CONFIDENTIAL

Appendix G: Agricultural Impact Assessment

Southeast Courtice Secondary Plan and Environmental Assessment

Municipality of Clarington, Ontario

May 1, 2020

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Clarington

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G. Agricultural Impact Assessment

G.1 Key Take-Aways

DBH Soil Services Inc was retained to complete an Agricultural Impact Assessment (AIA) for the 'Prime Agriculture' lands surrounding the Southeast Courtice Secondary Plan (SECSP) Area.

The surrounding 'Prime Agriculture' area abuts the existing built out urban area on the southeast corner of Courtice Urban Area. The SECSP extends (on both sides to the north and south) from Bloor Street just east of Robinson Creek to Courtice Road, and roughly spreads north from Bloor Street between Courtice Road and Hancock Road.

The SECSP Area is defined within the Official Plan of the Municipality of Clarington (Map A1 – Land Use – West Clarington Rural Area) as part of the Courtice Urban Area.

The lands to the north and west of the SECSP Area are predominantly built out urban areas. The lands to the east comprise a narrow strip of non-farm estate residential units (north of Bloor Street along Hancock Road) and agricultural lands, wooded areas and stream courses south of Bloor Street. Portions of the lands to the south of the SECSP Area are contained within the Courtice Urban Area and comprise agricultural land use, commercial/industrial areas, and the Highway 401 lands.

The future Highway 418 (a north-south link between Highway 407 and Highway 401) is currently under construction and is situated approximately 300-400 metres east of Hancock Road.

Historically the cleared portions of the 'Prime Agriculture' areas surrounding the SECSP Area were used for the production of agricultural crops and livestock. Much of the wooded areas are associated with steep sided valleys and stream courses or marshy areas.

This Agricultural Impact Assessment (AIA) report evaluated in a larger area, the Study Area described as a potential zone of impact extending a minimum of 1500 m (1.5 km) beyond the boundary of the SECSP Area.

The results of this assessment indicate the following:

1. The Prime Agriculture lands abut the existing built out urban area on the southeast corner of the Courtice Urban Area. The SECSP extends (on both sides to the north and south) from Bloor Street just east of Robinson Creek to Courtice Road, and roughly spreads north from Bloor Street between Courtice Road and Hancock Road.
2. The lands to the north and west of the SECSP Area are predominantly built out urban areas. The lands to the east comprise a narrow strip of non-farm estate residential units (north of Bloor Street along Hancock Road) and agricultural lands, wooded areas and stream courses south of Bloor Street. Portions of the lands to the south of the SECSP Area are contained within the Courtice Urban Area and comprise agricultural land use, commercial/industrial areas, and the Highway 401 lands.

3. The future Highway 418 (a north-south link between Highway 407 and Highway 401) is currently under construction and is situated approximately 300-400 metres east of Hancock Road.
4. Portions of the 'Prime Agriculture' Area are used for the production of common field crop. The section of 'Prime Agriculture' located between Bloor Street and Highway 2 is limited to agriculture due to the presence of numerous small lots and residential units.
5. The existing land uses on the 'Prime Agriculture' Area surrounding the SECSP Area are described as follows:

    The area north of Highway 2 comprises lower intensity agriculture with much of the lands used for forage/pasture or wooded.

    The area north of Highway 2 comprises numerous areas of built up land uses.

    The areas south of Highway 2 and immediately adjacent to the Highway 418 comprise large areas of tree fruits and market gardens.

    Areas south of Highway 2 and farther east from the Highway 418 comprise common field cropping (corn, soybean), forage/pasture and wooded areas
6. There are no specialty crops grown on the 'Prime Agriculture' Area surrounding the SECSP Area
7. The predominant agricultural land use in the 'Prime Agriculture' Area is common field crop.
8. There is limited investment in agricultural buildings, facilities or structures in the 'Prime Agriculture' Area surrounding the SECSP Area. Three potential agricultural buildings were identified (small pole barn with pastures, small pigeon coop, small pole barn possibly with horses or goats. Each of these buildings is within an area of 4 or more non-agricultural uses. Two of the buildings Minimum Distance Separation arcs are limited by the existence of the non-agriculture uses.
9. There is limited investment in tile drainage within the 'Prime Agriculture' Area surrounding the SECSP Area. One area of random tile drainage was noted north of Highway 2 and east of Hancock Road.
10. There is no investment in irrigation in the 'Prime Agriculture' Area surrounding the SECSP Area.
11. There is no investment in landforming in the 'Prime Agriculture' Area surrounding the SECSP Area.
12. It is evident from a review of the parcel data that 'Prime Agriculture' Area is exhibiting the decline of agriculture due to the presence of numerous smaller parcels and the degree of Non-Local ownership on the larger parcels.
13. The development of the SECSP area is not expected to be a great source in traffic related impacts to agriculture as the transportation routes in the area are already well traveled by non-farm vehicles.

Given the geographical location of the ‘Prime Agriculture’ Area surrounding the SECSP Area, it is the conclusion of this study that the development of the SECSP Area would have minimal impact on the surrounding agricultural activities within the ‘Prime Agriculture’ Area surrounding the SECSP Area.

G.2 Purpose

DBH Soil Services Inc was retained to complete an Agricultural Impact Assessment (AIA) for the ‘Prime Agriculture’ lands surrounding the Southeast Courtice Secondary Plan (SECSP) Area.

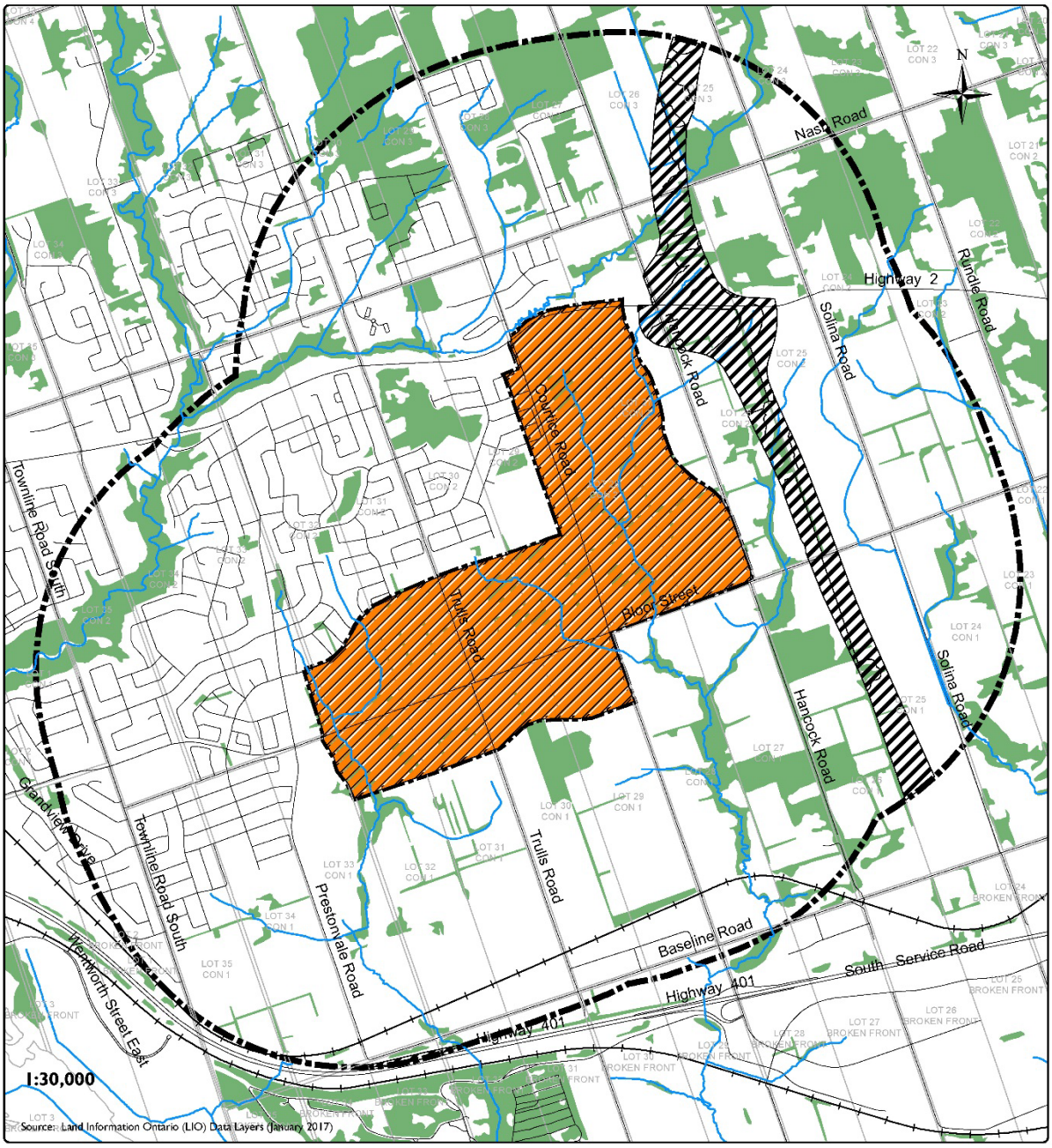
Figure G-1 illustrates the relative location and shape of the SECSP Area lands with respect to the above-mentioned features

For the purpose of an Agricultural Impact Assessment (AIA) report, agricultural operations and activities are evaluated in a larger area, the Study Area (**Figure G-1**), described as a potential zone of impact extending a minimum of 1500 m (1.5 km) beyond the boundary of the SECSP Area.

This minimum 1,500 m (1.5 km) area of potential impact outside the SECSP Area is used to allow for characterization of the agricultural community and the assessment of impacts adjacent to and in the immediate vicinity of the SECSP Area.

This report documents the methodology, findings, conclusions and mapping completed for this study. Specific to the requirements of the Municipality of Clarington this Agricultural Impact Assessment will document, analyze, identify and provide comment on the effect and mitigation of any potential impacts to “Prime Agriculture” areas adjacent to the SECSP Area as a result of urbanizing the lands within the SECSP Area.

Figure G-1: Location



Legend

- Railway (MNR)
- Roads (MNR)
- Watercourse (MNR)
- 1.5 km Buffer From Secondary Plan Area
- Courtice Secondary Plan Area
- Highway 418 Area
- Lot Lines (MNR)
- Wooded Areas (MNR)

Figure 1

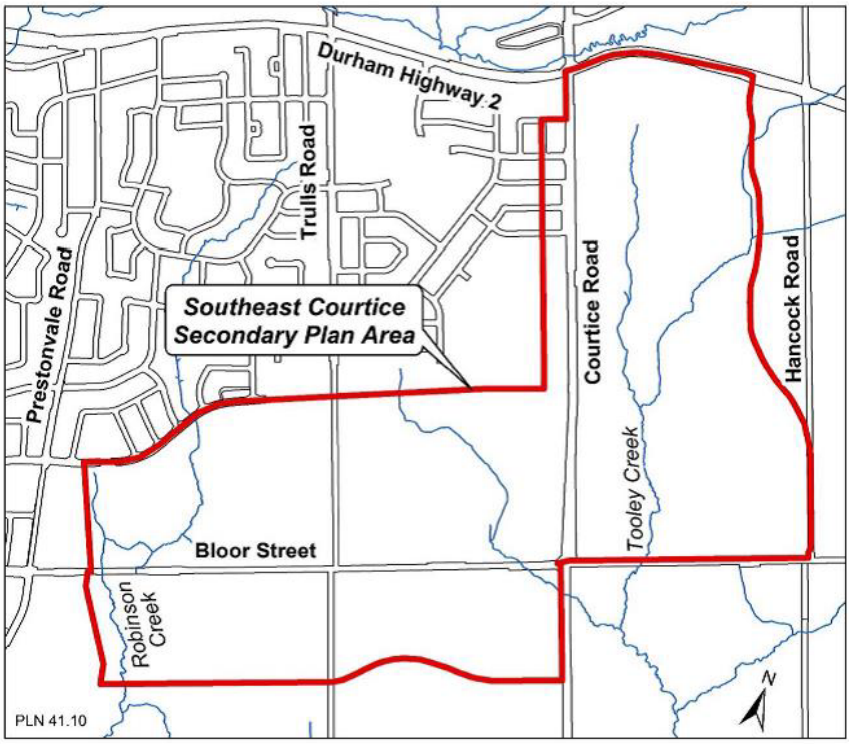
Location

DBH Soil Services Inc
October 2018

G.2.1 Methodology

A variety of data sources were evaluated to characterize the extent of agriculture resources and any potential existing (or future) impacts to agriculture in the “Prime Agriculture” areas adjacent to the SECSP Area. The boundary of the SECSP Area was provided by Corporation of the Municipality of Clarington and is illustrated below.

Figure G-2: Boundary of the SECSP Area



It should be noted that Durham Region and the Municipality of Clarington do not provide specific guidelines for completing an Agricultural Impact Assessment (AIA).

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) have recently released draft Agricultural Impact Assessment guidelines in a document titled “Draft Agricultural Impact Assessment (AIA) Guidance Document, March 2018”. This new document is considered as “Draft for Discussion Purposes” and does not hold status.

Prior to the release of the OMAFRA AIA document, the standard for completing Agricultural Impact Assessments was provided by a set of guidelines developed by the Region of Halton in 1985 (Agricultural Impact Assessment Guidelines, October 1985), and updated in June 2014.

The Region of Halton has specific standards and guidelines for completing Agricultural Impact Assessments (AIA) within the boundaries of the Region of Halton. The Halton Region guidelines are comprehensive and require considerable detail to complete. This report has been completed with regard to the Region of Halton Agricultural Impact Assessment Guidelines, a review of the

new OMAFRA "Draft Agricultural Impact Assessment (AIA) Guidance Document, March 2018" and through discussion with staff from the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

The Region of Halton Agricultural Impact Assessment Guidelines states that an AIA should include the following:

- Description of the proposal
- Purpose
- Applicable Planning Policies
- Onsite and Surround Area Physical Resource Inventory (including: soils; climate; slope; topography; drainage
- Minimum Distance Separation (MDS) calculations
- On-site features (including: past farming practices; type and intensity of existing agricultural production; non-agricultural land use; parcel size, shape and accessibility; existing farm management; capital investment related to agriculture)
- Off-site Land Use Features (including: surrounding land use types; existing and potential constraints to onsite agriculture; regional land use, lot and tenure patterns
- Agricultural Viability
- Assessment of Impact on Agriculture
- Mitigative Measures/Avoidance/Minimizing impact
- Conclusions

These tasks are also identified and presented in the OMAFRA "Draft Agricultural Impact Assessment (AIA) Guidance Document, March 2018".

Specific to this project the requirements are to:

- Complete a review of agricultural land uses surrounding the SECSP Area, and applicable planning policies and regulations.
- Complete an assessment to determine the potential adverse physical and operational impacts of the proposed uses described in the SECSP Area on surrounding agricultural uses; and to address issues of concern in consultation with the Clarington Agricultural Advisory Committee ("CAAC").
- Complete an assessment of potential alternatives to land use configurations that avoid/mitigate impacts to prime agricultural areas, and compliance with minimum distance separation formulae.
- Document that all mitigation/avoidance measures shall be incorporated within the Urban Area.

G.2.2 Data Collection

G.2.2.1 Agricultural Land Use

Agricultural land use data was collected through observations made during roadside reconnaissance surveys conducted on August 22-23, 2018 and October 29, 2018. Data collected included the identification of land use (both agricultural and non-agricultural), documentation of the location and type of agricultural facilities, non-farm residential units and non-farm buildings (businesses, storage facilities, industrial, commercial and institutional usage).

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 the Subject Lands and the Study Area.

G.2.2.2 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.

A review 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) revealed that:

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.”

Guideline #6 states – “A separate MDS I setback shall be required to be measured from all existing livestock facilities and anaerobic digesters on lots in the surrounding area that are reasonably expected by an approval authority to be impacted by the proposed application.

As part of municipal consideration of planning or building permit applications, all existing livestock facilities or anaerobic digesters within a 750 m distance of a proposed Type A land use and within a 1,500 m distance of a proposed Type B land use shall be investigated and MDS I setback calculations undertaken where warranted.

In circumstances where large livestock facilities (e.g., >1,200 Nutrient Units) exist beyond the 750 m or 1,500 m study area, MDS I setbacks from these facilities should also be calculated.”

Guideline #10 states – “An MDS I setback is required for all proposed amendments to rezone or redesignate land to permit *development* in *prime agricultural area*s and *rural lands* presently zoned or designated for *agricultural use*. This shall include amendments to allow site-specific

exceptions which add *nonagricultural uses* or *residential uses* to the list of *agricultural uses* already permitted on a *lot*, but shall exclude applications to rezone a *lot* for a *residence surplus to a farming operation* (e.g., to a rural residential zone) in accordance with Implementation Guideline #9 above.

