



**KIRBY ROAD WIDENING EA (JANE STREET TO
DUFFERIN STREET) -
AGRICULTURAL IMPACT ASSESSMENT
CITY OF VAUGHAN
REGION OF YORK**

DBH Soil Services Inc.

March 24, 2022



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CITY OF VAUGHAN
REGION OF YORK**

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March 24, 2022

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I BACKGROUND

DBH Soil Services Inc was retained to complete an Agricultural Impact Assessment (AIA) for an area identified as the Kirby Road Widening Environmental Assessment (EA) – Jane Street to Dufferin Street Study Area. The Study Area Map is provided below and will be referred to as the Study Area within this AIA. In early 2021 a proposed Right-of-way and associated easements was defined for the road widening. This AIA will comment on the Study Area and the potential impacts to agriculture within the proposed Right-of-way and associated easements. It should be noted that the majority of the Proposed Right-of-way and associated easements are located within the existing Kirby Road Right-of-way. Small slivers of additional lands adjacent to the existing Kirby Road Right-of-way will be the only areas potentially impacted by the Proposed Right-of-way and associated easements.



The Study Area is centered on Kirby Road, and crosses Jane Street, Keele Street and Dufferin Street. Further, the Study Area crosses the Barrie GO Rail line just west of Keele Street. The proposed Right-of-way and easements include the existing Kirby Road Right-of-way.

The Study Area comprises a mix of land uses including agriculture, recreation, urban, commercial and woodlands. The proposed Right-of-way and associated easements include the existing Kirby Road Right-of-way, and slivers of the adjacent lands. The Proposed Right-of-way and associated easements will include:

- road realignment (Kirby Road will be re-aligned at its intersection with Jane Street resulting in one intersection instead of two)
- road widening (from two to four lanes, and urbanization with curb and gutter throughout)
- active transportation facilities (2.0 m in-boulevard cycle track next to 2.0m sidewalk)
- Underpass (road under the rail) at the Barrie GO Rail crossing
- Street trees
- Illumination

The purpose of this AIA is to document the existing agricultural character, identify potential impacts and to provide mitigative measures as necessary.

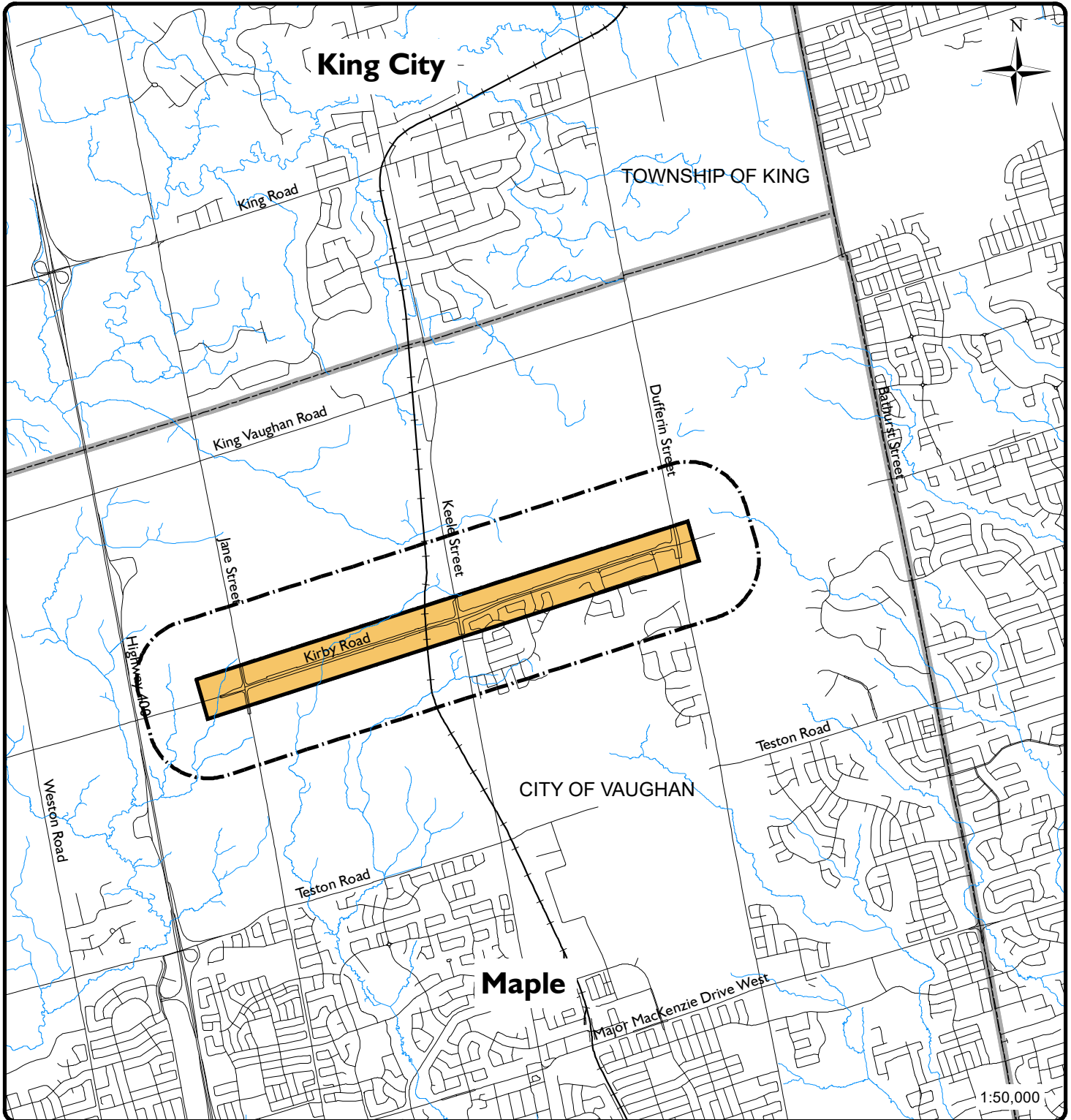
In the greater Regional context, the Study Area, and proposed Right-of-way and associated easements, are located approximately 2.5 km south of King City (in the Township of King) and approximately 1.8 km north of the community of Maple (in the City of Vaughan).

For the purpose of an Agricultural Impact Assessment (AIA) report, agricultural operations and activities are evaluated in a larger area, the Secondary Study Area, described as a potential zone of impact extending a minimum of 750 m (0.75 km) beyond the boundary of the Study Area.

This minimum 750 m (0.75 km) area of potential impact outside the Study Area is used to allow for characterization of the agricultural community and the assessment of impacts adjacent both on and in the immediate vicinity of the Study Area.

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

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



Legend








-  Railway
-  Roads
-  Watercourse (MNR)
-  Municipal Boundary
-  Proposed Right-of-Way and Easements
-  Secondary Study Area (750 m)
-  Study Area

Figure 1

Location

DBH Soil Services Inc.

October 2021

2 METHODOLOGY

A variety of data sources were evaluated to characterize the extent of agriculture resources and to assess any potential existing (or future) impacts to agriculture within the Study Area, the surrounding Secondary Study Area, and within the Proposed Right-of-way and associated easements.

It should be noted that neither the Regional Municipality of York nor the City of Vaughan have specific guidelines for completing an Agricultural Impact Assessment (AIA). Therefore, a review was completed to determine the existence and use of Agricultural Impact Assessment Guidelines in Ontario.

The review on the existence and use of Agricultural Impact Assessment Guidelines revealed that the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) had 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 have status. Prior to the release of the OMAFRA AIA guidelines, a standard for completing Agricultural Impact Assessments was 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.

As a result of the review on the existence and use of Agricultural Impact Assessment guidelines in Ontario, this Agricultural Impact Assessment report has been completed with regard to the *Region of Halton Agricultural Impact Assessment Guidelines (2014)*, 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 Surrounding 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; nonagricultural land use; parcel size, shape and accessibility; existing farm management; capital investment related to agriculture)
- Offsite 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*”.

2.1 DATA SOURCES

The following data sources were used (as a minimum) to carry out the AIA for the Study Area and Secondary Study Area:

- 1:10000 scale Ministry of Natural Resources and Forestry (MNRF) Aerial Photography, 1978,
- 1:10000 scale Ontario Base Map (1983) Ministry of Natural Resources and Forestry (MNRF):
 - 10 17 6150 48550
 - 10 17 6150 48600
 - 10 17 6200 48550
 - 10 17 6200 48600
- 1:50000 scale NTS Map No 30 M/13 and 31 D/4. 1984. Ministry of Energy Mines and Resources, Canada,
- 1:50000 scale NTS Map No 30 M/13 and 31 D/4. Canada Land Inventory (CLI) Capability Mapping (date unknown),
- *Agricultural Impact Assessment (AIA) Guidelines. Regional Official Plan Guidelines.* Halton Region. June 18, 2014,
- Agricultural Information Atlas online resource (OMAFRA, December 2019),
- Agricultural Resource Inventory, Ontario Ministry of Agriculture and Food, 1988,
- Agricultural System Portal online resource (OMAFRA, December 2019),
- Birdseye Online Imagery (December 2019),
- *City of Vaughan Official Plan 2010* (2019 Office Consolidation),
- Google Earth Pro Online Imagery (December 2019),
- *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)*,
- Ontario Ministry of Agriculture and Food - Land Use Systems Mapping Online (December 2019),
- Ontario Ministry of Agriculture and Food - Artificial Drainage Mapping Online (December 2019),
- *Provincial Policy Statement*, 2014,
- *Soil Survey of York County.* Report Number 19 of the Ontario Soil Survey. (Hoffman, D.W. and N.R. Richards, 1955),
- *The Canadian System of Soil Classification.* 3rd ed. Agric. Can. Publ. 1646. Agriculture Canada Expert Committee on Soil Survey. 1998,
- *The Corporation of the City of Vaughan By-Law Number 1-88.* (September 19, 1988),

- *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,*
- *The Regional Municipality of York Land Evaluation and Area Review Summary Report (August 28, 2009). Planscape and the Soil Resource Group,*
- *The Regional Municipality of York Official Plan 2019 Office Consolidation. (April 2019). Modified York Region Official Plan – 2010,*
- Windshield and field surveys by DBH Soil Services staff December 9, 2019.

2.2 DATA COLLECTION

2.2.1 POLICY

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

The review included an examination of Provincial and Municipal policy as is presented in the *Provincial Policy Statement (2014)*, the *Greenbelt Plan (2017)*, the *Growth Plan for the Greater Golden Horseshoe (2019)*, the *Oak Ridges Moraine Conservation Plan (2017)*, *The Regional Municipality of York Official Plan 2019 Office Consolidation. (April 2019)* and the *City of Vaughan Official Plan 2010 (2019 Office Consolidation)*

The review also included a search of the *Corporation of the City of Vaughan By-Law Number 1-88 (September 19, 1988)*.

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

An assessment of online data resources including the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), the Ministry of Natural Resources and Forestry (MNRF) Land Information Warehouse, the Region of York website, the City of Vaughan Website, combined with telephone, email and in person communication was used to derive a list of relevant policy, by-law and guidelines. Each relevant policy, by-law and guideline was collected in digital or paper format for examination for this study.

2.2.2 PHYSIOGRAPHY

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

2.2.3 TOPOGRAPHY AND CLIMATE

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

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

2.2.4 AGRICULTURAL LAND USE

Agricultural land use data was collected through observations made during roadside reconnaissance surveys and field surveys conducted on December 9, 2019. Data collected included the identification of land use (both agricultural and non-agricultural), the documentation of the location and type of agricultural facilities, the location of non-farm residential units and the location of 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 both the Study Area and Secondary Study Area.

2.2.5 MINIMUM DISTANCE SEPARATION

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

Guideline #10 states "*An MDS setback is required for all proposed amendments to rezone or redesignate land to permit development in prime agricultural areas and rural lands presently zoned or designated for agricultural use.*" MDS setbacks are calculated to separate uses so as to reduce incompatibility concerns about odour from livestock facilities.

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 # 3 pertains. Guideline # 3 – For What, and When, is an MDS setback NOT Required states:

“Certain proposed uses are not reasonably expected to be impacted by existing livestock facilities or anaerobic digesters and as a result, do not require an MDS setback. Such uses may include, but are not limited to:

- *extraction of minerals, petroleum resources*

and mineral aggregate resources;

- *infrastructure; and*
- *landfills.”*

Infrastructure is defined within 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) as: “Physical structures (facilities and corridors) that form the foundation for development. Infrastructure includes: sewage and water systems, septage treatment systems, stormwater management systems, waste management systems, electricity generation facilities, electricity transmission and distribution systems, communications/telecommunications, transit and transportation corridors and facilities, and oil and gas pipelines and associated facilities.”

This study relates to the enhancements of an existing road (transportation corridor) which has been define as infrastructure.

Therefore, MDS I calculations are **NOT** required for this study.

2.2.6 LAND TENURE AND FRAGMENTATION

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 data provided by the City of Vaughan. This data was used to determine the extent, location, and relative shape of each parcel/property within both the Study Area and the Secondary Study Area. It should be noted that there are no policies Provincially or Municipally that refer to land tenure. OMAFRA does consider land fragmentation as an impact to agriculture, and has illustrated the potential impact of fragmentation by including fragmentation in the Provincial Land Evaluation and Area Review (LEAR) study that was used to create the Provincial Land Base mapping

Land fragmentation data was collected through a review of online interactive mapping on the Agricultural Information Atlas (OMAFRA) website, the Agricultural System Portal (OMAFRA), the Town of Milton Website and assessment data, the Region of Halton website and assessment data. This data was used to determine the extent, location, relative shape of each parcel/property within both the Study Area and the Secondary Study Area.

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

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

2.2.7 SOIL SURVEY

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

The digital soil survey data was also correlated to the printed soil survey report and map *Soil Survey of York County*. Report Number 19 of the Ontario Soil Survey. (Hoffman, D.W. and N.R. Richards, 1955) to determine if the digital soils data has been modified from the original soil survey data.

2.2.8 AGRICULTURAL SYSTEM

The Ontario Ministry of Agriculture, Food and Rural Affairs online Agricultural Systems mapping were reviewed to determine the extent of agriculture on the Study Area, in the Secondary Study Area and within the City of Vaughan.

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.

2.2.9 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 Regional Municipality of York data used for this project. The data documents up to the 2016 Census. The City of Vaughan data was part of the Regional Municipality of York data set.

Additional census data sets were reviewed including the data for the Golden Horseshoe, the Greater Golden Horseshoe and the GTA (Greater Toronto Area).

3 POLICY REVIEW

Clearly defined and organized environmental practices are necessary for the conservation of land and resources. The long-term protection of quality agricultural lands is a priority of the Province of Ontario and has been addressed in the Provincial Policy Statement (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 the completion of Agricultural Impact Assessment (AIA) studies for changes in agricultural land use.

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 (2014)*; 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) were 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 was completed. It was determined that the Study Area (and Secondary Study Area) were located within the boundaries of the Oak Ridges Moraine Conservation Plan (2017), the Greenbelt Plan (2017), and the Growth Plan for the Greater Golden Horseshoe (2019).

