

Protecting Water Resources in Rural Municipalities in Southwestern Ontario

by

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ABSTRACT

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Ontario's Greenbelt has locational and natural advantages due to its proximity to urban centres, its vegetative production, and recreational benefits of its natural features. The Greenbelt Plan (2017), protects 533,000 acres of lakes, wetlands, rivers, and streams feeding the great lakes, and gives vital services of clean drinking water. As Ontario's population grows, the Province announced to move towards changes that will further protect Ontario's water resources. In December 2017, The Ministry of Housing and Municipal Affairs announced a study area of a potential Greenbelt boundary expansion, focusing on the important water features under pressure from urban development. Based on the premise that municipalities located in the outer edges of the Golden Greater Horseshoe will be experiencing significant growth pressures compared to the inner areas, the Ministry proposed to expand the outer boundary of the Greenbelt to offer more water resource protection. This study investigates the implementation successes and challenges of Ontario's land use planning policies of the Greenbelt Plan and the Growth Plan for the Greater Golden Horseshoe, within the context of Southwestern rural municipalities. This study used a case study approach and semi-structured interviews with planning professionals to further investigate the proposed boundary expansion. The results of this study suggest that the Province should be expected to provide detailed explanations of enhanced and specific protections the Greenbelt expansion will have on affected municipalities. From a municipal and political perspective, affected municipalities feel that the Ministry's proposal is not offering significant changes and could potentially cause additional policy implementation complications.

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List of Abbreviations

CAs – Conservation Authorities

GGH – Greater Golden Horseshoe

GLWQA – Great Lakes Water Quality Agreement

GRCA– Grand River Conservation Authority

Growth Plan – Growth Plan for the Greater Golden Horseshoe

GTA – Greater Toronto Area

IWM– Integrated Watershed Management

LPAT – Local Planning Appeal Tribunal

MMAH– Ministry of Municipal Affairs and Housing

The Ministry – Ministry of Municipal Affairs and Housing

MCR– Municipal Comprehensive Review

MNRF – Ministry of Natural Resources and Forestry

MOECC – Ontario Ministry of Environment and Climate Change

NEP – Niagara Escarpment Plan

OMB – Ontario Municipal Board

OP– Official Plan

OPA– Official Plan Amendment

ORMCP – Oak Ridges Moraine Conservation Plan

PPS – Provincial Policy Statement

SGCA – Smart Growth for Our Communities Act

UBAs – Undelineated built-up areas (UBUAs)

URVs– Urban River Valleys

Chapter 1.0 Introduction

The Greenbelt is a biodiverse region with some of Ontario's most productive agricultural lands surrounding Canada's largest metropolitan area, the Greater Toronto Area (GTA). The Greenbelt illustrates challenges and opportunities of both maintaining and managing the interconnected system of agricultural lands and natural heritage. *The Greenbelt Act (2005)* authorized the preparation of the Greenbelt Plan, which was first approved in February 2005. The Greenbelt Plan is provincial policy that identifies where urbanization should not occur to provide permanent protection of the agricultural land, and the ecological features and functions occurring in the Greenbelt Plan Area (NEP, 2017). The Greenbelt Plan sets out to protect farmland and environmentally sensitive land in the Greater Golden Horseshoe (GGH), because of its prominent location within the GGH. The Greenbelt Plan includes lands in other protected areas in Ontario identified within the Niagara Escarpment Plan (NEP) and the Oak Ridges Moraine Conservation Plan (ORMCA). The remaining land is referred to as *Protected Countryside*. The objective of the Greenbelt Plan is to keep lands for prime agricultural uses, environmental sensitive areas, or for recreational purposes.

The GGH is responsible for Ontario's economic development due to urban and commercial centres. The GGH is comprised of inner and outer boundary municipalities. The area immediately surrounding these municipalities is referred to as the Outer Greater Golden Horseshoe. As shown on **Figure 1**, the outer ring consists of: Barrie, Brantford, Guelph, Kawartha Lakes, Orillia, Peterborough, the Counties of Brant, Dufferin, Haldimand, Northumberland, Simcoe, Wellington, and the Regions of Niagara and Waterloo. The outer ring municipalities are forecasted to grow from 2.29 million in 2016 to 3.35 million in 2041 (MMAH, 2017). The Growth Plan for the Greater Golden Horseshoe (Growth Plan) was established to provide a framework for implementing Ontario's vision for building stronger and more prosperous communities in the region (Growth Plan, 2017). By taking into consideration sustainability and how towns, villages, and hamlets will grow over time, the plan has produced a long-term framework for directing the pressures of future growth and how it will be accommodated.

There is an interrelationship between growth and the availability of water. The Growth Plan prohibits intensification in areas without water services, such as wastewater and sewage capacity.

Additionally, much of the industrial, commercial, and residential water usage in Canada is taken from watersheds, so policies and legislation are in place to protect watersheds too.

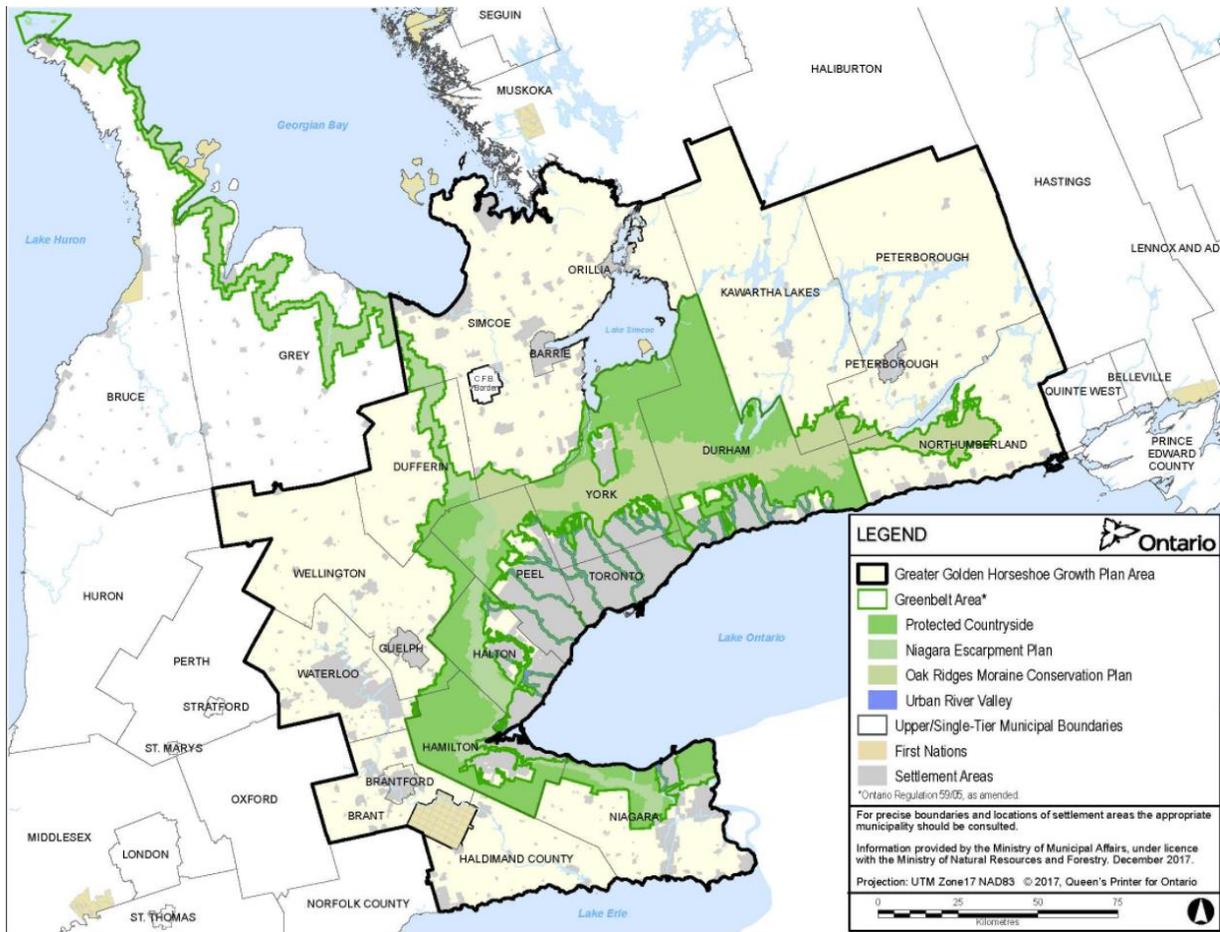


Figure 1. The Greater Golden Horseshoe with Inner Ring and Outer Ring Municipalities.

(MMAH, 2017).

The Provinces' Co-ordinated Land Use Planning Review resulted in updated provincial plans. As part of the review, the Advisory Panel highlighted the importance of protecting water sources in the GGH and recommend that the Province lead a process to grow the Greenbelt. In May 2017, The Greenbelt grew to include twenty-one major Urban River Valleys (URVs) and associated coastal wetlands across the GGH (Hunter, 2017). The Province continues to move towards the direction of more stringent protection policies through the Ministry of Municipal Affairs and Housing's (The Ministry) most recent announcement: a proposed study area for the boundary expansion of the Greenbelt, as shown in **Figure 2**. Through the provincial analysis of

historic and forecasted population change in the GGH, the provincially defined study was chosen based on areas with the highest population of growth. Since human settlement is a predominant factor impacting groundwater protection, the study area boundary is divided into seven geographic areas:

1. The Waterloo and Paris/Galt moraine complex in Waterloo Region, and Brant and Wellington counties,
2. The Orangeville Moraine in Wellington and Dufferin counties,
3. Several small moraines, including the Gibraltar and Singhampton moraines, along the brow of the Niagara Escarpment in Dufferin and Simcoe counties,
4. The Oro Moraine in northeast Simcoe County,
5. The Nottawasaga River corridor in Dufferin and Simcoe counties,
6. Important surface water and recharge features in southeast Simcoe County, and
7. Catchment areas and wetlands west of Minesing in Dufferin and Simcoe counties.

(MMAH, 2017).

To date, a consultation document titled *Protecting Water for Future Generations: Growing the Greenbelt in the Outer Ring*, a summary proposal, and study area map have been released to the public. Consultations for the study area boundary was open to further comments until March 2018. The themes during these consultations focused on identifying a study area, study area mapping, growth and settlement, and other provincial priorities and initiatives. Additionally, the Province is committed to further consult with the public, municipalities, Conservation Authorities, Indigenous communities, and other stakeholders on any changes and concerns of the boundary expansion.

What is in question is the demographics of the Greenbelt and how the Greenbelt has changed rural characteristics. Specifically, some municipalities would like to know what value would expanding the boundary of the Greenbelt have on water resource protection, that is not already addressed through current policy and legislation. This major research paper (MRP) seeks to examine this discourse and will focus on the political and municipal response to the Ministry's proposal on expanding the boundary of the Greenbelt.

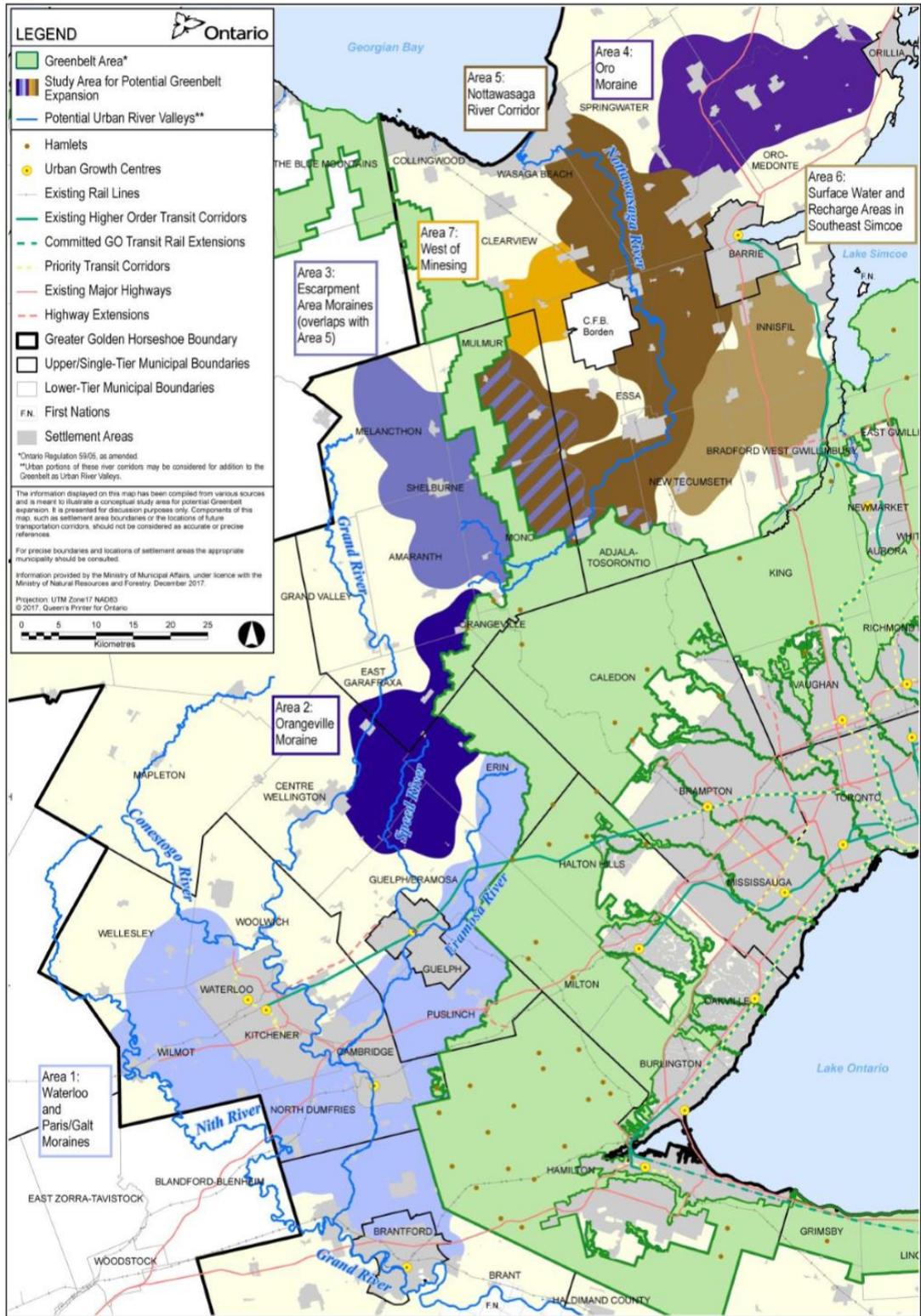


Figure 2. Proposed Greenbelt Boundary Expansion Study Area.