Amendments to rezone or redesignate land already zoned or designated for a *non-agricultural use*, shall only need to meet the MDS I setbacks if the amendment(s) will permit a more sensitive land use than existed before. In other words, if the proposal is to change an existing Type A land use (e.g., industrial use outside of a *settlement area*) to a Type B land use (e.g., commercial) in accordance with Implementation Guidelines #33 and #34, then an MDS I setback shall be required."

Guideline #34 states – "For the purposes of MDS I, proposed Type B land uses are characterized by a higher density of human occupancy, habitation or activity including, but not limited to:

- new or expanded settlement area boundaries;
- an official plan amendment to permit development, excluding industrial uses, on land outside a settlement area;
- a zoning by-law amendment to permit development, excluding industrial uses or dwellings, on land outside a settlement area; and
- the creation of one or more lots for development on land outside a settlement area, that results in four or more lots for development, which are in immediate proximity to one another (e.g., sharing a common contiguous boundary, across the road from one another, etc.), regardless of whether any of the lots are vacant.

Because of the increased sensitivity of these uses, a new or expanding Type B land use will generate an MDS I setback that is twice the distance as the MDS I setback for a Type A land use. This is reflected in the value of Factor E which is 2.2 for Type B versus 1.1 for Type A."

Guideline # 36 states – "MDS I setbacks are NOT required for proposed land use changes (e.g., consents, rezonings, redesignations, etc.) within approved settlement areas, as it is generally understood that the long-term use of the land is intended to be for non-agricultural purposes."

Therefore, at the direction of the Municipality of Clarington, this AIA study is to assess 'Prime Agriculture' lands surrounding the SECSP Area. As a result, MDS 1 calculations are required and are considered as a Type B sensitivity (1500 m zone from the AESCP Area) for this study.

G.2.2.3 Land Tenure and Fragmentation

Land Tenure is reviewed on an individual property basis to determine the location of the land owner (mailing address) with respect to the location of the individual property. Generally, an absent or non-local landowner has less incentive to maintain or enhance agricultural lands. Often properties owned by absent or non-local landowners have been purchased with the thought of future non-agricultural development (speculation).

Land Tenure data was collected through a review of online interactive mapping on the Agricultural Information Atlas (OMAFRA) website, the Agricultural System Portal (OMAFRA), and a review of assessment data at the Municipality of Clarington office in Bowmanville, Ontario. These data were used to determine the extent, location and relative shape of each parcel/property within both the Subject Lands and the Study Area.

The Municipality of Clarington offices were visited to access and review the Assessment Roll data to determine the address of the parcel owner and the farm land operator (i.e., whether the land is owner or tenant farmed). The reviewed Assessment Roll data had been collected for "Assessment Roll Reference Date for 2018 Taxation".

Land fragmentation is defined as the physical size and shape of individual properties within a given distance from the Subject Lands (SECSP Area). Generally, agricultural areas have limited fragmentation and are characterized by blocks of large individual land holdings of 40 ha (100 acres) or more, with limited smaller parcels. Generally, smaller parcels are less favourable for the larger equipment associated with the current cash crop or livestock farming operations.

Land fragmentation data was provided by AECOM in the form of Geographic Information System (GIS) shapefiles. The shapefiles illustrated the individual property boundaries and locations within 1.5 km of the SECSP Area.

G.2.2.4 Topography and Climate

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

Climate data was taken from the OMAFRA document titled 'Agronomy Guide for Field Crops – Publication 811 (June 2009)'.

G.2.2.5 Soils and Canada Land Inventory (CLI)

Soils and Canada Land Inventory (CLI) data was provided by Land Information Ontario (LIO) in shapefile format. Discussions with staff at the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) indicated that the latest iteration of the soils/CLI data are found in LIO.

The soils/CLI data was downloaded from the LIO website in July 2018.

G.2.2.6 Agricultural System

The Ontario Ministry of Agriculture, Food and Rural Affairs online Agricultural Systems mapping reviewed to determine the extent of agriculture in the area surrounding the SECSP Area and within the Municipality of Clarington.

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.

G.2.2.7 Agricultural Statistics

Agricultural statistics were provided by and downloaded from the OMAFRA website. The statistics were provided in Excel format for Central Ontario, with the Region of Durham and Municipality of Clarington data used for this study. The data documents up to the 2016 Census.

G.3 Existing Conditions

G.3.1 Physical Characteristics

The physiographic resources on the 'Prime Agriculture' areas surrounding the SECSP Area 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 agricultural potential of an area.

G.3.2 Existing Land Use

The existing land use reconnaissance survey for the lands out to 1.5 km surrounding the SECSP Area (to the east and south) was completed through a combination of windshield (completed in the summer and fall of 2018), a review of recent aerial photography, Google Earth Imagery, Bing Imagery, Birdseye Imagery and correlation to the OMAFRA Land Use Systems mapping. Agricultural and non-agricultural land uses were identified during the reconnaissance survey and are illustrated on **Figure G-3**.

The windshield survey identified the types of land uses including farm and non-farm uses (built up areas, non-farm residential uses, industrial, commercial, recreational, 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, or through a review of on farm infrastructure (type of buildings, manure system, feed (bins, bales), and types of equipment).

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

Agricultural cropping patterns were identified and mapped. Corn and soybean crops were mapped as 'common field crops'. Small grains included 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 can include non-farm residential units, commercial, recreational, estate lots, services (utilities) and industrial development.

Major road and rail rights-of-way were not mapped as part of this assessment. Smaller roads/laneways/trails were included as 'built up' areas due to mapping scale limitations.

Figure G-3: Existing Land Use

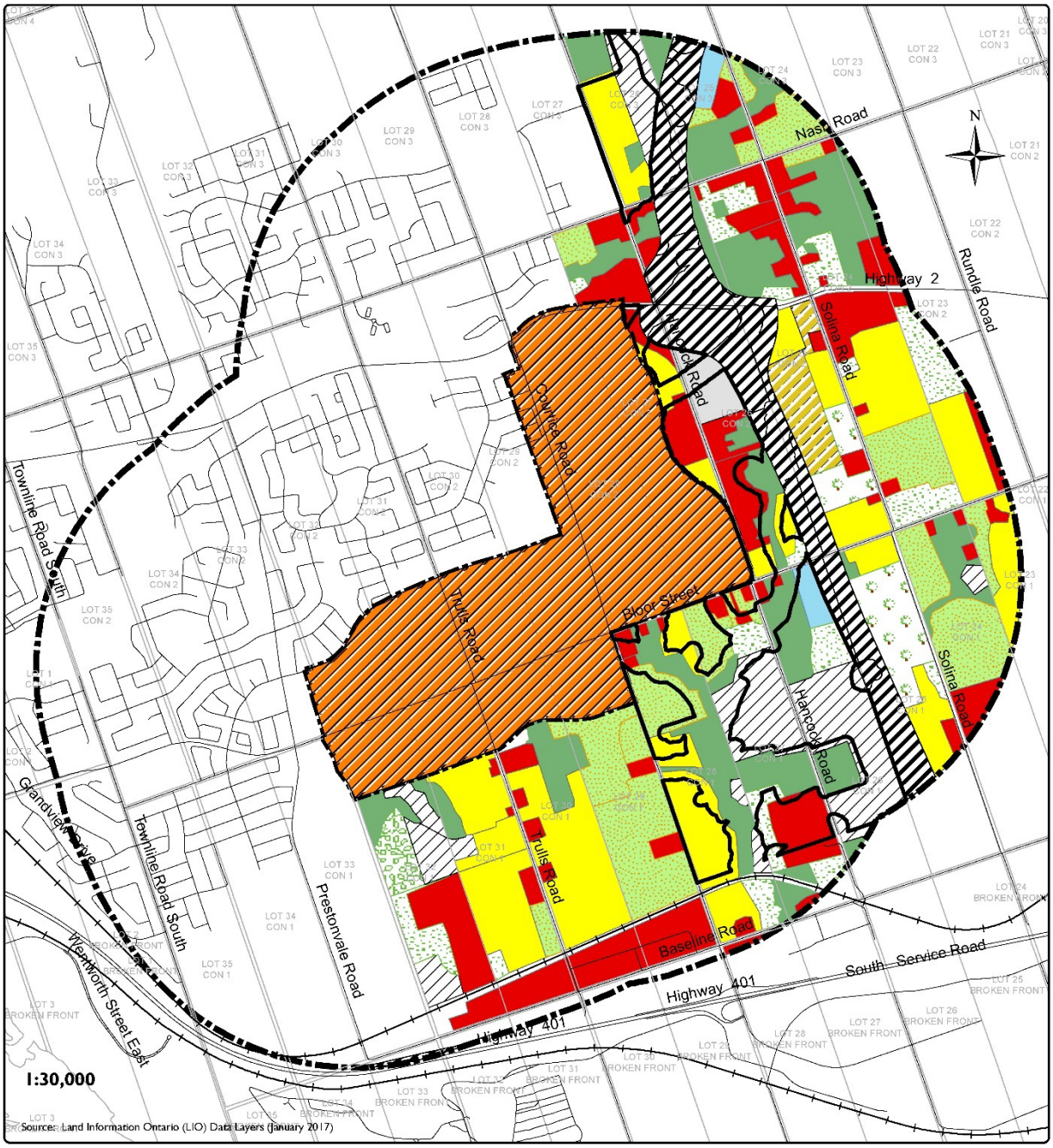


Figure 2

Existing Land Use

DBH Soil Services Inc
October 2018

Figure G-3 illustrates the existing land use on the lands surrounding the SECSP Area.

The existing land use information collected during the reconnaissance survey was digitized in Geographic Information System (GIS - Arcmap) to illustrate the character and extent of the existing land use in the areas to the south and east of the SECSP Area (out to 1.5 km). This information was documented to illustrate the present day land use in areas that include the 'Prime Agriculture' areas, the rural areas and areas that are not developed (or built out) but have been labelled as a non-agricultural designation within the respective Official Plans.

Figure G-3 Illustrates that lands to the south of the SECSP Area are maintained in agricultural land uses including: common field crops (corn, soybean); forage/pasture systems; and Christmas tree operations. Other land uses south of the SECSP Area include built up areas (including non-farm residential, farmsteads, composting facility, autowrecker), scrublands, industrial/commercial, wooded areas and areas of unknown use (could not be seen from the roadside due to line of sight restrictions).

Further, the lands to the east side of the Highway 418 area comprise: tree fruit lands; wooded areas; built up areas (including estate residential, commercial, recreational, farmsteads), market garden cropping, scrublands, common field crops (corn, soybean), stormwater ponds for the Highway 418 and forage/pasture areas.

A visual comparison of the existing land uses on the 'Prime Agriculture' Area to the existing land uses in the 'Rural' Area (east of Highway 418) provides the following:

- The area north of Highway 2 comprises lower intensity agriculture with much of the lands used for forage/pasture or wooded.
- The area north of Highway 2 comprises numerous areas of built up land uses.
- The areas south of Highway 2 and immediately adjacent to the Highway 418 comprise large areas of tree fruits and market gardens.
- Areas south of Highway 2 and farther east from the Highway 418 comprise common field cropping (corn, soybean), forage/pasture and wooded areas.

For the purposes of this study, area calculations for each existing land use polygon (area) in the 'Prime Agriculture' area surrounding the SECSP Area were calculated within the GIS software and exported as tabular data. The data are presented as follows.

Land use designations and land use definitions are provided in **Table G-1**.

Table G-1: Typical Land Use Designations

Land Use Designation	Land Use Definitions
Built Up/Disturbed Areas	Residential, Commercial, Industrial
Common Field Crop	Corn, Soybean, Cultivated
Market Garden	Market Garden - Vegetables
Forage/Pasture	Forage/Pasture
Railway/roads	Linear Corridor (not mapped)

Land Use Designation	Land Use Definitions
Scrublands	Unused field (>5 years)
Tree Fruit	Apples, Pears, Peaches
Unknown	Unknown Use (not seen from the road)
Small Grains	Wheat, Oats, Barley
Woods	Forested Areas

G.3.3 Land Use – Prime Agriculture Area Surrounding the SECSP Area

The 'Prime Agriculture' Area north of Highway 2 and west of the Highway 418 existing land use consists of common field crops and a small area of 'unknown' land use. Line of sight restrictions hindered the assessment of field crops in this location.

The existing land use in the 'Prime Agriculture' Area south of Highway 2 and north of Bloor Street included small areas of common field crop, wooded areas and scrublands. Larger areas of existing land use including built up areas and plowed fields.

The existing land use in the 'Prime Agriculture' Area south of Bloor Street included large areas of common field crops, forage/pasture and areas of unknown land use. Line of sight restrictions hindered the assessment of field crops in the area west of the Highway 418 between Bloor Street and the rail line.

The 'Prime Agriculture' Area comprises approximately 18.4 percent built up/disturbed lands, approximately 22.2 percent as common field crop (corn/soybean in 2018 growing season), approximately 8.7 percent as forage/pasture lands, approximately 4.1 percent as plowed fields, approximately 4.5 percent as scrublands, approximately 31.8 percent as unknown land use (viewing restricted by line of sight limitations), approximately 7.6 percent as wooded areas and approximately 2.6 percent as stormwater ponds (part of the Highway 418 area).

The predominant land use on the 'Prime Agriculture' Area is the production of common field crops (corn and soybean). There are no specialty crops grown on the 'Prime Agriculture' Area.

Table G-2 illustrates the percent occurrence of the land uses for both the SECSP Area.

Table G-2: Existing Land Use – Prime Agriculture Area Surrounding SECSP Area

Land Use Designation	Prime Agriculture Area Percent Occurrence
Built Up/Disturbed Areas	18.4
Common Field Crop	22.2
Forage/Pasture	8.7
Plowed Fields	4.1
Scrubland	4.5
Unknown	31.8
Stormwater Ponds	2.6
Woods	7.6
Totals	100.0

It should be noted that much of the 'Prime Agriculture' Area north of Bloor Street (between the SECSP Area and Highway 418) is limited for agricultural uses due to:

- Overall small area of land
- The small area of land is divided by Hancock Road
- The small area of land is divided by Environmental Protection Areas
- Numerous non-farm residential units
- Small parcel/property sizes
- Larger wooded areas.

G.3.4 Agricultural Investment

Agricultural investment is directly associated with the increase in capital investment toward agricultural lands and facilities. 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 (barns, silos, manure storage, sheds).

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. The 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.

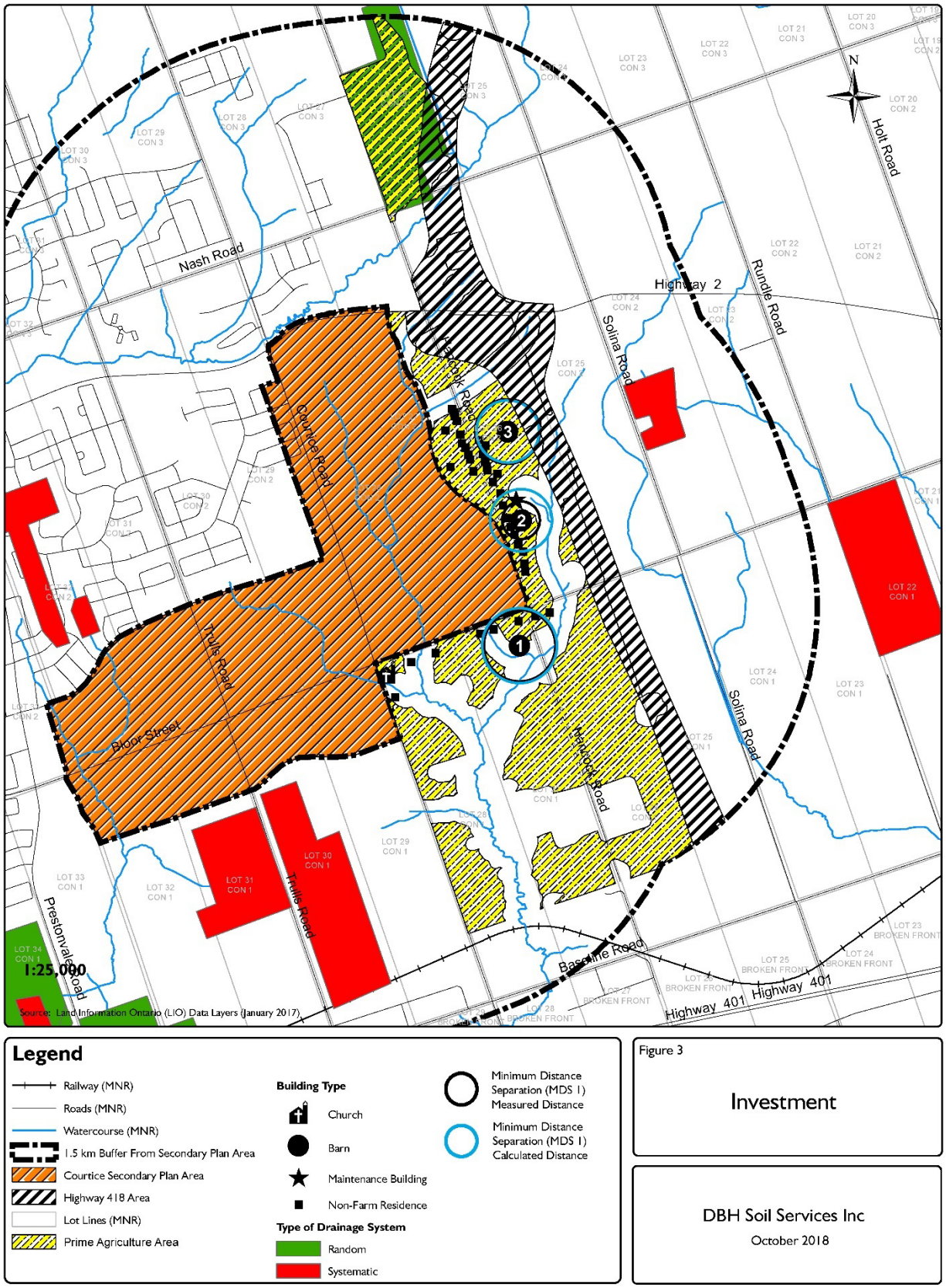
G.3.4.1 Agricultural Facilities

The potential agricultural facilities on the 'Prime Agriculture' lands surrounding the SECSP Area were identified through a combination of aerial photographic interpretation, a review of online digital imagery (Google Earth Pro, Bing Mapping, and Birds Eye Imagery), a review of Ontario Base Mapping and roadside evaluations. The potential livestock facilities that were 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 revealed that some of the buildings identified from the mapping and imagery no longer existed (torn down), or were not agricultural, but used for commercial activities.