A review of the agricultural policies in the Regional Municipality of York Official Plan 2019 Office Consolidation (April 2019) (Modified York Region Official Plan – 2010) and of the City of Vaughan Official Plan 2010 (2019 Office Consolidation) was completed as part of this study. Further, a review of the Corporation of the City of Vaughan By-Law Number 1-88. (September 19, 1988) was completed.

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

3.1 PROVINCIAL AGRICULTURAL POLICY

The Provincial Policy Statement (2014) was enacted to document the Ontario Provincial Governments development and land use planning strategies. The Provincial Policy Statement provides the policy foundation for regulating the development and use of land. With respect to the enhancements of Kirby Road the following policies may apply.

Section 1.6.8 – Transportation and Infrastructure Corridors provides policy specific planning policy for transportation.

Agricultural policies are addressed within Section 2.3 of the Provincial Policy Statement. Section 2.3.1 states that ‘Prime agricultural areas shall be protected for long term use for agriculture.’ Prime agricultural areas are defined as Specialty Crop Areas and Classes 1 – 3 lands with the order of preservation being Specialty Crop Areas, Classes 1, 2 and 3 in that order respectively, followed by any associated Class 4 through 7 lands within the prime agricultural area, in this order of priority.

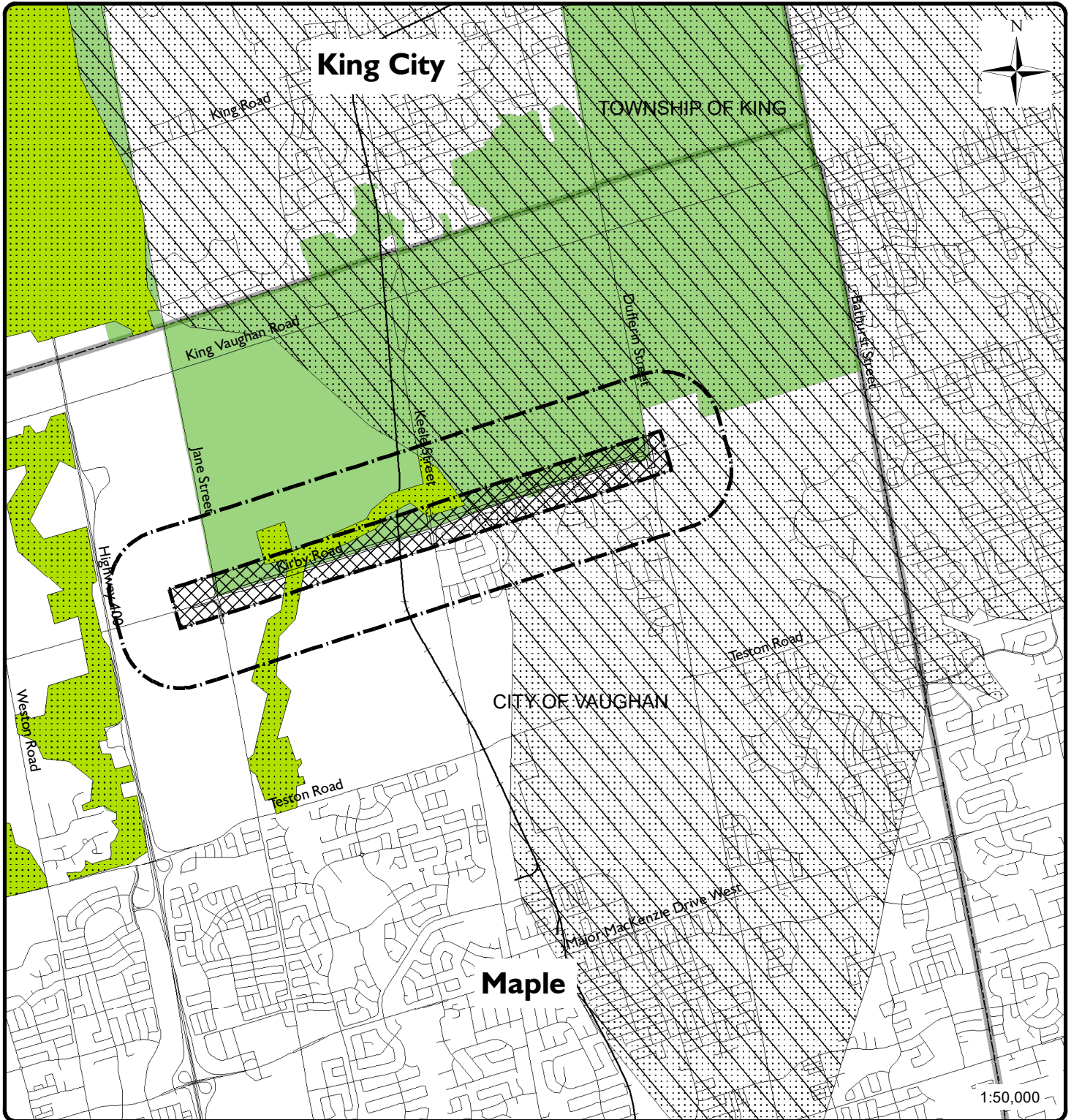
Section 2.3.4 – Lot Creation and Lot Adjustments provides policy for the creation of lots in agricultural areas. Section 2.3.4.1d – infrastructure states that lot creation in prime agricultural areas is discouraged and may only be permitted for “*infrastructure*, where the facility or corridor cannot be accommodated through the use of easements or rights-of-way.”

Section 2.3.6.2 states that any “impacts from any new or expanding non-agricultural uses on surrounding agricultural operations and lands are to be mitigated to the extent feasible.”

3.2 PROVINCIAL LAND USE PLANS

A review of the OMAFRA Agricultural Systems Portal has indicated that portions of the Study Area and Secondary Study Area are within the Oak Ridges Moraine Conservation Area, the Greenbelt Plan Area, Prime Agricultural Areas as defined within the Agricultural System for the Greater Golden Horseshoe and within the Growth Plan for the Greater Golden Horseshoe Area.

Figure 2 illustrates the approximate boundaries of the Agricultural Land Base, Prime Agricultural Area for the Growth Plan for the Greater Golden Horseshoe (2019), the boundary of the Greenbelt Plan (2017) and the boundary of the Oak Ridges Moraine Conservation Area (2017).



Legend

- Railway
- Roads
- Greenbelt Plan Area
- Municipal Boundary
- Prime Agricultural Area - Agricultural Land Base Mapping
- Proposed Right-of-Way and Easements
- Secondary Study Area (750 m)
- Study Area

Greenbelt Plan Designations

- Oak Ridges Moraine
- Protected Countryside

Figure 2

Provincial Land Use Plans

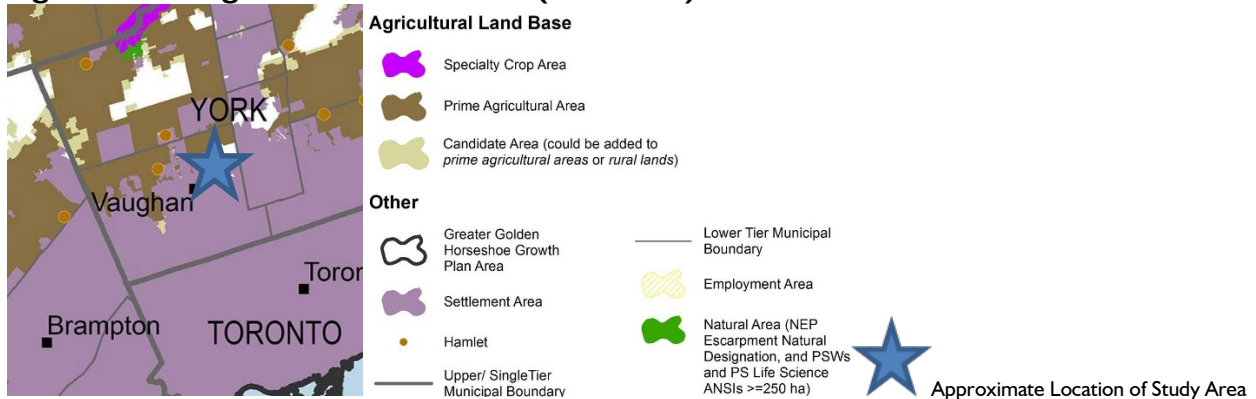
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3.2.1 THE GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE (2019)

A review of the OMAFRA Agricultural Systems Portal (online) for the Agricultural Land Base identified that neither the Study Area nor the Secondary Study Area are located in a provincially designated Specialty Crop area. Figure 3 – Agricultural Land Base is a portion of the OMAFRA Agricultural Land Base map (February 7, 2018) and illustrates the approximate location of the Study Area and Secondary Study Area identified as a blue star. As indicated in this image there are no specialty crop areas within or near the Study Area and Secondary Study Area.

Figure 3 Agricultural Land Base (OMAFRA)



Source: Agricultural Land Base map (February 7, 2018)

A more detailed review of the Provincial Land Base Prime Agricultural Area is illustrated in Figure 2. As illustrated in Figure 2 the Prime Agricultural Area is primarily focused on lands north of Kirby Road, with one small section extending south of Kirby Road, just east of Jane Street.

A review of the Growth Plan for the Greater Golden Horseshoe (2019) identified Agricultural System policies in Section 4.2.6 – Agricultural System. The policies are listed below.

- a) *An Agricultural System for the GGH has been identified by the Province.*
- b) *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.*
- c) *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.*
- d) *The geographic continuity of the agricultural land base and the functional and economic connections to the agri-food network will be maintained and enhanced.*
- e) *The retention of existing lots of record for agricultural uses is encouraged, and the use of these lots for non-agricultural uses is discouraged.*

- f) *Integrated planning for growth management, including goods movement and transportation planning, will consider opportunities to support and enhance the Agricultural System.*
- g) *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.*

3.2.2 THE GREENBELT PLAN (2017)

A review of the Greenbelt Plan (2017) mapping (GIS data presented on Figure 2) illustrated that portions of the Study Area and Secondary Study Area are located within the Greenbelt Plan area. As illustrated in Figure 2, the Greenbelt Plan (2017) area (identified as stippling) covers much of the eastern portion of the Study Area and Secondary Study Area and along a linear portion north of Kirby Road in the western portion of the Study Area and Secondary Study Area. A small linear portion extends south just east of Jane Street.

Section 3.1 of the Greenbelt Plan (2017) provides policy on the Agricultural System. The policies include detail on Specialty Crop Areas, Prime Agricultural Areas, Rural Lands, Agri-food Network and Agricultural System Connections.

As identified in Figure 2 the Greenbelt Plan designations include the Oak Ridges Moraine (cross hatched area in eastern portion of the Study Area and Secondary Study Area) and smaller areas designated as Protected Countryside. The Protected Countryside includes a linear area north of Kirby Road and a smaller area extending south just east of Jane Street.

The Greenbelt Plan policies for Prime Agricultural Areas (Section 3.1.3 of the Greenbelt Plan (2017)) within the Protected Countryside are listed below.

“For lands falling within prime agricultural areas of the Protected Countryside, the following policies shall apply:

- 1. *All types, sizes and intensities of agricultural uses and normal farm practices shall be promoted and protected, and a full range of agricultural uses, agriculture-related uses and on-farm diversified uses are permitted based on provincial Guidelines on Permitted Uses in Ontario’s Prime Agricultural Areas. Proposed agriculture-related*

- uses and on-farm diversified uses shall be compatible with and shall not hinder surrounding agricultural operations.*
2. *Lands shall not be redesignated in official plans for non-agricultural uses except for:
 - a) *Refinements to the prime agricultural area and rural lands designations, subject to the policies of section 5.3; or*
 - b) *Settlement area boundary expansions, subject to the policies of section 3.4.**
 3. *Non-agricultural uses may be permitted subject to the policies of sections 4.2 to 4.6.*
 4. *These uses are generally discouraged in prime agricultural areas and may only be permitted after the completion of an agricultural impact assessment.*
 5. *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.*
 6. *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.*
 7. *The geographic continuity of the agricultural land base and the functional and economic connections to the agri-food network shall be maintained and enhanced.”*

3.2.3 THE OAK RIDGES MORAINÉ CONSERVATION PLAN (2017)

Figure 2 illustrates the location of the Oak Ridges Moraine Conservation Plan Area. These lands comprise the eastern portion of the Study Area and Secondary Study Area. These lands include Prime Agricultural lands within the Countryside Areas. Countryside Area policy is presented in Section 13 of the Oak Ridges Conservation Plan (2017). Specific Land Use policies are presented in Part IV of the Oak Ridges Conservation Plan (2017). Infrastructure policy is identified in Section 41. Subsection 2.1 states:

“An application for the development of infrastructure in or on land in a prime agricultural area shall not be approved unless,

- a) *the need for the project has been demonstrated and there is no reasonable alternative that could avoid the development occurring in a prime agricultural area; and*
- b) *an agricultural impact assessment or equivalent analysis carried out as part of an environmental assessment, is undertaken that demonstrates that there will be no adverse impacts to the prime agricultural area or that such impacts will be minimized and mitigated to the extent possible.”*

3.3 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 *Regional Municipality of York Official Plan 2019 Office Consolidation (April 2019) (Modified York Region Official Plan – 2010)* and of the *City of Vaughan Official Plan 2010 (2019 Office Consolidation)* were reviewed.

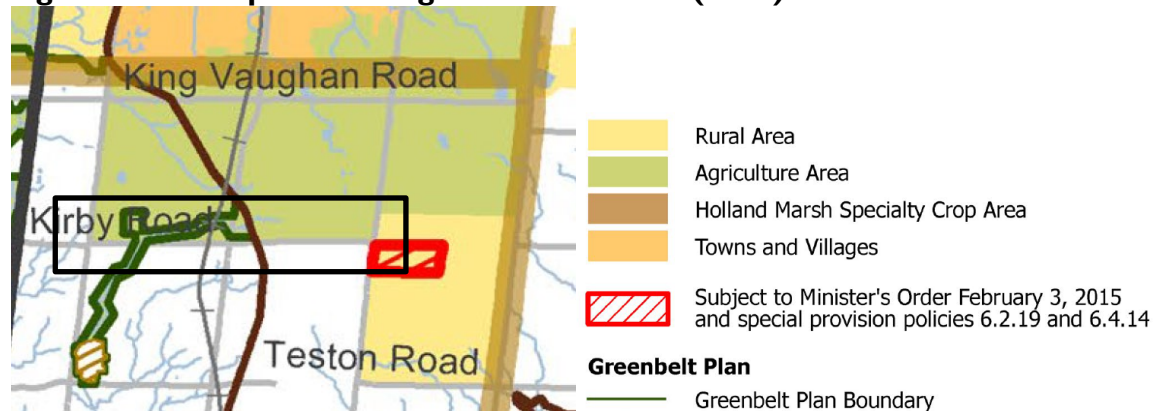
3.4 REGIONAL MUNICIPALITY OF YORK OFFICIAL PLAN 2019

The *Regional Municipality of York Official Plan 2019 Office Consolidation (April 2019) (Modified York Region Official Plan – 2010)* was reviewed for agricultural policy as it relates to the development of infrastructure.

