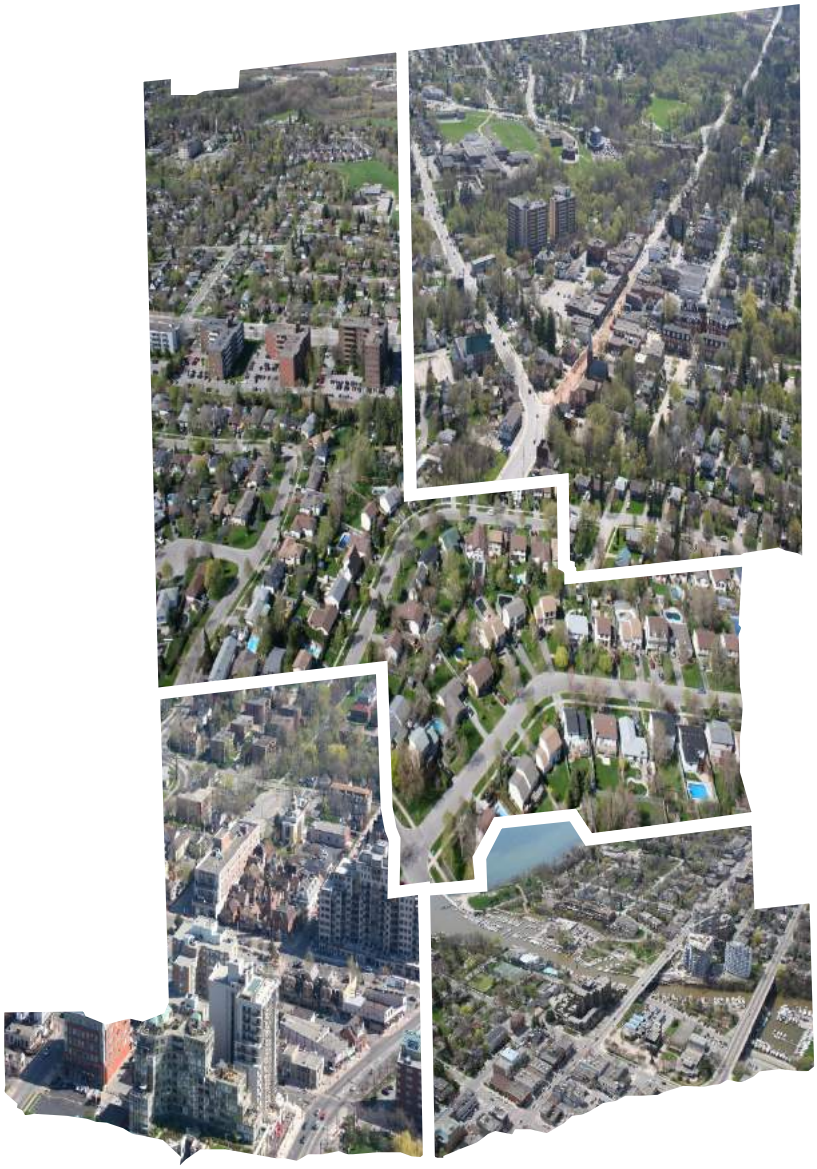


Appendix G

Agricultural Area Assessment

February 2021

Regional Official Plan Review

MERIDIAN PLANNING

Halton REGION

Appendix G: Agricultural Area Assessment

TABLE OF CONTENTS

1.0 PURPOSE

In 2016, the Region initiated a review of the Halton Region Official Plan (ROP). A key element of the review is the Integrated Growth Management Strategy (IGMS), which is intended to ensure conformity with the Growth Plan (2019) and the requirement to accommodate 1,100,000 million people and 500,000 jobs by 2051 (with these population and employment targets being established by Amendment 1 to the Growth Plan in 2020).

In order to accommodate expected population and employment growth, a number of Growth Concepts have been developed in the Fall of 2020. Each of these Growth Concepts involve the expansion of settlement areas into Halton Region's prime agricultural area.

In order to test the four Growth Concepts, an Evaluation Framework, with four themes have been developed by the Region, with Theme 3 dealing with Agriculture, Environment and Climate Change.

Within this theme are a series of measures that are intended to protect the integrity and minimize impact on the agricultural land base and system. These measures are below:

Measures
3.1.1 Retains the largest amount of contiguous agricultural land possible
3.1.2 Protects and avoids Prime Agricultural Land to maintain the most productive and fertile soils for agriculture
3.1.3 Maximizes the amount of agricultural lands to support the Agricultural System
3.1.4 Limits proximity of land uses sensitive to agricultural operations (e.g., noise, odour)
3.1.5 Recognizes the interconnectedness of agricultural and food assets and has the least impact on the Agricultural System

The purpose of this Agricultural Area Assessment is to assess the above measures in relation to the four Growth Concepts and it is intended to satisfy Section 2.2.8.3 f), g) and h) of the Growth Plan (2019).

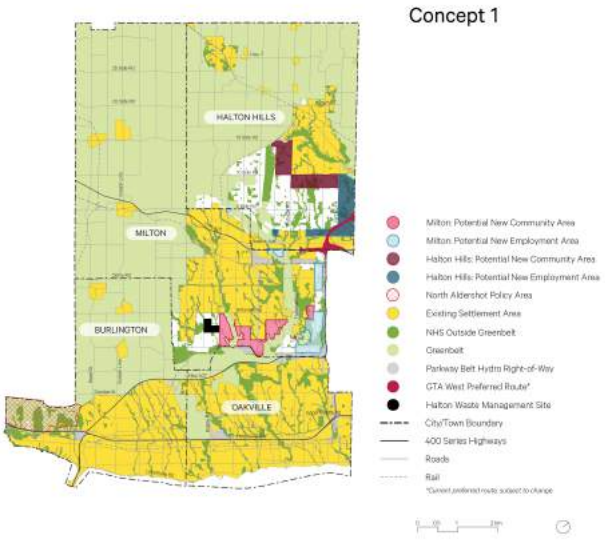
It is noted that there is also another measure under the 'Regional Urban System & Local Urban Structure' theme in the form of measure 1.3.2 which states the following: 'Supports maintenance of contiguous Natural Heritage and Agricultural lands.' To some extent measure 1.3.2 is similar to measure 3.1.1 which also deals with retaining the largest amount of contiguous agricultural land as possible

2.0 OVERVIEW OF THE FOUR GROWTH CONCEPTS

The Growth Concepts that are reviewed in the context of this Technical Memorandum are below:

Concept 1 - 2,630 hectares of new urban land (area net of Natural Heritage System) which is made up of 1,460 hectares of Community Area land and 1,170 hectares of Employment Area land.

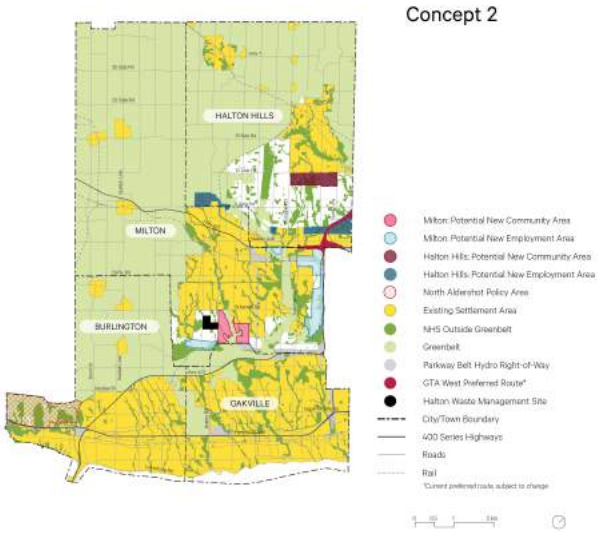
Total Prime Agricultural Area (area net of Key Features of the Natural Heritage System)[1] impacted by Concept 1 is 3,430 hectares.