Agricultural activities such as livestock rearing usually involve 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).

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 G-4** illustrates the location of buildings, agricultural facilities and tile drainage (agricultural investment) for the 'Prime Agriculture' lands surrounding the SECSP Area.

Figure G-4: Agricultural Investment



The 'Prime Agriculture' area surrounding the SECSP Area contained three barns/buildings that could be considered as investment in agriculture.

Building #1 was a small pole barn with two ancillary buildings (sheds) and is located adjacent to and south of Bloor Street near the intersection with Hancock Road. There is no residence with associated with these buildings. Pasture areas were observed in an area between the pole barn and Bloor Street. A review of online aerial photograph and imagery indicated the presence of an uncovered dry manure pile south of the barn. A horse trailer was also noted in the aerial photographic review.

No livestock was observed in the pasture areas. No manure piles or feed (bales of hay) were observed from the roadside.

There was no signage at the road to indicate the type of livestock, or a farm name. There was no one available onsite at this location at the time of the roadside surveys.

Building #2 appears to be an aviary located behind a residential unit on the east side of Hancock Road. No birds were seen at the time of the roadside survey. There was no one available onsite at this location at the time of the roadside survey.

Building #3 appears to be a small pole barn with small extensions. This building is located behind a residential unit on the east side of Hancock Road. The pole barn is located within 90 m of the Highway 418 right-of-way. No livestock was observed at the time of the roadside surveys. No one was available onsite at this location at the time of the roadside surveys.

It should be noted that each of these three buildings is located within close proximity to numerous non-farm residential units, each of which is located on small, narrow parcels of land.

Photographs and/or aerial photography/satellite imagery of the respective barns are located in **Attachment I**.

G.3.4.2 Minimum Distance Separation (MDS 1)

As stated previously in this report, a review 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) was completed. This review indicated that MDS 1 calculations are required for agricultural facilities located in the 'Prime Agriculture' Areas surrounding the SECSP Area.

As acknowledged above, three potential agricultural facilities were identified in the 'Prime Agriculture' Area surrounding the SECSP Area. MDS 1 calculations for each of the buildings were completed as follows.

Building #1

At the time of the roadside surveys there was no one onsite or available for an interview to determine the potential livestock type, livestock numbers, property size or manure storage system. Observations made from the roadside and through online imagery suggest that this building was used for medium size horses.

Measurements were made of the roof dripline from Google Earth Imagery to determine the area of the building. This method of determining area will overestimate the potential livestock numbers due to the building roof having some overhang. Additionally, when using the entire area of the building as based on the roof dimensions and without having discussion with the landowner, there is no opportunity to refine the measurement or to lesser the area as based on portions of the building that might be used as feed storage, offices or washrooms. The measured area assumes that the entire building is used as livestock area.

The calculated MDS 1 value was 194 m.

Building #2

Similar to building #1, at the time of the roadside surveys there was no one onsite or available for an interview to determine the potential livestock type, livestock numbers, property size or manure storage system. Observations made from the roadside and through online imagery suggest that this building was used for pigeons.

Similar to building #1, Measurements were made of the roof dripline from Google Earth Imagery to determine the area of the building. This method of determining area will overestimate the potential livestock numbers due to the building roof having some overhang. The measured area assumes that the entire building is used as livestock area.

The calculated MDS 1 value was 162 m.

Building #3

Similar to building #1 and #2, at the time of the roadside surveys there was no one onsite or available for an interview to determine the potential livestock type, livestock numbers, property size or manure storage system. Observations could not be made from the roadside due to line of sight limitations (vegetation). A review of online imagery suggests that this building could be used for horses or goats. MDS 1 calculations were made using horses as the potential livestock. The use of horses as the potential livestock would provide a more restrictive MDS 1 result.

Similar to buildings #1 and #2, measurements were made of the roof dripline from Google Earth Imagery to determine the area of the building. This method of determining area will overestimate the potential livestock numbers due to the building roof having some overhang. Additionally, when using the entire area of the building as based on the roof dimensions and without having discussion with the landowner, there is no opportunity to refine the measurement or to lesser the area as based on portions of the building that might be used as feed storage, offices or washrooms. The measured area assumes that the entire building is used as livestock area.

The calculated MDS 1 value was 162 m.

A review of the MDS Guideline #12 – Existing Uses that do not conform to MDS indicates that:

> "*an MDS I setback is required for proposed development or dwellings, even though there may be existing or approved development or dwellings nearby that do not conform to MDS I requirements.*

However, a reduced MDS I setback may be permitted provided there are four, or more, nonagricultural uses, residential uses and/or dwellings closer to the subject livestock facility than the proposed development or dwellings and those four or more non-agricultural uses, residential uses and/or dwellings are:

- *located within the intervening area (120° field of view shown in Figure 4 in Section 7 of this MDS Document) between the closest part of the proposed development or dwelling and the nearest livestock facility or anaerobic digester;*
- *located on separate lots; and*
- *of the same or greater sensitivity (i.e., Type A or Type B in accordance with Implementation Guidelines #33 and #34) as the proposed development or dwelling.*

If ALL of the above conditions are met, the MDS I setback for the proposed development or dwelling may be reduced such that it is located no closer to the livestock facility or anaerobic digester than the furthest of the four non-agricultural uses, residential uses and/or dwellings as shown in Figure 4."

Each of the three identified agricultural buildings is located in an area where there were four or more non-agricultural uses between the building and the SECSP Area. As a result, in each of these instances the MDS 1 arc will be limited to a distance that is to the farthest of the four non-agricultural uses.

The measured MDS 1 arc from building #1 was 185 m. The measured MDS 1 arc from building #2 was 100 m. The measured MDS 1 arc from building #3 was 168 m.

MDS 1 arcs are illustrated on **Figure G-4**. **Table G-3** illustrates the calculated MDS 1 values and the measured MDS 1 values.

Table G-3: Minimum Distance Separation (MDS 1)

Building Number	Calculated MDS 1 Value	Measured MDS 1 Value
1	194	185
2	162	100
3	162	168

A review of the calculated and measured MDS 1 values indicates that for building #1 the measured MDS 1 is less than the calculated value. When MDS guideline #12 is applied (four or more non-agriculture uses), it is appropriate to use the measured MDS 1 value of 185 m.

A review of the calculated and measured MDS 1 values for building #2 illustrates a similar situation. Again, when MDS guideline #12 is applied, the appropriate MDS 1 value is 100 m.

The review of calculated and measured MDS 1 values for building #3 indicates that the measured value is larger than the calculated value. In this instance, the calculated value is the appropriate MDS 1 value to use. The calculated MDS 1 value is 162 m.

On review of **Figure G-4**, with respect to the SECSP Area, the MDS arc from building #1 appears to just touch the boundary resulting in limited impact from the SECSP Area to building #1. The MDS arcs from buildings #2 and #3 do not impinge on the SECSP Area.

The MDS1 measurements calculated for this study represent the minimal distance for buffering from livestock odour. These calculated distances indicate the minimum required distance from existing livestock operations. A greater buffering distance would be considered and required for potential future expansions or new livestock facility construction.

G.3.4.3 Artificial Drainage

An evaluation of artificial drainage on the Subject Lands and within the Study Area was completed through a correlation of observations noted during the soil survey, aerial photographic interpretation and a review of the Ontario Ministry of Agriculture and Food (OMAF) 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).

Evidence in support of subsurface tile drainage on aerial photographs would be based on the visual pattern of tile drainage lines as identified by linear features in the agricultural lands and by the respective light and dark tones on the aerial photographs. The light and dark tones relate to the moisture content in the surface soils at the time the aerial photograph was taken.

OMAFRA Artificial Drainage System Maps were downloaded from Land Information Ontario (LIO) in July 2018 and were reviewed to determine if an agricultural tile drainage system had been registered to any of the ‘Prime Agriculture’ lands on the lands surrounding the SECSP Area.

Figure G-4 illustrates the OMAFRA Artificial Drainage Systems Mapping for the ‘Prime Agriculture’ lands on lands surrounding the SECSP Area and farther to the east and north.

As noted on **Figure G-4** there is one field within the ‘Prime Agriculture’ Area lands surrounding the SECSP Area that contains an artificial drainage system. This field is located north of Highway 2 to the east side of Hancock Road. The drainage system is identified as a ‘random’ system, which indicates that the drainage tile is placed in a random design in an effort to remove excess water from low areas within a field.

Based on the OMAFRA artificial drainage maps, it can be stated that there is limited investment in tile drainage on the ‘Prime Agriculture’ lands that surround the SECSP Area.

G.3.4.4 Irrigation

Observations noted during the reconnaissance survey indicated that the ‘Prime Agriculture’ lands surrounding the SECSP Area are not irrigated. Visual evidence supporting the use of irrigation equipment would include the presence of the irrigation equipment (piping, water guns, sprayers, tubing/piping, etc.), the presence of a body of water (pond, lake, water course)

capable of sustaining the irrigation operation and lands that are appropriate for the use of such equipment (large open and level fields).

There is no investment in irrigation on the 'Prime Agriculture' lands surrounding the SECSP Area.

G.3.4.5 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 volumes of soils moved.

With the exception of extensive landforming associated with the construction of the Highway 418 corridor and respective interchanges, no evidence of landforming was noted on the 'Prime Agriculture' lands that surround the SECSP Area.

There is no investment in agriculture related to landforming for agricultural purposes in this area.

G.3.4.6 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) within the area between Oshawa and Bowmanville noted that the lands surrounding the SECSP Area on the east side were located within the Prime Agricultural Area of the Agricultural Land Base within the Boundary Area of the Greater Golden Horseshoe.

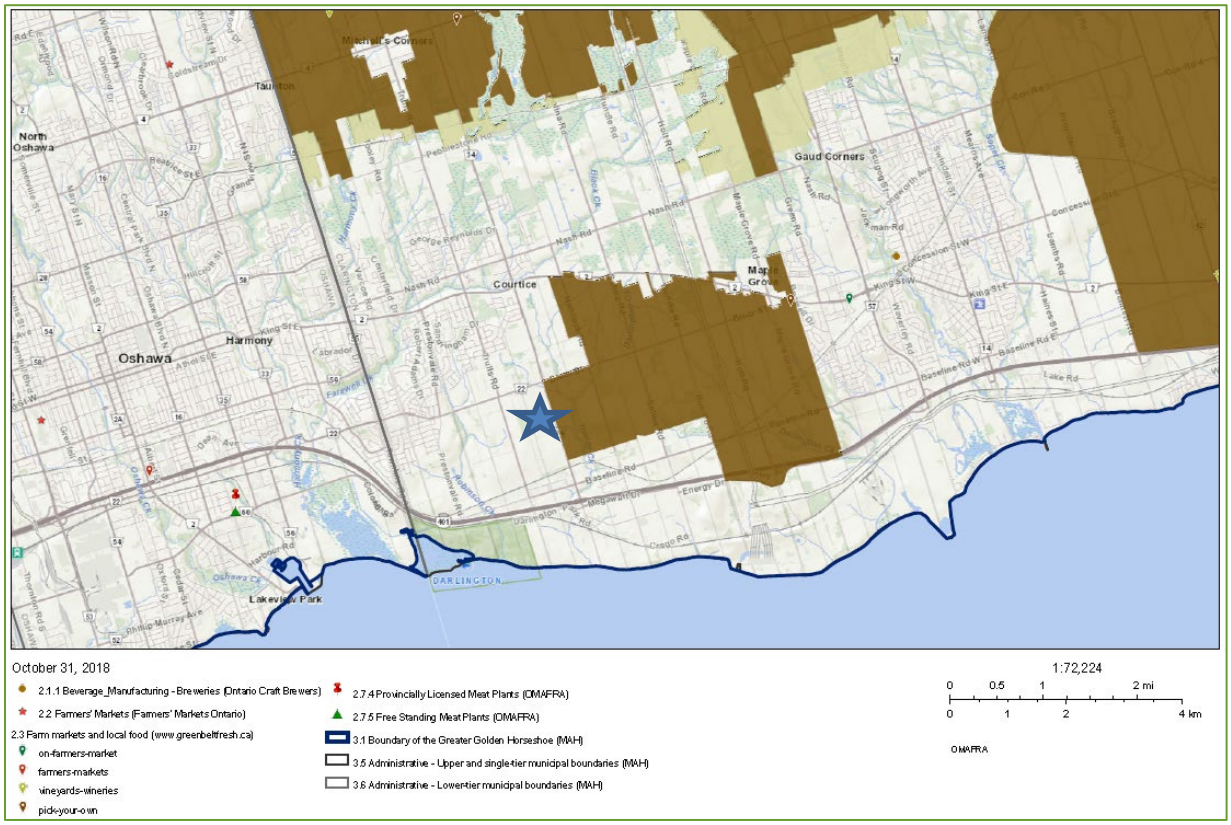
A review of the online Agricultural System Portal (OMAFRA) indicated that there were no farmers markets, pick your own operations, nurseries, specialty farms (crop or livestock), frozen food manufacturing, refrigerated warehousing/storage, livestock assets or abattoirs within close proximity to the Subject Lands. It should be noted that although the Agricultural Systems Portal (OMAFRA) mapping did not illustrate specialty crop farms, a large apple orchard operation (Watson Farms) was noted on the east side of the Highway 418.

The closest major roadway (for transportation of crop) is Highway 2 (to the north) and Highway 401 to the south.

A copy of the image from the Agricultural System Portal (**Figure G-5**) is provided below with the SECSP Area lands approximate location identified with a blue star.

Further, an online review of agricultural service dealers and equipment sellers was completed to determine the extent of agricultural infrastructure in the area. The online search indicated that there were no agricultural equipment dealers or agricultural service industry in close proximity to the 'Prime Agriculture' Area surrounding the SECSP Area.

