

Municipality of Lakeshore Large Scale Greenhouse Consultancy

Draft Update Report

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Interim report content



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1 Introduction

In May 2023, Harry Cummings & Associates Inc. (HCA), were retained by the Municipality of Lakeshore (hereafter, Lakeshore) to carry out a feasibility study, market analysis, and recommended site selection for a greenhouse business park within the Municipality. This interim report covers a consolidated summary of our work so far. We have conducted several studies and assessments as per our consultancy work plan. These include a review of studies and documents on Large Scale Greenhouse Farms (LSGFs), a market and growth study of the LSGFs, a field visit to an LSGF in Kingsville and a site visit to the Lakeshore and surrounding LSGF expansion areas, discussions with key stakeholders including water suppliers and municipal staff responsible for LSGF oversight in Kingsville and Leamington, a site selection study of areas of potential for LSGF Business Park; and a study of co-located battery energy storage system potential.

This report provides a summary of the major findings to date and concludes with recommendations for the Municipality.

2 The LSGF Market Growth Prospects in Canada and Ontario

The Canadian greenhouse industry is broadly classified into food crop and floriculture groups, which recorded \$2 billion and \$809.9 million in exports in 2021, respectively. Roughly 1656 establishments employ more than five people, most of which are LSGFs. Of these LSGFs, 39% are situated in Ontario. Most (75%) of Ontario's greenhouse production is concentrated in southern Ontario in the counties/regions located around the western end of Lake Ontario (Niagara and Hamilton) and the counties along the north shore of Lake Erie. The vegetable and mushroom industry takes the lion's share of the total industry by contributing 85% of the greenhouse industry exports (\$1.7 billion) and recording \$2.7 billion in farm gate sales in 2021.

The five-year greenhouse vegetable industry trend (2017-2021) showed that the number of establishments had decreased slightly (0.5%). However, the harvested area increased by about 18%, production volume increased by 17%, and farm gate price increased by 43%. The increase in farm gate prices includes an inflationary rise. The fact that production area and volume of production increased despite the reduction in the number of establishments shows a shift to large-scale greenhouse farms in the industry. This parallels changes happening in agriculture more generally. In Ontario, greenhouse vegetable establishments employed 6,186 permanent employees in 2021, which increased from 4,438 in 2017 and 4,266 seasonal employees in 2021, which increased from 3,550 in 2017. Canada maintained a positive trade balance between 2017 and 2021, which nearly doubled for both vegetables and mushrooms (from \$747,897 to \$1,233,583). Most (90%) of greenhouse exports go to the United States.

According to the Ontario Greenhouse Vegetable Growers study (2023)¹, the greenhouse vegetable industry is projected to grow at a 5% rate for the next decade. Using this projection with a baseline acreage of 3800 acres in 2022 for Ontario, it indicates a growth to a maximum of 6,200 acres by 2032, expanding by about 2,400 acres. Most of this expansion is expected to happen on the shores of Lake Erie, in the Leamington, Kingsville, and Chatham-Kent municipalities, which offer LSGFs a conducive cooler climate and favourable cold irrigation water of Lake Erie. There is already a concentration of LSGFs in the Leamington and Kingsville areas.

¹ Ontario Growth and Sustainability Study 2023, available online at <https://www.producegrower.com/news/ontario-greenhouse-vegetable-growers-growth-sustainability-study/>

In a Draft Update to the County of Essex Official Plan released August 11, 2024, new policies highlight the importance of LSGF farming for the agricultural industry and the County's commitment to conduct a Greenhouse study for the County (Section 5.A(e)).

3 The Leamington and Kingsville Experience

The municipalities of Leamington and Kingsville have acquired a lot of learning and adaptation to the management and governance of LSGFs for the last several years. We have conducted a discussion with the Town of Kingsville, conducted document reviews and field visits to gain an understanding of the LSGFs operations and the management approaches of these municipalities. Some of the key findings are included in this section.

3.1 LSGFs Priority Area

The unplanned expansion of LSGFs has been problematic for both Kingsville and Leamington. Challenges include damage to feeder roads, light pollution, water pollution concerns, temporary foreign worker (TFW) residences, and LSGF installation's impact on the landscape's view in both residential and rural neighbourhoods. In Essex County the terrain is very flat, therefore large structures have a greater visual impact on the rural landscape as compared to other locations in Ontario.

Commented [TR1]: Perhaps reword to make the intent clearer - i.e. visual impact on the landscape in both residential neighbourhoods and the rural areas(?)

The Town of Kingsville has incorporated an article in its 2023 Official Plan – 5 Year Conformity Review, deciding to promote a “Greenhouse Farming” Priority Area. Section 3.1 permits Greenhouse Farming within the Agriculture Designation and includes policies to encourage location of greenhouse development within a priority area (in proximity to existing similar development and associated servicing).