(MMAH, 2017).

1.1 The Research Question

To date, the Province has stated that the proposed study area does not constitute as the proposed Greenbelt boundary. Ongoing consultation with stakeholders on the matter will be considered on the proposed amendments to the Greenbelt boundary. Although the Province recognizes the importance of having land use policies in place that focus on agricultural, hydrological, and ecological preservation, other perspectives are just as significant. By focusing on the responses from political and municipal staff, I pose the following question:

Will the Ministry's proposed Greenbelt expansion place growth or other management barriers on rural municipalities within the outer boundary of the GGH?

1.2 Purpose Statement

By studying the policy gaps, growth, and the management barriers of intensification expectations imposed on rural municipalities, this paper will explore how the Province will accommodate future urban growth while protecting water resources. The significance of this research is to:

- Explore if Ontario has a strong institutional infrastructure in place to ensure that the quantity and quality of water resources are protected from the pressures of growth.
- Examine the barriers and limitations proposed by the Greenbelt boundary expansion on rural municipalities.
- Further investigate how rural settlements can grow, strengthen, and expand in the built environment, without compromising water resources.

The main goals of this research paper are:

1. To produce a set of transferrable recommendations aiding provincial staff in the changes required to ensure the protection of water resources.
2. To contribute to literature on protecting water resources and services from a municipal planning perspective.

All decisions on growth influence the development of infrastructure and services within communities. Some rural municipalities ask how exactly the new proposed boundary expansion

of the Greenbelt would strengthen the protection of water resources, if legislation and policy is already in place to do so. What exactly is the difference with this proposed change?

Chapter 2.0 Background and Context

2.1 Land Use Planning in Ontario

While the provincial government is responsible for land use planning legislation and policy development, Ontario's land use planning system gives municipalities a major role in planning decisions. The *Planning Act* (1990) sets the rules for land use planning within Ontario, enforces how land is controlled, and delegates power to lower-tier governments. Among other objectives, the *Planning Act* integrates matters of provincial interest into provincial and municipal planning decisions, ensuring decisions are consistent with the Provincial Policy Statement, 2014 (PPS).

Under Section 3 (1) the *Planning Act* states:

The Minister, or the Minister together with any other minister of the Crown, may from time to time issue policy statements that have been approved by the Lieutenant Governor in Council on matters relating to municipal planning that in the opinion of the Minister are of provincial interest (R.S.O. 1990, c. P.13, s. 3 (1)).

When it comes to decisions affecting land use planning, the *Planning Act* requires that decisions “shall be consistent with” the policy statement.

The Province is responsible for issuing the PPS under Section 3 of the *Planning Act*. The PPS was approved by the Lieutenant Governor in Council in 2014, and replaces the pre-existing PPS issued in 2005 (PPS, 2014). The PPS contains policy on provincial interests related to land use planning and development. It promotes a policy-led planning system that acknowledges the complex interrelationship between the environmental, economic, and social factors in land use planning (MMAH, 2010). In addition, the Province is also responsible for preparing provincial plans which are meant to build on the PPS to establish a land use planning framework. Under their corresponding acts, these provincial plans include: The Greenbelt Plan (2017 consolidation), the Growth Plan (2017 consolidation), the Niagara Escarpment Plan (2017 consolidation), and the Oak Ridges Moraine Conservation Plan (2017 consolidation). Together

these provincial plans establish the groundwork for managing growth in the GGH while preserving lands.

The Province approves upper-tier and single-tier Official Plans and necessary amendments. An Official Plan (OP) is a legal document adopted by municipalities that contains the objectives, policies, and standards for the purposes of protecting and preserving natural resources. The OP guides municipalities in decision making on how lands should be allocated within a community. It achieves this through schedules that provide land use designations. Other planning documents, such as Zoning By-laws highlight detailed regulation on development. Furthermore, where permitted, citizens could appeal a planning decision to the century-old Ontario Municipal Board (OMB). To date, many changes to the Planning system have been proposed.

Recently, new legislation was announced that will transform Ontario's land use planning appeals system. The *Smart Growth for Our Communities Act* (SGCA) was enacted to help municipalities fund growth and to make the development charges systems more predictable, transparent, and accountable (Rau, 2017). Similarly, the changes made to the *Planning Act* through Bill 139 have proposed changes that will give residents more say in the growth of their communities. The *Building Better Communities and Conserving Watershed Act* (2017) will give communities a stronger voice in land use planning. In fact, Schedule 1 of the Act involves the decision of the Local Planning Appeal Tribunal (LPAT) to overhaul the Ontario Municipal Board. The new tribunal would include local citizens into decisions from the beginning. With the birth of a new development review process in Ontario, stakeholders will have more clarity on the reasoning behind rulings. These key changes in Ontario will influence municipalities, developers, planners, Councillors, and community groups.

In addition, planning appeals would be more accessible to the public through a new agency that would aid in supporting and representing tribunals for citizens who want to be part of the appeal process (Rau, 2017). All stakeholders will need to be well-rounded in the planning process and Provincial Plans of Ontario. One of the crucial changes that will affect municipalities is on how provincial guidelines for intensification will take precedence over antiquated municipal By-laws. To fully comprehend Ontario's water protection, statutes pertaining to water are discussed in the next section.

2.2 Water Institutions in Ontario

Within Ontario, water regulation is shared jurisdiction between the Federal Government, and the Provincial Government, namely the Ontario Ministry of Natural Resources (MNR), and the Ontario Ministry of the Environment and Climate Change (MOECC). The Federal Government has jurisdiction on matters related to fisheries, navigation, federal lands, Aboriginal lands, transboundary, and international water covering the Great Lakes. The federal government holds a binational agreement with the United States through the International Joint Commission (OWWA, 2018). With approximately 7,000 water distribution systems within Ontario, municipal drinking water is regulated by MOECC (OWWA, 2018). It is the responsibility of the municipal government to delegate policies on the impacts of source, treatment, and distribution of drinking water. The municipality is then required to establish water rates for residential, commercial, and industrial uses.

Water policies and legislation are in place to protect both the quality and quantity of water, such as The *Ontario Water Resource Act* (1990). This legislation is regulated by the MOECC and includes regulation on both groundwater and surface water. For the purposes of this paper, key policies that target the protection of water resources include:

Section 30: prohibits the discharge of polluting material in or near water

Section 32: enables the issuance or orders requiring measures to prevent, reduce or allocate impairment of water quality

Section 34: regulates water takings in excess of 50,000 litres a day

(CELA, 2012).

Regulations under this act include Ontario Regulation 387/04 which further delegates Water Taking and Transfer requirements. In December 2016, the MOECC announced a proposal on a guidance document highlighting several initiatives to strengthen long-term groundwater protection in accordance with Ontario Regulation 463/16, Taking Ground Water to Produce Bottled Water, under the *Ontario Water Resources Act*. It supported the decision that Ontario would be charging an additional fee of \$500 on groundwater extraction permits. This fee would help recover any associated administrative costs, aid in scientific research, and further analysis on the environmental impacts of groundwater taking (OMOECC, 2017). Several other significant initiatives include: placing a moratorium on new and extended permits to take groundwater for

water bottle services that will remain in effect until January 2019; stricter laws on renewals for existing water bottle permits; further research for long-term protection; engaging Indigenous partners, communities, and industry on the changes to water quantity management practices (OMOECC, 2017).

The *Environmental Protection Act* (1990) is often used alongside the *Ontario Water Resources Act* to address sources of water pollution. It is regulated by MOECC and contains several general provisions that can be used to protect surface water and groundwater against contamination (CELA, 2012). The *Safe Drinking Water Act* (2002), also regulated by the MOECC, protects the quality of water through the regulation of drinking water systems and testing. The *Safe Drinking Water Act* provides legally binding standards. It requires municipal drinking water systems to obtain approval from the Ministry of the Environment prior to operation, requires operators to be trained and certified to provincial standards, and requires that drinking water testing take place at a licensed laboratory facility.

After a consultation process heavily driven by stakeholders and amendments, the *Clean Water Act* received Royal Assent in October (2006). The legislation sets out a framework for communities to follow in developing a local approach to protecting their municipal water supplies (NBMCA, 2017). The Act requires local communities, through local Source Protection Committees, to assess existing and potential threats to their water, and through implementation measures work on ways of reducing impacts. The *Clean Water Act* helps protect drinking water from source to tap through a multi-barrier approach that prevents contaminants from entering drinking water sources (CELA, 2012).

Furthermore, science-based studies are carried out at the watershed level. Some water management functions in Ontario are also handled by 36 Conservation Authorities (CAs) who employ an integrated watershed-based approach to manage land and water within jurisdictions. A partnership between municipalities within a watershed and CAs exists in accordance with the *Conservation Authorities Act*. The Act, enacted by the Ontario Provincial Legislature in 1946, ensures the conservation, restoration, and responsible management of Ontario's natural resources through programs that balance human, environmental, and economic needs (Conservation Ontario, 2018). CAs protect and manage Ontario's water and natural resources. Among other responsibilities, their partnership deals with development proposals or land alterations within or

near floodplains. In fact, reductions in flood-related damages and infrastructure costs have constantly supported that CAs safeguard people, property, and infrastructure by keeping development out of floodplains (Hayes, 2018). The passage of Bill 139, *Building Better Communities and Conserving Watershed Act* includes a new *Conservation Authorities Act*, (2018 consolidation) that supports a more modernized policy framework, building on previous policies, that address the concerns of members of the public, stakeholders, municipalities, and the acquired knowledge within Indigenous communities.

Development pressures, excess aggregate extraction, water takings, and the effects of climate change are challenges that will require an integrated, adaptable approach for future natural resource management. A modernized legislation recognizes that watershed management is a key tool in helping Ontario adapt to the impacts and corresponding issues. Science-based approaches serve to better understand the critical challenges of water. Veale & Cooke (2017) state that science-based approaches help to better comprehend the relationship between surface water, groundwater, aquatic, and terrestrial ecosystems at the sub-watershed level, allowing for better coverage on the overall protection of water quality and water resources.

Although there are a wide-range of miscellaneous acts regulating water indirectly, Section 2.0 of the PPS is dedicated to the Wise Use and Management of Resources. Specifically, Section 2.1 sets the provision for the protection of natural heritage features, and Section 2.2 delegates policies for the management and restoration of water quality and quantity. The policies and regulation that will be further discussed in the literature review and semi-structured interviews involve the policies within the Growth Plan (2017) and the Greenbelt Plan (2017). Both provincial plans include policy sections on water resources, natural heritage systems, and settlement area boundary expansion.

