrades are as follows

- Status: Tender awarded to Alfred Beam Excavating
- Description: Installation of a new watermain on Spring Creek Rd and Industrial Park Rd from Thompson Rd to Pearson St.
- Activity: Construction to begin at the end of June to the end of August 2020.

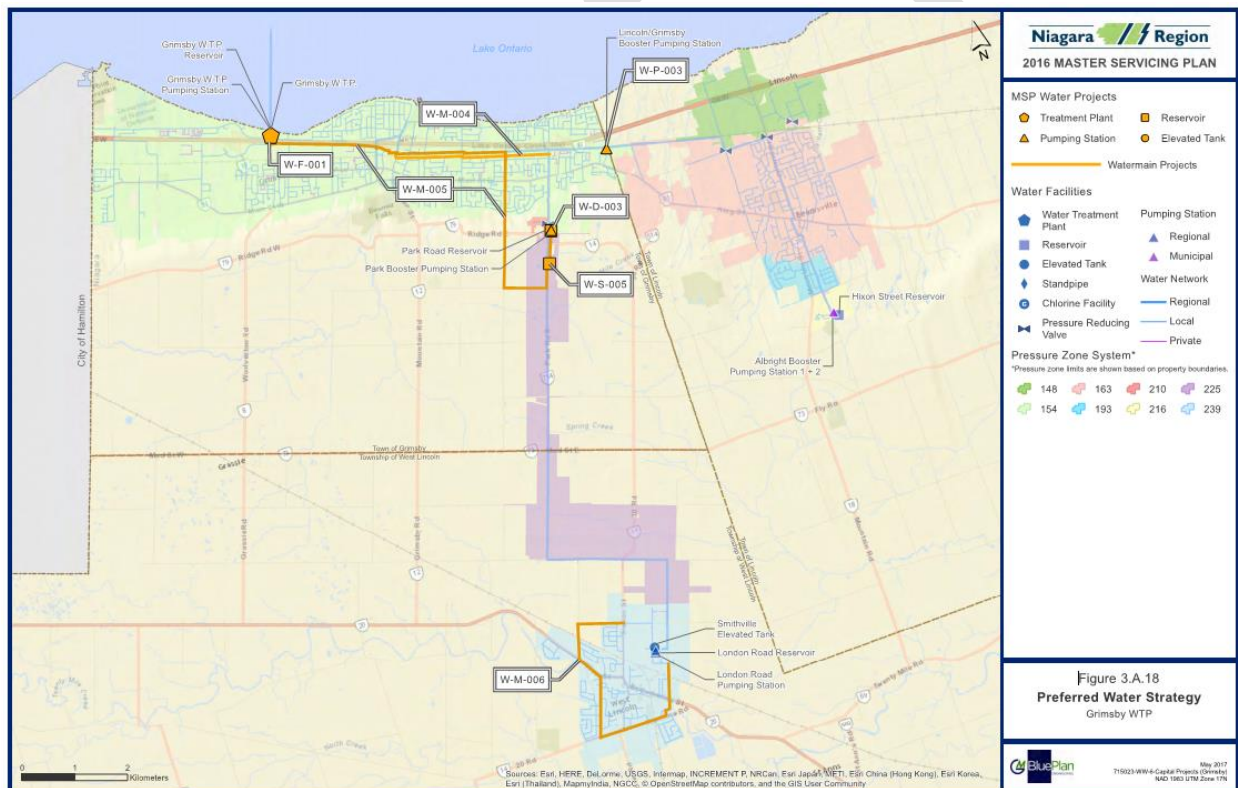


Figure 8: Grimsby Preferred Water Strategy (Region of Niagara Water Master Plan)

Water – Secondary Plan Area

An existing 150mm diameter watermain is located along Industrial Park Road, which is proposed to service the Secondary Plan area. An existing 150mm diameter watermain is also located on St. Catharines Street which currently terminates at the intersection of Industrial Park Road. A 200mm diameter watermain branches off the 150mm diameter watermain and crosses the existing water course to service the residential subdivision and the southern limits of Smithville. This

watermain could be extended easterly along the southern frontage of the subject lands if a secondary connection is required to service the site. A water analysis was completed based on a steady-state simulation for the existing parcels of land and the future development of lands within the existing urban boundary. The current watermain along Industrial Park Road should have sufficient capacity to support the Secondary Plan area, operating between existing system pressures of 60-80 psi with an available fire flow between 200 – 250 L/s. Refer to the **Existing Servicing Figure 104** showing the existing watermain in proximity to the site.

Table 4: Water Design Criteria (AMEC Servicing Report)

Water Demand Criteria		
Land Use Type	Equivalent Population Density	Design Flow Factor*
Residential	90 pers/ha	300 lpcd ⁽¹⁾
Commercial	125 pers/ha	300 lpcd ⁽²⁾
Institutional	25 pers/ha	300 lpcd ⁽²⁾
Industrial	125 pers/ha	28 m ³ /ha/day ⁽³⁾

1. Residential – 300 Lpcd based on Region of Niagara technical specifications;
2. Employment and commercial – 300 L/employee/day based on Niagara technical specifications;
3. Industrial – 28 m³/ha/day based on MOE Design Guidelines for Drinking Water Systems minimum allowance in the absence of reliable flow data.

Based on the water demand criteria for the subject lands the following water demands were anticipated for the secondary plan area in existing conditions.

Table 5: Smithville Secondary Plan Anticipated Water Flows

Zoning	Area (ha.)	Population Density	Population	Design Flow Factor	Flow L/d	Flow L/s
Service Commercial	7.6	125	950	300 lpcd	285,000	3.30
Employment	21.5	125	2687.5	28 m ³ /ha/d	602,000	6.97
Medium Density Residential	1.5	80	120	300 lpcd	36,000	0.42
Natural Heritage / Flood Plain	3.4					
Total	34				923,000	10.68

Existing Conditions – Drainage/Stormwater Management – Secondary Plan Area

A review of the topographic survey indicates that the subject site is generally sloping from north to south with the on-site contours ranging from 190 m near the rail line to 183 m adjacent to St. Catharines Street. South of St. Catharines Street the land is relatively flat surrounding 20 Mile Creek with elevations ranging between 181 – 182m, with a localized high point of 187m northeast of the existing RV Park Sales Centre. The land cover is generally pasture with some low density residential to the south of St. Catherine's Street. Upon review of detailed lidar information received from Niagara Region, there are three external catchment which convey flows towards the subject lands. Drainage from these catchments flow from north to south where four assumed culverts below the Trans Canada Railway convey external flows onto the subject lands. Drainage from the site and external catchments are picked up from two main draws which conveys water towards St. Catharine's street where two assumed culverts convey flow below the road towards the creek. Upon review of NPCA floodlines, there is an area designated as

floodplain immediately north of the St. Catharines street culvert, extending approximately 200m upstream along the existing draw before tapering out. To the south of St. Catharines street, the majority of the area between Townline and St. Catharine's street is designated floodplain. Refer to the sections below outlining the stormwater management criteria for the Secondary Plan Area as governed by the regulating agencies for this area: Niagara Region, Niagara Peninsula Conservation Authority and the Township of West Lincoln. Review of Engineering Drawings provide by Niagara Region, there appears to be a 250mm diameter storm sewer running along St. Catharines Street. This storm sewer appears to terminate roughly 70m west of the intersection of Industrial Road and St. Catharines, however a review of street level images suggests that the storm sewer continues west along St. Catherine's Street collecting drainage from the road through catch basins. A review of street level images along Industrial road also shows that the west side of Industrial Road is collected in catch basins to a storm sewer. The size of this storm sewer is to be confirmed. Refer to the **Existing Drainage Figure 103** showing the existing drainage conditions on site.

