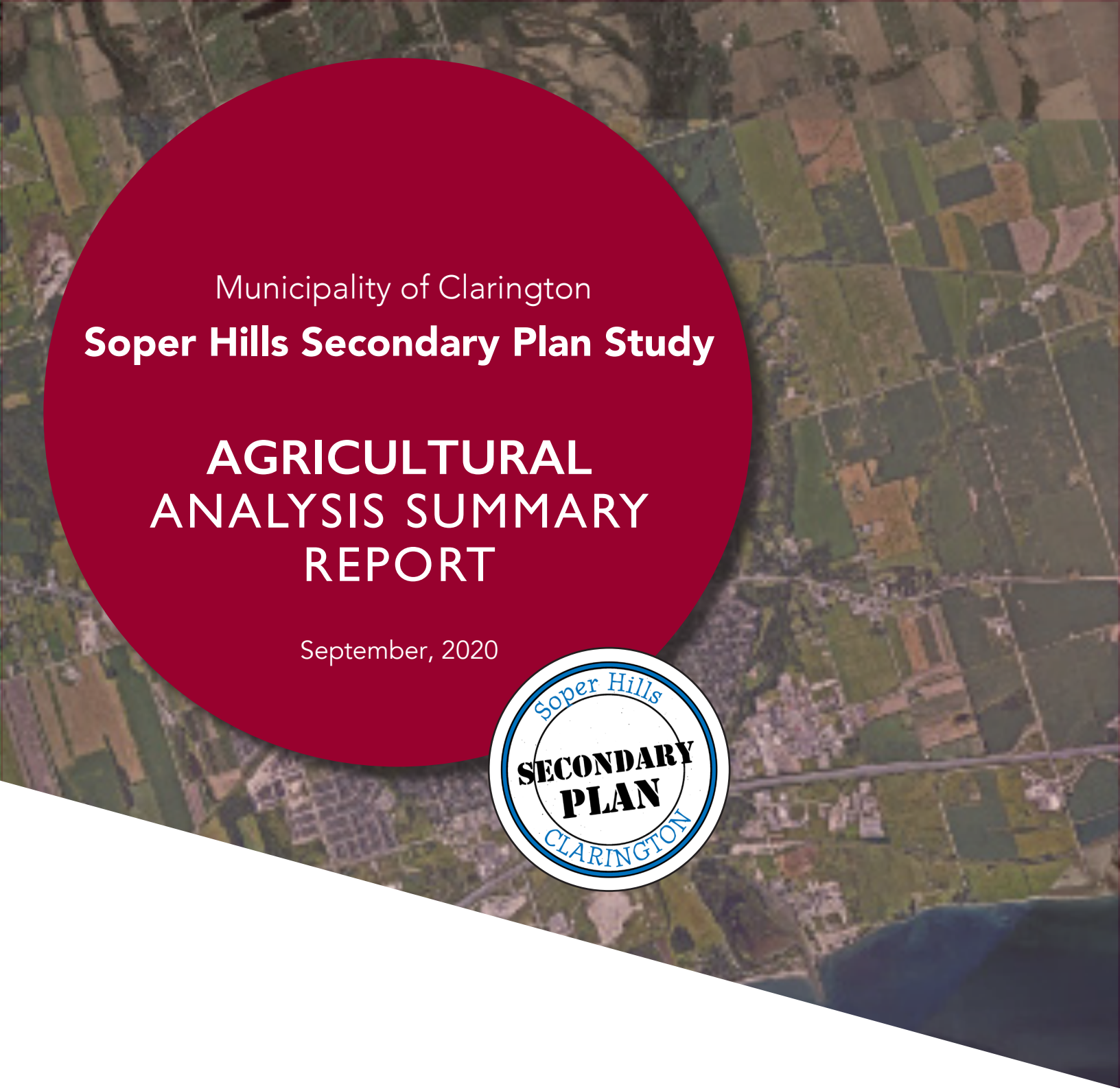

Municipality of Clarington

Soper Hills Secondary Plan Study

AGRICULTURAL ANALYSIS SUMMARY REPORT

September, 2020

Soper Hills SECONDARY PLAN CLARINGTON

SGL Planning & Design Inc.

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1 Introduction

The Soper Hills Secondary Plan Study area, or the "Study Area" (**Figure 1**), is a 193 hectare area in the Municipality of Clarington, located at the north end of Bowmanville. It is generally bound by Highway 2 to the south, Lambs Road to the west, the Canadian Pacific Railway to the north and Providence Road and its unopened road allowance to the east.

Map C of the Clarington Official Plan (COP) identifies this area as requiring preparation of a Secondary Plan. The purpose of this report is to provide an agricultural analysis as part of the background review and analysis of phase one of the study that will guide the preparation of a Secondary Plan.