Map 8 – Agricultural and Rural Area (Figure 4 below) identifies portions of the Study Area and Secondary Study Area are designated as Agriculture Area. The areas designated as Agriculture Area are located north of Kirby Road between Jane Street and Dufferin Street. Portions of the Study Area and Secondary Study Area located east of Dufferin Street are designated Rural, with one small area identified as “Subject to Minister’s Order February 3, 2015, and Special Provision Policies 6.2.19 and 6.4.14”.

A small section of Agriculture Area follows the Greenbelt designated area by extending to the south just east of Jane Street. The approximate location of the Study Area is illustrated as a black outline.

Figure 4 Map 8 York Regional Official Plan (2019)



Source: Map 8 Agricultural and Rural Area (the Regional Municipality of York, February 2019)

Agricultural policy is presented in Chapter 6 – Agricultural and Rural Areas. Specific to this study, policy 6.2.15 states:

“That transportation infrastructure and utilities are permitted in all Oak Ridges Moraine land use designations, and key natural heritage features and key hydrologic features, where the Infrastructure

provisions of the Oak Ridges Moraine Conservation Plan have been met. Demonstrated need for a project and conformity with the Oak Ridges Moraine Conservation Plan will be assessed and included as part of an Environmental Assessment Act process. If an Environmental Assessment Act process does not apply, the requirements of the Oak Ridges Moraine Conservation Plan will be met through Planning Act, Condominium Act, Local Improvement Act, or other applicable approval processes. The opening of a street within an unopened street allowance is prohibited unless all other requirements of the Oak Ridges Moraine Conservation Plan are met.”

Further, Policy 6.3.10 states:

“That in those portions of the Agricultural Area in Markham, Vaughan, East Gwillimbury, King and Whitchurch-Stouffville outside the Oak Ridges Moraine or Greenbelt which may accommodate future growth, and within new community areas, until such time as development occurs, normal farm practices and a full range of agricultural uses, agriculture-related uses and secondary agricultural uses shall be permitted and encouraged.”

3.4.1 CITY OF VAUGHAN OFFICIAL PLAN (2010)

The *City of Vaughan Official Plan 2010 (2019 Office Consolidation)* was reviewed for agricultural policy and mapping/schedules related to infrastructure development. Schedule 13 – Land Use was reviewed to determine the extent of agriculture designations within the Study Area and the Secondary Study Area. Policies related to the designated Agricultural and Rural Area with respect to transportation infrastructure were reviewed. The respective policies are presented below. A portion of Schedule 13 – Land Use (Figure 5) is presented with the approximate location of the Study Area identified as a black outline.

As identified in Schedule 13 – Land Use, the Study Area includes Agricultural Lands located north of Kirby Road from Jane Street to just east of Keele Street. The portions of the Study Area west of Jane Street are considered as ‘Lands Subject to Secondary Plans’. Portions of the Study Area south of Kirby Road between Jane Street and Keele Street are considered as ‘New Community Areas’ and a small area of ‘Greenbelt Plan Area’. Lands south of Kirby Road between Keele Street and Dufferin Street were identified as ‘Low Rise Residential’ and ‘Oak Ridges Moraine Natural Core’ areas. Lands north of Kirby Road between Keele Street and Dufferin Street were identified as ‘Oak Ridges Moraine Natural Core’ and ‘Oak Ridges Moraine Natural Linkage’ areas. Areas east of Dufferin Street were identified as ‘Oak Ridges Moraine Natural Core’ and ‘Oak Ridges Moraine Countryside’.

Section 3.2.3.7 states:

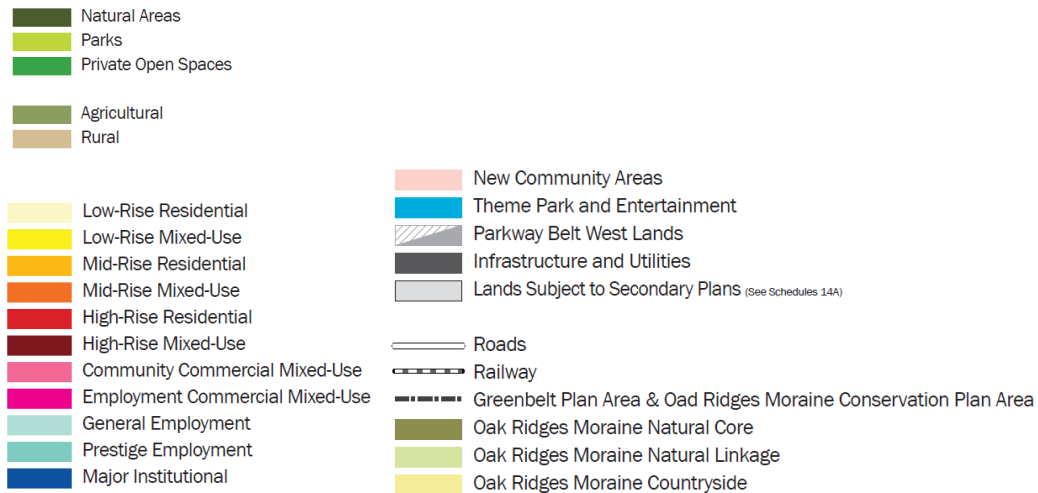
*“That development and/or site alteration in **Core Features** are prohibited except for the following:*

- a) *natural area management, such as for forest, fish and wildlife management, for the purposes of maintaining and enhancing the functions associated with Core Features;*

Figure 5 Schedule 13 – Land Use (City of Vaughan Official Plan, 2010)



Source: Schedule 13 – Land Use (City of Vaughan Official Plan, 2010)



- b) *conservation and flood or erosion control projects, where such projects are necessary and deemed in the public interest after all alternatives have been considered, and where such projects will not result in a negative impact on the Core Features and will not have a negative impact on the ecosystem function;*
- c) *transportation, infrastructure and utilities, where such projects are necessary and deemed in the public interest after all alternatives have been considered, and where such projects will minimize negative impacts on the Core Features and measures shall be identified to maintain habitat area and enhance overall ecosystem function."*

Section 3.4.2.7 states:

“That no development or site alteration is permitted within key natural heritage features or hydrologically sensitive features or their related minimum vegetation protection zones except for the following activities:

- a) forest, fish and wildlife management;
- b) conservation and flood erosion control projects, but only if they have been demonstrated to be necessary in the public interest after all alternatives have been considered;
- c) transportation, Infrastructure and Utilities as described in subsection 3.4.10 , but only if the need for the project has been demonstrated and there is no reasonable alternative, and
- d) low intensity recreational uses described in subsection 3.4.5 .”

Section 3.4.10.3 states:

“That in the Oak Ridges Moraine Natural Core Area an application for transportation, infrastructure or utilities use, shall not be approved unless the applicant demonstrates that:

- a) the requirements of policy 3.4.10.2 have been met;
- b) the project does not include and will not in the future require a highway interchange or a transit or railway station in an Oak Ridges Moraine Natural Core Area; and,
- c) the project is located as close to the edge of the Oak Ridges Moraine Natural Core Area as possible.

Section 3.4.10.4 states:

*“That within the **Oak Ridges Moraine Conservation Plan Area** shown on Schedule 4, all new transportation, **Infrastructure and Utilities** uses and all upgrading or extension of existing transportation, **Infrastructure and Utilities** uses, including the opening of a road within an unopened road allowance such as Kirby Road and Teston Road, but not including a stormwater management pond, may be permitted to cross a key natural heritage feature or a hydrologically sensitive feature only if the applicant demonstrates that:*

- a) the need for the project has been demonstrated and there is no reasonable alternative;
- b) the planning, and design and construction practices adopted will keep any adverse effects on the ecological integrity of the **Oak Ridges Moraine Conservation Plan Area** to a minimum;
- c) the design practices adopted will maintain, and where possible improve or restore, key ecological and recreational linkages, including the trail system in policy 3.4.9.1.
- d) the landscape design will be adapted to the circumstances of the site and use native plant species as much as possible, especially along rights-of-way; and
- e) the long-term landscape management approaches adopted will maintain, and where possible improve or restore, the health, diversity, size and connectivity of the key natural heritage feature or hydrologically sensitive feature.”

Section 4.2.1.7 states:

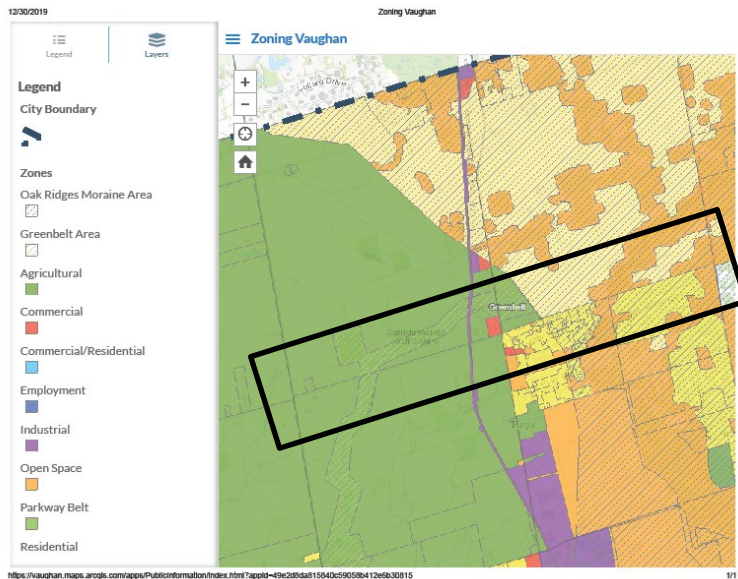
“To direct the undertaking of an appropriate environmental assessment study and/or process for transportation infrastructure related to crossings of **Watercourses**, and/or entering into the **Oak Ridges Moraine Conservation Plan Area** and **Greenbelt Plan Area**.”

3.4.2 THE CITY OF VAUGHAN ZONING BY-LAW (NUMBER I-88)

The *City of Vaughan Zoning By-Law (Number I-88)* was reviewed to determine the extent of lands that were zoned as agriculture within the Study Area and the Secondary Study Area. Section 8 A – Agricultural Zone provided the zoning standards for agriculture.

The following image (Figure 6) is a download from the City of Vaughan website illustrating the basic zoning for the Study Area and Secondary Study Area. As illustrated the western portion is predominantly Agricultural, with the eastern portion identified as Oak Ridges Moraine Area, Greenbelt Area and Open Space. The approximate location of the Study Area is illustrated with a black outline. The Proposed Right-of-way and associated easements will be similar to what has been identified for the Study Area.

Figure 6 City of Vaughan Zoning By-Law



3.4.3 LAND EVALUATION AND AREA REVIEW (2009)

While not considered as a policy document, the *Regional Municipality of York Land Evaluation and Area Review (LEAR) Summary Report (August 28, 2009)* was reviewed to determine the agricultural potential of the Study Area and Secondary Study Area. It is recognized that the information presented in the LEAR study was used to assist in creating or identifying Prime Agricultural Areas within the Regional Municipality of York Official Plan documentation and mapping.

4 AGRICULTURAL RESOURCE POTENTIAL

4.1 PHYSICAL CHARACTERISTICS

The physiographic resources within the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements 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.

4.1.1 PHYSIOGRAPHY

The Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements are located within the South Slope and the Oak Ridges Moraine Physiographic Regions.

The western portion of the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements is located in the South Slope Physiographic Region, while the eastern portions of the study areas are located within the Oak Ridges Moraine Physiographic Region.

The South Slope Physiographic Region is considered the southern slopes of the Oak Ridges Moraine ranging from the Niagara Escarpment to the Trent River. The South Slope Physiographic Region topography generally slopes down toward Lake Ontario. East of Maple the slope is smooth and drumlinized. West of Maple the surface is associated with ground moraine with limited topography. Stream courses have carved steep sided channels in the South Slope Physiographic Region.

The Oak Ridges Moraine Physiographic Region occupies an area that extends from the Niagara Escarpment to the Trent River. The height of the Oak Ridges Moraine is considered the dividing line between the drainage basin for streams flowing into Lake Ontario or into Georgian Bay. The surface is hilly with knob and basin relief. Generally, the hills are comprised of sands and gravel materials.

4.1.2 TOPOGRAPHY AND CLIMATE

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

The Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements are a complex mix of topography with level to gently undulating slopes west of the rail line (west of Keele Street) and steeper sloping topography east of the rail line. Steeper areas

of topography were noted in association with stream channels and the Oak Ridges Moraine Area.

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 Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements are located between the 3100 – 3300 Crop Heat Units (CHU-MI) 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 as Figure 8. The approximate location of the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements is marked with a blue star.

Figure 8 Crop Heat Units



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

4.2 LAND USE

The land use for both the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements was completed through a windshield survey (completed in December 2019), a review of recent aerial photography, Google Earth Imagery, Bing Imagery, Birdseye Imagery, Regional Municipality of York Imagery, and correlation to the OMAFRA Land Use Systems mapping. Agricultural and non-agricultural land uses are illustrated on Figure 9. The timing of the roadside survey (December 9, 2019) resulted in a review of fields after most crops had been harvested. The land use assessment was based on standing crop (corn) and crop residue in the fields.

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

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

The windshield survey identified the types of land uses including farm and non-farm uses (built up areas, non-farm residential uses, industrial, commercial, recreational, roads and railways). Farms were identified as livestock or cash crop. Livestock operations were further

differentiated to the type of livestock based on the livestock seen at the time of the survey, through a review of on farm infrastructure (type of buildings, manure system, feed (bins, bales), and types of equipment) or through any signage associated with the respective agricultural operation.

It should be noted that the roadside survey is based on a line-of-sight assessment process. Therefore, dense brush, woodlands, and topography can prevent an accurate assessment of some fields and/or buildings. In those instances, measures are taken to try to identify the crop and/or buildings through conversations with landowners (if applicable) or review of aerial photography. In some instances, no information is available. In those instances, the field polygon will be identified as 'unknown crop' 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 are typically characterized as including winter wheat, barley, spring wheat, oats, and rye. Forage crops may include mixed grasses, clovers and alfalfa. Other areas used for pasture, haylage or hay were mapped as 'forage/pasture'.

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

Land Use information was digitized in Geographic Information System (GIS - Arcmap) to illustrate the character and extent of Land Use in both the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements. Area calculations for each land use polygon (area) were calculated within the GIS software and exported as tabular data. The data is presented as follows. Land use designations and land use definitions are provided in Table I.

Table I Typical Land Use Designations

Land Use Designation	Land Use Definitions
Built Up/Disturbed Areas	Residential, Commercial, Industrial, Man Modified
Common Field Crop	Corn, Soybean, Cultivated
Forage/Pasture	Forage/Pasture
Railway/roads	Linear Corridor (not mapped)
Scrublands	Unused field (>5 years)
Unknown	Unknown Use (not seen from the road)
Small Grains	Wheat, Oats, Barley
Woodlands	Forested Areas



Legend

	Railway	Land Use	
	Roads		Common Field Crop
	Municipal Boundary		Disturbed
	Proposed Right-of-Way and Easements		Golf Course
	Secondary Study Area (750 m)		Forage/Pasture
	Study Area		Scrub Land
			Unknown
			Woodlands

Figure 9

Land Use

DBH Soil Services Inc.