Stormwater Management Criteria (Region, NPCA, Township of West Lincoln)

Summary of Stormwater Management Requirements

Control Parameter	NPCA Criteria
Quantity Control	Post-development peak flow rates for the 2-year through to the 100-year storm should not exceed pre-development level
Quality and Erosion Control	Quality: Achieve Ontario Ministry of the Environment and Climate Change (MOECC) Enhanced Level of protection (80% total suspended solids removal) Erosion: 24-hour detention of runoff generated during 25mm event is required
Water Balance	Post-development infiltration rates for the 2-year through to the 100-year storm should match pre-development level
Volume Control	Volume control for 25 mm of rainfall in accordance with LSRCA standards
Phosphorus Loading	80% Removal

As recently discussed with Conservation Authority staff, it is understood the NPCA's role in regulating stormwater has changed recently. The NPCA still governs all activities involving stormwater being directly discharged into a watercourse, including outfall construction (a NPCA "work" permit would be required) or if an applicant is discharging stormwater down a slope, of which adherence to all NPCA policies would be required. However, in regard to quantity and quality control of storm water criteria – the Region of Niagara is now responsible for commenting on files and regulating this activity, which would include the design and construction of any proposed stormwater management facilities. It is understood that since the Town would ultimately own and maintain any stormwater facility, strict adherence to their criteria and standards would also apply, including a full review by Town Engineering staff.

Summary of Stormwater Management Requirements

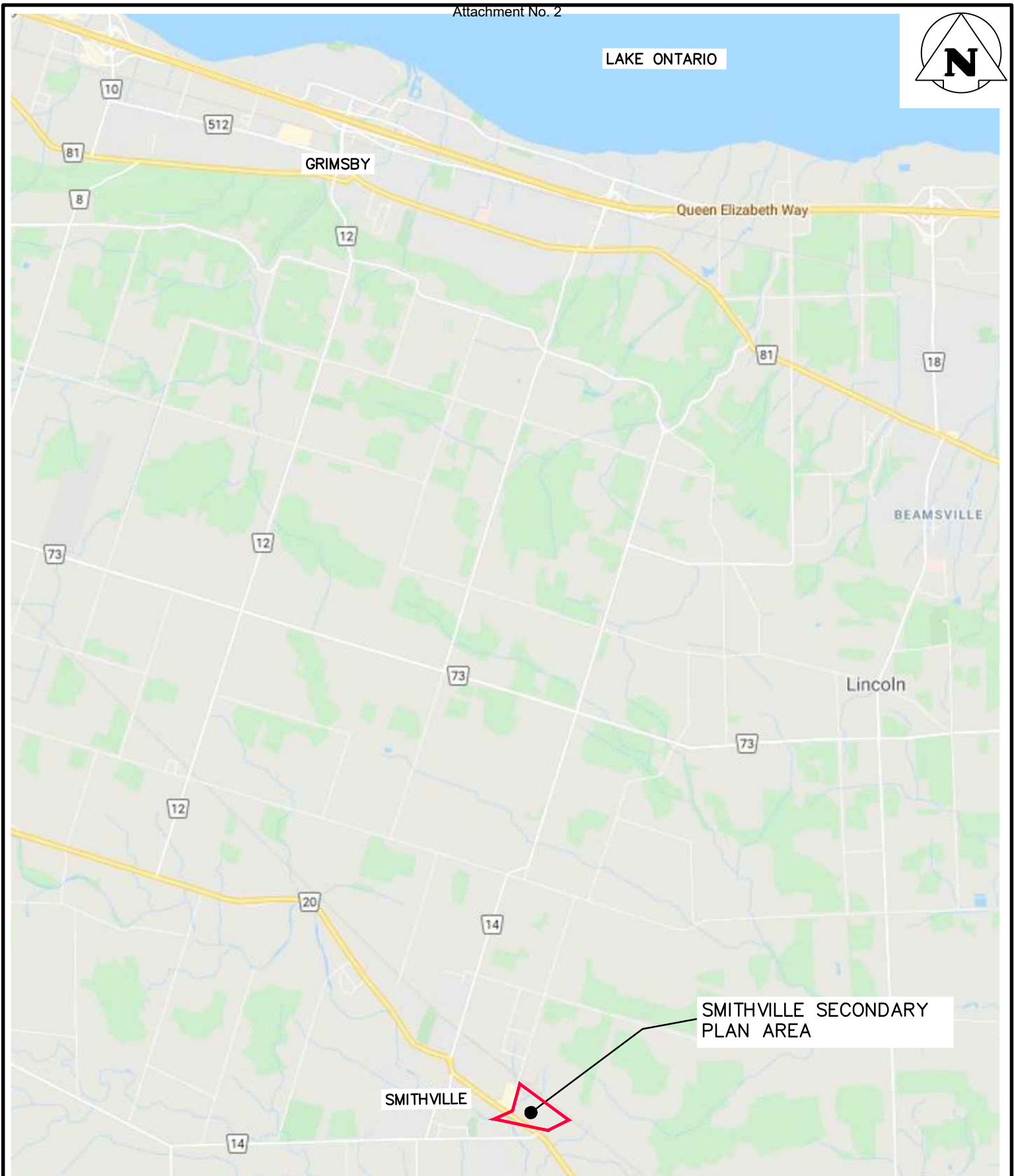
Control Parameter	Niagara Region Criteria
Quantity Control	Post-development peak flow rates for the 2-year through to the 100-year storm should not exceed pre-development level
Quality and Erosion Control	Quality: Achieve Ontario Ministry of the Environment and Climate Change (MOECC) Enhanced Level of protection (80% total suspended solids removal) Erosion: 24-hour detention of runoff generated during 25mm event is required

Summary of Stormwater Management Requirements

Control Parameter	Township of West Lincoln Criteria
Quantity Control	For all new developments, post-development storm water flows are to be maintained to pre-development levels.
Quality	All regulatory concerns with respect to the quality of the storm water discharge must be fully and adequately addressed by the Consulting Engineer

FIGURES

- Figure 101:** Context Plan – Town of Smithville
- Figure 102:** Context Plan – Secondary Plan Area
- Figure 103:** Secondary Plan Area - Existing Drainage Conditions
- Figure 104:** Secondary Plan Area – Existing Servicing Conditions