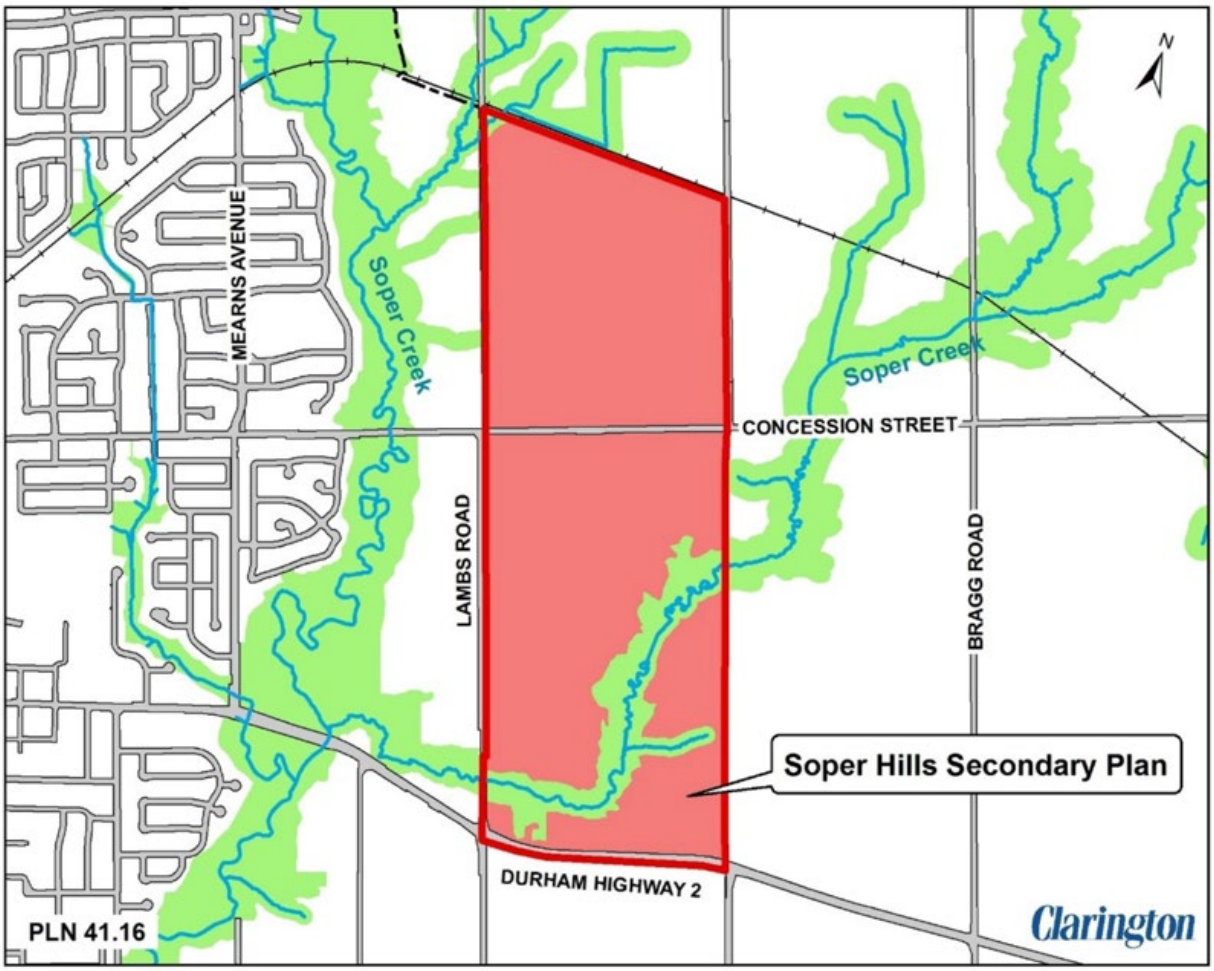

Figure 1: Soper Hills Secondary Plan Area Context
Source: Municipality of Clarington

The agricultural analysis and assessment forms part of the background review and analysis for the Soper Hills Secondary Plan Study.

The agricultural assessment is a desktop analysis that:

- provides statistical information for livestock production,
- includes aerial photo interpretation, and
- uses additional mapped information to characterize lands adjacent to the Secondary Plan area.

The assessment describes and evaluates the following:

1. What are the characteristics of the agricultural environment adjacent to the Soper Hills Secondary Plan Study Area?
2. How have the agricultural characteristics within the Study Area changed over the past 35 years (based on agricultural census data 1981 - 2016)?
3. What mitigation measures are recommended to mitigate impacts to agriculture operations outside of the Soper Hills Secondary Plan Study Area to the extent feasible?

The contents of this analysis are framed by policy as well as guidelines and address several agricultural characteristics including Minimum Distance Separation (MDS).

2 Agricultural Analysis

2.1 Context

The Soper Hills Secondary Plan is bordered by lands designated Prime Agricultural Area to the north and west as shown in **Figure 2**. While the current function and uses of the lands within the Secondary Plan area are primarily agricultural, Soper Hills is a designated urban area. This chapter considers the impact of urban development in the Secondary Plan area on existing agricultural operations located to the north and east.

