APPENDIX B

Agricultural Impact Assessment Report

AGRICULTURAL IMPACT ASSESSMENT
DUFFERIN COUNTY ROAD 109/2ND LINE REALIGNMENT
TOWNSHIPS OF AMARANTH AND EAST GARAFRAXA
DUFFERIN COUNTY

DBH Soil Services Inc.

February 26, 2024

AGRICULTURAL IMPACT ASSESSMENT
DUFFERIN COUNTY ROAD 109/2ND LINE REALIGNMENTS
TOWNSHIPS OF AMARANTH AND EAST GARAFRAXA
DUFFERIN COUNTY

Prepared for:

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February 26, 2024

Prepared by:

DBH Soil Services Inc.

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1 INTRODUCTION

DBH Soil Services Inc was retained to complete an Agricultural Impact Assessment (AIA) Report for a recommended plan of a four-legged signalized intersection connecting Dufferin County Road 109, 2nd Line and County Road 3. In this plan, the proposed 2nd Line is realigned to the east of the existing 2nd Line south of County Road 109; County Road 109 and County Road 3. Existing County Road 3 is realigned at the intersection such that the connection meets at a 90-degree angle and a tangent with County Road 109. County Road 23 is realigned further south of the existing County Road 23 to ensure the intersection of County Road 3 and County Road 23 doesn't conflict with the proposed four-legged intersection.

This proposed road realignment is located along the border of the Townships of Amaranth and East Garafraxa, in Dufferin County. The proposed realignment abuts the urban area of the town of Orangeville.

The proposed road realignment is located within Part Lot 1, Concessions 1 and 2, Township of Amaranth, and in Part Lots 6 and 7, Concession B in the Township of East Garafraxa, all within the County of Dufferin.

For this study, the proposed realignment is referred to as the Primary Study Area (PSA). The PSA lands include portions of County Road 109, 2nd Line, County Road 3, and County Road 23.

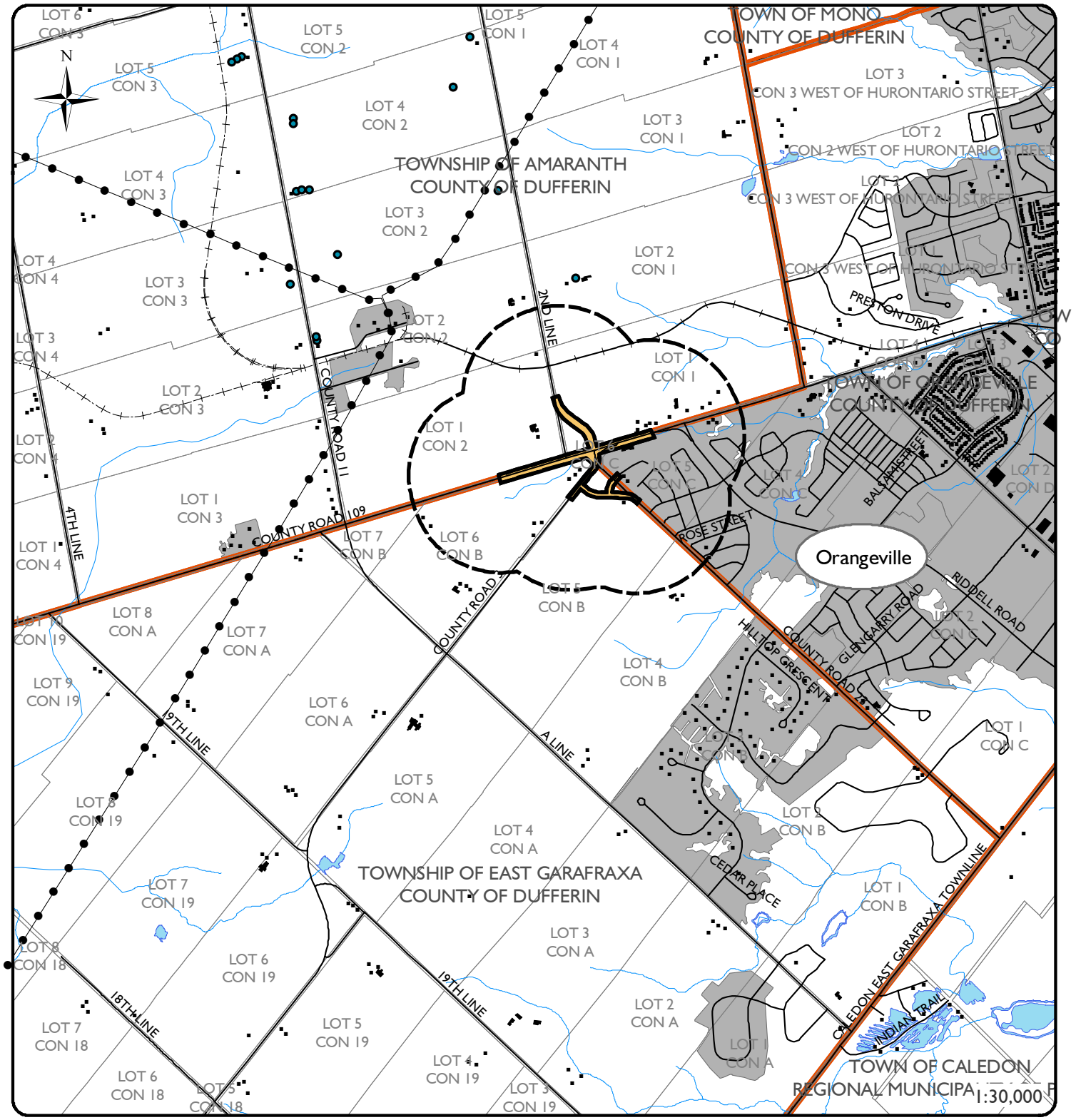
For the purpose of this AIA, agricultural operations and activities are evaluated in a larger area, described as the zone of impact extending for 500 m (0.5 km) beyond the boundary of the PSA. This larger area, called the Secondary Study Area, comprises 500 m (0.5km) area outside the PSA to allow for characterization of the agricultural community and the assessment of impacts adjacent to and in the immediate vicinity of the PSA.

This AIA was completed to document the existing land uses onsite and in the immediate surrounding area as well as any potential impacts to surrounding agriculture as a result of the proposed road realignment.

The PSA comprised a mix of land uses including agriculture, built up areas (including the existing road network), scrubland, open field, woodland, and urban areas. The SSA comprised a mix of land uses including urban uses, rural uses, agricultural lands, open field, stream channels, transportation corridors, and woodlots.

Figure 1 illustrates the relative location and shape of the PSA and the SSA with respect to the above-mentioned community features.

This report documents the methodology, findings, conclusions, and mapping completed for this study.



Legend

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- Roads (MNRF)
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Railway Status (MNRF)

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Utility Lines (MNRF)

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- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m
- Waterbody (MNRF)

Figure 1

Location

DBH Soil Services Inc.

October 2023

2 METHODOLOGY

A variety of data sources were evaluated to characterize the extent of agricultural resources and to assess any potential existing (or future direct or indirect) impacts to agriculture within the PSA and the surrounding SSA that may occur as a result of the proposed future development of the PSA.

In an effort to determine the requirements for completion of an AIA, a review of the *Dufferin Official Plan – Office Consolidation July 17, 2017* and associated schedules was completed. The review of the official plan determined that there was specific requirement identified. Specific to this project (Non-agricultural uses in agricultural areas), Section 4.2.3.1 of the *Dufferin Official Plan – Office Consolidation July 17, 2017,* identified the need to complete an AIA. Additional policy regarding Transportation Systems was identified in Section 7.2, with further policy regarding the Implementation and Interpretation of the Official Plan in Section 8.0. The official plan did not provide specific details on how to complete the AIA. As a result, a further review was completed to determine the existence and use of AIA guidelines in Ontario.

The review of the existence and use of AIA guidelines in Ontario, determined that the Region of Halton has created a document titled "*Agricultural Impact Assessment Guidelines, October 1985"*, and has updated those guidelines with a newer version from June 2014. The Region of Halton has specific standards and guidelines for completing AIAs within the boundaries of the Region of Halton. The Halton Region guidelines are comprehensive and require considerable detail to complete.

The review of the existence and use of AIA guidelines in Ontario also identified that the Town of Caledon had created a document titled *Agricultural Impact Assessment Guidelines, Planning and Development Department Town of Caledon, June 2003*. Emails with the planning staff at the Town of Caledon indicated that the Town of Caledon no longer relies on their own guidelines for the completion of AIAs and tends to rely on the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) standards.

The review on the existence and use of AIA guidelines revealed that OMAFRA had released draft Agricultural Impact Assessment guidelines in a document titled "*Draft Agricultural Impact Assessment (AIA) Guidance Document, March 2018*". This document is considered as "Draft for Discussion Purposes" and does not have status but is the basis for how OMAFRA addresses agricultural impacts and mitigation.

As a result of the review on the existence and use of AIA guidelines in Ontario, this AIA report has been completed with regard to the requirements of the OMAFRA "*Draft Agricultural Impact Assessment (AIA) Guidance Document, March 2018*".

2.1 CONSULTATION

Agriculture is an important component of the economy in Dufferin County. As such, consultation with the various agencies, provincial and municipal offices, and local farm community were initiated at the earliest stages of the project and have continued through the process. Additional consultation is an ongoing process.

An online Public Information Centre (PIC) #1 was held on December 15, 2022, to provide information to the public and to allow the public to ask questions and/or provide comments regarding the project.

A dedicated website for the project (including an email contact, telephone number, and option to sign up for project updates) was set up and located at the following url: https://www.dufferincounty.ca/MCEA.

2.2 DATA COLLECTION

A variety of data sources were utilized in the assessment of agriculture in the PSA and the SSA. Data was collected in a variety of formats including digital (shapefiles and imagery), paper copy, and through correspondence (telephone, meetings, email, etc). A synopsis of the type of data and the collection of the relevant data is provided below.

2.2.1 POLICY

Relevant policy, by-laws and guidelines related to agriculture and infrastructure development were reviewed for this study.

The review included an examination of Provincial and Municipal policy as is presented in the *Provincial Policy Statement (2020), the Greenbelt Plan (2017), the Growth Plan for the Greater Golden Horseshoe (2020 Office Consolidation), the Oak Ridges Moraine Conservation Plan (2017),* the *Dufferin County Official Plan – Office Consolidation July 17, 2017, the Official Plan for the Township of Amaranth (Office Consolidation June 2018)* and the *Official Plan for the Township of East Garafraxa (Includes Final MMAH Modifications – October 26, 2005).*

The review also included a review of the *Zoning By-law of the Township of Amaranth Zoning By-law 2-2009 (Township Consolidation December 2021)* and the *Township of East Garafraxa Zoning By-law 60-2004 (January 2011).*

Further, the review included an assessment of *the Minimum Distance Separation (MDS) Document – Formulae and Guidelines for Livestock Facility and Anaerobic Digester Odour Setbacks. Publication 853. Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA, 2016).* The MDS document was reviewed to determine the applicability of the document's use for this study.

An assessment of online data resources including the OMAFRA website, the Ministry of Natural Resources and Forestry (MNRF) Land Information Warehouse (Land Information Ontario (LIO)), the Dufferin County website, the Township of Amaranth website, and the Township of East Garafraxa webiste. Further, this assessment included telephone, email and in person communication/correspondence to derive a list of relevant policy, by-law and guidelines. Each relevant policy, by-law and guideline was collected in digital or paper format for examination for this study.

2.2.2 PHYSIOGRAPHY

A review of the *Physiography of Southern Ontario 3rd Edition, Ontario Geological Survey Special Volume 2, Ministry of Natural Resources (1984)* and the associated digital GIS shapefiles was completed to document the type(s) and depth of bedrock and soil parent materials, and how these materials, in conjunction with glacial landforming processes, have led to the development of the existing soil resources.

2.2.3 TOPOGRAPHY AND CLIMATE

Topographic information was reviewed from the 1:10000 scale Ontario Base Mapping, Land Information Ontario digital contour mapping and windshield surveys.

Climate data was taken from the OMAFRA document titled *Agronomy Guide for Field Crops – Publication 811 (June 2017)* and online OMAFRA data sources. The use of this climate information is consistent with the description within the *Draft OMAFRA Agricultural Impact Assessment (AIA) Guidance Document (March 2018)* where there is a requirement to provide a general description of climatic features (crop heat units, frost free days, and general climatic patterns of the area).

The *Draft OMAFRA Agricultural Impact Assessment (AIA) Guidance Document (March 2018)* indicates the need to provide greater detail on climate only in specialty crop areas.

2.2.4 AGRICULTURAL EXISTING LAND USE

Agricultural existing land use data was collected through observations made during roadside reconnaissance surveys and field surveys conducted in March and April 2023. Data collected included the identification of land use (both agricultural and non-agricultural), the documentation of the location and type of agricultural facilities/services, the location of non-farm residential units and the location of non-farm buildings (businesses, storage facilities, industrial, commercial and institutional usage).

It should be noted that the timing of the existing land use survey did not allow for an ideal assessment of cropping patterns and crop types, as portions of the PSA and the SSA were under snow cover. The assessment of existing land use was based on the type of crop stubble that was visible in the fields, and through an assessment of online imagery.

Agricultural land use designations were correlated to the *Agricultural Resource Inventory* (ARI) (Ontario Ministry of Agriculture and Food report and maps) and the information provided in the Agricultural System Portal (OMAFRA) for the purpose of updating the Ontario Ministry of Agriculture and Food Land Use Systems mapping for both the PSA and the SSA.

2.2.5 MINIMUM DISTANCE SEPARATION

Minimum Distance Separation (MDS) formulae were developed by OMAFRA to reduce and minimize nuisance complaints due to odour from livestock facilities and to reduce land use incompatibility.

Guideline #1 states

> *In accordance with the Provincial Policy Statement, 2014, this MDS Document shall apply in prime agricultural areas and on rural lands. Consequently, the appropriate parts of this MDS Document shall be referenced in municipal official plans, and detailed provisions included in municipal comprehensive zoning by-laws such that, at the very least, MDS setbacks are required in all designations and zones where livestock facilities and anaerobic digesters are permitted.*

Further, Guideline #3 states

> *Certain proposed uses are not reasonably expected to be impacted by existing livestock facilities or anaerobic digesters and as a result, do not require an MDS I setback. Such uses may include, but are not limited to:*
>
> - *extraction of minerals, petroleum resources and mineral aggregate resources*
> - *infrastructure; and*
> - *landfills.*

Therefore, as this AIA study is to address a proposed road realignment, or infrastructure project, Minimum Distance Separation (MDS 1) does not apply, and MDS 1 calculations were not required nor were completed for this study.

2.2.6 LAND FRAGMENTATION/SEVERANCE

Land fragmentation data was collected through a review of online interactive mapping on the Agmaps (OMAFRA) website, the Agricultural System Portal (OMAFRA), and the Dufferin County website. This data was used to determine the extent, location, relative shape of each parcel/property within both the PSA and the SSA.

Land fragmentation can be defined as the increase in the number of smaller parcels, which are generally non-agricultural uses, within a predominantly agricultural area. Over time the increase in smaller non-agricultural land uses creates a patchwork-like distribution of rural land uses, resulting in lands lost to agricultural production. Generally, good productive areas of farmland are comprised of larger parcels with few (if any) smaller parcels interspersed.

The assessment of fragmentation will look at the size, shape and number of parcels within a given area, and provide comment on the potential effect on agriculture.

Land severance is the severing or dividing of a parcel into multiple sections. An assessment of land severance was completed to determine the extent of parcels that may be severed by the proposed development of the PSA.

2.2.7 SOIL SURVEY

Soil survey data and Canada Land Inventory (CLI) data was provided by OMAFRA in digital format through the Land Information Ontario website warehouse. The soils/CLI data is considered the most recent iteration of the soil information from OMAFRA.

The digital soil survey data was also correlated to the printed soil survey reports and maps (*Soil Survey of Dufferin County, Report No. 38 of the Ontario Soil Survey (Hoffman, D.W., B.C. Matthews, and R.E. Wicklund, 1964)*) to determine if the digital soils data have been modified from the original soil survey data.

Further, discussions with OMAFRA indicated that the Provincial soils data base has been updated to include some slope information in an effort to provide the digital data at a scale of 1:50000. The original reports and associated mapping were generally completed to a scale of 1:63360 or 1 inch to 1 mile.

2.2.8 AGRICULTURAL SYSTEM

The Ontario Ministry of Agriculture, Food and Rural Affairs online Agricultural Systems mapping were reviewed to determine the extent of agriculture in the PSA, in the SSA, and Dufferin County in general.

OMAFRA identifies that the Agricultural System comprises two parts: Agricultural Land Base; and the Agri-Food Network.

The Agricultural Land Base illustrates the Prime Agricultural Areas (including Specialty Crop Areas), while the Agri-Food Network illustrates regional infrastructure/transportation networks, buildings, services, markets, distributors, primary processing, and agriculture communities.

The review of the Agricultural Network included a visual assessment of any agricultural services and transportation networks within the PSA and the SSA, and a review of the OMAFRA Agricultural Systems Portal mapping.

2.2.9 AGRICULTURAL STATISTICS

Agricultural statistics were provided by and downloaded from the OMAFRA website. The statistics were provided in Excel format for Dufferin County. The data sets provide information up to (and including) the 2021 Census.

3 POLICY REVIEW

Clearly defined and organized environmental practices are necessary for the conservation of land and resources. The long-term protection of quality agricultural lands is a priority of the Province of Ontario and has been addressed in the *Provincial Policy Statement (2020)*. Further, in an effort to protect agricultural lands, the Province of Ontario has adopted policy and guidelines to provide a framework for managing growth. These four provincial land use plans: *the Growth Plan for the Greater Golden Horseshoe (Office Consolidation 2020), the Greenbelt Plan (2017); the Niagara Escarpment Plan (2017), and the Oak Ridges Moraine Conservation Plan (2017)* support the long-term protection of farmland. The provincial land use plans have policy that require the completion of AIA studies for changes in agricultural land use.

With this in mind, the: *Provincial Policy Statement (2020); the Growth Plan for the Greater Golden Horseshoe (GGH) (Office Consolidation 2020); the Greenbelt Plan (2017); the Niagara Escarpment Plan, and the Oak Ridges Moraine Conservation Plan (2017)* were reviewed for this study.

With respect to this AIA and the four provincial land use plans, a review of the boundaries of the Growth Plan for the Greater Golden Horseshoe Area mapping, the Greenbelt Plan Area mapping, the Niagara Escarpment Plan mapping, and the Oak Ridges Moraine Conservation Area mapping was completed. It was determined that portions of the PSA (and portions of the SSA) were located within the Growth Plan for the Greater Golden Horseshoe Agricultural Land Base mapping.

The whole of the PSA and portions of the SSA are located within the boundaries of the Greenbelt Plan mapping. Therefore, the policies of the Greenbelt Plan will apply.

No portions of the PSA nor the SSA were located within the Niagara Escarpment Plan mapping, or the Oak Ridges Moraine Conservation Plan mapping. Therefore, the policy identified in those policy plans does not apply for the PSA or SSA.

Municipal Governments have similar regard for the protection and preservation of agricultural lands and address their specific concerns within their respective Official Plans on County/Regional level and Township level.

A review of municipal policy included an examination of the *Dufferin County Official Plan – Office Consolidation July 17, 2017,* the *Official Plan for the Township of Amaranth (Office Consolidation June 2018)* and the *Official Plan for the Township of East Garafraxa (Includes Final MMAH Modifications – October 26, 2005)*.

The review also included a review of the *Zoning By-law of the Township of Amaranth Zoning By-law 2-2009 (Township Consolidation December 2021)* and the *Zoning By-law of the Township of East Garafraxa 60–2004 (Township Consolidation January 2011)*.

It was determined through these reviews, that no portions of the PSA or the SSA were located in a Provincially designated Specialty Crop Area.

The relevant policies from the above-mentioned documents were presented as follows.

3.1 PROVINCIAL AGRICULTURAL POLICY

The *Provincial Policy Statement (2020)* was enacted to document the Ontario Provincial Governments development and land use planning strategies. The *Provincial Policy Statement* provides the policy foundation for regulating the development and use of land. With respect to the potential future development of the PSA, the following policies may apply. Agricultural policies are addressed within 2.3 (Agriculture) of the Provincial Policy Statement (2020).

2.3.1 Prime agricultural areas shall be protected for long-term use for agriculture.
Prime agricultural areas are areas where prime agricultural lands predominate. Specialty crop areas shall be given the highest priority for protection, followed by Canada Land Inventory Class 1, 2, and 3 lands, and any associated Class 4 through 7 lands within the prime agricultural area, in this order of priority.

2.3.2 Planning authorities shall designate prime agricultural areas and specialty crop areas in accordance with guidelines developed by the Province, as amended from time to time. Planning authorities are encouraged to use an agricultural system approach to maintain and enhance the geographic continuity of the agricultural land base and the functional and economic connections to the agri-food network.

2.3.3 Permitted Uses

2.3.3.1 In prime agricultural areas, permitted uses and activities are: agricultural uses, agriculture-related uses and on-farm diversified uses. Proposed agriculture-related uses and on-farm diversified uses shall be compatible with, and shall not hinder, surrounding agricultural operations. Criteria for these uses may be based on guidelines developed by the Province or municipal approaches, as set out in municipal planning documents, which achieve the same objectives.

2.3.3.2 In prime agricultural areas, all types, sizes and intensities of agricultural uses and normal farm practices shall be promoted and protected in accordance with provincial standards.

2.3.3.3 New land uses in prime agricultural areas, including the creation of lots and new or expanding livestock facilities, shall comply with the minimum distance separation formulae.

2.3.4 Lot Creation and Lot Adjustments

2.3.4.1 Lot creation in prime agricultural areas is discouraged and may only be permitted for:

- *a) agricultural uses, provided that the lots are of a size appropriate for the type of agricultural use(s)common in the area and are sufficiently large to maintain flexibility for future changes in the type or size of agricultural operations;*
- *b) agriculture-related uses, provided that any new lot will be limited to a minimum size needed to accommodate the use and appropriate sewage and water services;*
- *c) a residence surplus to a farming operation as a result of farm consolidation, provided that:*
  - *1. the new lot will be limited to a minimum size needed to accommodate the use and appropriate sewage and water services; and*
  - *2. the planning authority ensures that new residential dwellings are prohibited on any remnant parcel of farmland created by the severance. The approach used to ensure that no new residential dwellings are permitted on the remnant parcel may be recommended by the Province, or based on municipal approaches which achieve the same objective; and*
- *d) infrastructure, where the facility or corridor cannot be accommodated through the use of easements or rights-of-way.*

2.3.4.2 Lot adjustments in prime agricultural areas may be permitted for legal or technical reasons.

2.3.4.3 The creation of new residential lots in prime agricultural areas shall not be permitted, except in accordance with policy 2.3.4.1(c).

2.3.5 Removal of Land from Prime Agricultural Areas

2.3.5.1 Planning authorities may only exclude land from prime agricultural areas for expansions of or identification of settlement areas in accordance with policy 1.1.3.8.

2.3.6 Non-Agricultural Uses in Prime Agricultural Areas

2.3.6.1 Planning authorities may only permit non-agricultural uses in prime agricultural areas for:

a) extraction of minerals, petroleum resources and mineral aggregate resources; or

b) limited non-residential uses, provided that all of the following are demonstrated:

1. the land does not comprise a specialty crop area;

2. the proposed use complies with the minimum distance separation formulae;

3. there is an identified need within the planning horizon provided for in policy 1.1.2 for additional land to accommodate the proposed use; and

4. alternative locations have been evaluated, and

i. there are no reasonable alternative locations which avoid prime agricultural areas; and

ii. there are no reasonable alternative locations in prime agricultural areas with lower priority agricultural lands.

2.3.6.2 Impacts from any new or expanding non-agricultural uses on surrounding agricultural operations and lands are to be mitigated to the extent feasible.

Of particular importance is Policy 2.3.4.1d where it is indicated that lot creation is allowed for infrastructure provided that the corridor cannot be accommodated through the use of easements or rights-of-way.

Further, the PPS Policy 2.3.2 indicates the use of the Agricultural System approach to planning. The Agricultural System has been defined as:

Agricultural System: A system comprised of a group of inter-connected elements that collectively create a viable, thriving agricultural sector. It has two components:

a) An agricultural land base comprised of prime agricultural areas, including specialty crop areas, and rural lands that together create a continuous productive land base for agriculture; and

b) An agri-food network which includes infrastructure, services, and assets important to the viability of the agri-food sector.