Legend



SMITHVILLE
= SECONDARY
PLAN AREA

Project

SMITHVILLE SECONDARY PLAN

Drawing

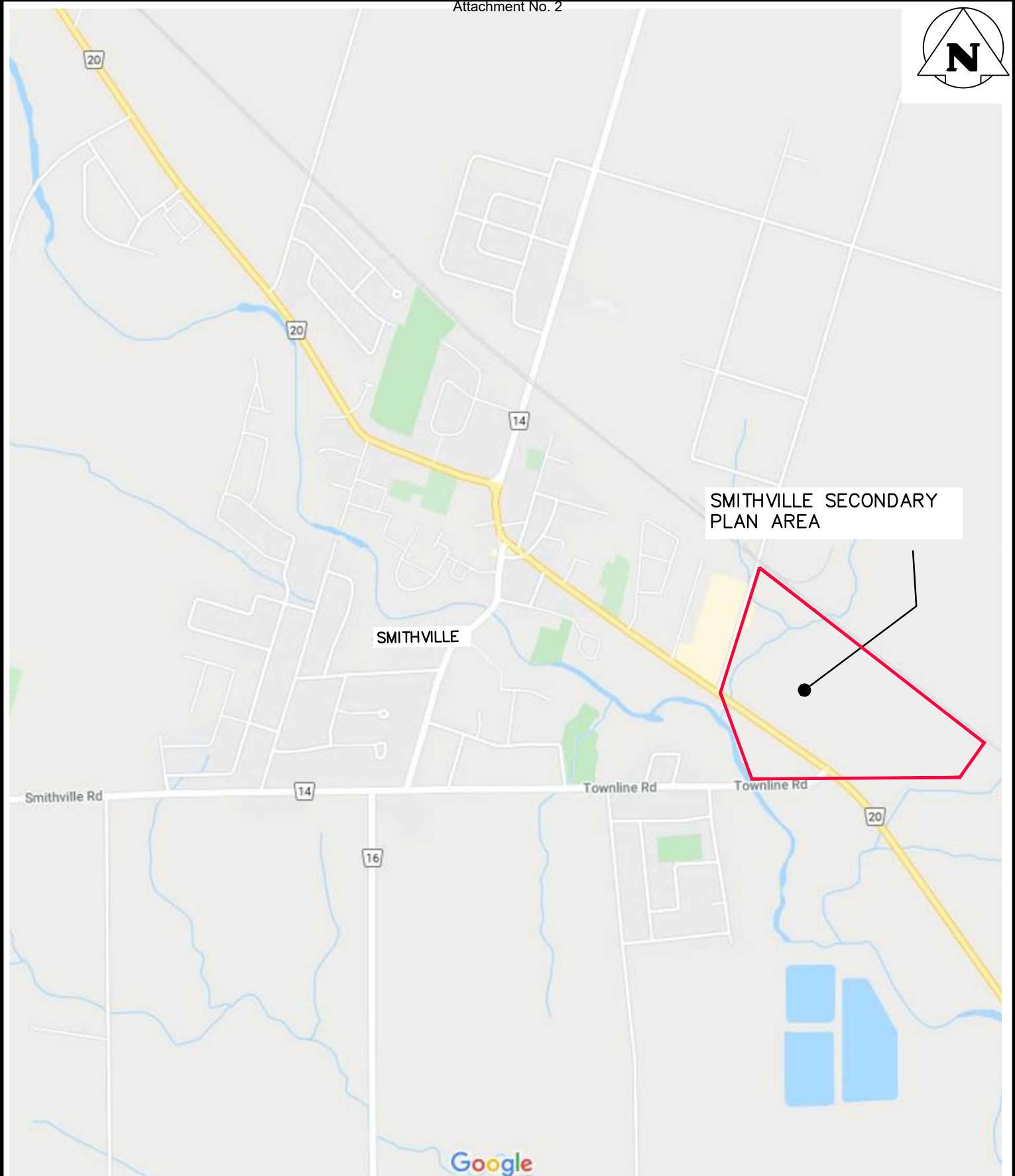
PROJECT LOCATION



CROZIER
CONSULTING ENGINEERS

57 JOHN STREET WEST
P.O. BOX 1011
BRADFORD, ON L3Z 2B4
905-952-3111 T
WWW.CFCROZIER.CA

Drawn By	M.P.	Design By	Project	529-2257
Scale	N.T.S.	Date	06/10/2020	Check By
			D.W.	FIGURE 101



Legend

SMITHVILLE
= SECONDARY
PLAN AREA

Project

SMITHVILLE SECONDARY PLAN

Drawing

PROJECT LOCATION



CROZIER
CONSULTING ENGINEERS

57 JOHN STREET WEST
P.O. BOX 1011
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905-952-3111 T
WWW.CFCROZIER.CA

Drawn By	M.P.	Design By	Project	529-2257
Scale	N.T.S.	Date	06/10/2020	Check By
			D.W.	FIGURE 102



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2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