[1] Net of Key Features but inclusive of the Parkway Belt West lands.

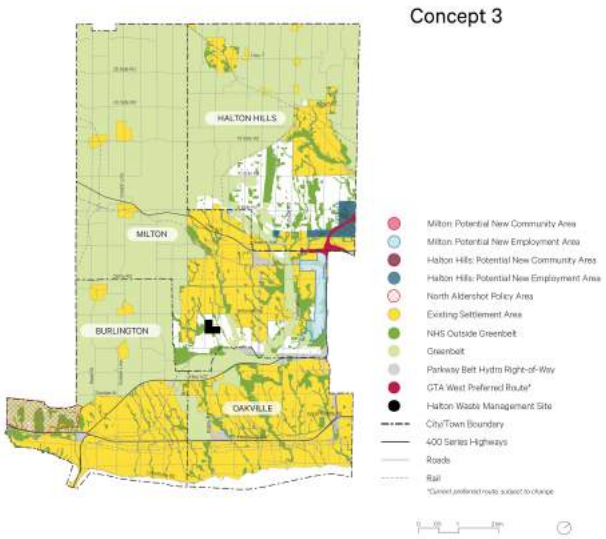
Concept 2 - 1,830 hectares of new urban land (area net of Natural Heritage System) which is made up of 730 hectares of Community Area land and 1,100 hectares of Employment Area land.

Total Prime Agricultural Area (area net of Key Features of the Natural Heritage System)[2] impacted by Concept 2 is 2,320 hectares.



Concept 3 - 980 hectares of new urban land (area net of Natural Heritage System) which is made up of 980 hectares of Employment Area land and Community Area urban expansion.

Total Prime Agricultural Area (area net of Key Features of the Natural Heritage System)[3] impacted by Concept 3 is 1,270 hectares.

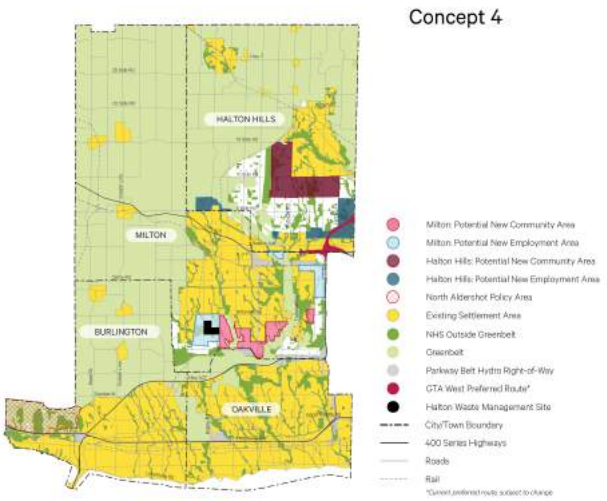


[2] Net of Key Features but inclusive of the Parkway Belt West lands.

[3] Net of Key Features but inclusive of the Parkway Belt West lands.

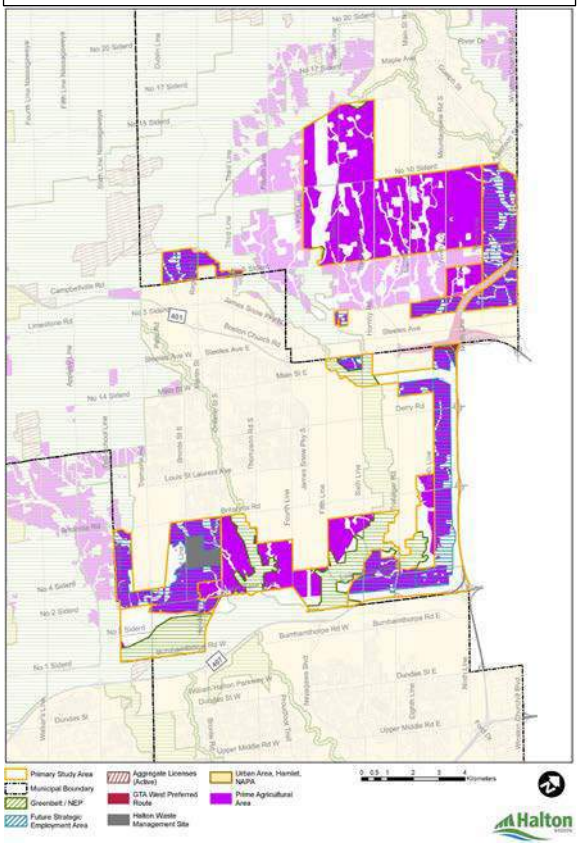
Concept 4 - 3,300 hectares of new urban land (area net of Natural Heritage System) which is made up of 2,080 hectares of Community Area land and 1,220 hectares of Employment Area land.

Total Prime Agricultural Area (area net of Key Features of the Natural Heritage System)[4] impacted by Concept 1 is 3,900 hectares.



Each of the above Growth Concepts are included in a Primary Study Area that was established early on in the IGMS process and Map 1 on the right indicates that all of the Growth Concepts extend into the Region's prime agricultural area.

Map 1 - Primary Study Area and Prime Agricultural Areas



In order to test the four Growth Concepts, an Evaluation Framework organized into four evaluation themes, has been developed by the Region, with Theme 3 dealing with Agriculture, Environment and Climate Change.

Within this theme are a series of measures that are intended to comparatively evaluate the Growth Concepts according to which they protect the integrity of, and minimize impact on, the agricultural land base and system. These measures are below:

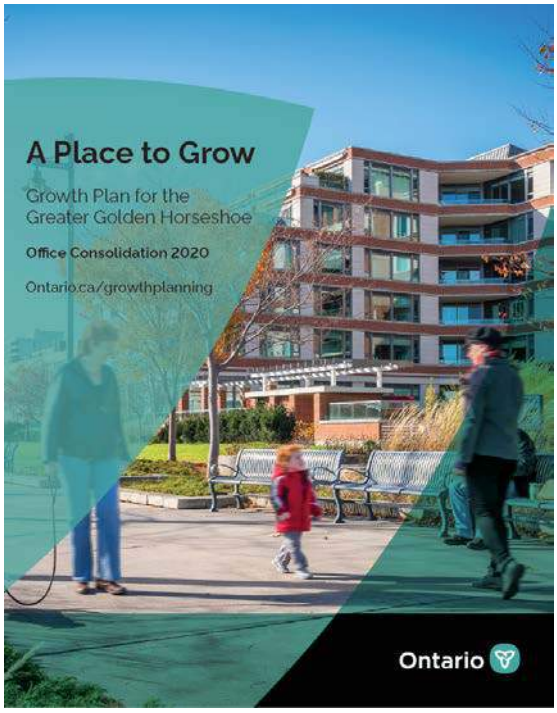
[4] Net of Key Features but inclusive of the Parkway Belt West lands.

Measures
3.1.1 Retains the largest amount of contiguous agricultural land possible
3.1.2 Protects and avoids Prime Agricultural Land to maintain the most productive and fertile soils for agriculture
3.1.3 Maximizes the amount of agricultural lands to support the Agricultural System
3.1.4 Limits proximity of land uses sensitive to agricultural operations (e.g., noise, odour)
3.1.5 Recognizes the interconnectedness of agricultural and food assets and has the least impact on the Agricultural System

The purpose of this Agricultural Area Assessment is to assess the above measures in relation to the four Growth Concepts.