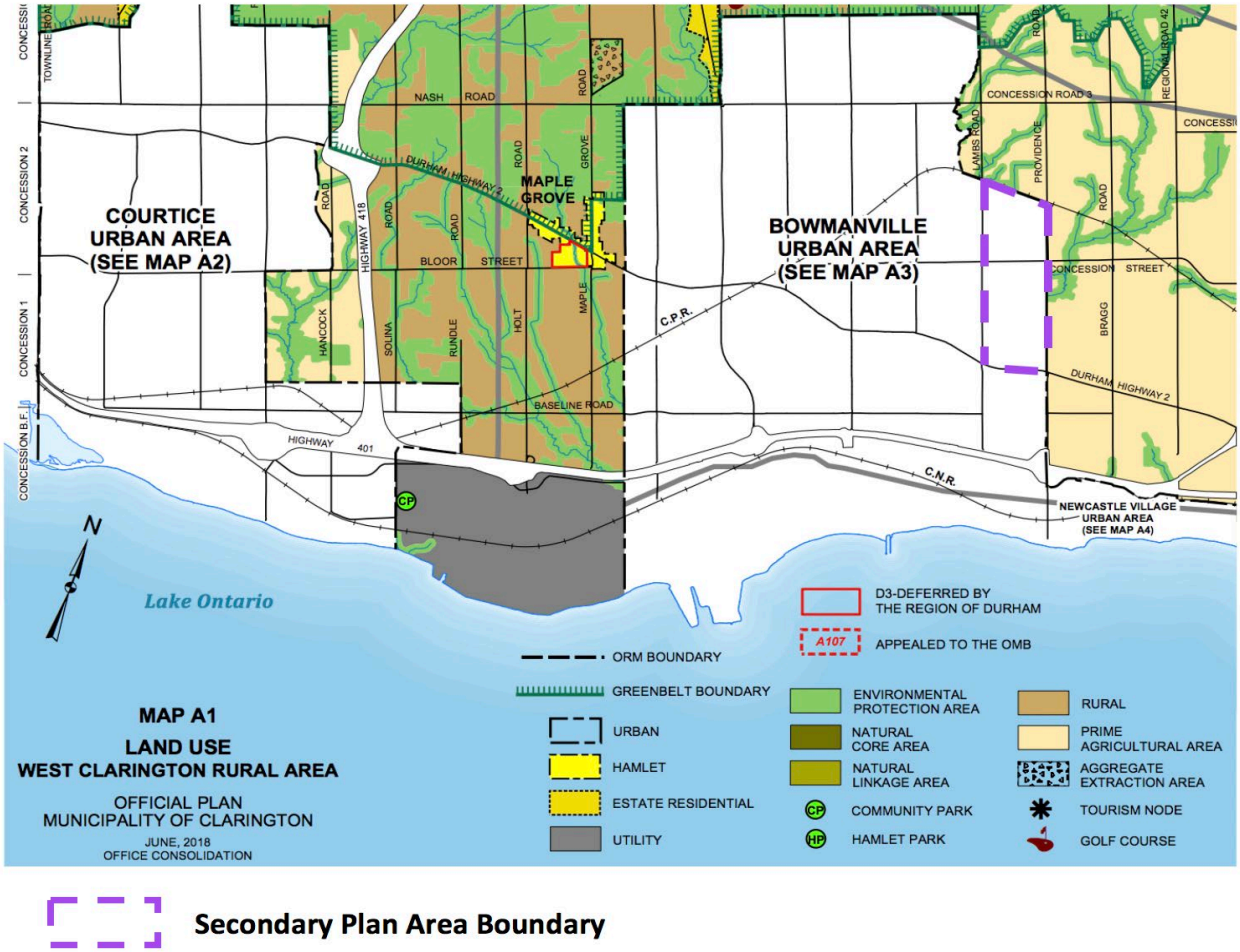

Figure 2: Soper Hills Secondary Plan Area in Relation to Surrounding Land Uses
Source: Clarington Official Plan

2.1.1 Agricultural Impact Assessment (AIA) Guidelines

Agricultural Impact Assessment (AIA) guidance at the Secondary Plan stage has been described by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA, 2018) in draft guidelines. The draft AIA guidelines refer to secondary plans and state that edge planning tools:

- can be implemented to alleviate land use conflicts between agricultural and non-agricultural uses, and
- include directing traffic away from farming areas, using buffers and providing separation distance.

The Draft Agricultural Impact Assessment (AIA) Guidance Document (OMAFRA, 2018) discusses Secondary Planning together with Subdivision Design and, with reference to secondary plans, states that they may include policies and maps that provide direction on topics including land use, infrastructure, transportation, design and the natural environment. The Draft Agricultural Impact Assessment (AIA) Guidance Document (OMAFRA, 2018) is more specific regarding subdivision planning, which follows the secondary plan stage, and states that design elements that could be incorporated into subdivision in the fringe areas include:

- Road design to direct traffic away from farming areas;
- Increased lot depths/sizes along the urban-agriculture boundary to allow for greater separation between uses;
- Planting vegetation buffers and/or installing fences to protect residential areas from possible spray drift, dust and noise;
- Recognition that a road right of way may be an adequate buffer and planting vegetation to improve the existing roadway buffer; and
- Increased building setback provisions in the zoning by-law to increase the separation between uses.

Therefore, mitigation measures such as road design, buffers and setbacks are appropriately evaluated and implemented, as is reasonable, at the subdivision design stage rather than at the secondary plan stage. Hence, this report does not contain recommendations related to those mitigation measures which are specific to the subdivision design stage.

While previous references are made to the Draft Agricultural Impact Assessment (AIA) Guidance Document (OMAFRA, 2018), the “Guidance Document” is still a draft and the release date of the final document is unknown (personal communication, 2019, OMAFRA Land Use Planning staff).

3 Findings

3.1.1 Livestock and Manure Production Trends

Several data sources have been used at various scales to characterize trends in livestock use. For example, impediments to the construction of new livestock buildings are to be found in government regulation such as the Nutrient Management Act (NMA, 2002) and the Act's associated Regulation, in addition to the costs associated with the livestock business.

These costs include:

- The requirements of compliance with the NMA. Costs are significant and vary with agricultural industry and are outlined in the paper by Brethour et al. (2004). The poultry business is in a relatively good position to expense those costs.
- Costs for entering supply controlled agricultural industry such as dairy or poultry (which are the livestock industries with a good expectation of high net returns) is high. Combe (2000) estimated that the capital investment (excluding land costs) related to 30,000 units of chicken broiler quota was $1.609 million. Therefore, the capital investment (excluding land) for the 30,000 units of chicken broiler quota would be in excess of $1.6 million at year 2000 prices.

Given the level of liability, costs of compliance, hard work and uncertainty associated with livestock production, that production may become a less desirable farming option. For example, livestock farming may not be the favoured choice for an agricultural operation because of externally imposed requirements related to nutrient management, animal welfare, diseases such as BSE and avian flu in addition to the cost of quota associated with supply-controlled industries (chicken, eggs and dairy).

This perspective of diminished interest in livestock production is supported by information that indicates that less livestock is being produced within Durham Region and Clarington. Because the number of census farms and census farm area has changed over time, nutrient units (amount of manure) has been calculated proportionate to census farm number and census farm area. Statistics Canada information, which tracks changes every five years, shows diminishing levels of nutrient units (formerly animal units) and manure production (**Figures 3** to **8**) as follows:

- total nutrient units in Durham Region and Clarington per census farm and per census farm hectare have diminished from 1981 to 2016 (**Figures 3** and **4**),

- when total nutrient units are multiplied by the odour factor (an "unpleasantness" rating), per census farm as well as per census farm hectare, Clarington's and Durham's levels have decreased between 1981 and 2016 (**Figures 5** and **6**)
- Clarington's total nutrient units as a proportion of Durham Region's total nutrient units have decreased from 1981 to 2016 (**Figure 7**),
- when farms reporting manure and the amount of manure reported are summarized from 1991 to 2016, (data are only available from 1991 to the present census) Clarington farms reporting, and amount of manure reported, as a proportion of the amounts reporting/reported within Durham Region, has diminished (**Figure 8**).

The diminishing number of farms reporting livestock as well as the diminishing amount of manure reported support the conclusion that there is a lower probability of manure odour.