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Town

No.	ISSUE	DATE: MM/DD/YYYY
0	DRAFT FOR DISCUSSION	MM/DD/YYYY

Engineer

Engineer


DRAFT
FOR DISCUSSION PURPOSES ONLY

Project

SMITHVILLE SECONDARY PLAN

Drawing

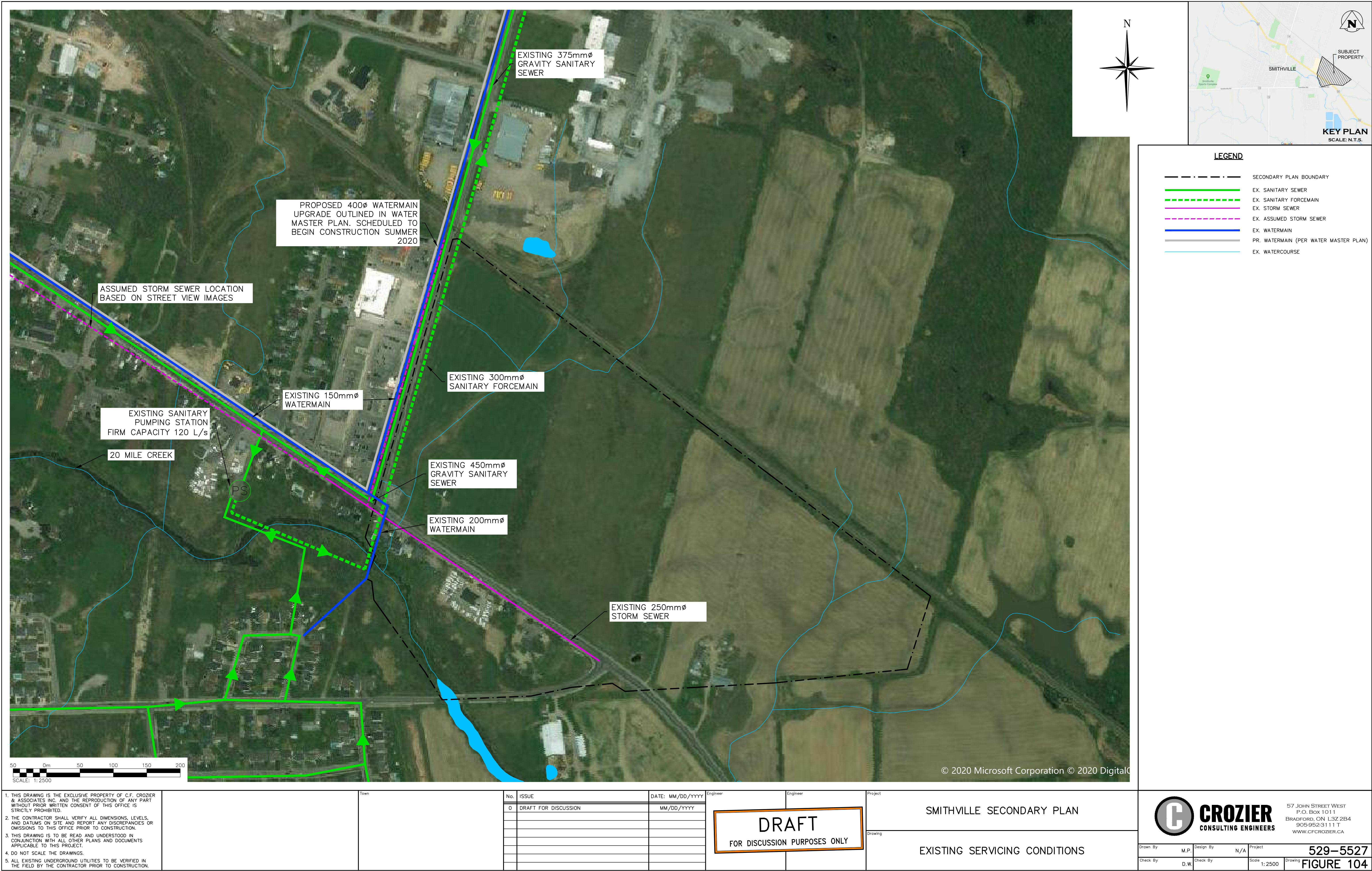
EXISTING DRAINAGE CONDITIONS

**CROZIER**
CONSULTING ENGINEERS

57 JOHN STREET WEST
P.O. BOX 10111
BRADFORD, ON L3Z 2B4
905.952.3111 T
WWW.CFCROZIER.CA

Drawn By: M.P. Design By: N/A Project: 529-5527

Check By: D.W. Check By: Scale: 1:2500 Drawing: FIGURE 103



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3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.

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5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

Town

No.	ISSUE	DATE: MM/DD/YYYY
0	DRAFT FOR DISCUSSION	MM/DD/YYYY

Engineer

Engineer


DRAFT
FOR DISCUSSION PURPOSES ONLY

Project

SMITHVILLE SECONDARY PLAN

Drawing

EXISTING SERVICING CONDITIONS



CROZIER
CONSULTING ENGINEERS

57 JOHN STREET WEST
P.O. BOX 10111
BRADFORD, ON L3Z 2B4
905.952.3111 T
WWW.CFCROZIER.CA

Drawn By	M.P.	Design By	N/A	Project	529-5527
Check By	D.W.	Check By		Scale	1:2500
				Drawing	FIGURE 104

Appendix C

JULY 1ST, 2020

PROJECT NO: 0529-5527

SENT VIA: EMAIL

DCURRIE@MHBCPLAN.COM

540 Bingham Centre Drive, Suite 200
Kitchener, Ontario
N2B 3X9

Attention: Dan Currie

**RE: EXISTING CONDITIONS REVIEW
SMITHVILLE EAST SECONDARY PROPOSAL
TOWN OF WEST LINCOLN, NIAGARA REGION**

Dear Dan,

C.F. Crozier & Associates Inc. (Crozier) was retained by MHBC Planning to undertake a Transportation Study in support of Secondary Plan. The purpose of the study is to conduct a high-level assessment of transportation needs, provide recommendations as required and promote conformance to the Township of West Lincoln and Niagara Region's Official Plans and Transportation Master Plans.

The scope of work in this report is in accordance with the Region of Niagara's "Guidelines for Transportation Impact Studies." In preparing this report, the following municipal documents were received to promote consistency and ensure general conformance to the Township's and Region's planning and transportation goals:

- Niagara Region Transportation Master Plan (October 2017)
- The Township of West Lincoln Official Plan (October 2018)

Development Lands

The subject lands encompass approximately 70 acres of mostly undeveloped land bounded by a railway to the north, St. Catharines Street to the south, Industrial Park Road to the west, and farming to the east. Single-detached dwellings and a farming structure exist on the site, fronting St. Catharines Street. The lands are zoned for future service commercial and employment area use per Schedule B-4 of the Township's Official Plan.

Boundary Road Network

St. Catharines Street is an east-west major arterial roadway under the jurisdiction of the Regional Municipality of Niagara (Niagara Region). The roadway has an urban cross-section, two approximate four-metre travel lanes and a posted speed limit of 50 km/h. Pedestrian facilities exist on the south leg of St. Catharines Street terminating at Townline Road but continuing east past Industrial Park Road.

Industrial Park Road is a north-south minor arterial under the jurisdiction of the Township of West Lincoln. The two-lane roadway has a hybrid cross-section with curb and gutter along the west leg of the roadway while the east leg has a gravel shoulder and ditch. A posted 50 km/h speed limit exists, with approximately four-metre lanes. No pedestrian or bicycle facilities are provided.

Townline Road is skewed directionally, and for the purpose of this report will be given a north-south orientation to provide clarity. Townline Road is assumed to be a minor arterial roadway abutting the subject lands under the jurisdiction of the Township of West Lincoln, with an assumed speed limit of 50 km/h. The roadway consists of an urban cross-section with pedestrian sidewalks on the east side of the roadway.

Traffic Data

At the time of this study, there is an ongoing global COVID-19 crisis. Consequently, existing (2020) traffic counts were not undertaken as travel patterns on the boundary road network will not be reflective of typical commuter travel patterns. As such, the most current turning movement counts available were obtained from the Niagara Region and used for this assessment.

The turning movement counts (TMCs) at the intersection of Industrial Park Road and St. Catharines Street were undertaken on Thursday, October 11, 2016, from 7:00 a.m. to 6:00 p.m., as obtained from Niagara Region staff. The peak hours of the turning movement counts occurred between 7:15 a.m. and 8:15 a.m. for the morning peak period and between 4:30 p.m. and 5:30 p.m. for the evening peak period. The TMCs are included in the attachments for reference.

The turning movement counts (TMCs) at the intersection of Townline Road and St. Catharines Street were undertaken on Tuesday, October 1, 2013, from 7:00 a.m. to 6:00 p.m., as obtained from Niagara Region staff. The peak hours of the turning movement counts occurred between 7:30 a.m. and 8:30 a.m. for the morning peak period and between 4:30 p.m. and 5:30 p.m. for the evening peak period. The TMCs are included in the attachments for reference.

Niagara Region staff also provided annual average daily traffic (AADT) volumes for St. Catharines Street. Based on the AADT's of 8,200 in 2017 and 12,000 in 2014, it is apparent that negative growth through this corridor has occurred. As such, it has been determined a one percent (1%) growth rate would be deemed appropriate to apply to the turning movement counts to determine 2020 existing traffic volumes. AADT provided by the Region has been appended to this letter.

Cycling Routes

Bicycle routes shared with the roadway are located along Industrial Park Road, St. Catharines Street, and Townline Road, according to The Region of Niagara's GIS Navigator mapping. The shared bicycle routes connect to other bicycle routes covering the extent of the Niagara Region. The bicycle routes within the secondary plan area are named "Edge of Smithville" and "The Other Niagara Long", and further details about these routes have been appended to this letter.

Public Transit

No public transit is available to the residents of Smithville.

Traffic Modeling

The assessment of intersections is based on the method outlined in the “Highway Capacity Manual, 2010” using Synchro 10 modelling software. Intersections are assessed using a Level of Service metric, with ranges of delay assigned a letter from “A” to “F”. For stop-controlled intersections, a Level of Service “A” or “B” would typically be measured during off-peak hours when lesser traffic volumes are on the roadways. Levels of Service “C” through “F” would typically be measured in the commuter peak hours when greater vehicle volumes cause longer travel times. The Level of Service (LOS) definitions for unsignalized intersections are appended to this letter.