3.0 APPROACH TO THE ANALYSIS

3.1 Policy Requirements



The Growth Plan (2019) sets out the requirements that must be followed when an expansion to a settlement area is proposed. In this regard, the following is stated in Section 2.2.8.3 as it relates to agriculture:

"Where the need for a settlement area boundary expansion has been justified … the feasibility of the proposed expansion will be determined and the most appropriate location for the proposed expansion will be identified based on the comprehensive application of all of the policies in this Plan, including the following:

f) prime agricultural areas should be avoided

where possible. To support the Agricultural System, alternative locations across the upper-or single-tier municipality will be evaluated, prioritized and determined based on avoiding, minimizing and mitigating the impact on the Agricultural System and in accordance with the following:

i. expansion into specialty crop areas is prohibited;

ii. reasonable alternatives that avoid prime agricultural areas are evaluated; and

iii. where prime agricultural areas cannot be avoided, lower priority agricultural lands are used;

g) the settlement area to be expanded is in compliance with the minimum distance separation formulae;

h) any adverse impacts on the agri-food network, including agricultural operations, from expanding settlement areas would be avoided, or if avoidance is not possible, minimized and mitigated as determined through an agricultural impact assessment;"

3.2 Avoidance of Prime Agricultural Areas

Sub-section f) begins by saying that prime agricultural areas should be avoided where possible. In the case of Halton Region, where the majority of the potentially eligible lands for urban expansion are within the prime agricultural area, it is not possible to avoid prime agricultural areas, as shown on Map 1.

Halton Region identified the Prime Agricultural Areas in the current ROP (as shown on Map 1) through the creation of a Land Evaluation and Area Review (LEAR) study. The LEAR study was completed in 2009 and considered soil quality (Land Evaluation) and other non-soil factors in the Area Review (AR) portion of the Study.

The Halton Region LEAR study (as with all LEAR studies) is based on the Ontario Ministry of Agricultural and Food (OMAFRA) document entitled 'Land Evaluation and Area Review (LEAR) System for Agriculture' (June 2002).

LEAR studies comprise two components: A Land Evaluation (LE); and an Area Review (AR). The LE component provides a method of determining the importance of the soil resource

and is generally based on the CLI ratings established by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). The AR component provides a method for identifying other locally (regionally) important factors that contribute to the suitability of the study area for agriculture.

The Halton LEAR study was based on an Evaluation Unit of Lots (lot and concession). The soils data was evaluated on both the dominant and subdominant component of the Canada Land Inventory ('CLI') associated with each soil polygon as defined within the 'Soils of Halton' (Report No. 43 of the Ontario Soil Survey) and with data provided by OMAFRA within the digital soils data available on the Land Information Ontario (LIO) website operated through the Ontario Ministry of Natural Resources (MNR).

The digital data contains the CLI associated with each soil polygon, and the soils data is updated by OMAFRA as is necessary. The LE component was evaluated on the basis that within the CLI each soil class has a potential soil quality. The soil capability is identified within a seven-class system for mineral soil, with class 1 having no limitations while class 7 is unsuitable for agricultural cultivation.

The AR component was based on an assessment of three factors: Property Fabric/Fragmentation; Farm Infrastructure; and Conflicting Land Uses. Property fabric was measured as a count of ownership parcels within the Evaluation and represented 33.3 percent of the AR. Farm infrastructure was based on MPAC data property codes and represented 33.3 percent of the AR. Conflicting land uses was based on existing land uses as defined by MPAC data and counted the number of conflicting land uses within 2 kilometres of the evaluation unit. Again, the conflicting land uses represented 33.3 percent of the AR. The LE component comprised 65 percent of the total LEAR score, while the AR component comprised 35 percent.

Section 2.2.8.3 f) of the Growth Plan goes on to say that alternatives for settlement area expansion should be evaluated, prioritized and determined based on avoiding, minimizing and mitigating the impact on the Agricultural System.

Section 4.2.6.1 of the Growth Plan indicates that the Province has identified an Agricultural System for the Greater Golden Horseshoe and this occurred on February 9, 2018 when the agricultural land base was released. The agricultural system identified by the Province is intended to include a continuous and productive land base comprised of prime agricultural

areas, including specialty crop areas and rural lands, as well as a complementary agri-food network that together enable the agri-food sector to thrive. This Provincial map was also based on a LEAR study.

In comparison to the Halton Region LEAR, the Provincial LEAR study also identified each soil class with a weighted rating with class 1 having the best rating and class 7 having the worst. The table below illustrates the respective CLI class and the associated rating. On comparison to the Halton Region LE component, the Provincial weighted ratings differ for CLI classes 2, 3 and 4. The Provincial ratings are slightly higher resulting in higher LE scores.

The Provincial AR component was based on an assessment of two factors: Percent of Land in Agricultural Production; and Parcel Fragmentation. The percent of land in agricultural production factor represents 30 percent of the total LEAR score (out of 100). The parcel fragmentation factor represents 10 percent of the total LEAR score. The Provincial LEAR is scored out of 100 points, with LE representing 60 points and the AR as 40 points. The Provincial LEAR was based on an Evaluation Unit of 1 hectare buffered out to 750 metres from the edge of the 1-hectare square.

Given the differences in how the LEAR studies were carried out, the Provincial mapping of prime agricultural areas differs from the mapping of prime agricultural areas in the ROP. It was also determined that the Provincial mapping contains errors and does not use the most current or best available data when compared to Halton Region mapping and data.

The result is that Halton Region's Prime Agricultural Area mapping comprises 42,914 hectares, while the Provincial System identifies 41,799 hectares. It is also noted that Provincial prime agricultural areas also extend into hamlets and mineral aggregate operations and Key Natural Heritage Features. However, a notwithstanding the above, the extent of the differences below the Niagara Escarpment Brow are minor and primarily relate to the overlap between the Region's natural heritage system and prime agricultural areas.

According to Section 2.2.8.3 f) of the Growth Plan, three factors must be considered, relating to the avoidance of the prime agricultural area when expanding settlement areas, with the first being a prohibition of settlement area expansions into specialty crop areas. No specialty crop areas have been identified in Halton Region, so this is not a factor in the analysis.

The second factor involves reviewing reasonable alternatives that avoid prime agricultural

areas. In the case of Halton Region, the Primary Study Area and each of the four Growth Concepts extend into the Region's prime agricultural area as shown on Map 1 and there are no other reasonable alternatives where this can be avoided, given that the majority of the land eligible for urban expansion is within the Region's prime agricultural area.

The third and last factor then directs that where prime agricultural areas cannot be avoided, lower priority agricultural lands should be considered. In the case of the four Growth Concepts there are variations in the Canada Land Inventory (CLI) classes of agricultural land that exist and this will be discussed later in this Technical Memorandum, which means that it is only Section 2.2.8.3 f) iii) of the Growth Plan that is being assessed in this analysis.