The Kingsville Official Plan Section 3.1.2.1 is stated as follows:

3.1.2.1 Greenhouse Farming

Greenhouse farming and associated support facilities such as packing, shipping, and cogeneration are permitted in the 'Agriculture' designation subject to the following:

- a) greenhouse development shall be subject to the Site Suitability criteria of Section 2.8 of the Plan;*
- b) greenhouse development will be encouraged to locate in close proximity to existing greenhouse development more specifically south of Road 5 E and east of Division Rd N. New greenhouse development not located within this area shall be required to provide justification of compliance with Section 2.8 (map 3.1);*
- c) greenhouse development shall be subject to site plan control;*
- d) greenhouse development shall be encouraged to provide active transportation linkages to existing and future active transportation corridors including the CWATS and Greenways;*
- e) the internal recycling of fertigation water by greenhouse farms shall be encouraged in order to reduce primary water use, in accordance with the policies of this Plan, including Section 6.3.5; and*
- f) that required facilities will be installed such as, but not be limited to, on-site water storage and rate-of-flow control facilities as listed under Sub-Section 6.4.5 and complete Stormwater management facilities as listed under Sub-Section 6.4.6 of this Official Plan and a water taking permit process to the province.*

Further, within Section 6.4.5, the policies for Water Supply and Distribution state:

d) the Town recognizes that greenhouse farming is permitted in all "Agriculture" designated and zoned areas, but encourage their establishment and operation in locations where servicing is demonstrated to be consistent with Section 2.8.

The Town's approach is to incentivize LSGFs to develop in the priority areas by facilitating or developing essential infrastructure within a concentrated area. Therefore, the Town can prioritize gas, hydro and water main expansion projects in the priority area. The Town, through policy, forces private mains to pump septic/sewer from greenhouses (and associated bunkhouses) to the sewer treatment facility during off-peak hours. In addition, LSGFs have the opportunity to share the cost of additional infrastructure, such as side roads and stormwater management, which makes it cheaper to concentrate in the priority greenhouse area.

3.2 Buffer strip

One of the challenges of LSGF installations [in both the Leamington and Kingsville experience](#) is the variety of designs and looks that, when scattered through the rural landscape or close to suburban neighbourhoods, have undesirable visual effects on the surrounding countryside. Some LSGFs applied a visual buffer by planting trees around the LSGF installations, particularly facing the roadside.

It is recommended that LSGF construction plans include a buffer strip with tree planting to create a visual screen and enhance scenery. This practice, along with the application of Greenhouse Priority or Business Area, will help to protect the integrity of the rural landscape in Lakeshore.

3.3 Infrastructure

Gas, hydro, water, and side roads are the most essential infrastructure for LSGFs. Kingsville and Leamington's experience shows that the development of LSGFs so far has been utilizing existing infrastructure. Gas and Hydro providers have been upgrading infrastructure to catch up with demand, and a similar effort is being made to upgrade water infrastructure.

Water, gas, and hydro infrastructure constraints have been part of Kingsville's instrument to govern LSGF development within the boundaries of the Greenhouse Priority Area, as described in section 3.1 above. Recent upgrades of hydro and gas supply in the Kingsville Priority Greenhouse Area helped promote LSGF development in the priority area in Kingsville. In addition, municipalities have more control over upgrading water supply systems, as they co-own the water suppliers and hold approval rights regarding who gets water.

LSGF operations involve significant truck traffic that transport inputs to the farms and products out of the farms. These trucks reportedly have damaged municipal roads connecting LSGF farms with regional and provincial highways. As LSGF [are classified \(MPAC\) for taxation purposes](#) as agricultural [and industrial](#) activities [means a small tax for municipalities the taxes collected do not match the Municipal services provided. T](#), the cost of road maintenance caused by LSGF truck traffic has been problematic for Kingsville and Leamington. The Municipalities collaborated with LSGFs to pay for side roads heavily utilized by the LSGFs. One of the advantages of the designation of an LSGF Business Park or Priority Area is the [potential for](#) cost-sharing for road infrastructure by LSGF farms, which reduces the cost of LSGF development.

3.4 Waste Management

Both organic waste from crop residue and the inorganic waste/garbage from the growing medium are significant burdens that require innovative management and technology. Options include,

- Bio-digester to manage the excess biomaterial from LSGFs. The financial feasibility of investment in bio-digestors depends on the ability to sell the excess power generated. Currently, there is no mechanism to sell excess power into the grid. The Greenhouse executive we talked to informed us that his company currently crushes organic crop residue and sells it to local farmers for organic fertilization of their farms. LSGFs are interested in collaborating with researchers to make the growing medium organic or easily recyclable. This includes creating a new type of growing medium or innovative use of the waste instead of disposing it in landfill.
- Proper stormwater management- recommended to be an integrated regional approach.
- Access to services for temporary farm workers: We have learned that investors prefer to maintain a bunkhouse when they can. LSGF provides scheduled transport for service and shopping, and workers use bikes to commute to the nearest towns at other times. There is a need for a reasonable distance to access basic services. Temporary farm workers could enhance economic activity in the nearby cities for basic needs such as groceries.

3.5 Temporary Foreign Workers (TFWs) Residence

Temporary workers live in either bunkhouses within the farm or rented spaces in closer communities. Some LSGFs prefer the in-farm bunkhouses for the efficiency and logistical costs of transporting farmers to and from residential areas to the farm, as well as unfavourable contractual conditions put on them by developers or owners of rental accommodations. When workers live in bunkhouses, operators arrange scheduled visits to the nearest municipalities to access financial services and purchase groceries. In some cases, there is evidence of new service facilities, such as restaurants and grocery shops, emerging in communities near the LSGFs that target temporary farm workers.