3.0 Literature Review

Ontario has experienced unprecedented growth in the last decade putting strenuous pressure on natural resources. “Ontario’s population is projected to grow by 30.3 percent, or more than 4.2 million, over the next 25 years, from an estimated 14.0 million on July 1, 2016, to more than 18.2 million by July 1, 2041” (Ontario Ministry of Finance, 2017). Water features such as moraines, streams, and wetlands are finite resources experiencing stress from urbanization and other human activities. Together, this compromises the long-term health of key hydrological features. Through land use planning regulation, the Province has responded to the consequences of negative economic, social, and ecological impacts. Density can be measured through the intensity of activities and its related built-up areas and functional or physical densities (Artmann, Kohler, Meinel, Gan & Ioja, 2017). Areas of high density encourage space-efficient forms through vertical redevelopments. Research has found that low-density development contributes to sprawl. Additionally, there is a misconception of a front or back lawn of a low-density, single household being just as beneficial as open space. However, this is not the case since development causes disturbance. Although disturbance may be minimal, the soil is still being compacted during construction and water will not percolate into the ground as it would in open space or in a forested area.

The Environmental Protection Agency (2016) modeled scenarios at different densities to show that higher-density development produces less runoff and less impervious cover than low-density development. When considering growth across a watershed area, lower-density development impacts more of the watershed area than at higher densities. This further supports how higher density development may better protect water quality both at the lower scale (acres) level and at the watershed level, which is imperative when considering the growth demands in the outer edges of the GGH.

Communities within rural areas are growing in Ontario and all decisions on growth influence the development of infrastructure and services within these municipalities. Low-density, dispersed development, and several other site-level practices have been identified by literature as regional issues impacting water resources (Environmental Protection Agency, 2016). Other consequences of low-density development can include high costs for municipalities. In the context of the proposed Greenbelt boundary expansion, other challenges and limitations can arise

with respect to growth in rural municipalities. The following sections highlight studies that focus on the impact of growth on rural settlements and indirect/direct influences on water resources.

3.1 Complications of Intensification

The Neptis Foundation has published several brief reports on pre-existing policy gaps within the (2006) Growth Plan. In 2017, the Neptis Foundation identified definitional differences in provincial policies that have led to land use planning complications. The brief, titled *Should Rural Settlements in the Greater Golden Horseshoe be a Focus for Growth?* focused on policy definitional differences between the (2006) Growth Plan and the proposed (2016) Growth Plan. In 2013, the Neptis Foundation identified wording that permitted municipalities to direct growth to settlement areas that lacked full municipal services. Multiple authors have addressed the issue, and the consensus is that the lack of transparent policy language designating a clear distinction between what constitutes an undelineated built-up area (UBUA) vs. delineated built-up area, (BUA) led to implementation issues of the (2006) Growth Plan. Although provincial policy objectives direct growth to delineated BUA, policy loopholes admitted for low-density developments within UBUA.

3.2 Policy and Implementation Gaps

Grey areas within policy have exacerbated environmental and economic issues by allowing low-density developments in partially serviced areas. The Neptis Foundation identified the financial and environmental implications of extending water and wastewater pipes to partially serviced areas to accommodate dispersed settlements, reflecting a leapfrog development. A leapfrog development is defined as building expensive new infrastructure to serve far-flung developments across vast stretches of rural and agricultural lands when growth should be directed to existing areas with servicing capacity (Neptis Foundation, 2017). Allen et al. (2017) acknowledges the effects of leapfrog developments and the provisions of the Growth Plan by stating, “The Growth Plan encourages the containment of major development within areas where growth is deemed desirable, rather than allowing for the widespread conversion of greenfields in an un-planned manner, often referred to as checkerboard or leapfrog development.” (Pg. 4). Although the Growth Plan’s guiding principles encourage a range of mixed-use developments and housing options, if developments are predominately dispersed, low-density, then the outcome of this leapfrog effect has undermined the intent of the Growth

Plan. The effect of this pattern of expansion is reduced connectivity and viability of agricultural and natural lands.

Allen et al. (2017) expand on the initial implications of the leapfrog effect by stating that, leapfrog developments are mitigated within the Greenbelt Plan through two constraints. These two constraints include infrastructure expansion into the *protected countryside* and the prohibition of extended municipal or private communal sewage or water services outside a settlement area boundary. However, this latter prohibition is subject to an exception in the case of *health issues* as well as the expansion of legally established uses in existence when the Greenbelt Plan came into effect.” (Pg.15). The authors raise questions about these exceptions and if they contribute to servicing expansions in areas that were not intended to be. If pipes extend significant distances, initial infrastructure and maintenance would be a high cost for rural municipalities. This would only contribute to the present barriers smaller municipalities face. A couple of these barriers include limited resources and limited funds for hiring more staff members.

Other avenues where ambiguous policy falls short is within the PPS. Allen et al. (2017) state that the PPS does not include provisions on its own that prohibit subdivision-style development in UBAs. Section 1.2.3 Settlement Areas includes only two provisions that address intensification and redevelopment within built-up areas:

1.1.3.5 Planning authorities shall establish and implement minimum targets for intensification and redevelopment within built-up areas, based on local conditions. However, where provincial targets are established through provincial plans, the provincial target shall represent the minimum target for affected areas.

1.1.3.6 New development taking place in designated growth areas should occur adjacent to the existing built-up area and shall have a compact form, mix of uses and densities that allow for the efficient use of land, infrastructure and public service facilities.

(PPS, Pg.8, 2014).

It is important to note that the research conducted by the Neptis Foundation occurred when the Province was considering changes to the (2017) Growth Plan. The Province did address the gaps and ambiguous policy language. Currently, the consolidated (2017) Growth

Plan defines *Undelineated Built-up Area* as “settlement areas for which the Minister has not delineated a built boundary” (Growth Plan, 2017). The term *Delineated Built Boundary* is defined as “the limits of developed urban area as defined by the Minister in consultation with affected municipalities for the purpose of measuring the minimum intensification target of this Plan” (Growth Plan, 2017). Lastly, the term *Delineated Built-up Area* is defined as “all land within the delineated built boundary” (Growth Plan, 2017). However, although the Growth Plan (2017) does define UBUA, it still does not mention the rationale for leaving areas *undelineated*, or what the status is regarding future monitoring. This would be an area that would benefit from further research and analysis.

Additionally, Section 2.2.2 Delineated Built-up Areas is a section absent in the (2006) Growth Plan. Chapter 2 in the (2006) Growth Plan only acknowledges *built-up areas*, within the context of growth management and intensification. To contrast, the (2017) Growth Plan removes ambiguous policy wording to eliminate misconceptions and includes the word *delineated* to direct growth appropriately. Section 2.2.1.2 Managing Growth addresses future growth and where it should be directed:

2. Forecasted growth to the horizon of this Plan will be allocated based on the following:

a) the vast majority of growth will be directed to settlement areas that:

- i. have a delineated built boundary;
- ii. have existing or planned municipal water and wastewater systems; and
- iii. can support the achievement of complete communities;

b) growth will be limited in settlement areas that:

- i. are undelineated built-up areas;
- ii. are not serviced by existing or planned municipal water and wastewater systems; or
- iii. are in the Greenbelt Area;

c) within settlement areas, growth will be focused in:

- i. delineated built-up areas;
- ii. strategic growth areas;

(Growth Plan, 2017).

Additionally, Section 2.2.2.4 Delineated Built-up Areas states the following:

4. All municipalities will develop a strategy to achieve the minimum intensification target and intensification throughout delineated built-up areas, which will:
 - a) encourage intensification generally to achieve the desired urban structure;
 - b) identify the appropriate type and scale of development and transition of built form to adjacent areas;
 - c) identify strategic growth areas to support achievement of the intensification target and recognize them as a key focus for development;
 - d) ensure lands are zoned and development is designed in a manner that supports the achievement of complete communities;
 - e) prioritize planning and investment in infrastructure and public service facilities that will support intensification; and
 - f) be implemented through official plan policies and designations, updated zoning and other supporting documents.

(Growth Plan, 2017).

Thus, policies have changed to ensure that development and direction of growth is achieved through complete communities. Furthermore, other initiatives that municipalities have taken to ensure that growth is directed to appropriate areas is through updated OPs and Secondary Plans for all residential, commercial, and industrial development, while remaining consistent with the PPS and provincial plans.

Although changes have been made at both the local and regional scale, the (2017) Growth Plan needs to be fully implemented to evaluate whether development and growth changes have had improvements. Therefore, it would be premature to judge whether positive results have been attained so far. Moving forward, as more analysis and science-based studies become available, progress on development and growth patterns will be readily available for further discussion and analysis.

3.3 Planning for Water Resources

The PPS (2014) states that a watershed is an area that is drained by a river and its tributaries. A watershed has both chemical and ecological functions. The chemical functions include storing water of various amounts at different times and releasing water as runoff. The

ecological functions of a watershed include providing diverse sites for chemical reactions to take place and provide a habitat for all flora and fauna (Ontario's Ecology and Watersheds, 2009). At both the local and regional level, human activities affect all functions of a watershed. Research has constantly supported how impervious cover can degrade water quality. Studies show that at 10 percent of imperviousness, a watershed is likely to become impaired and grows more impaired as imperviousness increases (EPA, 2016). In general, higher density scenarios display less stormwater runoff at all scales—per household (acre) and at the watershed level (EPA, 2016).

Due to the complex relationship between water quality and development, water management professionals, municipalities, and planners result to regulatory tools to enhance the protection of water resources, while ultimately accommodating growing populations. To protect water resources, communities need to employ a wide range of land use planning strategies. Lie et al. (2016) suggest that a cumulative effects management approach is effective for managing development impacts in the contributing watersheds of the Great Lakes. Watershed and water quality models were used to evaluate environmental outcomes under various management options. This tool has been identified as a key component in decision making and for implementing a water quality management framework under the Canada–United States Great Lakes Water Quality Agreement (GLWQA). This cumulative effective management approach supports an integrated modeling of watersheds and encourages the assessment of various practices. A similar application, just on a more local scale, is used on watersheds within Ontario. This integrated, multi-disciplinary, multi-agency approach is currently implemented by the Grand River Conservation Authority (GRCA) and discussed in the final section of this literature review.

3.4 Grand River Watershed

The Waterloo Moraine complex represents about nine percent of the total land area of the Grand River Watershed. The Grand River Watershed is the largest in Southern Ontario with the largest drainage basin discharging into Lake Erie. Combined with its major tributaries, the Conestogo, Nith, Speed, and Eramosa Rivers, the Grand River drains an area of 6800 km² (Veale & Cooke, 2017). The water system delivers services to almost one million residents by providing a source for municipal drinking water and assimilating the wastewater from different communities. Thirty-nine municipalities are located partially or within the Grand River

watershed, as well as two First Nations reserves (Veale & Cooke, 2017). Groundwater is still the largest portion of municipal supply source in the Grand River, with approximately 65% of all municipal water demand coming from groundwater sources (Wong, 2011). Although municipal water supplies within the watershed are sustainable, previous studies have emphasized degrading concerns over the surface water quality within the middle and lower sections of the river. In addition, The Conference Board of Canada (2018) suggest that perhaps a viable solution would be to increase the cost of water as an incentive for conservation and halting excess withdrawals.

3.5 Municipal Water Supply

Municipal water usage includes domestic, industry, institution, commercial, and other associated operations that rely on the municipalities for their water supply. The regional municipality of Waterloo and the City of Guelph supplement groundwater supplies with surface water withdrawal. The Region of Waterloo supplies water to cities of Cambridge, Kitchener, Waterloo, and to the smaller cities of Elmira, Browns, and St. Jacobs. Wong (2011) states that within the Waterloo region, groundwater comprises 70% of the supply from numerous wells, while the Grand River supplements the groundwater through Mannheim pumping station in Kitchener. The City of Brantford and the Ohsweken, on the Six Nations of the Grand River, directly depend on surface water withdrawals for their municipal water supply. **Table 1** highlights the municipal services communities and their sources of water supply. The smaller municipality of Moorefield, began its municipal distribution system in 2006 (Wong, 2011). Within the Township of Wilmot, Baden and New Hamburg amalgamated into one municipal system, much like the Towns of Fergus and Elora.

Gaps were identified by the GRCA within their Management Watershed Plan (2017), which state that servicing needs of current unserved communities have not been factored into the table. Consequently, not having this information readily available undermines the Growth Plan and makes it difficult to obtain future water projection targets for municipalities. Municipalities need to follow protocols of long-term planning and provide detailed and updated studies to ensure they have sufficient water available in the future. This information should be reflected through municipal OPs, and other applicable land use plans, much like the City of Guelph has done with their Water Supply Master Plan (2014).