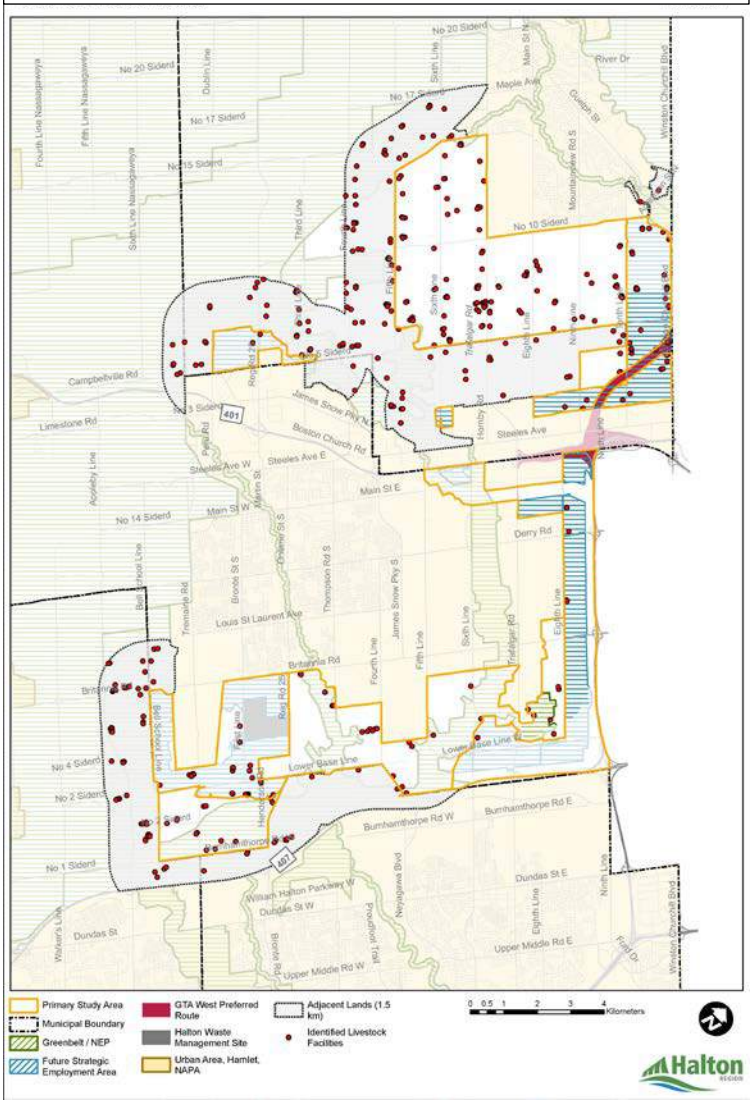
3.3 Compliance with Minimum Distance Separation Requirements

Section 2.2.8.3 g) of the Growth Plan then deals with Provincial Minimum Distance Separation requirements. The Minimum Distance Separation (MDS) formulae and guidelines were updated in 2016 and came into effect on March 1, 2017.

The MDS Document, Publication 853 (2016) recognizes two types of land uses. In this regard, a settlement area expansion would be considered a Type B land use. According to the MDS Documents, Publication 853 (2016), Type B land uses '*include applications to rezone or redesignate agricultural lands for residential, institutional, recreational use – high intensity, commercial or settlement area purposes*'.

An initial scan of the land areas affected by the four Growth Concepts has been carried out to determine the number of agricultural buildings within the area of the four Growth Concepts and within 1.5 kilometres of each as well. The number of facilities is significant and includes all those that appeared on the data available to the Region at the time. In this regard, Map 2 below shows the location of potential livestock facilities in the Primary Study Area:

Map 2 - Primary Study Area and Location of Potential Livestock Facilities



Based on Map 2, it is apparent that there are more potential livestock facilities located to the south and west of the Georgetown urban area than there is to the south and east of the Milton urban area.

At the time of the writing of this Technical Backgrounder, a more detailed review is in the process of being carried out.

Given the wording of sub-section g), there is a need to carry out the required MDS calculations to support the final Preferred Growth Concept in order to satisfy this Growth Plan policy.

3.4 Agri-Food Network Impacts

The last section of the Growth Plan dealing with settlement area expansions and agriculture (Section 2.2.8.3 g)) focuses on avoiding adverse impacts on the agri-food network and if avoidance is not possible, minimized and mitigated as determined through an agricultural impact assessment. In this regard, there are two components to the above, with the first being the avoidance of impacts on agri-food network, which is defined below:

"Within the Agricultural System, a network that includes elements important to the viability of the agri-food sector such as regional infrastructure and transportation networks; on-farm buildings and infrastructure; agricultural services, farm markets, distributors, and primary

processing; and vibrant, agriculture-supportive communities."

The second component of the above policy deals with a circumstance where avoidance is not possible and in such a circumstance, adverse effects should be minimized and mitigated as determined through an agricultural impact assessment. In this regard, it will not be until the development of a Preferred Growth Concept that a detailed review of how impacts can be minimized and mitigated will be carried out.

3.5 Two-Phased Approach to the Assessment

This two-phased approach is supported by the definition of "agricultural impact assessment" in the Growth Plan (2019):

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

This policy is only triggered when developing and recommending the Preferred Growth Concept that best satisfies the many Evaluation Framework measures, and the associated provincial land use planning policies, that have been identified. However, determining conformity with this policy means carrying out the required MDS calculations, determining impacts, and identifying the measures to minimize and mitigate impacts before a decision by Regional Council is made under the Planning Act to proceed with a settlement boundary expansion, and bring more lands into the urban area.

There are a number of policies within Section 4.2.6 (sub-sections 3, 4 and 6) of the Growth Plan that are relevant to the IGMS and these are also reproduced below.

"3. Where agricultural uses and non-agricultural uses interface outside of settlement areas, land use compatibility will be achieved by avoiding or where avoidance is not possible, minimizing and mitigating adverse impacts on the Agricultural System. Where mitigation is required, measures should be incorporated as part of the non-agricultural uses, as appropriate, within the area being developed. Where appropriate, this should be based on an agricultural impact assessment.

4. The geographic continuity of the agricultural land base and the functional and economic connections to the agri-food network will be maintained and enhanced.

6. *Integrated planning for growth management, including goods movement and transportation planning, will consider opportunities to support and enhance the Agricultural System."*

The above policies can also be considered in the final agricultural impact assessment that is intended to satisfy Sections 2.2.8.3 g) and h) of the Growth Plan.

4.0 EVALUATION

As noted previously, the Evaluation Framework theme is entitled 'Protect the integrity and minimize impact on the Agricultural Land Base.'

There are five measures under this theme and they are discussed below:

4.1 Measure 3.1.1: Retains the largest amount of contiguous agricultural land possible

This measure partially addresses the first paragraph of Section 2.2.8.3 f) and all of sub-section h) of the Growth Plan since both of these sections indicate that impacts on the overall Agricultural System should be avoided with sub-section g) indicated that if avoidance is not possible, adverse impacts will be minimized and mitigated.

The largest contiguous area of prime agricultural land within the areas being considered for urban development is located to the west and south of Georgetown extending south to the Highway 401/407 employment area, with this area being shown on Map 1. Much smaller areas of contiguous prime agricultural land are located to the south and west of Milton and to a lesser extent between the Milton urban area and Highway 407, which is also identified as a Future Strategic Employment Area, which are also shown on Map 2 which shows the Future Strategic Employment Areas on top of the Region's prime agricultural area.

While the Future Strategic Employment Area (FSEA) that has been identified is included within the in-effect Regional Official Plan, these areas are not a land use designation. However, the purpose of the FSEA is to identify priority areas for consideration, if and when a need for additional employment lands is identified, through a land needs assessment, in this case to the 2051 planning horizon. In this regard, each of the four Growth Concepts includes new employment lands that are currently identified as Future Strategic Employment Areas on Map 1C of the ROP.

Concept 3 would support this measure the best because the proposed Halton Hills expansion area is limited to some lands that front on the portion of Winston Churchill Boulevard that is already identified as Future Strategic Employment Area (in the vicinity of the GTA West highway) and a small band of land going westwards along the north side of the Highway 401/407 Employment Area. This means that the large contiguous area of prime agricultural land in Halton Hills is left mostly intact if this Growth Concept were selected. In addition, the Milton expansion area in Concept 3 only affects lands on the east side of the Milton urban area, which as noted above, has already been identified as part of the FSEA.

Concept 2 would also perform well in relation to this measure, because the incursion into the Halton Hills prime agricultural area is less than Growth Concepts 1 and 4. Concept 1 would perform less well, although the incursion into the Halton Hills prime agricultural area is less than Concept 4. Concept 4 would least support this measure because of the significant incursion of the potential settlement boundary expansion of this Concept into the prime agricultural area in Halton Hills.