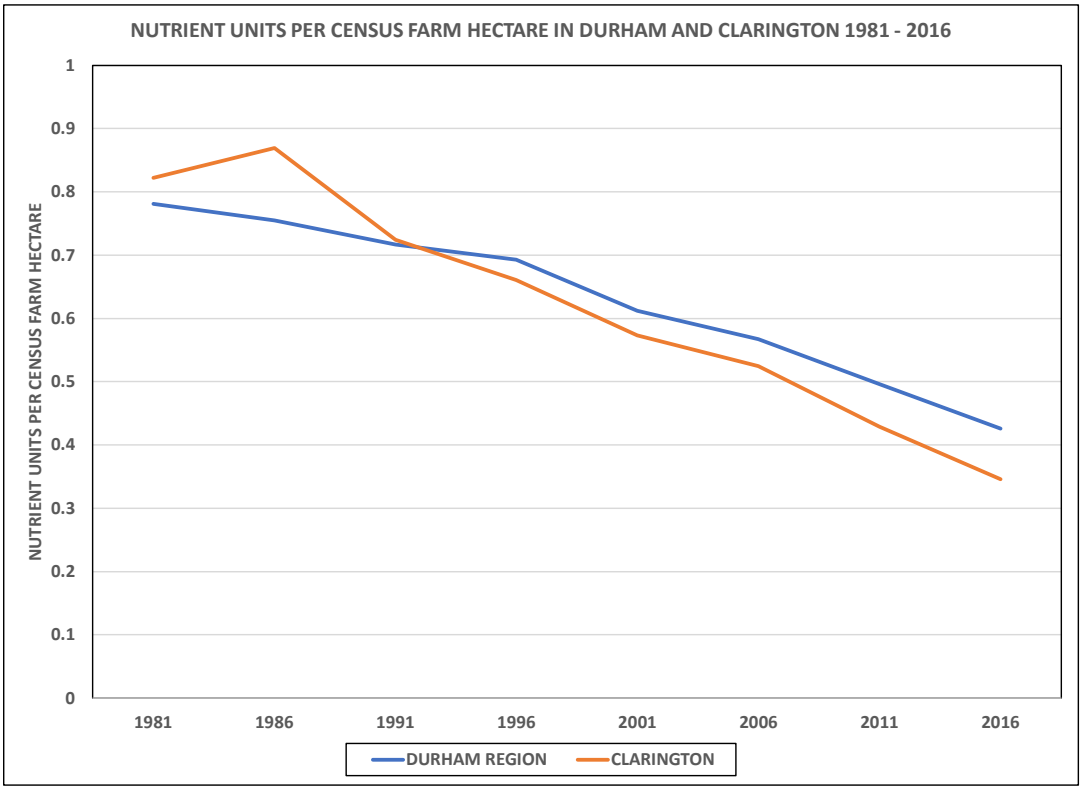

Figure 3: Change in Nutrient units per farm hectare over time

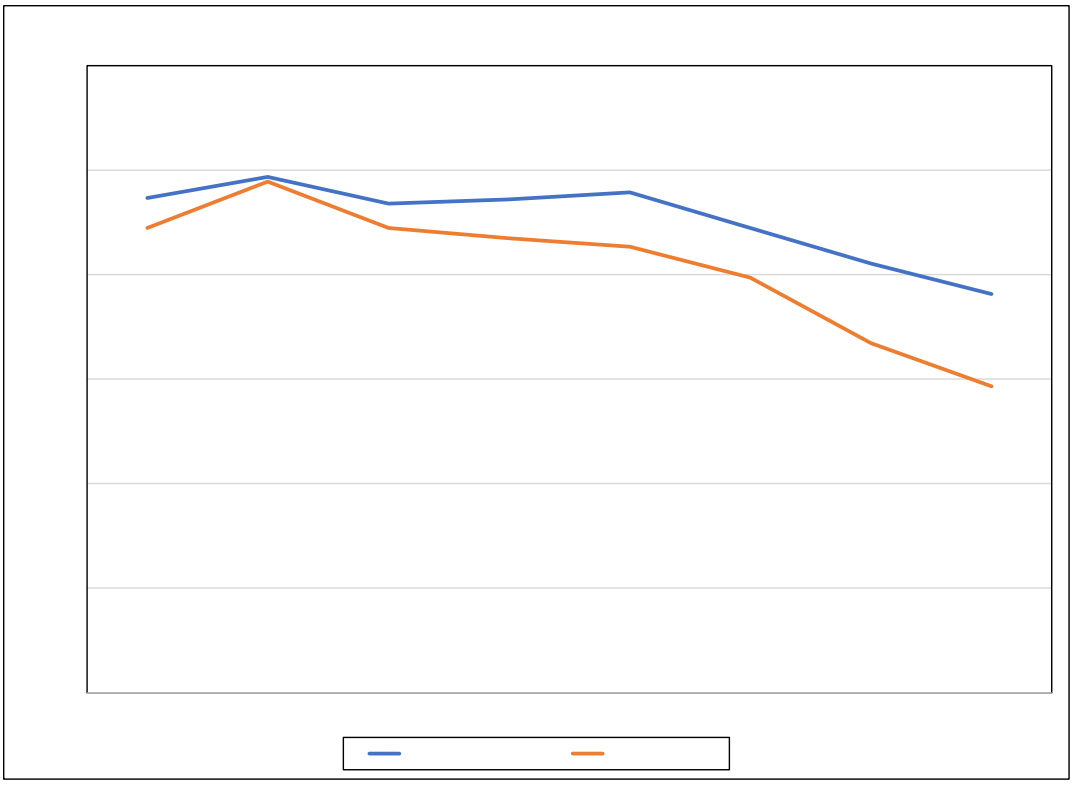

Figure 4: Change in Nutrient units per farm over time

Figure 5: Change in Nutrient units time odour factor per farm hectare over time

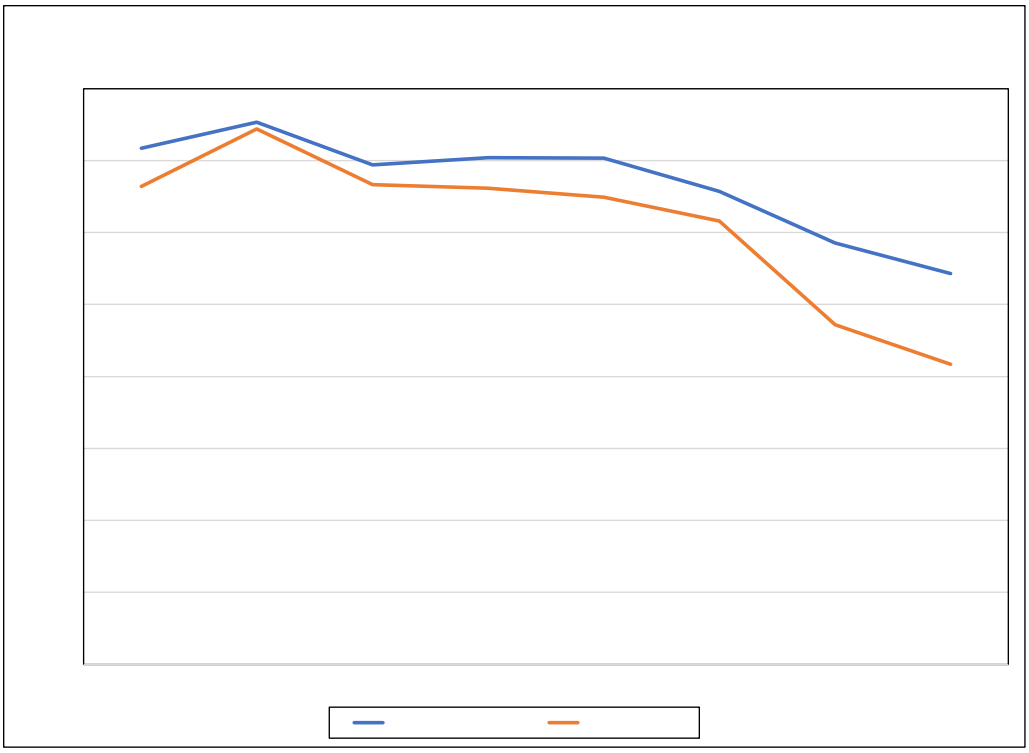

Figure 6: Change in Nutrient unit times odour factor per census farm over time

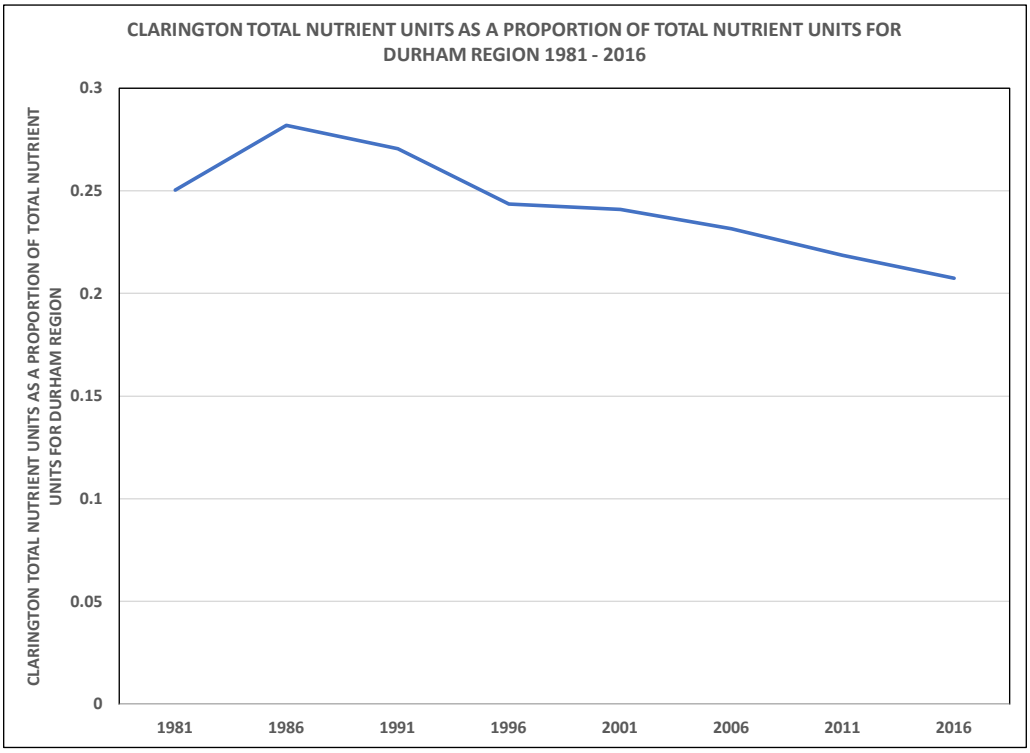

Figure 7: Change in nutrient in Clarington as proportion of Durham over time