Municipality	Community	Source of Supply
Grey County (Southgate)	Dundalk	Groundwater
Dufferin County (Grand Valley, Amaranth, E. Garafraxa)	Grand Valley, Waldemar and Marsville	Groundwater
Wellington County (Wellington North, Mapleton, Centre Wellington, Guelph-Eramosa)	Arthur, Moorefield, Drayton, Fergus, Elora, Hamilton Drive, Rockwood	Groundwater
City of Guelph	Guelph	Groundwater and Eramosa River
Perth County (Perth East)	Milverton	Groundwater
Region of Waterloo	Integrated Urban System (serving Waterloo, Kitchener, Cambridge, Elmira, St. Jacobs, Hidden Valley, Wilmot Centre)	Groundwater and Grand River
	Ayr, Branchton Meadows, Roseville, Linwood, St. Clements, Wellesley, Foxboro Green, New Dundee, Baden, New Hamburg, Conestogo, Heidelberg, Maryhill, West Montrose.	Groundwater
Oxford County	Bright, Drumbo, Plattsville	Groundwater
County of Brant	Paris, Airport, St. George and Mount Pleasant	Groundwater
City of Hamilton	Lynden	Groundwater
City of Brantford	Brantford (including Cainsville)	Grand River
Haldimand County	Dunnville	Lake Erie
	Caledonia and Cayuga	City of Hamilton, Lake Ontario
	Hagersville	Nanticoke, Lake Erie
Six Nations of the Grand River	Ohsweken and parts of the Reserve	Grand River
Mississaugas of the New Credit	Parts of the Reserve	Nanticoke, Lake Erie

Table 1. Municipal Service and Source of Supply.

(GRCA, 2017).

3.6 Future Water Supply Demands

Municipality	Water System	Long Term Water Supply Needs			Notes (Sufficient Supply assumes OLWR participation and industry accepted efforts to reduce water loss)
		Avg. Day	Peak Day	WDM Objective	
Southgate	Dundalk	OK	OK	Status Quo	Sufficient Supply
Amaranth	Waldemar	OK	OK	Status Quo	Sufficient Supply
East Garafraxa	Marsville	OK	OK	Status Quo	Sufficient Supply
Grand Valley	Grand Valley	OK	OK	Status Quo	Sufficient Supply
Centre Wellington	Fergus-Elora	OK	X	Reduce 14% by 2028, 38% by 2040	Water Supply Master Plan in progress. Soft Path Report identified staged water demand management objectives.
Mapleton	Drayton	OK	OK	Status Quo	Sufficient Supply
	Moorefield	OK	OK	Status Quo	Sufficient Supply
North Wellington	Arthur	OK	OK	Status Quo	Sufficient Supply (no expansion needed)
Guelph-Eramosa	Rockwood	OK	X	Strengthen WDM program	Expansion required by 2031 to satisfy peak day needs could be deferred with WDM.
	Hamilton Dr.	OK	OK	Status Quo	Sufficient Supply
Perth East	Milverton	OK	OK	Status Quo	Sufficient Supply
Region of Waterloo	Integrated Urban System	X	X	Will review a reduction in residential demand	The Region will be commencing a Water Conservation and Efficiency Study Update in late 2013 to review the long term residential use target. An aggressive target could help defer the long term need for significant water supply expansion projects and help satisfy peak day needs.
	Baden/ New Hamburg	X	X		
	Ayr	OK	OK		
	Wellesley	OK	OK		
	St. Clements	OK	OK	Status Quo	Sufficient Supply
	Non-Growth Rural Systems	OK	OK	Status Quo	Sufficient Supply
Guelph	Guelph	X	X	Reduce 20% by 2025	Expansion and demand management required to satisfy long term needs.
Hamilton	Lynden	OK	OK	Status Quo	Sufficient Supply
County of Oxford	Bright	OK	OK	Status Quo	Sufficient Supply
	Plattsville	OK	OK	Status Quo	Sufficient Supply
	Drumbo	OK	OK	Status Quo	Sufficient Supply
County of Brant	Paris	OK	X	Status Quo	Sufficient Supply
	St. George	OK	OK	Status Quo	Sufficient Supply
	Mt. Pleasant	OK	OK	Status Quo	Sufficient Supply (with treatment system)
	Airport	OK	OK	Status Quo	Sufficient Supply
Brantford	Brantford	OK	OK	Status Quo	Sufficient Supply
Haldimand County	Caledonia/ Cayuga	OK	OK	Status Quo	Sufficient Supply (currently connected by pipeline to Hamilton)
	Dunnville	OK	OK	Status Quo	Sufficient Supply (no expansion needed)

Note: OK implies water system can meet demand beyond 2041, X implies water system may not be able to meet average and/or peak day demand.

Table 2. Summary of Municipal Water Demand Management.

(GRCA, 2017).

The GRCA Water Management Plan states that most municipalities expecting significant growth have completed a Water Supply Master Plan that sets out where they intend to source their long-term water supply needs (GRCA, 2017). These long-term plans may be documented in Water Supply Master Plans, Servicing Master plans or Class Environmental Assessment Reports (GRCA, 2017). Future demand and capacity calculations, based on 20-40-year population

growth projections, were completed on a municipal water system. **Table 2** shows the projected long-term municipal water demand management objectives for watershed municipalities. Additionally, best practices were developed and applied to aid watershed municipalities with water demand. Based on the evidence presented in **Table 2**, municipal systems in most communities and rural centres have sufficient supplies to meet long-term needs beyond 2041.

To date, The Source Protection Program under the Province’s *Clean Water Act* was developed to protect the water quality and quantity of existing and proposed municipal drinking water systems across the Province (Drinking Water Source Protection, 2018). The water quality components of the Grand River Source Protection Plan have been approved and are in effect since July 1, 2016 (Drinking Water Source Protection, 2018). The Tier 3 Water Budget study is under the water quantity components for the Grand River Source Protection Plan. The results of the of the Tier 3 Water Budget study will also guide municipalities in managing future water takings across the water quantity wellhead protection areas.

3.7 Integrated Watershed Management

Adaptive management in the context of watershed management is an ongoing process with constant monitoring and improvements in both practices and policies. Science-based studies are significant for understanding the complex relationship between surface water and groundwater interactions. Integrated water resource management is defined as “a process which promotes the coordinated development and management of water, land, and related resources to maximize the social and economic welfare towards sustainable development, without compromising

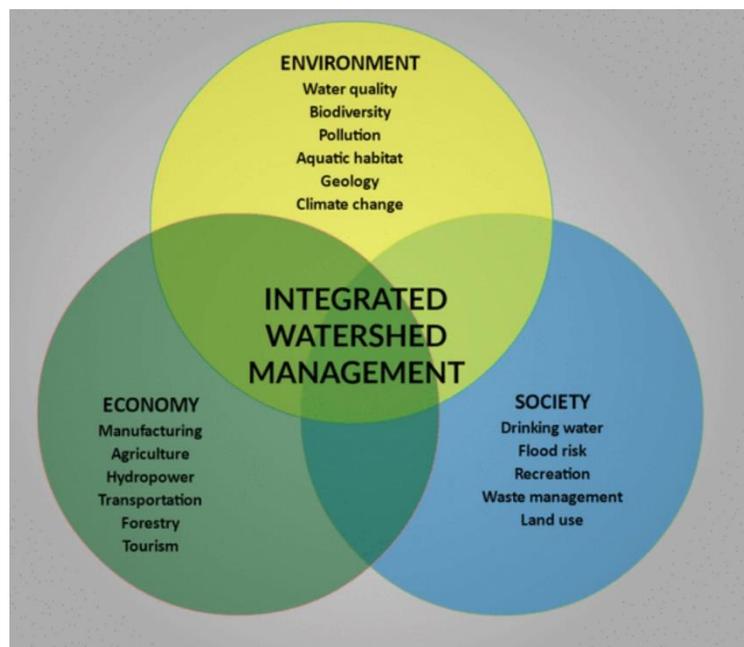


Figure 3. IMW Supports the Environment, Economy, and Society.

(Conservation Ontario, 2018).

the sustainability of ecosystems.” (The Global Water Partnership, 2000). However, the application has had significant gaps between theory and implementation.

The identified limitations of municipal water supply, water security, and the cumulative impact of wastewater discharges on water quality, are mitigated through an integrated watershed management (IWM). IWM is designed to be cost-effective, builds on pre-existing information, and incorporates the expertise of diverse stakeholders. **Figure 3** shows a Venn diagram highlighting the interrelationships of IWM. IWM relies on an adaptive management approach which establishes a plan, implements the plan, monitors, reports, re-evaluates and makes updates when necessary (Conservation Ontario, 2018).

3.8 Water Resource Protection

The Province identified moraines, cold-water streams, and wetlands as the three building blocks within their study. Thus, the ministry is committed to protecting the Waterloo, Paris, and Gait Moraine Complex which affects Waterloo Region, Brant County, and Wellington County. The Waterloo moraine complex is one of the seven mapped studies, connecting to the Greenbelt through the Paris and Gait Moraine. The Paris and Gait Moraines are located adjacent to the Greenbelt and extend from Guelph, southward towards Cambridge and Brant County (MMAH, 2017). The Ministry (2017) also states that aquifers within the Waterloo Moraine are essential for municipal supply and provide a baseflow to the area’s coldwater streams. In areas where the aquifers are exposed to the surface, they serve as significant groundwater recharge areas. The moraines and associated sand and gravel deposits are significant groundwater recharge areas providing enhanced baseflow to the Grand River between Cambridge and Brantford (MMAH, 2017). Although further environmental protection is important for natural heritage and hydrological systems, natural heritage systems and hydrological features are adequately protected through conservation and stewardship programs, restricted By-laws, and policy implementation.

The policy briefs have built on existing literature to address the current state of adequate water protection and its delivery. Researchers collectively agree that grey areas have permitted complications for land use planning over time. Although the current state of water resource protection would suggest that the Province will be able to accommodate growth and protection of water resources through adequate delegation of legislation and implementation, the Provinces’

proposal might introduce new challenges and shed light on any disconnects between the Province and municipalities.

The up-coming section of semi-structured interviews will further discuss any foreseeable complications with the Ministry’s proposal, the areas the Province should focus their efforts on, and other municipal related implications.

4.0 Methodology

The illustrated methodology in **Figure 4** displays how data was collected. To study policy and implementation gaps impacting the protection of Ontario’s water resources, eight questions were asked through semi-structured key informant interviews. The participants were selected from municipalities that would be affected by the proposed boundary expansion. The selected participants spanned from municipalities of the City of Guelph, the Township of Guelph/Eramosa, the Township of North Dumfries, the Township of Wilmot, and the Grand River Conservation Authority. The interview questions focused on understanding services and management issues, infrastructure, intensification, and water protection.

The review of secondary data on policy, municipal water supply, and land use planning for growth management, provide the geographic and legislative context. Analysis of two provincial documents, two policy briefs, five planning committee agendas, and five environmental regulatory documents, were gathered and utilized to triangulate the primary data emerging from the semi-structured interviews.



Figure 4. A Schematic Representation of the Methodology.

4.1 Municipal Context – Case Study Description

The townships of Wilmot and North Dumfries are lower-tier municipalities under the Regional Municipality of Waterloo. The Townships of Guelph/Eramosa, Centre Wellington, and Puslinch are lower-tier municipalities under Wellington County. The City of Guelph is a single-tier municipality, independent of Wellington County. The potential expansion would grow to include a significant portion of the Township of Wilmot and the Township of North Dumfries. Additionally, the boundary expansion would affect partial areas of Centre Wellington and the City of Guelph. The five participants were selected through a targeted approach. **Table 3** and **4** list the number of study participants, location, and their roles. Only adult planning professionals were interviewed to ensure that a person with less than six years of experience in the topic was excluded from the research. This was done to ensure that those interviewed are well versed in the topic and issues regarding provincial plans and policies.

Participant #	Location	Identifier Code
1	Township of Wilmot	TW
2	The Township of Guelph/Eramosa	TGE
3	The City of Guelph	CG
4	The Township of North Dumfries	TND
5	Grand River Conservation Authority	CA

Table 3. Study Participants, Location, and Identifying Codes.

Roles
Director of Planning and Development
Director of Development Services
Manager, Policy Planning
Township Mayor / Councillor
Township Planner

Table 4. Role of Study Participants.

4.2 Data Collection - Interviews

The participants were contacted through e-mail as shown in **Appendix A**. The invitation letter was used to obtain consent and participation within this study. The semi-structured interviews took place in March 2018 and occurred within the offices of each participants' place of work. The following section includes the questions asked during the 30-40-minute semi-structured interviews. Data was generated through the previously mentioned method in **4.1 Municipal Context- Case Study Description**. Names were removed from the interview transcript and an identifier code was used to link the questions and interview transcript. The semi-structured interviews were recorded and then transcribed.

Protecting Water Resources in Rural Municipalities in Southwestern Ontario

Date: 03/XX/18

Identifier Code: _____

Theme 1: Municipal Concerns

1. How do you think the Province will be able to accommodate both growth and water protection?
2. What do you think was missed during the public consultation meeting on Growing the Greenbelt or within municipal workshops? What development changes do you think should be required whether it be covered by the Greenbelt Plan or another provincial policy instrument?
3. What are some of the source water protection, stormwater management, and wastewater issues you are seeing within your municipality? Would growing the Greenbelt help these issues, possibly exacerbate issues, or have no effect?
4. Could the ability to grow be complicated by the potential Greenbelt expansion? Can you comment on how you think policies and the potential expansion can be making it difficult for your municipality to grow?
5. What should be key considerations for drawing a potential boundary around settlement areas?