4.2 Measure 3.1.2: Protects and avoids Prime Agricultural Land to maintain the most productive and fertile soils for agriculture

This measure addresses Section 2.2.8.3 f) iii) of the Growth Plan since it takes into account lower priority agricultural lands.

Given that 99% of the lands within the Growth Concepts are prime agricultural land, this measure is all about how much Class 1 land is consumed in each Growth Concept. In this regard, Maps 3, 4, 5 and 6 on the next few pages page identify the location of Class 1 land in each Growth Concept:

Map 3 - Classification of Land in Growth Concept 1

Map 4 - Classification of Land in Growth Concept 2

Soil Classification

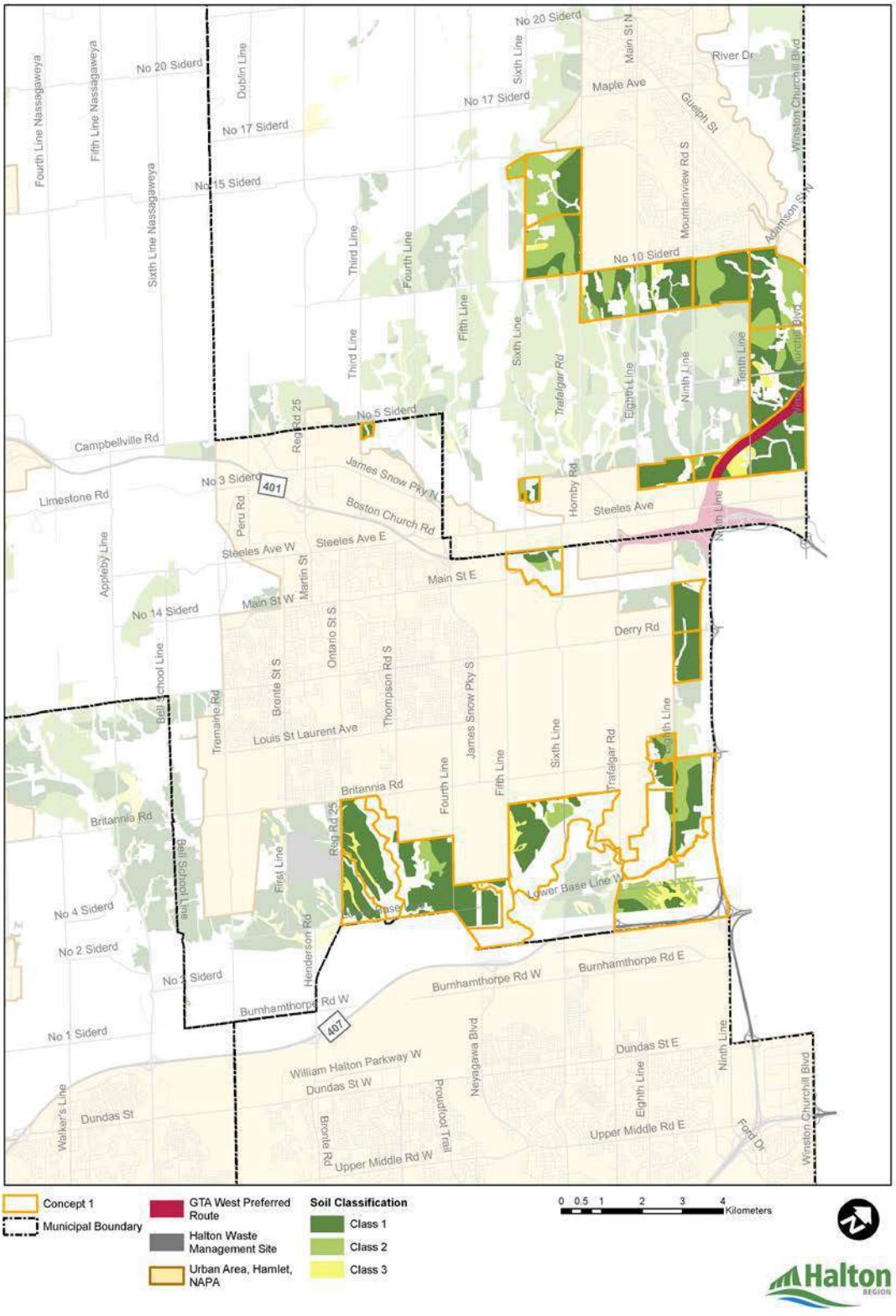
- Class 1
- Class 2
- Class 3

Map 5 - Classification of Land in Growth Concept 3

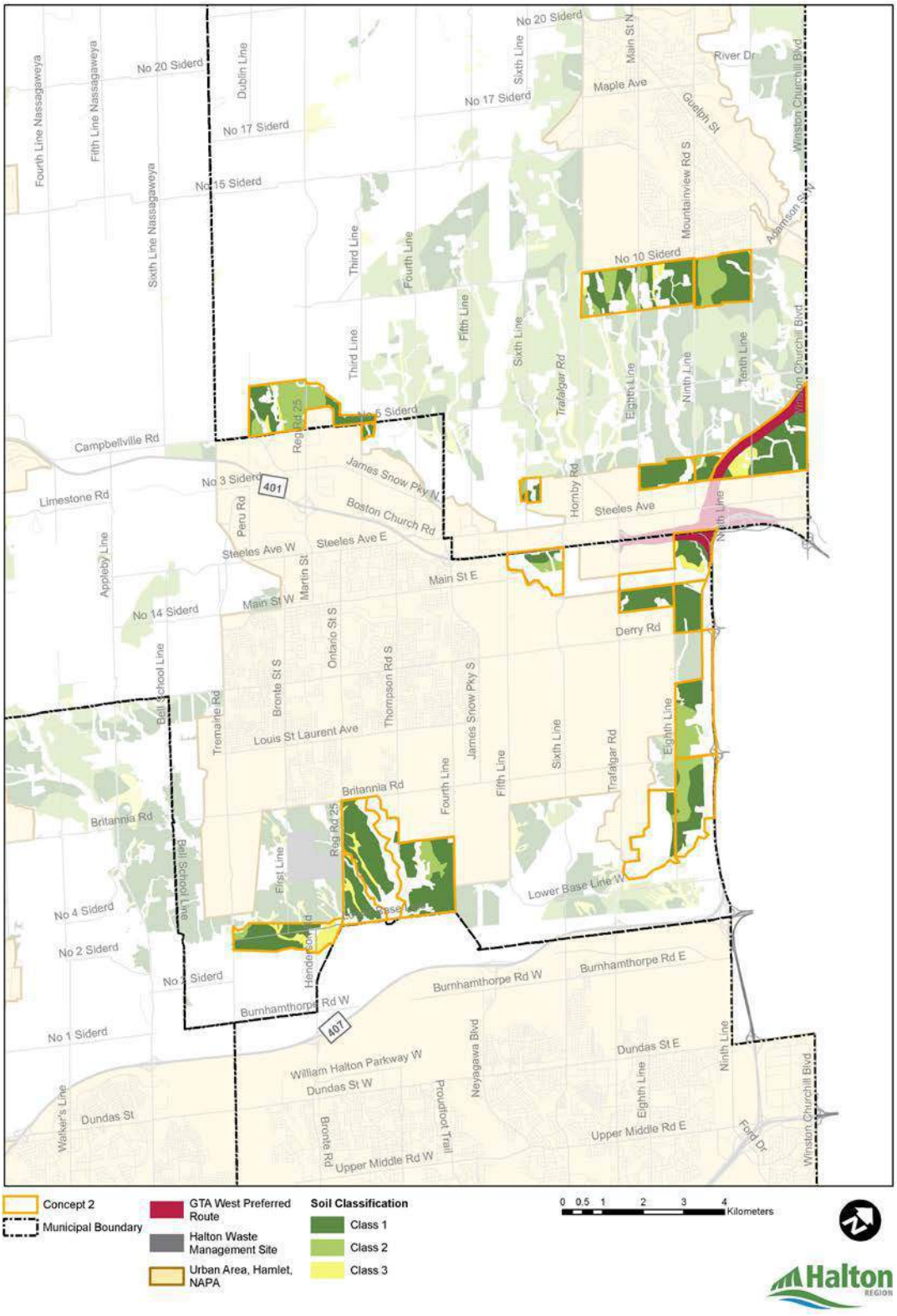
Map 6 - Classification of Land in Growth Concept 4