October 2021

4.2.1 LAND USE – STUDY AREA AND PROPOSED RIGHT-OF-WAY/EASEMENTS

The Study Area, and the Proposed Right-of-way and associated easements land use comprises built up/disturbed areas, common field crop production, forage/pasture lands, recreational areas (Golf Course – Carrickmacross West), linear corridors (roads/rail) and woodlands. As stated previously, the Proposed Right-of-way and associated easements comprise the existing Kirby Road Right-of-way. The area of impact for the Proposed Right-of-way and associated easements will be confined to small slivers of land adjacent to the existing road right-of-way.

The southeastern portion of the Study Area (south of Kirby Road and east of Keele Street) is predominantly urban land use with some woodlands areas. The western portion of the Study Area (west of Keele street) comprises agricultural lands, a golf course, scrub lands, woodlands and commercial/industrial areas. The commercial/industrial lands are limited to the area located west of Keele Street and east of the rail line. These lands include a car dealership, restaurants (Tim Horton's and A&W), gas station with car wash and a transportation/trucking company (Grant Global Logistics)

The lands east of Keele Street and north of Kirby Road comprise a mix of agricultural lands, woodlands, and scrub lands.

The Study Area lands comprise approximately 26.1 percent built up/disturbed lands, 35.4 percent as common field crop (corn/soybean in 2019 growing season), 8.0 percent as forage/pasture lands, 7.1 percent as recreation lands (golf course), 3.7 percent as scrublands, 8.3 percent as linear corridor (roads/rail), and 11.4 percent as woodlands areas.

The predominant agricultural land use on the Study Area Lands is the production of common field crops (corn and soybean). There are no specialty crops grown on the Study Area lands.

The Proposed Right-of-way and associated easements lands comprise approximately 5.5 percent of disturbed areas, 40.4 percent common field crop, 21.2 percent pasture/forage lands, 11.1 percent as recreational use (golf course), 8.9 percent as scrubland, and 13.0 percent as woodlands. There will be no agricultural impacts within the existing road right-of-way.

4.2.2 LAND USE – SECONDARY STUDY AREA

The Secondary Study Area consists of a variety of land uses including, but not limited to built up/disturbed areas, common field crops, scrubland, forage/pasture lands, open field, recreational (golf courses), roads/rail corridor, and woodlands areas.

The Secondary Study Area comprises land use of approximately 19.5 percent as built up/disturbed areas, approximately 40.7 percent common field crop (corn and soybean), 1.2 percent as unknown (not visible – line of sight), 3.7 percent as pasture/forage lands, 0.6 percent as open field, 4.8 percent as recreational (golf courses), 5.1 percent as scrublands, 2.1 percent as linear corridor (roads/rail) and approximately 22.3 percent as woodlands.

On review of the Land Use data it was observed that the predominant land uses included the production of common field crops, built up areas and woodlands. The majority of the built-up areas are associated with the lands north of Kirby Road between the rail line and Keele Street, and the lands south of Kirby Road between Keele Street and Dufferin Road.

No areas of specialty crop were noted during the roadside survey.

Table 2 illustrates the percent occurrence of the land uses for both the Study Area and Secondary Study Area.

Table 2 Land Use – Study Area and Secondary Study Area

Land Use Designation	Proposed Right-of-way and Associated Easements Percent Occurrence	Study Area Percent Occurrence	Secondary Study Area Percent Occurrence
Built Up/Disturbed Areas	5.5	26.1	19.5
Common Field Crop	40.4	35.4	40.7
Unknown	-	-	1.2
Forage/Pasture	21.2	8.0	3.7
Open Field	-	-	0.6
Recreation (Golf Course)	11.1	7.1	4.8
Scrubland	8.9	3.7	5.1
Roads/Rail	-	8.3	2.1
Woodlands	13.0	11.4	22.3
Totals	100.0	100.0	100.0

The Proposed Right-of-way and associated easements land use relates to approximately 0.3 ha of built-up/disturbed areas, 2.2 ha of common field crop, 1.2 ha of forage/pasture lands, 0.6 ha of recreational lands (golf course), 0.5 ha of scrublands, and 0.7 ha of woodlands.

4.3 AGRICULTURAL INVESTMENT

Agricultural investment is directly associated with the increase in capital investment to 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 tendency of 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.

Investment in agricultural is illustrated in Figure 10 – Agricultural Investment.

4.3.1 AGRICULTURAL FACILITIES

The potential agricultural facilities (facilities that may be capable of housing livestock) and barns 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 preliminary mapping and imagery no longer existed (torn down), or were not agricultural, but used for commercial activities.

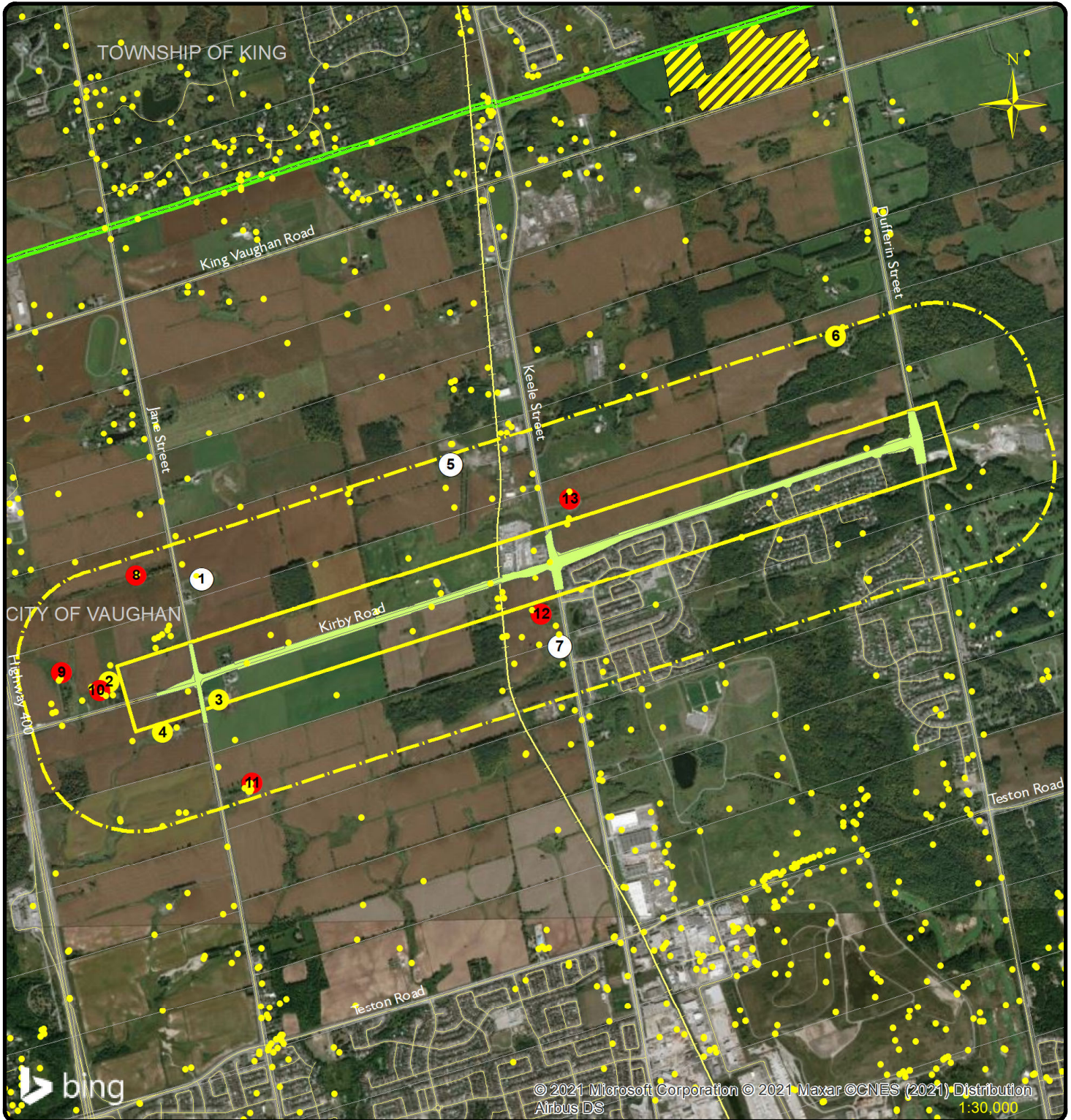
Agricultural activities such as livestock rearing usually involve an investment in agricultural facilities. Dairy operations require extensive facilities for the production of milk. Poultry and hog operations require facilities specific for those operations. Beef production, hobby horse and sheep operations 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 10 illustrates the location of buildings, agricultural facilities, and tile drainage for both the Study Area and the Secondary Study Area. There are no agricultural facilities within the Proposed Right-of-way and associated easements.

A total of 13 agricultural facilities or areas where facilities were located were identified within the Study Area and Secondary Study Area. One agricultural facility was located within the Study Area while the remaining 12 were located within the Secondary Study Area.

4.3.1.1 Study Area

The Study Area contained one agricultural operation located south of Kirby Road and east of Jane Street. This agricultural operation is identified as an Active operation number 3 on Figure 7. This operation is located within the New Community Areas as illustrated in the Vaughan Official Plan Schedule I – Urban Structure. This agricultural operation includes a residential unit, numerous sheds and ancillary buildings, a large bank barn with large pole barn addition, grain bins, Quonset hut for machinery storage, machine shed and large metal sided buildings that may be associated with equipment or hay storage. It should also be noted that construction



Legend

- Water Wells (MNRF)
 - Railway
 - Roads
 - Municipal Boundary
 - Proposed Right-of-Way and Associated Easements
 - Secondary Study Area (750 m)
 - StudyArea
-
- Agricultural Facilities**
- Active
 - Remnant
 - Vestige
- Tile System Type**
- Systematic

Figure 10
Agricultural Investment

DBH Soil Services Inc.
 October 2021

equipment was observed parked near these buildings (excavators, dumptrucks) along with large piles of materials such as fill, or possibly broken concrete.

Manure piles were noted near the large barn. A beef cow was observed in a pasture near these buildings. A sign in front of the buildings along Jane Street indicated that agricultural products such as sheep meat was for sale.

No other agricultural buildings or facilities were noted within the Study Area.

4.3.1.2 Secondary Study Area

Numerous agricultural facilities and facility locations were noted during the preliminary mapping and during the reconnaissance roadside surveys. It was noted that a number of agricultural facility sites identified during the preliminary mapping no longer existed. The observations during the roadside survey failed to identify even remnant of the buildings. A review of the historical online imagery identified the buildings, however, the observations from the reconnaissance survey indicated that some of the buildings were no longer standing. On other properties, some potential agricultural facilities (barns) had been removed, while the ancillary buildings remained.

For the purposes of documenting the loss of agricultural buildings and potential facilities, Figure 7 illustrates the existing (Active operations), the remnant facilities (barns gone and ancillary buildings remain), and the vestige (a trace of or no longer exists) sites where there is no present-day visual evidence of any buildings.

A total of 12 agricultural facility sites (active, remnant, vestige) were identified in the Secondary Study Area. These facility sites are identified on Figure 7. Agricultural facility sites numbered 8, 9, 10, 11 and 12 were sites where that had been agricultural facilities historically, but there are no present-day buildings or remnants. These areas are considered as 'disturbed' and are not presently used for the production of agriculture.

Agricultural facility sites numbered 1, 5 and 7 were considered as remnant facilities due to the removal of barns and/or buildings. Some ancillary buildings are present on these sites and may be used for agricultural purposes such as storage of equipment or feed.

Agricultural facility sites numbered 2, 4 and 5 comprise barns or facilities potentially capable of housing livestock. Agricultural facility number 2 is located north of Kirby Road and west of Jane Street. This operation comprises a residential unit, Quonset with attached pole barn/building. No livestock, feed, or manure storage was noted on review of this site. No agricultural equipment (tractors, plows, disks, seeder/planters, etc) was observed on the aerial imagery or during the roadside reconnaissance surveys.

Agricultural facility number 7 was located south of Kirby Road and west of Jane Street. This facility comprised a residential unit, machine sheds, bank barn with extensions, concrete silo, concrete yard between the barn and extensions, and ancillary sheds. No livestock, feed, or

manure storage was observed on the aerial imagery or during the roadside reconnaissance surveys. Agricultural equipment including tractors and implements were observed during the roadside surveys. This agricultural operation appears to be a cash crop operation. At the time of the reconnaissance surveys the fields around this operation comprised unharvested corn.

Agricultural facility number 5 was located north of Kirby Road and west of Dufferin Street. The view to this site was obstructed from Dufferin Street. The review of aerial imagery suggested that a barn (or building capable of housing livestock) has been constructed north of the residential unit. No livestock, feed or manure storage was observed from the imagery or during the roadside reconnaissance surveys.

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

4.3.2 ARTIFICIAL DRAINAGE

An evaluation of artificial drainage in the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements was completed through a correlation of observations noted during the reconnaissance roadside survey, aerial photographic interpretation and a review of the Ontario Ministry of Agriculture and Food (OMAF) Artificial Drainage System Mapping.

OMAFRA Artificial Drainage System Maps were downloaded from Land Information Ontario (LIO) in December 2019 and were reviewed to determine if an agricultural tile drainage system had been registered for the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area. Figure 10 illustrates the OMAFRA Artificial Drainage Systems Mapping for the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area.

Visual evidence supporting the use of subsurface tile drains would have included observations of drain outlets to roadside ditches or surface waterways, and surface inlet structures (hickenbottom or French drain inlets). There was no observed evidence of artificial tile drainage noted during the road side surveys.

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.

As noted on Figure 10 there are no artificial drainage systems registered on the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area. There is no capital investment in tile drainage in either the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area.

One area of tile drainage was noted outside the Study Areas, north of the King-Vaughan Road and west of Dufferin Street.

4.3.3 WATER WELLS

A review was completed of the MNRF Water Well records to determine the extent of water wells in the Study Area and the Secondary Study Area. The review of water well records involved a download of the latest version of the Water Well Records from the Land Information (LIO) data warehouse. The Water Well locations are identified on Figure 10. As illustrated on Figure 10, numerous water wells are located within Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area. It is assumed that the water wells that are located within the existing Kirby Road right-of-way are slightly misplaced, or have been properly capped and closed.

The review of water well records was completed to determine the location and extent of water wells in the area, and to identify any potential concerns or impacts that may occur as a result of the construction and operation of the Proposed Right-of-way and associated easements.

Generally, many livestock operations use groundwater for their livestock, and any disruption to the water in terms of quality and/or quantity could have a significant impact to the operation.

Due to the locations and numbers of water wells in the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area, it will be important to either preserve any existing wells, or properly engineer the closing/capping of the well to prevent potential groundwater contamination.

4.3.4 IRRIGATION

Observations noted during the reconnaissance survey indicated that the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements lands are not irrigated. It was noted that these lands are not set up for the use of irrigation equipment. 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 capital investment related to irrigation systems the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area.