Theme 2: Intensification

6. How should infrastructure be considered as part of the potential Greenbelt expansion? Where does infrastructure support from the Province fit in all of this?
7. Are there ways of intensifying that will continue to support the kind of amenities that people are seeking out in rural areas?
8. Could provincial jurisdiction on the Greenbelt expansion mean less, not more protection for your municipality?

4.3 Data Analysis

Once the interviews were completed and transcribed, a single level of coding was done to arrive at the results presented in the next chapter. By looking at the written results, common themes and trends were grouped together. The questions were grouped into two themes, Municipal Concerns and Intensification. The qualitative data was then analyzed and presented by different perspectives.

5.0 Results

This section will present the findings of the semi-structured interviews and an attempt is made to contextualize and analyze the findings. Interview data is divided into two themes and presented by the participants' perspectives.

5.1 Municipal Concerns:

“We would like there to be enhanced protection for our water supplies, but we will be achieving this through existing legislation and policy framework. Specifically, with what is stated in the Growth Plan, the Official Plan, and the Clean Water Act.”

Manager, Policy Planning

City staff at Guelph agree with the existing and planned pending policy framework. More protection is not needed beyond what is already in place. As for groundwater concerns, the groundwater supply is being reviewed under current legislation. There is a need to protect our water supply, but the protection of water resources will be addressed without the Greenbelt Plan. The City is looking to implement current legislation, and the legislation the Province is working on, so why would you need the Greenbelt to further complicate things? Similarly, the Region of Waterloo also has adequate water protection in place. To bring into effect their current policy regime under their OP, they battled hard for through the local planning process and at the OMB. The OP for the Waterloo Region is more restrictive than what the Ministry is proposing with the potential expansion of the Greenbelt. In addition, the proposed study area appears to exclude the very best farmland in the Region, which is at odds with the stated purpose of the Greenbelt within the Greenbelt Plan itself.

“Water usage is a political issue because of the existing pressures. Who gets the water? What municipality gets priority over who?”

Township Mayor/ Councillor

From a political perspective, Ontario has adequate legislation and policy in place. The *Ontario Water Resources Act*, the PPS, and the *Source Water Protection Act* all offer security on water quality. The Ministry’s consultation document does not prohibit water taking or does not address the quantity of water, nor which (municipality) gets the water. Smaller municipalities who do not have a water and sewage system in place will not get the growth. If tension exists, growth creates it. For example, if the City needs more water once their wells are maxed out, they need to come out of their City into smaller areas to obtain sewer and water capacity. If towns cannot get water and sewage capacity, residents will leave. This issue was not discussed at the consultation open house. The Province should focus their efforts on securing the quantity of water. The MOECC is looking into the Permit to Take Water legislation and the Province has put a ban on commercial takings, so bottling plants are not issuing any permits. When it comes to plastic bottles, ban all of them or cap it. From a political point of view, if this proposal was water-related, the Province would have focused on total water use. The correct approach to water protection is to look at everything that is water related, not just natural heritage features.

“Too many planning initiatives in place can create issues with implementation. What we need is one set of policies. This would help out smaller municipalities.”

Township Planner

The Ministry’s workshops on the proposed expansion fell short of addressing significant matters. Specifically, how exactly would the Province plan for climate change

pressures? All standards were missing. A major issue is that the Province releases individual policies without considering the implementation process. The Township of North Dumfries would like to see more requirements on setbacks to rivers and other bodies of water. The PPS is also lacking some vital regulation such as delegation matters relating to Low Impact Development (LID). Additionally, the Township has experienced stormwater issues within their municipality. Although Toronto Region and Conservation Authority (TRCA) has produced guidelines, a manual and standards on a set of criteria from the Province would be helpful. The Township is looking for more specific policies to aid with the issues of stormwater management draining into wetlands.

Furthermore, an accurate portrayal of actual growth pressures was also lacking. On the premises of the Ministry's exercise, they emphasize that outer boundary municipalities of the GGH is an area that is going to receive massive growth. While partially true, you need to plan for growth, the proposal created the perception that growth is going to go beyond existing urban boundaries. It created a public perception that we need to look at the Greenbelt because all the cities and small towns are going to spread out beyond their current boundaries. However, the Growth Plan prevents municipalities from doing so. To add to the matter, The City of Guelph states that rigorous tests need to be met before the City of Guelph, and other townships within Wellington County, could expand. If a municipality needs more land, that is a different question. When it comes to meeting your growth forecast inside your current boundary, the municipality would have to demonstrate that they cannot grow any further, and there are tests in place to prove that.

“You need to look at the correct direction to grow and consider infrastructure, environmental features, groundwater, and agriculture. If you do end up expanding a small town, it is not a given that you will expand into an area that is a problematic for water resources. You will have to evaluate the fringe of these communities and say, is this the right way to grow? No, there are important groundwater resources in place.”

Manager, Policy Planning

If groundwater resources are at stake, municipalities need to take preventative measures to make sure that recharge areas are not disturbed. The whole growth premises for the exercise was addressed in a paragraph within the consultation document. The Ministry displayed alarming bar charts regarding the amount of growth the outer GGH is expected to receive, but no real analysis on this issue. For example, how much of this growth is designated for an urban centre? Additionally, growth rising beyond provincial boundaries is a premature assumption because municipalities have not done their Lands Needs Assessment yet. Municipalities have articulated growth within their urban boundaries. If the Province is referring to growth population beyond their boundaries, what are they doing to protect water? Tier 3, Water Budget Study is looking at the quantity of water. What Guelph staff members want to know is: what is the threat to water that you need to expand the Greenbelt? If the Province is concerned about protecting water resources, why does the boundary expansion only include the western part of the outer GGH, but not the whole southern portion?

“Why not make this part of the PPS so all municipalities would have to consider these changes? This is a little suspicious because we are growing and those decisions to grow were made under the Province’s requirement, and it is happening within the boundary.”

Director of Planning and Development

Similarly, Township staff at Wilmot feel that the Province should delay consultation on the study area until adequate time has been given to review the inclusionary Agricultural System and Natural Heritage Systems mapping. The study area was rather premature, as only groundwater, out of three components- Source Water Systems, Agricultural Systems, and Natural Heritage Systems- was mapped out with the release of the study area. Another significant issue the Township had with the proposal was that the Province indicated that it has added a 1 km buffer around features in the mapping and this has unjustifiably bloated the study area. This generalized 1 km buffer for features affects the lands within the Countryside Line between Baden and New Hamburg and should not be part of this study. The Province has failed to consider the planning efforts and infrastructure investments the Township has made to date.

On the other hand, smaller townships within Wellington County have different issues with the proposal. The County feels that this proposal is driven by an urban perspective attempting to solve a rural issue. Since the Growth Plan directs growth to areas with sewer and water services, some people are not happy with the projected growth of their towns. The Township of Fergus, for example, does not want massive amounts of growth. There are places that want to retain their small town rural characteristics. The Greenbelt does not prevent development when you have population growth and massive immigration. Growth is directed to the Township of Fergus because you need sewer and water capacity to accommodate it. The proposal is creating a leapfrog effect: if a population is expanding and you put a Greenbelt in-between it, you are just moving growth around.

Across all participant responses, a key consideration for drawing a potential Greenbelt boundary around settlement areas should be determined by whether the Greenbelt Plan policies offer more protection than municipal OPs on water resource protection. Consideration of the Greenbelt boundary expansion should proceed after the Province has approved all municipal comprehensive reviews, which is done to ensure conformity with the Growth Plan. One of the requirements of the MCR is for municipalities to establish a hierarchy between towns, villages, and hamlets. After this provincial requirement is complete, it will aid municipalities with the size and direction of urban or rural expansion.

5.2 Intensification

“The Greenbelt makes it difficult to maintain infrastructure because it adds more costs to municipalities. The more legislation and restriction, the more bureaucracy for adding a bridge on the road.”

Township Mayor/ Councillor

The Rockwood community has one subdivision that is currently approved but has no more sewage capacity to allow for additional expansion. Therefore, you do not need the Greenbelt to stop growth in this situation. An issue to consider is that, along with the proposed boundary expansion, there will be the introduction of new paperwork and additional work for

municipal staff. It will add time delays, new staff will need to get hired, and it will add other avenues for destruction, by exposing the people and the public.

Furthermore, the transportation issues that North Dumfries Township has been experiencing can be solved by designing better roads. There are a lot of roads with no stop signs in North Dumfries. So far, the Township has had no provincial support and needs funding to fix the existing built environment. If you want municipalities to grow, the Province needs to invest in funding upgrades and maintenance for municipal roads. In addition to the engineering analysis, recreation facility development, and servicing infrastructure, the Township of Wilmot has invested in securing access to public transit within their corridor. This has resulted in increased densities growing compactly in accordance with provincial requirements. Other highlights for the Township include planning the growth of New Hamburg-Baden Communities. This has been a priority for the Township, and through infrastructure investments made by local school boards, the Region of Waterloo, without any provincial support. There is a consensus among municipal staff members that infrastructure should follow the infrastructure policies within the Growth plan and other relevant legislation- like the *Environmental Assessment Act*. Infrastructure should be consistent with plans, and the objective of plans includes efficient use of infrastructure.

“Rural residents like and want trail systems. These trails are hard to accomplish because there is policy, but no requirements for enforcement.”

Township Planner

There are ways of intensifying that is in keeping with the kind of amenities that people seek in rural areas. There needs to be more of a focus on open space (5% in 100 acres). What is stated in the *Planning Act* for open space, is too little. Developers can come in and do as they please because they go by what is stated in the *Planning Act*. Furthermore, from a political perspective, it can be said that a lot of people that move to rural places are transplants from urban cities and tend to be the ones expecting certain amenities. There are planning and budget-related differences. When you are investing in property, if the population is low, water rates will be

high. This can vary under certain circumstances, like if a private sector services you. There are servicing and distancing issues within Rural Minto and Wellington North. There is a fight between trying to stay rural and keeping the government out. People in rural areas generally do not want municipal services because they are more expensive. When services come into an area, the public perception is usually that they do not want it.

Furthermore, municipal staff state that a certain amount of intensification can be accommodated on an individual basis within rural areas. For example, Wellington County would not have any issues with proposals that wish to establish second units in unserved areas. This is a modest form of intensification. Examples include an apartment inside a house on an unserved lot, or an apartment in an ancillary building on an unserved lot.

“There are many key natural heritage features that were not considered. Many valleys, woodlots, and forests that the Region of Waterloo has identified and mapped were not reflected within the Ministry’s proposal.”

Township Planner

The Ministry’s mapping of the study area offered less protection- for Waterloo Region. The Province only deals with policy; they do not know what planners must deal with when consulting with developers. Woodlots and forests that the Waterloo Region has mapped out in their OP are absent from the study area. City staff would like to know why the Ministry did not take a trip to Waterloo Region to obtain this information. There is an obvious disconnect between the Ministry and the affected municipalities. Similarly, the GRCA is concerned that the Greenbelt Plan policies will override policies in local municipal plans and the OP, and that there is a potential for the reduction in the protection of sensitive features. GRCA recommends that the best available technical information and data is used to determine lands for expansion. This includes information collected at the local watershed scale by municipalities and CAs. Examples include source water protection, mapping for significant groundwater recharge areas, GRCA wetland and watercourse mapping, and subwatershed study information. GRCA states that the more protective policies stated within the Greenbelt or municipal OPs, are the ones that should be enforced. GRCA also recommends that the municipal Water Resource System mapping mentioned in the Growth Plan

and the Watershed Planning in Ontario guidance document are finalized before the Province decides to move forward with any decision regarding the Greenbelt expansion.

Furthermore, although expanding the Greenbelt would not necessarily mean less protection for Wellington County, politicians believe otherwise. In fact, one states that the boundary expansion would not offer more protection on water resources. What the Ministry needs to provide is analysis defining what difference the boundary would make. Most people want to protect water, but it must be practical, and policy is already in place. Why is it such an isolated spot? Who is on that foundation, and who is funding it? You will notice that it is driven by an urban perspective, and the government's money is endless when it comes to climate change issues. The driving problem is growth and it is driven by federal policies. You cannot limit immigration to zero. You cannot change population, but you can manage it. However, once provincial policies have been implemented, and source water protection policies have been implemented, what else can you do to ensure water resource protection?

“The Province should be expected to provide detailed explanations of the enhanced and specific protections the Greenbelt will add to our community, and protections that are currently missing in the local, provincially approved policy environment.”