See next page for the full maps

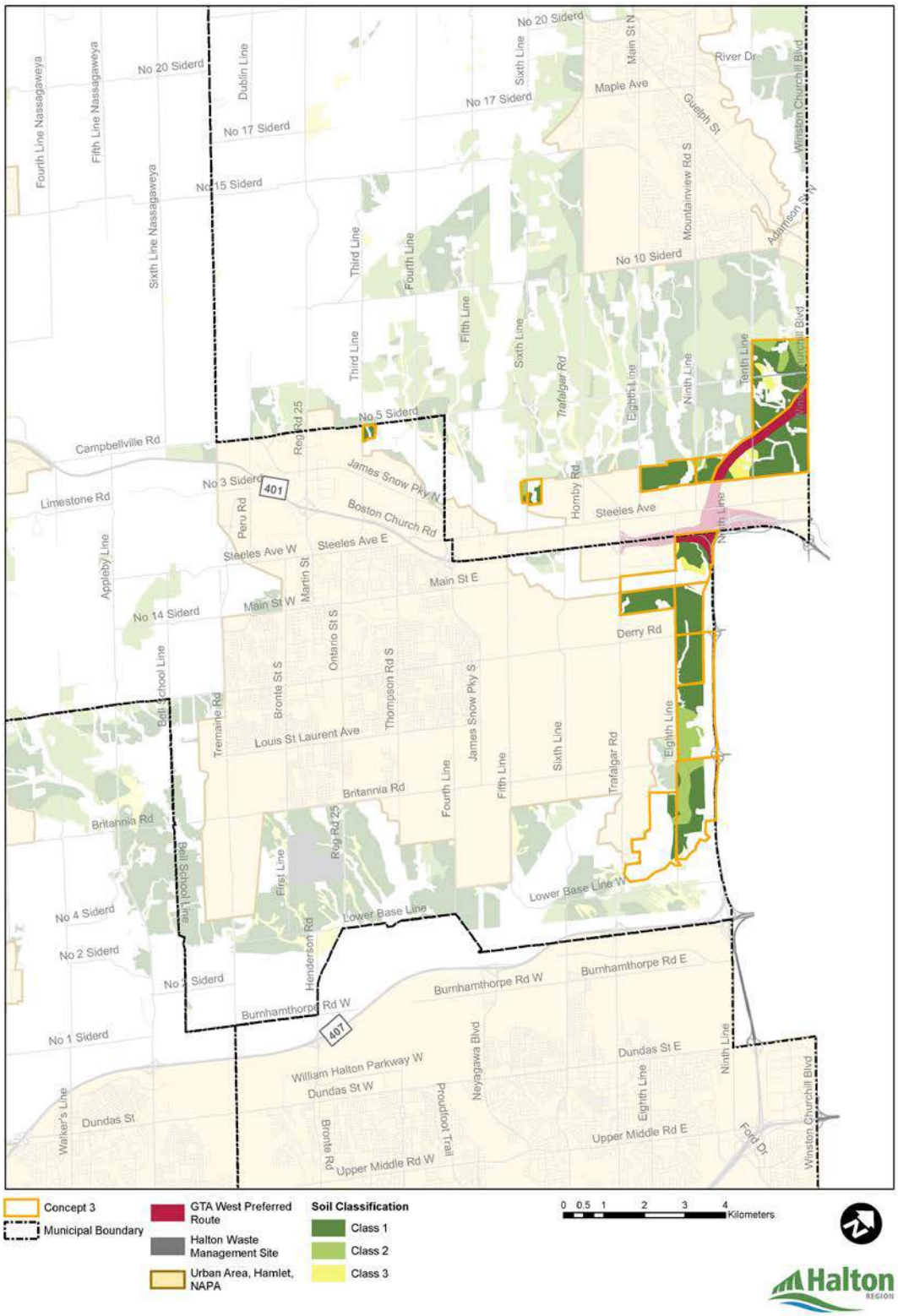
Map 3 - Classification of Land in Growth Concept 1



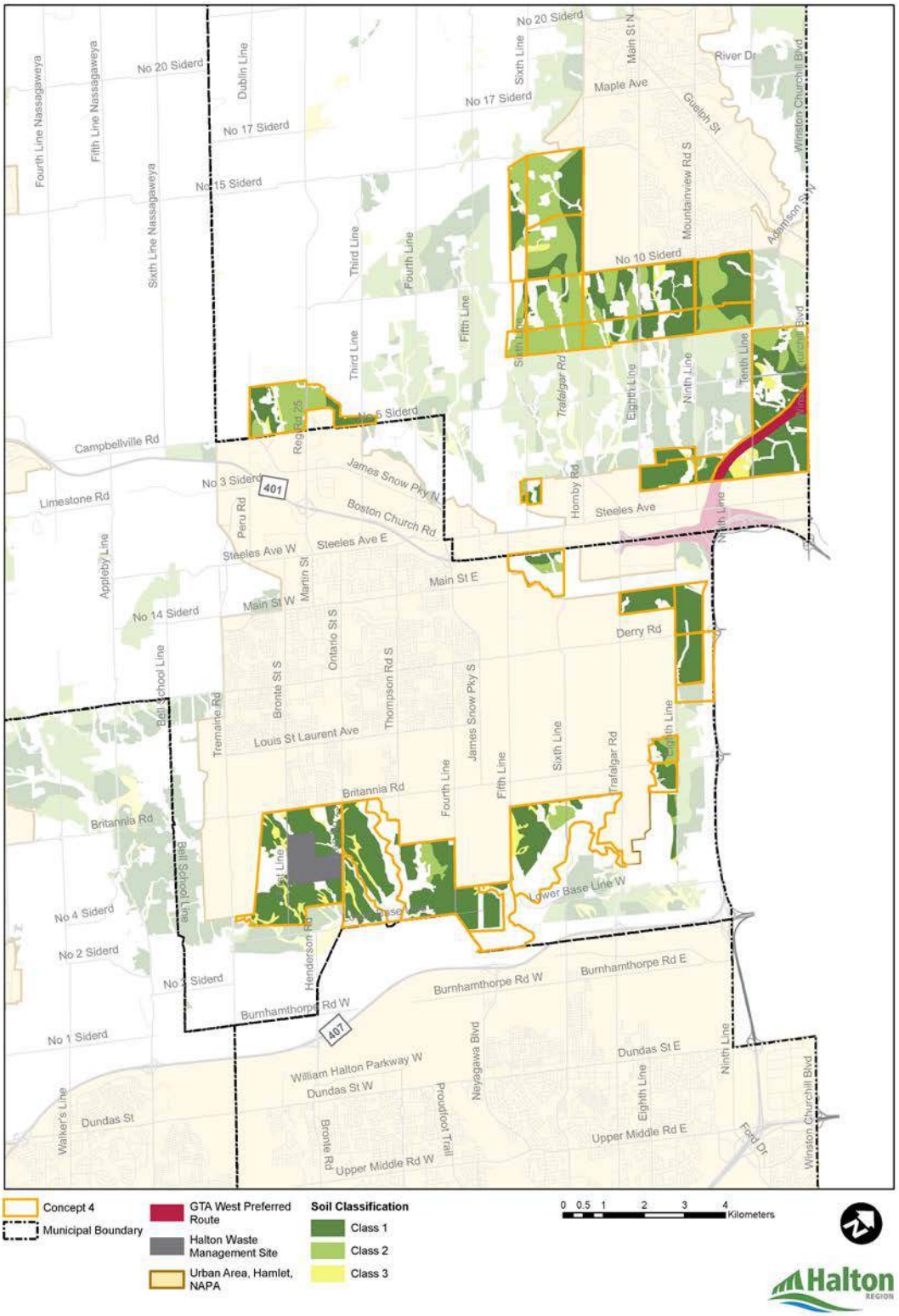
Map 4 - Classification of Land in Growth Concept 2