The Town of Kingsville has updated TFW housing guidelines in consultation with the Ontario Human Rights Council, which resulted in the removal of the term bunkhouse, replacing it with boarding, lodge, and rooming houses in all documents, and introducing some critical standards that improved the human rights situation of TFWs. Kingsville commissioned a TFWs study in 2022, which guided the development of OPA 13.² The updated OP text distinguishes between Agricultural and Residential “Boarding, Lodging and Rooming Houses”. The former are permitted in the Agricultural Designation, subject to site plan control, and may contain any number of occupants. The latter are permitted anywhere residential uses are permitted and are restricted to 10 or fewer occupants. Boarding, Lodging and Rooming Houses are to be designed with adequate amenities and transportation arrangements to the city to be provided by LSGFs to improve the living conditions of TFWs. Section 2.10 also states that the Town may implement a licencing framework for Boarding, Lodging, and Rooming Houses and subject to inspection by the Windsor-Essex Country Health Unit, The Town of Kingsville Fire Department, and the Town of Kingsville Building Department minimum standards.

² By-Law 52-2022 is introduced as an amendment to By-law No. 1-2014, the Comprehensive Zoning By-law for the Town of Kingsville. The By-Law was approved by the County of Essex on November 7, 2022.

3.6 Light abatement

The municipalities of Leamington and Kingsville have implemented by-laws to enforce light abatement curtains as a requirement for greenhouse operations (Leamington By-law 41-22 and Kingsville By-law 96-2020). As a result, the issue of light nuisance is managed effectively. For example, opening curtains during hot weather (in the summer) creates a 10% light emission. This light is considered minimal, radiates horizontally and does not light the night sky.

Kingsville follows a cost-effective approach to enforce light abatement guidelines. The Town does not conduct routine monitoring or checks but responds to inquiries or complaints from residents. Rather, it uses drones to review greenhouse locations and zoning requirements.

4 Critical Resources and Infrastructure

Flat land, water, gas, and electricity are the key resources and infrastructures needed for LSGFs establishment. Infrastructure capacity in the Kingsville and Leamington municipalities is currently at full capacity, and infrastructure is being upgraded to meet the growing demand for LSGFs. For this reason, a moratorium is imposed on water supply applications from LSGFs in Kingsville.

4.1 Flat land

LSGF developers are interested in flat land, with a minimum of 30 acres considered ideal for economies of scale. LSGF infrastructure is interested in flat land with access to water, gas, and electricity and a quick connection to the highway. Currently, land prices range from CAD 25,000 to CAD 60,000 per acre, depending on location. The cost of land is primarily determined by its closeness to the coast of Lake Erie due to associated productivity. Therefore, the price of land in Lakeshore is likely to be on the lower end.

4.2 Water

We assessed two types of water supply systems for LSGFs. The first is direct irrigation from Lake Erie, currently supplied to a small number of LSGFs in Leamington by the Leamington Area Drip Irrigation Incorporated (LADII). The second is through a municipal water supply system, mainly the Union Water Supply Inc.

4.2.1 Leamington Area Drip Irrigation Incorporated (LADII)

The Leamington Area Drip Irrigation (LADI) Limited Liability Company (Ltd) was established by field tomato farmers who jointly built irrigation infrastructure to supply water to their farms. It later became incorporated as an irrigation water supply company. It provides direct untreated water for a small number of LSGFs [up to seven] and field tomato farmers who are its shareholders. This direct, cold, untreated water supply is preferable for LSGFs for maximum productivity and reduced need for chemical treatment. However, LADII is currently at full capacity and cannot receive new applications from LSGFs. Increasing LADII's pump and main capacity to supply Lakeshore LSGF customers would require heavy investment and is not under consideration.

4.2.2 Union Water Supply Systems Inc (UWSS Inc)

Union Water Supply Systems (UWSS) is a municipal service corporation co-owned by the municipalities of Essex, Lakeshore, Leamington, and Kingsville that provides potable water to the population of these municipalities. UWSS is the main irrigation water supplier for LSGFs in Kingsville and Leamington municipalities. LSGFs use the same potable water as households and businesses for irrigation. This requires LSGFs to treat the chlorine before applying it for

irrigation, unlike the LSGFs that use LADII water that is not chemically treated. However, current Municipal regulations do not differentiate between residential and LSGF water charges, making municipal water relatively inexpensive for greenhouse operations.

Due to the growth of the LSGFs in the last several years, particularly in Leamington and Kingsville, the UWSS has reached maximum capacity. Hence, in 2021, UWSS put a three-year moratorium on the water supply for LSGFs.

The UWSS is currently undergoing several infrastructure upgrading projects to serve more customers. A phased expansion plan is ongoing, with the first phase of a 40 ML expansion (a 30% increase) starting in 2024 and expected to be fully developed in three years. The next phase will add another 40 ML. It is anticipated that 50% of the expansion capacity will be supplied to LSGFs and the other 50% to other clients. Applicants already in the queue are likely to consume the current expansion capacity.

Another upgrade is at the concept stage and is being discussed between UWSS and Windsor Utilities. This concept envisages improving interconnection and providing redundancy between Windsor and UWSS infrastructure. This upgrade is expected to cost over 50M and is significant for the water security of the municipalities of Southwestern Ontario.

If this plan proceeds, it could supply water for potential LSGFs growth in Lakeshore.

The UWSS prioritizes serving residential growth as its primary mandate but cannot decide who gets water. However, it can impose a moratorium on new LSGF irrigation water supply applications. Consequently, a three-year moratorium was put in place in 2021 on grounds of depleted supply capacity.