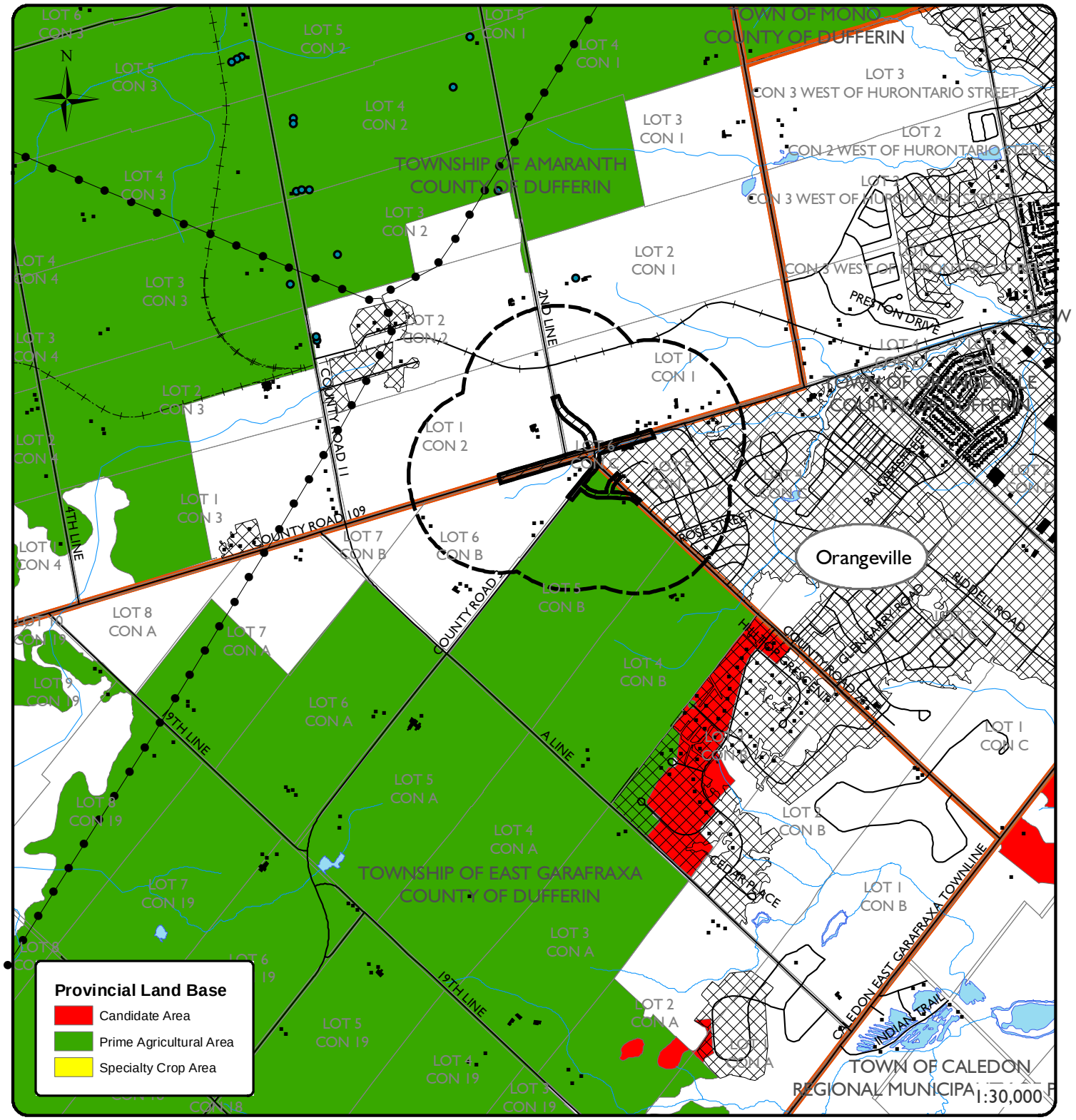
3.2 THE GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE

A review of the boundaries of the Growth Plan for the Greater Golden Horseshoe (GPGGH) area was completed. An assessment of the Agricultural Land Base mapping (online and in digital shapefile format) was completed for the PSA and the SSA.

It was determined that the portions of the PSA and the SSA comprise Prime Agricultural Areas.

Figure 2 illustrates the relative location of the PSA and the SSA with respect to the Growth Plan for the Greater Golden Horseshoe Prime Agricultural Areas.

As identified previously in Section 2.1.8, the provincial land use plans require the implementation of an agricultural system. The Agricultural System comprises two parts:



Legend

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Figure 2

Agricultural Land Base

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October 2023

Agricultural Land Base; and the Agri-Food Network. The respective policies for the Agricultural System are as follows:

4.2.6 Agricultural System

1. *An Agricultural System for the GGH has been identified by the Province.*
2. *Prime agricultural areas, including specialty crop areas, will be designated in accordance with mapping identified by the Province and these areas will be protected for long-term use for agriculture.*
3. *Where agricultural uses and non-agricultural uses interface outside of settlement areas, land use compatibility will be achieved by avoiding or where avoidance is not possible, minimizing and mitigating adverse impacts on the Agricultural System. Where mitigation is required, measures should be incorporated as part of the non-agricultural uses, as appropriate, within the area being developed. Where appropriate, this should be based on an agricultural impact assessment.*
4. *The geographic continuity of the agricultural land base and the functional and economic connections to the agri-food network will be maintained and enhanced.*
5. *The retention of existing lots of record for agricultural uses is encouraged, and the use of these lots for non-agricultural uses is discouraged.*
6. *Integrated planning for growth management, including goods movement and transportation planning, will consider opportunities to support and enhance the Agricultural System.*
7. *Municipalities are encouraged to implement regional agri-food strategies and other approaches to sustain and enhance the Agricultural System and the long-term economic prosperity and viability of the agri-food sector, including the maintenance and improvement of the agri-food network by:*
   a) *providing opportunities to support access to healthy, local, and affordable food, urban and near- urban agriculture, food system planning and promoting the sustainability of agricultural, agri-food, and agri-product businesses while protecting agricultural resources and minimizing land use conflicts;*
   b) *protecting, enhancing, or supporting opportunities for infrastructure, services, and assets. Where negative impacts on the agri-food network are unavoidable, they will be assessed, minimized, and mitigated to the extent feasible; and*
   c) *establishing or consulting with agricultural advisory committees or liaison officers.*
8. *Outside of the Greenbelt Area, provincial mapping of the agricultural land base does not apply until it has been implemented in the applicable upper- or single-tier official plan. Until that time, prime agricultural areas identified in upper- and single-tier official plans that were approved and in effect as of July 1, 2017 will be considered the agricultural land base for the purposes of this Plan.*
9. *Upper- and single-tier municipalities may refine provincial mapping of the agricultural land base at the time of initial implementation in their official plans, based on implementation procedures issued by the Province. For upper-tier municipalities, the initial implementation of provincial mapping may be done separately for each lower-tier municipality. After provincial mapping of the agricultural land base has been implemented in official plans, further refinements may only occur through a municipal comprehensive review.*

The review of the GPGGH (Office Consolidation 2020) revealed that it is possible to develop non-agricultural uses in the Prime Agricultural Area under specific conditions as identified under Policy 4.2.6.3 (above), and that impacts from any new or expanding non-agricultural uses on surrounding agricultural operations and lands are mitigated to the extent feasible (Policy 2.3.6.2 above).

It is also noted that the provincial land base mapping (Figure 2) does not apply until it has been implemented in the applicable upper or single tier official plan.

3.3 THE GREENBELT PLAN

A review of the Greenbelt Plan (2017) mapping indicated that the PSA and portions of the SSA were located within the Greenbelt Plan area. The whole of the PSA and the portions of the SSA that were within the Greenbelt Plan Area are considered as Protected Countryside. Figure 3 illustrates the relative location of the PSA and the SSA with respect to the Greenbelt Plan mapping.

The Greenbelt Plan has specific policies for Prime Agricultural Lands and provides the policies in Section 3.1.3. Section 3.1.3 states:

> *For lands falling within prime agricultural areas of the Protected Countryside, the following policies shall apply:*
>
> 1. *All types, sizes and intensities of agricultural uses and normal farm practices shall be promoted and protected and a full range of agricultural uses, agriculture-related uses and on-farm diversified uses are permitted based on provincial Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas. Proposed agriculture-related uses and on-farm diversified uses shall be compatible with and shall not hinder surrounding agricultural operations.*
> 2. *Lands shall not be redesignated in official plans for non-agricultural uses except for:*
>   a) *Refinements to the prime agricultural area and rural lands designations, subject to the policies of section 5.3; or*
>   b) *Settlement area boundary expansions, subject to the policies of section 3.4.*
> 3. *Non-agricultural uses may be permitted subject to the policies of sections 4.2 to 4.6. These uses are generally discouraged in prime agricultural areas and may only be permitted after the completion of an agricultural impact assessment.*
> 4. *New land uses, including the creation of lots (as permitted by the policies of this Plan), and new or expanding livestock facilities, shall comply with the minimum distance separation formulae.*
> 5. *Where agricultural uses and non-agricultural uses interface, land use compatibility shall be achieved by avoiding or, where avoidance is not possible, minimizing and mitigating adverse impacts on the Agricultural System, based on provincial guidance. Where mitigation is required, measures should be incorporated as part of the non-agricultural uses, as appropriate, within the area being developed.*
> 6. *The geographic continuity of the agricultural land base and the functional and economic connections to the agri-food network shall be maintained and enhanced.*

3.4 THE NIAGARA ESCARPMENT PLAN

A review of the boundaries of the Niagara Escarpment Plan (and associated digital mapping) was completed. The review indicated that no portions of the PSA or the SSA are located within the Niagara Escarpment Plan area. Therefore, the policies of the Niagara Escarpment Plan do not apply.

3.1 THE OAK RIDGES MORAINE CONSERVATION PLAN

A review of the boundaries of the Oak Ridges Moraine Conservation Plan (and associated digital mapping) was completed. The review indicated that no portions of the PSA or the SSA were located. within the Oak Ridges Conservation Plan area. Therefore, the policies of the Oak Ridges Moraine Conservation Plan do not apply.

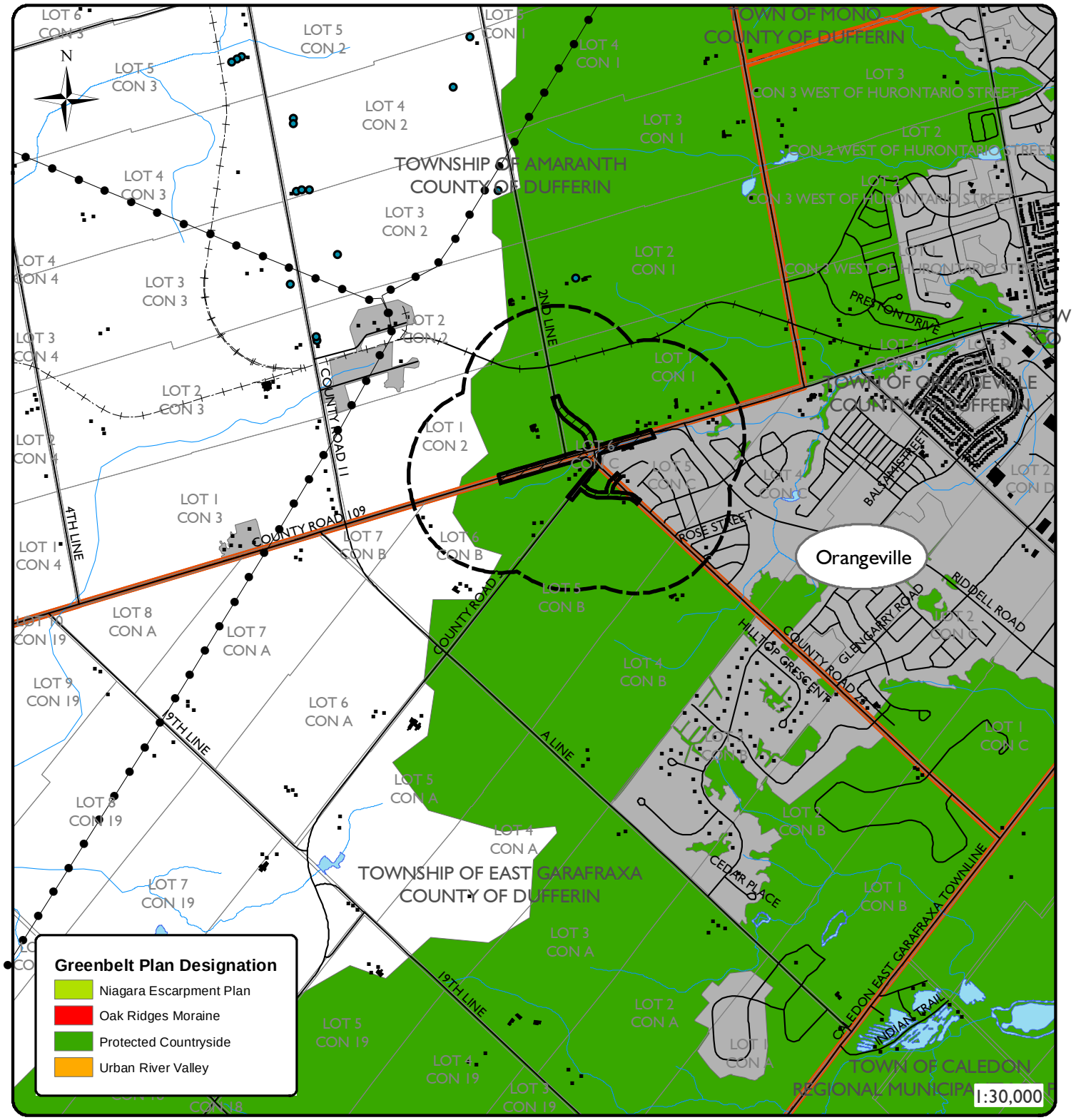

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Figure 3

Greenbelt Mapping

DBH Soil Services Inc.

October 2023

3.2 OFFICIAL PLAN POLICY

Official Plan policies are prepared under the Planning Act, as amended, of the Province of Ontario. Official Plans generally provide policy comment for land use planning while taking into consideration the economic, social and environmental impacts of land use and development concerns. For the purpose of this AIA, the review included an examination of the *Dufferin County Official Plan – Office Consolidation July 17, 2017,* the *Official Plan for the Township of Amaranth (Office Consolidation June 2018), and the Official Plan for the Township of East Garafraxa (Includes Final MMAH Modifications – October 26, 2005)*.

3.2.1 DUFFERIN COUNTY OFFICIAL PLAN

A review of the *Dufferin County Official Plan – Office Consolidation July 17, 2017, Schedule B – Community Structure and Land Use* identified that portions of the PSA and the SSA were comprised of designated Countryside Area, Community Settlement Areas, Primary Settlement Area (Urban Settlement Area), and part of the Provincial Plan. Figure 4 illustrates a select portion of Schedule B showing the designations for the PSA and SSA.

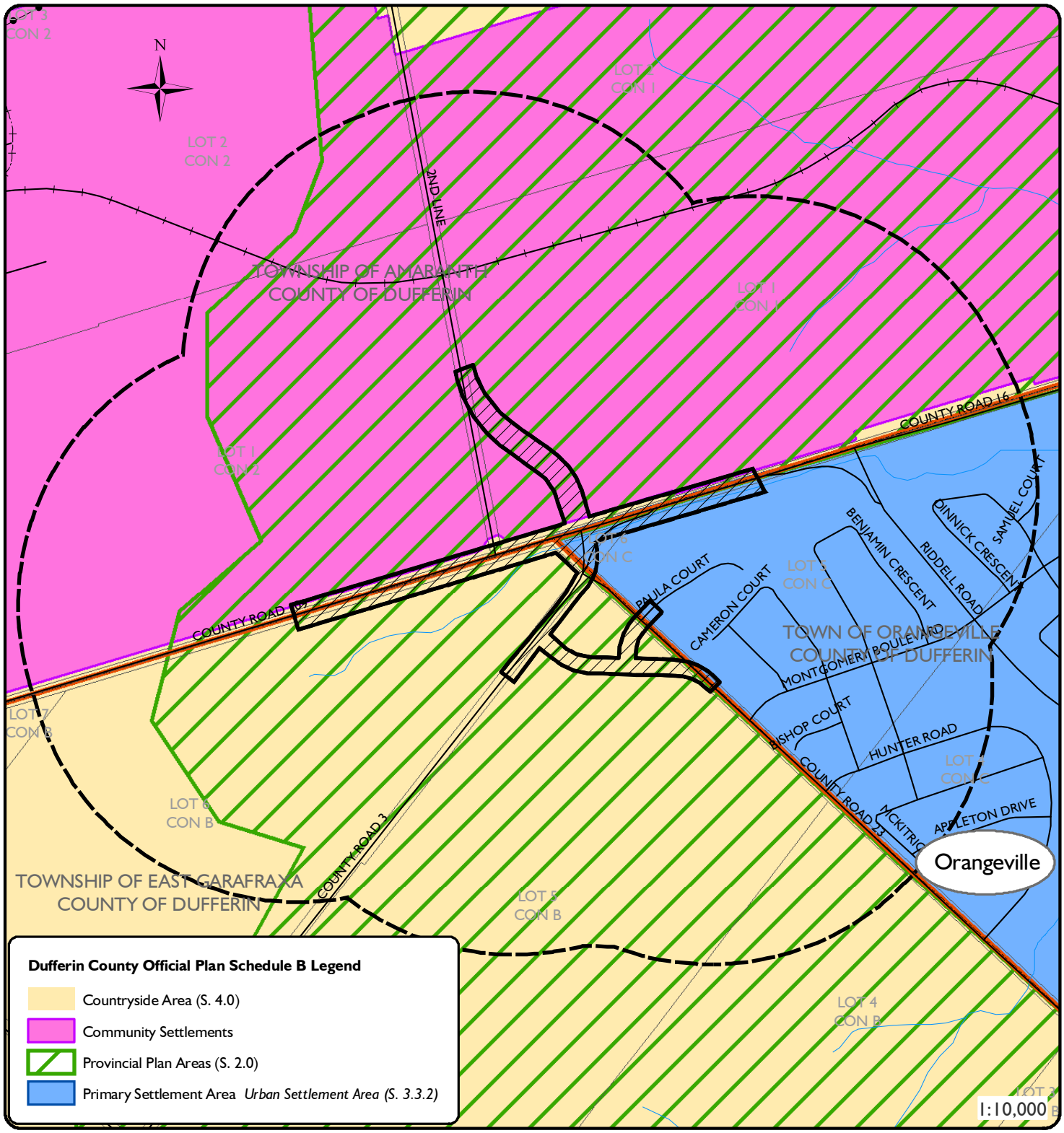
A review of the *Dufferin County Official Plan – Office Consolidation July 17, 2017, Schedule C – Agricultural Area and Rural Lands* identified that portions of the PSA and the SSA were comprised of designated Agricultural Area lands. Figure 5 illustrates a select portion of Schedule C showing the designations for the PSA and SSA. Approximately 1.3 ha of designated Prime Agricultural Land will be utilized for the proposed road realignment.

Agricultural policy (Section 4.2) is provided in Section 4.0 – Countryside of the *Dufferin County Official Plan – Office Consolidation July 17, 2017*. Section 4.2.2 provided policy for the Permitted Uses in the Agricultural area. Section 4.2.3.2 states that there are no Specialty Crop Areas in the County. Section 4.2.3.2 is provided as follows.

> *4.2.3.2 Specialty Crop Areas*
> *Currently, there are no lands designated for specialty crops in the County. Local municipal official plans may include policies for the designation of specialty crop areas. Any future identification of specialty crop areas will be implemented by way of amendment to this Plan, including the addition of appropriate policies related to specialty crop areas.*

Specific to this AIA, Section 7.7 Coordination of Infrastructure and Environmental Assessments indicates that the County will support coordinated efforts for developing transportation corridors through the Municipal Class Environmental Assessments. A select portion of Section 7.7 is provided as follows.

> *The County will work with local municipalities and the Province to support the efficient provision of infrastructure required to accommodate growth in a fiscally and environmentally responsible manner. The County will support coordinated efforts in the provision of transportation corridors and transit-supportive networks, water and wastewater systems, waste management systems, trails and recreation networks,*



Legend

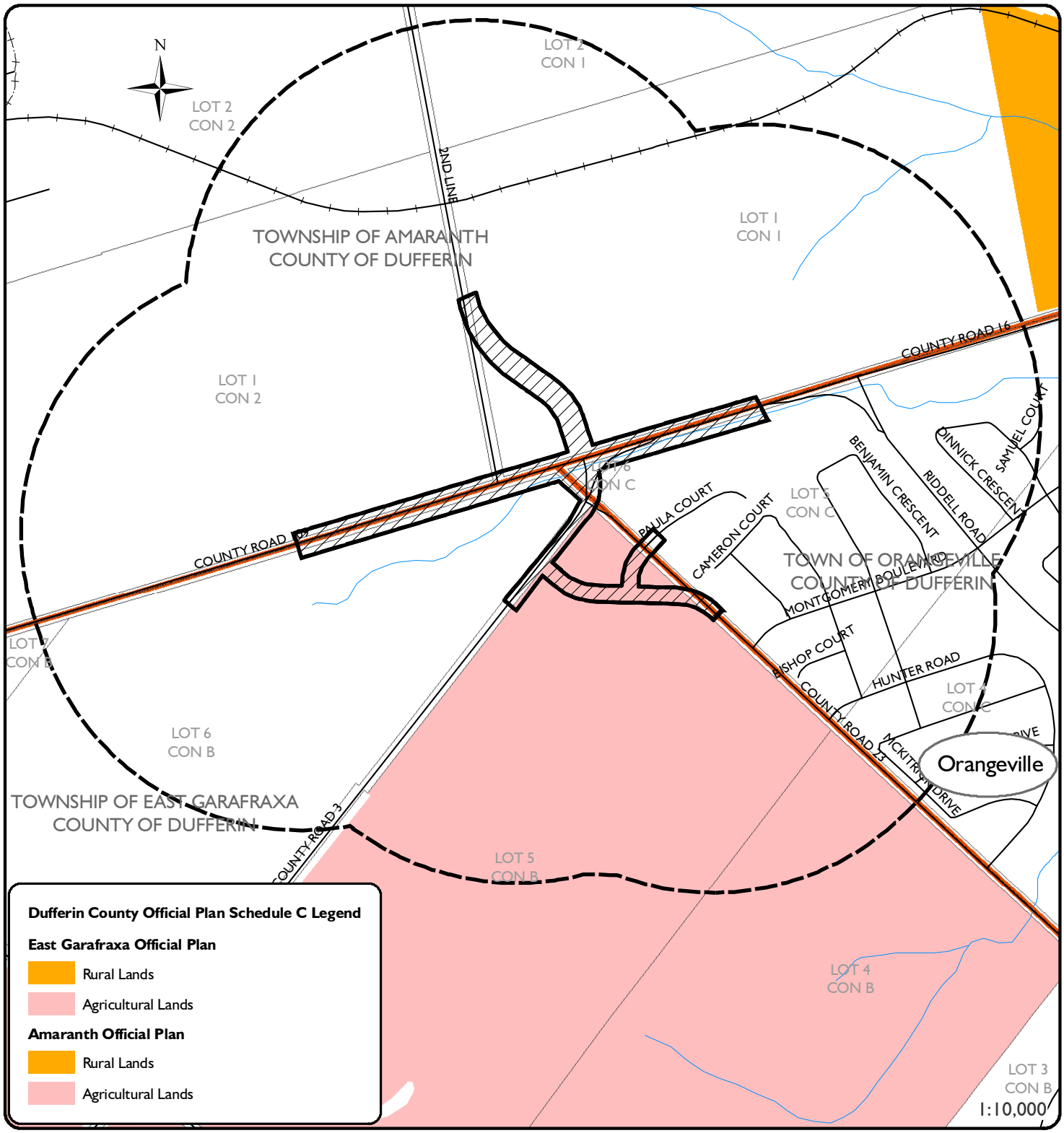
- Roads (MNRF)
- Electric Transmission Line (MNRF)
- **Railway (MNRF)**
  - Active
  - Abandoned
- Watercourse (MNRF)
- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m
- Waterbody (MNRF)

Figure 4

Dufferin County Official Plan
Schedule B
Community Structure and Land Use

DBH Soil Services Inc.

October 2023



Legend

- Roads (MNRF)
- Electric Transmission Line (MNRF)
- **Railway (MNRF)**
- Active
- Abandoned
- Watercourse (MNRF)
- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m
- Waterbody (MNRF)

Figure 5

Dufferin County Official Plan
Schedule C
Agricultural Area and Rural Lands

DBH Soil Services Inc.

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communication/telecommunications and utilities, and community infrastructure and facilities.

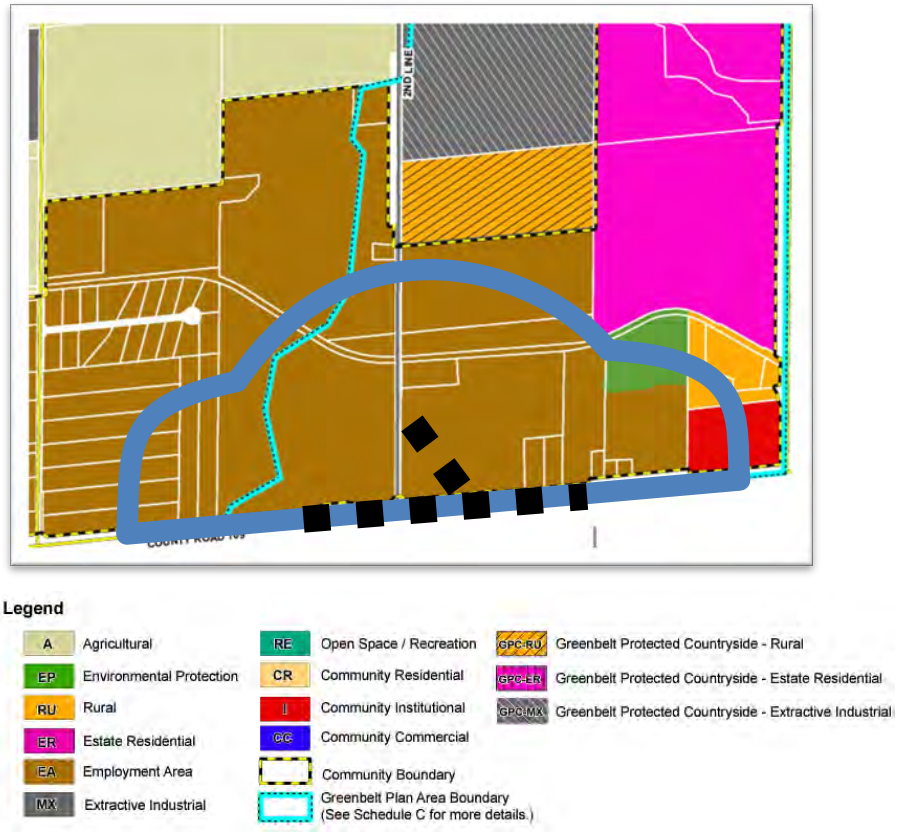
The requirement for undertaking Municipal Class Environmental Assessments (EAs) apply to municipal infrastructure projects including roads, water and wastewater projects, in accordance with the Environmental Assessment Act. The Municipal Class EA recognizes the desirability of coordinating or integrating the planning process and approvals under the Environmental Assessment Act and the Planning Act, as long as the intent and requirements of both Acts are met.

The review of the *Dufferin County Official Plan – Office Consolidation July 17, 2017,* revealed that it is possible to develop non-agricultural uses in the Prime Agricultural Area under specific conditions. Further, the review of the *Dufferin County Official Plan – Office Consolidation July 17, 2017,* identified in Policy 4.2.3.2 that there are no designated special crop lands in the County.

3.2.2 TOWNSHIP OF AMARANTH OFFICIAL PLAN

A review of the *Township of Amaranth (Office Consolidation June 2018) Schedule A-3 – Land Use & Transportation* identified that the PSA (in the Township of Amaranth) was comprised of Employment Area, while the SSA comprised Employment Area and a small portion of Environment Protection, Rural, and Community Institutional. Figure 6 illustrates a select portion of Schedule A-3 with the PSA identified with a black dashed line and the SSA identified with a solid blue line.