Director of Development Services

Staff at Wilmot Township state that the existing Protected Countryside destination and source water protection policies within the Regional and the local OP are more than sufficient to achieve the long-term protection of groundwater supplies. The Township's Countryside Line minimizes future urban expansions to appropriate locations which can sustain high densities, drive intensification, and maximize the return on infrastructure investment while protecting Prime Agricultural Areas. The Greenbelt's policy does not add to what has been put forth by Waterloo Region. In fact, the Greenbelt policies dilute protections related to aggregate extraction and groundwater. The Region of Waterloo has policies in place that require a cumulative impact assessment for new and expanded aggregate extraction. Thus, areas that are planned for

infrastructure or mineral aggregate extraction should have no bearing on the mapping of any Greenbelt expansion.

6.0 Discussion and Analysis

The primary data from the semi-structured interviews and concepts from the literature review have been harnessed to present the discussion and analysis of the findings from the results section. **Figure 2** on page 11, shows that within land Area 1: Waterloo and Paris/Galt Moraines and Area 2: Orangeville Moraine both extend into Wellington County, along with URVs and is associated with Conestogo, Grand, Speed, and Eramosa rivers. The study area includes several lakes, adjacent recreational areas, and contains one of the largest mineral aggregates in Ontario. The study area is approximately: 11,500 ha in Centre Wellington; 13,700 ha in Guelph/Eramosa; 14,200 ha in Erin; and 16,900 ha in Puslinch, for a total area in Wellington County of 56,300 ha (The Corporation of the County of Wellington, 2018. p. 8). **Table 5** shows the breakdown of urban centres and hamlets within the study area. The study area contains 2 urban centres and 16 hamlets within Wellington County. Furthermore, **Figure 5** shows that the Greenbelt boundary expansion would grow to include The City of Guelph partially, and a significant portion of the Township of Wilmot and North Dumfries.

Type	Centre Wellington	Guelph/Eramosa	Erin	Puslinch	TOTAL
Urban Centre	0	1 Rockwood	0	1 Aberfoyle	2
Hamlet	2 Belwood, Ennotville	8 Barrie Hill, Brucedale, Crewson's Corner, Eden Mills, Hwy 7, Lake Road, Oustic, Shadow Beech	5 Brisbane, Cedar Valley, Crewson's Corner, Orton, Ospringe	1 Arkell	16
TOTAL	2	9	5	2	18

Table 5. Wellington County Settlement Areas Inside the Study Area.

(County of Wellington, 2018. p. 10).

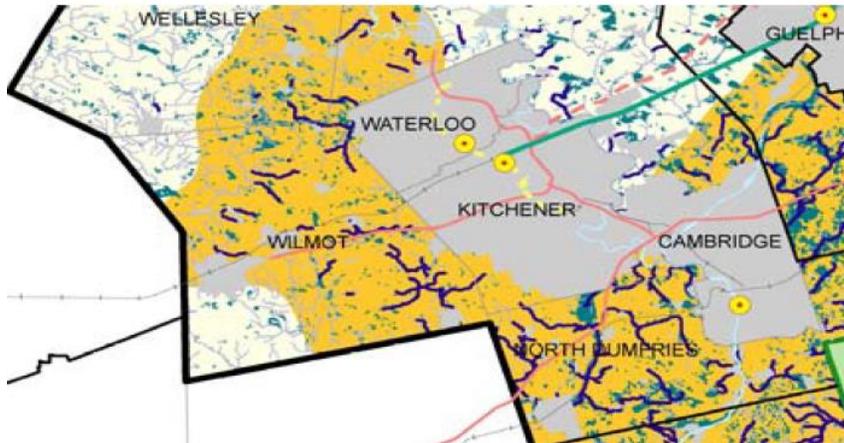


Figure 5. The Township of Wilmot and North Dumfries Within the Study Area.

(Township of Wilmot Report, 2018. p. 1).

The following section provides commentary and analysis on the municipal thoughts and concerns regarding the Province's approach to the Greenbelt expansion. If the Province decides to move from a study area to a new Greenbelt boundary, all gaps and concerns must be addressed. The Province will need to consult again if they decide to move forward with the new boundary. Although the participants in this study are supportive of the Province's efforts to protect, maintain, and manage water resources, the interviewees highlighted areas where the Province failed to deliver. Emphasized in the results section was a dissociation between the Province and affected municipalities. The upcoming sections of this chapter will discuss in greater detail the issues identified by municipal and political staff members:

- Mapping ignored ongoing municipal land use planning work
- Failure to include the Agricultural System and Natural Heritage System
- Unstated methodology of the study area
- Incomplete consideration of all-natural features
- Lack of environmental sensitive policy areas

6.1 Municipal Concerns

Staff at the City of Guelph made it clear that none of the settlement areas within Wellington County would need to expand to meet the 2041 OP forecasts. Current long-term land supply estimates determined this. As a requirement under the Growth Plan (2017) all municipalities are required to use a standard methodology to assess the quantity of land needed to accommodate forecasted growth. The location of any expansion will be determined based on a

series of criteria studies that require the Natural Heritage System, Key Hydrological Areas, and Prime Agricultural Areas to be avoided where possible. This is only one component of a larger process of a MCR. The MCR will be required by 2022 and subject to approval by the Province (County of Wellington, 2018. p. 10).

The region of Waterloo and the City of Guelph are established leaders in water conservation. Both municipalities have updated their OPs since the Greenbelt Plan was established to offer more protection on water resources. The City of Guelph and the Guelph/Eramosa Township have also provided operating information statistics input for model development to ensure proper characterization of the Township's drinking water system, through Tier 3 Water Budget study. Both the City of Guelph and the Guelph/Eramosa Township have considered the stress relied on groundwater and surface water supplies for municipal drinking water and are doing their part to ensure protection for a sustainable future. The City of Guelph also established a multi-barrier approach to protect municipal drinking water, and to ensure its conformity with the *Source Water Protection Act*.

Wellington County has updated their OP with an Official Plan Amendment (OPA) 98 to conform with the 5 Source Protection Plans (County of Wellington, 2018. p. 10). Under OPA 81, policies protecting the Paris/Galt moraine are included. This further supports the adequate protection that is in place at the municipal level, offering more protection than the Ministry's proposal. **Figure 6** shows the existing Greenbelt with additional layers of the proposed study area, and the County of Wellington's OP. This schedule shows that water quality and quantity are further protected through the Well Head Protection Areas, Issue Contributing Areas, and Intake Protection Zone designations.

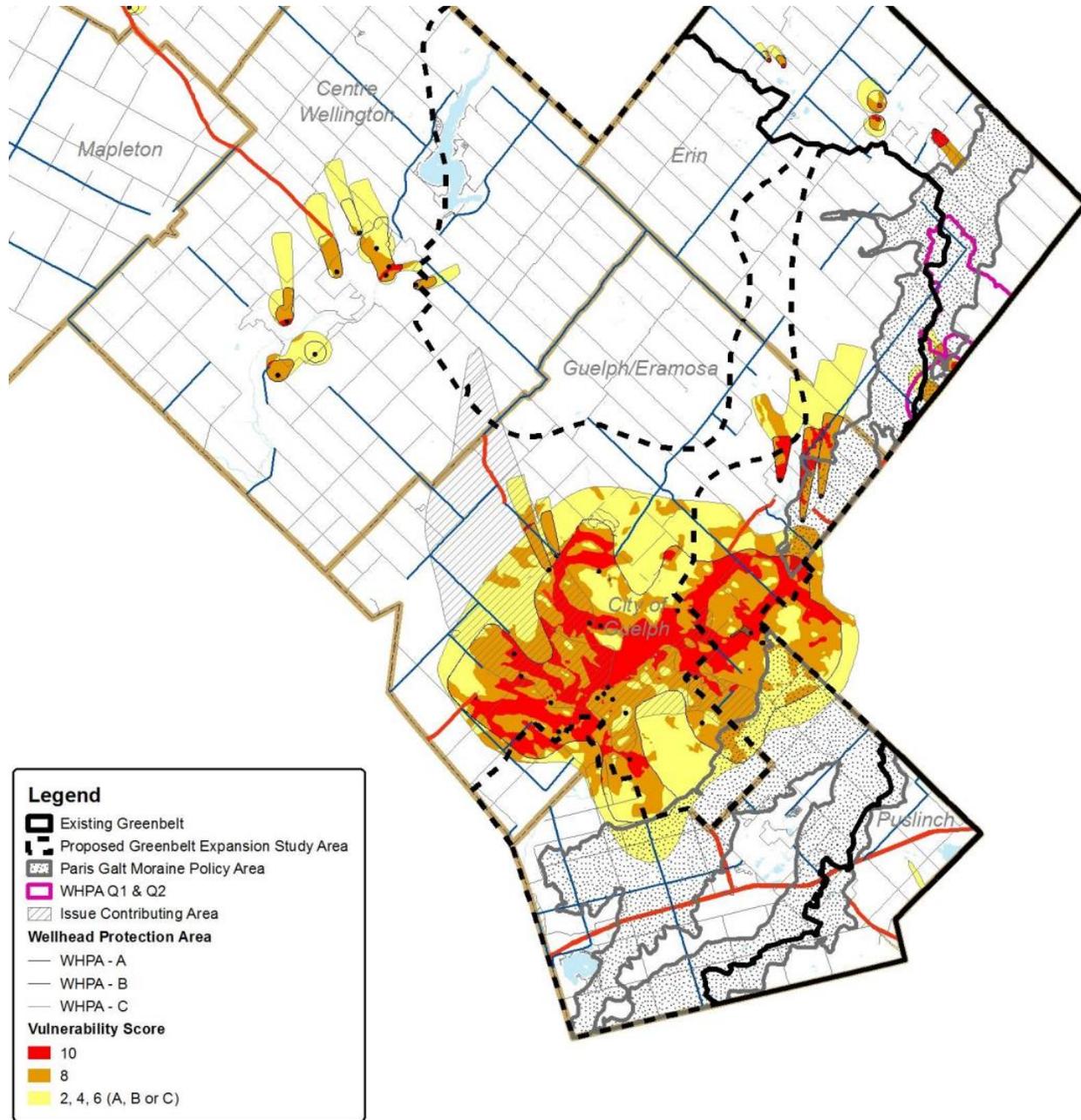


Figure 6. Existing Greenbelt, Study Area, and County of Wellington’s Official Plan.

(County of Wellington, 2018. p. 11).

Furthermore, City staff at Guelph believe that the Province was too preoccupied with protecting water resources, that they forgot to consider the integrity of agricultural lands. Although the Waterloo and Paris/Galt moraine is located south, in general, the best farmland is located north of the City of Guelph. In a hypothetical situation, if the City of Guelph needed to expand, and the proposed Greenbelt boundary was in place, this would force the City to rationally compare the trade-offs between growing onto the best farmland vs. not the best land. This would then take the agricultural analysis out of it. In addition, the geographic context the Province is working within is the poorest farmland within the Greenbelt. This would force the City to examine the best farmland which is located east, north, and west of the City of Guelph. Therefore, the City will not be able to rationally determine what is the best trade-off between agricultural, natural environment, and infrastructure, which is what you should be doing in land use planning. Thus, it is important for municipalities to go through the Growth Plan exercise and the MCR, to figure out if a municipality needs to expand. If a municipality needs to expand, through the examination of all four points of the compass, the direction of growth will be evident. Under the MCR process (2017) municipalities will undergo background research, public consultation, and policy formulation to ensure the policies in their OP is in conformity with the Growth Plan (OMOECC, 2017). The Growth Plan (2017) sets minimum standards for density and intensification. Growth targets are key to making more efficient decisions on land use and infrastructure planning. The five types of growth targets municipalities need to consider are:

1. Intensification
2. Designated Greenfield Area density
3. Employment Area density
4. Urban Growth Centre density
5. Major Transit Station Area density

(OMOECC, 2017).

Growth targets are meant to slow the outward expansion of settlement areas and protect resources such as farmlands, water systems, wetlands, and woodlands.

The prematurity of this proposal is displayed through the base mapping that does not include all the environmental features within the study area. The Greenbelt policies do not enhance what Waterloo Region has in place for water resource protection and their policies on aggregate extraction. Since the PPS, Growth Plan, and the Greenbelt Plan include policies on

aggregate extraction, it is not clear why the Province felt that the overlap of policy would offer more aggregate protection. Mineral aggregate extraction should not have an influence on the Greenbelt boundary expansion. The Region of Waterloo’s OP (ROP) requires a cumulative impact assessment for new or expanded aggregate extraction. The ROP also prohibits aggregate extraction in Environmentally Sensitive Policy Areas (Grand River Conservation Authority Annual General Meeting Agenda, 2018. p. 23). However, the Greenbelt Plan does not mention or add to the current resource protection. Staff at the Township of North Dumfries state that many of the woodlands, wetlands, and forests that have been identified by the Region of Waterloo and are mapped, are not included in the Ministry’s proposal. The Region of Waterloo’s ROP includes schedules of regional resource protection and is accompanied by extensive policies that are to be referred to. Examples of the schedules highlighting protection areas are below.