Figure G-5: Agricultural System Portal – Accessible Viewer



G.3.5 Land Tenure and fragmentation

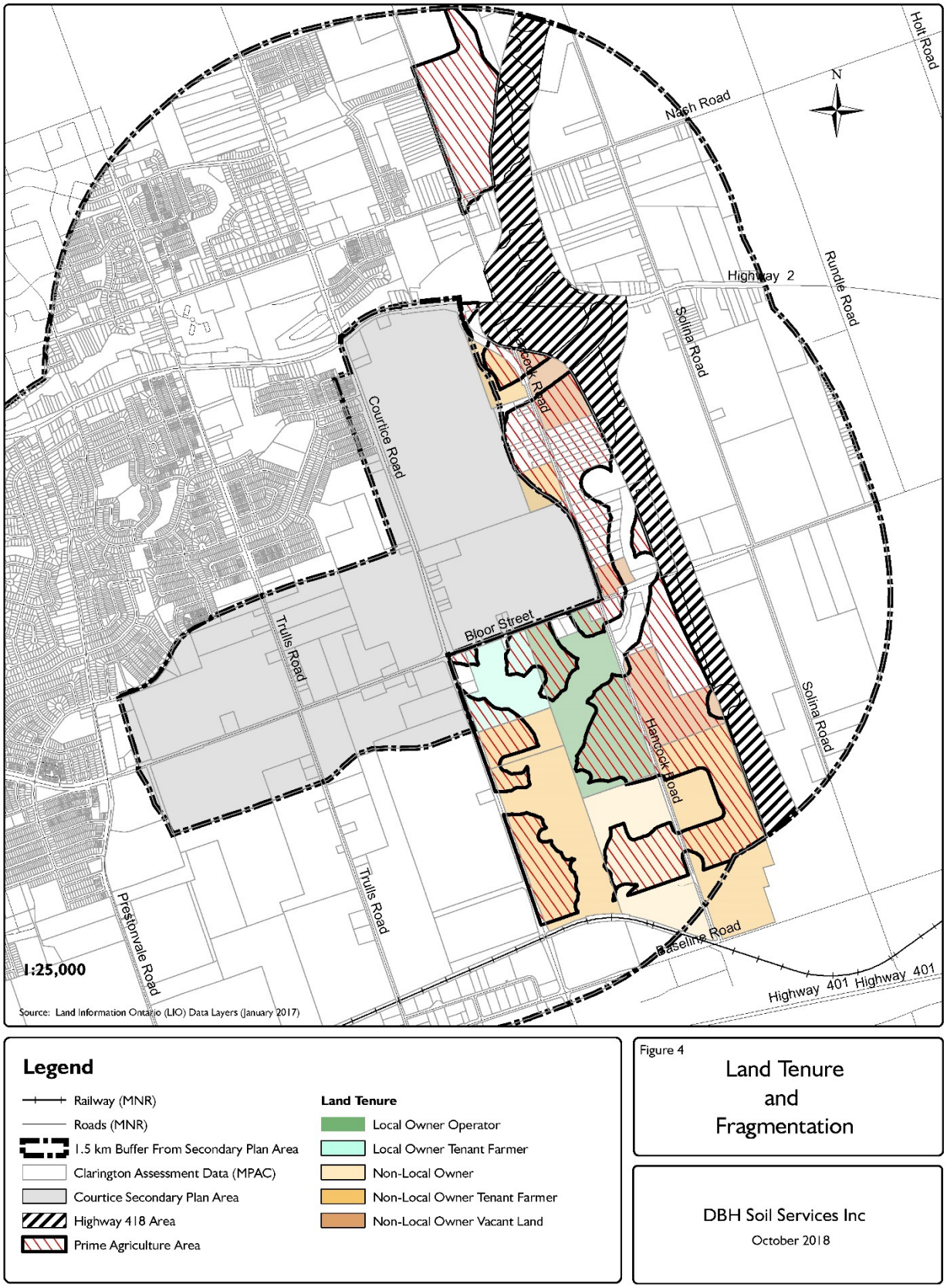
Land tenure in the 'Prime Agriculture' lands surrounding the SECSP Area was evaluated to determine the characteristics of land ownership and to determine if the 'Prime Agriculture' lands within the area surrounding the SECSP Area are locally owned and operated.

In order to evaluate land tenure, the most recent Assessment Roll mapping and Assessment Roll information from the Municipality of Clarington was referenced on a property by property basis (for the 'Prime Agriculture' lands surrounding the SECSP Area) to determine the approximate location, shape, size and ownership of each parcel. The approximate location and shape of each large property were digitized into the Geographic Information System (GIS) to provide an overview of land tenure and land fragmentation.

For the purpose of this study, the most recent Assessment Roll mapping and Assessment Roll information for the Municipality of Clarington was evaluated. The Assessment mapping information and Assessment Roll information was acquired from a combination of resources including the Municipality of Clarington Office in Bowmanville, the online Agricultural Atlas, the online Agricultural System Portal and AECOM (MPAC).

Discussions with the staff at the Office indicated that the Assessment Mapping and Roll information was compiled in 2017 for the 2018 Taxation Year. Assessment (land owner/tenant) information is illustrated on the Land Tenure/Fragmentation map in **Figure G-6**.

Figure G-6: Land Tenure



A review of the assessment data illustrated a variety of Owner-Operator combinations including: Local Owner Operator; Local Owner with Tenant Farmer; Non-Local Owner; Non-Local Owner Tenant Farmer; and Non-Local Owner Vacant Land.

Figure G-6 illustrates the complexity of the land tenure within the 1.5 km buffer surrounding the SECSP Area. The urbanized areas to the west and north comprise numerous small parcels. A few larger parcels within this area comprise areas of woodlots/valley systems, parks, commercial, schools and some open space areas.

The lands to the south comprise parcels of larger size with a few smaller parcels interspersed with the larger parcels. The lands south of the SECSP Area and west of Courtice Road are designated as non-agricultural lands use. Although these lands are designated as non-agricultural, the lands are used for agricultural purposes in the interim.

The lands to the south of the SECSP Area between Courtice Road and Highway 418 ('Prime Agriculture') comprise mostly larger parcels. A few smaller parcels were located along the south side of Bloor Street. The land tenure/ownership in this area is a mix of Local and Non-local ownership. Portions of these lands are not used for agriculture as evidenced by the large composting facility at the southern extent.

The lands south of Bloor Street between the road allowance for Hancock Road and the Highway 418 is predominantly Non-Local ownership.

The lands to the east of the SECSP Area and north of Highway 2 comprise numerous smaller parcels, with larger parcels located farther away.

The lands to the east of the SECSP Area up to the Highway 418 and are located between Highway 2 and Bloor Street comprise mostly small linear parcels which is consistent with residential estate type land use. There is limited agricultural use in this area.

The lands to the east of Highway 418 between Highway 2 and Bloor Street comprise areas of smaller parcels adjacent to the Highway 2, with the remainder of the area in larger parcels. These areas larger parcel size is consistent with larger agricultural operations which include the market garden, tree fruit and beef cattle activities.

The lands to the south of Bloor Street and east of Highway 418 are predominantly larger parcels.

The Provincial Policy Statement (PPS, 2020) identifies the Provincial land use policies and provides context for the protection of agriculture. The PPS (2020) does not provide an indication of a minimum lot size for agriculture, but 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."

Statistics Canada Census of Agriculture (2016) indicates that the average farm size in Ontario is 100.8 ha (249 acres). Farms comprise many types, sizes and intensities. They may consist of larger areas for livestock operations or tender fruit farms located on smaller parcels.

Areas of intensive agricultural activities generally have larger tracts or blocks of land with few smaller severed parcels in close proximity. In areas of transition from the agricultural land base to more rural residential, there will be many smaller severed parcels and fewer large blocks of agricultural land. In these areas of transition, the larger parcels of agricultural lands are often owned by non-local interests.

Locally owned parcels reflect the owners desire to live and work in the immediate area. Non-locally owned parcels often reflect areas of properties purchased for speculation development.

It is evident from a review of the parcel data that 'Prime Agriculture' Area is exhibiting the decline of agriculture due to the presence of numerous smaller parcels and the degree of Non-Local ownership on the larger parcels. These observations indicate that this area is in transition from farming.

G.3.6 Soils

A review of the OMAFRA soils data for Durham Region and the Municipality of Clarington was undertaken to determine the soil resources and the appropriate Canada Land Inventory (CLI) for the soils in the 'Prime Agriculture' Area surrounding the SECSP lands.

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 is 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 Durham Region. 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 is associated with the Durham Region soil survey complex file was exported to excel to run a unique symbols list based on Soil Series, topography, CLI class and CLI subclass.

The unique symbols list (based on the SYMBOL1 column) provided 61 unique symbols combined with the associated slope and CLI class and CLI subclass. The unique symbols list is provided in **Attachment III**. A review of this list indicated that there were some minor issues with a few of the soils and the respective CLI class and/or subclass.

As noted in the list in **Attachment III**, the symbol Gsl (Granby Sandy Loam) is listed twice and is presented with 2 different CLI Classes (Class 4W and Class 5W). In this instance both of these CLI Classes would be considered as non-prime agricultural lands as they are both within the CLI Class 4-7, which is considered as non-prime within the PPS (2014). Therefore, although there is an inconsistency with respect to the Gsl symbol and the data, it would not be considered as a detriment to the assessment of Canada Land Inventory and the documentation of prime and non-prime soils.

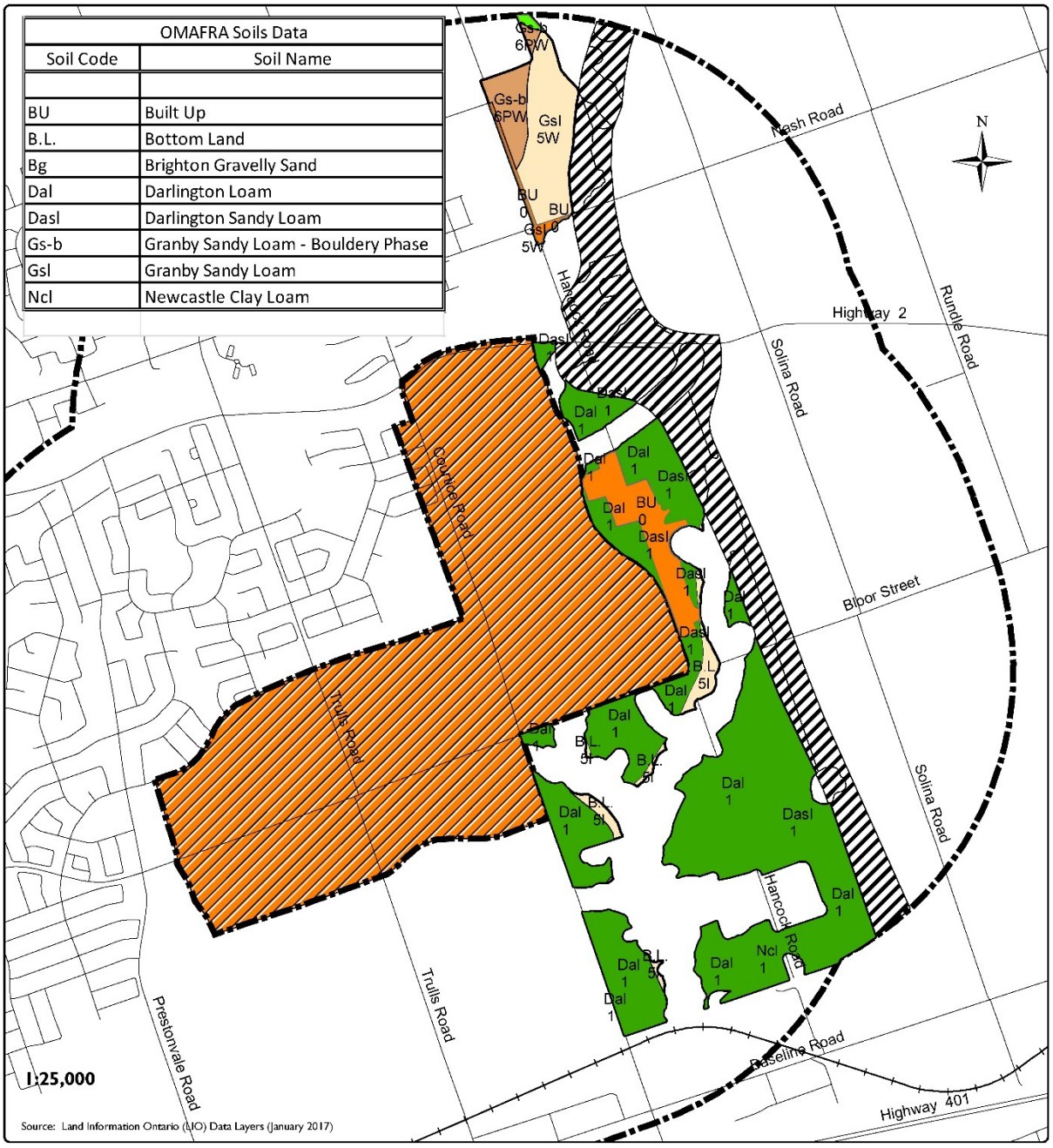
Similarly, the Ll (Lyons Loam) symbol is listed twice, and is presented with the same CLI Class. These data are not considered as a detriment to the assessment of the Canada Land Inventory.

The Ma (Marsh) symbol is listed twice due to a difference in typing the slope. Both symbols reflect the appropriate CLI Class. These data are not considered as a detriment to the assessment of the Canada Land Inventory.

The ‘Prime Agriculture’ Area comprises six soil series and two miscellaneous landscape groups. The six soil series were identified as Brighton Gravelly Sand, Darlington Loam, Darlington Sandy Loam, Granby Sandy Loam – Bouldery Phase, Granby Sandy Loam and Newcastle Clay Loam. The two miscellaneous landscape groups were Built Up areas and Bottom Land. The Built Up areas are areas associated with lands that were disturbed such as around buildings. Bottom Land is the land in the stream valleys. These soils are typically inundated many times during the year.

Figure G-7 illustrates the location of the soil polygons and labels each polygon with a soil series code and a Canada Land Inventory (CLI) colour code.

Figure G-7 Soils and Canada Land Inventory (CLI)



G.3.6.1 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 or Muck soils are not classified under this system. Disturbed Soil Areas are not rated under this system.

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:

"*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."

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) 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 I – Inundation by streams or lakes: Flooding by streams and lakes causes crop damage or restricts agricultural use.

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

Subclass P – Stoniness: This subclass indicates soils sufficiently stony to hinder tillage, planting, and harvesting operations.

Class 2P: Surface stones cause some interference with tillage, planting and harvesting; stones are 15-60 cm in diameter, and occur in a range of 1-20 m apart, and occupy <3% of the surface area. Some stone removal is required to bring the land into production.

Class 3P: Surface stones are a serious handicap to tillage, planting, and harvesting; stones are 15-60 cm in diameter, occur 0.5-1 m apart (20-75 stones/100 m^2), and occupy 3-15% of the surface area. The occasional boulder >60 cm in diameter may also occur. Considerable stone removal is required to bring the land into production. Some annual removal is also required.

Class 4P: Surface stones and many boulders occupy 3-15% of the surface. Considerable stone and boulder removal is needed to bring the land into tillable production. Considerable annual removal is also required for tillage and planting to take place.

Class 5P: Surface stones 15-60 cm in diameter and/or boulders >60 cm in diameter occupy 15-50% of the surface area (>75 stones and/or boulders/100 m^2).

Class 6P: Surface stones 15-60 cm in diameter and/or boulders >60 cm in diameter occupy >50% of the surface area.

Built Up areas are considered as Not Rated within the Canada Land Inventory classification system and have been given a CLI code of '0' in the OMAFRA soils dataset.

Table G-4 summarizes the relative percent area occupied by each capability class for the Subject Lands.

Table G-4: Canada Land Inventory – Subject Lands

Canada Land Inventory Class (CLI)	Area (ha)	Percent Occurrence
Class 1	124.2	74.6
Class 2	-	-
Class 3	-	-
Class 4	-	-
Class 5	21.2	12.8
Class 6	6.4	3.9
Class 7	-	-
Not Rated	14.6	8.8
Totals	**166.5**	**100.0**

The 'Prime Agriculture' Area lands surrounding the SECSP Area comprise approximately 74.8 percent Canada Land Inventory (CLI) capability of Class 1 – 3. Approximately 16.6 percent of these lands are considered Canada Land Inventory (CLI) class 4 - 7 soils, with the remaining 8.8 percent as Not Rated.

G.3.6.2 Hoffman Productivity Index (Soil Productivity Rating)

The Hoffman Productivity Index (HPI) is a tool that was published in ARDA Report No. 4 “The Assessment of Soil Productivity for Agriculture” and is used to relate the productivity of lands to the Canada Land Inventory (CLI) soil capability.

These indices are also referred to as the Soil Productivity Index and are used to calculate and assign a parcel or polygon a single value which represents the overall productivity of that parcel or polygon.

The single value is derived from the sum of the percent occurrence of each CLI Soil Capability Class on the parcel or within the polygon multiplied by the productivity index corresponding to the soil class.

Certain assumptions are made when using the productivity index. The HPI assumes that if the same level of management is applied to areas of differing CLI classes, then the productivity for each class will differ. Hoffman determined the average yields produced for common field crops on lands with CLI classes 1 to 4 within Ontario.

In developing the HPI, it was determined that a CLI class 2 land produced approximately 80% of the yield that would be associated with a class 1 land. Further that a class 3 land produced approximately 64% of the yield that would be associated with a class 1 land, while a class 4 land produced approximately 49%. Values for class 5 through class 7 lands were extrapolated. As a result, it was determined that the productivity ranges were as follows as illustrated in **Table G-5**.