Figure 6 Township of Amaranth Official Plan Schedule A-3

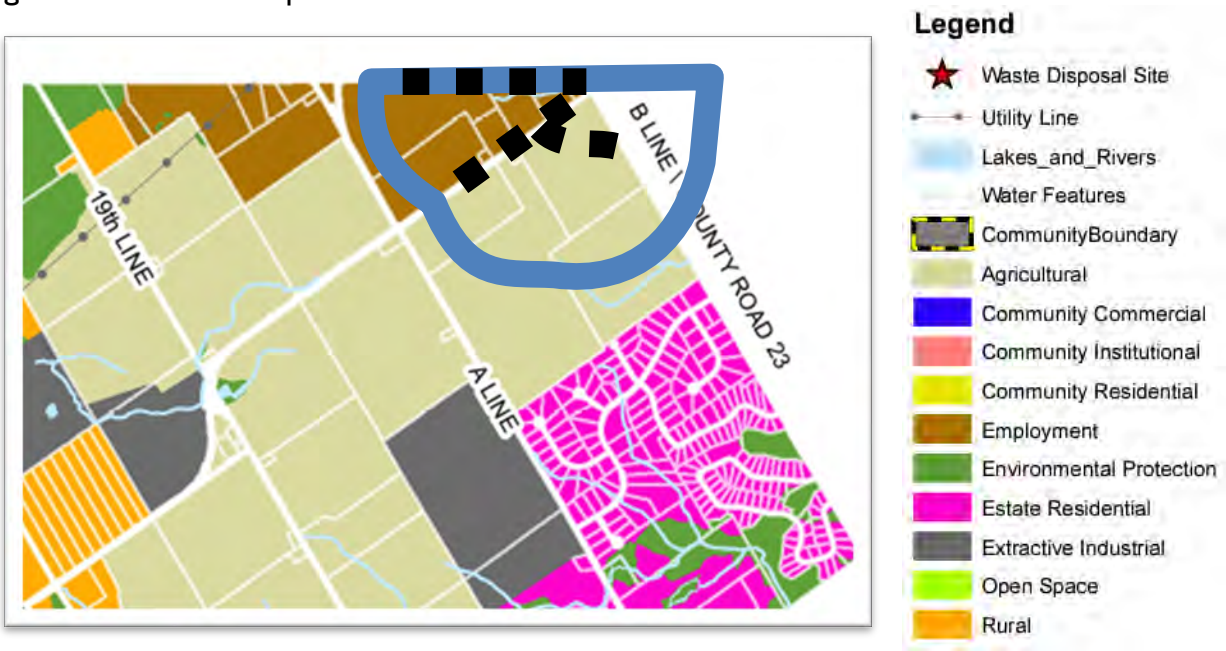


Source: *Township of Amaranth (Office Consolidation June 2018) Schedule A-3 – Land Use & Transportation*

3.2.3 TOWNSHIP OF EAST GARAFRAXA OFFICIAL PLAN

A review of the *Official Plan for the Township of East Garafraxa (Includes Final MMAH Modifications – October 26, 2005) Schedule A – Land Use & Transportation* identified that the PSA and the SSA (in the Township of East Garafraxa) was comprised of Agricultural, and Employment areas. Figure 7 illustrates a select portion of Schedule A with the PSA identified with a black dashed line and the SSA identified with a solid blue line.

Figure 7 Township of East Garafraxa Official Plan Schedule A



Source: *Official Plan for the Township of East Garafraxa (Includes Final MMAH Modifications – October 26, 2005) Schedule A – Land Use & Transportation*

Agricultural Policies are presented in Section 5.1 of the *Official Plan for the Township of East Garafraxa (Includes Final MMAH Modifications – October 26, 2005)*, while Section 6.0 provides policy for transportation and utilities.

Select policies are provided below.

Policy 5.1.3 Permitted Uses states:

The primary use of land in the Agricultural designation shall be agricultural uses that include the use of lands, buildings, or structures for the growing of crops, including nursery and horticultural crops, raising of livestock and other animals for food, or fur, including poultry, and fish, aquaculture, agroforestry, and maple syrup production, subject to the provisions outlined in this Plan. In addition to agriculture, the following uses shall also be permitted;

a) One single-detached residential dwelling per lot,
b) Home occupations,
c) Small scale agriculturally related home industries,
d) Forest, wildlife and fisheries management,
e) Produce stands, accessory to an agricultural operation,

f) Public transportation and utility facilities that must be located in the Agricultural designation due to their function,
g) Small-scale commercial and industrial operations servicing the agricultural community that must, by the nature of the operation, be located in close proximity to agricultural uses, or are permitted as temporary uses within existing agricultural buildings,
h) Farm oriented tourist businesses including bed and breakfast uses that do not reduce the agricultural capability of the land, remove farm infrastructure or adversely effect adjacent farm operations, and
i) Wayside pits and quarries and portable asphalt plants used on public authority contracts, subject to the Aggregate Resources Act.

Policy 5.1.3f indicates that public transportation may be located in the Agricultural designation areas due to their function.

3.2.4 ZONING BY-LAWS

Official Plans set out a municipality's general policies for existing and future land use. Zoning bylaws specify permitted uses and standards for each municipally designated zone. The specific requirements identified within a zoning bylaw are legally enforceable. Local municipalities are the approval authority for zoning bylaws. As such, this AIA reviewed the zoning bylaws for the local municipalities of the Township of Amaranth *(Township of Amaranth Zoning By-law 2-2009 (Township Consolidation December 2021)* and the Township of East Garafraxa *(Township of East Garafraxa Zoning By-law 60-2004 (January 2011)*).

3.2.4.1 Township of Amaranth Zoning By-law

The review of the *Township of Amaranth Zoning By-law 2-2009 (Township Consolidation December 2021)* identified that the PSA appears to be comprised of A (Agricultural), C1 (General Commercial) zoning. Portions of the SSA comprise M1 (Industrial), C1 (General Commercial), C2 (Highway Commercial), and EP3 (Environmental Protection). Figure 8 illustrates a select portion of the Township of Amaranth Zoning By-law mapping. The PSA is identified as a black dashed line, while the SSA is identified as a solid blue line.

Section 4.1 of the *Zoning By-law of the Township of Amaranth Zoning By-law 2-2009 (Township Consolidation December 2021)* provided the zone provisions for the Agricultural (A) zone.

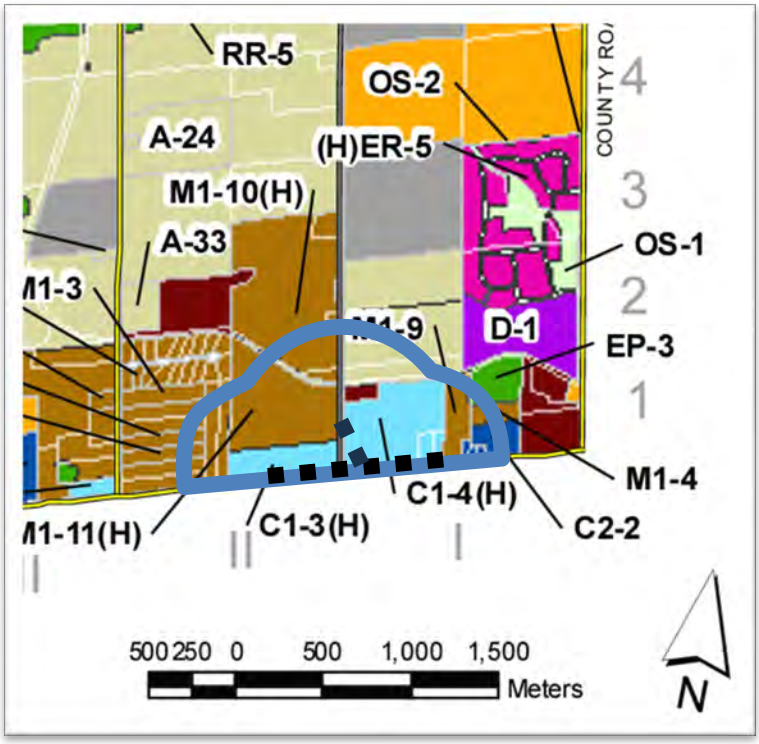
4.1 Agricultural (A) Zone
No person shall within any Agricultural (A) Zone, use any land or erect, alter or use any building or structure except in accordance with the following provisions:

4.1.1 Permitted Uses
Agricultural Uses
i) agricultural use
ii) farm produce sales outlet accessory to an agricultural use
iii) farm produce storage facility
iv) greenhouse
v) home occupation
vi) home industry
vii) kennel on a lot of at least 38 ha
viii) resource management

ix) riding school or boarding stables
x) single detached dwelling
xi) specialized agriculture not exceeding 300 Nutrient Units (NU)
xii) veterinary clinic
xiii) wayside pit or wayside quarry including a portable asphalt plant

A minimum lot size of 19 ha was identified for the Agricultural (A) zone.

Figure 8 Township of Amaranth Zoning By-law 2-2009



Source: Schedule A Consolidation of Zoning By-law 2-2009 Township of Amaranth

Legend

A	Agricultural	C1	General Commercial	OS	Open Space		Waterline
EP	Environmental Protection	C2	Highway Commercial	RE	Recreation		Provincial Highway
HR	Hamlet Residential	I	Institutional	D	Development		County Road
ER	Estate Residential	M1	Industrial				Municipal Road
RR	Rural Residential	MX	Extractive Industrial				Parcel Boundary
RU	Rural	MD	Waste Disposal Industrial				

3.2.4.2 Township of East Garafraxa Zoning By-law

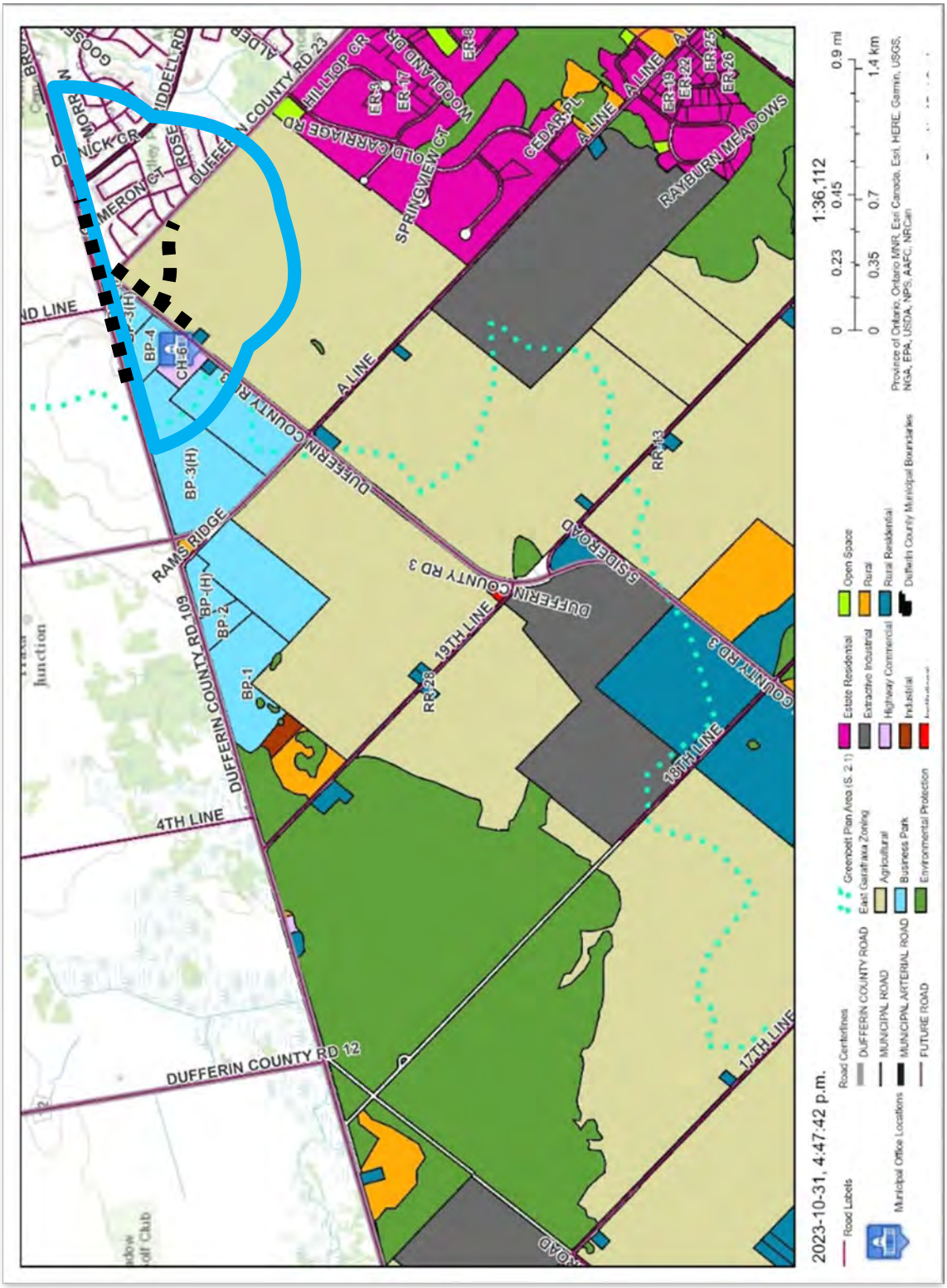
The review of the *Township of East Garafraxa Zoning By-law 60-2004 (January 2011)* identified that the PSA and the SSA comprise BP (Business Park), CH (Highway Commercial), and A (Agricultural) zoning. Figure 9 illustrates a select portion of the Township of East Garafraxa Zoning By-law mapping. The PSA is identified as a black dashed line, while the SSA is identified as a solid blue line.

Section 4.1 of the *Zoning By-law of the Township of East Garafraxa Zoning By-law 60-2004 (Township Consolidation December 2021)* provided the zone provisions for the Agricultural (A) zone.

> *4.1 Agricultural (A) Zone*
> *No person shall within a Agricultural (A) Zone, use any land or erect, alter or use any building or structure except in accordance with the following:*
>
> *4.1.1 Permitted Uses*
> *i) agricultural use*
> *ii) bed and breakfast establishment*
> *iii) farm produce sales outlet accessory to a farm*
> *iv) farm produce storage facility*
> *v) greenhouse operation*
> *vi) home occupation*
> *vii) home industry*
> *viii) kennel*
> *ix) resource management activities*
> *x) riding school or boarding stables*
> *xi) single detached dwelling*
> *xii) specialized agriculture not exceeding 450 animal units*
> *xiii) a second single detached dwelling accessory to a farm on a lot of at least 38 hectares (94 acres) located within 50 m of the existing dwelling.*
> *xiv) wayside pit or wayside quarry including a portable asphalt plant*

A minimum lot size of 19 ha was identified for the Agricultural (A) zone.

Figure 9 Township of East Garafraxa Zoning By-law 2 - 2009



Source: Township of East Garafraxa Zoning By-law 2-2009 *60-2004 (Township Consolidation December 2021)* online mapping

4 AGRICULTURAL RESOURCE POTENTIAL

4.1 PHYSICAL CHARACTERISTICS

The physiographic resources within the PSA and the SSA are described in this section. The physiographic resources identify the overall large area physical characteristics documented as background to the soils and landform features. These characteristics are used to support the description of the soils and agricultural potential of an area.

4.1.1 PHYSIOGRAPHY

On review of the Land Information Ontario (LIO) digital physiographic region data, and *The Physiography of Southern Ontario 3rd Edition*, (Ontario Geological Survey Special Volume 2, Ministry of Natural Resources, 1984), it was determined that the PSA and the SSA are located within the Dundalk Till Plain physiographic region.

The Dundalk Till Plain was characterized as an area of undulating till plain. In the main part of the till plain, the flutings run southeastward. Swamps, bogs, and poorly drained areas occur in the depressional areas of the flutings.

Figure 10 illustrates the geographic location and shape of the respective physiographic region as compared to the location and shape of the PSA and the SSA.

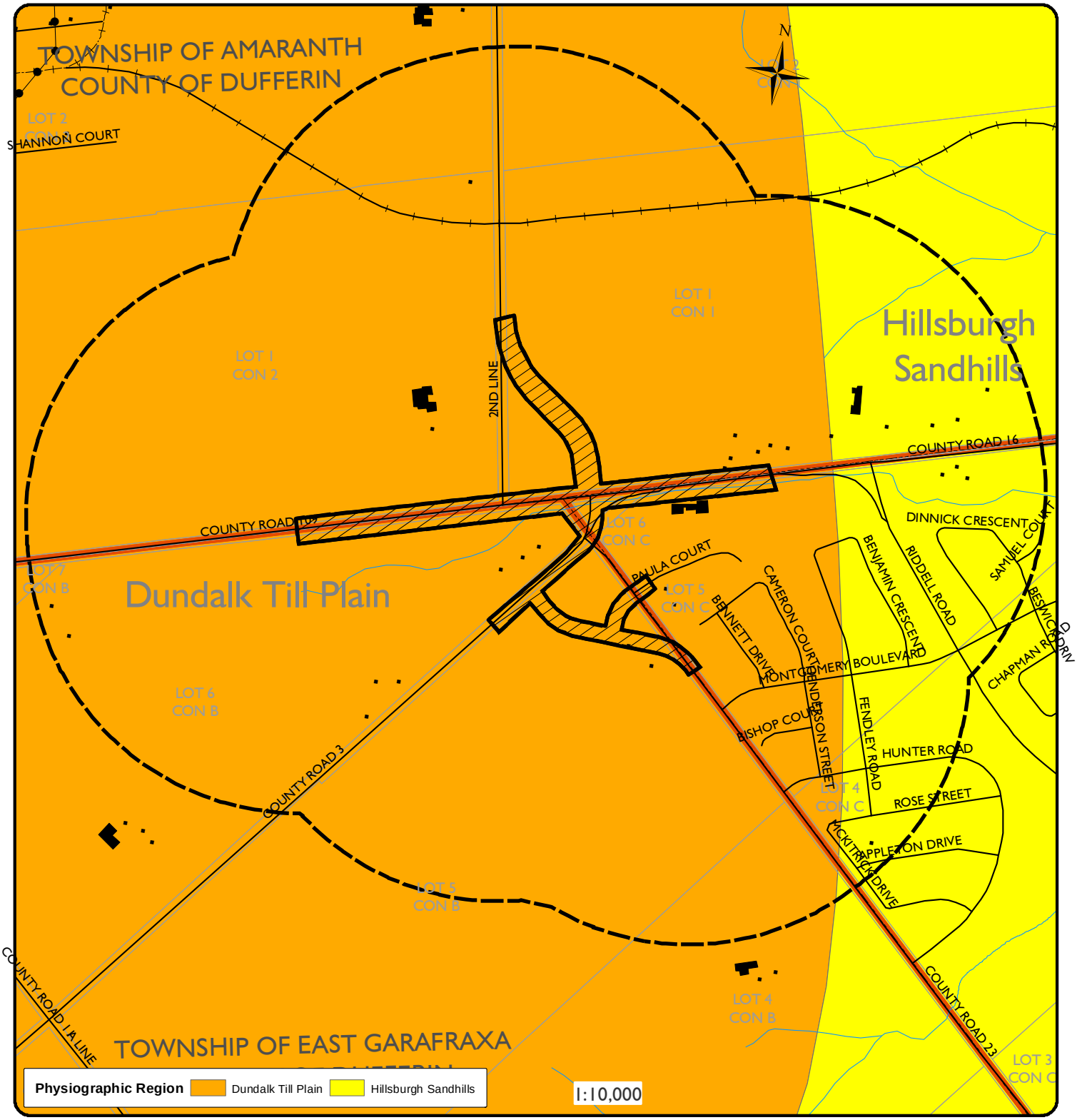
4.1.2 TOPOGRAPHY AND CLIMATE

Topographic information was reviewed and correlated to the 1:10000 scale Ontario Base Mapping, Land Information Ontario digital contour mapping, aerial photo interpretation and windshield surveys.

The PSA was considered as gently undulating, with the overall topography sloping to the south, southeast.

The topography of the SSA is also considered as gently undulating, with the higher elevations occurring along a ridge to the north of the PSA and extending to the east. The slopes within the SSA slope down from the ridge area mostly to the south and the southeast.

Climate data was taken from the OMAFRA document titled *Agronomy Guide for Field Crops – Publication 811 (June 2017)* and the *Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) Factsheet – Crop Heat Units for Corn and Other Warm Season Crops in Ontario, 1993.*



Legend

- Buildings (MNRF)
- Electric Transmission Line
- Roads (MNRF)

Railway Status (MNRF)

- Active
- Non-Active
- Building to Scale (MNRF)
- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m

Figure 10

Physiographic Regions

DBH Soil Services Inc.

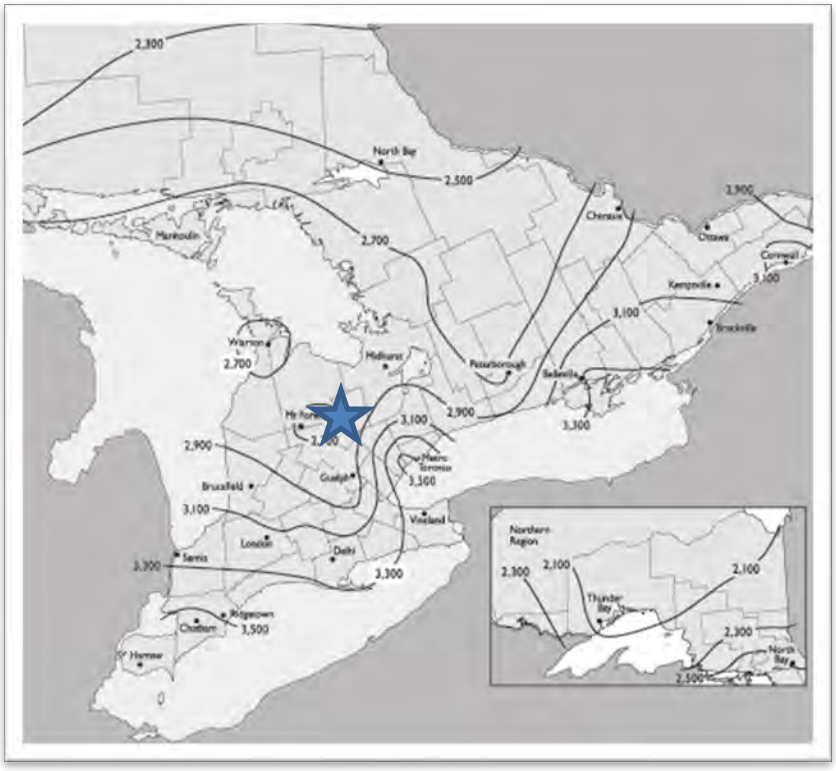
November 2023

The PSA and SSA are located between the 2700 and 2900 Crop Heat Units (CHU-M1) available for corn production in Ontario. The Crop Heat Units (CHU) index was originally developed for field corn and has been in use in Ontario for 30 years. The CHU ratings are based on the total accumulated crop heat units for the frost-free growing season in each area of the province. CHU averages range between 2500 near North Bay to over 3500 near Windsor. The higher the CHU value, the longer the growing season and greater are the opportunities for growing value crops.

Crop Heat Units for corn map (based on 1971-2000 observed daily minimum and maximum temperature (OMAFRA, 2017)) was illustrated on Figure 11. The approximate location of the PSA and SSA is marked with a blue star.

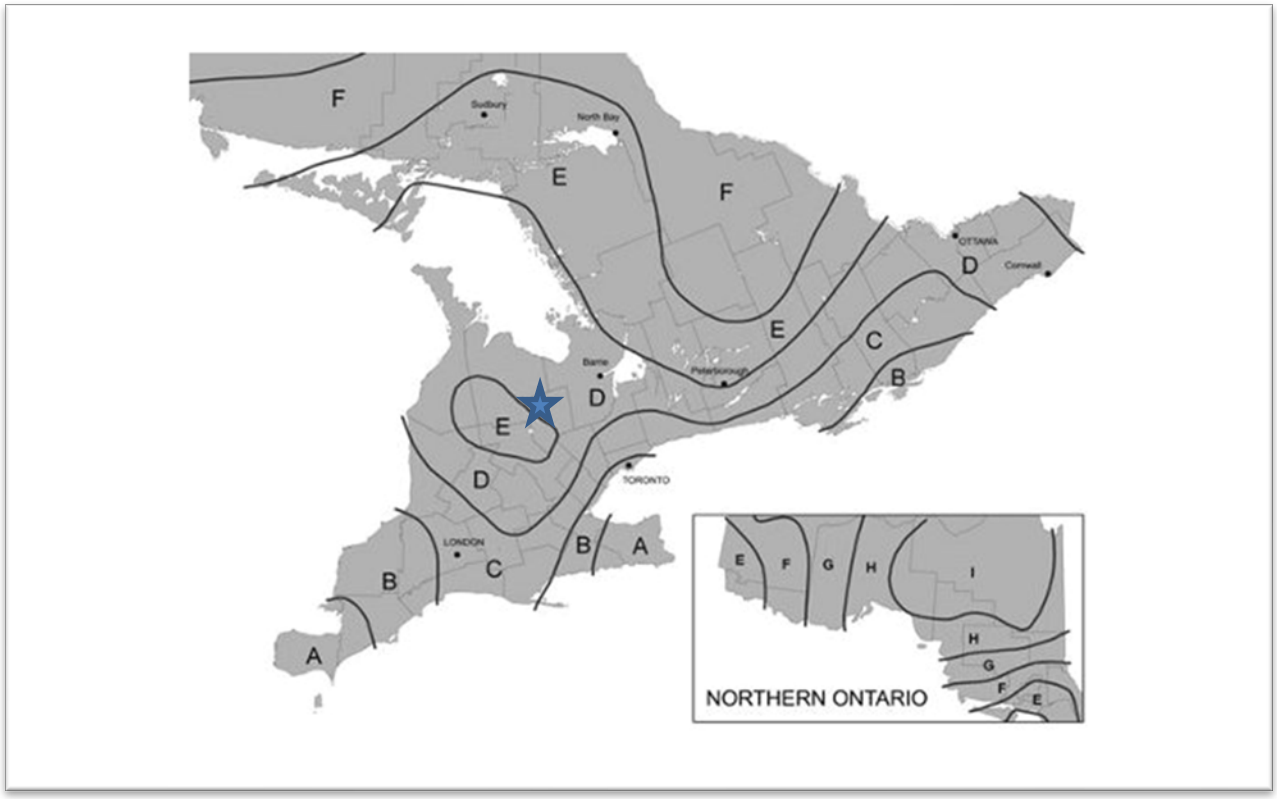
A review of OMAFRA *Climate Zone Mapping* (https://www.ontario.ca/page/climate-zones-and-planting-dates-vegetables-ontario) revealed that the PSA and the SSA are located within the Zone D. Figure 12 from the OMAFRA website (link provided above) illustrated the Climate Zone Map of Ontario. The approximate location of the PSA and SSA is marked with a blue star.