Intersection Operations

The traffic operations at the intersections of St. Catharines at Industrial Park Road and St. Catharines Street at Townline Road were analyzed based on the traffic volumes outlined in the “Traffic Data” section of this letter. Detailed capacity analyses are also appended to this letter.

The operations of the critical intersections were analyzed based on the traffic volumes illustrated in Figure 1. Table 1 outlines the existing traffic levels of service.

Table 1: 2020 Existing Levels of Service

Intersection	Control	Peak Hour	Level of Service	Average Delay per Vehicle(s)	Max V/C Ratio (Approach)	V/C Ratio(s) > 0.85 (Approach) ¹	95 th %ile Queues > Storage Length
Industrial Park Road at St. Catharines Street (RR20)	Stop Control (SB)	A.M.	C	15.3 s	0.17 (SBL)	None	None
		P.M.	E	49.9 s	0.86 (SBL)	0.86 (SBL)	None*
Townline Road at St. Catharines Street (RR20)	Stop Control (NB)	A.M.	B	13.8 s	0.24 (NB)	None	None
		P.M.	C	16.5 s	0.31 (NB)	None	None

Note: [1] V/C Ratio – illustrates the maximum and other volume to capacity ratios greater than 0.85.
The Level of Service (LOS) of an unsignalized intersection is based on the highest delay to the minor approach.

As indicated in Table 1, the intersections of St. Catharines Street at Industrial Park Drive and St. Catharines Street at Townline Road operate at a Level of Service “C” during both the weekday a.m. and p.m. peak hours except for Industrial Park Road and St. Catharines Street operates at a Level of Service “E” during the p.m. peak hour. The level of service “E” is indicative of very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable. The maximum volume-to-capacity ratio is 0.86 at the intersection of Industrial Park Road at St. Catharines Street during the weekday p.m. peak hour.

Potential Access Locations

The assessment of access locations is based on the Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC Manual) Figure 8.8.2 and Section 9.4.2. As outlined in Section 9.4.2.1 of the TAC Manual, "A typical minimum intersection spacing along arterial roadways is 200 metres, generally only applicable in the area of intense existing development or restrictive physical controls where feasible alternatives do not exist. The 200 metres of spacing allows for minimum lengths of back to back storage for left-turning vehicles at the adjacent intersections."

Based on the above, it is currently recommended three access points be provided to the Smithville East Secondary Plan lands. The proposed accesses are as follows:

- One full moves access to Industrial Park Road. The access is to be centred as best as applicable between the Railway and the intersection of St. Catharines Street and Industrial Park Road. The access should align with the "Village Square" commercial development on Industrial Park Road.
- A full moves access to create the 4th leg at the intersection of St. Catharines Street and Townline Road. This intersection is currently under construction to a single lane roundabout.
- A potential full moves access to St. Catharines Street directly between Townline Road and Industrial Park Road. Additional analysis will be required to confirm if this access can operate safely as a full moves access or if turning restriction will be required.

It should be noted any recommendations to provide roadway improvements to increase safety and improve operations will be reviewed as a part of the future background and total traffic conditions.

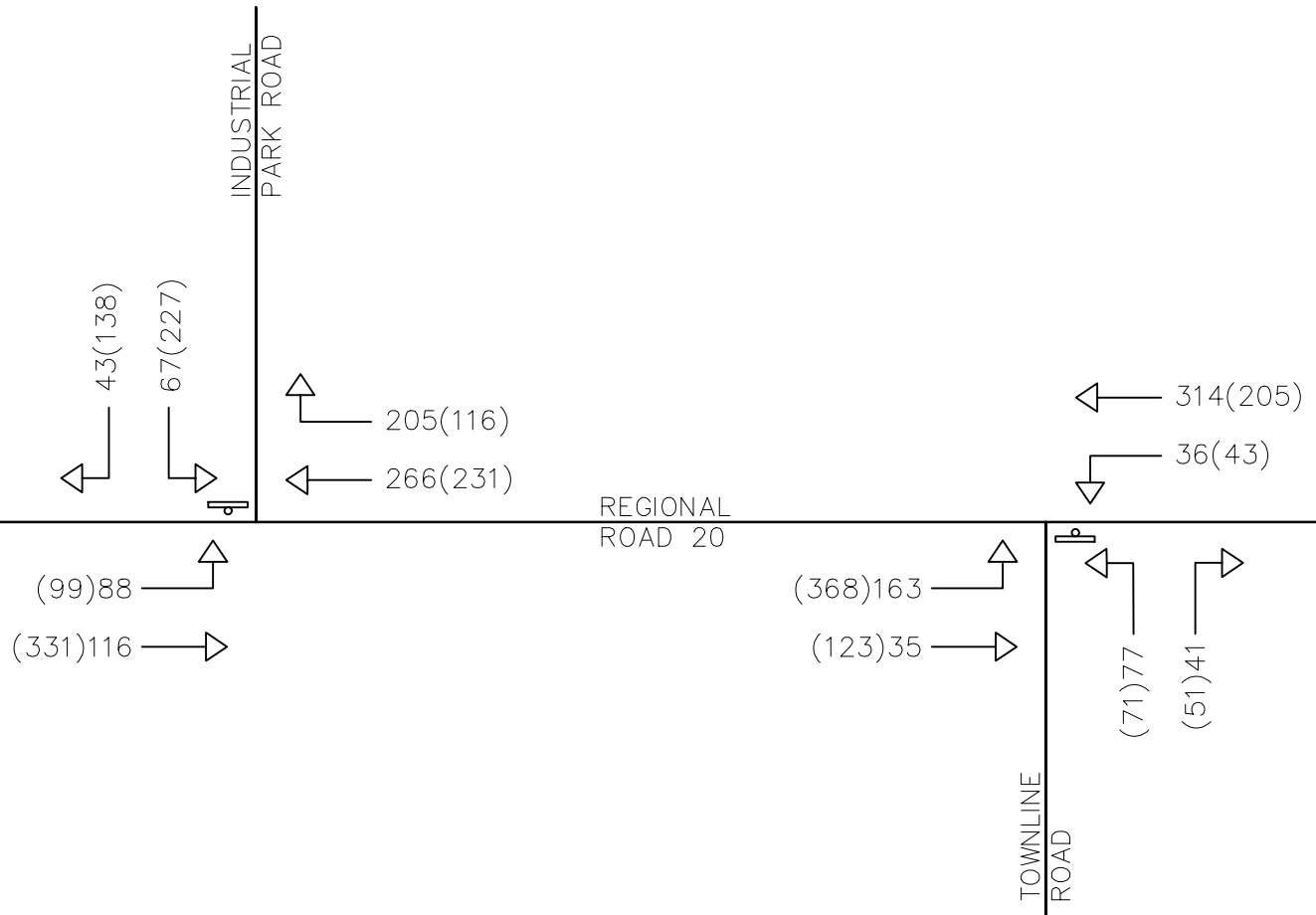
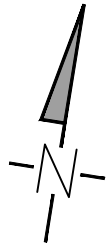
Sincerely,

C.F. CROZIER & ASSOCIATES INC.





R. Aaron Wignall
Associate, Transportation

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NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.