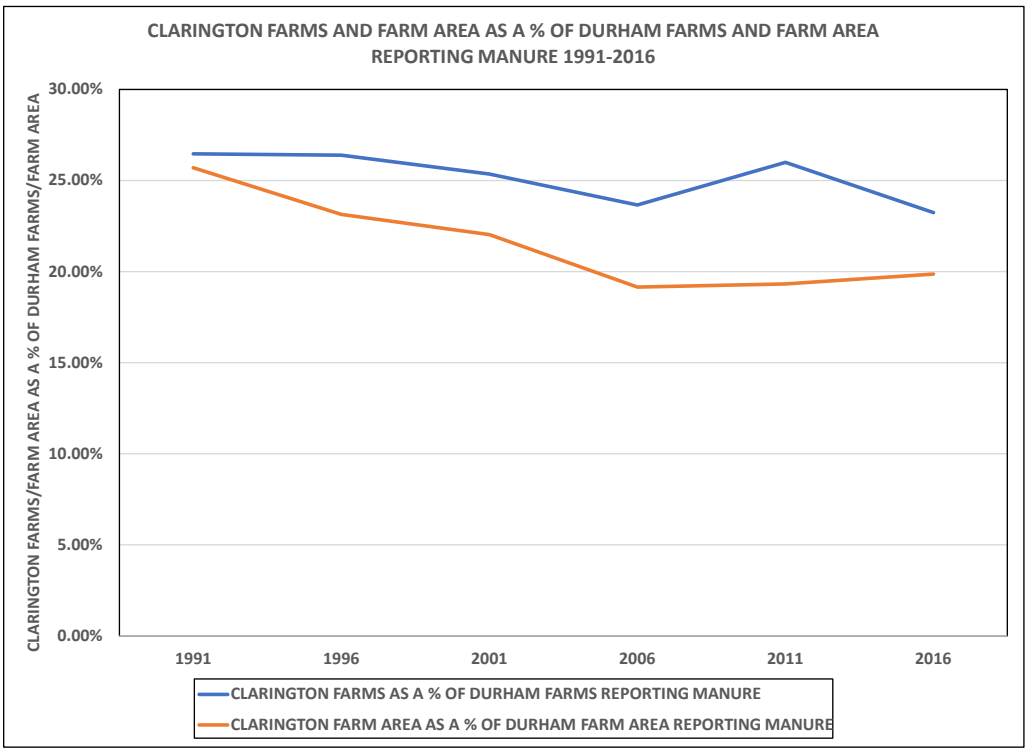

Figure 8: Change in farm area relative to Durham over time

3.1.2 Minimum Distance Separation (MDS II) Analysis and Results

The Minimum Distance Separation (MDS) Formulae Document produced by the Ministry of Agriculture, Food and Rural Affairs (Ontario) guides the application of the Minimum Distance Separation Formulae with the intent, as stated on page 1 of the document, to "prevent land use conflicts and minimize nuisance complaints from odour."