Table G-5: Soil Productivity Index Ranges

CLI Class	Soil Productivity Index
1	1.0
2	0.8
3	0.64
4	0.49
5	0.33
6	0.17
7	0.02

A parcels or polygons HPI or Soil Productivity Index is calculated as follows:

Soil Productivity Index = (percent occurrence of class 1 lands x 1.0) + (percent occurrence of class 2 lands x 0.8) + (percent occurrence of class 3 lands x 0.64) + (percent occurrence of class 4 lands x 0.49) + (percent occurrence of class 5 lands x 0.33) + (percent occurrence of class 6 lands x 0.17) + (percent occurrence of class 7 lands x 0.02)

Once a Soil Productivity Index value is calculated for the parcel or polygon, the value can be related back to a CLI Equivalent. The following table (**Table G-6**) illustrates the range of values which can be directly correlated to the equivalent CLI class.

Table G-6: Soil Productivity Index Range and Equivalent CLI

Equivalent CLI Class	Soil Productivity Range
1	0.90 - 1.00
2	0.73 - 0.89
3	0.58 – 0.72
4	0.43 – 0.57
5	0.28 – 0.42
6	0.10 – 0.27
7	0.00 – 0.09

With respect to the 'Prime Agriculture' Area surrounding the SECSP Area, an HPI calculation was completed. The HPI value and subsequent CLI class are provided in Table 7.

Table G-7: Soil Productivity Rating and Equivalent CLI for the Subject Lands

	Soil Productivity Rating	Corresponding CLI Class
Subject Lands	0.795	2

The calculated Soil Productivity Rating for the 'Prime Agriculture' Area surrounding the SECSP Area was 0.795 or a CLI class 2 equivalent.

G.3.6.3 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 'Prime Agriculture' Area surrounding the SECSP Area are a complex mix of topography with steeper slopes associated with the stream courses and valleys, and with more gently sloping lands between the stream courses.

Generally, the topography of the lands within the 'Prime Agriculture' Area surrounding the SECSP Area slopes to the south, toward Lake Ontario.

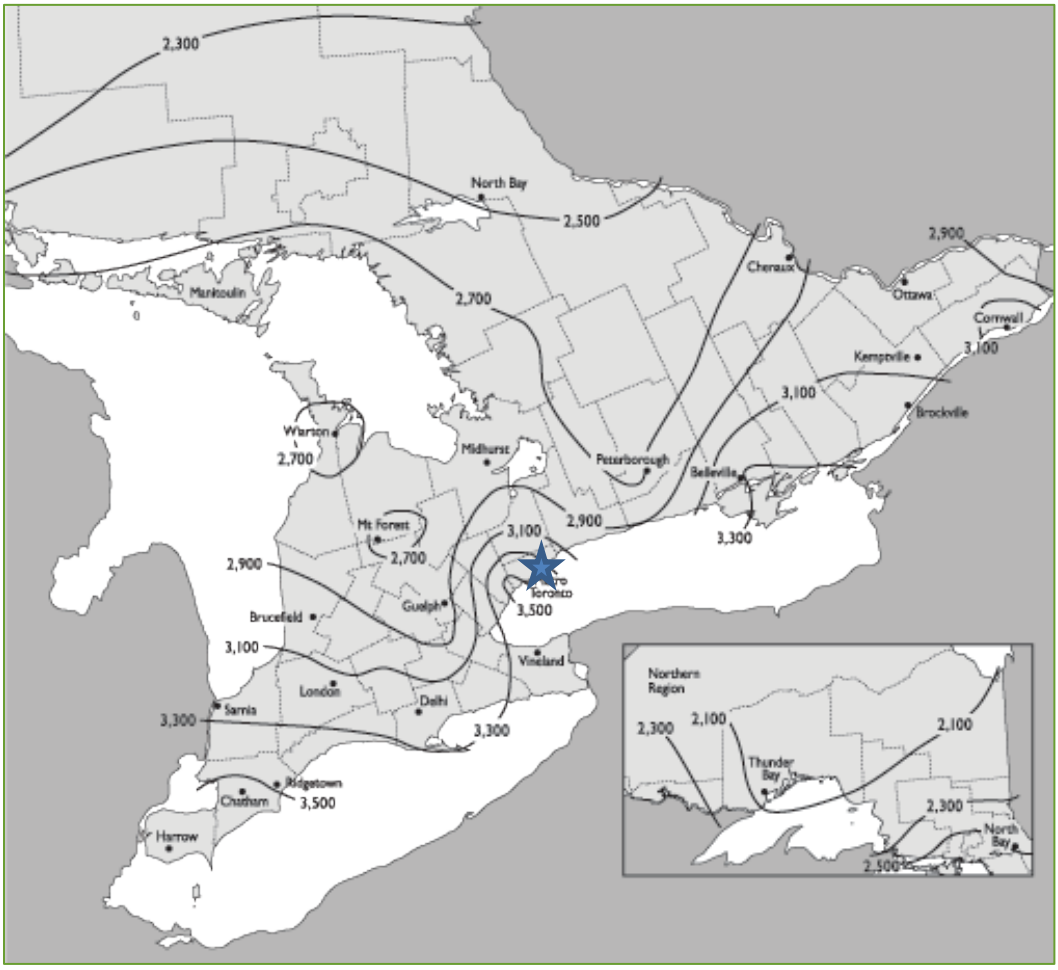
The topography of the lands associated with the stream courses are considered complex (slope length less than 50 m), while the topography of the lands between the stream courses is considered as simple sloped (slope length greater than 50 m) topography.

Climate data was taken from the OMAFRA document titled 'Agronomy Guide for Field Crops – Publication 811 (June 2009)' 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.

The Subject Lands are located near the 3300 Crop Heat Units (CHU-M1) line available for corn production area. 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 (based on 1971-2000 observed daily minimum and maximum temperature (OMAFRA, 2009)) map is illustrated below (**Figure G-8**). The approximate location of the Subject Lands is marked with a star.

Figure G-8: Crop Heat Units for Corn



G.3.7 Agricultural Census Data

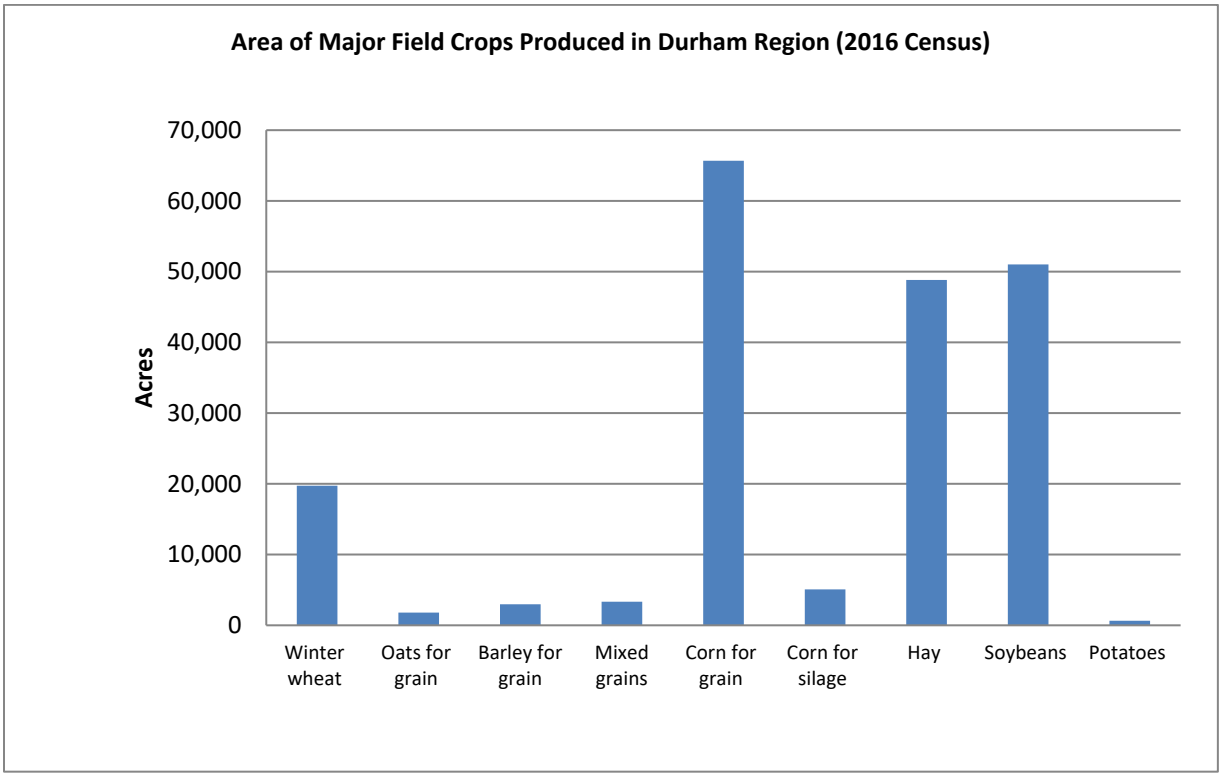
A review of the Census of Agricultural data (Census 2016) was completed to determine the agricultural characteristics of the Durham Region and the Municipality of Clarington, and to allow comparison to the agricultural characteristics on the 'Prime Agriculture' Area surrounding the SECSP Area.

Common field crops (corn, soybean) and small grains are the predominant crop production in the Region of Durham and the Municipality of Clarington. The predominant field crop in both instances is corn for grain. Graph 1 and Graph 3 illustrate the relative areas of major field crops for both Durham Region and the Municipality of Clarington.

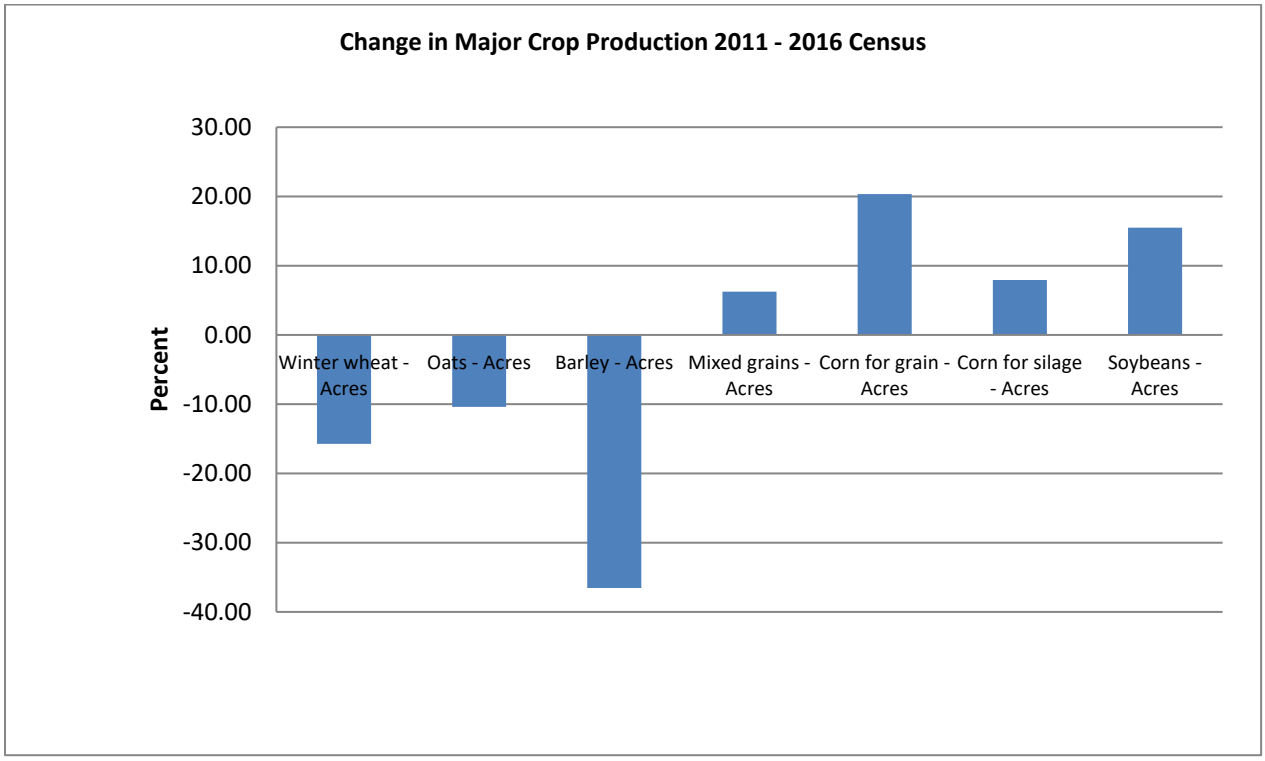
As illustrated in **Graph G-1** and **Graph G-2** the graphs, the major field crops for both Durham Region and the Municipality of Clarington are the traditional crops of soybean, corn for grain, hay and winter wheat. It was previously identified within this report that the lands of the 'Prime Agriculture' Area surrounding the SECSP Area were used for the production of common field crops, forage/pasture and unknown crops (line of sight restrictions).

In comparison to the Census data for Durham Region and the Municipality of Clarington, the 'Prime Agriculture' Area surrounding the SECSP Area cropping pattern is comparable with a crop rotation of soybean, corn and winter wheat which is consistent with the typical cropping found in the area.

Graph G-1: Area of Major Field Crops Produced in Durham Region (2016 Data)



Graph G-2: Change in Major Crop Production from 2011 Census Data – Durham Region

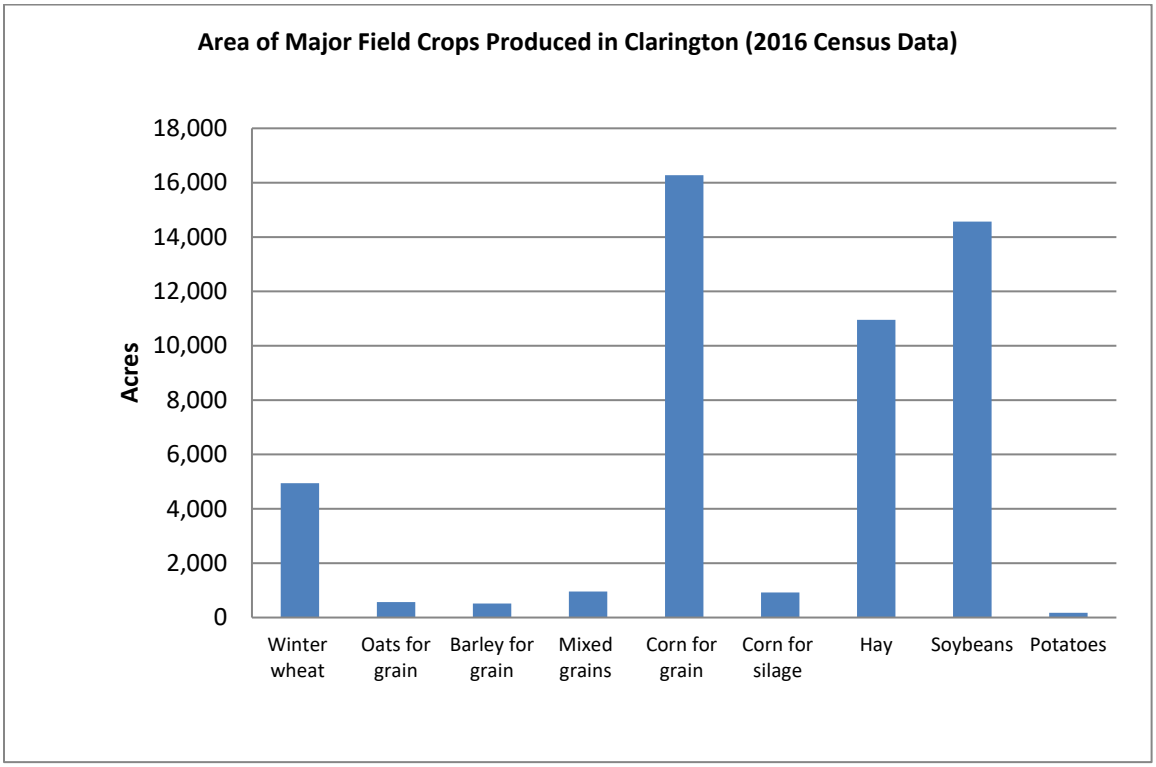


The Census (2016) data includes a component that documents the change in major crop production over time. **Graph G-2** and **Graph G-4** illustrate the change in major crop production for Durham Region and the Municipality of Clarington (respectively) since the 2011 Census.