<div>Legend</div> <div><div></div><div>STOP CONTROL</div></div> <div><div>xx(m)</div><div>WEEKDAY A.M. (WEEKDAY P.M.) PEAK HOUR VOLUMES</div></div>	<div>Project</div> <div>SMITHVILLE EAST SECONDARY PLAN TOWNSHIP OF WEST LINCOLN</div>	<div><div></div><div><div>CROZIER</div><div>CONSULTING ENGINEERS</div></div><div>57 JOHN STREET WEST P.O. Box 1011 BRADFORD, ON L3Z 2B4 905-952-3111 T WWW.CFCROZIER.CA</div></div>	
	<div>Drawing</div> <div>2020 EXISTING TRAFFIC VOLUMES</div>		<div>Drawn By</div> <div>S.K.</div> <div>Design By</div> <div>S.K.</div> <div>Project</div> <div>529-5527</div>
	<div>Scale</div> <div>N.T.S.</div> <div>Date</div> <div>2020/06/30</div> <div>Check By</div> <div>P.A.</div> <div>Drawing</div> <div>FIG. 1</div>		

Aaron Wignall

From: Huppunen, Stephanie <Stephanie.Huppunen@niagararegion.ca>
Sent: June 12, 2020 9:54 AM
To: Aaron Wignall
Subject: RE: Townline Road and Highway 20 Roundabout
Attachments: 2019-T-210 RR20 IFT DWGS_07-04-2019-Townline.pdf

Good morning Aaron,

The following information is from our 2019 traffic count data:

RR20 (St. Catharines Street) from RR14 (Convenient Street) to RR69 (Twenty Mile Road) - 0.9km -
Year 2017 - AADT 8,200; SADT 8,400; WADT 8,100; Previous AADT 12,000 (2014)

I have also provided the IFT drawings for the roundabout at Townline currently under construction, please let me know if you need anything else. Have a great day.

Stephanie Huppunen, C.E.T.
Project Manager - Transportation Engineering
Niagara Region
Phone: 905-980-6000 ext 3552
Mail: 1815 Sir Isaac Brock Way, PO Box 1042
Thorold, Ontario, L2V 4T7

From: Aaron Wignall <awignall@cfcrozier.ca>
Sent: Wednesday, June 10, 2020 4:08 PM
To: Huppunen, Stephanie <Stephanie.Huppunen@niagararegion.ca>
Subject: Townline Road and Highway 20 Roundabout

CAUTION: This email originated from outside of the Niagara Region email system. Use caution when clicking links or opening attachments unless you recognize the sender and know the content is safe.

Hi Stephanie,

I am reaching out to gather as much information as I can for the work you are undertaking for the Highway 20 and Townline Road roundabout in Smithville. We are working with MHBC Planning and the Town of West Lincoln to complete various supporting documents for the East Smithville Secondary Plan.

I am looking for any traffic counts or drawings you are able to provide me that can help me complete my existing conditions traffic review. Please feel free to give me a call to chat.