The purpose of the Minimum Distance Separation (MDS) Formulae is to determine setback distances between livestock barns, manure storages or anaerobic digesters and surrounding land uses. Municipalities are responsible for ensuring MDS setbacks are met. The Ontario MDS Document outlines the two separate formulae:

- "MDS I – provides the minimum distance separation between proposed new development and any existing livestock barns, manure storages and/or anaerobic digesters". This formula is used for the setback of a new use to an existing relevant agricultural use.
- MDS II – provides the minimum distance separation between proposed new, expansion of remodelled livestock barns, manure storages and/or anaerobic digesters and existing or approved development". This MDS formula is used when there is a new relevant agricultural use to other uses around it.

The MDS Document only applies in prime agricultural areas and rural areas thus the formulae would not apply to any new development in the Soper Hills Secondary Plan. However, outside of the Secondary Plan Area, any new, expanded or remodelled livestock barns, manure or anaerobic digesters would have to meet the MDS II, including anything that would be planned within the Secondary Plan area. In this report, the MDS II is applied to livestock operations near the Secondary Plan area, to understand how they may be impacted by future development.

There is some probability that there may be MDS II conflicts if farms near to Soper Hills wish to expand their operations. As a result, farms actively engaged in livestock production were identified and MDS II calculations were made.

The MDS II calculations procedure was as follows:

1. Barns capable of housing livestock within 1.5 km of Soper Hills boundary were identified and measured using aerial photography. Limited field reconnaissance from the roadside was also completed.
2. Total barn area per farm was calculated based on the photographic measurements.
3. Barn area was used in the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) AgriSuite software (version 3.4.0.18) to calculate maximum housing capacity.
4. Livestock and manure handling system was ascertained, where possible, based on photo interpretation.
5. MDS II calculations were completed assuming:
    - the current manure handling system,
    - an increase in barn size or new barn to accommodate twice as many livestock as current maximum housing capacity,
    - that no building permits for barns had been issued within the past 3 years.

Calculations were completed for 3 livestock facilities on 3 separate properties (**Figure 9**).

Farms A and B were determined to contain cattle, while Farm C was determined to contain a limited number of horses.

Farm A currently has an estimated livestock barn area of 5,574 square metres. It is assumed that if this facility were to double, it would have a livestock barn area of 11,148 square metres. Based on MDS II for Type B Land Uses, the minimum livestock barn setback distance is 620 metres, and the minimum manure storage setback distance is 758 metres.

Farm B currently has an estimated livestock barn area of 2,207 square metres. If this facility were to double, it would have an area of 4,414 square metres. Based on MDS II

for Type B Land Uses, the minimum livestock barn setback distance is 392 metres, and the minimum manure storage setback distance is also 392 metres.

Farm C was identified to contain a single horse, with an existing estimated livestock barn area of 513 square metres, that is not used for the horse on site. Rather, only a small shelter is provided on site. It is assumed that if the existing structure was filled, it could accommodate a maximum of 17 horses, which is what could occur without a building permit, since the existing single horse in a shelter doesn't count as a livestock operation under the guidelines. Based on MDS II, the minimum livestock barn setback distance for 17 horses is 233 metres, and the minimum manure storage setback distance is 277 metres.

Two of the 3 livestock facilities (farms A and B, **Figure 10**) could double their current livestock housing capacity without MDS conflict. The barns immediately adjacent to the Soper Hills eastern boundary (farm C) had relatively few livestock and could increase that livestock based on existing housing capacity. Given the trends to lower livestock production in Clarington and the MDS II calculations, opportunities are available to increase livestock numbers without limitations due to MDS.

3.1.3 Mitigation

The following discussion on mitigation is presented to provide an indication of the kinds of approaches to mitigation between agriculture and non-agricultural uses that have been applied and documented. However, given the direction of the Draft Agricultural Impact Assessment (AIA) Guidance Document (OMAFRA, 2018), most of the mitigation described in the following is best considered and implemented as reasonable later in the planning process at the subdivision design stage.

There is much qualitative literature describing possible conflict between agriculture and urban uses where that conflict is related to dust, pesticides, noise, light, transportation, odour, trespass, vandalism, farm management, animal care and other matters and expectations associated with, agricultural versus urban areas. It is not the intent of this report to review that literature extensively. OMAFRA does not have documents that describe mitigation measures and their efficacy but have provided information prepared by some municipalities within southern Ontario (London, Mississippi Mills) and to government papers available for British Columbia (OMAFRA, 2018). The literature from British Columbia is more extensive. Published literature generally provides information with respect to subdivision design and other recommendations intended to reduce urban/rural conflict. This literature has found that:

- Roads at the boundary between agricultural and urban areas should be designed to accommodate large, wide, slow-moving farm machinery (by use of wider road surfaces including paved shoulders; by placement of road markers, signage, mail boxes away from the road edge, for example); and

- Visual barriers provided by tree plantings within the agricultural and urban areas would potentially reduce some impacts related to light and noise.
- Areas of lower agricultural importance/priority should be chosen for non-agricultural development where that proposed non-agricultural development has a boundary adjacent to relatively lower priority agricultural lands.