4.3.5 LANDFORMING

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

There has been no land leveling or landforming for the purpose of creating gently sloped agricultural areas within the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area.

There is no capital investment in landforming for agricultural purposes in the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area.

4.4 LAND TENURE AND FRAGMENTATION

Land tenure was evaluated to determine the characteristics of land ownership and the degree of land fragmentation in the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area. In order to evaluate land tenure, the most recent Assessment Roll mapping and Assessment Roll information from the Regional Municipality of York were referenced on a property-by-property basis (for the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area) to determine the approximate location, shape and size of each parcel. The approximate location and shape of each large property were inventoried in digital format in the Geographic Information System (GIS) to provide an overview of land tenure and land fragmentation.

The Assessment mapping information and Assessment Roll information was acquired from online interactive mapping and in digital format from the City of Vaughan.

Assessment (landowner/tenant) information is illustrated on the Land Tenure/Fragmentation map in Figure 11.

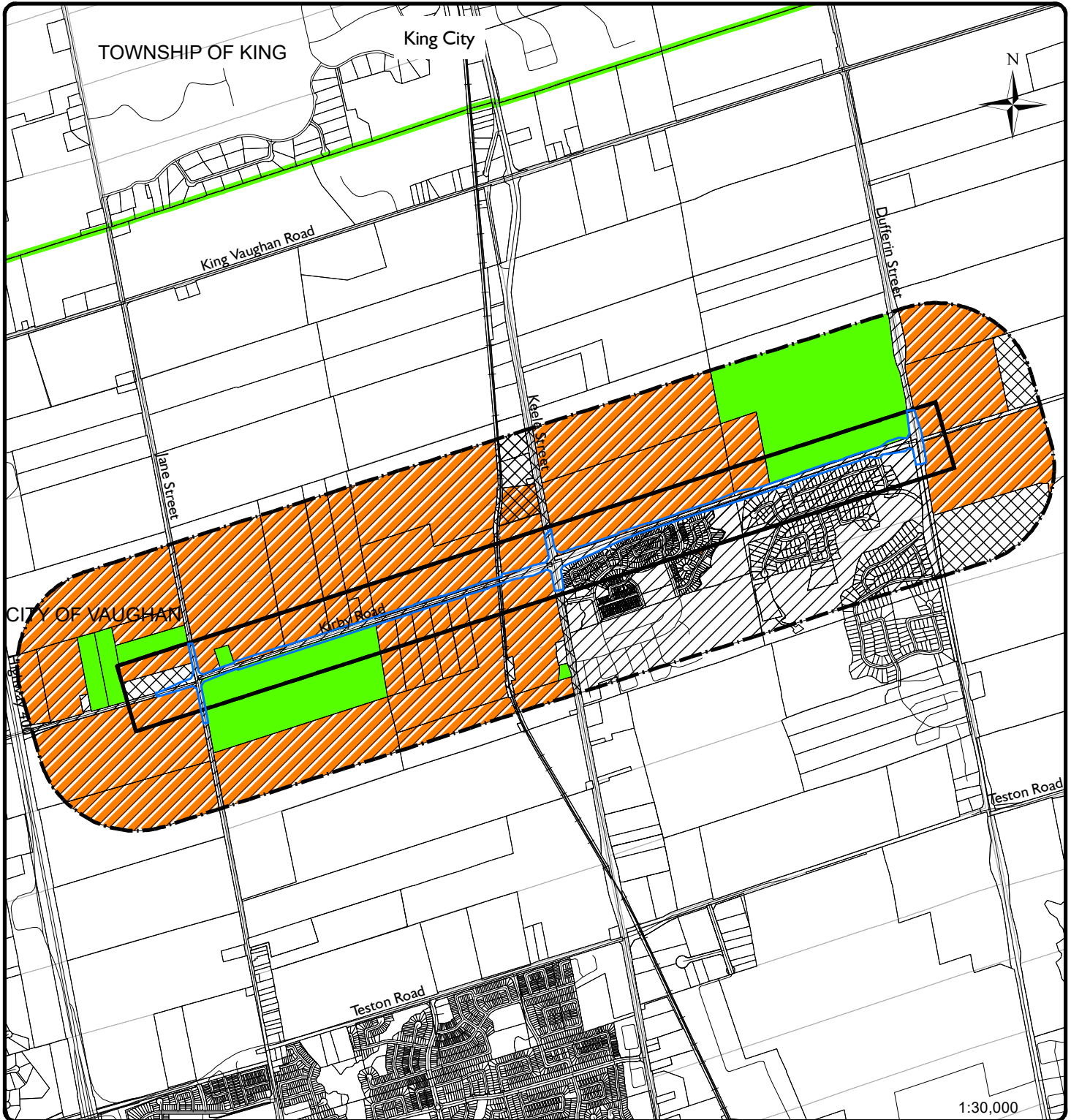
A review of the assessment data illustrated a variety of Owner-Operator combinations including Local Ownership, Non-local Ownership, Urban or Developed areas and Unknown Ownership. Developed areas included the lands associated with roads and rail.

The Provincial Policy Statement (PPS, 2014) identifies the provincial land use policies and provides context for the protection of agriculture. The PPS (2014) 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 on smaller parcels.

Areas of high 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



Legend

- Railway
- Roads
- Municipal Boundary
- Property Boundary
- Proposed Right-of-Way and Associated Easements
- Secondary Study Area (750 m)
- StudyArea

Tenure

- Urban/Developed
- Local
- Non-Local
- Unknown

Figure 11
 Land Tenure/Fragmentation

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 October 2021

agricultural land.

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.

The Study Area (and the Proposed Right-of-way and associated easements) comprises few large parcels of land (>40 ha) or portions of large parcels of land. The larger parcels (or portions of large parcels) are located north of Kirby Road between Keele Street and Dufferin Street, and south of Kirby Road just east and west of Jane Street. Many smaller parcels were noted between Jane Street and Keele Street on both sides of Kirby Road. Numerous small parcels of land were noted north of Kirby Road and west of Jane Street.

This mix of property sizes within the Study Area illustrates an area in transition from strong agricultural land base to a more rural setting. The large area of urban use south of Kirby Road between Keele Street and Dufferin Street illustrates the close proximity of the transition from an agricultural land base to an urban and rural setting. These characteristics are similar for the Proposed Right-of-way and associated easements area, as these lands are located within the Study Area.

Similar conditions were noted within the Secondary Study Area.

Table 3 provides an indication of the Ownership in both the Study Area and within the Secondary Study Area.

Table 3 Land Tenure – Study Area and Secondary Study Area

	Study Area (Percent Occurrence)	Secondary Study Area (Percent Occurrence)
Local Owner	13.5	13.3
Non-Local Owner	40.0	60.7
Urban or Developed Parcels	44.6	19.6
Unknown	1.9	6.4
Totals	100.0	100.0

4.4.1 STUDY AREA

Based on an evaluation of the City of Vaughan, Regional Municipality of York Assessment data, the land tenure of the Study Area illustrates that a large portion of the land base is in non-local ownership (land owned by person or company that does not reside in the local area) or is in urban/developed area. Local ownership accounts for 13.5 percent of the Study Area. Unknown ownership (no information in the data set) accounts for 1.9 percent of the Study Area.

A large non-local ownership or a large urban/developed area is associated with areas that are in transition from an agricultural land base to a more urban setting. This type of relationship is often an indication of an area in transition away from the traditional owner/operator farm.

As illustrated in Figure 11, there is a complex pattern to land fragmentation. A few larger parcels are noted north of Kirby Road, west of Dufferin Street, while significant fragmentation is noted south of Kirby Road, between Keele Street and Dufferin Road. The lands between Jane Street and Keele Street comprise numerous smaller parcels, with few large parcels. Similar conditions exist for the Proposed Right-of-way and associated easements area.

4.4.2 SECONDARY STUDY AREA

The land tenure in the Secondary Study Area illustrates a mix of ownership and property size. Similar to the Study Area, the Secondary Study Area comprises few large parcels of land (>40 ha) or portions of large parcels of land. The larger parcels (or portions of large parcels) are located north of Kirby Road between Keele Street and Dufferin Street, and south of Kirby Road just east and west of Jane Street. Many smaller parcels were noted between Jane Street and Keele Street on both sides of Kirby Road. Numerous small parcels of land were noted north of Kirby Road and west of Jane Street.

This mix of property sizes within the Secondary Study Area illustrates an area in transition from strong agricultural land base to a more rural setting. The large area of urban use south of Kirby Road between Keele Street and Dufferin Street illustrates the close proximity of the transition from an agricultural land base to an urban and rural setting.

Approximately 13.3 percent of the Secondary Study Area is locally owned. Approximately 60.7 percent is non-locally owned, while 19.6 percent is in urban or developed lands. The remaining 6.4 percent has unknown ownership as the data was not available within the datasets.

As illustrated in Figure 5, agriculture within the Secondary Study Area is under pressure due to Non-Local Ownership and urban/developed lands.

On review of the Land Tenure mapping various observations can be made.

Land Tenure of the Study Area and the Secondary Study Area is typical of areas under pressure from non-local ownership, urban and development land uses.

Land Fragmentation of the Study Area is also typical of areas under pressure due to numerous severed parcels and built-up areas.

The large amount of non-local ownership and urban/developed lands in conjunction with the numerous small parcels is a clear sign of the reduction of the agricultural land base.

As illustrated in Figure 11, there is a complex pattern to land fragmentation. A few larger parcels are noted north of Kirby Road, west of Dufferin Street, while significant fragmentation is noted south of Kirby Road, between Keele Street and Dufferin Road. The lands between Jane Street and Keele Street comprise numerous smaller parcels, with few large parcels.

The Proposed Right-of-way and associated easements area will not contribute to additional fragmentation, as the required lands will be small areas immediately adjacent to the existing Kirby Road corridor. There will be no additional fragmentation.

4.5 SOILS AND CANADA LAND INVENTORY (CLI)

A review was completed of the soils and Canada Land Inventory (CLI) data base for the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements. The review was completed to determine the extent and location of the high capability soils. Digital soils data was retrieved from the Land Information Ontario data warehouse in December 2019.

4.5.1 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.”*

With respect to the soils and Canada Land Inventory (CLI) identified in the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements area, 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

Subclass I denotes soils having periodic flooding by streams and lakes which 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 S - Adverse Soil Characteristics

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

Subclass T - Topography

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

Subclass W – Excess Water

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

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

Figure 12 – Soils and Canada Land Inventory (CLI) illustrates the OMAFRA digital soils data for the Study Area, the Secondary Study Area, and the Proposed Right-of-way and associated easements. The OMAFRA soils data base has not removed or discounted soils from roads, rails, urban or developed areas. As a result, the percent occurrence will illustrate a CLI rating within those areas. For the purposes of this AIA and based on the recently acquired GIS shapefiles for the existing Kirby Road Right-of-way, and the Proposed Right-of-way and associated easements, soils data has been pulled from the soils data set to allow an assessment of soils and CLI with the portions of land that exist outside the existing Kirby Road Right-of-way, and within the Proposed Right-of-way and associated easements.

It is noted within Figure 12 that the soils adjacent to and east of Keele Street have a higher sand content. This is consistent with the soil materials that are associated with the Oak Ridges Moraine.

Table 4 summarizes the relative percent area occupied by each capability class for the Study Area, Secondary Study Area, and the Proposed Right-of-way and associated easements.

The Proposed Right-of-way and associated easements comprise approximately 89.3 percent CLI class 1-3 lands (approximately 64.3 percent CLI class 1, 12.5 percent CLI class 2, and 12.5 percent CLI class 3). Approximately 10.7 percent is CLI class 4 lands. These percentages relate to approximately 3.6 ha of CLI class 1, 0.7 ha of CLI class 2, 0.7 ha of CLI class 3, and 0.6 ha of CLI class 6 lands.

The Study Area comprises approximately 83.1 percent Canada Land Inventory (CLI) capability of Class 1 – 3. Approximately 17.0 percent of the Study Area is considered Canada Land Inventory (CLI) class 4 - 7 soils.



Legend

- Railway
- Roads
- Municipal Boundary
- Proposed Right-of-Way and Associated Easements
- Secondary Study Area (750 m)
- Study Area

CLI Class Subclass
 CLI Class
 Percent Occurrence
 4T 60 1 40

Canada Land Inventory (CLI)

- Class 1
- Class 3
- Class 4
- Class 5
- Class 6
- Organic Soils

Figure 12
**Soils and
 Canada Land Inventory (CLI)**

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 October 2021

Table 4 Canada Land Inventory – Study Area and Secondary Study Area

Canada Land Inventory Class (CLI)	Proposed Right-of-way and Associated Easements	Study Area Percent Occurrence	Secondary Study Area Percent Occurrence
Class 1	64.3	53.5	50.8
Class 2	12.5	12.3	10.6
Class 3	12.5	17.2	17.1
Class 4	-	0.5	3.4
Class 5	-	-	0.7
Class 6	10.7	16.5	16.8
Class 7	-	-	-
Not Rated	-	-	0.6
Totals	100.0	100.0	100.0

The Secondary Study Area comprises approximately 78.5 percent Canada Land Inventory (CLI) capability of Class 1 - 3. Approximately 20.9 percent of the Secondary Study Area is considered Canada Land Inventory (CLI) Class 4 - 7 soils. The remaining 0.6 percent is considered as Not Rated and is associated with Organic soil materials.

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) noted that the Study Area, Secondary Study Area, and the Proposed Right-of-way and associated easements were located within the Prime Agricultural Area of the Agricultural Land Base within the Boundary Area of the Greater Golden Horseshoe.