4.2.3 Innovation by LSGFs in Irrigation Water

LSGFs are required to build on-site water storage capacity and manage their water flow to prevent overdraw during peak seasons, ensuring a steady water supply for the rest of the population. LSGFs primarily used municipal water for irrigation but have been constantly innovating to reduce their reliance on Municipal water supply. These included recycling, using groundwater, and capturing rainwater. As a result, many LSGFs consume less than 50% of their approved capacity. Some LSGFs applied to transfer their unused capacity for new LSGFs or expansions. UWSS currently accepts if a latent capacity is used for expansion in the same area but does not transfer unused capacity into a new LSGF in another area.

Commented [TR2]: Who requires? The Municipality requires on-site water storage?

4.2.4 Water Supply for The Municipality of Lakeshore

Lakeshore's current infrastructure, specifically the water main from the Union Water system, is insufficient to supply LSGFs. Expansion of the mains would require agreement on funding, and the current expansion plan of UWSS does not account for upgrading the main to Lakeshore, thus not considering LSGFs' supply in Lakeshore. Upgrading the water main would require an investment of about \$30 million.

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Innovation is crucial as water supply is currently the bottleneck for LSGFs' growth. LSGFs are continuously innovating to overcome the water constraint by using a combination of rainwater harvesting and recycling. Several LSGFs are already using these approaches, resulting in the use of less water from the municipal supply than their approved capacity. A pilot project is being tested for LSGFs to use water from the system only during the off-peak season, storing water to fulfill their needs from May to September (peak season).

There are several possibilities for LSGFs in Lakeshore. One is realizing the Windsor UWSS partnership, which has about a 50-50 chance and would take around five years. Another possibility is innovative approaches, such as LSGFs proposing to use only 20-25% of the supply during the off-peak season, which could be considered after the moratorium is lifted.

4.2.5 Innovation

The Greenhouse industry has demonstrated innovativeness and is piloting innovative approaches to overcome the constraints hindering it from growth, particularly water use. This includes innovation around water recycling and water harvesting techniques. Most LSGFs have already achieved reliance on recycling and rainwater harvesting for 50% of their need. It is expected that this could further increase and release more capacity to provide municipal water services to additional customers.

4.3 Hydro and Gas

LSGFs require a relatively large supply of hydro and gas for photosynthesis, lighting, and heating (winter production). Currently, both Leamington and Kingsville infrastructure is stretched to full capacity, and the growth of LSGF depends on the speed of hydro and gas infrastructure expansion, which is the same as for water.

Lakeshores LSGF potential areas bordering the Kingsville and Leamington Municipalities require gas and hydro infrastructure upgrades. Kingsville's experience suggests that allocating infrastructure upgrades to Priority Greenhouse Areas is a good practice, which also helps govern the LSGF's growth in specific areas of concentration. Therefore, a business park concept in Lakeshore would require a similar effort to facilitate the expansion of this essential infrastructure in the designated area.

5 Desirable Conditions for LSGF Development

5.1 Geographic and climate

The HCA team visited field sites and conducted several discussions with people who knew the industry, including LSGF executives.

Lake effect cooling and the supply of relatively colder water for irrigation on the shores of Lake Erie results in up to 7 °C cooler temperatures on the LSGFs located at the shores compared to LSGFs located further inland. This translates into the productivity of LSGF's vegetable crops, which increase by 1 kg per square meter on the shores of Lake Erie due to cooler temperatures resulting from lake-effect cooling. This increase in yield brings additional tens to hundreds of thousands of dollars in revenue per production cycle per crop for LSGFs located on the shores of Lake Erie. The shore of Lake Erie has these desirable effects because of its depth and ability to offer excellent climate and water resources.

On the other hand, Lake St Clair is considered warmer, shallower, and dirtier water and is not seen as similarly desirable by LSGFs.

This reality is the primary driver to the LSGF growth and expansion on the shores of Lake Erie and will continue to influence future growth of LSGFs to concentrate on the shores of Lake Erie, exhausting available land in Leamington and Kingsville and expanding towards the Municipality of Chatham-Kent, east of Leamington. However, recent zoning restrictions have been placed on the expansion of LSGFs to Chatham-Kent.

The price of land per acre ranges from 25,000 to 65,000 based primarily on distance from the shore.

5.2 Supportive Conditions

LSGFs have climatic advantages for expanding on the shores of Lake Erie, so they are expanding to the direction of Chatham-Kent. However, LSGFs do not experience a similar level of support and a welcoming environment from all municipalities in the County of Essex. LSGFs have already established strong linkage with the municipalities of Leamington and Kingsville.

In their policy “Planning for Large Scale Greenhouse Development – Study Update and Recommendations to Mayor and Council, April 27, 2021” Chatham Kent has adopted policies for Greenhouse abatement and identified growth areas to be restricted from greenhouse development until a new policy review is completed.

6. Energy Storage Opportunity

The Municipality of Lakeshore had interest in investigating the potential for additional uses within the Greenhouse Business Park, such as Battery Energy Storage Systems (BESS) and utility corridors. BESS are a form of energy storage which can provide additional power to the electrical grid during periods of high demand and recharge during periods of low demand. In addition to BESS, thermal energy storage (TES) is also increasingly integrated into the energy systems of large-scale greenhouses, in the form of insulated water tanks. A TES can support the collection and storage of summertime sunlight and heat to maintain a warm environment for plant growth year-round. JLR provided a review of BESS systems and TES systems and their business case for a LSGF Business Park. The detailed Energy Storage Study is included as an Appendix to this report. There is increasing interest in BESS systems and rationale to suggest implementation of a BESS system may pose a lower-cost alternative for major expenditures to upgrade the existing grid. The summary concludes, however, that current information is limited to identify the value of a BESS or TES system for a LSGF and provides next steps for further data collection and analysis. The report recommends ongoing review as new market opportunities for BESS continue to emerge and to practice early consultation with the grid operator when considering suitability and opportunity for implementation.