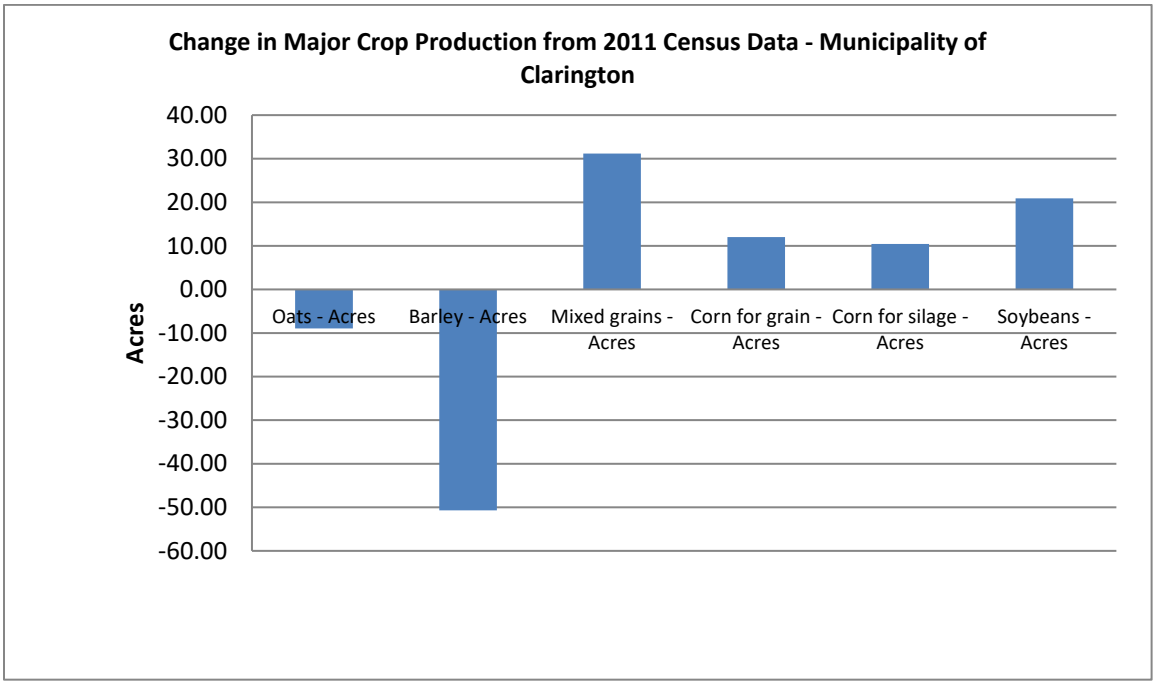
The change in major crop types for Durham Region includes a reduction in the number of acres planted in small grains and an increase in the number of acres planted for mixed grains, corn (for grain), corn (for silage) and soybean.

The change in major crop types for the Municipality of Clarington also includes a reduction in acres planted in small grains and an increase in the number of acres planted in mixed grains, corn (for grain), corn (for silage) and soybean.

Graph G-3: Area of Major Field Crops Produced in the Municipality of Clarington (2016 Data)



Graph G-4: Change in Major Crop Production from 2011 Census Data for the Municipality of Clarington



G.4 Policy Direction

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 (2014). 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: Greenbelt Plan (2017); the Oak Ridges Moraine Conservation Plan (2017); the Niagara Escarpment Plan (2017); and the Growth Plan for the Greater Golden Horseshoe(GGH) (2019) support the long-term protection of farmland The four provincial land use plans have policy plans that require Agricultural Impact Assessments (AIA) in the GGH.

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.

With this in mind, the: *Provincial Policy Statement (2020);* Greenbelt Plan (2017); the Oak Ridges Moraine Conservation Plan (2017); the Niagara Escarpment Plan (2017); and the Growth Plan for the Greater Golden Horseshoe (GGH) (2019) reviewed for this study.

With respect to this AIA and the four provincial land use plans, a review of the boundaries of the Greenbelt Plan Area, the Oak Ridges Moraine Area, the Niagara Escarpment Plan Area and the Growth Plan for the Greater Golden Horseshoe Area, only the Growth Plan for the Greater Golden Horseshoe (2019) and the Greenbelt Plan (2017) are applicable to this site.

The Greenbelt Plan (2017) detailed maps numbered 51, 65 and 66 were reviewed. On review of these maps it was determined that the Greenbelt Plan Area extends north from Highway 2 in the Municipality of Clarington. These lands are immediately adjacent to the northern boundary of the SECSP Area.

Additionally, the *Durham Regional Official Plan (Consolidation May 11th, 2017)* and the *Official Plan of the Municipality of Clarington* (2018) were reviewed.

The Corporation of the Town of Newcastle By-Law Number 84-63 (A Zoning By-Law) (Municipality of Clarington/Zoning By-Law 84-63 (Last update March 2015)) was also reviewed for zoning policy related to Agriculture on the ‘Prime Agriculture’ lands surrounding the SECSP Area.

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

G.4.1 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.

Agricultural policies are addressed within Section 2.3 of the Provincial Policy Statement. Selected portions of Section 2.3 state:

> 2.3 Agriculture
>
> 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.

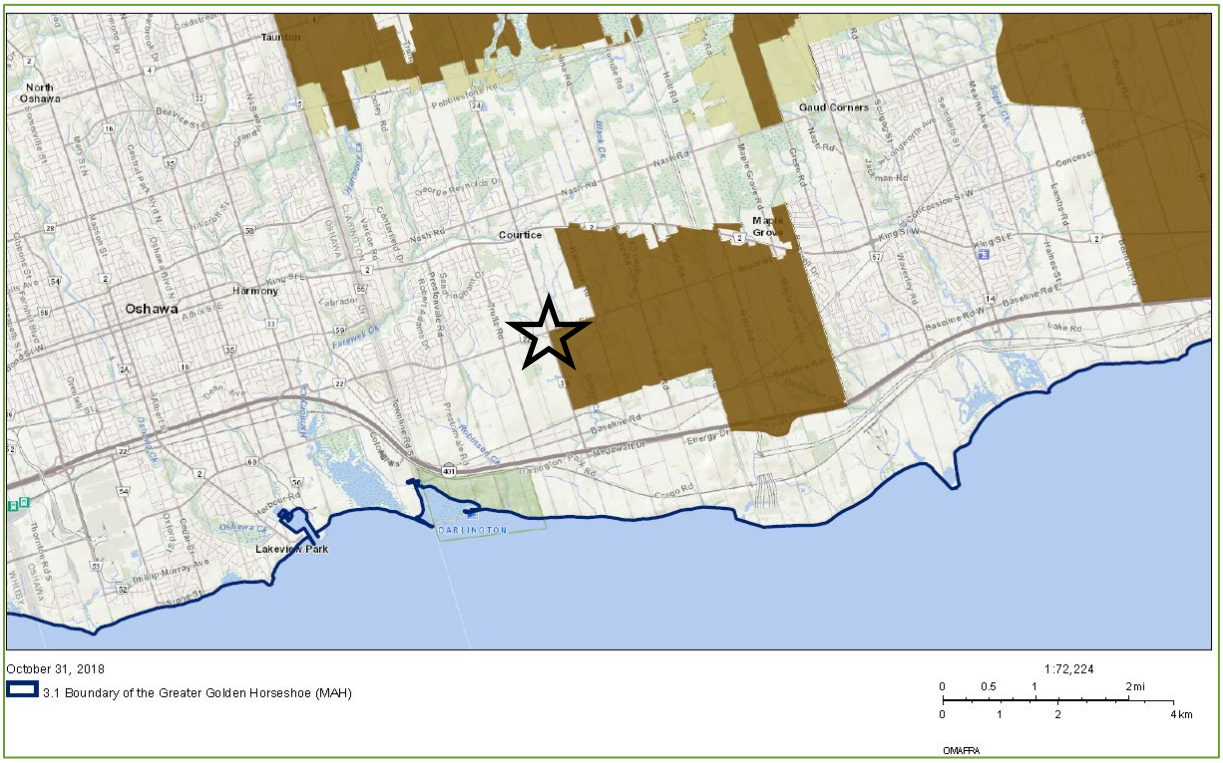
G.4.2 The Growth Plan for the Greater Golden Horseshoe (2019)

A review of the Growth Plan for the Greater Golden Horseshoe (2019) through the OMAFRA Agricultural System Portal illustrated that the Subject Lands are located within a Prime Agricultural Area.

The image below is a product of the Agricultural Systems Portal Mapping system (**Figure G-9**). The image illustrates the Prime Agricultural Areas (in Brown). The legend, in particular the designation for the Prime Agricultural Area, has not printed completely from the Agricultural Systems Portal Mapping online resource and, as such, is not provided in the following map.

As indicated previously, a black outlined star symbol illustrates the approximate location of the SECSP Area.

Figure G-9: Agricultural System Portal Mapping System



The Growth Plan for the Greater Golden Horseshoe (2019) provides comment on Agricultural Lands in Section 4.2.6 – Agricultural System

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.*

Additionally, the Growth Plan for the Greater Golden Horseshoe (2019) provides the following definitions:

- **Agricultural Impact Assessment**
  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).
- **Agricultural System**
  The system mapped and issued by the Province in accordance with this Plan, comprised of a group of inter-connected elements that collectively create a viable, thriving agricultural sector. It has two components: 1. An agricultural land base

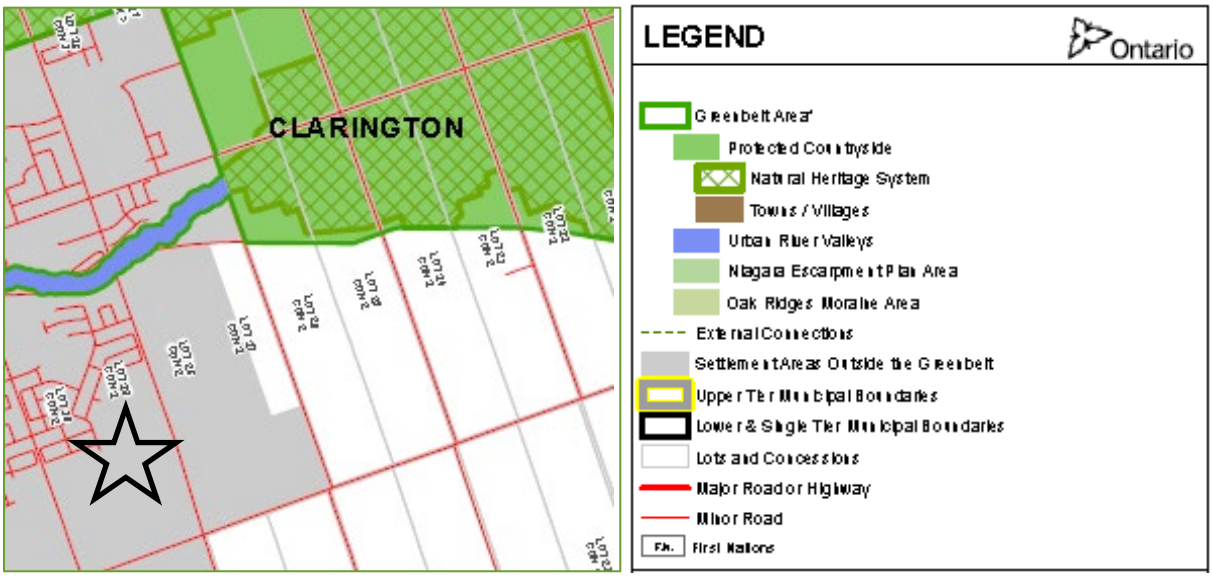
comprised of *prime agricultural areas*, including *specialty crop areas,* and *rural lands* that together create a continuous productive land base for agriculture; 2. An *agri-food network* which includes *infrastructure*, services, and assets important to the viability of the agri-food sector. (Greenbelt Plan).

- **Agri-Food Network**
  Within the *Agricultural System*, a network that includes elements important to the viability of the agri-food sector such as regional *infrastructure* and transportation networks; on-farm buildings and infrastructure; agricultural services, farm markets, distributors, and primary processing; and vibrant, agriculture-supportive communities. (Greenbelt Plan).

G.4.3 Greenbelt Plan (2017)

A review of the Detailed Greenbelt Plan Mapping (online resource) Map 51 illustrated that the lands to the northeast of Highway 2 and Hancock Road are within the Protected Countryside designated area. A select portion of Map 51 (and associated legend) are provided below. The approximate location of the SECSP Area is identified with an outlined star symbol.

Figure G-10: Detailed Greenbelt Plan Mapping (Select Portion of Map 51)



Select portion of the Greenbelt Plan, map division and enlargement Map 51

The Greenbelt Plan (2017) Protected Countryside – Agricultural System policies are provided in Section 3.1 of the Greenbelt Plan. The policies of Section 3.1 are provided below.

3.1 Agricultural System

3.1.1 Description

The Protected Countryside contains an Agricultural System that provides a continuous, productive and permanent agricultural land base and a complementary agri-food network that together enable the agri-food sector to thrive. Many of the farms within this system also contain important natural heritage features, including areas that support pollinators, and hydrologic features. The stewardship of these farms facilitates both environmental benefits and agricultural protection. The agricultural land base is therefore integral to the long-term sustainability of the Natural Heritage System within the Protected Countryside. It is through evolving agricultural and environmental approaches and practices that this relationship can continue and improve.

The agricultural land base is comprised of prime agricultural areas, including specialty crop areas, and rural lands. The agri-food network includes infrastructure, services and assets important to the viability of the agri-food sector.

The delineation of the Agricultural System is guided by a variety of factors, including a land evaluation area review (LEAR), which assesses such matters as soils, climate, productivity and land fragmentation; the existing pattern of agriculturally protected lands set out in official plans; the availability of infrastructure, services and assets important to the viability of the agri-food sector and a consideration of projected future growth patterns.

The Niagara Peninsula Tender Fruit and Grape Area and the Holland Marsh are specialty crop areas. The delineation of the Niagara Peninsula Tender Fruit and Grape Area (see Schedule 2) is based on provincial soil and climate analysis of current and potential tender fruit and grape production areas. The Holland Marsh boundary is based on provincial muck soil analysis and current agricultural production in both the Region of York and the County of Simcoe (see Schedule 3).

Prime agricultural areas are those lands designated as such within official plans to permanently protect these areas for agriculture.

Rural lands are those lands outside of settlement areas which are not prime agricultural areas and which are generally designated as rural or open space within official plans.

When official plans are brought into conformity with this plan, the mapping of the Agricultural System may only be refined and augmented in a manner that is consistent with the policies of section 5.3.

3.1.3

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:
    1. Refinements to the prime agricultural area and rural lands designations, subject to the policies of section 5.3; or
    2. 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.

G.4.4 Official Plan Policy

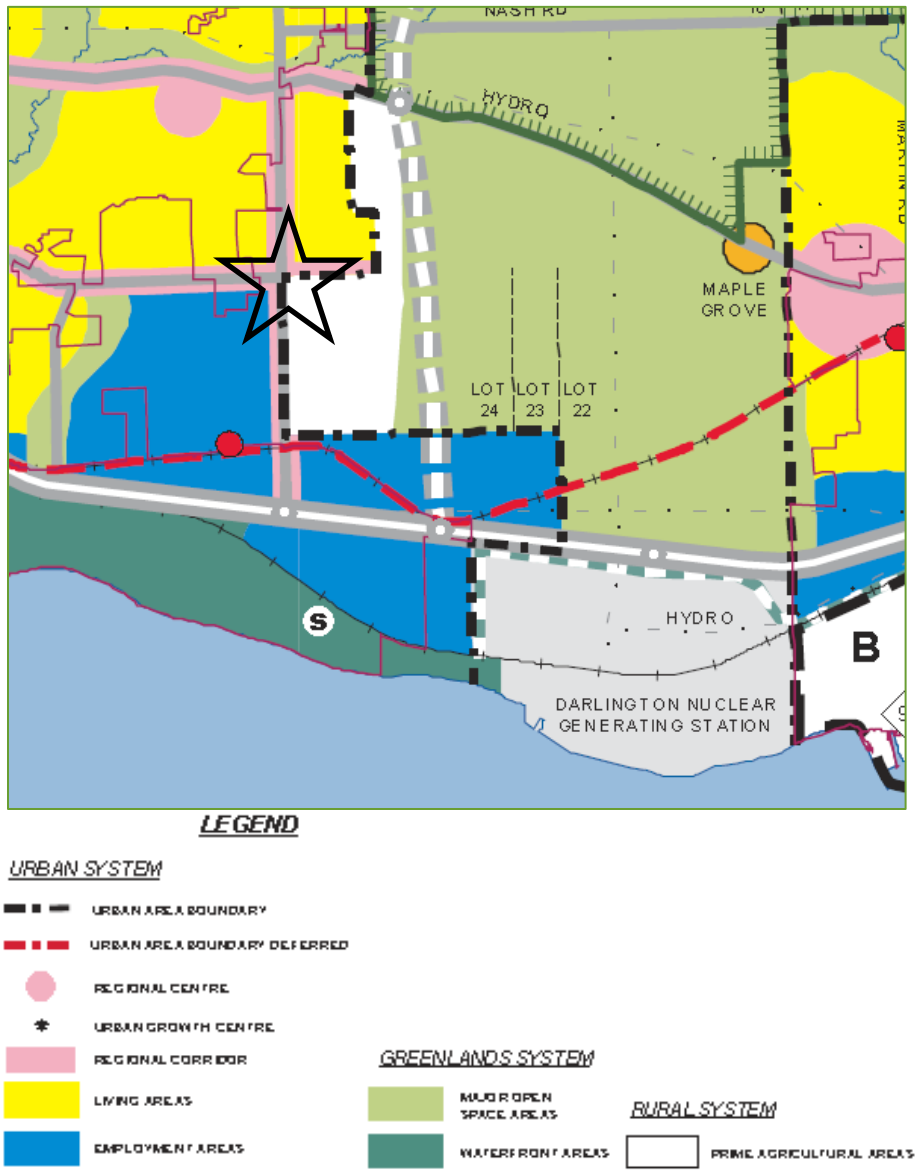
Official Plan policies are prepared under the Planning Act, as amended, of the Province of Ontario. Official Plans generally provide policy comment for land use planning while taking into consideration the economic, social and environmental impacts of land use and development concerns. For the purpose of this study the *Durham Region Official Plan (Consolidation May 11, 2017)* and the *Municipality of Clarington Official Plan (2018)* were reviewed for policy related to agriculture.