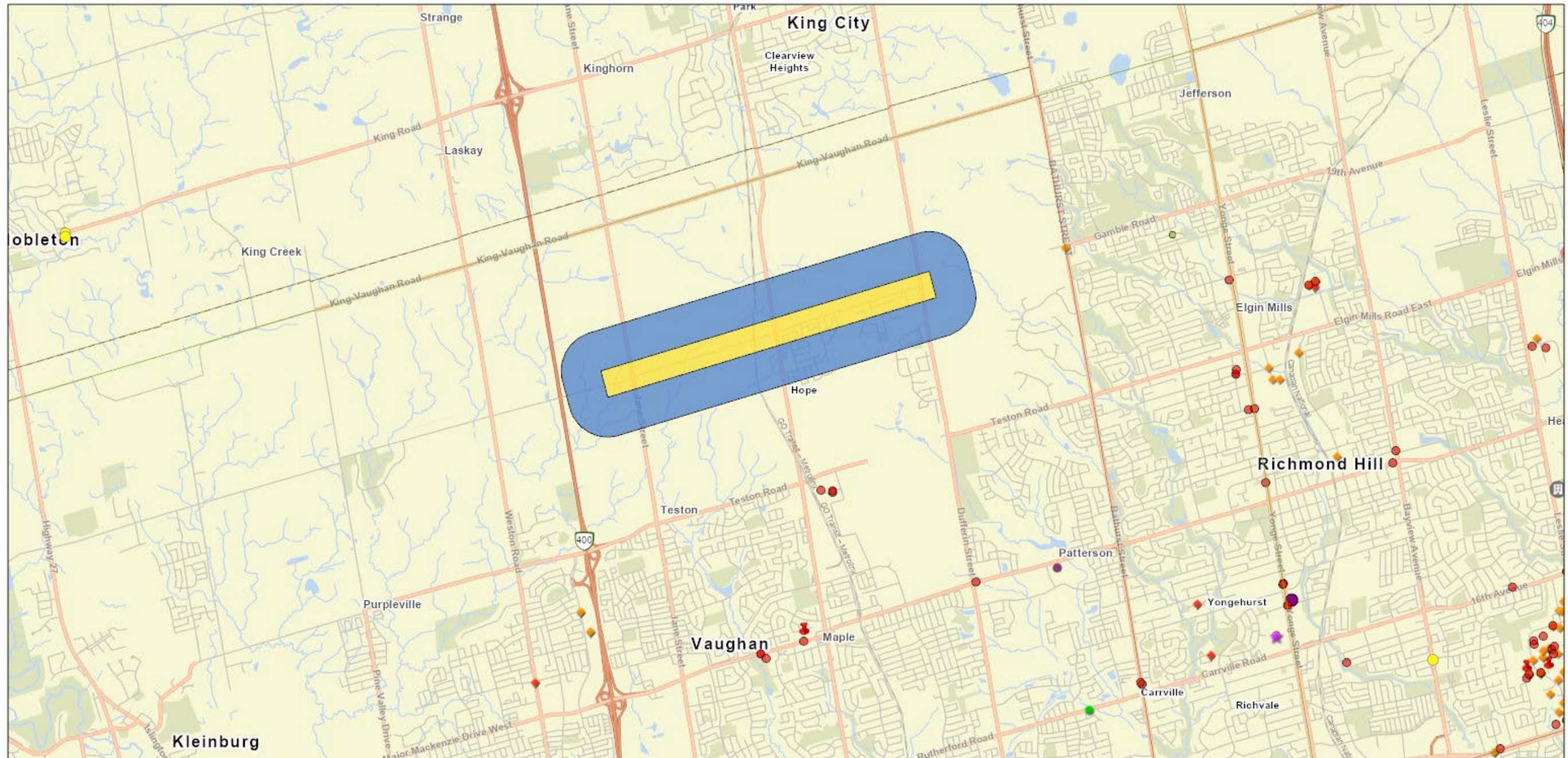
A review of the online Agricultural System Portal (OMAFRA) indicated that there were no farmers markets, pick your own operations, nurseries, specialty farms (crop or livestock), frozen food manufacturing, refrigerated warehousing/storage, livestock assets or abattoirs on the Study Area, Secondary Study Area, and the Proposed Right-of-way and associated easements. A copy of the online image has been provided in Figure 13 – Agricultural Systems Portal. The image from the Agricultural System Portal is provided below with the approximate location of the Study Area and Secondary Study Area.

As illustrated in this image there are no agricultural services within the Study Area, Secondary Study Area, and the Proposed Right-of-way and associated easements. The image illustrates a ‘pick-your-own’ operation just north of the Secondary Study Area boundary on Dufferin Street. This ‘pick-your-own’ operation was not noted during the roadside reconnaissance survey.

As illustrated in this image, there are few agricultural services in close proximity to the Study Area, Secondary Study Area, and the Proposed Right-of-way and associated easements. A

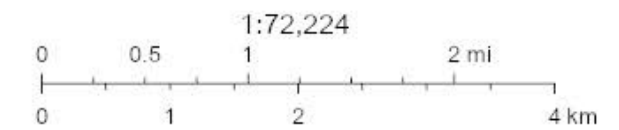
Figure 13 Agricultural Systems Portal Mapping

Agricultural Systems Portal 2021



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- | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mapping - StudyArea | Maple Syrup and Products Production (ConnectON) | Fish and Seafood Product Merchant Wholesalers (ConnectON) |
| mapping - 750 m buffer Secondary Study Area | Food Manufacturing (ConnectON) | Nursery Stock and Plant Merchant Wholesalers (ConnectON) |
| Single and Lower Tier Municipalities (LIO) | Beverage and Tobacco Manufacturing (ConnectON) | Wineries (OMAFRA) |
| Upper Tier Municipalities and District (LIO) | Refrigerated Warehouses (OMAFRA) | Override 1 |
| Geographic Township Improved (LIO) | Food Merchant Wholesalers (ConnectON) | Renderers (OMAFRA) |
| Farmers Markets (Farmers Markets ON) | Farm Product Merchant Wholesalers (ConnectON) | Provincially Licensed Meat Plants (OMAFRA) |
| Fruit and Vegetable Canning, Drying and Pickling (ConnectON) | Fresh Fruit and Vegetable Merchant Wholesalers (ConnectON) | |



Esri Canada, Province of Ontario, York Region, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

frozen food manufacture was noted south of Teston Road and east of Keele Street. This facility was approximately 2 km from the Study Area. The next closest service is 'livestock assets and services', with a number of these facilities within 3 to 4 km.

The closest transportation network (major roadway) is Highway 400 (less than one concession block to the west), with direct access at the King-Vaughan Line and Teston Road. A rail line crosses the Study Area, Secondary Study Area, and the Proposed Right-of-way and associated easements just west of Keele Street.

4.7 AGRICULTURAL CENSUS DATA

A review of the Census of Agricultural data (Census 2016, including 2006 and 2011 data) was completed to determine the agricultural characteristics of the Regional Municipality of York and the City of Vaughan, and to allow comparison to the agricultural characteristics on the Study Area and Secondary Study Area.

Table 5 provides Census 2016 data for agriculture for the Regional Municipality of York and provides a comparison to the Provincial Census 2016 agricultural data. It is evident from this data that the Regional Municipality of York comprises a large land base for common field crops (corn and soybean), and forage/hay crops. Winter wheat is also a major crop within the Regional Municipality of York. A further review indicates that the Regional Municipality of York has a major vegetable crop production. Much of this vegetable crop production is associated with the Holland Marsh area.

Table 5 Regional Municipality of York Census 2016 Data

Item	York	Province	Percent of province	Percent from 2011
Major Field Crops, 2016 Census (acres)				
Winter wheat	9,357	1,080,378	0.87	-17.41
Oats for grain	328	82,206	0.40	-29.61
Barley for grain.....	1,019	103,717	0.98	-31.93
Mixed grains	1,227	92,837	1.32	-23.17
Corn for grain	22,656	2,162,004	1.05	-9.61
Corn for silage	1,999	295,660	0.68	-4.45
Hay	21,124	1,721,214	1.23	-18.38
Soybeans	27,501	2,783,443	0.99	12.40
Potatoes	1,468	34,685	4.23	18.87
Major Fruit Crops, 2016 Census (acres)				
Total fruit crops	345	51,192	0.67	-16.26
Apples	105	15,893	0.66	-3.67
Sour Cherries.....	x	2,121	-	-
Peaches	33	5,232	0.63	-
Grapes	58	18,718	0.31	-47.27
Strawberries	111	2,915	3.81	-19.57
Raspberries.....	19	680	2.79	-47.22

Major Vegetable Crops, 2016 Census (acres)

Total vegetables	10,771	135,420	7.95	-0.88
Sweet corn	1,676	22,910	7.32	26.87
Tomatoes	110	15,744	0.70	-58.17
Green peas	x	16,268	-	-
Green or wax beans	43	9,732	0.44	-28.33

Table 5 also illustrates the change in production (percent) from 2011. The Census data indicates a significant reduction in grain production and an increase in the production of soybeans.

A review of the City of Vaughan agricultural census data (2016) revealed that there is limited total land in crop production, with a total area in farms listed at 7,584 acres. Table 6 illustrates the total land in agricultural production in the City of Vaughan.

Table 6 City of Vaughan Agricultural Land Land Use, 2016 Census (acres)

Land in crops.....	6,447
Summerfallow land.....	14
Tame or seeded pasture.....	121
Natural land for pasture.....	192
Christmas trees, woodlands & wetland.....	444
All other land.....	366
Total area of farms.....	7,584

Table 7 illustrates the major crop types grown in the City of Vaughan.

Table 7 City of Vaughan Census 2016 Crop Data

Item	Vaughan	Province	Percent of province	Percent from 2011
Major Field Crops, 2016 Census (acres)				
Winter wheat	1,082	1,080,378	0.10	-
Oats for grain	0	82,206	0.00	-
Barley for grain.....	0	103,717	0.00	-
Mixed grains	0	92,837	0.00	-
Corn for grain	0	2,162,004	0.00	-
Corn for silage	0	295,660	0.00	-
Hay	1,321	1,721,214	0.08	-17.33
Soybeans	0	2,783,443	0.00	-
Potatoes	0	34,685	0.00	-
Major Fruit Crops, 2016 Census (acres)				
Total fruit crops	30	51,192	0.06	-63.86
Apples	x	15,893	-	-
Sour Cherries.....	0	2,121	0.00	-

Peaches	x	5,232	-	-
Grapes	x	18,718	-	-
Strawberries	x	2,915	-	-
Raspberries.....	0	680	0.00	-
Major Vegetable Crops, 2016 Census (acres)				
Total vegetables	x	135,420	-	-
Sweet corn	x	22,910	-	-
Tomatoes	50	15,744	0.32	-76.30
Green peas	11	16,268	0.07	-73.17
Green or wax beans	x	9,732	-	-

The predominant field crop from the 2016 Census data for the City of Vaughan is winter wheat and hay.

As illustrated in Tables 5, 6 and 7 the major field crops for Regional Municipality of York and the City of Vaughan are the traditional field crops including corn, soybeans, winter wheat and hay. It was identified earlier in this report that the agricultural land use included fields of corn, soybean and hay/pasture. These crops are typical of the crops identified in the 2016 agricultural census data.

5 RESOURCE ALLOCATION AND CONFLICT POTENTIAL

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

It has been previously stated within this AIA study that the Proposed Right-of-way and associated easements comprise the existing Kirby Road right-of-way plus small areas of land adjacent to the existing Kirby Road right-of-way. It has also been stated that the proposed enhancements to Kirby Road include:

- road realignment (Kirby Road will be re-aligned at its intersection with Jane Street resulting in one intersection instead of two)
- road widening (from two to four lanes, and urbanization with curb and gutter throughout)
- active transportation facilities (2.0 m in-boulevard cycle track next to 2.0m sidewalk)
- Underpass (road under the rail) at the Barrie GO Rail crossing
- Street trees
- Illumination

The majority of these enhancements will occur within the existing Kirby Road right-of-way. Small areas of land adjacent to the existing Kirby Road (the lands between the existing Kirby Road right-of-way, and the proposed right-of-way and associated easements), will be the areas of potential agricultural impact.

5.1 IMPACTS, ASSESSMENT AND COMPATABILITY 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, severing or land locking of agricultural lands and operations
- The loss of existing and future farming opportunities
- The loss of infrastructure, services or assets
- The loss of investments in structures and land improvements

- Disruption or loss of functional drainage systems
- Disruption or loss of irrigation systems
- Changes to soil drainage
- Changes to surface drainage
- Changes to landforms
- Changes to hydrogeological conditions
- Disruption to surrounding farm operations
- Effects of noise, vibration, dust
- Potential compatibility concerns
- Traffic concerns
- Changes to adjacent cropping due to light pollution

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 Study Area, the Secondary Study Area, and the proposed right-of-way and associated easements. It has been determined that the Study Area, the Secondary Study Area, and the proposed right-of-way and associated easements comprise portions of active agricultural land uses including cash crop operations in combination with a livestock operation (beef, sheep). It was observed that many farm operations have reverted from livestock rearing to cash crop operations. This was noted with large and medium sized barns, some with silos, which are now used for storage or other non-livestock purposes (cash crop operations). It was also noted that over time, some agricultural facilities have been removed from the land leaving only ancillary buildings.

The Study Area, the Secondary Study Area, and the proposed right-of-way and associated easements comprise a mix of land tenure, with large areas of Non-Local Ownership and urban land uses. A large concentration of small, severed parcels was located south of Kirby Road and east of Keele Street, extending to Dufferin Street.

These types of tenure are a clear indication of an area in transition from an agricultural land base to a more urban environment. The lack of large agricultural properties plus the large number of small parcels and commercial/industrial lands provides an indication as to the lack of long-term intentions for agriculture in the Study Area, the Secondary Study Area, and the proposed right-of-way and associated easements.

With respect to the potential impacts as listed on the previous page of this report:

- Interim or permanent loss of agricultural lands – there will be a permanent loss of the use of 5.6 ha of land.
- Fragmentation, severing or landlocking of agricultural lands and operations – there will be no additional land fragmentation as a result of the construction and operation of the proposed right-of-way and associated easements.
- The loss of existing and future farming opportunities – there will be a loss of land

use of approximately 0.3 ha of built-up/disturbed areas, 2.2 ha of common field crop, 1.2 ha of forage/pasture lands, 0.6 ha of recreational lands (golf course), 0.5 ha of scrublands, and 0.7 ha of woodlands.

- The loss of infrastructure, services or assets – there is no loss of agricultural infrastructure, services or assets.
- The loss of investments in structures and land improvements – there is no loss of agricultural investments in structures or land improvements.
- Disruption or loss of functional drainage systems – there is no loss of investment in agricultural drainage systems.
- Disruption or loss of irrigation systems – there is no loss of investment in agricultural irrigation systems.
- Changes to soil drainage – there will be no changes to agricultural soil drainage as a result of the enhancements to Kirby Road within the proposed right-of-way and associated easements.
- Changes to surface drainage – there will be no changes to surface drainage on adjacent agricultural lands as a result of the proposed enhancements to Kirby Road within the proposed right-of-way and associated easements.
- Changes to landforms – there will be no changes to landforms (with respect to agriculture) as a result of the proposed enhancements to Kirby Road.
- Changes to hydrogeological conditions – would need to be addressed under separate cover by the hydrogeological consultant.
- Disruption to surrounding farm operations – there will be limited disruption to surrounding/adjacent farm operations as a result of the proposed enhancements to Kirby Road within the proposed right-of-way and associated easements.
- Effects of noise, vibration, dust - there will be limited potential for noise, vibration and dust as a result of the enhancements to Kirby Road within proposed right-of-way and associated easements. There is a potential for noise, vibration and dust during the initial construction phase.
- Potential compatibility concerns – there should be no potential for compatibility concerns as the proposed enhancements include a widening of the existing Kirby Road through a new proposed right-of-way and associated easements, as the majority of the enhancements will occur with the existing Kirby Road right-of-way.
- Traffic concerns - Traffic issues should be limited in scope as this study relates to proposed enhancements of an existing road.
- Changes to adjacent cropping due to light pollution – there is the potential for agricultural impacts depending on the type of streetlights that might be used adjacent to the agricultural areas. Recent studies have identified impacts to soybean crops due to the use of tall street light poles, high pressure sodium lights and light casting onto adjacent agricultural lands.

5.2 TRAFFIC, TRESPASS AND VANDALISM

Specific to agriculture, increased vehicle traffic along roadways can lead to safety issues with respect to the movement of slow moving, long, wide farm machinery and, as well, interrupt or alter farm traffic flow patterns.