Figure 11 Crop Heat Units Map



Source: Figure 1-1 Crop Heat Units – Agronomy Guide for Field Crops (Publication 811)

Figure 12 OMAFRA Climate Zone Map



Source: OMAFRA Climate Zone Mapping

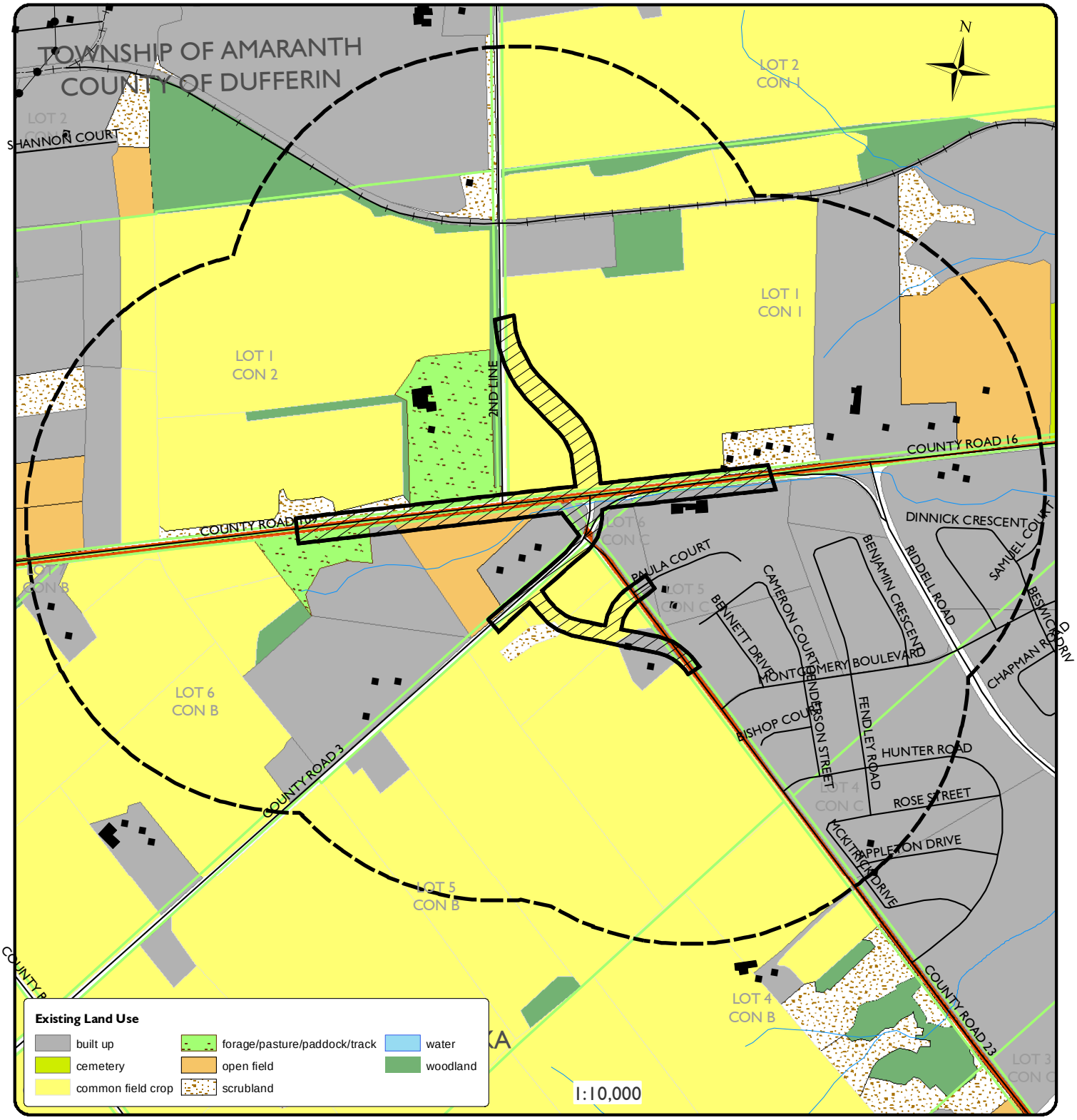
Zone D has an average Frost-Free period of 130-165 days, an Average Date of Last Spring Frost of May 11, and an Average Date of First Fall Frost of October 1.

4.2 EXISTING LAND USE

The existing land use for both the PSA and the SSA was completed through windshield/reconnaissance surveys (completed March and April 2023) and a review of recent aerial photography, Google Earth Imagery, Bing Imagery, Birdseye Imagery, Dufferin County online imagery, and correlation to the OMAFRA Land Use Systems mapping. Agricultural and non-agricultural existing land uses were illustrated on Figure 13.

The terms used in the Agricultural Land Use assessment were derived from the OMAFRA Agricultural Resource Inventory (ARI) 1983 Coverage. It should be noted that not all terms were relevant or used in this AIA. Only the terms that were appropriate for this area were utilized. For the purposes of this AIA additional terms or more relevant terms such as 'common field crop' were used. As example, 'common field crop' indicates crop production that includes corn and soybean. The ARI 1983 Coverage land use terms include:

- Built up
- Cherries
- Corn System



Legend

- Buildings (MNRF)
- Electric Transmission Line
- Roads (MNRF)

Railway Status (MNRF)

- Active
- Non-Active

- Building to Scale (MNRF)
- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m

Figure 13

Existing Land Use

DBH Soil Services Inc.

November 2023

- Extraction Pits and Quarries
- Grazing System
- Hay System
- Idle Agricultural Land (5 - 10 years)
- Idle Agricultural Land (> 10 years)
- Market Gardens/Truck Farms
- Mixed System
- Nursery
- Orchard
- Pasture System
- Recreation
- Reforestation
- Sod Farm
- Swamp/Marsh/Bog
- Unknown
- Vineyard
- Vineyard-Orchard
- Water
- Woodlands

The windshield survey identified the types of land uses including farm and non-farm uses (built up areas, commercial, and roads). Farms were identified as livestock or cash crop. Livestock operations were further differentiated to the type of livestock based on the livestock seen at the time of the survey, through a review of on farm infrastructure (type of buildings, manure system, feed (bins, bales), and types of equipment) or through any signage associated with the respective agricultural operation.

It should be noted that the roadside survey is based on a "line-of-sight" assessment process. Therefore, dense brush, woodlands, and topography can prevent an accurate assessment of some fields. In those instances, measures are taken to try to identify the crop through conversations with landowners (if applicable) or review of aerial photography. In some instances, no information is available. In those instances, the field polygon will be identified as 'unknown crop'.

Agricultural cropping patterns were identified and mapped. Corn and soybean crops were mapped as common field crops. Small grains are typically characterized as including winter wheat, barley, spring wheat, oats and rye. Forage crops may include mixed grasses, clovers and alfalfa. Other areas used for pasture, haylage or hay were mapped as 'forage/pasture'.

Non-farm (built up or disturbed areas) uses may include non-farm residential units, commercial, recreational, estate lots, services (utilities), industrial development and any areas that have been man-modified and are unsuitable for agricultural land uses (cropping).

Existing land use information was digitized in Geographic Information System (GIS - Arcmap) to illustrate the character and extent of land use in both the PSA and the SSA. Area calculations for

each land use polygon (area) were calculated within the GIS software and exported as tabular data. The data is presented as follows. Existing land use designations and land use definitions are provided in Table 1.

Table 1 Typical Land Use Designations

Land Use Designation	Land Use Definitions
Built Up/Disturbed Areas	Residential, commercial, industrial, man modified, existing road system and Velodrome area
Cemetery	Cemetery
Common Field Crop	Corn, Soybean, Cultivated
Forage/Pasture	Forage/Pasture
Market Garden	Vegetables, Garden Crops
Water	Lakes, ponds, rivers, stream course
Open Field	Unused field (<5 years)
Scrubland	Unused field (>5 years) – woody vegetation regrowth
Sod	Sod Production
Small Grains	Wheat, Oats, Barley
Woodland	Forested Areas

4.2.1 EXISTING LAND USE – PRIMARY STUDY AREA

The PSA comprised of a variety of existing land uses including, but not limited to built-up/disturbed areas (associated with the agricultural building and laneways), common field crops, open field, forage/pasture, scrubland, and woodland areas.

The PSA existing land use was comprised of approximately 26.6 percent as built-up/disturbed areas, 51.9 percent as common field crop (soybean, corn), 6.8 percent as forage/pasture areas, 9.5 percent as open field, 4.7 percent as scrubland, and 0.5 percent as woodland areas.

On review of the existing land use data, it was observed that the predominant land uses in the PSA included the production of common field crops, and built-up/disturbed areas.

4.2.2 LAND USE – SECONDARY STUDY AREA

The SSA consisted of a variety of existing land uses including, but not limited to built-up/disturbed areas, common field crops, forage/pasture lands, open field, scrubland, and woodland areas.

The SSA existing lands use comprised approximately 33.7 percent as built up/disturbed areas, 54.2 percent as common field crop (soybean, corn), 2.6 percent as forage/pasture lands, 4.5 percent as open field, 0.5 percent as railway, 2.0 percent as scrublands, and 2.5 percent as woodland areas.

On review of the existing land use data, it was observed that the predominant land uses in the

SSA include the built up/disturbed areas, and the production of common field crops.

Table 2 illustrates the percent occurrence of the land uses for both the PSA and the SSA.

Table 2 Land Use – Primary Study Area and Secondary Study Area

Land Use Designation	Primary Study Area Percent Occurrence	Secondary Study Area Percent Occurrence
Built Up/Disturbed Areas	26.6	33.7
Common Field Crop	51.9	54.2
Forage/Pasture	6.8	2.6
Open Field	9.5	4.5
Railway	-	0.5
Scrubland	4.7	2.0
Woodland	0.5	2.5
Totals	100.0	100.0

On review of Table 2 it is evident that the PSA comprised many areas of non-agricultural land use with approximately 26.6 percent identified as built up/disturbed (including the existing road network) land uses. Agricultural crop land use in the PSA comprised approximately 68.2 percent with those land uses identified as common field crop, forage/pasture lands, and open field.

The relatively high amount of land in non-agricultural land use is typical of areas in close proximity to urban spaces and an existing road network. This amount of non-agricultural land use is expected for a study where the purpose of the project is realigning an existing road network.

Further, on review of Table 2 it is evident that the SSA comprised many areas of non-agricultural land use with approximately 33.7 identified as built up/disturbed areas. Agricultural land use in the SSA comprised approximately 61.3 percent with those land uses identified as common field crop, forage/pasture, and open field.

The relatively high amount of land in non-agricultural land use is typical of areas in close proximity to urban settlement areas and existing road networks.

No specialty crop production was noted on either the PSA or the SSA.

4.3 AGRICULTURAL INVESTMENT

Agricultural investment is directly associated with the increase in capital investment to agricultural lands and facilities/buildings. In short, the investment in agriculture is directly related to the money used for the improvement of land through tile drainage or irrigation equipment, and through the improvements to the agricultural facilities/buildings (barns, silos, manure storage, sheds, processing and storage).

As a result, the lands and facilities that have increased capital investment are often considered as having greater affinity for preservation than similar capability lands and facilities that are undergoing degradation and decline. Investment in agriculture is often readily identifiable through observations of the condition and type of the facilities, field observations and a review of OMAFRA artificial tile drainage mapping.

Investment in agriculture is illustrated in Figure 14 – Agricultural Investment.

4.3.1 AGRICULTURAL BUILDINGS

Agricultural facilities/buildings (including buildings that may be capable of housing livestock), barns, storage and processing facilities were identified through a combination of aerial photographic interpretation, a review of online digital imagery (Google Earth Pro, Bing Mapping, Provincial and municipal online imagery, and Birds Eye Imagery), a review of Ontario Base Mapping and roadside evaluations.

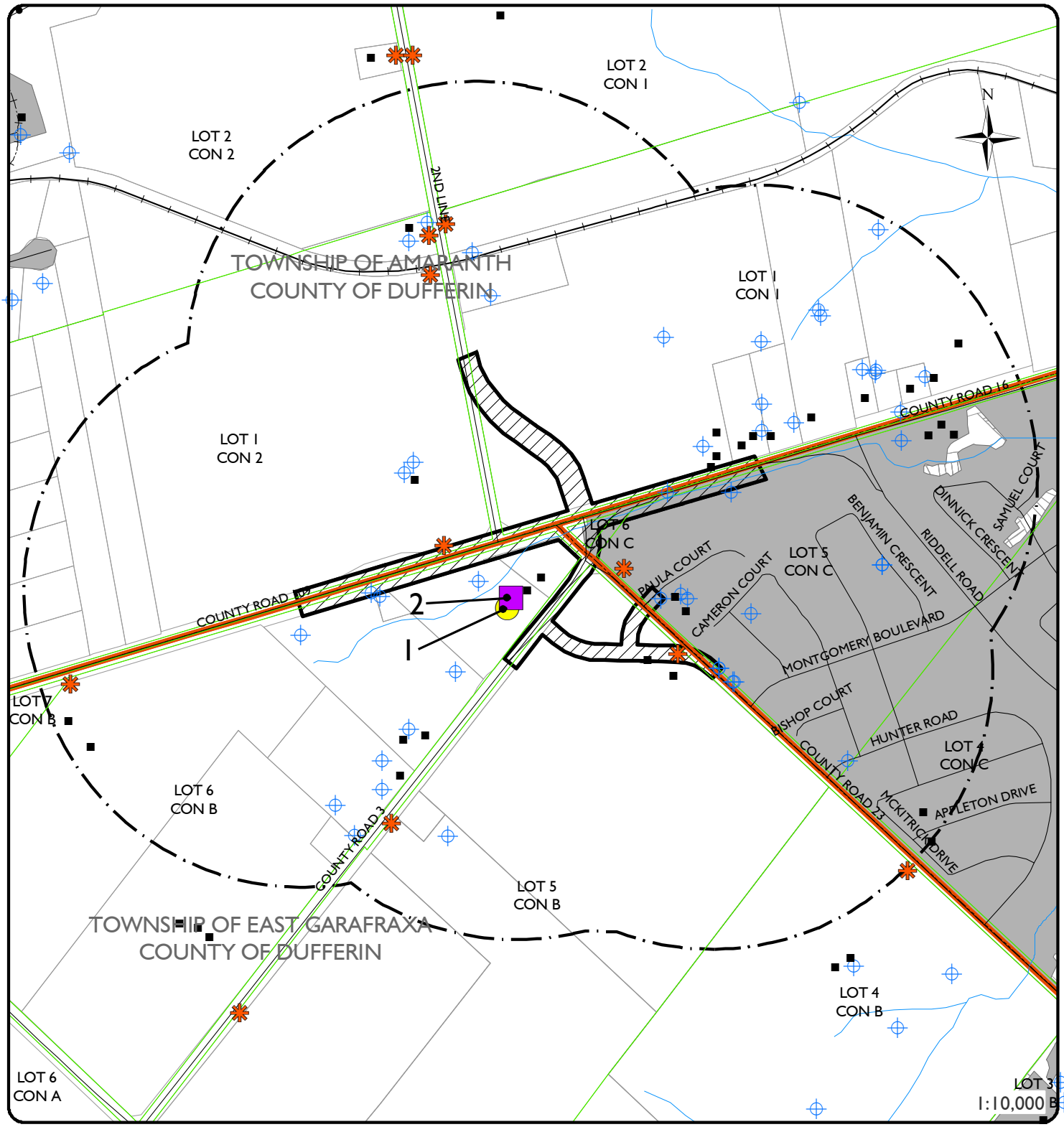
The agricultural facilities or potential livestock facilities that are often identified on mapping and imagery prior to conducting field investigations included buildings used for the active housing of livestock, barns that were empty and not used to house livestock, barns in poor structural condition, barns used for storage and any other large building that had the potential to house livestock. Field investigations can reveal that some of the buildings identified from the preliminary mapping and imagery no longer existed (torn down), or were not agricultural, but used for commercial activities. Further, field investigations often identify newer buildings that were not illustrated in the online imagery.

Agricultural activities such as livestock rearing usually involves an investment in agricultural facilities. Dairy operations require extensive facilities for the production of milk. Poultry and hog operations require facilities specific for those operations. Beef production, hobby horse and sheep operations usually require less investment capital (when compared to dairy operations or other high valve operations).

Some cash crop operations are considered as having a large investment in agriculture if they have facilities that include grain handling equipment such as storage, grain driers and mixing equipment that is used to support ongoing agricultural activities. Figure 14 illustrates the location of buildings, agricultural facilities, areas of potential irrigation, farm field access points, and tile drainage for both the PSA and the SSA.

A total of 2 agricultural buildings were identified. No agricultural buildings were observed in the PSA. Two agricultural buildings were observed in the SSA.

A listing of these agricultural buildings was included in Appendix A. The listing included the agricultural building identification number, address, brief description of the building, possible use, and livestock (if applicable).



Legend

- Field Access
- Building (MNRF)
- Water Wells (MOE)
- Electric Transmission Line (MNRF)
- Watercourse (MNRF)

Railway (MNRF)

- Active
- Abandoned

- Built Up Area (MNRF)
- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Parcel (Dufferin)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m

Building Type

- Machine Shed
- Pole Barn

OMAFRA Tile Drainage

- Random
- Systematic

Figure 14

Agricultural Investment

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November 2023

4.3.1.1 Primary Study Area

As indicated above, no agricultural buildings were noted in the PSA. There will be no impact to agricultural buildings in the PSA as a result of the construction of the proposed road realignment.

4.3.1.2 Secondary Study Area

Descriptions of the agricultural facilities/buildings are provided as follows in Table 3.

Table 3 Agricultural Buildings

Agricultural Building Number	Type of Building	Use	Type of Livestock
1	Pole Barn	Appears to be storage	None
2	Machine Shed	Storage	None

Photographs and/or aerial photography/satellite imagery of the respective buildings are located in Appendix B.

There will be no direct impacts to the agricultural buildings identified in the SSA as a result of the construction of the proposed road realignment.

4.3.2 ARTIFICIAL DRAINAGE

An evaluation of artificial drainage in the PSA and within the SSA was completed through a correlation of observations noted during the reconnaissance roadside survey, aerial photographic/aerial imagery interpretation and a review of the OMAFRA Artificial Drainage System Mapping.

Visual evidence supporting the use of subsurface tile drains included observations of drain outlets to roadside ditches or surface waterways, and surface inlet structures (hickenbottom or French drain inlets). There was no observed evidence during the roadside reconnaissance surveys of artificial tile drainage in either the PSA or the SSA.

Evidence in support of artificial drainage on aerial photographs/online imagery would be based on the visual pattern of artificial (tile) drainage lines as identified by linear features in the agricultural lands and by the respective light and dark tones on the aerial photographs, often referred to as a 'herring bone' pattern. The light and dark tones relate to the moisture content in the surface soils at the time the aerial photograph was taken.

The review of online imagery (Google Earth historical imagery) suggested that there were no tile drainage systems in the PSA or the SSA.

With respect to the digital online artificial drainage information, OMAFRA Artificial Drainage System Maps were downloaded from Land Information Ontario (LIO) in August 2023 and were reviewed to determine if an agricultural tile drainage system had been registered anywhere in the PSA, or in the SSA. The OMAFRA Artificial Drainage System data illustrates the location and type of tile drainage system. The type of tile drainage system is defined as either 'random' or 'systematic'. A random tile drainage system is installed to drain only the low areas or areas of poor drainage within a field. A systematic tile drainage system refers to a method of installing drain tile at specific intervals across a field, in an effort to drain the entire field area. From a cost perspective, a systematic tile drainage system would be a greater cost, or investment in agriculture when compared to a random tile drainage system.

Figure 14 illustrated the OMAFRA Artificial Drainage Systems Mapping for the PSA and the SSA. As noted in Figure 14, there were no areas of tile drainage identified within the PSA or the SSA.

There will be no disturbance to artificial drainage on PSA or the SSA as a result of the construction of the proposed road realignment.

4.3.3 WATER WELLS

A review was completed of the Ministry of the Environment, Conservation and Parks (MECP) Water Well records to determine the extent of water wells in the PSA and the SSA. The review of water well records involved a download of the latest version of the Water Well Records from the Land Information (LIO) data warehouse. The Water Well locations are identified in Figure 14. As illustrated in Figure 14, there are possibly six water wells located within the PSA, and numerous water wells located within the SSA.

The review of water well records was completed to determine the location and extent of water wells in the area, and to identify any potential concerns or impacts that may occur as a result of the proposed future development of the PSA. Generally, many livestock operations and some crop farms (nursery stock farms) use ground water for their livestock or crops, and any disruption to the water in terms of quality and/or quantity could have a significant impact to the operation.

Due to the existence of the water wells in the PSA, it may be necessary to either preserve the existing wells, or properly engineer the closing/capping of any water well, where necessary, to prevent potential groundwater contamination. It should be noted that a review from a groundwater expert may be necessary to evaluate any potential risks.

With respect to this AIA, there appears to be capital investment in water wells in the PSA and the SSA, as based on the review of the online water well record data. It is unknown if these wells are used in livestock production, or possibly irrigation purposes.

The proposed development of the PSA will need to ensure that the MECP identified water wells are appropriately considered.

4.3.4 IRRIGATION

Observations noted during the roadside reconnaissance surveys indicated that no portions of the PSA or the SSA appear to be irrigated. The PSA appeared to have a ponded area that may be capable for use for irrigation.

No actual irrigation use or equipment was observed during the roadside reconnaissance surveys work.

There will be no loss of irrigation equipment, areas of irrigation, or use of irrigation as a result of the proposed development of the PSA.

4.3.5 LANDFORMING

Landforming is the physical movement of soil materials to create more uniformly sloped lands for the ease of mechanized operations. The costs associated with landforming can be exorbitant, depending on the volume of soil moved.

No landforming for the purposes of enhancing an agricultural operation was noted within the PSA or the SSA. Therefore, no additional investment has been made in landforming.

4.3.6 FIELD AND FARM ACCESS

Figure 14 illustrates the location of field and farm access points within the PSA and the SSA.

It is noted that a field/farm access point along County Road 23 is located under the proposed road realignment. It is also noted that the proposed road realignment will create severed parcels without access points. Access points will need to be established for each of those field areas.

4.4 FRAGMENTATION

Assessment data was evaluated to determine the characteristics and the degree of land fragmentation in the PSA and the SSA.

In order to evaluate land fragmentation, the most recent Assessment Roll mapping and Assessment Roll information from the County of Dufferin was referenced on a property-by-property basis (for the PSA and the SSA) to determine the approximate location, shape, and size of each parcel. The assessment of fragmentation looked at the numbers of and proximity of properties within the PSA and the SSA.

While a minimum size for an agricultural property is not specified in the *Provincial Policy Statement* (PPS, 2020), the PPS does state in Section 2.3.3.2 that:

> "In *prime agricultural areas*, all types, sizes and intensities of *agricultural uses* and

normal farm practices shall be promoted and protected in accordance with provincial standards."

A review of the *Dufferin County Official Plan – Office Consolidation July 17, 2017*, identified in Section 4.2.5b (Agricultural Area Lot Creation and Adjustment) for *prime agricultural areas* within the Greenbelt Plan Protected Countryside, the minimum *lot* size will be 40 hectares (100 acres).

A review of the *Official Plan for the Township of Amaranth (Office Consolidation June 2018)*, identified in Section 3.1.4a Severance Policy) that the *basic farm unit in this category will be the original surveyed parcel of land, of approximately 40 hectares, the farm residence, barns and other buildings and structures which together support the farm operation* and in Section 3.1.5h (Development Policies) that *Hobby farms shall be permitted on lots having an area of at least 2.0 hectares.*

A review of the *Township of Amaranth Zoning By-law 2-2009 (Township Consolidation December 2021)* was completed and identified a minimum lot area of 19.0 ha for an agricultural zoning.