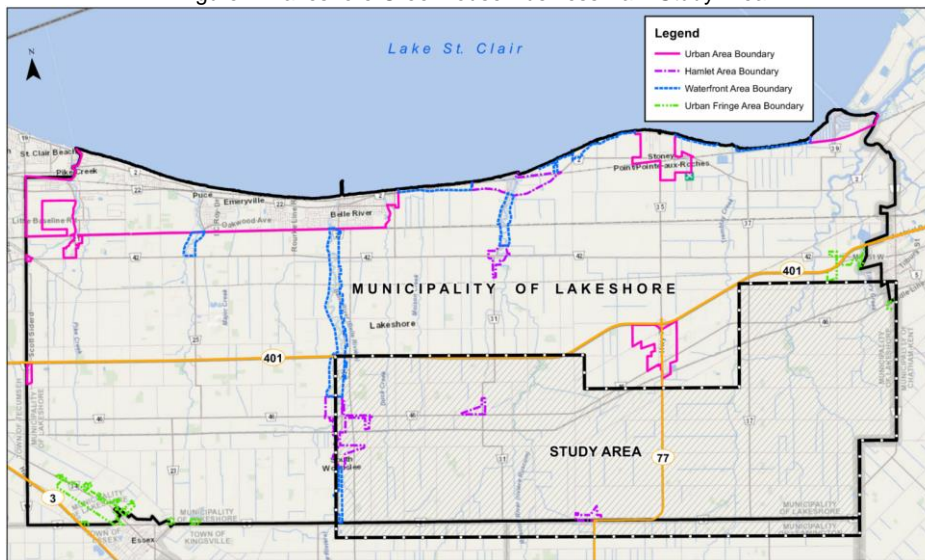
7. Priority LSGF Business Park Locations in Lakeshore

A study area for the project, focusing on the area east of County Road 27 and south of Highway 401, was selected through discussion with Municipal Staff (Figure 1). Areas of the Municipality located further north and west were eliminated early from the study due to:

- The Lakeshore Official Plan, as amended by OPA 18, states in Section 6.2.1(h)(vi) that commercial greenhouse farms shall be prohibited on all lands North of County Road 42, between Manning Road and the north/south leg of County Road 22;
- proximity to urban settlement areas of Lakeshore or the neighbouring Town of Essex;
- Input gathered through discussion with utility providers and neighbouring municipalities that water sourced from Lake Erie was preferable for greenhouses use than that of Lake St. Clair;
- The presence of Highway 401 running east-west through the Municipality, inconveniences efficient north-south transportation and extension of infrastructure; and

- The area of potential natural gas infrastructure expansion identified by Enbridge Gas is located in the southeast, in the area of Rochester Townline Road and County Road 46.

Figure 1. Lakeshore Greenhouse Business Park Study Area



Within this area, JLR conducted an analysis of the land conditions, servicing, and municipal and County policy to further identify preferred sites for a cluster of greenhouses. Initial criteria, described in Table 1, were ranked based on background review, into a simple high-medium-low matrix to determine priorities for discussion with municipal staff. As a note, a low-ranking priority might indicate that there is little variation across the study area, rather than solely implying low significance to siting decisions.

Table 1 Initial Study Criteria, Priority Status, and Rationale

Criterion	Priority Level	Considerations/Constraints
Proximity to settlement area	High	<ul style="list-style-type: none"> The Municipality of Lakeshore Zoning By-law (via amendment 2-2023) requires that Commercial Greenhouse Farms are setback 1000 m from all settlement areas. Class 3 Industrial Uses are required by the Ministry of Environment Conservation and Parks (D-Series guidelines) to maintain a minimum 300 m setback from a sensitive land use. The Lakeshore Greenhouse Study recommends maintaining the minimum 300 m setback from residential areas. Prior to amendment 2-2023, the Zoning By-law required that greenhouse farm structures be setback a minimum of 300 m from residential areas. Where requirements for safety and compatibility can be ensured, siting within some proximity (up to the 300 m per D-series guidelines) of a settlement area can be beneficial for access to existing infrastructure and for employment purposes.
Proximity to the Hallam Observatory	High	<ul style="list-style-type: none"> The Municipality of Lakeshore Zoning By-law (via amendment 2-2023) requires that Commercial Greenhouse Farms are setback 5000 m from the Hallam Observatory. A buffer area of 5 km from the observatory will be included on mapping to identify constrained parcels. Parcels within the setback could apply for a Zoning By-law amendment to permit LSGF uses subject to mitigation measures. Alternatively, criteria could be developed through a future Zoning By-law Amendment to decrease the setback subject to dark sky lighting mitigation measures.
Residential Dwellings (MPAC)	High	<ul style="list-style-type: none"> The study area contains many farm parcels with existing residential dwellings, as reported through MPAC data. Parcels and groupings of contiguous parcels without an existing residential dwelling will be prioritized. MPAC data provides a general indication of the type of land use for preliminary analysis. At later stages of analysis, the presence of an existing residence can be verified for each parcel.
Parcel size	Medium	<ul style="list-style-type: none"> Larger parcels are better suited to accommodate the scale of large greenhouse operations and will be prioritized. Eligible contiguous parcels which could be consolidated will also be considered higher priority.
Servicing connectivity - Gas	Medium	<ul style="list-style-type: none"> Enbridge shared an estimated priority servicing area which has been applied to the GIS mapping. Parcels in proximity to this area will be prioritized, however this area is constrained by the above setback requirements. More information from Enbridge may provide greater context to increase the priority level of this criterion.