Map 5 - Classification of Land in Growth Concept 3



Map 6 - Classification of Land in Growth Concept 4



On the basis of the information derived from Maps 3, 4, 5 and 6, below is the result of our analysis in this regard:

As a result, Concept 3 supports this measure the best because it consumes the least amount of Class 1 land. Concept 1 and 2 do not support this measure as well as Concept 3, since they consume more Class 1 land, while Concept 4 performs the worst as it consumes the most Class 1 land.

	Class 1 Hectares
Concept 1	1,665
Concept 2	1,297
Concept 3	721
Concept 4	2,074

4.3 Measure 3.1.3: Maximizes the amount of agricultural lands to support the Agricultural System

This measure partially addresses Section 2.2.8.3 f) of the Growth Plan since the measure deals with how much prime agricultural land is affected. Below are the results of the analysis, based on the information presented on Maps 3, 4, 5 and 6:

In this regard, Concept 3 would again support this measure the best because it utilizes the least amount of land (948 hectares), thereby maximizing the amount of agricultural land retained to support the Agricultural System. Concept 2 next best supports the measure utilizing 1,828 hectares, which is then followed by Concept 1 utilizing 2,563 hectares. Concept 4 would then least support this measure because it utilizes the most land (3,215 hectares).

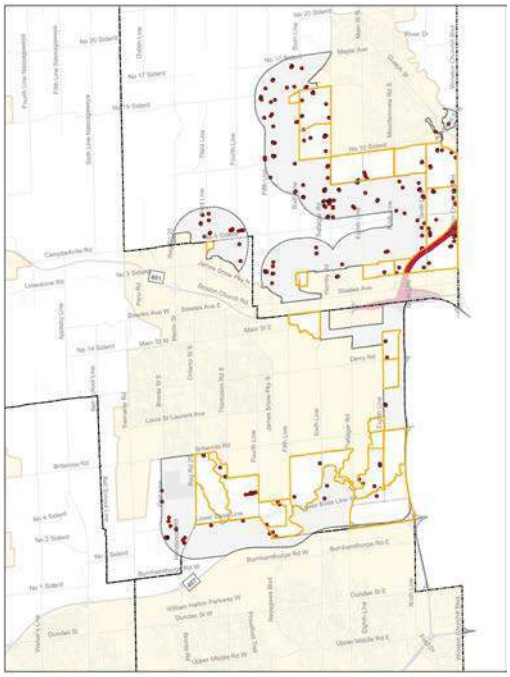
	Class 1-3 Hectares
Concept 1	2,563
Concept 2	1,828
Concept 3	948
Concept 4	3,215

4.4 Measure 3.1.4: Limits Proximity of Land Uses Sensitive to Agricultural Operations

This measure addresses Section 2.2.8.3 g) and h) of the Growth Plan since both of these sub-sections indicate that impacts on the overall Agricultural System should be avoided.

In this regard, an initial scan of the location of potential livestock facilities has indicated that there are more potential livestock facilities to the west and south of the Georgetown urban areas than there is to the south and east of the Milton urban area as shown on Maps 7, 8, 9 and 10 on the next few pages.

Map 7 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 1



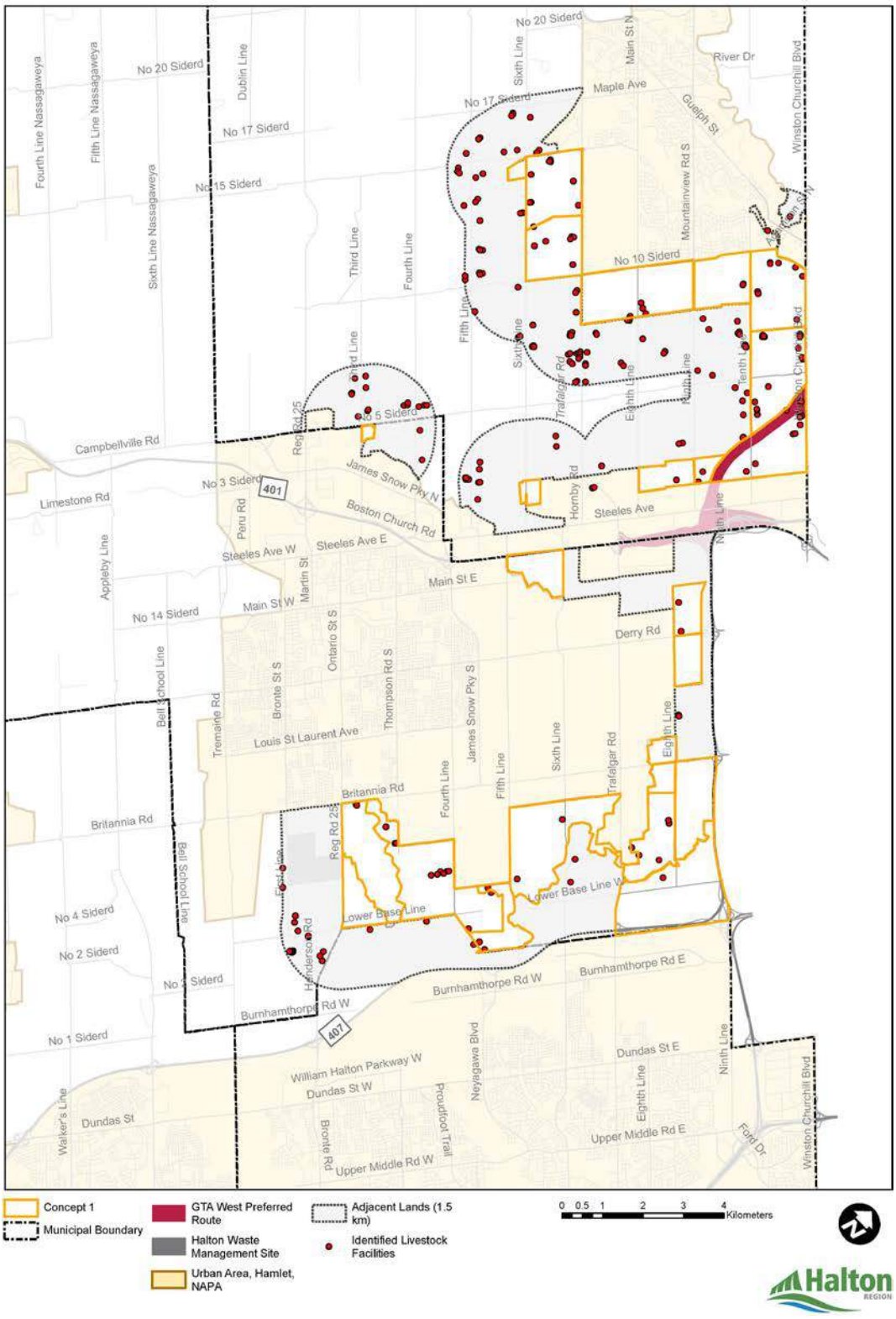
Map 8 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 2