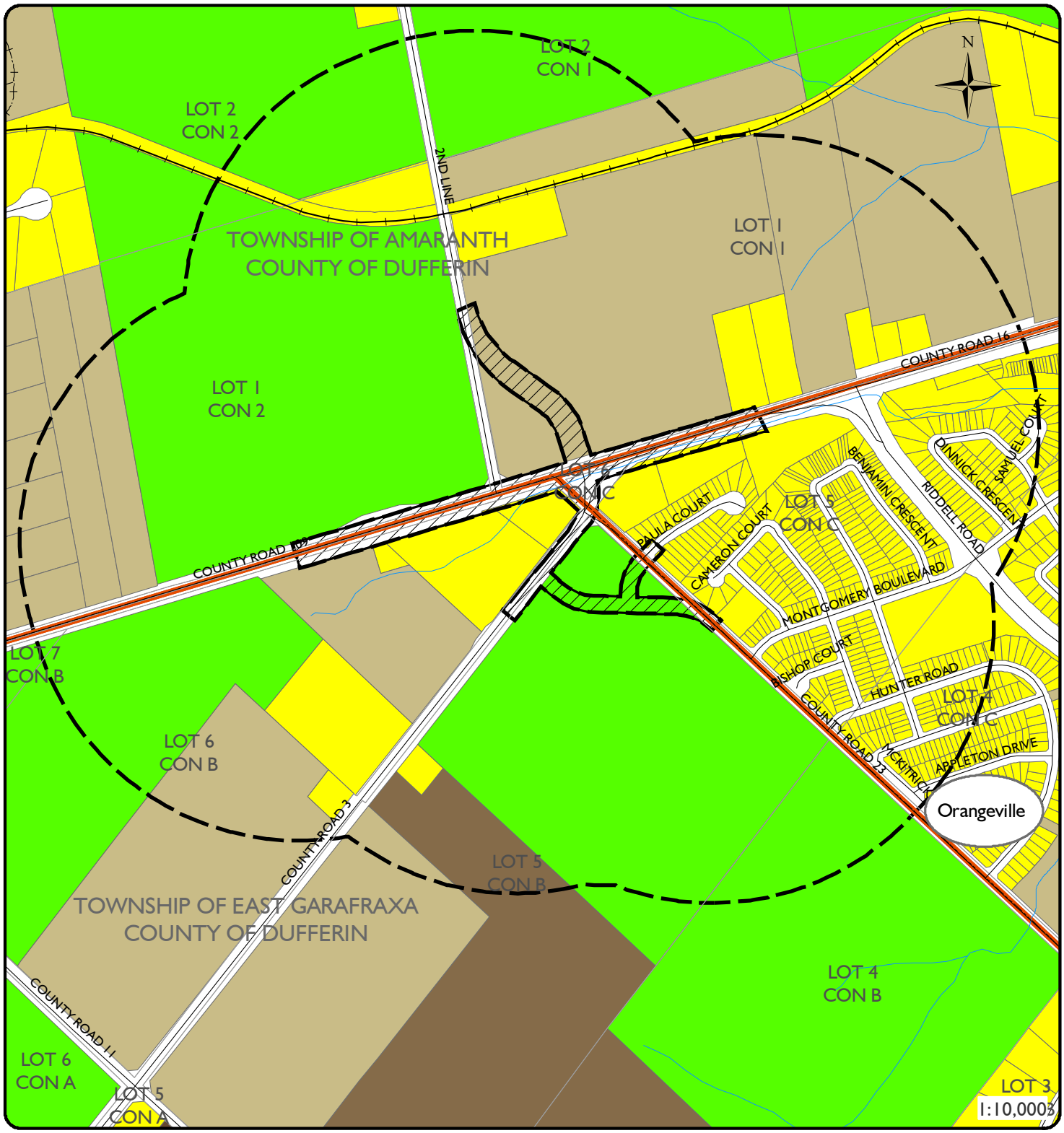
A review of the *Township of East Garafraxa Zoning By-law 60-2004 (January 2011)* was completed and identified a minimum lot area of 19.0 ha for an agricultural zoning.

Historically, Statistics Canada Census of Agriculture (2011) indicated that the average farm size in Ontario was 98.7 ha (244 acres). This average size was based on the number of Census farms divided by the acreage of those Census farms (Total Farm Area). The Total Farm Area was land owned or operated by an agricultural operation and includes cropland, summer fallow, improved and unimproved pasture, woodlands and wetlands, and all other lands (including idle land, and land on which farm buildings are located) (Statistics Canada, 2017). It should be noted that the average farm size was based on farmland holdings, which may include more than one parcel (property). Further, the Census of Agriculture (2011) information indicated that the average farm size in Dufferin County was 88.1 ha (217.8 acres).

Further, the historical Census of Agriculture (2016) data indicated that the average farm size in Ontario (for Census farms) was 100.8 ha (249) acres. Again, the Census of Agriculture (2016) average farm size was based on farmland holdings, which may include more than one parcel (property). The Census of Agriculture (2016) information indicated that the average farm size in Dufferin County was 91.8 ha (226.9 acres).

The more recent Census of Agriculture (2021) data indicated that the average farm size in Ontario (for Census farms) was 98.3 ha (243 acres). Again, the Census of Agriculture (2021) average farm size was based on farmland holdings, which may include more than one parcel (property). Further, the Census of Agriculture (2021) information indicates that the average farm size in Dufferin County was 91.7 ha (226.5 acres).

Figure 15 illustrates the complexity of the land fragmentation within the PSA and SSA. GIS was utilized to calculate the area (in acres) of each parcel within the PSA and SSA from which MPAC (Municipal Property Assessment Corporation) area data was not available. Acre calculations



Legend

- Roads (MNRF)
- Electric Transmission Line (MNRF)
- **Railway (MNRF)**
  - Active
  - Abandoned
- Watercourse (MNRF)
- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m

Range in Acres

- 0.001 - 9.9
- 10.0 - 69.9
- 70.0 - 129.9
- 130.0 - 179.9
- > 180.0

Figure 15

Fragmentation

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were completed to allow an assessment or comparison of all the parcels within the PSA and the SSA. This assessment was not limited to only the agricultural properties but included all parcels (industrial, commercial, agricultural, urban, etc). Census data only related to parcels that are designated as agriculture.

The Census data provides detailed information on Census farms (farms which provided census data). Census data is provided in the unit format of acres, with the splits in the data at 0.001 – 9.9, 10.0 – 69.9, 70.0 – 129.9, 130.0 – 179.9 and greater than 180.0 acres. For the purposes of this AIA report, similar splits in acre data were used for the comparison.
As illustrated in Figure 15, the PSA included portions of the urban area of the Town of Orangeville. Additional smaller parcels were noted along County Road 3.

The review of fragmentation in the SSA revealed similar conditions with a portion of the SSA comprising small parcels within the Town of Orangeville.

The review of parcel data as a means of determining the existing fragmentation of the PSA and the SSA revealed that both areas comprised numerous parcels of varying size. Table 4 provides a comparison between the parcel count of the PSA, the SSA, and the Census farm data. The parcel count for Dufferin County reflects only the Census Farms in the 2021 census.

As illustrated in Table 4, the parcel count for the PSA and the SSA indicates the presence of numerous small parcels, and fewer larger parcels. This type of fragmentation pattern is common in areas near urban boundaries and within the Greater Toronto Area (GTA) and Greater Golden Horseshoe (GGH) areas. It is noted that there are large clusters of smaller parcels associated with the urban areas of the Town of Orangeville.

Table 4 Parcel Size and Parcel Count

Parcel Size Range (Acre)	Primary Study Area	Secondary Study Area	Dufferin County (2021 Census)	Dufferin County (2016 Census)	Dufferin County (2011 Census)
0.0 – 9.9	13	473	32	27	28
10.0 – 69.9	2	14	209	192	213
70.0 – 129.9	2	6	201	193	230
130.0 – 179.9	-	1	51	45	60
>180	-	-	202	233	264

Although a direct comparison of the parcel size count of the PSA and the SSA to the Census data cannot be made, as the census data only refers to census farms while the parcel data refers to all parcels, there are similarities in the proportion of the numbers between the PSA counts and the Census data. Table 4 shows a general decrease in parcel count as parcel size increases.

The proposed development of the PSA will create an additional two parcels and increase fragmentation in the SSA.

4.5 PARCEL OR LAND SEVERANCE

A parcel or land severance is defined as an authorized separation of a piece of land to form a new lot or parcel of land. The proposed development of the PSA has taken into consideration the potential of the creation of severed parcels which may result in the reduction in size of a farm parcel, a splitting of a parcel into multiple pieces (with pieces on opposite sides of the proposed route), and/or the creation of a land locked parcel that has no direct roadside access.

For the purposes of this existing conditions report, GIS mapping was used to calculate the number of parcels that will lose a portion of the property to the PSA, and the number of parcels that will be severed (resulting in a minimum of two separate portions).

The proposed development of the PSA will result in the creation of three severed parcels from one parcel (two smaller pieces plus the larger remaining piece of the original parcel west of the proposed road realignment. This parcel is located at the southwest corner of the intersection of County Road 3 and County Road 23. Two smaller areas will be severed from the original parcel. The two smaller areas comprise 1.24 ha and 0.2 ha. The remainder of the large parcel is located west of the proposed road realignment.

Specific to this AIA, we are evaluating severances on designed agricultural land only.

It is noted that none of the three created parcels (two severed pieces plus the remaining portion of the original parcel) will be landlocked and each of the three parcels will have at least one side along an existing road. As indicated above, field access points will need to be created to these severed areas.

4.6 SOILS AND CANADA LAND INVENTORY (CLI)

A review was completed of the soils and Canada Land Inventory (CLI) data base for the PSA and the SSA. The review was completed to determine the extent and location of the high capability soils. The OMAFRA digital soils data was retrieved from the Land Information Ontario data warehouse in March 2023.

The review included a download of the latest version of the soils data from the Land Information Ontario website and discussions with OMAFRA staff to determine if the downloaded data set was the latest iteration of the soils data.

Due to the continual updates to the soil survey complex datasets, it is prudent to verify or at least confirm that the soil series data and Canada Land Inventory (CLI) information within the datasets is accurate across Dufferin County. In an effort to confirm the correctness of the soils and the Canada Land Inventory data on a soil series basis, the dbase data file that was associated with the Dufferin County soil survey complex file was exported to excel to run a unique symbols list based on Soil Series, topography (slope), CLI class and CLI subclass.

The review of the Dufferin County soil data identified 1507 records. The unique symbols list (based on the SYMBOL1 column) provided 117 unique symbols combined with the associated slope and CLI class and CLI subclass (CLI_1 and CLI_2). The unique symbols list was provided in Appendix B. A review of this list indicated that there were inaccuracies with a few symbols and the respective CLI class and/or subclass.

As noted in the list in Appendix C, a few symbols for a particular soil series would have two or more CLI classes listed for a mineral soil. Similar conditions were associated with the CLI subclass, where two or more CLI and CLI subclass combinations were associated with the soil series symbol. In many cases the difference between the CLI classification was related only to the subclass. Therefore, in those instances, the Canada Land Inventory (CLI) rating or classification for a particular soil did not change, only the subclass did which relates to a different limitation in the soil, but not a change in CLI class.

In other instances, the CLI Class changed. In those instances, the change in some CLI Class were related to topography or stoniness. The greater the slope, results in a lower capability of the land. In those instances, the CLI Class change was appropriate.

For the purposes of this AIA report the soil and CLI data presented on Figure 16 are considered appropriate in soil code and CLI rating.

A review of these soil polygon issues indicated that none of the affected soil polygons were located within the PSA or the SSA.

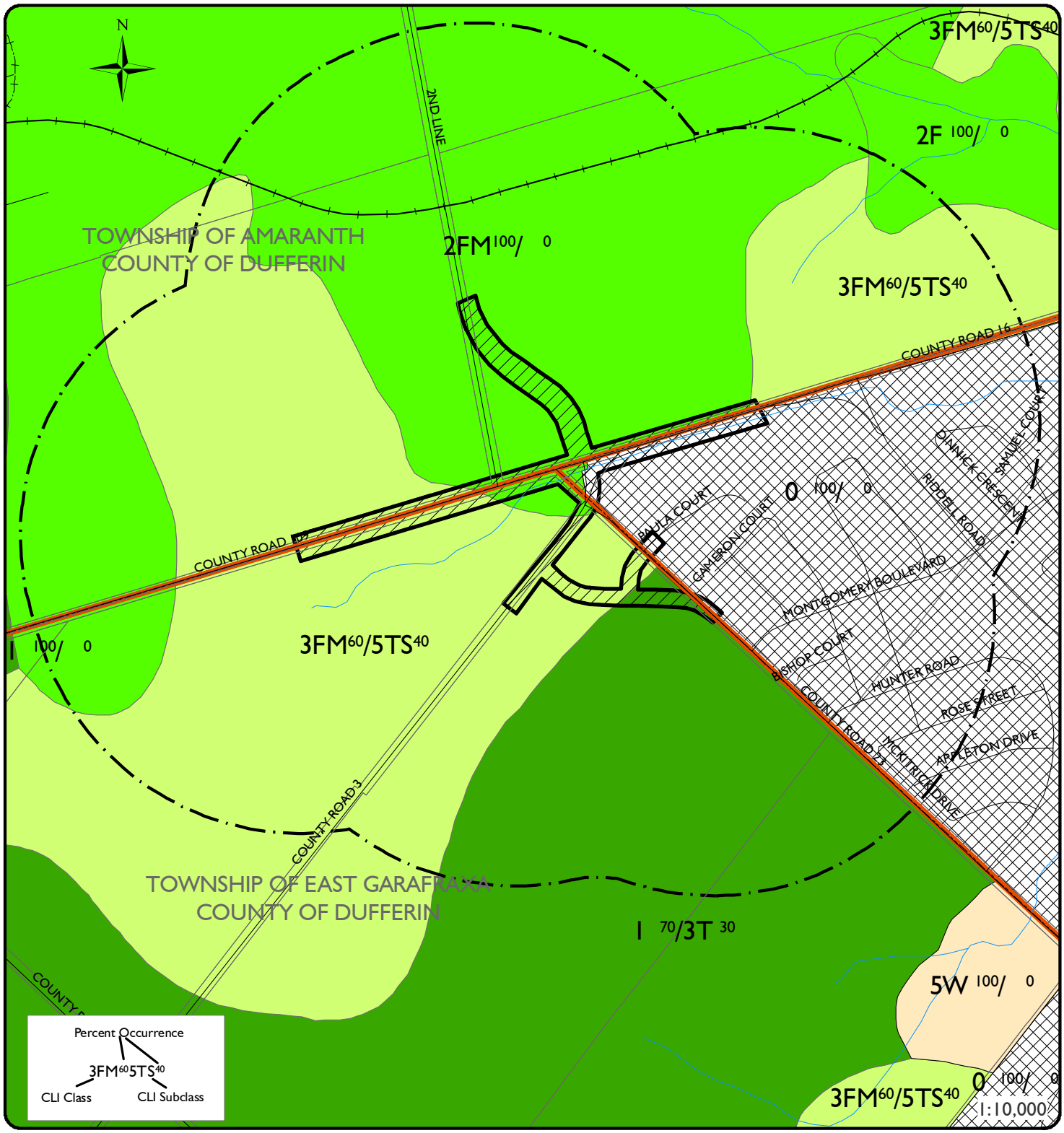
4.6.1 SOIL CAPABILITY FOR AGRICULTURE

Basic information about the soils of Ontario is made more useful by providing an interpretation of the agricultural capability of the soil for various crops. The Canada Land Inventory (CLI) system combines attributes of the soil to place the soils into a seven-class system of land use capabilities. The CLI soil capability classification system groups mineral soils according to their potentialities and limitations for agricultural use. The first three classes are considered capable of sustained production of common field crops, the fourth is marginal for sustained agriculture, the fifth is capable for use of permanent pasture and hay, the sixth for wild pasture and the seventh class is for soils or landforms incapable for use for arable culture or permanent pasture.

Organic (O) or Muck (M) soils are not classified under this system. Disturbed Soil Areas are not rated under this system.

4.6.1.1 Canada Land Inventory (CLI) Class

The Ontario Ministry of Agriculture, Food and Rural Affairs document "Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario" defines the Canada Land Inventory (CLI) classification as follows:



Legend

- Roads (MNRF)
- **Railway (MNRF)**
- Active
- Abandoned
- Watercourse (MNRF)
- Lot Lines (MNRF)
- Municipal Boundaries (MNRF)
- Primary Study Area (PSA)
- Secondary Study Area (SSA) - 500 m
- **Canada Land Inventory (CLI)**
- Not Rated
- Class 1
- Class 2
- Class 3
- Class 4
- Class 5
- Class 6
- Class 7
- Organic Soil
- Water

Figure 16

Canada Land Inventory (CLI)

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Class 1 - Soils in this class have no significant limitations in use for crops. Soils in Class 1 are level to nearly level, deep, well to imperfectly drained and have good nutrient and water holding capacity. They can be managed and cropped without difficulty. Under good management they are moderately high to high in productivity for the full range of common field crops.

Class 2 - Soils in this class have moderate limitations that reduce the choice of crops, or require moderate conservation practices. These soils are deep and may not hold moisture and nutrients as well as Class 1 soils. The limitations are moderate, and the soils can be managed and cropped with little difficulty. Under good management they are moderately high to high in productivity for a wide range of common field crops.

Class 3 - Soils in this class have moderately severe limitations that reduce the choice of crops or require special conservation practices. The limitations are more severe than for Class 2 soils. They affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. Under good management these soils are fair to moderately high in productivity for a wide range of common field crops.

Class 4 - Soils in this class have severe limitations that restrict the choice of crops, or require special conservation practices and very careful management, or both. The severe limitations seriously affect one or more of the following practices: timing and ease of tillage; planting and harvesting; choice of crops; and methods of conservation. These soils are low to medium in productivity for a narrow to wide range of common field crops but may have higher productivity for a specially adapted crop.

Class 5 - Soils in this class have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible. The limitations are so severe that the soils are not capable of use for sustained production of annual field crops. The soils are capable of producing native or tame species of perennial forage plants and may be improved through the use of farm machinery. Feasible improvement practices may include clearing of bush, cultivation, seeding, fertilizing or water control.

Class 6 - Soils in this class are unsuited for cultivation, but are capable of use for unimproved permanent pasture. These soils may provide some sustained grazing for farm animals, but the limitations are so severe that improvement through the use of farm machinery is impractical. The terrain may be unsuitable for the use of farm machinery, or the soils may not respond to improvement, or the grazing season may be very short.

Class 7 - Soils in this class have no capability for arable culture or permanent pasture. This class includes marsh, rockland and soil on very steep slopes.

4.6.1.2 Canada Land Inventory (CLI) Subclass

With respect to the soils and Canada Land Inventory (CLI) identified in the PSA and SSA, the OMAFRA document *Classifying Prime and Marginal Agricultural Soils and Landscapes: Guidelines for Application of the Canada Land Inventory in Ontario* defines the Canada Land Inventory (CLI) subclassification as follows:

Subclass F - Low Natural Fertility
Subclass F denotes soils having low fertility that is either correctable through fertility management or is difficult to correct in a feasible way. Low fertility may be due to low cation exchange capacity, low pH, presence of elements in toxic concentrations (primarily iron and aluminum), or a combination of these factors.

Subclass M – Moisture Deficiency
Subclass M denotes soils which have low moisture holding capacities and are more prone to droughtiness.

Subclass S – Adverse Soil Characteristics
This subclass denotes a combination of limitations of equal severity. In Ontario it has often been used to denote a combination of fertility (F) and moisture (M) when these are present with a third limitation such as topography (T) or stoniness (P).

Subclass T - Topography
The steepness of the surface slope and the pattern or frequency of slopes in different directions are considered topographic limitations if they: 1) increase the cost of farming the land over that of level or less sloping land; 2) decrease the uniformity of growth and maturity of crops; and 3) increase the potential of water and tillage erosion.

Subclass W – Excess Water
The presence of excess soil moisture (other than that from inundation) may result from inadequate soil drainage, a high water table, seepage, or runoff from surrounding areas. This limitation only applies to soils classified as poorly drained or very poorly drained.

Disturbed soil areas (built up or developed areas) are considered as Not Rated within the Canada Land Inventory (CLI) classification system. Muck (organic soils) are not rated in the Canada Land Inventory (CLI) classification system.

Figure 16 – Canada Land Inventory (CLI) illustrated the OMAFRA digital soils data for the PSA and the SSA. The OMAFRA soils data base has not removed or discounted soils from roads, railways, urban or developed areas.

Table 5 illustrates the soils data as derived by percent occurrence within the respective polygons and summarizes the relative percent area occupied by each capability class for the PSA and the SSA.

The PSA comprised approximately 68.5 percent Canada Land Inventory (CLI) capability of Class 1 – 3, with approximately 4.0 percent as Class 1, 41.1 percent as Class 2, and 23.4 percent as Class 3. Approximately 14.5 percent of the PSA was identified as Class 5 lands, with the remaining 17.0 percent identified as not rated.

The SSA comprised approximately 68.5 percent Canada Land Inventory (CLI) capability of Class 1 – 3, with approximately 9.7 percent as Class 1, 33.9 percent as Class 2, and 24.9 percent as

Class 3. Approximately 13.9 percent of the SSA was identified as Class 5 lands, with the remaining 17.6 percent of the lands not rated.

Table 5 Canada Land Inventory – Percent Occurrence

Canada Land Inventory Class (CLI)	PSA Percent Occurrence	SSA Percent Occurrence
Class 1	4.0	9.7
Class 2	41.1	33.9
Class 3	23.4	24.9
Class 4	0.0	0.0
Class 5	14.5	13.9
Class 6	0.0	0.0
Class 7	0.0	0.0
Not Rated	17.0	17.6
Totals	100.0	100.0

Again, it should be noted that the OMAFRA soils database does not consider existing road networks, therefore, the quantity of high-capability soils identified in Table 5 will be an overestimate or approximation due to the presence of the existing road network.

4.7 AGRICULTURAL SYSTEMS PORTAL

A review of the OMAFRA Agricultural System Portal online resource for agricultural services/agricultural network (markets, abattoirs, renderers, livestock auctions, investment, warehousing and storage, wineries and breweries) noted that portions of the PSA and portions of the SSA were located in the Prime Agricultural Area of the Agricultural Land Base of the Greater Golden Horseshoe as has been illustrated in Figure 2 of this AIA.

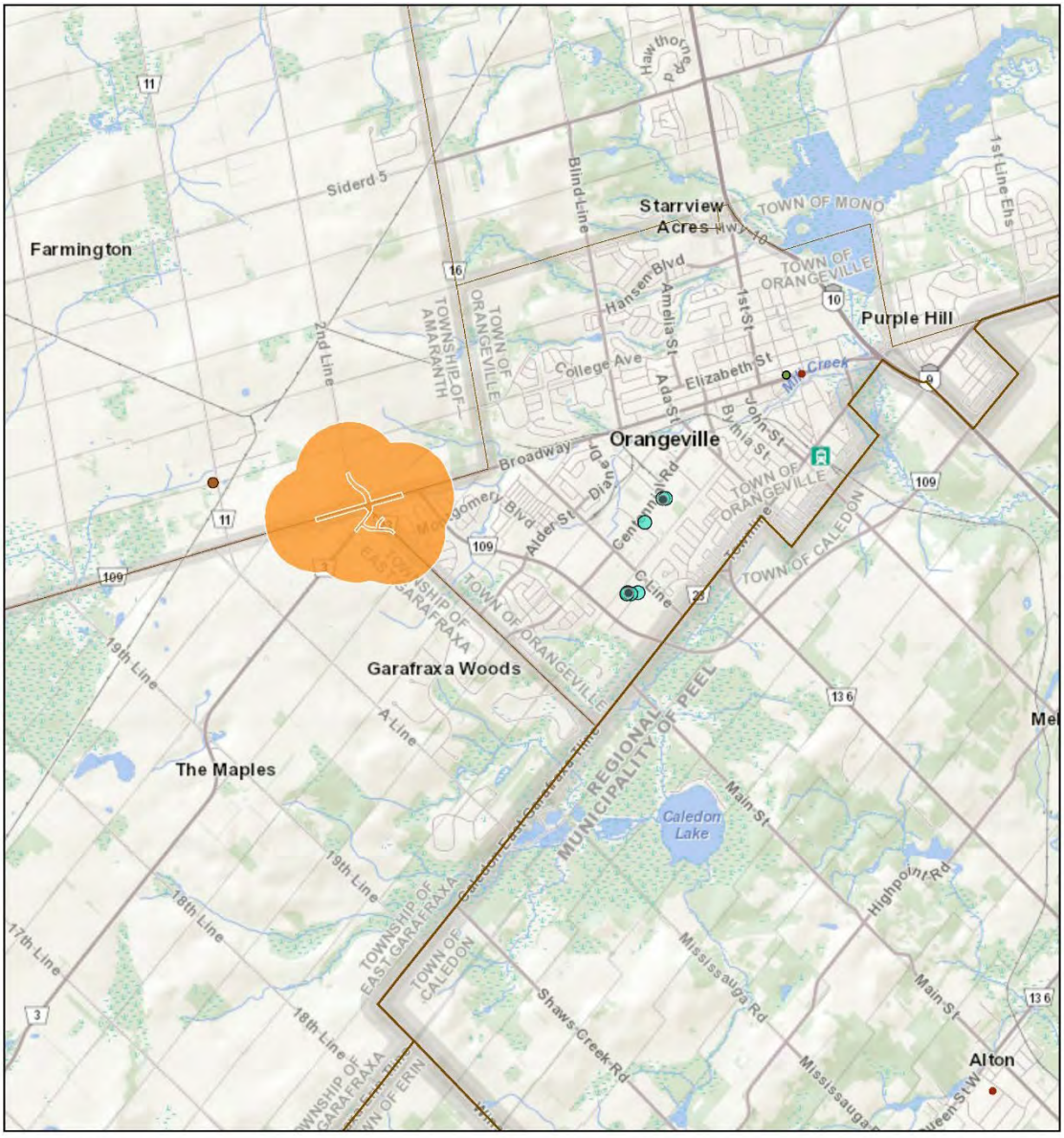
A review of the online Agricultural System Portal (OMAFRA) indicated that there were no registered farmers markets, pick your own operations, nurseries, frozen food manufacturing, refrigerated warehousing/storage, livestock assets, abattoirs, or other agricultural services in the PSA or the SSA.

The review of agricultural services and agricultural operations from the Agricultural Systems Portal revealed there are limited agricultural resources/services in the local area outside the SSA. Holmes Argo (Oilseed and grain merchant wholesalers, support activities for crop production) was located in the SSA at Lot 2, Concession 3, Township of Amaranth (west of the SSA).

The closest transportation network (major roadway) is County Road 109 (within the PSA and the SSA) and County Roads 3 and 23.

Figure 17 provided an illustration of the Livestock, Fish, and Poultry agricultural resources within the PSA and the SSA as based on a search of the OMAFRA Agricultural Systems Portal website.

Figure 17 OMAFRA Agricultural Systems Portal Mapping – Livestock, Fish and Poultry



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1:75,534

0 0.45 0.9 1.8 mi

0 0.75 1.5 3 km

- PSAOct17_2023
- SSA_500m_Oct17_2023
- Farmers Markets (Farmers Markets ON)
- Farm Product Merchant Wholesalers NAICS 4111 (ConnectON)
- Provincially Licensed Dairy Plants (OMAFRA)
- Dairy Product Manufacturing NAICS 3115 (ConnectON)
- Support Activities for Agriculture and Forestry NAICS 115110 (ConnectON)
- Support Activities for Animal Production NAICS 115210 (ConnectON)
- Lower And Single Tier Municipal Boundaries (LIO)
- Upper And District Tier Municipal Boundaries (LIO)

Figure 17 provided an illustration of the agricultural resources in a larger area context to illustrate the relative distance from the PSA to the existing agricultural services.