Servicing connectivity - Hydro	Medium	<ul style="list-style-type: none"> Definitive Hydro infrastructure information has not been provided, however JLR is aware of a transformer station in the area around County Road 46, just east of Ruscom Station. Parcels in proximity to this existing Hydro infrastructure are prioritized. It is understood that this transformer would not have sufficient capacity to accommodate a greenhouse park and would require upgrading.
Proximity to former waste disposal site	Medium	<ul style="list-style-type: none"> Per the Lakeshore OP (section 5.4.2.4) all development within 500 m of active or closed waste disposal sites require a study demonstrating MOE guideline requirements can be met. Proximity to the site will require additional expenses on the part of development and so will be deprioritized.
Provincially Significant or Other Natural Heritage Features	Medium	<ul style="list-style-type: none"> The study area includes two Provincially Significant Wetlands (PSWs): Ruscom Wetland Complex and Tilbury West Wetland Complex. The Official Plans for the Municipality (Section 5.2) and the County (Section 3.4) prohibit development within a PSW. Development may only be considered on lands adjacent to a PSW (120 m), where an environmental impact study (EIS) can be undertaken and demonstrate that development will not have negative impacts to the ecological feature or function of the wetlands. Parcels within the PSWs will be removed from consideration. A 120 m buffer will be applied to the wetlands and parcels outside of this buffer will be prioritized. Areas within the 120 m buffer may also be considered, recognizing that development in these areas will have associated development costs to conduct an EIS and respond to any required mitigation measures. No other major constraints related to provincially significant natural heritage features are present in the study area.
Servicing connectivity - Water	Low	<ul style="list-style-type: none"> Existing greenhouses in Leamington source water privately from Lake Erie to the South, however there is insufficient supply to extend this source further north to the study area. Information from Union Water (municipal servicing for Kingsville and parts of Lakeshore) is currently being collected to determine capacity for connection to municipal services. It is likely that all water mains will require upgrading to service demand from new greenhouses, regardless of location, hence the low ranking assigned to this criterion. Proximity to existing or planned water mains will be prioritized, however the limitations to potential service expansion limit identifying particular areas of opportunity at this time.

Intake and Source Protection	Low	<ul style="list-style-type: none"> • Municipal OP schedule B1-1 demonstrates that the study area is within Belle River IPZ 3, Stoney Point IPZ 3, and LTVCA IPZ3. For each, the IPZ boundaries closely follow stormwater channels throughout the study area. • Most parcels will be affected, so proximity to a particular area is not a priority consideration. • For Stoney Point and Belle River IPZ 3, Section 5.1.1 of the OP states: <ul style="list-style-type: none"> ○ “the handling and storage of liquid fuels (containing benzene) in quantities greater than 15,000 L shall be restricted in accordance with Section 59 of the Clean Water Act for any commercial, agricultural and industrial land uses”. ○ A notice from the Risk Management Official in accordance with Section 59(2) of the Clean Water Act is required for all development. • LTVCA IPZ 3 is subject to the regulation of the Lower Thames Valley Conservation Authority.
Municipality of Lakeshore and County of Essex Official Plan Designation/Policies	Low	<ul style="list-style-type: none"> • Parcels with the Agricultural land use designations within the Municipality of Lakeshore Official Plan and County of Essex Official Plan will be prioritized. • Lakeshore OPA 18 includes a new definition for LSGF and prohibits them as a use until the following can be completed: <ul style="list-style-type: none"> ○ Regional stormwater assessment; ○ Implementation of a water discharge quality monitoring program. ○ Completion of Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) study regarding greenhouse lighting and other adverse effects; ○ Determination of financial impact on Lakeshore.
Municipality of Lakeshore Zoning By-law Zone/Provisions	Low	<ul style="list-style-type: none"> • By-law 2-2023 was adopted March 7, 2023, prohibiting Commercial Greenhouse Farms in the Agriculture Zone. • An amendment to the Zoning By-law will be required to permit the proposed greenhouse park within the Agriculture Zone.
Distance to Provincial Highways	Low	<ul style="list-style-type: none"> • The Lakeshore Greenhouse Study identifies a setback of 1000 m distance from provincial highways as best practice for locating large scale greenhouses. • However, as neighbouring greenhouses in Leamington are located in close proximity to Provincial Highway 77, this criterion shows less local relevance. • In addition, there are several County Roads which are also designed and suitable for truck traffic from which greenhouses could locate.
Slope	Low	<ul style="list-style-type: none"> • There is minimal variation in terrain elevation across the study area
Land Classification (CLI Mapping)	Low	<ul style="list-style-type: none"> • There is minimal variation as most lands involve crop cultivation