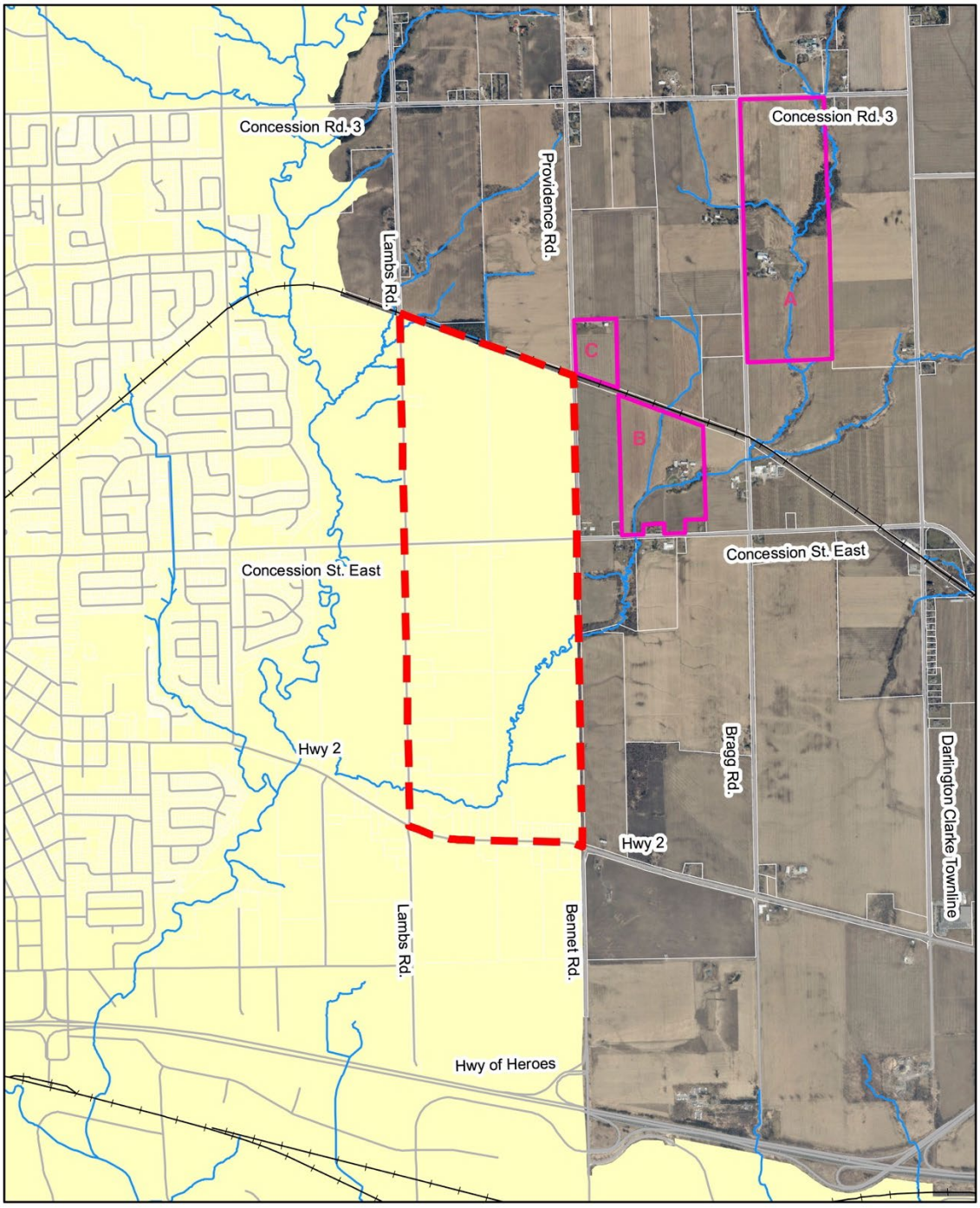

Figure 9: Locations of farms containing livestock in proximity to the Secondary Plan area

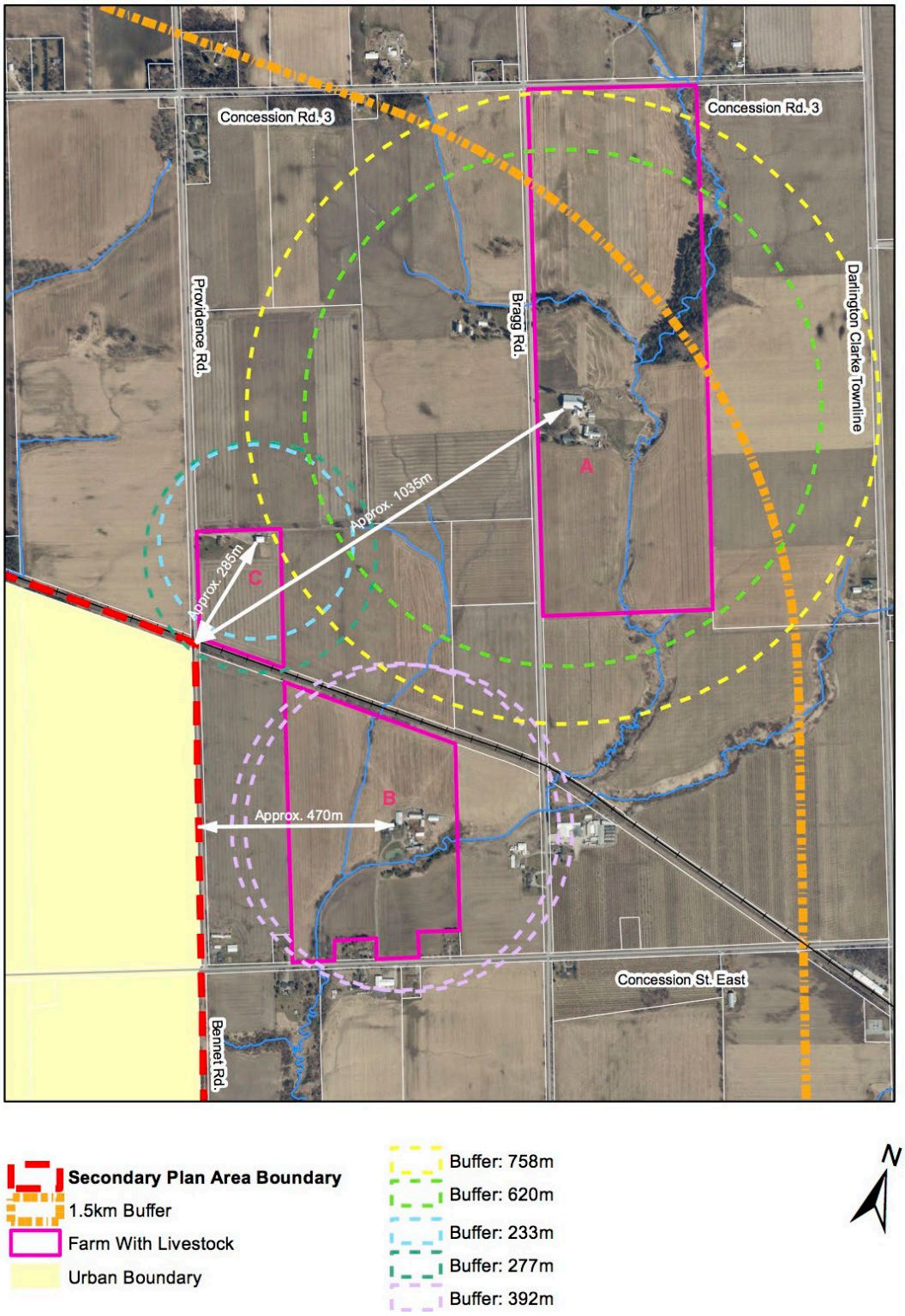

Figure 10: MDSII Arcs for hypothetical expansion of existing livestock

The literature shows that mitigation can take the form of:

- physical separation (buffer strips),
- berms,
- fencing,
- screening through use of vegetation,
- insertion of low-density uses between high-density urban uses and farm land,
- specialized zoning of buffer strips to prevent structures, storage, and removal of vegetation,
- clauses attached to land title which warn that adjacent uses include farm land where normal farm practices are protected and where those practices include the production of dust, vibration, odours, light, noise etc. and the use of fertilizers and pesticides, and
- any combination of the aforementioned.

The need for, as well as the form or characteristics of, that mitigation can depend on several factors such as:

- the relative importance of the farmland as defined by planning policy;
- the kind and scale/size of agricultural operations (livestock versus fruit production, for example);
- the probability of impacts to agriculture and the severity of those impacts if they should occur;
- the probability that mitigation in any, or of a specific form, can significantly reduce probable impacts; and
- the relative positive impacts of residential development adjacent to farm land compared to negative impacts associated with the juxtaposition of residential and agricultural development.

The literature tends to emphasize the negative interactions at the urban/agricultural interface. However, there are some positive impacts and these are outlined by Sokolow (Chapter 12, no date).

The common generalization from several studies is that urban proximity can provide profit-making opportunities as well as problems for farmers, considering the potential for direct marketing, other forms of access to urban consumers, and off-farm income for operators. (Edelman, et al., 1999). But only certain kinds of intensely-cultivated farms, including vegetable producers, seem to benefit from such locations (Larson, et al., 2001). A USDA review of the available information on farms in metropolitan areas characterizes them as smaller, producing more per acre, more diverse, and more

focused on high-value production than farms in non-metropolitan areas (U.S. Department of Agriculture, 2001).

Mitigation must also consider the fact that agriculture includes a diversity of farm types and farm management. Agriculture includes the production of nursery crops which can be a source for “horticultural plantings” and some “invasive plants” relative to other kinds of agricultural production. Regardless, there is currently no requirement for buffer areas between farms producing nursery crops and other types of farms within prime agricultural areas.

The mitigation options available are based on several sources of literature. Much of the Canadian literature is from the province of British Columbia and has been put in place relative to their Agricultural Land Reserve (ALR). Landscaped buffer specifications (Agricultural Land Commission, 1993) start with a minimum buffer width of 3 m. Other specifications suggest that berms may be added to the buffer.

Different fencing types are described as part of Agricultural Land Commission buffer specifications. Specialized zoning and a restrictive covenant are present because of discussions in papers such as those by the British Columbia Ministry of Agriculture, Fisheries and Food (1996) and Curran (2005).

All of the literature search related to buffers at the agriculture/urban interface provided very little quantitative information and this viewpoint is expressed by Sokolow et al. (2010):

> It [edge conflict] appears in many other parts of the nation where urbanization extends into commercial agricultural areas (Jackson-Smith and Sharp 2008; Abdalla and Kelsey 1996; Larson et al. 2001; Van Driesche et al. 1987). These accounts are usually anecdotal or prescriptive in nature, lacking a systematic examination of the causes and effects of agricultural-residential conflicts, especially one that builds on a comparison of different edge situations.

Sokolow concludes his research with the question:

> What is the relative effectiveness of various public policy measures - such as grievance procedures, right–to-farm ordinances, required buffers for new development and zoning - in avoiding or reducing edge conflicts?

Englund (2003) evaluated 27 buffers in British Columbia by use of survey research. Buffers varied in their length (40 m to 900 m), width (1 m to 350 m), density (20% to 95%) and species composition. As well, the positive and negative elements of the vegetated buffers were viewed differently. For example, some survey respondents classified the shade provided as a positive element while others saw it as negative. The fact that the buffer provided habitat for wildlife as well as provided for the screening of views was also viewed both positively and negatively by respondents to the survey. The sample size of 27 buffers, given the variation in the characteristics of the buffers, as

well as in the characteristics of the survey respondents, renders any form of conclusion with respect to the study as tentative.

Finally, there has recently been an impetus for agricultural production within urban areas. For example, the Ontario planning Journal (Volume 26 (4), 2011) provides information that urban agriculture is being studied at York and Queens Universities as well as the Universities of Toronto and Guelph. OMAFRA provides information related to urban agriculture on several websites (OMAFRA 2015) and includes discussions on livestock production within urban areas. OMAFRA does mention the use of Minimum Distance Separation (MDS) in urban areas but, within its own MDS Document (2017), leaves any requirement for the application of MDS within the urban settlement areas up to individual upper and/or lower tier municipalities.

In the review of the literature, no requirement for buffers between agricultural uses and urban uses within urban settlement areas was mentioned.

4 Recommendations

Based on the on the MDS analysis, the existing livestock operations in proximity to Soper Hills (1.5 km) are not expected to be impacted or restricted from expanding as a result of the development of the Soper Hills Secondary Plan Area.

OMAFRA's draft Agricultural Impact Assessment Guidelines (2018) indicate that the majority of impacts at the urban/agricultural interface are best minimized at the plan of subdivision stage rather than at the current secondary plan stage. Given the age of the literature related to mitigation and on the lack of quantitative analysis concerning the success of the mitigation, the literature on mitigation is limited. Therefore, the following recommendations are made.

Recommendation 1:

> Policies should be included in the Secondary Plan which require consideration of the urban agricultural interface, within and along the boundary of the Secondary Plan, during the preparation of the draft plan of subdivision stage.

Recommendation 2:

> The literature on mitigation related to the urban agricultural interface should be newly reviewed at the time of subdivision planning. Any known beneficial mitigation at the interface between urban and agricultural uses should be applied at that time.