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

This area is impacted by the existing urban development, commercial/industrial land uses. The proposed enhancements to Kirby Road should have limited effect on the potential for an increase in traffic, trespass and vandalism.

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 the Study Area, the Secondary Study Area and the proposed right-of-way and associated easements.

A review of the OMAFRA Agricultural System Portal was completed to identify the presence of any livestock assets and services (renderers, meat plants, abattoirs), refrigerated warehousing and storage, frozen food manufacturing, farm markets, wineries, or cideries within the Study Area. None of these features was identified within the Study Area, Secondary Study Area and the proposed right-of-way and associated easements.

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.

5.4 MITIGATION MEASURES

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

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

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

5.4.1 AVOIDANCE

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 severity of the potential impacts is related to the type and size of the change in land use, and the degree of agricultural activities and operations in the surrounding area.

The first method of addressing potential impacts is to avoid the potential impact. In this study, the proposed enhancements of Kirby Road will be a permanent use, with the majority of the enhancements occurring within the existing Kirby Road right-of-way. Small areas of the new proposed right-of-way and easements are located within an agricultural area.

The type of change in land use, a proposed enhancement of an existing road, does not allow for an avoidance of Prime Agricultural Lands. There will be a small net loss of lands, some of which include the use for agriculture. The loss of lands has been kept to a minimum by expanding the exiting Kirby Road right-of-way.

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.

Potential methods of minimizing impacts may include:

- Enhancing Kirby Road within the existing road right-of-way. The proposed right-of-way and associated easements will be an expansion of the existing Kirby Road right-of-way, thereby minimizing the loss of agricultural lands.
- Enhancing Kirby Road by including wide shoulders to allow safe transportation of agricultural equipment, or increasing the number of lanes to allow for safe passing of farm vehicles.

5.4.3 MITIGATING IMPACTS

When avoidance techniques 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 may include:

- 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 berms or vegetated feature 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 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.
- Limit the use of tall streetlights or use lighting that is directed down and away from agricultural lands.

The opportunity to utilize these strategies will be addressed in the design build phase of the project.

This AIA has provided comment on the avoidance (if possible), minimizing potential impacts and mitigation measures in the instances where avoidance is not possible. Further, it has been illustrated that the proposed mitigation measures may be incorporated as part of the proposed enhancements of Kirby Road.

6 SUMMARY AND CONCLUSIONS

DBH Soil Services Inc was retained to complete an Agricultural Impact Assessment (AIA) for an area identified as the Kirby Road Widening Environmental Assessment (EA) – Jane Street to Dufferin Street Study Area. In early 2021 a proposed right-of-way and associated easements was defined for the road widening. It should be noted that the majority of the proposed right-of-way and associated easements are located within the existing Kirby Road right-of-way. Small slivers of additional lands adjacent to the existing Kirby Road right-of-way will be the only areas potentially impacted by the proposed enhancements of Kirby Road. These small slivers comprise approximately 5.6 ha of land.

The Study Area and the Kirby Road proposed right-of-way and associated easements comprise a mix of land uses including agriculture, recreation, urban, industrial/commercial, scrub lands and woodlands.

The purpose of this AIA was to document the existing agricultural character, identify potential impacts and to provide mitigative measures as necessary.

In the greater Regional context, the Study Area and the Kirby Road proposed right-of-way and associated easements are located approximately 2.5 km south of King City (in the Township of King) and approximately 1.8 km north of the community of Maple (in the City of Vaughan).

For the purpose of an Agricultural Impact Assessment (AIA) report, agricultural operations and activities are evaluated in a larger area, the Secondary Study Area, described as a potential zone of impact extending a minimum of 750 m (0.75 km) beyond the boundary of the Study Area.

The Secondary Study Area also comprises a mix of land uses including agriculture, recreation (golf course), urban, industrial/commercial, scrub lands and woodlands.

The results of this Agricultural Impact Assessment are presented below:

- **Geographical Limits**

The Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements are roughly rectangular in shape, with the longer boundaries running east-west. The Study Area is centered on Kirby Road, and crosses Jane Street, Keele Street and Dufferin Street. Further, the Study Area crosses the Barrie GO Rail line just west of Keele Street.

The Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements are located within the South Slope and Oak Ridges Moraine Physiographic regions with the division between the regions occurring at roughly Keele Street. The western portion of the Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements are located within the South Slope

Physiographic region. The eastern portions of the Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements are located within the Oak Ridges Moraine Physiographic region.

The South Slope Physiographic region topography is characterized by gently undulating slopes and stream courses that flow south to Lake Ontario. The soil material in the South Slope Physiographic region developed on glacial ground moraine materials and will have higher clay content than the soils found in the Oak Ridges Moraine Physiographic region.

The Oak Ridges Moraine Physiographic region topography is characterized by steeper slopes and coarser open soil materials such as sands and gravels.

- **Agricultural Policy**

The portions of the Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements lands that are north of Kirby Road between Jane Street and Dufferin Street are located within the Prime Agricultural Area as defined in the Agricultural Land Base (Greater Golden Horseshoe, 2019). Portions of the Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements north of Kirby Road between Jane Street and Dufferin Street are also designated as Protected Countryside and Oak Ridges Moraine within the Greenbelt Plan (2017). A small portion of Protected Countryside was noted south of Kirby Road just east of Jane Street.

No lands within the Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements are located within any Provincially designated Specialty Crop areas.

The Regional Municipality of York Official Plan 2019 Office Consolidation (April 2019) (Modified York Region Official Plan – 2010) Map 8 – Agricultural and Rural Area identifies that portions of the Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements are designated as Agriculture Area. The areas designated as Agriculture Area are located north of Kirby Road between Jane Street and Dufferin Street. Portions of the Study Area, the Secondary Study Area, and the Kirby Road right-of-way and associated easements located east of Dufferin Street are designated Rural, with one small area identified as “Subject to Minister’s Order February 3, 2015 and Special Provision Policies 6.2.19 and 6.4.14”.

As identified in the City of Vaughan Official Plan 2010 (2019 Office Consolidation) Schedule 13 – Land Use, the Study Area (and the Kirby Road proposed right-of-way and associated easements) includes Agricultural Lands located north of Kirby Road from Jane Street to just east of Keele Street. The portions of the Study Area (and the Kirby Road proposed right-of-way and associated easements) west of Jane Street are considered as ‘Lands Subject to Secondary Plans’. Portions of the Study Area (and the Kirby Road proposed right-of-way and associated easements) south of Kirby Road between Jane Street and Keele Street are

considered as 'New Community Areas' and a small area of 'Greenbelt Plan Area'. Lands south of Kirby Road between Keele Street and Dufferin Street were identified as 'Low Rise Residential' and 'Oak Ridges Moraine Natural Core' areas. Lands north of Kirby Road between Keele Street and Dufferin Street were identified as 'Oak Ridges Moraine Natural Core' and 'Oak Ridges Moraine Natural Linkage' areas. Areas east of Dufferin Street were identified as 'Oak Ridges Moraine Natural Core' and 'Oak Ridges Moraine Countryside'.

The City of Vaughan Zoning By-Law (Number 1-88) was reviewed to determine the extent of lands that were zoned as agriculture within the Study Area, the Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements. Section 8 A – Agricultural Zone provided the zoning standards for agriculture. The western portion of the Study Area (and Right-of-way and associated easements) is predominantly Agricultural, with the eastern portion identified as Oak Ridges Moraine Area, Greenbelt Area and Open Space.

Neither the Study Area, the Secondary Study Area, or the Kirby Road proposed right-of-way and associated easements are located in designated or zoned as Specialty Crop lands.

- **Agricultural Land Use**

The Study Area (and the Kirby Road proposed right-of-way and associated easements) land use comprises built up/disturbed areas, common field crop production, forage/pasture lands, recreational areas (Golf Course – Carrickmacross West), linear corridors (roads/rail) and woodlands.

The southeastern portion of the Study Area and the Kirby Road proposed right-of-way and associated easements (south of Kirby Road and east of Keele Street) is predominantly urban land use with some woodlands areas. The western portion of the Study Area and the Kirby Road proposed right-of-way and associated easements (west of Keele street) comprises agricultural lands, a golf course, scrub lands, woodlands and commercial/industrial areas. The commercial/industrial lands are limited to the area located west of Keele Street and east of the rail line. These lands include a car dealership, restaurants (Tim Horton's and A&W), gas station with car wash and a transportation/trucking company (Grant Global Logistics)

The lands east of Keele Street and north of Kirby Road comprise a mix of agricultural lands, woodlands and scrub lands.

The Study Area lands comprise approximately 26.0 percent built up/disturbed lands, 35.4 percent as common field crop (corn/soybean in 2019 growing season), 8.0 percent as forage/pasture lands, 7.1 percent as recreation lands (golf course), 3.7 percent as scrublands, 8.3 percent as linear corridor (roads/rail), and 11.4 percent as woodlands areas.

The predominant agricultural land use on the Study Area Lands is the production of

common field crops (corn and soybean). There are no specialty crops grown on the Study Area lands.

The Secondary Study Area consists of a variety of land uses including, but not limited to built up/disturbed areas, common field crops, scrubland, forage/pasture lands, open field, recreational (golf courses), roads/rail corridor, and woodlands areas.

The Secondary Study Area comprises land use of approximately 19.5 percent as built up/disturbed areas, approximately 40.7 percent common field crop (corn and soybean), 1.2 percent as unknown (not visible – line of sight), 3.7 percent as pasture/forage lands, 0.6 percent as open field, 4.8 percent as recreational (golf courses), 5.1 percent as scrublands, 2.1 percent as linear corridor (roads/rail) and approximately 22.4 percent as woodlands.

On review of the Land Use data it was observed that the predominant land uses included the production of common field crops, built up areas and woodlands. The majority of the built-up areas are associated with the lands north of Kirby Road between the rail line and Keele Street, and the lands south of Kirby Road between Keele Street and Dufferin Road.

The Kirby Road proposed right-of-way and associated easements lands comprise approximately 5.5 percent of disturbed areas, 40.4 percent common field crop, 21.2 percent pasture/forage lands, 11.1 percent as recreational use (golf course), 8.9 percent as scrubland, and 13.0 percent as woodlands. There will be no agricultural impacts within the existing road right-of-way. The Kirby Road proposed right-of-way and associated easements land use relates to approximately 0.3 ha of built-up/disturbed areas, 2.2 ha of common field crop, 1.2 ha of forage/pasture lands, 0.6 ha of recreational lands (golf course), 0.5 ha of scrublands, and 0.7 ha of woodlands.

- **Agricultural Investment**

A total of 13 agricultural facilities or areas where facilities were located were identified within the Study Area and Secondary Study Area. One agricultural facility was located within the Study Area while the remaining 12 were located within the Secondary Study Area.

The Study Area contained one agricultural operation located south of Kirby Road and east of Jane Street. This agricultural operation is identified as an Active operation number 3 on Figure 4. This operation is located within the New Community Areas as illustrated in the Vaughan Official Plan Schedule I – Urban Structure. This agricultural operation includes a residential unit, numerous sheds and ancillary buildings, a large bank barn with large pole barn addition, grain bins, Quonset hut for machinery storage, machine shed and large metal sided buildings that may be associated with equipment or hay storage. It should also be noted that construction equipment was observed parked near these buildings (excavators, dumptrucks) along with large piles of materials such as fill, or possibly broken concrete.

Manure piles were noted near the large barn. A beef cow was observed in a pasture near

these buildings. A sign in front of the buildings along Jane Street indicated that agricultural products such as sheep meat was for sale.

A total of 12 agricultural facility sites (active, remnant, vestige) were identified in the Secondary Study Area. Agricultural facility sites numbered 8, 9, 10, 11 and 12 were sites where that had been agricultural facilities historically, but there are no present day buildings or remnants. These areas are considered as 'disturbed' and are not presently used for the production of agriculture.

Agricultural facility sites numbered 1, 5 and 7 were considered as remnant facilities due to the removal of barns and/or buildings. Some ancillary buildings are present on these sites and may be used for agricultural purposes such as storage of equipment or feed.

Agricultural facility sites numbered 2, 4 and 5 comprise barns or facilities potentially capable of housing livestock. Agricultural facility number 2 is located north of Kirby Road and west of Jane Street. This operation comprises a residential unit, Quonset with attached pole barn/building. No livestock, feed, or manure storage was noted on review of this site. No agricultural equipment (tractors, plows, disks, seeder/planters, etc) was observed on the aerial imagery or during the roadside reconnaissance surveys.

Agricultural facility number 4 was located south of Kirby Road and west of Jane Street. This facility comprised a residential unit, machine sheds, bank barn with extensions, concrete silo, concrete yard between the barn and extensions, and ancillary sheds. No livestock, feed, or manure storage was observed on the aerial imagery or during the roadside reconnaissance surveys. Agricultural equipment including tractors and implements were observed during the roadside surveys. This agricultural operation appears to be a cash crop operation. At the time of the reconnaissance surveys the fields around this operation comprised unharvested corn.

Agricultural facility number 5 was located north of Kirby Road and west of Dufferin Street. The view to this site was obstructed from Dufferin Street. The review of aerial imagery suggested that a barn (or building capable of housing livestock) has been constructed north of the residential unit. No livestock, feed or manure storage was observed from the imagery or during the roadside reconnaissance surveys.

There is no investment in artificial tile drainage in the Study Area, the Secondary Study Area, or the Kirby Road proposed right-of-way and associated easements.

There is no investment in irrigation in the Study Area, the Secondary Study Area, or the Kirby Road proposed right-of-way and associated easements.

There is no investment in landforming on the Study Area, the Secondary Study Area, or the Kirby Road proposed right-of-way and associated easements.

- **Land Tenure/Fragmentation – Land tenure/fragmentation represents a major impact to the long term viability of agriculture in the Study Area and Secondary Study Area and is typical of areas under pressure from non-agricultural land uses.**

A review of the City of Vaughan, Regional Municipality of York Assessment data, the land tenure of the Study Area (and the Kirby Road proposed right-of-way and associated easements) illustrates that a large portion of the land base is in non-local ownership (land owned by person or company that does not reside in the local area) or is in urban/developed area. Local ownership accounts for 13.5 percent of the Study Area. Unknown ownership (no information in the data set) accounts for 1.9 percent of the Study Area.

A large non-local ownership or a large urban/developed area is associated with areas that are in transition from an agricultural land base to a more urban setting. This type of relationship is often an indication of an area in transition away from the traditional owner/operator farm.

Similar conditions exist within the Secondary Study Area.

Land Tenure of the Study Area and the Secondary Study Area is typical of areas under pressure from non-local ownership, urban and development land uses.

Land Fragmentation of the Study Area is also typical of areas under pressure due to numerous severed parcels and built up areas.


The large amount of non-local ownership and urban/developed lands in conjunction with the numerous small parcels is a clear sign of the reduction of the agricultural land base.

The foregoing represents a comprehensive Agricultural Impact Assessment with the purpose of evaluating the Study Area, Secondary Study Area, and the Kirby Road proposed right-of-way and associated easements to document the existing agricultural character and to determine any potential impacts to agriculture as a result of the proposed Kirby Road enhancements.