Figure 18 illustrates the Field Crop agricultural resources within the PSA and the SSA as based on a search of the OMAFRA Agricultural Systems Portal website. As identified above there were no agricultural resources in the PSA or the SSA.

There would be no loss of agricultural resources as a result of the development of the PSA.

4.8 AGRICULTURAL SYSTEM AND AGRICULTURAL NETWORK

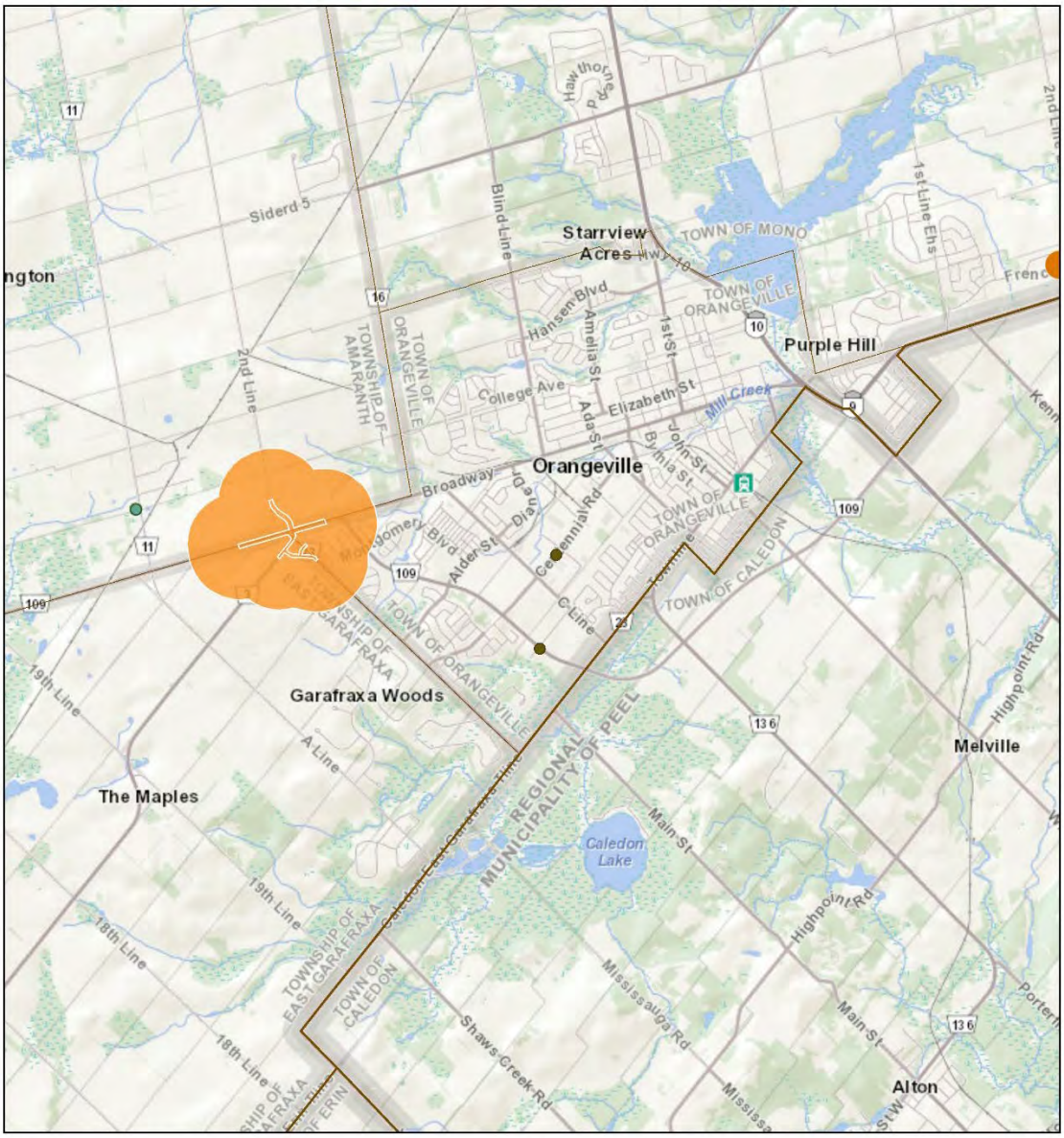
The PPS (2020) required the implementation of an agricultural system. The Agricultural System comprises two parts: Agricultural Land Base; and the Agri-Food Network. The Agricultural Land Base was evaluated through a review of Canada Land Inventory (CLI) in Section 4.6 of this AIA.

This AIA has determined that portions of the PSA are located in a designated Agricultural area (Prime Agricultural Area) and that significant portions of the PSA (and the SSA) is comprised of high capability soils.

The Agricultural Network includes the services and infrastructure that are important components of the agricultural industry. Section 4.7 of this AIA provided comments on the agricultural services and infrastructure in the surrounding area. It was noted that there are no major services in the PSA or the SSA. There are agricultural services located farther from the PSA and the SSA, in the urban areas of the Town of Orangeville.

There will be no loss of agricultural services or infrastructure as a result of the development of the PSA.

Figure 18 OMAFRA Agricultural Systems Portal Mapping – Field Crops



4.9 AGRICULTURAL CENSUS DATA

A review of the Census of Agricultural data (Census 2021 including 2016, 2011 and 2006 data) was completed to determine the agricultural characteristics of Dufferin County and Amaranth Township, and to allow comparison to the agricultural characteristics in the PSA and SSA.

4.9.1 Dufferin County

Table 6 provided Census 2021 data for agricultural land use in Dufferin County and provided a comparison to the Provincial Census 2016, 2011 and 2006 agricultural data. As indicated in the Census data, Dufferin County comprised approximately 1.34 percent of the total area of farms in Ontario (Census 2021).

A review of Census 2021 data for Dufferin County revealed that the total area in farms was 157,389 acres (Census Farms). Much of the farmed land was in crops with a total of 122,320 acres. The remaining lands were listed as summerfallow land, tame or seeded pasture, natural land for pasture, Christmas trees, woodlands and wetlands and all other land.

Table 6 Dufferin County Census 2021 Data – Land Use

Item	Dufferin County	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Land Use, 2021 Census (acres)						
Land in crops	122,320	9,051,011	1.35	1.30	1.35	1.46
Summerfallow land	387	13,964	2.77	2.53	2.06	2.42
Tame or seeded pasture	9,476	400,480	2.37	1.97	1.89	2.10
Natural land for pasture	6,711	626,366	1.07	1.01	1.29	1.32
Christmas trees, woodland & wetland	12,191	1,269,535	0.96	0.89	1.19	1.02
All other land	6,303	404,714	1.56	1.51	1.44	1.55
Total area of farms	157,389	11,766,071	1.34	1.27	1.36	1.43

Table 6 illustrated that there have been fluctuations in all land uses since 2006 with the general trend being an increase in acreage over the last 5 years (As based on Census 2021 farm data).

Table 7 provided a more detailed inventory of agricultural lands, and it was evident from this data that Dufferin County contributed a small amount to the Provincial totals for production in major field crops (As based on Census farm data 2021). It should be noted that Dufferin County contributed 17.11 percent to the Provincial total for potato crop contribution.

Table 7 Dufferin County Census 2021 Data – Crops

Item	Dufferin County	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Major Field Crops, 2021 Census (acres)						
Winter wheat	18,969	1,144,406	1.66	1.52	1.10	1.16
Oats for grain	2,231	84,320	2.65	1.45	1.05	1.22
Barley for grain	3,778	68,756	5.49	6.01	7.89	5.25
Mixed grains	900	59,961	1.50	2.11	2.97	3.27
Corn for grain	17,677	2,202,465	0.80	0.71	0.58	0.62
Corn for silage	3,215	289,678	1.11	1.25	1.15	0.33
Hay	33,633	1,704,017	1.97	1.89	2.13	2.04
Soybeans	27,880	2,806,255	0.99	0.95	0.65	0.82
Potatoes	6,705	39,193	17.11	9.45	16.67	15.08
Major Fruit Crops, 2021 Census (acres)						
Total fruit crops	72	48,661	0.15	0.08	0.11	0.10
Apples	19	16,008	0.12	0.04	0.23	0.13
Sour Cherries	1	1,383	0.07	-	-	-
Peaches	0	4,608	0.00	0.00	-	-
Grapes	0	18,432	0.00	0.00	0.00	-
Strawberries	23	2,633	0.87	0.89	0.40	0.45
Raspberries	4	438	0.91	0.44	0.33	1.04
Major Vegetable Crops, 2021 Census (acres)						
Total vegetables	768	127,893	0.60	0.48	0.43	0.34
Sweet corn	48	20,518	0.23	0.17	0.46	0.29
Tomatoes	15	14,614	0.10	0.06	0.02	0.01
Green peas	60	14,044	0.43	-	-	-
Green or wax beans	7	8,709	0.08	-	0.10	0.02
Cucumbers	50	4,125	1.21	-	0.06	-
Rhubarb	70	164	42.68	-	-	-
Spinach	445	687	64.77	-	-	-

Fluctuations in acreage were noted for all major field crop production with the exception of mixed grains where there was a decrease over the last 15 years. Increases were noted (as a percent of the Provincial totals) in all major field crops acreage except for barley for grain, mixed grain, and corn for silage since 2016.

Table 7 also illustrated Census 2021 data for major fruit crops and major vegetable crops in Dufferin County and provided a percent of Province comparison from the Provincial Census 2016, 2011 and 2006. With respect to fruit crops, Dufferin County was not a significant contributor to the Provincial totals for major fruit crops. Table 7 illustrated an increase in acreage for sour cherries and fluctuations in acreage for apples, strawberries, and raspberries over the last 15 years. The total fruit crop acreage also included pears, plums and prunes, blueberries (high bush), currants (black, red, and white), haskaps and other fruit berries and nuts.

Dufferin County contributed a small amount to the Provincial totals for production of vegetables. The Census data indicated an increase in Dufferin County's contribution (as a percent of the Provincial totals) for tomatoes, green peas, rhubarb, and spinach since 2006. Fluctuations in contribution were noted for sweet corn, green or wax beans and cucumber crops over the last 15 years. The total vegetable crop acreage also included broccoli, brussel

sprouts, carrots, beets, radishes, shallots and green onions, dry onions, garlic, lettuce, pumpkins, squash and zucchini, and asparagus.

Table 8 illustrated the Census 2021 data for livestock. Dufferin County was a small contributor to the Provincial totals for livestock. Fluctuations have been noted in all livestock inventories since 2006.

Dufferin County contributed a small about to the Provincial totals for poultry inventories. Fluctuations have occurred in total hens and chickens' and turkey inventories over the last 15 years, but the general trend has been an increase in contribution over the last 5 years.

Table 8 Dufferin County Census 2021 Data – Livestock

Item	Dufferin County	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Livestock Inventories, 2021 Census (number)						
Total cattle and calves	21,449	1,604,810	1.34	1.46	1.89	1.65
Steers	4,318	299,540	1.44	2.21	2.76	1.45
Beef Cows	4,331	224,194	1.93	1.73	2.34	2.25
Dairy Cows	3,098	327,272	0.95	0.82	1.04	0.94
Total Pigs	45,179	4,071,902	1.11	0.76	0.90	0.72
Total sheep and lambs	9,363	322,508	2.90	3.87	4.10	3.46
Poultry Inventories, 2021 Census (number)						
Total hens and chickens	682,588	53,802,772	1.27	0.49	0.82	0.39
Total turkeys	36,149	2,453,126	1.47	0.16	0.15	0.23

4.9.2 EAST GARAFRAXA TOWNSHIP

A review of Census 2021 data for East Garafraxa Township revealed that the total area in farms was 27,357 acres (Census Farms). Much of the farmed land was in crops with a total of 22,801 acres. The remaining lands were listed as tame or seeded pasture, natural land for pasture, Christmas trees, woodlands, and wetland and all other land.

Table 9 provided Census 2021 data for agricultural land use in East Garafraxa Township and provided a percent of Province comparison from the Provincial Census 2016, 2011, and 2006 agricultural data. As indicated in the Census data, East Garafraxa Township comprised approximately 0.25 percent of the land in crops for Census farms in Ontario (Census 2021).

In comparison to the Census 2016, 2011, and 2006 data, there were fluctuations in the acreage of all land use crops with the exception of tame or seeded pasture where there has been an increase in acreage since 2006.

Table 9 East Garafraxa Township Census 2021 Data – Land Use

Item	East Garafraxa Township	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Land Use, 2021 Census (acres)						
Land in crops	22,801	9,051,011	0.25	0.27	0.22	0.25
Summerfallow land	0	13,964	-	-	0.15	-
Tame or seeded pasture	1,342	400,480	0.34	0.17	0.15	-
Natural land for pasture	1,071	626,366	0.17	0.12	0.11	0.12
Christmas trees, woodland & wetland	1,429	1,269,535	0.11	0.11	0.07	0.09
All other land	714	404,714	0.18	-	0.12	0.24
Total area of farms	27,357	11,766,071	0.23	0.24	0.19	0.21

Table 10 provided a breakdown of the major field crops, major fruit crops, and major vegetable crops in East Garafraxa Township and provided a percent comparison from the Provincial Census 2016, 2011, and 2006. Major field crop contributions to the Provincial totals were minimal. There was a slight decrease in mixed grain contribution since 2006. Fluctuations in contribution occurred in all other major field crops over the last 15 years.

Table 10 also provided Census data for major fruit crops. East Garafraxa Township's contribution to the Provincial totals for major fruit crops was small with 3 acres of apples (Census 2021).

East Garafraxa Township has not contributed to the Provincial totals for major vegetable crops for the last 15 years (Census 2021). The total vegetables acreage included 3 acres of asparagus.

Table 10 East Garafraxa Township Census 2021 Data – Crops

Item	East Garafraxa Township	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Major Field Crops, 2021 Census (acres)						
Winter wheat	4,745	1,144,406	0.41	0.34	0.29	0.41
Oats for grain	89	84,320	0.11	-	-	0.09
Barley for grain	104	68,756	0.15	0.58	0.59	0.48
Mixed grains	70	59,961	0.12	0.13	0.14	0.25
Corn for grain	4,060	2,202,465	0.18	0.27	0.20	0.24
Corn for silage	574	289,678	0.20	0.23	0.12	0.14
Hay	4,547	1,704,017	0.27	0.22	0.19	0.23
Soybeans	8,304	2,806,255	0.30	0.33	0.19	0.24
Potatoes	0	39,193	-	-	-	-
Major Fruit Crops, 2021 Census (acres)						
Total fruit crops	3	48,661	0.01	-	-	-
Apples	3	16,008	0.02	-	-	-
Sour Cherries	0	1,383	-	-	-	-
Peaches	0	4,608	-	-	-	-
Grapes	0	18,432	-	-	-	-
Strawberries	0	2,633	-	-	-	-
Raspberries	0	438	-	-	-	-

Item	East Garafraxa Township	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Major Vegetable Crops, 2021 Census (acres)						
Total vegetables	3	127,893	0.00	-	-	-
Sweet corn	0	20,518	-	-	-	-
Tomatoes	0	14,614	-	-	-	-
Green peas	0	14,044	-	-	-	-
Green or wax beans	0	8,709	-	-	-	-

Table 11 provided the Census 2021 data for livestock for East Garafraxa Township. Increases occurred in dairy cow inventories in the last 15 years. There were fluctuations in contribution to Provincial totals from East Garafraxa Township for all other livestock inventories over the last 15 years.

East Garafraxa Township contributed a minimal amount to the Provincial totals for poultry inventories. Decreases occurred in total hens and chickens' inventories over the last 15 years.

Table 11 East Garafraxa Township Census 2021 Data – Livestock

Item	East Garafraxa Township	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Livestock Inventories, 2021 Census (number)						
Total cattle and calves	2,531	1,604,810	0.16	0.33	0.13	0.15
Steers	37	299,540	0.01	0.96	0.04	0.12
Beef cows	508	224,194	0.23	0.14	0.15	-
Dairy cows	683	327,272	0.21	0.21	0.14	-
Total pigs	6,576	4,071,902	0.16	-	0.31	0.32
Total sheep and lambs	778	322,508	0.24	0.55	0.27	0.27
Poultry Inventories, 2021 Census (number)						
Total hens and chickens	96,797	53,802,772	0.18	0.19	0.19	0.22
Total turkeys	0	2,453,126	-	-	-	-

Table 12 provided a side-by-side comparison of East Garafraxa Township and Dufferin County's Census 2021 data for crops. Table 12 also provided this comparison as a percent calculation of the contribution from East Garafraxa Township to Dufferin County (2021, 2016, 2011 and 2006).

As illustrated in Table 12, East Garafraxa Township was a significant contributor to the major field crops in Dufferin County. Increases in contribution were noted (as a percent of Dufferin County totals) for winter wheat, oats for grain, mixed grain and hay since 2016. Decreases occurred in acreage contribution for barley for grain, corn for grain and silage and soybeans over the last 5 years. There were fluctuations in the percent contribution from East Garafraxa Township to Dufferin County totals for all major field crops over the last 15 years.

With respect to major fruit crops, East Garafraxa Township's contribution to Dufferin County's major fruit totals was small with 3 acres of total fruit crops resulting in a 4.17 percent

contribution to Dufferin County's major fruit crop totals. East Garafraxa Township contributed 3 acres of apples to Dufferin County totals in 2021.

As illustrated in Table 12, East Garafraxa Township was a limited contributor to major vegetable crops in Dufferin County with 3 acres of major vegetable crops in 2021 resulting in a 0.39 percent contribution to Dufferin County's totals. East Garafraxa Township contributed 3 acres of asparagus to Dufferin County totals in 2021.

Table 12 Comparison of Township and Regional Municipality Census 2021 Data - Crops

Item	East Garafraxa Township	Dufferin County	Percent of Dufferin County 2021	Percent of Dufferin County 2016	Percent of Dufferin County 2011	Percent of Dufferin County 2006
Major Field Crops, 2021 Census (acres)						
Winter wheat	4,745	18,969	25.01	22.17	26.74	35.06
Oats for grain	89	2,231	3.99	-	-	7.46
Barley for grain	104	3,778	2.75	9.70	7.53	9.15
Mixed grains	70	900	7.78	6.39	4.72	7.78
Corn for grain	4,060	17,677	22.97	38.26	34.59	38.80
Corn for silage	574	3,215	17.85	18.68	10.60	12.97
Hay	4,547	33,633	13.52	11.78	8.77	11.23
Soybeans	8,304	27,880	29.78	34.46	29.25	29.58
Potatoes	0	6,705	-	-	-	-
Major Fruit Crops, 2021 Census (acres)						
Total fruit crops	3	72	4.17	-	-	-
Apples	3	19	15.79	-	-	-
Sour Cherries	0	1	-	-	-	-
Peaches	0	0	-	-	-	-
Grapes	0	0	-	-	-	-
Strawberries	0	23	-	-	-	-
Raspberries	0	4	-	-	-	-
Major Vegetable Crops, 2021Census (acres)						
Total vegetables	3	768	0.39	-	-	-
Sweet corn	0	48	-	-	-	-
Tomatoes	0	15	-	-	-	-
Green peas	0	60	-	-	-	-
Green or wax beans	0	7	-	-	-	-

Table 13 provides a side-by-side comparison of East Garafraxa Township and Dufferin County Census (2021) data for livestock and poultry inventories. As illustrated in Table 13, East Garafraxa Township contributed 22.05 percent in dairy cows, 14.56 percent in total pigs, 11.80 percent in total cattle and calves, 11.73 percent in beef cows, 8.31 percent in total sheep and lambs and 0.86 percent in steers to Dufferin County's 2021 livestock inventories. A further review of the Census data indicated that there were increases in East Garafraxa Township's contribution to the Dufferin County inventories for beef cows and total pigs, and decreases in contribution for total cattle and calves, steers, dairy cows and total sheep and lambs over the last 5 years.

East Garafraxa Township contributed 14.18 percent of Dufferin County's total hens and chickens' inventories in 2021.

Table 13 Comparison of Township and Regional Municipality Census 2021Data – Livestock

Item	East Garafraxa Township	Dufferin County	Percent of Dufferin County 2021	Percent of Dufferin County 2016	Percent of Dufferin County 2011	Percent of Dufferin County 2006
Livestock Inventories, 2021 Census (number)						
Total cattle and calves	2,531	21,449	11.80	22.83	6.75	6.74
Steers	37	4,318	0.86	43.56	1.28	8.09
Beef cows	508	4,331	11.73	8.36	6.42	-
Dairy cows	683	3,098	22.05	25.82	13.36	-
Total pigs	6,576	45,179	14.56	-	34.88	43.78
Total sheep and lambs	778	9,363	8.31	13.61	6.50	7.86
Poultry Inventories, 2021 Census (number)						
Total hens and chickens	96,797	682,588	14.18	38.18	23.23	55.98
Total turkeys	0	36,149	-	0.80	0.86	-

4.9.3 Amaranth Township

A review of Census 2021 data for Amaranth Township revealed that the total area in farms was 25,074 acres (Census Farms). Much of the farmed land was in crops with a total of 19,424 acres. The remaining lands were listed as summerfallow land, tame or seeded pasture, natural land for pasture, Christmas trees, woodlands, and wetland and all other land.

Table 14 provided Census 2021 data for agricultural land use in Amaranth Township and provided a percent of Province comparison from the Provincial Census 2016, 2011 and 2006 agricultural data. As indicated in the Census data, Amaranth Township comprised approximately 0.21 percent of the land in crops for Census farms in Ontario (Census 2021).

In comparison to the Census 2016, 2011 and 2006 data, there have been fluctuations in acreage of all land use crops with the exception of land in crops and total area farms where there has been a decrease in acreage since 2006.

Table 14 Amaranth Township Census 2021 Data – Land Use

Item	Amaranth Township	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Land Use, 2021 Census (acres)						
Land in crops	19,424	9,051,011	0.21	0.22	0.22	0.27
Summerfallow land	214	13,964	1.53	-	-	0.22
Tame or seeded pasture	917	400,480	0.23	0.35	0.29	0.44
Natural land for pasture	1,155	626,366	0.18	0.16	0.18	0.21
Christmas trees, woodland & wetland	1,527	1,269,535	0.12	0.19	0.18	0.16
All other land	1,836	404,714	0.45	-	-	0.23
Total area of farms	25,074	11,766,071	0.21	0.22	0.22	0.26

Table 15 provided a breakdown of the major field crops in Amaranth Township and provides a percent comparison from the Provincial Census 2016, 2011 and 2006. Amaranth Township contributed a limited amount to the Provincial totals for major field crops, major fruit crops, and major vegetable crops.

Major field crop contributions to the Provincial totals are limited. There have been slight increase in oats for grain, soybeans and potato crop contribution since 2006. Fluctuations were noted in all other major field crop contributions over the last 15 years.

Table 15 also provided Census data for major fruit crops. Amaranth Township's contribution to the Provincial totals for major fruit crops was small with 7 acres of strawberries, 3 acres of apples, 1 acres of sour cherries (Census 2021). Pears, plums and prunes, and currants are also included in the total fruit crop acreage.

Amaranth Township's contribution to the Provincial totals for major vegetable crops was small with 1 acre of sweet corn and 1 acre of tomatoes (Census 2021). Cauliflower, broccoli, garlic, lettuce, and pumpkins are also included in the total vegetable crop acreage.

Table 15 Amaranth Township Census 2021 Data – Crops

Item	Amaranth Township	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Major Field Crops, 2021 Census (acres)						
Winter wheat	1,630	1,144,406	0.14	0.18	0.18	0.14
Oats for grain	621	84,320	0.74	0.41	0.38	0.30
Barley for grain	1,127	68,756	1.64	1.37	1.14	1.53
Mixed grains	135	59,961	0.23	0.31	0.77	0.69
Corn for grain	2,942	2,202,465	0.13	0.12	0.06	0.12
Corn for silage	817	289,678	0.28	0.21	0.11	0.28
Hay	7,105	1,704,017	0.42	0.42	0.41	0.43
Soybeans	3,370	2,806,255	0.12	0.12	0.12	0.10
Potatoes	4	39,193	0.01	-	-	-
Major Fruit Crops, 2021 Census (acres)						
Total fruit crops	15	48,661	0.03	-	0.01	0.03
Apples	3	16,008	0.02	-	-	-
Sour Cherries	1	1,383	0.07	-	-	-
Peaches	0	4,608	-	-	-	-
Grapes	0	18,432	-	-	-	-
Strawberries	7	2,633	0.27	-	-	-
Raspberries	0	438	-	-	-	0.26
Major Vegetable Crops, 2021 Census (acres)						
Total vegetables	16	127,893	0.01	-	0.09	0.07
Sweet corn	1	20,518	0.00	-	-	-
Tomatoes	1	14,614	0.01	0.05	-	-
Green peas	0	14,044	-	0.02	-	-
Green or wax beans	0	8,709	-	0.02	0.01	-

Table 16 provided the Census 2021 data for livestock for Amaranth Township. Increases in contribution have been noted for total pigs since 2006 (Census 2021). Decreases have occurred in steer and beef cow inventories over the last 15 years. Total cattle and calves, dairy cows and

total sheep and lambs' inventories have fluctuated since 2006. Amaranth Township contributed 86,463 total hens and chickens and 10,063 turkeys to the Provincial totals in 2021.

Table 16 Amaranth Township Census 2021 Data – Livestock

Item	Amaranth Township	Province	Percent of Province 2021	Percent of Province 2016	Percent of Province 2011	Percent of Province 2006
Livestock Inventories, 2021 Census (number)						
Total cattle and calves	3,803	1,604,810	0.24	0.30	0.25	0.43
Steers	410	299,540	0.14	0.37	0.43	0.69
Beef cows	805	224,194	0.36	0.36	0.38	0.39
Dairy cows	868	327,272	0.27	0.18	0.13	0.30
Total pigs	15,405	4,071,902	0.38	0.23	0.19	0.17
Total sheep and lambs	2,067	322,508	0.64	0.56	0.46	0.85
Poultry Inventories, 2021 Census (number)						
Total hens and chickens	86,465	53,802,772	0.16	-	-	-
Total turkeys	10,063	2,453,126	0.41	-	-	-

Table 17 provided a side-by-side comparison of Amaranth Township and Dufferin County's Census 2021 data for crops. Table 17 also provided this comparison as a percent calculation of the contribution from Amaranth Township to Dufferin County (2021, 2016, 2011 and 2006).