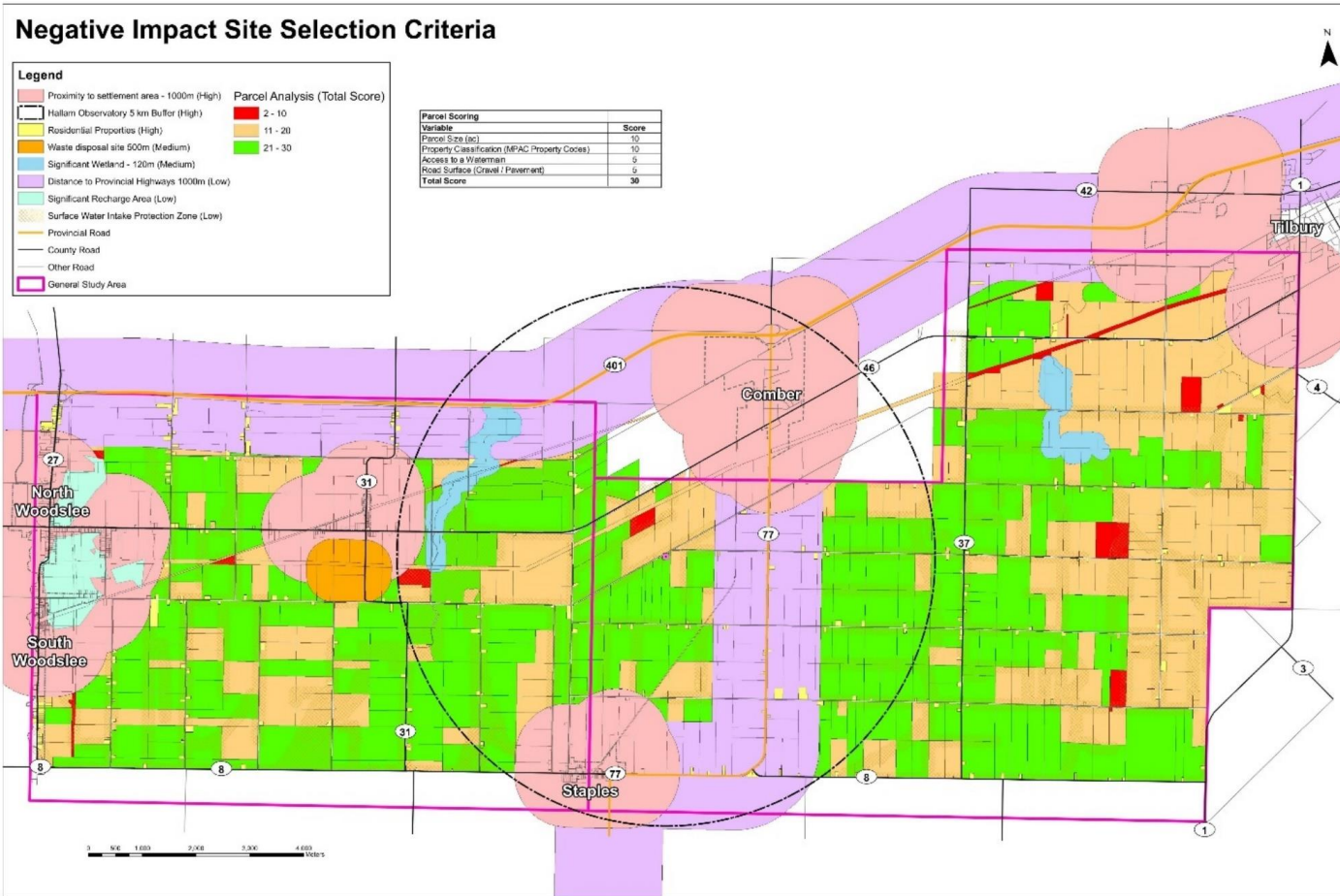
Following discussion with municipal staff, the primary criteria of interest were quantified, and parcels were scored according to each criterion. Values were assigned to parcels based on lot size (up to 10 points), existing use as identified by MPAC property code (10 points), proximity to an existing watermain (5 points), and paved road surface (5 points). Parcels were colour-coded red, orange, or green to indicate a total score out of a possible 30 points. The constraints identified from Table 1 were then added to this parcel scoring, as shown in Figure 2.

Green parcels unencumbered by constraints indicate the highest potential for an LSGF, as determined by the ranked criteria of parcel size, existing use, paved road surface, and proximity to a watermain. In sum, there is a total of 6,560 ha of unconstrained high-scoring parcels available within the study area for potential LSGF development. A further 4,566 ha of parcels received a mid-range score, indicating potential for greenhouse operations, subject to mitigation or resolution of site-specific limitations.

As is visible on Figure 2, these high-scoring parcels are geographically dispersed. It is also important to note that individual parcels may be less desirable for LSGFs looking to invest and grow operations long-term. However, multiple high-scoring parcels can be clustered, such as in the areas south of South Middle Road and east of Lakeshore Road 225, as well as on the southeast side of the study area, surrounding County Road 37. The results of Figure 2 demonstrate that there may be no single ideal area of high candidacy for an LSGF Business Park, but rather there several clusters of parcels which would be more conducive to LSGF investment.

As discussed in Section 4.2, given the widespread constraint of water capacity for LSGF expansion or growth in the Municipality, and the preference of greenhouse operators for water from Lake Erie, the most logical areas to encourage LSGF development would be in clusters to the south of the study area, in proximity to existing LSGF development of Kingsville and Leamington.