It was determined that the Study Area, the Secondary Study Area, and the Kirby Road proposed Right-of-way and associated easements (outside of the existing right-of-way) are areas of transition from a livestock agricultural base to a cash crop base, that is further impacted by the existing urban environment pressures

Given the geographical location of these lands, and the small area of land needed for the enhancement of Kirby Road, it is the conclusion of this study that the proposed enhancements of Kirby Road would have minimal impact on the surrounding agricultural activities within the Study Area and that the small portions of adjacent lands can reasonably be utilized for the proposed enhancements of Kirby Road.

Sincerely
DBH Soil Services Inc.

A handwritten signature in black ink, appearing to read 'D Hodgson', is centered below the company name. The signature is fluid and cursive, with a large initial 'D' and a stylized 'H'.

Dave Hodgson, P.Ag.
President

7 REFERENCES

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- *The Regional Municipality of York Land Evaluation and Area Review Summary Report (August 28, 2009).* Planscape and the Soil Resource Group,
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- Windshield and field surveys by DBH Soil Services staff December 9, 2019.

APPENDIX A

POTENTIAL AGRICULTURAL FACILITIES PHOTOGRAPHS

Agricultural Facility #1



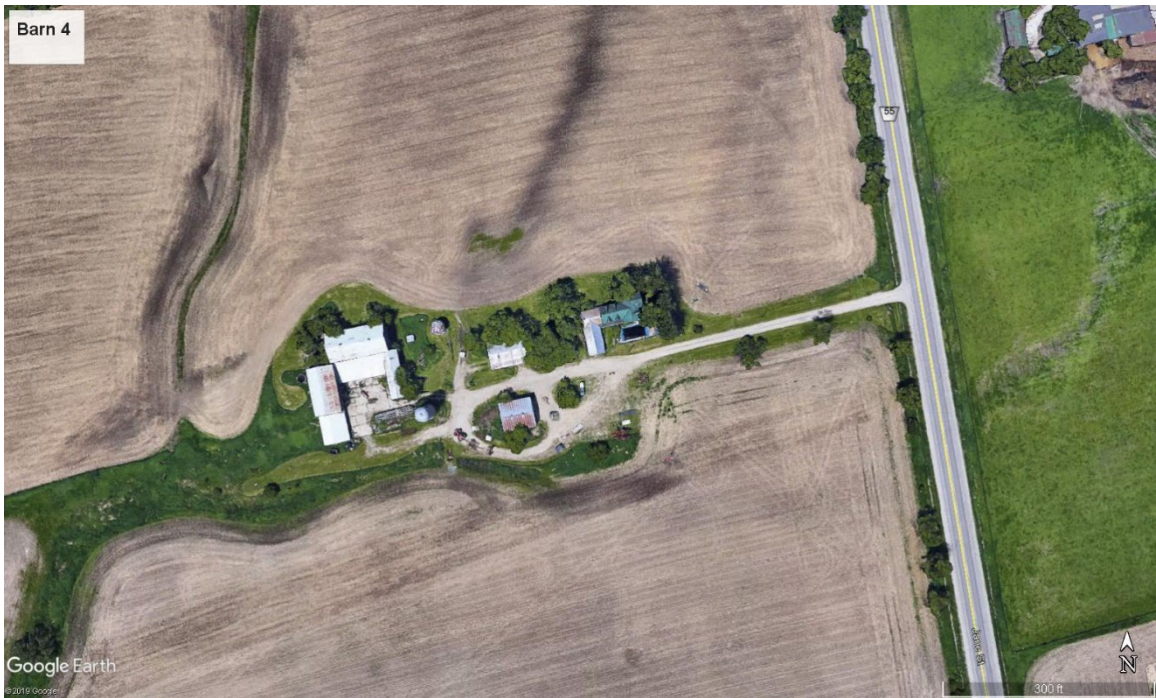
Agricultural Facility #2



Agricultural Facility #3



Agricultural Facility #4



Agricultural Facility #5



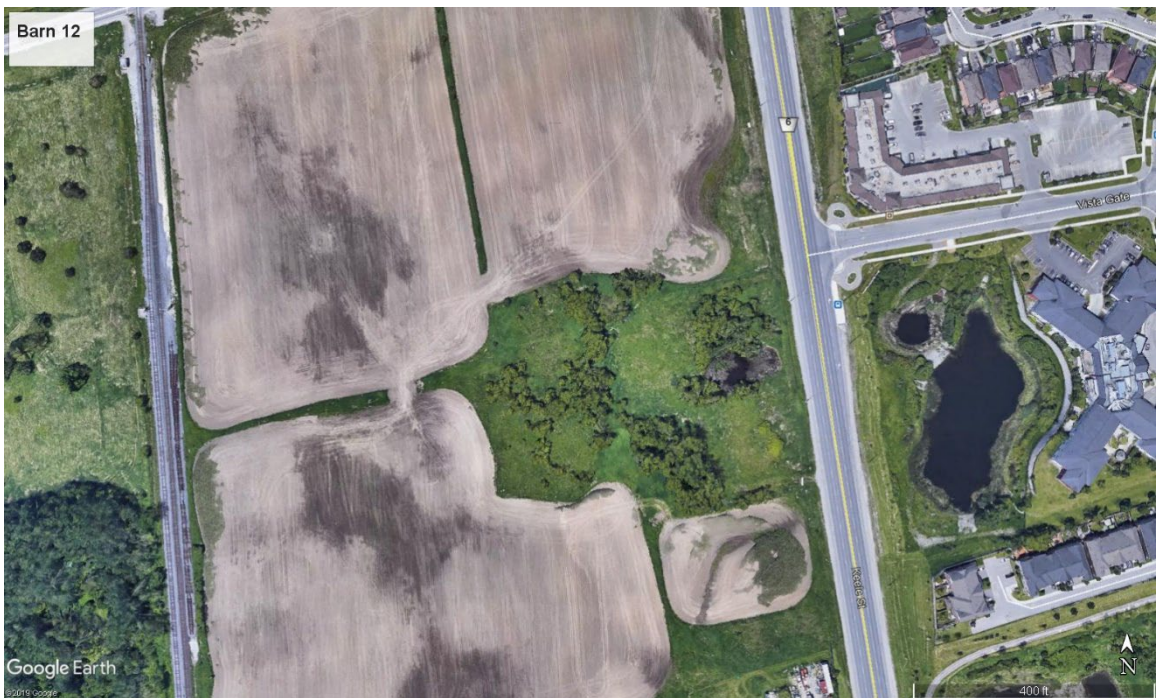
Agricultural Facility #6



Agricultural Facility # 11



Agricultural Facility #12



Agricultural Facility #13



APPENDIX B

DAVE HODGSON CURRICULUM VITAE



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

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

AREAS OF PROFESSIONAL EXPERIENCE

2000 to Present **Senior Pedologist/President. DBH Soil Services Inc., Kitchener, Ontario.**
Mr. Hodgson provides expertise in the investigation, assessment and resource evaluation of agricultural operations/facilities and soil materials. Dave is directly responsible for the field and office operations of DBH Soil Services and for providing advanced problem solving skills as required on an individual client/project basis. Dave is skilled at assessing soil and agricultural resources, determining potential impacts and is responsible for providing the analysis of and recommendations for the remediation of impacts to soil/agricultural/environmental systems in both rural and urban environments.

1992 to 2000 **Pedologist/Project Scientist. Ecologistics Limited, Waterloo, Ontario.**
As pedologist (soil scientist), Mr. Hodgson provided expertise in the morphological, chemical and physical characterization of insitu soils. As such, Mr. Hodgson was involved in a variety of environmental assessment, waste management, agricultural research and site/route selection studies.
Dave was directly responsible for compiling, analysis and management of the environmental resource information. Dave is skilled at evaluating the resource information utilizing Geographic Information System (GIS) applications.

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

SELECT PROJECT EXPERIENCE

Environmental Assessment Studies

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



2012 – 2013.

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

Agricultural Impact Studies

- Bradford Bypass Highway 400- 404 Link, Agricultural Impact Assessment, 2021 – ongoing.
- Wilfrid Laurier Milton Campus, Agricultural Impact Assessment, 2021 – ongoing.
- Town of Lincoln Road Realignment, Agricultural Impact Assessment, 2021 – ongoing.
- Britannia Secondary Plan, Agricultural Impact Assessment, Milton, 2021 – ongoing.
- Petersburg Sand Pit, Agricultural Impact Assessment, 2021 – ongoing.
- Milton, CRH Quarry Expansion, Agricultural Impact Assessment, 2020 – ongoing.
- Grimsby, Specialty Crop Area Redesignation, Agricultural Impact Assessment, 2020-ongoing.
- Halton Hills, Premier Gateway Phase 2 Employment Lands Secondary Plan, Agricultural Impact Assessment, 2020 - 2021.
- Milton Education Village Secondary Plan, Agricultural Impact Assessment, 2020 - 2021.
- Woodstock, Pattullo Avenue Realignment, Agricultural Impact Assessment, 2020 - 2021.
- Smithville, West Lincoln Master Community Plan, Agricultural Impact Assessment, AECOM, 2019 – On-going.
- Kirby Road Agricultural Impact Assessment, HDR, Vaughan, 2019 – 2021.
- Elfrida Lands, City of Hamilton, Agricultural Impact Assessment Update, WSP, 2019 – 2021.
- Dorsay Development – Durham Region High Level Agricultural Assessment, 2019.
- Stoney Creek Landfill AIA Update – GHD, 2019.
- Town of Wilmot, Agricultural Impact Assessment (AIA) Aggregate Pit Study (Hallman Pit), 2018, On-going.
- Courtice Area South East Secondary Plan (Clarington) Agricultural Impact Assessment (AIA), 2019,
- Town of Halton Hills, Minimum Distance Separation (MDS I), August 2018,
- Cedar Creek Pit/Alps Pit (North Dumfries), Agricultural Impact Assessment (AIA), 2018 – On-going,
- Belle Aire Road (Simcoe County) Agricultural Impact Assessment (AIA) Study, 2019,
- Vinemount Quarry Extension (Niagara) Agricultural Impact Assessment (AIA) Study, December 2017.
- Grimsby – Agricultural Impact Assessment Opinion, November 2017.
- City of Hamilton, Urban Core Developments – Agricultural Capability Assessment, February 2017.
- Township of North Dumfries – Minimum Distance Separation (MDS I), February 2017.
- Township of Erin, County of Wellington – Minimum Distance Separation I (MDS I Study), 2016.
- Halton Hills Employment Area Secondary Plan, Halton, 2015 - 2016.
- Peer Review of Agricultural Impact Assessment, Oro-Medonte Township, 2015.
- Greenwood Construction Aggregate Pit, Mono Township, 2014 - 2015.
- Innisfil Mapleview Developments, Town of Innisfil – Minimum Distance Separation (MDS I), 2014.
- Loyalist Township – Minimum Distance Separation (MDS I & 2), 2014.
- Rivera Fine Homes, Caledon – Minimum Distance Separation (MDS I), 2014.
- Town of Milton PanAm Velodrome – Minimum Distance Separation (MDS) 2012 – 2013.

Soil Surveys/Soil Evaluations

- Soil Sampling, City of Kitchener, 2021 – 2022.



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- Soil Survey and Canada Land Inventory Evaluation, Max Becker Enterprises, City of Kitchener, 2021
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- Soil Survey and Canada Land Inventory Evaluation, Maryhill Pit, 2019.
- Soil Survey and Canada Land Inventory Evaluation, Glen Morris Pit, Lafarge Canada, 2018,
- Soil Survey and Canada Land Inventory Evaluation, Brantford Pit Extension, Lafarge Canada, 2018,
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- Soil evaluation and opinion, King-Vaughan Road, March 2018,
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- City of Kitchener, City Wide Urban Soil Assessments, 2016 – On-going.
- Soil Survey and Canada Land Inventory Evaluation, Solar Feed-In Tariff (FIT) Program Study, 2016.
 - Bruce County (15 sites)
 - Grey County (4 sites)
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- Soil Survey and Canada Land Inventory Evaluation Study, MHBC Bradford, Simcoe County, 2016.
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Municipal Comprehensive Review Studies (MCR)

- Simcoe County, 2020 - ongoing.
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Land Evaluation and Area Review Studies (LEAR)

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



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Expert Witness

- Local Planning Appeal Tribunal (LPAT) Hearing, Greenwood Aggregates Limited, Violet Hill Pit Application, 2020.
- Ontario Municipal Board (OMB) Hearing, Burl's Creek Event Grounds 2018-2019.
- Town of Mono Council Meeting, Greenwood Aggregates Violet Hill Pit, January 2018.
- Ontario Municipal Board (OMB) Hearing, Burl's Creek Event Grounds, Simcoe County, 2015 – 2016.
- Ontario Municipal Board (OMB) Hearing, Town of Woolwich, Gravel Pit, 2012 – 2013.
- Ontario Municipal Board (OMB) Hearing, Mattamy Homes – City of Ottawa, 2011 – 2012.
- Ontario Municipal Board (OMB) Hearing, Town of Colgan, Simcoe County, 2010.
- Presentation to Planning Staff on behalf of Mr. MacLaren, City of Ottawa, 2005.
- Ontario Municipal Board (OMB) Hearing, Flamborough Severance, 2002.
- Preparation for an Ontario Municipal Board Hearing, Flamborough Golf Course, 2001.
- Ontario Municipal Board (OMB) Hearing, Stratford RV Resort and Campground – Wetland Delineation Assessment, 2000.
- Ontario Municipal Board (OMB) Hearing, Watcha Farms, Grey County, Agricultural Impact Assessment – Land Use Zoning Change, 1999-2000.
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- Halton Agricultural Advisory Committee (HAAC), Halton Joint Venture Golf Course Proposal - Agricultural Impact Assessment for Zoning Change, 1999-2000
- Halton Agricultural Advisory Committee (HAAC), Sixteen Mile Creek Golf Course Proposal – Agricultural Impact Assessment for Zoning Change, 1999.
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- Union Gas/Enbridge Gas 20" Gas Pipeline Construction Monitoring – Kingsville – 2019 - 2020.
- Union Gas/Enbridge Gas – Gas Pipeline Construction Monitoring for Tree Clearing. Kingsville Project. February/March 2019.
- CAEPLA – Union Gas 36" Gas Pipeline Construction Monitoring and Post Construction Clean Up – Agricultural Monitoring Panhandle Project. 2017 – 2018.
- CAEPLA – Union Gas 36" Gas Pipeline Construction Clearing Panhandle Project (Dawn Station to Dover Station) – Agricultural Monitoring, 2017 (Feb-March).
- City of Kitchener, Soil Sampling and data set analysis, 2017 – On-going.
- GAPLO – Union Gas 48" Gas Pipeline (Hamilton Station to Milton) Construction Soil and Agricultural Monitoring, 2016 – 2017.
- GAPLO – Union Gas 48" Gas Pipeline (Hamilton –Milton) Clearing – Agricultural Monitoring, 2016.

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