As illustrated in Table 17, Amaranth Township was a significant contributor to the major field crops in Dufferin County. Increases in contribution have been noted (as a percent of Dufferin County totals) for barley for grain, mixed grains, corn for silage and potatoes over the last 5 years. Decreases have occurred in acreage contribution for winter wheat, oats for grain, corn for grain, hay, and soybeans since 2016. There have been fluctuations in the percent contribution from Amaranth Township to Dufferin County totals for all major field crops except potatoes over the last 15 years.

With respect to major fruit crops, Amaranth Township's contribution to Dufferin County's major fruit totals was small with 15 acres of total fruit crops resulting in a 20.83 percent contribution to Dufferin County's totals. Amaranth Township contributed 7 acres of strawberries, 3 acres of apples, and one acre of sour cherries to Dufferin County in 2021. Also included the contribution is 1 acre each of pears, plums and prunes and currants in 2021.

As illustrated in Table 17, Amaranth Township's contribution to Dufferin County's major vegetable crop inventories was small with one acre of sweet corn and one acre tomatoes in 2021. Other crops included in Amaranth Township's contribution to total vegetables crops in 2021 were 7 acres of cauliflower, 2 acres each of broccoli and pumpkins, and 1 acre each of garlic and lettuce.

Table 17 Comparison of Township and Regional Municipality Census 2021 Data - Crops

Item	Amaranth Township	Dufferin County	Percent of Dufferin County 2021	Percent of Dufferin County 2016	Percent of Dufferin County 2011	Percent of Dufferin County 2006
Major Field Crops, 2021 Census (acres)						
Winter wheat	1,630	18,969	8.59	11.66	16.45	12.21
Oats for grain	621	2,231	27.84	28.01	35.74	24.32
Barley for grain	1,127	3,778	29.83	22.78	14.42	29.10
Mixed grains	135	900	15.00	14.88	25.77	21.01
Corn for grain	2,942	17,677	16.64	16.98	11.01	19.87
Corn for silage	817	3,215	25.41	17.08	9.99	26.93
Hay	7,105	33,633	21.13	22.38	19.23	21.12
Soybeans	3,370	27,880	12.09	12.70	18.13	12.71
Potatoes	4	6,705	0.06	-	-	-
Major Fruit Crops, 2021 Census (acres)						
Total fruit crops	15	72	20.83	-	5.17	27.69
Apples	3	19	15.79	-	-	-
Sour Cherries	1	1	100.00	-	-	-
Peaches	0	0	-	-	-	
Grapes	0	0	-	-	-	-
Strawberries	7	23	30.43	-	-	-
Raspberries	0	4	-	-	-	25.00
Major Vegetable Crops, 2021Census (acres)						
Total vegetables	16	768	2.08	-	21.80	20.11
Sweet corn	1	48	2.08	-	36.08	-
Tomatoes	1	15	6.67	80.00	-	-
Green peas	0	60	-	-	-	-
Green or wax beans	0	7	-	-	11.11	-

Table 18 provided a side-by-side comparison of Amaranth Township and Dufferin County Census (2021) data for livestock and poultry inventories. As illustrated in Table 18, Amaranth Township contributed 34.10 percent in total pigs, 28.02 percent in dairy cows, 22.08 percent in total sheep and lambs, 18.59 percent in beef cows, 17.73 percent in total cattle and calves and 9.50 percent in steers to Dufferin County's 2021 inventories. A review of the Census data indicates that there have been increases in Amaranth Township's contribution to the Dufferin County's total dairy cows', total pigs and total sheep and lambs' inventories and decreases to total cattle and calves, steers and beef cows over the last 5 years.

Amaranth Township contributed 12.67 percent of Dufferin County's total hens and chickens' inventories and 27.84 percent of total turkeys' inventories in 2021.

Table 18 Comparison of Township and Regional Municipality Census 2021Data – Livestock

Item	Amaranth Township	Dufferin County	Percent of Dufferin County 2021	Percent of Dufferin County 2016	Percent of Dufferin County 2011	Percent of Dufferin County 2006
Livestock Inventories, 2021 Census (number)						
Total cattle and calves	3,803	21,449	17.73	20.22	11.22	26.34
Steers	410	4,318	9.50	16.92	15.72	47.48
Beef cows	805	4,331	18.59	20.96	16.27	17.21
Dairy cows	868	3,098	28.02	22.31	12.48	31.91
Total pigs	15,405	45,179	34.10	30.69	20.60	24.16
Total sheep and lambs	2,067	9,363	22.08	14.41	11.20	24.70
Poultry Inventories, 2021 Census (number)						
Total hens and chickens	86,465	682,588	12.67	-	99.50	-
Total turkeys	10,063	36,149	27.84	-	1.11	-

5 RESOURCE ALLOCATION AND CONFLICT POTENTIAL

Land use planning decisions involves trade-offs among the competing demands for land. The fundamental base used for the evaluation of agricultural lands is land quality, i.e. CLI soil capability ratings. Within the rural/urban interface, there are a number of other factors which contribute to the long-term uncertainty of the economic viability of the industry and these, in turn, are reflected in the lack of investments in agricultural facilities, land and infrastructure and changes to agricultural land use patterns in these areas. Several of these factors include, but are not limited to, the presence of rural non-farm residents, land fragmentation, intrusions of non-agriculture land uses, non-resident ownership of lands and inflated land values. This section summarizes the impact of these factors on agriculture in the area.

5.1 IMPACTS, ASSESSMENT AND COMPATIBILITY WITH SURROUNDING LAND USES

The identification and assessment of potential impacts is paramount to determining potential mitigation measures to either eliminate or offset the impact to the extent feasible. Potential impacts may include:

- Interim or permanent loss of agricultural lands
- Fragmentation of agricultural lands and operations
- The loss of existing and future farming opportunities
- The loss of infrastructure, services or assets
- The loss of investments in structures and land improvements
- Disruption or loss of functional drainage systems
- Disruption or loss of irrigation systems
- Changes to soil drainage
- Changes to surface drainage
- Changes to landforms
- Changes to hydrogeological conditions
- Disruption to surrounding farm operations
- Effects of noise, vibration, dust
- Potential interim compatibility concerns
- Traffic concerns

It should be noted that this AIA report should be read in conjunction with any and all other discipline/specialist reports in an effort to provide an adequate evaluation of the above-mentioned potential impacts.

The agricultural character of the PSA and the SSA has been documented within this AIA report. It has been determined that the PSA comprised portions of active agricultural land uses (cash crop) in combination with built-up/disturbed lands, and small areas of forage/pasture, open field, scrublands, and woodland areas.

The SSA was comprised of agricultural uses (cash crop, forage/pasture, open field), commercial, industrial, rural residential, built-up/disturbed areas (including urban, railway, and existing road network), scrublands, and woodland areas.

Should the PSA be developed for a road realignment, the impact on the surrounding agricultural operations will be minimal.

With respect to the potential impacts as listed on Page 60 of this AIA report:

- Interim or permanent loss of agricultural lands – there will be a permanent loss of the use of some agricultural lands as a result of the proposed road realignment.
- Fragmentation of agricultural lands and operations – there will be fragmentation of agricultural lands due to the creation of severed parcels along County Road 23.
- The loss of existing and future farming opportunities – there will be a loss of existing or future farming opportunities on a portion of the one designated agricultural parcel (southwest corner of the intersection of County Road 3 and County Road 23).
- The loss of infrastructure, services, or assets – there will be no loss of infrastructure, services or assets as a result of the proposed road realignment.
- The loss of investments in structures and land improvements – there will be no loss of investments in structures and land improvements as a result of the proposed road realignment.
- Disruption or loss of functional drainage systems – there will be no loss of investment in drainage systems as a result of the proposed road realignment.
- Disruption or loss of irrigation systems – there will be no loss of investment in irrigation systems.
- Changes to soil drainage – there will be no change in soil drainage in the PSA or the SSA as a result of the proposed road realignment.
- Changes to surface drainage – there should be no change in surface drainage in the SSA as a result of the proposed road realignment.
- Changes to landforms – there will be no change to landforms in the SSA as a result of the proposed road realignment.
- Changes to hydrogeological conditions – should be addressed under separate cover by a hydrogeological consultant.
- Disruption to surrounding farm operations – there should be limited potential for disruption on surrounding/adjacent farm operations on completion of the construction of the proposed road realignment. There may be limited disruption to agricultural traffic during the construction phase of the proposed road realignment.
- Effects of noise, vibration, dust - there should be limited potential for noise, vibration, and dust on the adjacent properties once the construction phase is completed. There is a potential for noise, vibration, and dust during the initial construction phase.

- Potential interim compatibility concerns – there should be limited potential for compatibility concerns due to the presence of existing and active road network (infrastructure) in the immediate local area.
- Traffic concerns – the proposed road realignment will provide smoother transitions at intersections within the PSA. As a result, on completion of the construction, there should be minimal traffic concerns.

Given the existing land use pattern in the vicinity of the PSA, the proposed road realignment should not have a significant impact on agriculture in the area.

5.2 TRAFFIC, TRESPASS AND VANDALISM

Specific to agriculture, increased vehicle traffic along roadways can lead to safety issues with respect to the movement of slow moving, long, wide farm machinery and, as well, interrupt or alter farm traffic flow patterns. As indicated above, the proposed road realignment of the well-used existing road network will allow for smoother traffic flow at intersections within the PSA. As a result, on completion of the construction activities, there should be minimal traffic concerns for the local farm operations.

Trespassing and vandalism impacts are generally related to development within agricultural areas predominated by specialty crop operations or large livestock operations, and in areas of close proximity to urban environments. On completion of the proposed road realignment construction, there will be no new opportunities for trespassing on the local agricultural lands. Further, there are no specialty crop areas, or livestock facilities within the PSA. Therefore, the proposed road realignment will have limited impact with respect to trespassing and vandalism on adjacent agricultural operations.

5.3 AGRICULTURAL INFRASTRUCTURE

The roadside reconnaissance survey did not identify any agricultural equipment dealers, seed dealers/cleaning/drying services or farm equipment maintenance service businesses within the PSA or the SSA.

The roadside reconnaissance survey did identify the presence of the Holmes Agro (agricultural seeds, infrastructure, service) just outside the SSA to the west.

The review of the OMAFRA Agricultural System Portal was completed to identify the presence of any livestock assets and services (renderers, meat plants, abattoirs), refrigerated warehousing and storage, frozen food manufacturing, farm markets, wineries, or cideries within the PSA. None of these features were identified within either the PSA, or the SSA.

The proposed road realignment will not impact any agricultural assets and services (renderers, meat plants, abattoirs), refrigerated warehousing and storage, frozen food manufacturing, farm markets, wineries, or cideries.

5.4 MITIGATION MEASURES

The Growth Plan for the Greater Golden Horseshoe defines an Agricultural Impact Assessment as:

> *A study that evaluates the potential impacts of non-agricultural development on agricultural operations and the Agricultural System and recommends ways to avoid or, if avoidance is not possible, minimize and mitigate adverse impacts. (Greenbelt Plan).*

With respect to this AIA, the following sections provide comment with regard to the avoidance, minimization, and mitigation of any potential adverse impacts.

5.4.1 Avoidance

Any change in land use within or adjacent to an identified or designated prime agricultural area or rural area will result in the potential for impacts to the adjacent agricultural area or rural area. The severity of the potential impacts is related to the type and size of the change in land use, and the degree of agricultural activities and operations in the surrounding area.

The first method of addressing potential impacts is to avoid the potential impact. In this study, the proposed road realignment will be a permanent use of designated agricultural lands in an area of agricultural land uses.

As stated previously in this AIA, the proposed road realignment involves the intersections of County Road 109, County Road 3, County Road 23, and 2nd Line. A portion of the road realignment between County Road 3 and County Road 23 will result in the loss of a portion of designated agricultural lands. The loss of these lands cannot be avoided.

5.4.2 Minimizing Impacts

When avoidance is not possible, the next priority would be to minimize impacts to the extent feasible. Mitigation measures should be developed to lessen the potential impacts. The minimization of impacts can often be achieved during the design process and through proactive planning measures that provide for the separation of incompatible land uses.

In this instance (proposed road realignment), efforts have been made during the design process to minimize the impacts to agricultural lands by creating the road realignment as close to the urban area of Orangeville as possible, with respect to the engineering requirements for road safety.

In this way, the long-term prime agricultural designation and future agricultural use of the remaining designated agricultural lands has been maintained, resulting in a minimization of the impact.

5.4.3 Mitigating Impacts

When avoidance techniques and minimizing potential impacts to agriculture have not achieved the desired effect the next priority was to mitigate any further impact. As this project is a proposed road realignment, the typical mitigation measures that are often utilized to protect agricultural interests need to be modified.

Typical mitigation measures often include the following which may or may not be appropriate for this project.

- The use of natural heritage feature or a road to separate agriculture from non-agricultural land uses to create a defined boundary to reduce trespassing and potential vandalism. In this instance, the PSA is a proposed road realignment.
- The creation of berms or vegetated features between the different types and intensities of land uses may reduce the potential for trespassing and potential vandalism.
- The use of adequate fencing to reduce the potential for trespassing and potential vandalism.
- The use of signage between the different types and intensities of land uses to indicate No Trespassing, and/or Private Property.
- The use of plantings/vegetation as buffers to reduce visual impacts and sounds.
- The use of reduced speed limits in the agricultural areas.
- The use of controlled intersections will provide for a safer traffic environment for slow moving agricultural equipment.
- Creation of drainage ditches to maintain surface water drainage from adjacent agricultural lands.
- The use of tall streetlights or lighting that is directed down (light shielding) and away from agricultural lands. Limit the use of any type of lighting (high pressure sodium (HPS) lights (LED lights are known to interfere with soybean production) that have a negative effect on agricultural lands, livestock, or crops.
- Restore impacts to tile drainage systems.
- Maintain local roads during construction to allow access for the movement of oversized agricultural equipment.

Specific to this project, mitigation measures would include:

- Maintaining field and farm operation access.
- Creation of new roadside drainage ditches and maintaining the existing roadside drainage ditch system to allow for continued surface drainage patterns.
- Limiting the use of tall streetlights that cast or direct light onto agricultural fields. Certain light systems have a negative effect on agricultural crops (soybean in particular).
- Maintaining local road access or traffic detouring during construction to allow access for the movement of oversized agricultural vehicles and equipment.

- The use of appropriate signage (as necessary) to direct traffic during construction.
- Implementing erosion control measures (silt fencing, mulch, erosion control blankets, etc) during construction.
- Applying seed and mulch, or erosion control blankets in areas of soil disturbance to provide adequate and long-term slope protection.
- Placing strawbales or other flow checks in ditches down slope from areas of soil disturbance.

Therefore, as per the OMAFRA draft AIA Guidance Document, this AIA has provided comments on the avoidance, minimizing potential impacts and mitigation measures for the proposed road realignment on the PSA lands.

6 SUMMARY AND CONCLUSIONS

DBH Soil Services Inc was retained to complete an Agricultural Impact Assessment (AIA) Report for a recommended plan of a four-legged signalized intersection connecting Dufferin County Road 109, 2nd Line and County Road 3. In this plan, the proposed 2nd Line is realigned to the east of the existing 2nd Line south of County Road 109; County Road 109 and County Road 3. Existing County Road 3 is realigned at the intersection such that the connection meets at a 90-degree angle and a tangent with County Road 109. County Road 23 is realigned further south of the existing County Road 23 to ensure the intersection of County Road 3 and County Road 23 doesn't conflict with the proposed four-legged intersection.

This proposed road realignment is located along the border of the Townships of Amaranth and East Garafraxa, in Dufferin County. The proposed realignment abuts the urban area of the town of Orangeville.

For this study, the proposed realignment was referred to as the Primary Study Area (PSA). The PSA lands include portions of County Road 109, 2nd Line, County Road 3, and County Road 23.

For the purpose of this AIA, agricultural operations and activities were evaluated in a larger area, described as the zone of impact extending for 500 m (0.5 km) beyond the boundary of the PSA. This larger area, was called the Secondary Study Area (SSA), comprises 500 m (0.5km) area outside the PSA to allow for characterization of the agricultural community and the assessment of impacts adjacent to and in the immediate vicinity of the PSA.

A summary of the results of this AIA are presented below:

- **Geographical Limits**

  The PSA and the SSA were located within the Dundalk Till Plain physiographic region.

  The Dundalk Till Plain was characterized as an area of undulating till plain. In the main part of the till plain, the flutings run southeastward. Swamps, bogs, and poorly drained areas occur in the depressional areas of the flutings.

  The PSA was considered as gently undulating, with the overall topography sloping to the south, southeast. The topography of the SSA is also considered as gently undulating, with the higher elevations occurring in the west and sloping to the east. The slopes within the SSA slope down from the west to the south and the southeast.

  The PSA and SSA are located between the 2700 and 2900 Crop Heat Units isolines (CHU-M1) available for corn production in Ontario.

The PSA and SSA are located in the OMAFRA Climate Zone D and have an average Frost-Free period of 130-165 days, an Average Date of Last Spring Frost of May 11, and an Average Date of First Fall Frost of October 1.

The PSA comprised approximately 68.5 percent Canada Land Inventory (CLI) capability of Class 1 – 3, with approximately 4.0 percent as Class 1, 41.1 percent as Class 2, and 23.4 percent as Class 3. Approximately 14.5 percent of the PSA was identified as Class 5 lands, with the remaining 17.0 percent identified as not rated.

The SSA comprised approximately 68.5 percent Canada Land Inventory (CLI) capability of Class 1 – 3, with approximately 9.7 percent as Class 1, 33.9 percent as Class 2, and 24.9 percent as Class 3. Approximately 13.9 percent of the SSA was identified as Class 5 lands, with the remaining 17.6 percent of the lands not rated.

- **Agricultural Policy**

A review of the boundaries of the Growth Plan for the Greater Golden Horseshoe (2019) area determined that portions of the PSA and the SSA comprise Prime Agricultural Areas. No areas of provincially designated Specialty Crop lands were identified in either the PSA or the SSA.

A review of the Greenbelt Plan (2017) mapping indicated that the PSA and portions of the SSA were located within the Greenbelt Plan area. The whole of the PSA and the portions of the SSA that were within the Greenbelt Plan Area are considered as Protected Countryside.

The review indicated that no portions of the PSA or the SSA are located within the Niagara Escarpment Plan area or the Oak Ridges Moraine Conservation Plan area.

A review of the *Dufferin County Official Plan – Office Consolidation July 17, 2017, Schedule B – Community Structure and Land Use* identified that portions of the PSA and the SSA were comprised of designated Countryside Area, Community Settlement Area, Primary Settlement Area (Urban Settlement Area), and part of the Provincial Plan.

A review of the *Dufferin County Official Plan – Office Consolidation July 17, 2017, Schedule C – Agricultural Area and Rural Lands* identified that portions of the PSA and the SSA were comprised of designated Agricultural Area lands.

There are no Specialty Crop Areas in the County.

Approximately 1.3 ha of designated Prime Agricultural Land will be utilized for the proposed road realignment.

A review of the *Township of Amaranth (Office Consolidation June 2018) Schedule A-3 – Land Use & Transportation* identified that the PSA (in the Township of Amaranth) was comprised

of Employment Area, while the SSA comprised Employment Area and a small portion of Environment Protection, Community Rural, and Community Institutional.

A review of the *Official Plan for the Township of East Garafraxa (Includes Final MMAH Modifications – October 26, 2005) Schedule A – Land Use & Transportation* identified that the PSA and the SSA (in the Township of East Garafraxa) was comprised of Agricultural, and Employment areas.

The review of the *Township of Amaranth Zoning By-law 2-2009 (Township Consolidation December 2021)* identified that all of the PSA appears to be located in C1 (General Commercial) zoning. Portions of the SSA comprise M1 (Industrial), C1 (General Commercial), C2 (Highway Commercial), and EP3 (Environmental Protection).

The review of the *Township of East Garafraxa Zoning By-law 60-2004 (January 2011)* identified that the PSA and the SSA comprise BP (Business Park), CH (Highway Commercial), and A (Agricultural) zoning.

No portions of the PSA or the SSA were located within any provincially or municipally designated Specialty Crop Area.

- **Agricultural Land Use**

The PSA existing land use was comprised of approximately 26.6 percent as built-up/disturbed areas, 51.9 percent as common field crop (soybean, corn), 6.8 percent as forage/pasture areas, 9.5 percent as open field, 4.7 percent as scrublands, and 0.5 percent as woodland areas.

The SSA existing lands use comprised approximately 33.7 percent as built up/disturbed areas, 54.2 percent as common field crop (soybean, corn), 2.6 percent as forage/pasture lands, 4.5 percent as open field, 0.5 percent as railway, 2.0 percent as scrublands, and 2.5 percent as woodland areas.

The relatively high amount of land in non-agricultural land use is typical of areas in close proximity to urban spaces and an existing road network. This amount of non-agricultural land use is expected for a study where the purpose of the project is realigning an existing road network.

- **Agricultural Investment**

A total of 2 agricultural buildings were identified within the SSA. No agricultural buildings were observed in the PSA. One building was a machine shed/garage, while the other building was a pole barn. Both buildings appear to be used for storage. No livestock was noted at the pole barn.

There will be no direct impacts to the agricultural buildings identified in the SSA as a result

of the construction of the proposed road realignment.

There is no investment in artificial tile drainage or irrigation in the PSA and the SSA.

There is no investment in landforming for agricultural purposes in either the PSA or the SSA.

Minimum Distance Separation I (MDS I) calculations were not completed for this AIA, as MDS is not required for an infrastructure project.

A review of the online Agricultural System Portal (OMAFRA) indicated that there were no nurseries, specialty farms (crop or livestock), frozen food manufacturing, refrigerated warehousing/storage, livestock assets or abattoirs in the PSA or the SSA.

There are no agricultural services within the PSA or the SSA.

There are possibly six water wells located within the PSA, and numerous water wells located within the SSA, as based on data from MECP. The proposed development of the PSA will need to ensure that the MECP identified water wells are appropriately considered.

The closest transportation network (major roadway) is County Road 109 (within the PSA and the SSA) and County Roads 3 and 23.

- **Land Fragmentation and Severance**

Land fragmentation represents a major impact to the long-term viability of agriculture in the SSA and is typical of areas under pressure from non-agricultural land uses.

The PSA included portions of the urban area of the Town of Orangeville. Additional smaller parcels were noted along County Road 3. The review of fragmentation in the SSA revealed similar conditions with a portion of the SSA comprising small parcels within the Town of Orangeville. The parcel count for the PSA and the SSA indicates the presence of numerous small parcels, and fewer larger parcels. This type of fragmentation pattern is common in areas near urban boundaries and within the Greater Toronto Area (GTA) and Greater Golden Horseshoe (GGH) areas.

The proposed development of the PSA will result in the creation of three severed parcels from one parcel (two smaller pieces plus the larger remaining piece of the original parcel west of the proposed road realignment. Two smaller areas will be severed from the original parcel. The two smaller areas comprise 1.24 ha and 0.2 ha. The remainder of the large parcel is located west of the proposed road realignment. None of the three created parcels (two severed pieces plus the remaining portion of the original parcel) will be landlocked and each of the three parcels will have at least one side along an existing road.

The foregoing represents a comprehensive AIA with the purpose of evaluating the PSA and SSA to document the existing agricultural character and to determine any potential impacts to agriculture as a result of the proposed road realignment on the PSA lands.

Given the geographical location of these lands, it is the conclusion of this study that the proposed development of the PSA lands will result in a minimal loss of lands presently used for agricultural production.

The proposed road realignment on the PSA will have limited impact on the surrounding agricultural activities within the SSA.

Sincerely
DBH Soil Services Inc.