G.4.4.1 Durham Region Official Plan

The *Durham Region Official Plan (Consolidation May 11, 2017)* was reviewed for agricultural policy. A review of Schedule 'A' – Regional Structure map of the Official Plan of the Regional Municipality of Durham (Office Consolidation – May 11, 2017) illustrates that the area surrounding the SECSP Area comprises Living Areas (to the north and west), Employment Lands to the south, Rural System (Prime Agricultural Areas) (up to approximately the Highway 418) with Greenlands System (Major Open Space Areas) east of the Highway 418 and north of

Highway 2. The image below (**Figure G-11**) represents a portion of the Schedule 'A' – Regional Structure Map with a star representing the approximate location of the SECSP Area.

Figure G-11: Portion of the Schedule 'A' – Regional Structure Map



Part B - Structural Policies Section 9 Rural System, Subsection 9A – Prime Agricultural Areas provides policy for Agriculture. Part B – Structural Policies Section 10 Greenlands System, Subsection 10A – Major Open Space Areas provides policy on Major Open Space areas which include 'key natural heritage and hydrologic features, prime agricultural lands as well as lands of lesser agricultural significance'.

9A.1 General Policies

9A.1.1 Prime Agricultural Areas consist of areas where prime agricultural lands predominate. They also include areas of lesser agricultural significance (Canada Land Inventory Classes 4 to 7 soils) and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. Agricultural Areas shall be used primarily for agriculture and farm-related uses.

9A.1.2 The Region shall discourage fragmentation of the agricultural land base.

9A.1.3 The Region shall encourage the consolidation of agricultural parcels of land.

9A.1.4 The Region shall pursue actions by the Federal and Provincial Governments, and any other authorities having jurisdiction, to support the Region's agricultural industry.

9A.1.5 The intrusion of urban type land uses into Prime Agricultural Areas shall not be permitted.

9A.1.6 Marginal agricultural land, key natural heritage and hydrologic features and woodlands located within Prime Agricultural Areas, shall be considered as significant elements of the agricultural land base.

9A.1.7 New land uses and lot creation, as permitted by the policies of this Plan, and new or expanding livestock facilities shall comply with the Minimum Distance Separation formulae.

9A.1.8 Prime Agricultural Areas shall be protected as a significant element of the Region's economy and a secure source of food.

9A.2 Policies

9A.2.1 Prime Agricultural Areas outside of the Oak Ridges Moraine are designated on Schedule 'A'. Prime Agricultural Areas on the Oak Ridges Moraine are designated on Schedule 'B' – Map 'B3'.

9A.2.2 Within Prime Agricultural Areas a full range of agricultural, agricultural-related and secondary uses shall be permitted. The establishment of non-agricultural uses in Prime Agricultural Areas shall be strictly limited to forest, fish and wildlife management, conservation, infrastructure, aggregate extraction, existing uses, in accordance with the policies of this Plan, and the Oak Ridges Moraine Conservation Plan and Greenbelt Plan where applicable.

AGRICULTURAL-RELATED AND SECONDARY USES

9A.2.3 Agricultural-related uses, such as grain drying and storage for farm produce may be permitted, provided such uses are small in scale and exclusively devoted to the farm operation. Severances for agricultural-related uses shall not be granted.

9A.2.4 The establishment of a second dwelling to accommodate persons employed full-time on the farm may be permitted, where the size and nature of the operation warrants additional employment. In the Oak Ridges Moraine, the secondary dwelling may only be a temporary, mobile or portable unit. An application to sever such an accessory dwelling shall not be granted.

9A.2.5 Farm-gate sales and retail stands for the sale of agricultural products from the farm unit upon which the stand is to be situated, shall be permitted. Area municipal zoning by-laws shall include regulations to limit the size and scale of such stands. Severances for such uses shall not be granted.

9A.2.6 Uses accessory to the principal agricultural use of the property are permitted, including small-scale home occupations/businesses and home industries, and kennels, provided such uses do not alter the principal use of the property for agriculture. In addition, small-scale uses secondary to the agriculture use, that produce value-added agricultural products, such as cottage wineries, and agri-tourism uses, such as bed and breakfast establishments, farm vacation homes, and farm tours are permitted as secondary agricultural uses, provided such uses are directly related to, or exclusively devoted to the existing farm operation.

Area municipal official plans shall include detailed policies to limit the scale and number of secondary agricultural uses, and include policies to address compatibility with surrounding uses. New secondary agricultural uses, other than home occupations/business, bed and breakfast establishments and farm vacation homes, will only be permitted when the area municipal official plan has been amended, or where a site specific zoning by-law amendment has been adopted in accordance with the policies of this Plan.

Severances for accessory and secondary agricultural uses shall not be granted.

Agricultural, Agricultural-Related and Secondary Uses policies from Subsection 10A.2.3 are provided as follows.

AGRICULTURAL, AGRICULTURAL-RELATED AND SECONDARY USES

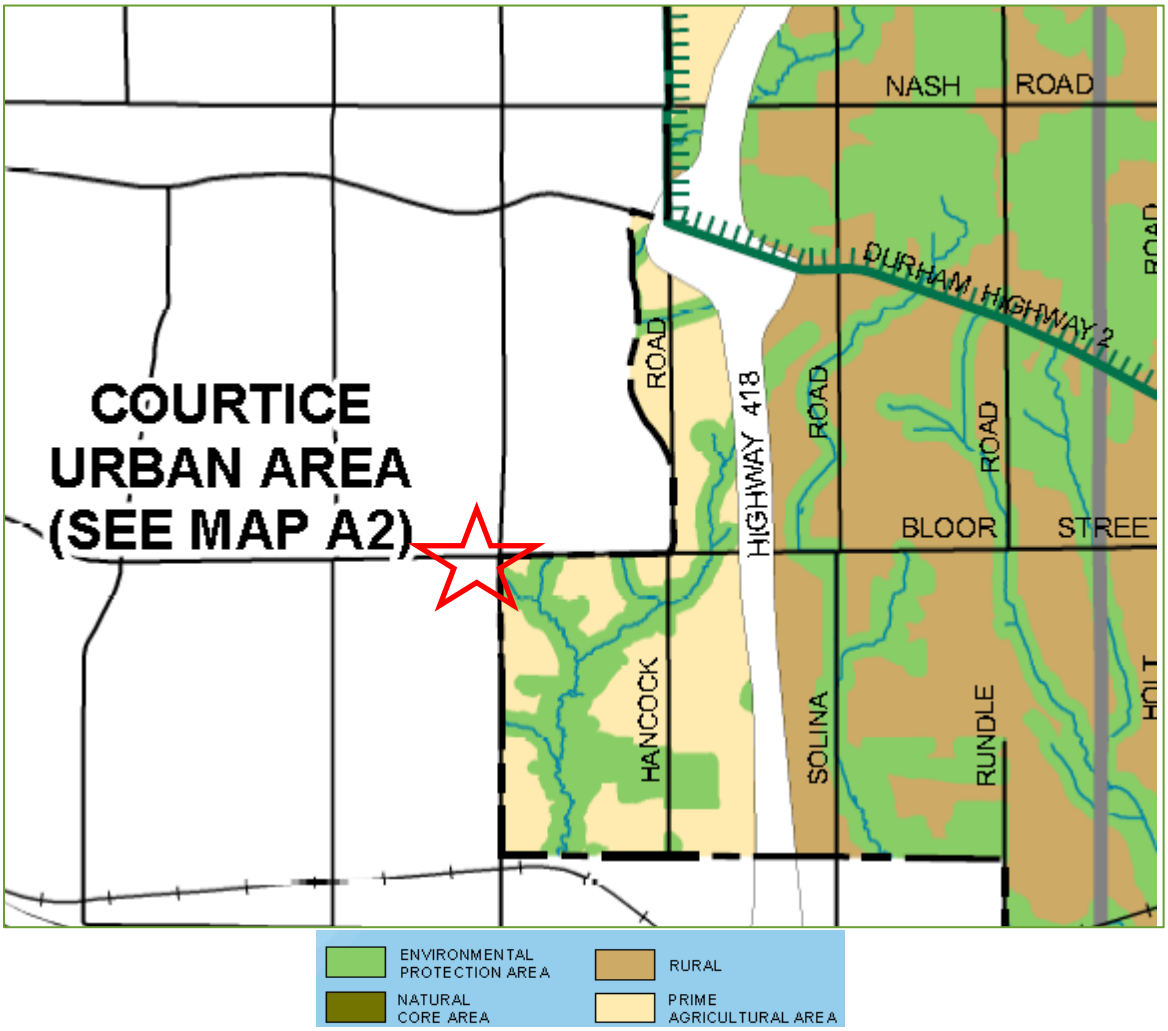
10A.2.3 In the Major Open Space Areas, any severance applications for agricultural and agricultural-related uses shall be considered, in accordance with the relevant policies of Sub-Section 9A.

G.4.4.2 Official Plan of the Municipality of Clarington

Map A1 – Land Use – West Clarington Rural Area of the Official Plan of the Municipality of Clarington (October 2018-Office Consolidation) was reviewed to determine the land use designations in the SECSP surrounding area. The review indicated that the lands surrounding the SECSP Area comprised the Courtice Urban Area to the west, north and south, while Prime Agricultural, Rural and Environmental Protection Areas were located to the east (out to 1.5 km) and to the northeast.

On completion of the review of Map A1, The Official Plan of the Municipality of Clarington (2018) was reviewed for policy related to agriculture. A select portion of Map A1 is presented below (**Figure G-12**).

Figure G-12: Select Portion of Map A1, The Official Plan of the Municipality of Clarington (2018)

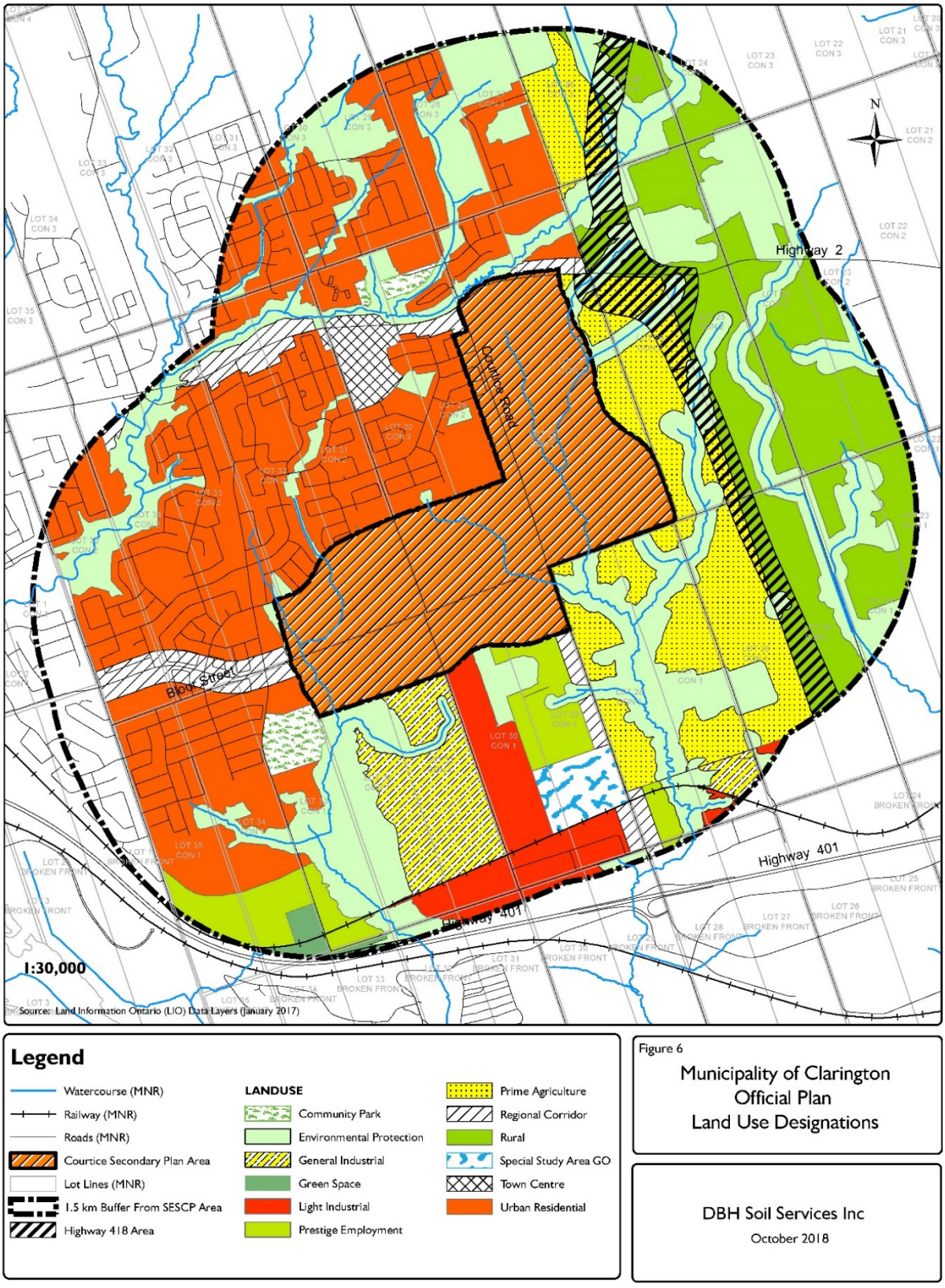


A review of the Official Plan of the Municipality of Clarington (Office Consolidation, October 2017) revealed that the Prime Agricultural Areas policies are found in Section 13 – Countryside, Section 13.4 – Prime Agricultural Areas. Section 13.4 Prime Agricultural Areas policies are provided as follows.

> 13.4 Prime Agricultural Areas
>
> 13.4.1 Prime Agricultural Areas shall predominantly be used for agricultural uses, agriculture-related uses and on-farm diversified uses.
>
> 13.4.2 Major Recreation uses are not permitted in Prime Agricultural Areas.

Figure G-13 illustrates the Land Use designations for the SECSP Area and the surrounding area out to 1.5 km. The ‘Prime Agriculture’ area has been highlighted in yellow on this map.

Figure G-13: Municipality of Clarington Official Plan Land Use Designations



G.4.4.3 The Town of Newcastle Zoning By-Law (84-63)

A review of the Town of Newcastle Zoning By-Law 84-63 (Municipality of Clarington/Zoning By-Law 84-63) and associated Zoning maps (Schedule '4' (Courtice) maps 4A, 4B, 4C, 4D and 4E) indicated that the 'Prime Agriculture' lands surrounding the SECSP Area (out to 1.5 km) are zoned as A (Agricultural).

A similar review of Zoning maps (Schedule '1' (Darlington)) illustrated that the 'Prime Agriculture' lands surrounding the SECSP Area (out to 1.5 km) are zoned as A (Agricultural). Smaller areas of EP (Environmental Protection), RC (Rural Cluster), RE (Residential Estate) and C (Commercial) were also noted within the 1.5 km area to the east of the SECSP Area.