Figure 2. Parcel Analysis for Lakeshore Greenhouse Business Park Site



8 Conclusions and Recommendations

8.1 LSGFs Business Park Alternatives

Findings from the above analysis identify multiple clusters of high-scoring parcels in the areas south of South Middle Road and east of Lakeshore Road 225, as well as on the southeast side of the study area, surrounding County Road 37. Constraints noted in other sections of this document remain present and pose limitations to the selection of a single ideal site for a large-scale greenhouse business park.

Despite the constraints to identifying a single LSGF Business Area, it is still feasible for the Municipality to encourage LSGF development. This might be done through the identification of a Priority LSGF Area(s) as could be demonstrated on Official Plan Schedules with accompanying policies in the Official Plan to encourage the siting of new LSGF in areas of high-scoring available agriculturally designated land, with proximity to existing greenhouse development, and subject to consideration of the constraints identified in the above analysis. This would model the approach taken by the Town of Kingsville, as described in 3.1.

A Priority Area could also act as an incentive tool for LSGF operators by making developing in the Priority Area cheaper or attractive. This would be achieved primarily through the Municipality's prioritizing infrastructure development in these areas, particularly water infrastructure. In addition, the provision of municipal services and the benefit of sharing costs by a cluster of LSGFs, such as side road maintenance, will also be attractive for LSGFs to operate in business areas/priority areas.

The Municipality may also consider potential supplementary incentives to encourage LSGF development within these areas. For example, the Municipality might consider a Community Improvement Plan targeted towards one or more LSGF Priority Areas, with funding to encourage investment, rehabilitation, or innovation, particularly in the areas of water or energy use.

8.2 The LSGF Market and Growth Trend

The Canadian greenhouse industry, divided into food crop and floriculture sectors, had exports of \$2 billion and \$809.9 million in 2021. The industry is dominated by LSGFs, with 39% in Ontario. The vegetable and mushroom sector is the largest contributor, accounting for 85% of exports (\$1.7 billion) and \$2.7 billion in farm gate sales in 2021. Despite a 0.5% decrease in establishments from 2017-2021, there was an 18% increase in harvested area, a 17% increase in production volume, and a 43% increase in farm gate price, indicating a shift towards LSGFs. Employment also increased, with 6,186 permanent and 4,266 seasonal employees in 2021. Canada's trade balance nearly doubled from 2017-2021 for vegetables and mushrooms, with 90% of exports going to the U.S.

Ontario, accounting for 66% of Canada's greenhouse vegetable value by farm gate, dominates 71% of the harvested acres. The sector generates significant revenue locally and internationally, with Southern Ontario as a major hub. The industry provides over 32,000 jobs. According to the OGVG Association report 2023, the sector is projected to grow 5% annually for the next decade. In 2021, 3407 acres of land were under LSGF development in Ontario. With the projected growth

rate, an additional 2400 acres could be developed by 2033, totalling nearly 6190 acres, assuming infrastructure and necessary conditions for LSGF development catch up to demand.

The 2400-acre growth in the next decade could mostly be absorbed primarily in Leamington and Kingsville because of the advantages of LSGFs and already expanding infrastructure in the two municipalities. On the contrary, the infrastructure in Lakeshore is not yet ready to attract LSGFs. As Lakeshore plans for future growth of the Municipality, demand for LSGF growth and the servicing required, will be a critical consideration. When the infrastructure conditions in Lakeshore do become attractive, the Municipality has a sufficient 6,560 ha. of high-priority land available to meet demand.

8.3 Recommendations

Given the current limitations to selecting a single ideal site for a LSGF, no Official Plan amendment is recommended at this time to establish a LSGF Business Park location. In lieu of this, we offer the following recommendations for the Municipality:

1. Reassess the need for a LSGF Business Park in five years' time. In the interim, the Municipality should continue monitoring demand and interest in LSGFs. Should an operator come forward with interest in locating an LSGF in Lakeshore, the analysis of this report can be used to identify high scoring parcels and the areas of constraint.
2. Consider further assessment of a LSGF Priority Area approach, similar to that of the Town of Kingsville, as an alternative to the Business Park model. This model would permit LSGF within the Agricultural Area Designation, with policy and incentives to encourage co-location in Priority Areas, with development subject to servicing and land use compatibility requirements, including the constraints identified within the above analysis.
3. Request an amendment to Section 6.2.1 (h) of OPA 18 (LSGF Official Plan Amendment), to include the following statement:
 - a. Monitoring and review of these policies will be undertaken to identify trends in greenhouse issues in the Region, to analyze the impact of future water main expansions as well as trends in the price of land and demand for Large Scale Commercial greenhouses in Lakeshore. Reporting back to Council on the monitoring of the policies and issues will be in the form of annual briefings or status reports.
4. Prepare Design Guidelines to provide visual direction for future LSGF design. These design guidelines can inform the site plan control process for future greenhouse proposals.
5. Conduct further assessment and consider policy to support private infrastructure innovation and partnerships for LSGF operations, with particular attention to water servicing.
6. Pass a By-Law to regulate light emission during particular hours of the day or night, taking lessons from Leamington and Kingsville experiences.
Pass a By-Law for TFW residences to regulate the design of large bunkhouses with adequate amenities as part of LSGF development plans. The practice of Kingsville and Leamington can again serve as a model.