Dave Hodgson, P. Ag
President

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APPENDIX A

AGRICULTURAL BUILDINGS LIST

Property Information			Online Imagery Survey							Roadside Reconnaissance Survey				
Agricultural Building Number	Address	Roll Number	Residential Unit	Type of Building	"Line of Sight" Restriction	Additional Details	Evidence of Livestock	Evidence of Feed Storage	Evidence of Manure Storage	Findings	Visual Evidence of Livestock	Visual Evidence of Feed Storage	Visual Evidence of Manure Storage	Additional Details
1	065407 County Road 3	220100000316200	Y	Pole Barn	N	Assumed storage Back part being used as storage for vehicle	N	N	N		N	N	N	
2	065407 County Road 3	220100000316200	Y	Machine Shed/Garage	N						N	N	N	

APPENDIX B

AGRICULTURAL BUILDING PHOTOGRAPHS

Agricultural Buildings 1 and 2

APPENDIX C

Unique Soil Symbols and Canada Land Inventory (CLI) List

SOILCODE 1	SLOPE 1	CLASS 1	RANGE 1	STONINESS 1	CLI1	CLI1_ 1	CLI1_ 2
ALT	1.2	B	0.5 - 2	0	3	F	
BAY	1.2	B	0.5 - 2	0	2	F	
BAY	1.2	B	0.5 - 2	1	2	F	
BAY	3.5	C	2 - 5	0	2	F	
BDH	7.0	D	5 - 9	1	1		
BDH	12.0	E	9 - 15	3	1		
BFO	7.0	D	5 - 9	0	1		
BKN	1.2	B	0.5 - 2	0	2	W	
BKN	1.2	B	0.5 - 2	1	2	W	
BKN	12.0	E	9 - 15	0	2	W	
BKN	1.2	B	0.5 - 2	1	3	W	
BNG	7.0	D	5 - 9	0	1		
BNG	7.0	D	5 - 9	1	1		
BNG	12.0	E	9 - 15	0	1		
BOO	3.5	C	2 - 5	0	2	F	M
BOO	7.0	D	5 - 9	0	2	F	M
BOO	12.0	E	9 - 15	0	2	F	M
BRT	3.5	C	2 - 5	0	1		
BRT	7.0	D	5 - 9	0	1		
BRT	12.0	E	9 - 15	0	1		
BSB	1.2	B	0.5 - 2	0	2	F	
BSB	1.2	B	0.5 - 2	1	2	F	
BSB	3.5	C	2 - 5	1	2	F	
BUF	1.2	B	0.5 - 2	1	2	M	
BUF	3.5	C	2 - 5	0	2	M	
BUF	3.5	C	2 - 5	1	2	M	
BUF	3.5	C	2 - 5	2	2	M	
BUF	7.0	D	5 - 9	1	2	M	
BVY	1.2	B	0.5 - 2	0	2	W	
BVY	3.5	C	2 - 5	0	2	W	
CAD	3.5	C	2 - 5	0	2	F	M
CAD	3.5	C	2 - 5	1	2	F	M
CAD	3.5	C	2 - 5	2	2	F	M
CAD	7.0	D	5 - 9	0	2	F	M
CAD	7.0	D	5 - 9	1	2	F	M
CAD	7.0	D	5 - 9	2	2	F	M
CAD	12.0	E	9 - 15	1	2	F	M
CMB	1.2	B	0.5 - 2	0	2	W	
CMB	1.2	B	0.5 - 2	1	2	W	
CMB	1.2	B	0.5 - 2	2	2	W	

SOILCODE 1	SLOPE 1	CLASS 1	RANGE 1	STONINESS 1	CLI1	CLI1_1	CLI1_2
CMB	3.5	C	2 - 5	0	2	W	
CML	1.2	B	0.5 - 2	0	1		
CML	3.5	C	2 - 5	0	1		
CWO	1.2	B	0.5 - 2	0	2	W	
CWO	1.2	B	0.5 - 2	1	2	W	
CWO	1.2	B	0.5 - 2	2	2	W	
CWO	3.5	C	2 - 5	0	2	W	
DUD	12.0	E	9 - 15	1	4	D	T
DUD	22.5	F	15 - 30	2	4	D	T
DUD	22.5	F	15 - 30	3	4	D	T
DUD	57.5	H	45 - 70	1	7	E	T
DUD	57.5	H	45 - 70	3	7	E	T
DUF	7.0	D	5 - 9	0	3	F	M
DUF	12.0	E	9 - 15	2	3	M	P
DUF	12.0	E	9 - 15	3	3	M	P
DUF	22.5	F	15 - 30	2	3	M	P
DUF	22.5	F	15 - 30	3	3	P	M
DUF	37.5	G	30 - 45	3	3	P	M
DUF	12.0	E	9 - 15	1	6	M	T
DUF	12.0	E	9 - 15	3	6	M	T
DUF	22.5	F	15 - 30	1	6	M	T
DUF	22.5	F	15 - 30	2	6	M	T
DUF	22.5	F	15 - 30	3	6	M	T
DUF	37.5	G	30 - 45	3	6	M	T
DUF	37.5	G	30 - 45	4	6	P	T
DUF	57.5	H	45 - 70	3	6	P	T
DUF	57.5	H	45 - 70	2	7	T	
DUF	57.5	H	45 - 70	3	7	T	
DUL	7.0	D	5 - 9	0	1		
DUL	12.0	E	9 - 15	0	1		
DYK	7.0	D	5 - 9	3	6	M	T
DYK	12.0	E	9 - 15	1	6	M	T
DYK	12.0	E	9 - 15	2	6	M	T
DYK	12.0	E	9 - 15	3	6	M	T
DYK	22.5	F	15 - 30	2	6	M	T
DYK	22.5	F	15 - 30	3	6	M	T
DYK	37.5	G	30 - 45	3	6	M	T
EBR	1.2	B	0.5 - 2	0	1		
EBR	1.2	B	0.5 - 2	1	1		
EBR	1.2	B	0.5 - 2	3	1		
EBR	3.5	C	2 - 5	0	1		

SOILCODE 1	SLOPE 1	CLASS 1	RANGE 1	STONINESS 1	CLI1	CLI1_1	CLI1_2
EBR	3.5	C	2 - 5	1	1		
EBR	3.5	C	2 - 5	2	1		
FOX	3.5	C	2 - 5	0	2	F	M
GFD	1.2	B	0.5 - 2	1	4	W	
GNY	1.2	B	0.5 - 2	0	5	W	
GUP	1.2	B	0.5 - 2	0	1		
GUP	7.0	D	5 - 9	0	1		
GUP	7.0	D	5 - 9	1	1		
GUP	12.0	E	9 - 15	1	1		
HKY	3.5	C	2 - 5	1	1		
HKY	7.0	D	5 - 9	0	1		
HKY	7.0	D	5 - 9	1	1		
HLG	1.2	B	0.5 - 2	0	3	F	M
HLG	3.5	C	2 - 5	0	3	F	M
HLG	7.0	D	5 - 9	0	3	F	M
HLG	7.0	D	5 - 9	1	3	F	M
HLG	7.0	D	5 - 9	2	3	F	M
HLG	12.0	E	9 - 15	0	3	F	M
HLG	12.0	E	9 - 15	1	3	F	M
HLG	12.0	E	9 - 15	2	3	F	M
HLG	22.5	F	15 - 30	1	3	F	M
HLG	22.5	F	15 - 30	2	3	F	M
HLG	22.5	F	15 - 30	3	3	F	M
HLG	37.5	G	30 - 45	1	3	F	M
HLG	37.5	G	30 - 45	2	3	F	M
HLG	57.5	H	45 - 70	1	3	F	M
HRR	1.2	B	0.5 - 2	0	1		
HRR	3.5	C	2 - 5	0	1		
HRR	7.0	D	5 - 9	0	1		
HRR	7.0	D	5 - 9	1	1		
HRR	12.0	E	9 - 15	0	1		
HRR	12.0	E	9 - 15	1	1		
HRR	22.5	F	15 - 30	1	1		
HRR	12.0	E	9 - 15	1	2		
HUO	7.0	D	5 - 9	0	1		
HUO	7.0	D	5 - 9	1	1		
HUO	12.0	E	9 - 15	0	1		
HUO	12.0	E	9 - 15	1	1		
HUO	12.0	E	9 - 15	1	6		
HYW	7.0	D	5 - 9	0	1		
HYW	7.0	D	5 - 9	1	1		

SOILCODE 1	SLOPE 1	CLASS 1	RANGE 1	STONINESS 1	CLI1	CLI1_ 1	CLI1_ 2
HYW	7.0	D	5 - 9	2	1		
HYW	12.0	E	9 - 15	0	1		
HYW	12.0	E	9 - 15	1	1		
HYW	22.5	F	15 - 30	0	1		
HYW	22.5	F	15 - 30	3	1		
HYW	37.5	G	30 - 45	0	1		
HYW	37.5	G	30 - 45	1	1		
LOD	3.5	C	2 - 5	0	1		
LOD	3.5	C	2 - 5	1	1		
LOD	7.0	D	5 - 9	1	1		
LTW	1.2	B	0.5 - 2	0	1		
LTW	1.2	B	0.5 - 2	1	1		
LTW	3.5	C	2 - 5	0	1		
LTW	3.5	C	2 - 5	1	1		
LTW	3.5	C	2 - 5	2	1		
MPW	1.2	B	0.5 - 2	0	2	W	
OPY	22.5	F	15 - 30	1	3	T	
OPY	22.5	F	15 - 30	2	3	T	
OPY	22.5	F	15 - 30	3	3	T	
OPY	37.5	G	30 - 45	3	6	T	
OPY	57.5	H	45 - 70	3	7	D	T
PLL	1.2	B	0.5 - 2	0	2	W	
PLL	1.2	B	0.5 - 2	1	2	W	
PLL	1.2	B	0.5 - 2	2	2	W	
PTH	3.5	C	2 - 5	0	1		
PTH	3.5	C	2 - 5	1	1		
PYO	22.5	F	15 - 30	1	6	M	T
SMF	1.2	B	0.5 - 2	0	1		
TIG	3.5	C	2 - 5	0	3	F	M
TIG	7.0	D	5 - 9	0	3	F	M
TIG	3.5	C	2 - 5	0	4	F	M
TIG	3.5	C	2 - 5	1	4	F	M
TIG	7.0	D	5 - 9	0	4	F	M
TIG	22.5	F	15 - 30	1	6	T	M
TIG	22.5	F	15 - 30	3	6	T	M
TIG	37.5	G	30 - 45	1	6	T	M
TIG	57.5	H	45 - 70	1	7	E	T
TLD	1.2	B	0.5 - 2	0	2	W	
TUC	1.2	B	0.5 - 2	0	1		
TUC	3.5	C	2 - 5	0	1		
TVK	1.2	B	0.5 - 2	0	1		

SOILCODE 1	SLOPE 1	CLASS 1	RANGE 1	STONINESS 1	CLI1	CLI1_ 1	CLI1_ 2
TVK	3.5	C	2 - 5	0	1		
WIT	3.5	C	2 - 5	0	2	W	
WIT	3.5	C	2 - 5	1	2	W	
WIT	7.0	D	5 - 9	1	2	W	
WTF	3.5	C	2 - 5	0	2	W	
WTF	3.5	C	2 - 5	1	2	W	
WTF	3.5	C	2 - 5	2	2	W	
WUS	1.2	B	0.5 - 2	0	3	W	
ZAL	-9.0			0	5	I	
ZES	-9.0			0	7	P	R
ZMK	1.2	B	0.5 - 2	0	O		
ZPT	1.2	B	0.5 - 2	0	O		
ZZZ	-9.0				W		

APPENDIX D

DAVE HODGSON CURRICULUM VITAE

DBH Soil Services Inc
217 Highgate Court
Kitchener Ontario N2N 3N9

phone: (519) 578-9226
email: dhodgson@dbhsoilservices.ca

DAVID B. HODGSON, B.Sc., P. Ag.
PRESIDENT – Senior Pedologist/Agrologist

EDUCATION

- B.Sc. (Agriculture), 1983-1987; University of Guelph, Major in Soil Science
- Agricultural Engineering, 1982-1983; University of Guelph.
- Materials Science Technology, 1981-1982; Northern Alberta Institute of Technology (NAIT), Edmonton, Alberta.

AREAS OF PROFESSIONAL EXPERIENCE

2000 to Present

Senior Pedologist/President. DBH Soil Services Inc., Kitchener, Ontario.
Mr. Hodgson provides expertise in the investigation, assessment and resource evaluation of agricultural operations/facilities and soil materials. Dave is directly responsible for the field and office operations of DBH Soil Services and for providing advanced problem solving skills as required on an individual client/project basis. Dave is skilled at assessing soil and agricultural resources, determining potential impacts and is responsible for providing the analysis of and recommendations for the remediation of impacts to soil/agricultural/environmental systems in both rural and urban environments.

1992 to 2000

Pedologist/Project Scientist. Ecologistics Limited, Waterloo, Ontario.
As pedologist (soil scientist), Mr. Hodgson provided expertise in the morphological, chemical and physical characterization of insitu soils. As such, Mr. Hodgson was involved in a variety of environmental assessment, waste management, agricultural research and site/route selection studies.
Dave was directly responsible for compiling, analysis and management of the environmental resource information. Dave is skilled at evaluating the resource information utilizing Geographic Information System (GIS) applications.

Dave was also involved the firms Environmental Audit and Remediation Division in the capacity of: asbestos identification; an inspector for the remediation of a pesticide contaminated site; and an investigator for Phase I and Phase II Audits.

SELECT PROJECT EXPERIENCE

Environmental Assessment Studies

- Agricultural Component of the Highway 6 Widening Hamilton 2022 – ongoing.
- Agricultural Component of the Bradford Bypass (Highway 400 to 404 link) 2021 – ongoing.
- Agricultural Component of the Green for Life (GFL) Environmental, Moose Creek, Eastern Ontario Waste Handling Facility (EOWHF) Expansion, 2020 – 2023.
- Agricultural Component of the Greater Toronto Area West (GTAW) Highway 413 Corridor Assessment, 2019 – ongoing.
- Peer Review of the Walker Environmental Group (WEG) Inc. Southwestern Landfill Proposal, Ingersoll, 2013 – 2021.
- Agricultural Component for the High-Speed Rail Kitchener to London –Terms of Reference, 2018,
- Agricultural Component of the Mount Nemo Heritage District Conservation Study – City of Burlington, 2014 – 2015.
- Agricultural Component of the Greater Toronto Area West (GTAW) Highway Corridor Assessment – Phase 2, 2014 – 2016.
- Peer Review of the Agricultural Component of the Walker Group Landfill – Ingersoll, 2013 – 2015.
- Agricultural Component of the Highway 407 East Extension Design and Build Phase, 2012 – 2013.

- Agricultural Component of the Beechwood Road Environmental Centre (Landfill/Recycling) – Napanee, 2012 – 2013.
- Agricultural Component of the Clean Harbors Hazardous Waste Landfill Lambton County 2009 – 2015.
- Agricultural Component of the Highway 401 widening Cambridge to Halton Region 2009 – 2012.
- Agricultural Component of the Upper York Sanitary Sewer Study, York Region, 2009 – 2013.
- Agricultural Component of the Greater Toronto Area West Corridor Environmental Assessment Study 2007 – 2013 (Phase 1).
- Agricultural Component of the Niagara to GTA Planning and Environmental Assessment Study, 2007 – 2013.
- Agricultural Component of the Highway 401 widening, Chatham, 2006 - 2007.
- Agricultural Component of the Trafalgar Road study, Halton Region, 2005.
- Agricultural Component of the Highway 404 Extension North, 2004.
- Agricultural Component of the Highway 404 – 400 Bradford Bypass, 2004.
- Agricultural Component of the Highway 407 East Extension, 2002 – 2010.

Agricultural Impact Assessment/Minimum Distance Separation Studies

- Town of King Battery Energy Storage System (BESS) Agricultural Impact Assessment, 2023.
- City of London Agricultural Impact Assessment, 2023 - ongoing
- Caledonia Secondary Plan Agricultural Impact Assessment, 2023.
- Inglewood Well Agricultural Impact Assessment, 2023 – ongoing.
- Orangeville Battery Energy Storage System (BESS) Agricultural Impact Assessment, 2023.
- County Road 109 Realignment Agricultural Impact Assessment, 2023 – ongoing.
- Thornbury Acres Agricultural Impact Assessment, 2022 – 2023.
- Highway 6 Widening Hamilton Agricultural Impact Assessment, 2022 – ongoing.
- Whistle Bare Pit Agricultural Impact Assessment, 2022.
- Middletown Road Agricultural Impact Assessment, 2022.
- Claremont Minimum Distance Separation, Durham Region. 2022.
- Grand Valley Settlement Area Boundary Expansion 2022 -ongoing.
- Hagersville Minimum Distance Separation, 2022.
- East River Road Minimum Distance Separation, County of Brant, 2022.
- Brampton Brick Norval Quarry, Agricultural Impact Assessment, 2022 – ongoing.
- Northfield Drive Minimum Distance Separation, Waterloo Region, 2021
- Bradford Bypass Highway 400- 404 Link, Agricultural Impact Assessment, 2021 – ongoing.
- Wilfrid Laurier Milton Campus, Agricultural Impact Assessment, 2021 – 2023.
- Town of Lincoln Road Realignment, Agricultural Impact Assessment, 2021 – 2023.
- Britannia Secondary Plan, Agricultural Impact Assessment, Milton, 2021 – 2023.
- Reesor Road Minimum Distance Separation, Markham, 2021.
- Maclean School Road Minimum Distance Separation, County of Brant, 2021.
- Petersburgh Sand Pit, Agricultural Impact Assessment, 2021 – 2022.
- Milton, CRH Quarry Expansion, Agricultural Impact Assessment, 2020 – 2022.
- Grimsby, Specialty Crop Area Redesignation, Agricultural Impact Assessment, 2020 - 2022.
- Halton Hills, Premier Gateway Phase 2 Employment Lands Secondary Plan, Agricultural Impact Assessment, 2020 - 2021.
- Milton Education Village Secondary Plan, Agricultural Impact Assessment, 2020 - 2021.
- Woodstock, Pattullo Avenue Realignment, Agricultural Impact Assessment, 2020 - 2021.
- Smithville, West Lincoln Master Community Plan, Agricultural Impact Assessment, AECOM, 2019 – 2022.
- Kirby Road Agricultural Impact Assessment, HDR, Vaughan, 2019 – 2021.
- Elfrida Lands, City of Hamilton, Agricultural Impact Assessment Update, WSP, 2019 – 2021.
- Dorsay Development – Durham Region High Level Agricultural Assessment, 2019.
- Stoney Creek Landfill AIA Update – GHD, 2019.
- Town of Wilmot, Agricultural Impact Assessment (AIA) Aggregate Pit Study (Hallman Pit), 2018, on-going.

- Courtice Area South East Secondary Plan (Clarington) Agricultural Impact Assessment (AIA), 2019,
- Town of Halton Hills, Minimum Distance Separation (MDS 1), August 2018,
- Cedar Creek Pit/Alps Pit (North Dumfries), Agricultural Impact Assessment (AIA), 2018 – 2021,
- Belle Aire Road (Simcoe County) Agricultural Impact Assessment (AIA) Study, 2019,
- Vinemount Quarry Extension (Niagara) Agricultural Impact Assessment (AIA) Study, December 2017.
- Grimsby – Agricultural Impact Assessment Opinion, November 2017.
- City of Hamilton, Urban Core Developments – Agricultural Capability Assessment, February 2017.
- Township of North Dumfries – Minimum Distance Separation (MDS 1), February 2017.
- Township of Erin, County of Wellington – Minimum Distance Separation 1(MDS1 Study), 2016.
- Halton Hills Employment Area Secondary Plan, Halton, 2015 - 2016.
- Peer Review of Agricultural Impact Assessment, Oro-Medonte Township, 2015.
- Greenwood Construction Aggregate Pit, Mono Township, 2014 - 2015.
- Innisfil Mapleview Developments, Town of Innisfil – Minimum Distance Separation (MDS 1), 2014.
- Loyalist Township – Minimum Distance Separation (MDS 1 & 2), 2014.
- Rivera Fine Homes, Caledon – Minimum Distance Separation (MDS 1), 2014.
- Town of Milton PanAm Velodrome – Minimum Distance Separation (MDS) 2012 – 2013.

Soil Surveys/Soil Evaluations

- Soil Survey and Canada Land Inventory Evaluation, Pinehurst Road, 2023.
- Soil Survey and Canada Land Inventory Evaluation, Paris Plains Church Road Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Mulmur Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Port Colborne Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Pike Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, New Dundee Road Site, 2022.
- Soil Survey and Canada Land Inventory Evaluation, Gehl Farm, 2022
- Soil Sampling, City of Kitchener, 2021 – 2022.
- Soybean Cyst Nematode Soil Sampling, Enbridge, 2021.
- Soil Survey and Canada Land Inventory Evaluation, Max Becker Enterprises, City of Kitchener, 2021
- Soil Survey and Canada Land Inventory Evaluation, Max Beck Enterprises, City of Kitchener, 2021 – 2022.
- Soil Survey and Canada Land Inventory Evaluation, Burlington, Nelson Quarry, 2020-2021.
- City of Kitchener, City Wide Soil Studies, 2020-ongoing.
- Soil Survey, Fallowfield Drive, City of Kitchener Development Manual Study, 2020 - ongoing.
- Soil Survey, Williamsburg Estates, City of Kitchener Development Manual Study, 2020 - 2021.
- Soil Survey, South Estates, City of Kitchener Development Manual Study, 2020 - 2021.
- Soil Survey and Canada Land Inventory Evaluation, Burlington, Nelson Quarry, 2019.
- Soil Survey and Canada Land Inventory Evaluation, Maryhill Pit, 2019.
- Soil Survey and Canada Land Inventory Evaluation, Glen Morris Pit, Lafarge Canada, 2018,
- Soil Survey and Canada Land Inventory Evaluation, Brantford Pit Extension, Lafarge Canada, 2018,
- Soil Survey and Canada Land Inventory Evaluation, Pinkney Pit Extension, Lafarge Canada, May 2018,
- Soil evaluation and opinion, King-Vaughan Road, March 2018,
- Soil Sampling, Upper Medway Watershed, Agriculture and Agri-Food Canada. December 2017 – June 2018.
- Soil Survey and Canada Land Inventory Evaluation, Hillsburgh Pit Extension, SBM St Marys, December 2017.
- Soil Survey and Canada Land Inventory Evaluation, Erin South Pit Extension, Halton Crushed Stone, December 2017.
- City of Kitchener, City Wide Urban Soil Assessments, 2016 – On-going.
- Soil Survey and Canada Land Inventory Evaluation, Solar Feed-In Tariff (FIT) Program Study, 2016.
    - Bruce County (15 sites)
    - Grey County (4 sites)
- Soil Survey and Canada Land Inventory Evaluation, Wasaga Beach area, County of Simcoe, 2016.
- Soil Survey and Canada Land Inventory Evaluation Study, MHBC Bradford, Simcoe County, 2016.
- Soil Survey and Canada Land Inventory Evaluation, Solar Feed-In Tariff (FIT Program Study), Carbon Foot Print

Offsetters, Durham Region, 2015.
- Soil Survey and Canada Land Inventory Evaluation, Solar Feed-In Tariff (FIT Program Study), Abundant Solar Energy (12 Sites – Peterborough, Madoc, Havelock, Belleville), 2015.
- Soil Survey and Canada Land Inventory Evaluation, Solar Feed-In Tariff (FIT Program Study), City of Hamilton, 2015.

Municipal Comprehensive Review and Mapping Studies (MCR)
- Bruce County 2022 – 2023.
- Simcoe County, 2020 - ongoing.
- Northhumberland County, 2020 - ongoing.
- Halton Region, 2019 - 2022.

Land Evaluation and Area Review Studies (LEAR)
- Mapping Audit Bruce County. Assessment of Prime and Non-Prime Agricultural Lands, 2022.
- Mapping Audit Northumberland County. Comparison of Regional and Provincial Prime Agricultural Area Mapping – 2021 - ongoing.
- Mapping Audit Simcoe County. Comparison of Regional and Provincial Prime Agricultural Area Mapping – 2021 - ongoing.
- Mapping Audit Halton Region. Comparison of Regional and Provincial Prime Agricultural Area Mapping – 2019 - 2022.
- Land Evaluation and Area Review – Soils Component, in Association with AgPlan Ltd, Kanata/Munster. December 2017 – July 2018.
- Land Evaluation and Area Review – Soils Component, Prince Edward County, 2016 – 2017.
- Land Evaluation and Area Review – Soils Component, Peel Region, 2013 - 2014.
- Land Evaluation and Area Review, Minto Communities, Ottawa, 2012 – 2013.
- GIS and LE component of Land Evaluation and Area Review, York Region 2008 – 2009.
- Land Evaluation and Area Review, Mattamy Homes, City of Ottawa – Orleans, 2008 – 2009.
- GIS for Manitoba Environmental Goods and Services (EG&S) Study. 2007 – 2008.
- GIS and LE component of Land Evaluation and Area Review, Halton Region 2007 - 2008.
- GIS and LE component of Land Evaluation and Area Review, City of Hamilton, 2003 – 2005.

Expert Witness
- Local Planning Appeal Tribunal (LPAT) Hearing, Greenwood Aggregates Limited, Violet Hill Pit Application, 2020.
- Ontario Municipal Board (OMB) Hearing, Burl's Creek Event Grounds 2018-2019.
- Town of Mono Council Meeting, Greenwood Aggregates Violet Hill Pit, January 2018.
- Ontario Municipal Board (OMB) Hearing, Burl's Creek Event Grounds, Simcoe County, 2015 – 2016.
- Ontario Municipal Board (OMB) Hearing, Town of Woolwich, Gravel Pit, 2012 – 2013.
- Ontario Municipal Board (OMB) Hearing, Mattamy Homes – City of Ottawa, 2011 – 2012.
- Ontario Municipal Board (OMB) Hearing, Town of Colgan, Simcoe County, 2010.
- Presentation to Planning Staff on behalf of Mr. MacLaren, City of Ottawa, 2005.
- Ontario Municipal Board (OMB) Hearing, Flamborough Severance, 2002.
- Preparation for an Ontario Municipal Board Hearing, Flamborough Golf Course, 2001.
- Ontario Municipal Board (OMB) Hearing, Stratford RV Resort and Campground – Wetland Delineation Assessment, 2000.
- Ontario Municipal Board (OMB) Hearing, Watcha Farms, Grey County, Agricultural Impact Assessment – Land Use Zoning Change, 1999-2000.
- Ontario Municipal Board (OMB) Hearing, Town of St. Vincent Agricultural Impact Assessment – Land Use Zoning Change, 1999 – 2000.
- Halton Agricultural Advisory Committee (HAAC), Halton Joint Venture Golf Course Proposal - Agricultural Impact Assessment for Zoning Change, 1999-2000
- Halton Agricultural Advisory Committee (HAAC), Sixteen Mile Creek Golf Course Proposal – Agricultural

Impact Assessment for Zoning Change, 1999.
- Ontario Municipal Board (OMB) Hearing, Town of Flamborough, Environs Agricultural Impact Assessment for Zoning Change – Golf Course Proposal, 1999.
- Ontario Municipal Board (OMB) Hearing, Stratford RV Resort and Campground – Agricultural Impact Assessment, 1998.

Monitoring Studies
- Ontario Stone, Sand, and Gravel Association (OSSGA) Rehabilitation Study, 2023 – ongoing.
- Enbridge Soil Sampling for Soybean Cyst Nematode, various sites Lambton County, 2022
- Union Gas/Enbridge Gas 20" Gas Pipeline Construction Monitoring – Kingsville – 2019 - 2020.
- Union Gas/Enbridge Gas – Gas Pipeline Construction Monitoring for Tree Clearing. Kingsville Project. February/March 2019.
- CAEPLA – Union Gas 36" Gas Pipeline Construction Monitoring and Post Construction Clean Up – Agricultural Monitoring Panhandle Project. 2017 – 2018.
- CAEPLA – Union Gas 36" Gas Pipeline Construction Clearing Panhandle Project (Dawn Station to Dover Station) – Agricultural Monitoring, 2017 (Feb-March).
- City of Kitchener, Soil Sampling and data set analysis, 2017 – On-going.
- GAPLO – Union Gas 48" Gas Pipeline (Hamilton Station to Milton) Construction Soil and Agricultural Monitoring, 2016 – 2017.
- GAPLO – Union Gas 48" Gas Pipeline (Hamilton –Milton) Clearing – Agricultural Monitoring, 2016.

Publications

D.E. Stephenson and D.B. Hodgson, 1996. Root Zone Moisture Gradients Adjacent to a Cedar Swamp in Southern Ontario. In Malamoottil, G., B.G. Warner and E.A. McBean., *Wetlands Environmental Gradients, Boundaries, and Buffers*, Wetlands Research Centre, University of Waterloo. Pp. 298.