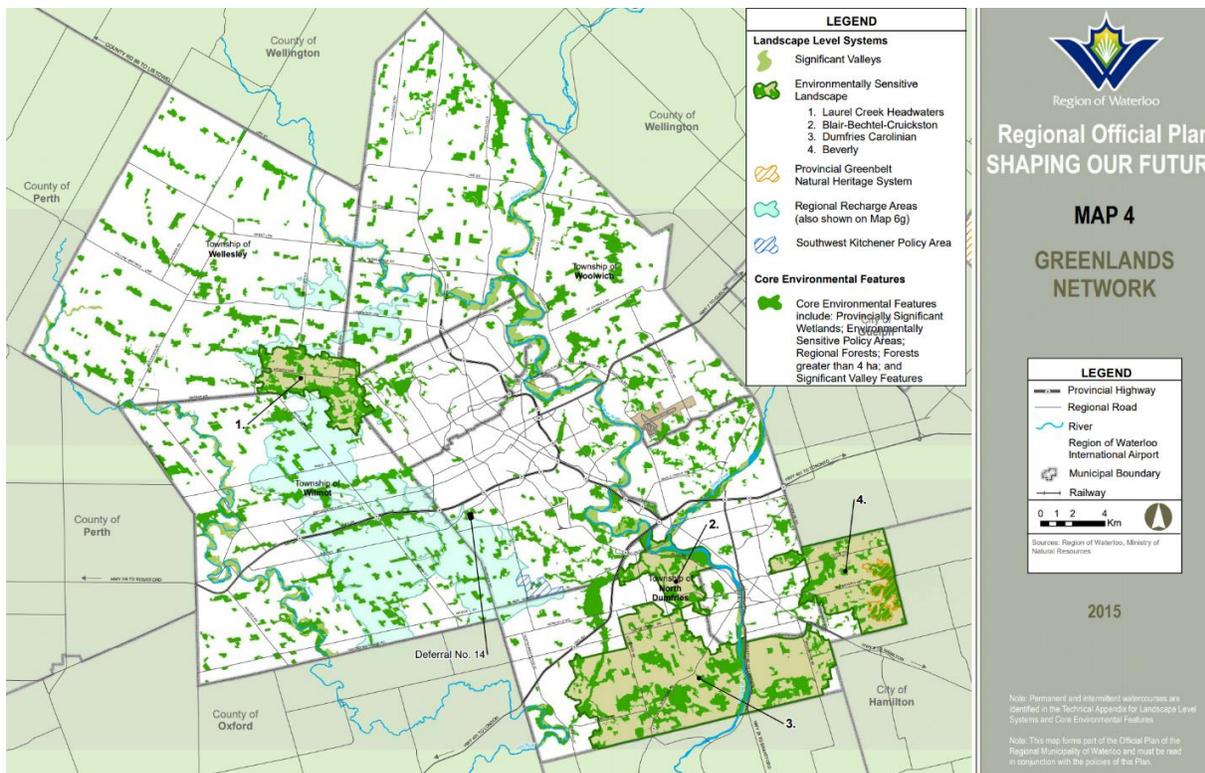


Figure 7. Map 4 Regional Official Plan of Waterloo’s Greenland Network.

(Region of Waterloo, 2015).

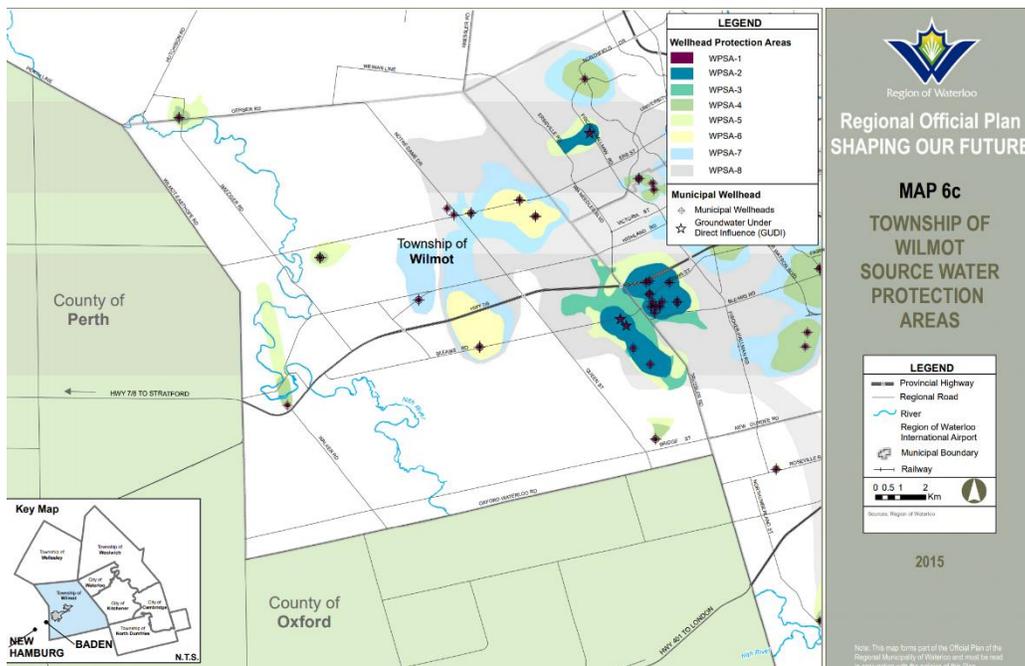


Figure 8. Map 6c Township of Wilmot’s Source Water Protection Areas.

(Region of Waterloo, 2015).

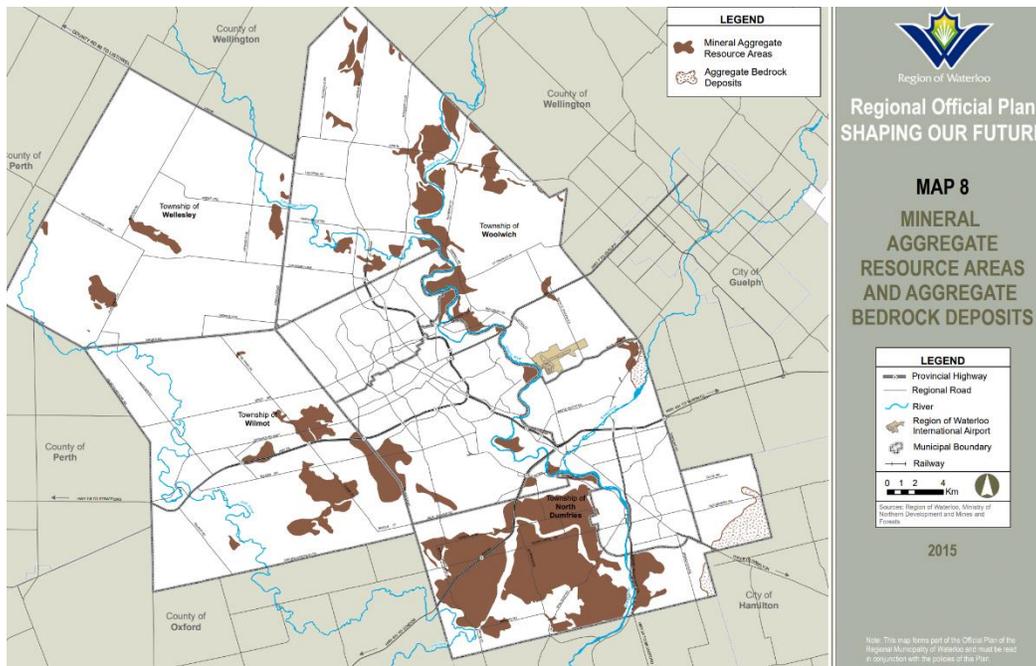


Figure 9. Map 8 Regional Official Plan of Waterloo Mineral Aggregate Resource Areas.

(Region of Waterloo, 2015).

6.2 Study Area Methodology

The Province performed a mapping “features and functions” approach to target the water features and their role and function within the watershed (GRCA, 2018. p. 24). The issue was that the mapping only identified general areas for consideration. Other issues with the methodology included the absence of a description of what was done to develop the limits of the study area. GRCA (2018) mentions that the Province failed to define terms such as *concentrated areas* and what would constitute a *concentrated area*. The consultation document states that the GIS algorithm that was used to develop the study area focused on catchment areas with high wetland density. The analysis failed to provide catchment sizes and density thresholds (GRCA, 2018. p. 26). Leaving out important information makes the study area less credible, difficult to replicate, and leaves room for the public to question practices and standards. In addition, within the central and northern portion of the Grand River Watershed, GRCA has identified many wetlands not included within provincial mapping, stating that there are approximately 5,251 hectares of wetland (GRCA, 2018. p. 26). Therefore, there is a possibility that many wetlands could have been overseen in Provinces’ study area. The absence of credible data diminishes the accuracy of the analysis. The Provinces’ vague description on how moraine mapping was obtained from various sources such as through the Ontario Geological Survey, is problematic as well since stakeholders should be able to review the information and could help in confirming that the most current data for watersheds was considered.

Moreover, the Province recently released a guidance document titled *Watershed Planning in Ontario – Guidance for Land-Use Planning Authorities (2018)*. The document was created to support municipalities in their implementation of the watershed planning policies of the (2017) Growth Plan and Greenbelt Plan (GRCA, 2018. p. 23). The guidance document includes information on how municipalities should identify and map the *Water Resource System*. GRCA (2018) states that municipalities should be provided this tool before the Province considers going through with the Greenbelt boundary expansion. In fact, nearly acquired information and datasets obtained from municipalities should be incorporated into the study area. This guidance document, coupled with the Lands Need Assessment, and MCRs, will provide further information on where growth pressures on water resources exist.

6.3 Intensification

The concerns of the Township of Wilmot are related to the Province’s announcement of a 1 km buffer around heritage features. The 1 km buffer creates a significantly exaggerated area of influence where much of it results in lands within the Countryside Line designation, between Baden and New Hamburg. Township staff state that mapping the study area should limit itself to the features without the introduction of a standardized 1 km buffer. This Protected Countryside and its associated Countryside Line creates hard edges for long-term planning and future growth. (Township of Wilmot Report, 2018. p. 3). The Province approved the Township’s Regional Official Plan and endorsed Wilmot’s approach and the implementation (ToWR, 2018. p. 3). However, the study area for the Greenbelt expansion fails to acknowledge this. **Figure 10** below shows the OPA #9, approved by the Province. It is important to note that the Waterloo Moraine is also protected.

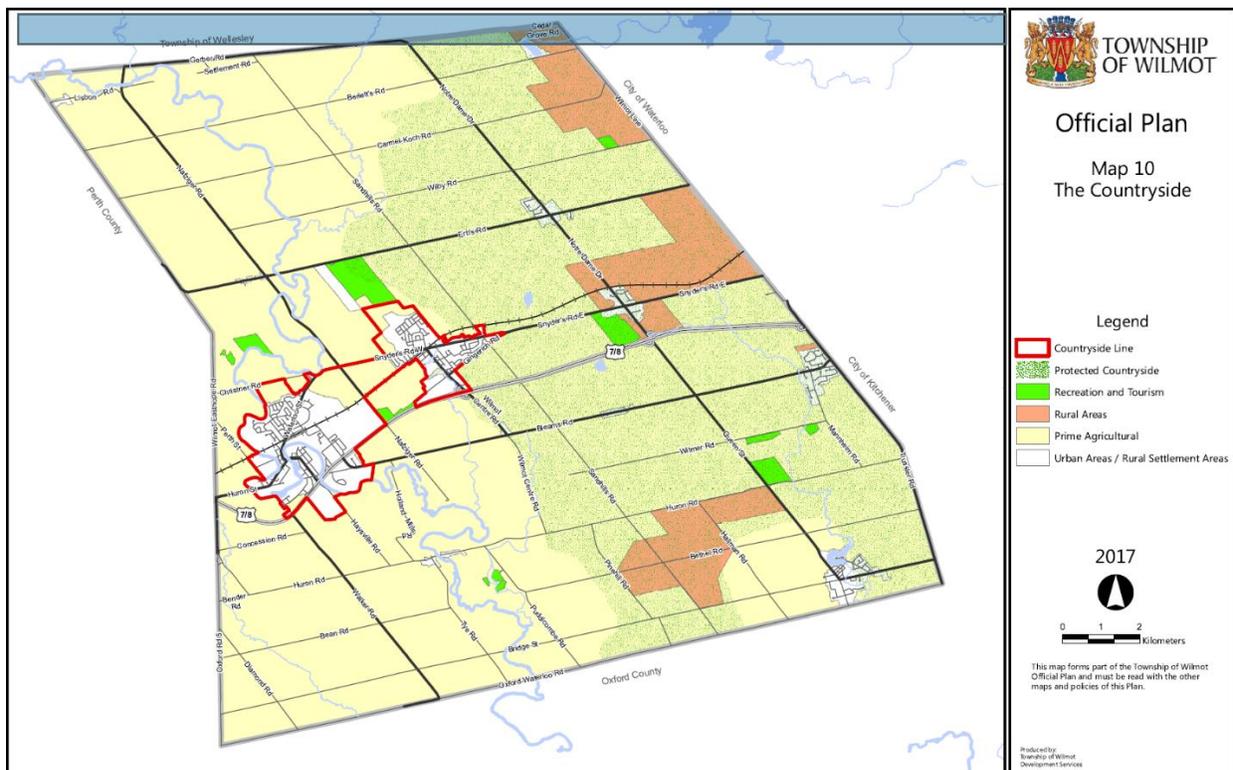


Figure 10. OPA #9 Map showing the inclusion of the lands between Baden and New Hamburg (those lands inside the Countryside Line) within the Greenbelt Expansion Study Area.