Regards,

Aaron Wignall | Associate
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4

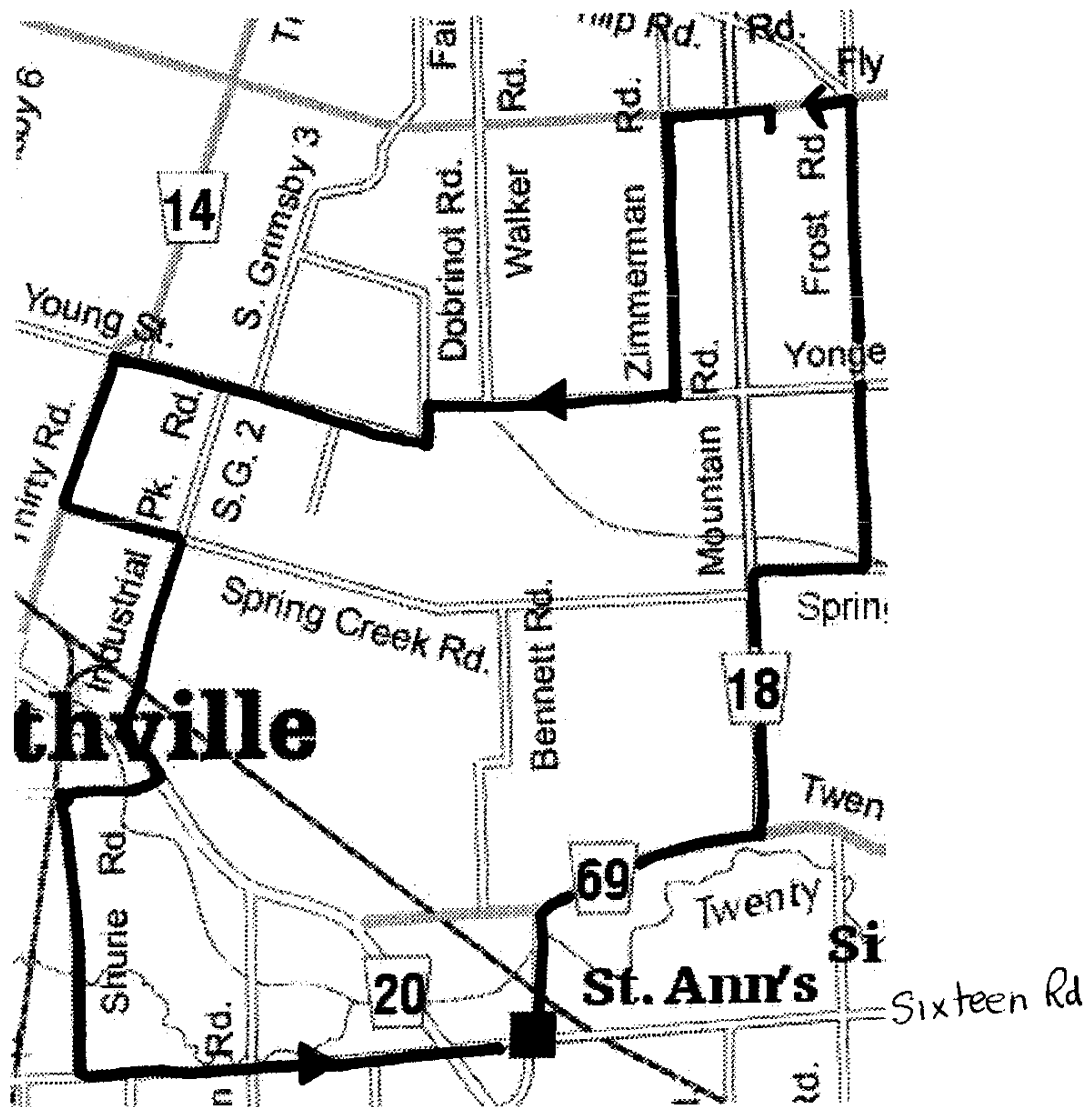


0.0	L	Beamsville lions Sports Park
	L	Fly Rd.
0.7	L	Zimmerman Rd.
2.7	R	Yonge Rd.
6.9	L	Thirty Rd.

11.5	L	Shurie Rd.
13.6	L	Sixteen Rd.
16.8	L	St. Anns Rd.
17.7	R	Twenty Rd.
19.3	L	Mountain Rd.

8.1	L	Spring Creek Rd.
9.0	R	Industrial Park Rd.
10.3	L	Reg.Rd. 20
10.8	R	Townline Rd.

21.2	R	Spring Creek Rd.
22.1	L	Frost Rd.
25.3	L	Fly Rd.
26.2	L	Beamsville Lions Sports Park



The Other Niagara – Long – 1996 – Rev. 2005

By Eveline Stout

0.0 WM Plaza @ TH	35.8 L Gainsborough Caistor Townline
0.6 L Vansickle Rd.	45.2 Stop@Attercliffe Restaurant
1.5 R St.Paul St. / 81	R Canborough Rd.
3.7 L Fifth St.	46.6 R Creek Rd. / 45
6.1 R Eighth Ave.	55.6 R Riverside Rd. / 27
6.9 L Seventh St.	61.4 L Boyle Rd. becomes Rosedene
7.5 R Rockway Rd. / 69 (becomes Eighth Ave.)	69.4 L Fourth Concession
13.5 L Twenty-first St.	69.9 R Rosedene Rd.
14.5 R Spring Creek Rd.	72.4 R Sixteen Rd.
15.5 L/R jog @ Victoria / 24	81.0 L Effingham St. (becomes Fifth St.)
23.1 L/R jog @ Mountain Rd. / 12	86.3 R Eighth Ave.
27.4 L Industrial Park Rd.	87.2 L Third St.
28.8 R Reg. Rd. 20 to Tim Horton's for a quick break	89.7 R St.Paul St. / 81
28.9 R Townline Rd./Twenty Rd.	91.0 L Vansickle Rd.
29.8 L Shurie Rd.	92.0 R WM Plaza
32.0 R Sixteen Rd.	

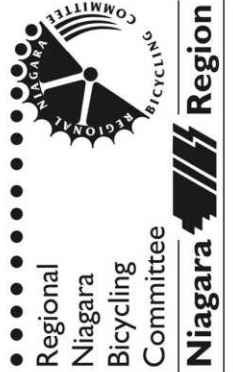
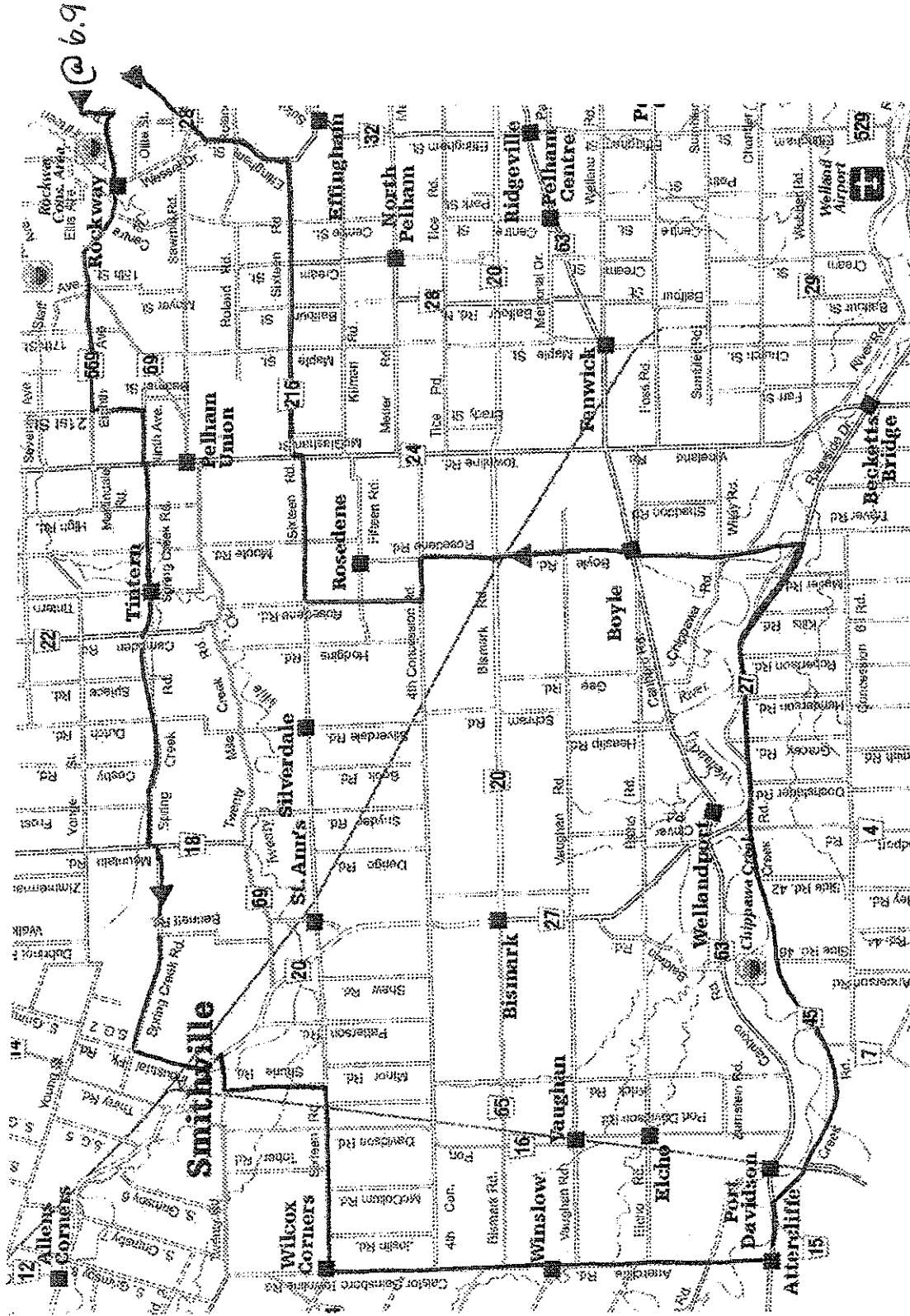


healthylivingniagara.com

Bicycles are considered vehicles under the Highway Traffic Act and must obey all rules of the road. Helmet use is strongly encouraged.



The Other Niagara – Long – 1996 – Rev. 2005
By Evelyn Stout



Bicycles are considered
vehicles under the Highway
Traffic Act and must obey all
rules of the road. Helmet use
is strongly encouraged.

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NIAGARA**

healthylivingniagara.com

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on the minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on minor streets.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