The Agricultural (A) Zoning is provided in Section 6 of the *Town of Newcastle* (Municipality of Clarington/Zoning By-Law 84-63) Zoning By-Law. Section 6 states:

6. Agricultural (A) Zone

6.1 Permitted Uses

No person shall within the Agricultural (A) Zone, use any land or erect, alter or use any building or structure except as specified hereunder:

a. Residential Uses

i) One single detached dwelling;
ii) One additional single detached dwelling provided that such dwelling is used by persons employed on the lot, and provided that the lot is not less than 20 hectares in area;

Amended by By-law 85-51
Amended by By-Law 2015-062

iii) A converted dwelling containing not more than 2 dwelling units and occupied by persons employed on the same lot or members of the owner's immediate household; and
iv) A home occupation use in accordance with the provisions of Section 3.11.

b. Non-Residential Uses

i) Cemeteries and places of worship which existed prior to the date of passing of this By-law;
ii) Conservation and forestry;
iii) A farm;
iv) A wayside pit or quarry in accordance with the provisions of The Pits and Quarries Control Act, as amended;

Amended by By-law 2004-167
Amended by By-Law 2015-062

v) Kennels which existed prior to June 28, 2004;
vi) Fur farms;
vii) Riding and boarding stables;

Amended by By-law 95-88

viii) Seasonal farm produce sales outlet; and

Amended by By-law 85-51
Deleted by By-Law 2015-062

6.2 Regulations for Residential Uses

a. Non-farm residential buildings and structures on lots which predate the passing of this By-law, farm-related residences and residential buildings and structures on lots which are created by severance in accordance with the Durham Regional Official Plan, shall comply with the Zone requirements set out in Section 9.2 of this By-law. Notwithstanding the foregoing, where an additional single detached dwelling is provided, said dwelling shall have a total floor area of not less than 60 square metres.

b. Notwithstanding the above, converted dwellings shall have a minimum total floor area of 60 square metres.

6.3 Regulations for Non-Residential Uses

a. Lot Area (minimum) 40 hectares

b. Lot Frontage (minimum)

i) Farm Exclusive of Residential Buildings 10 metres
ii) All Other Permitted Uses 100 metres

c. Yard Requirements (minimum)

i) Front Yard 15 metres
ii) Exterior Side Yard 15 metres
iii) Interior Side Yard 15 metres
iv) Rear Yard 15 metres

d. Lot Coverage (maximum) 5 percent

e. Landscaped Open Space (minimum) 10 percent

f. Building Height (maximum)

i) Buildings Accessory to a Farm No Restriction
ii) All Others 10 metres

Amended by By-law 85-51

g. Residual Lot Area and Frontage Requirements

Notwithstanding the minimum lot area and frontage requirements set forth under Section 6.3 and the minimum setback requirements of Section 3.21, where a lot is created in accordance with the provisions of the Durham Regional Official Plan, that portion of the original lot from which the lot has been severed shall be deemed to be an existing non-complying lot and shall be subject to the provisions of Section 3.7 hereto, and shall be deemed to comply with the minimum setback requirements of Section 3.21.

Select portions of T*own of Newcastle* (Municipality of Clarington/Zoning By-Law 84-63) Zoning By-Law Schedule ‘1’ (Darlington) Map 1A and Schedule ‘4’ (Courtice) Maps 4D and 4E are presented below (.

Figure G-14: Municipality of Clarington Zoning By-Law 84.63 Schedule '4' (Courtice) – Maps 4D and 4E

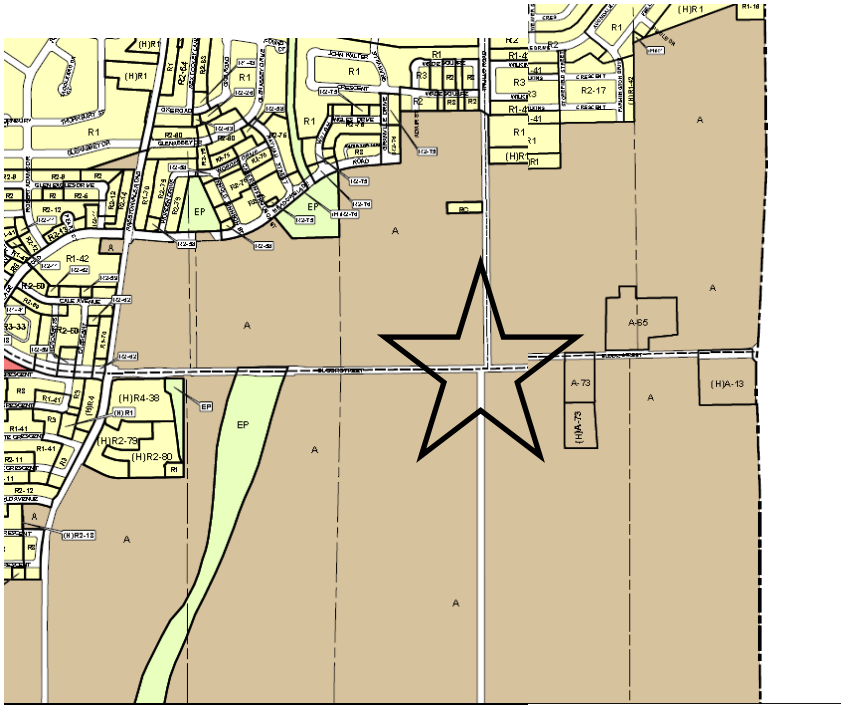
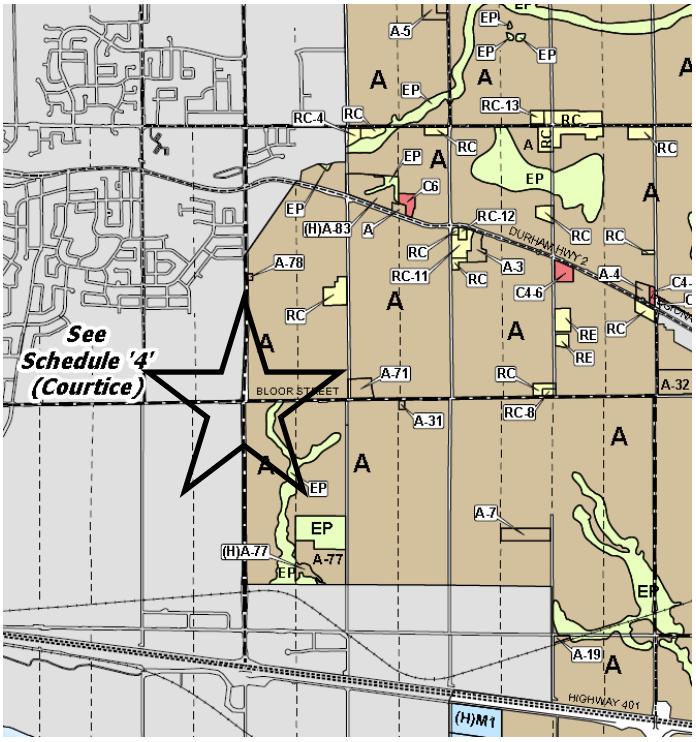


Figure G-15: Municipality of Clarington Zoning By-Law 84.63 Schedule '1' (Darlington) – Map 1A



G.5 Opportunities/Constraints & Related KPIs

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.

G.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 of 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 compatibility concerns
- Traffic concerns

When considering potential impacts to agriculture, it should be noted that this Agricultural Impact Assessment (AIA) report should be read in conjunction with all other discipline reports in an effort to provide an adequate evaluation of the above mentioned potential impacts.

It has been documented within this report, the agricultural character of the ‘Prime Agriculture’ Area surrounding the SECSP Area. It has been determined that the ‘Prime Agriculture’ Area surrounding the SECSP Area comprises portions of active agricultural land uses including cash crop operations in combination with a potential livestock operation (horse).

The ‘Prime Agriculture’ Area surrounding the SECSP Area comprises a mix of land tenure, with large areas of Non-Local Ownership and Local Ownership with Tenant Farmers. Further, that the ‘Prime Agriculture’ Area comprises numerous small parcels with non-farm residential units.

These types of Ownership and small parcel size send a clear, negative signal to the agricultural community as to the long term intensions for agriculture in the ‘Prime Agriculture’ Area surrounding the SECSP Area.

G.5.2 Traffic, Trespass and Vandalism

Specific to agriculture, the build out or urbanization of the SECSP Area will result in increased vehicle traffic. The increase in 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.

Trespassing and vandalism impacts are generally related to development within or adjacent to agricultural areas with specialty crop operations or large livestock operations, and in areas of close proximity to urban environments.

G.5.3 Agricultural Infrastructure

The reconnaissance level land use survey failed to identify any agricultural equipment dealers, seed dealers/cleaning/drying services or farm equipment maintenance service businesses within close proximity to the ‘Prime Agriculture’ Area surrounding the SECSP Area.

A review of the OMAFRA Agricultural System Portal was completed to identify the presence of any livestock assets and services (renderers, meat plants, and abattoirs), refrigerated warehousing and storage, frozen food manufacturing, farm markets, wineries, or cideries within the Study Area. None of these features was identified within close proximity to the ‘Prime Agriculture’ Area surrounding the SECSP Area.

The lack of local agricultural business and infrastructure is also indicative of areas in decline from agriculture, as these services rely on the business supplied by the local farm operators.

G.5.4 Mitigation Measures

G.5.4.1 Avoidance

In any change in land use within or adjacent to an identified or designated prime agricultural area will result in the potential for impacts to the adjacent agricultural area.

The first method of addressing potential impacts is to avoid the potential impact. In the SECSP Area, there is the potential for edge impacts between urban areas and the ‘Prime Agriculture’ lands. Avoidance measures are possible for potential impacts from traffic and changes to surface water quality and quantity.

The creation of urban areas should include the design of internal road systems that would direct the urban traffic to alternate roads, thereby avoiding roads that are used by farm vehicles and equipment, where possible.

In an effort to avoid potential impacts from changes in water quality and quantity, it would be appropriate to maintain or enhance the agricultural drainage (streams, creeks, rivers) and to avoid water erosion through effective stormwater management. In urban areas it would be appropriate to include buffer areas to minimize impermeable surfaces and to maximize vegetated areas in an effort to maintain or enhance groundwater and surface water supplies used by agricultural operations.

G.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 be achieved during the design process and through proactive planning measures that provide for the separation of land uses.

G.5.4.3 Mitigating Impacts

When avoidance technics and minimizing impacts potential impacts to agriculture have not achieved the desired effect the next priority is to mitigate any further impact.

Potential mitigation measures include:

- The calculated MDS1 distances relate to the existing livestock facilities. The use of a greater distance (more than the minimum calculated distance) would support potential future expansion of existing operations or any possible new livestock facilities.
- The use of buffers to provide greater distance or boundary (trees, vegetation, ponds, etc.) between nonagricultural and agricultural land uses
- 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.
- The creation of a wall or berm between the different types and intensities of land uses to 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 or Private Property.
- Locate low occupancy uses on the developing lands adjacent to farmland and agriculture operations.
- The use of plantings/vegetation as buffers to reduce visual impacts and sounds.

- The rebuilding of roads to accommodate the volumes of proposed traffic and allow for large shoulders for farm equipment. Roads would need to be designed to accommodate the larger farm equipment (height and width) through the use of wider lanes, wider shoulders, better lighting, good sight lines at intersections and bridges, offset signs and lighting systems to allow for wider equipment.
- The use of reduced speed limits in the agricultural areas.
- Implementation of surface and/or groundwater monitoring in areas where agricultural operations make use of surface or groundwater as part of their normal farm practices.
- Efforts could be made to maximize stormwater infiltration to support groundwater recharge or to minimize the extent of impermeable surfaces in development areas and to reduce runoff into water courses flowing into agricultural areas.

G.5.4.4 Next Steps/Recommendations

Agriculture continues to be a major land use in Durham Region and with good planning, the interface zone between agricultural lands and urban areas can continue to be a vibrant part of local agricultural commodity sales, education opportunities and agricultural business opportunities (market gardens, riding stables, etc).

The above-mentioned recommendations, such as 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, were incorporated in the Phase 2 - Assessment of Alternatives Technical Evaluation. The use of these potential mitigation measures was applied to each of the three options in the Phase 2 assessment and were considered in conjunction with recommendations and potential mitigation for the other disciplines.

Phase 3 – Design stage further enhanced the use of the above-mentioned mitigation measures in the Transition Zone by providing guidelines that consider the sensitivity of adjacent agricultural land uses and to protect them for the long term. The guidelines include: providing greater distances than what were calculated with the Minimum Distance Separation (MDS) guidelines; the use of buffers (including vegetation, trees, ponds) and landscape features between agriculture and non-agricultural uses; the construction of roads with wide shoulders and good lighting to accommodate the predicted traffic volumes; and the consideration of surface/ground water monitoring.

The use of and consideration of the above-mentioned mitigation measures in the SECSP will allow for coherent and organized planning for the creation of healthy and vibrant communities.

Attachment I : Data Sources

- 1:10000 scale Ministry of Natural Resources (MNR) Aerial Photography, 1978,
- 1:10000 scale Ontario Base Map (1983) Ministry of Natural Resources:
  - 10 17 6750 48650
  - 10 17 6750 48600
  - 10 17 6800 48650
  - 10 17 6800 48600
- 1:50000 scale NTS Map No 30 M/15. 1984. Ministry of Energy Mines and Resources, Canada,
- 1:50000 scale NTS Map No 30 M/15. Canada Land Inventory (CLI) Capability Mapping,
- Agricultural Information Atlas online resource (OMAFRA),
- *Agricultural Resource Inventory*, Ontario Ministry of Agriculture and Food, 1988,
- Agricultural System Portal online resource (OMAFRA),
- Birdseye Online Imagery,
- *Durham Regional Official Plan* (Consolidation May 11, 2017),
- Google Earth Pro Online Imagery,
- *Greenbelt Plan* (2017),
- *Growth Plan for the Greater Golden Horseshoe* (2019),
- *Guide to Agricultural Land Use*, Ontario Ministry of Agriculture, Food and Rural Affairs, March 1995,
- *Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas, 2016* (Publication 851),
- *Municipality of Clarington Zoning By-Law 84-63 – Schedule 1 (Darlington)*, December 2010,
- *Municipality of Clarington Zoning By-Law 84-63 – Schedule 4 (Courtice)*, August 2016,
- *Official Plan for the Municipality of Clarington*, 2018,
- Ontario Ministry of Agriculture and Food - Land Use Systems Mapping,
- Ontario Ministry of Agriculture and Food - Artificial Drainage Mapping,
- *Provincial Policy Statement*, 2020,
- *The Canadian System of Soil Classification*. 3rd ed. Agric. Can. Publ. 1646. Agriculture Canada Expert Committee on Soil Survey. 1998,
- *The Corporation of the Town of Newcastle By-Law Number 84-63 (Municipality of Clarington/Zoning By-Law 84-63, Last Update March 2015),*
- *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 Physiography of Southern Ontario* 3rd Edition, Ontario Geological Survey Special Volume 2, Ministry of Natural Resources, 1984,
- Windshield and field surveys by DBH Soil Services staff August 22-23, 2018 and October 29, 2018.

Attachment II : Potential Agricultural Facilities (Buildings) Photographs

Photograph G-1: Agricultural Facility #1

Photograph G-2: Agricultural Facility #2

Photograph G-3: Agricultural Facility #3

Attachment III : Unique Symbols List OMAFRA Soils Data

Table G-8: Unique Soil Symbols List (OMAFRA Soils Data – July 2018)

SYMBOL1	RANGE1	STONINESS1	CLI1
B	30-45	0	7
B.L.		0	5
B-b	15-30	3	4
Bg	0.5-2	0	3
Bl	2-5	1	1
Br-b	0.5-2	0	4
Brs	0.5-2	0	2
Brsl	2-5	0	2
Brsl/g	2-5	0	3
Brsl-st	2-5	3	3
Bs	2-5	1	1
Bs	0.5-2	0	2
Bsl	2-5	1	1
Dal	2-5	0	1
Dal-b	9-15	0	1
Dasl	2-5	0	1
Dsl	2-5	0	2
El	2 - 5	0	1
El-sh	2 - 5	2	3
Fl	0.5-2	2	6
Gs-b	0.5-2	4	6
Gsl	0.5-2	0	4
Gsl	0.5-2	0	5
Gu-b	0.5-2	3	4
Gul	2-5	1	1
Gusl	2-5	1	1
Ks	0.5-2	0	5
Lcl	2 - 5	0	2
Ll	0.5-2	1	3
Ll	0.5-2	1	3
M	0.5-2	0	O
Ma	0 - 0.5	0	7
Ma	0-0.5	0	7
Ml	2-5	1	1
Ml-st	2-5	2	2
Ms	0.5-2	0	3
Ncl	2-5	0	1
Nl	2-5	0	1
Ol	2 - 5	1	1
Ol-s	15-30	2	5
Osl	2 - 5	1	1
P	0-0.5	0	O
Pec	2-5	0	1
Pg	15-30	0	6
Pl	2-5	0	1
Ps	15-30	0	6

SYMBOL1	RANGE1	STONINESS1	CLI1
P-s	15-30	0	6
Psl	15-30	0	6
Scl	0.5-2	0	1
Sg	0.5-2	0	3
Shc	2-5	0	1
Shs	2-5	0	1
Sic		0	2
Tfsl	0.5-2	0	1
Tsl	0.5-2	0	2
Tsl-st	0.5-2	2	2
Wes	2-5	0	4
Whl	2-5	0	1
Wol	2-5	1	1
Wos	2-5	1	1
ZZ			W