Moreover, The Greenbelt boundary expansion will not exacerbate or help the stormwater management issues within the Township of North Dumfries. In fact, results showed that the Greenbelt expansion would have no effect on the current state of the storm and wastewater systems within participants' municipalities because the Greenbelt policy is too vague. Participants suggested a push for an updated PPS that incorporates more land use planning topics. Municipal staff acknowledges that having many planning initiatives can cause complications especially when it comes to policy interpretation and implementation. In addition, with the introduction of new policies, smaller Townships may benefit from having more than one planner. However, provincial support in additionally funding is not as easy to obtain.

6.4 Urban/ Rural Tension

The results displayed a rural vs. urban tension since some participants felt that rural issues tend to be overlooked. From a politician's perspective, there is an issue of overseeing all rural communities and their pressures through an urban lens. The Province is treating each rural area as if they are all the same when each of Wellington County's Townships, have different pressures. Guelph/Eramosa's position on the Province's proposal is that they do not want additional paperwork and costs. This would make business harder for the Townships and they would need more funding for hiring additional staff to accommodate new work. Council's position senses an obvious disconnect between the Province and rural areas since legislation is always driven from urban perspectives. The results emphasized that sometimes people in rural areas do not want growth and do not want to pay for additional services. What smaller communities would like to know is why the Province cannot treat small towns much like natural heritage features, or heritage buildings. There are areas that want to preserve certain characteristics, such as the way a village looks. By telling another township what to do with their property based on their own worldview is classic NIMBYism (Not in My Backyard). Oftentimes the planning legislation does not fit with what people want and the implementation is not considered thoroughly. This is a major concern for smaller towns because it is the implementation that affects peoples' lives.

There is also a disconnection between the Province and *uncontrolled growth*. There is a misperception that the Growth Plan is about promoting growth. However, the Growth Plan is about managing growth. There is a new section in the (2017) Growth Plan on water resources,

Section 4.2, that was not included in the (2006) Growth Plan. Provincial policies were created on the means of working together, if you are following the Growth Plan you do not need to bring in the Greenbelt Plan to offset issues of growth. It is not a proper reflection of the policies included in the Growth Plan. Results show that issues of growth will be accommodated through existing legislation following the protective instruments in place, much like what is done for water resource protection. Many of the policies in the (2017) Greenbelt Plan offer similar protection of the (2017) Growth Plan and watershed municipalities within their OPs. Many of the requirements under the (2017) Greenbelt Plan are already implemented at the municipal level through OPs, natural heritage studies, subwatershed planning, master plans for stormwater, water, and wastewater (GRCA, 2018. p. 23). There are main differences with respect to growth and water protections. GRCA (2018) produced a table highlighting key settlement area boundary expansion differences between the (2017) Growth Plan and the Greenbelt Plan (2017).

Feature/Topic	Growth Plan	Greenbelt Plan
Settlement area boundary expansions	<p>Settlement area expansions may be permitted under a municipal comprehensive review if growth cannot be accommodated by intensification and in designated greenfield areas</p> <p>Expansions must align with water and wastewater master plans, stormwater master plans and subwatershed plans</p> <p>Key hydrologic areas and natural heritage systems should be avoided</p>	<p>Settlement areas outside of the Greenbelt are not permitted to expand into the Greenbelt</p> <p>Expansions must maintain the rural and/or existing character of the <i>settlement area</i></p> <p>Only modest expansions of towns and villages are permitted (5% increase in size to a max of 10 ha; only 50% of added lands can be residential)</p> <p>No expansions of Hamlets are permitted</p> <p>Expansions into the Natural Heritage System of Protected Countryside is prohibited</p>

Table 4. Settlement Area Boundary Expansions Differences Between the Growth Plan and the Greenbelt Plan.

(GRCA, 2018. p. 31).

Table 6 shows that under both provincial plans, settlement area boundary expansions are dealt with under different policy requirements. Although the Growth Plan (2017) allows for settlement area boundary expansions, it states that key hydrological areas and natural heritage systems should be avoided. The (2017) Greenbelt Plan, however, prohibits such expansions. The Greenbelt Plan prohibits settlement areas outside the Greenbelt to expand into the Greenbelt. The Greenbelt Plan does allow for modest expansion of towns and villages to be a maximum size of 10 ha.

Similarly, **Table 7** shows the differences between water resources and natural heritage features in both provincial policies. To further support that there is adequate water protection in place, a *Water Resource System* is identified under both plans, and the only key differences are within large-scale developments. The Growth Plan (2017) states that for any large-scale development, water functions must be protected. To contrast, the Greenbelt Plan (2017) states that major development that is more than 500 m², four or more new lots and major recreational uses, must demonstrate that water functions are protected. In this particular case, the Greenbelt Plan offers direction by indicating what constitutes a "major development" by stating the metrics. Likewise, the Growth Plan gives examples of the different types of large-scale developments such as plans of subdivision, condos, and site plans.

6.5 Limitations of Study

Not producing results for every affected municipality is a limitation of my study. I would have liked to interview staff from municipalities located within the Northwestern portion of the GGH outer ring. Additional insight from other municipalities would have helped provide an overarching analysis on what all affected municipalities think about the Greenbelt boundary expansion, possible limitations, and other corresponding effects. However, in my defense, the Province focused their study area to the western outer ring of the GGH because it was identified as the area with the highest anticipated population growth. The second limitation of this study is the limited time I had to conduct this work. The Province is currently considering all comments from stakeholders. It would have been rewarding if this research was able to monitor the entire process, until a final decision on the Greenbelt expansion is made. A new question to consider would be, what else can be done to safeguard water and enough of it? Why does the Province

need to expand the Greenbelt to offer more protection? If growth is the issue, the way to deal with excess growth is to manage growth accordingly, through policy regulation.

Feature/Topic	Growth Plan	Greenbelt Plan
General	Policies focused on directing growth such as where and how to grow including protection for natural heritage, water resource and agricultural systems.	Policies focused on protecting agriculture, natural heritage, open space and rural lands from impacts of growth
	Watershed planning/subwatershed planning is now required to inform decisions on growth and development	
Water Resources	A Water Resource System includes: <ol style="list-style-type: none"> 1. Key hydrologic features (streams, inland lakes, seepage areas, springs, wetlands) 2. Key hydrologic areas (significant groundwater recharge areas, highly vulnerable aquifers and significant surface water contribution areas) Municipalities will undertake watershed planning to identify the Water Resource System	
	Large scale development (i.e. plans of subdivision, condos, site plans) must demonstrate water functions are protected	Major development (footprint larger than 500m ² , four or more new lots or major recreational use) must demonstrate water functions are protected
Natural Heritage	A Natural Heritage System includes: <ol style="list-style-type: none"> 1. Key natural heritage features (habitat of endangered species and threatened species, fish habitat, wetlands, life science areas of natural and scientific interest, significant valleylands, significant woodlands, significant wildlife habitat, sand barrens, savannahs, tallgrass prairies and alvars) 2. Key hydrologic features (streams, inland lakes, seepage areas, springs and wetlands) 3. Key hydrologic areas (significant groundwater recharge areas, highly vulnerable aquifers and significant surface water contribution areas) 	
	Settlement Areas should avoid expansions into key hydrologic areas and the Natural Heritage System where possible	Settlement areas are prohibited from expanding into the Natural Heritage System

Table 7. Water Resources and Natural Heritage Differences Between the Growth Plan and the Greenbelt Plan.

(GRCA, 2018, p. 32).

7.0 Conclusion

Although the Province is only consulting on a proposed boundary expansion, the results of this study are significant for understanding the municipal, political perspectives, and the process of consulting with all stakeholders before a planning legislation moves forward. It is evident that within the planning system in the GGH, you can encounter issues of plans overlapping one another, and the complexity of this is even greater for water resources. Having multiple planning initiatives in place can be beneficial through multi-barrier approaches but can also cause complications during the implementation process.

My research question asked, *Will the Ministry's proposed Greenbelt expansion place growth or other management barriers on rural municipalities within the outer boundary of the GGH?* Although natural heritage and water resources have had significant overlap within the Growth Plan and the Greenbelt Plan, the results section of this paper show how municipal and political staff support that all water resource matters are subject to the *Planning Act*, and are also adequately addressed in the PPS, Growth Plan, OPs, Source Protection Plans, and Conservation Authority Regulations. Thus, Ontario has a strong institution in place to ensure that the quantity and quality of water resources are protected from the pressures of growth. Implementation of these policies and ensuring that all municipal systems have updated plans, policies, and guidelines, should be an area of focus. A multi-layer approach to the protection of water has proven to be beneficial, but duplication of work and layers of policy will cause issues for municipalities.

Moreover, within the consultation document, the Province asks how the Agricultural Systems and Natural Heritage Systems should be considered under the Growth Plan when they are completed. The Township of Wilmot provided an excellent response to the Ministry's question, where Township staff stated that the answer is within all (3) provincial plans. "The Greenbelt, the NEP, and the ORMCP state where urbanization should not occur to provide permanent protection to the agricultural land base and the ecological and hydrological features, areas and functions occurring on the landscape." (ToWR, 2018. p. 2). To further this response, GRCA states that mapping for these systems should be refined when more information on municipal natural heritage studies, subwatershed plans, and environmental assessments become available to ensure proper application of the Growth Plan (GRCA, 2018. p. 28).

Final Recommendations:

1. For the Province to connect with municipalities and CAs on sensitive environmental features in the area.
2. For the Province to incorporate data and information of drinking water supply into the study area.
3. For the Province to wait for municipalities to complete their MCR to determine the impact the Greenbelt expansion will have on rural settlement areas and rural lands.
4. For the Province to state a provision that the most restrictive planning policy will take precedence over water resource planning.
5. For the Province to consider the outcomes of the potential to cause development pressure to advance from the GTA at a faster rate than initially forecasted.
6. For the Province to provide detailed explanations of the enhanced and specific protections the Greenbelt expansion will have for each municipality.
7. For the Province to provide the methodology that was used to develop the limits of the study area and the mapping of all wetlands and moraines.

The GRCA raised concerns over the issues of the Greenbelt boundary expansion adding less protection than other plans. However, the response to this can be found within provincial policy. Section of 1.4 of the Greenbelt Plan states that “whenever the plans, regulations, or standards are more restrictive than this Plan, the more restrictive provision shall prevail (Greenbelt Plan, 2017). Similarly, the Growth Plan further supports this by stating, “the direction that provides more protection to the natural environment or human health prevails.” (Growth Plan, 2017).

In addition, emphasized within the results section was a clear disconnect between the Province and affected municipalities. The Province needs to consult with each municipality to identify duplicate areas of mapping and any missed opportunities. Further research should consider total water usage for water protection, not just natural heritage features. Future work should also consider the concerns identified by Indigenous communities on water quantity and quality and compare those results to the municipal and political concerns, to get an overarching analysis on the interrelationship between water conservation and land use planning.

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Appendix A- Research Invitation Letter



ONTARIO
AGRICULTURAL COLLEGE

SCHOOL OF ENVIRONMENTAL DESIGN
AND RURAL DEVELOPMENT

March 01, 2018

Good afternoon,

My name is Heather Rodriguez and I am a Master's of Science (Rural Planning and Development) student, at the University of Guelph. I am completing a major research paper that will examine provincial policy change on the proposed Greenbelt boundary expansion and the impacts on rural municipalities, as it relates to the relationship between growth and water resources protection.

I am extending an invitation to you to take part in a one-on-one interview on this topic. I would greatly appreciate your thoughts on what challenges and opportunities the identified study area might have within your municipality.

Please let me know if you would be willing to participate in my research through a brief 10-minute semi-structured interview. Attached is a one-page summary that highlights my methodology and the themes I would like to further explore. I am also happy to answer any questions you may have in advance.

My ethics application has been submitted and awaiting review, and I anticipate approval in the upcoming weeks. In the meantime, I would like to be proactive and where possible set up interviews for the third week of March 2018. If this period does not work for you, please advise on the best time to contact.

If you are interested, please e-mail me at hrodrigu@uoguelph.ca and we can arrange a time and place to meet. I do have a vehicle, so I can make my way to you at your convenience.

Kind regards,

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