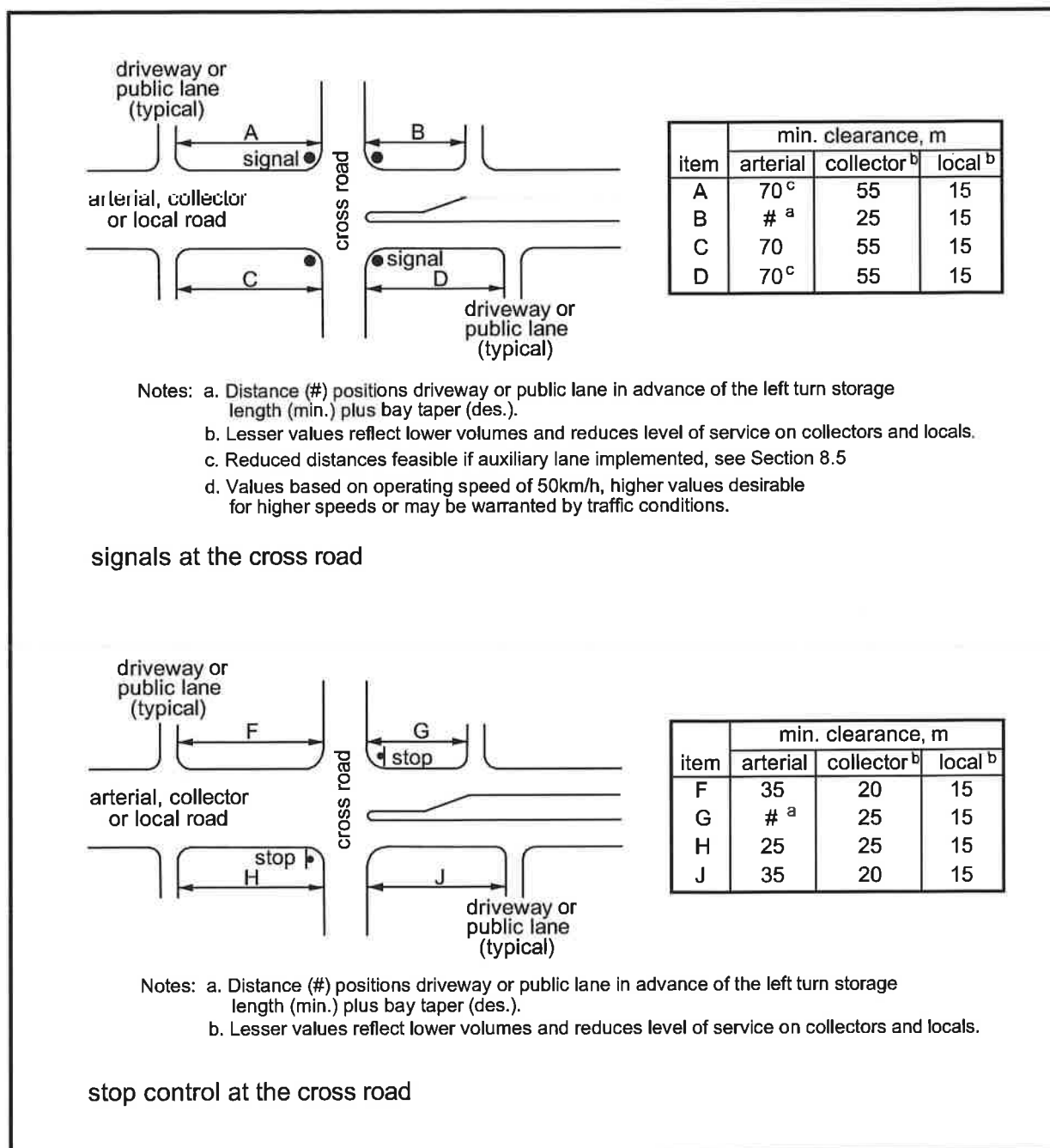


Figure 8.8.2: Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections

Inadequate corner clearance between accesses and signalized intersections along a major road, such as a major arterial, can create serious operational problems including:

The development of a final design is facilitated by drawings that become progressively more detailed throughout the process. Some important aspects of the process are described below.

Roads are one form of land use and one element in the transport system. In developing areas and existing urban road networks, the role of roads is influenced by the type of land use and the other modes of transportation available. The development of new roads and road networks therefore requires input from specialists in land use planning, transport modelling, and traffic engineering.

While the current traffic situation is relevant in many cases, designs for new roads and major upgrades of existing roads requires estimations of traffic flows, traffic movements, and traffic composition in a future design year. In some cases, the need for an intersection may be questioned. A decision not to provide a new intersection or to remove an existing intersection should be taken only after an analysis of the likely effects on other roads and intersections in the surrounding road network. These effects could involve traffic congestion, crashes at other intersections, or traffic infiltration into local streets.

For new intersections, possible locations will have to be identified, taking into account topography, natural and man-made features, and many other considerations as outlined in **Section 9.3**. It may also be appropriate to consider a range of layout options and to evaluate them in terms of safety, traffic performance, environmental effect, and cost.

The process also involves an approval process that is preceded by consultation with other stakeholders (e.g., local municipalities and service authorities), the outcome of which may influence the design and final recommendation.

9.4.2 LOCATION AND SPACING OF INTERSECTIONS

Both rural road and urban road network spacing are often based on the location of the original road allowances before urban development. The systems of survey employed in the layout of original road allowances vary from region to region across Canada. As rural areas urbanize, the development of major roads generally occurs along these original road allowances; consequently, road networks vary from region to region. As examples, the land survey system in Ontario has created a basic spacing between major roads of 2.0 km, whereas the land survey system in the Prairie Provinces has resulted in a 1.6 km grid.

As development occurs, this spacing is often reduced. In areas of commercial or mixed use development, the vehicle, cyclist, and pedestrian traffic generated by employment and retail shopping may result in a reduced arterial spacing. In downtown areas, this spacing could be reduced further, as determined by the various road user characteristics and typically higher relative needs of pedestrians and cyclists.

The spacing of intersections along a road in both an urban and rural setting has a great effect on the operation, level of service, and vehicular capacity of the roadway. Ideally, intersection spacing along a road should be selected based on function, traffic volume, and the relative presence of various road user modes (e.g., vehicles, cyclists, pedestrians). However, it is often not always possible to provide ideal intersection spacing for all road users, especially in an urban setting. The designer should consider arterials, collectors, locals, cross roadway intersection spacing adjacent to interchanges, and traffic signal spacing and progression.

9.4.2.1 Arterials

Along signalized arterial roads, vehicular traffic volumes are generally high. It is therefore desirable to provide spacing between signalized intersections that is consistent with the desired vehicular traffic progression speed and signal cycle lengths. By spacing the intersections uniformly, based on known or assumed running speeds and appropriate cycle lengths, signal progression in both directions can be achieved. Progression allows platoons of vehicles to travel through successive intersections without stopping. For a progression speed of about 50 km/h and a cycle length of 60 s, the corresponding desired spacing between signalized intersections is approximately 400 m. As speeds increase, the optimal intersection spacing increases proportionately.

Where an arterial corridor must accommodate a variety of road users (e.g., vehicles, cyclists, and pedestrians), vehicle operations and the consequent intersection designs must balance the various needs while recognizing that the priority of arterial roadways is generally servicing vehicular traffic movement.

A typical minimum intersection spacing along arterial roadways is 200 m, generally only applicable in areas of intense existing development or restrictive physical controls where feasible alternatives do not exist. The 200 m spacing allows for minimum lengths of back to back storage for left turning vehicles at the adjacent intersections.

The close spacing does not permit signal progression; therefore, it is normally preferable not to signalize the intersection that interferes with progression along a major arterial. Intersection spacing at or near the 200 m minimum is normally only acceptable along minor arterials, where optimizing traffic mobility is not as important as along major arterials.

Where intersection spacing along an arterial does not permit an adequate level of traffic service, many alternatives can be considered to improve traffic flow. These include, but are not limited to:

- Converting two-way to one-way operation
- Implementing cul-de-sacs for minor connecting roads
- Introducing channelization to restrict turning movements at selected intersections to right turns only.

The designer's options may be substantially limited by the policies of the local jurisdiction.

On divided arterial roads, a right-in, right-out intersection without a median opening may be permitted at least 100 m from an adjacent all-directional intersection. The distance is measured between the closest edges of pavement of the adjacent intersecting roads.

In retrofit situations, the desired spacing of intersections along an arterial is sometimes compromised in consideration of other design controls, such as the nature of existing adjacent development and the associated access needs.

9.4.2.2 Collectors

The typical minimum spacing between adjacent intersections along a collector road is 60 m.

9.4.2.3 Locals

Along local roads, the minimum spacing between four-legged intersections is normally 60 m. Where the adjacent intersections are three-legged, a minimum spacing of 40 m is acceptable.