Map 9 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 3

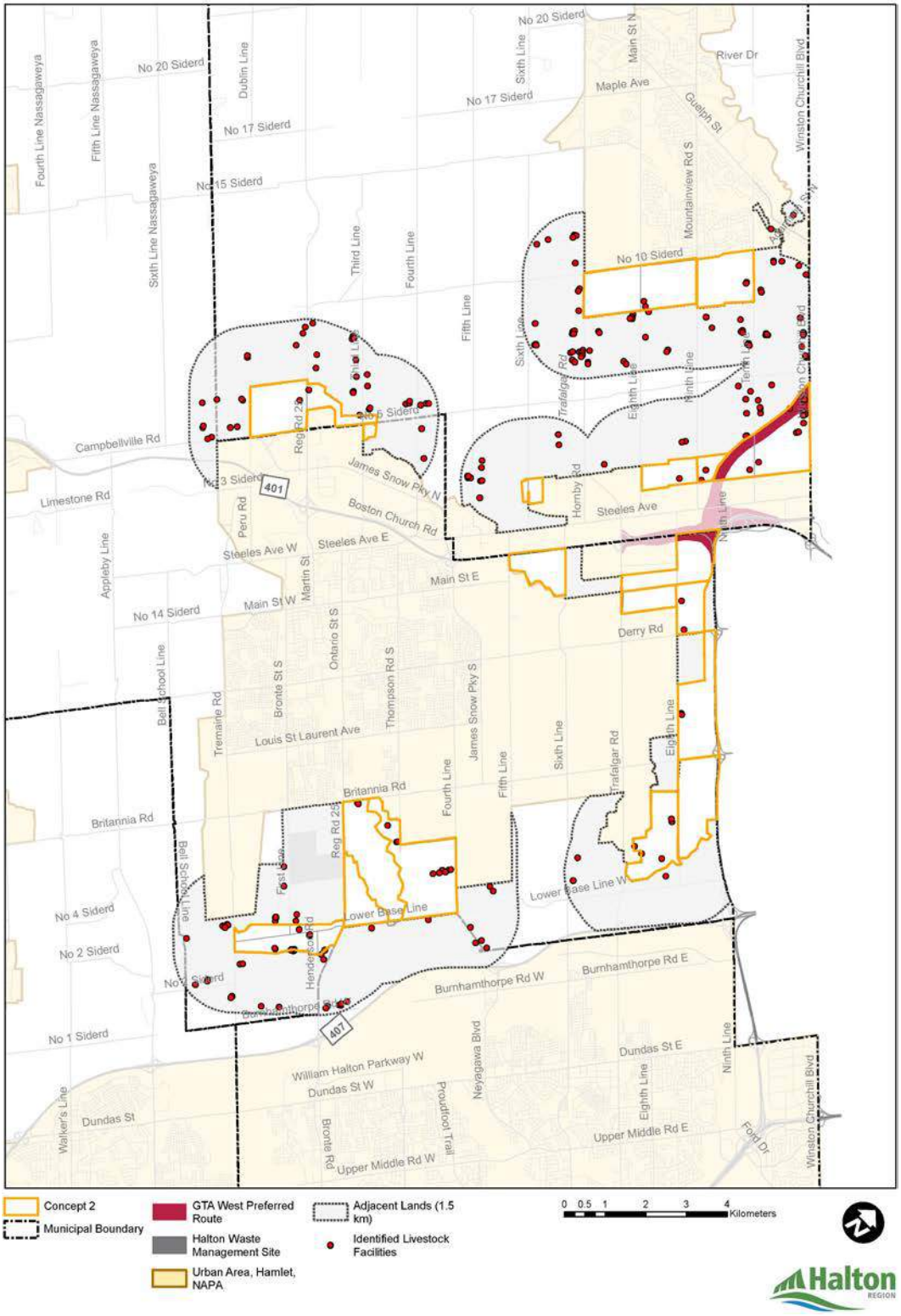
Map 10 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 4

See next page for the full maps

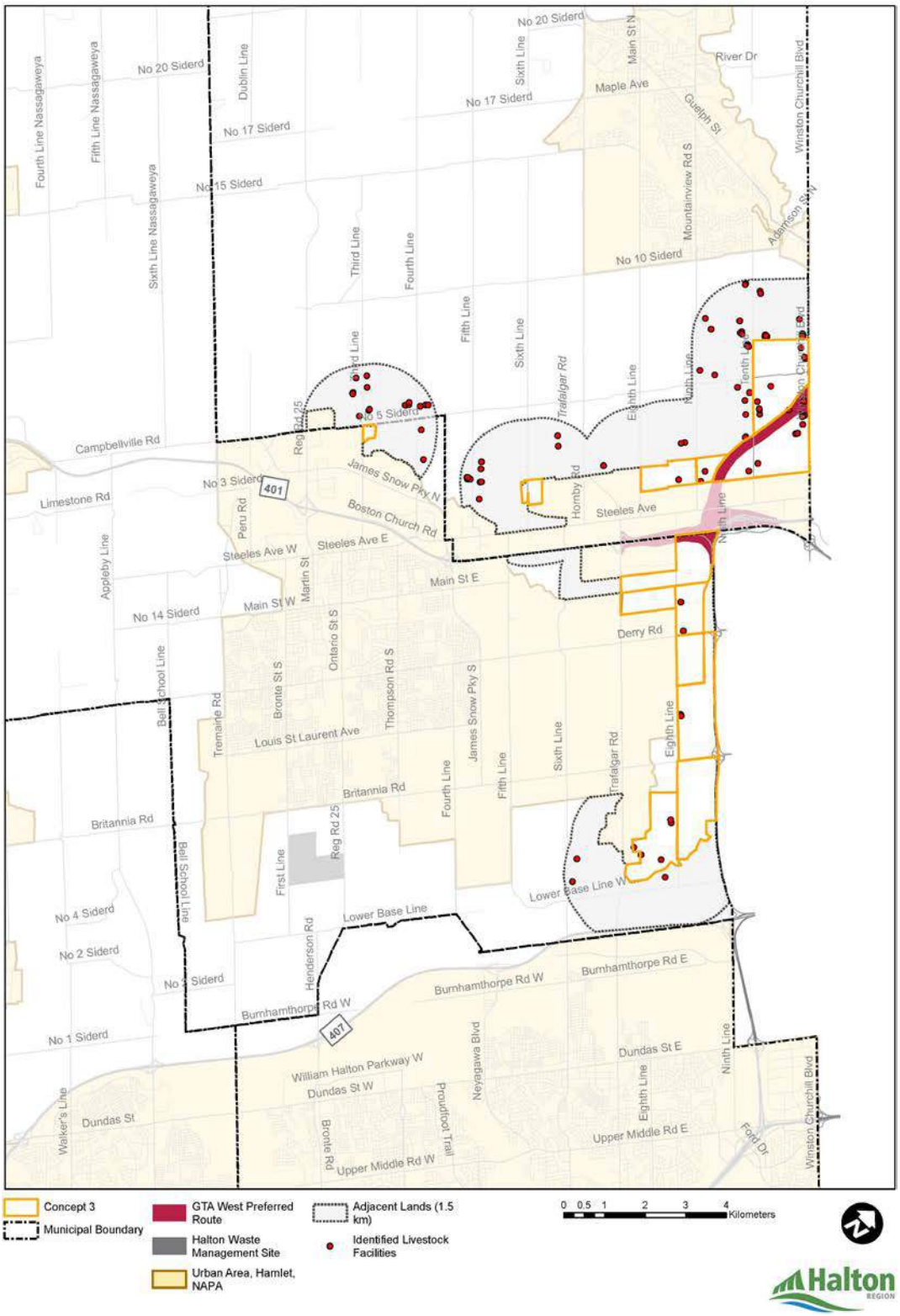
Map 7 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 1



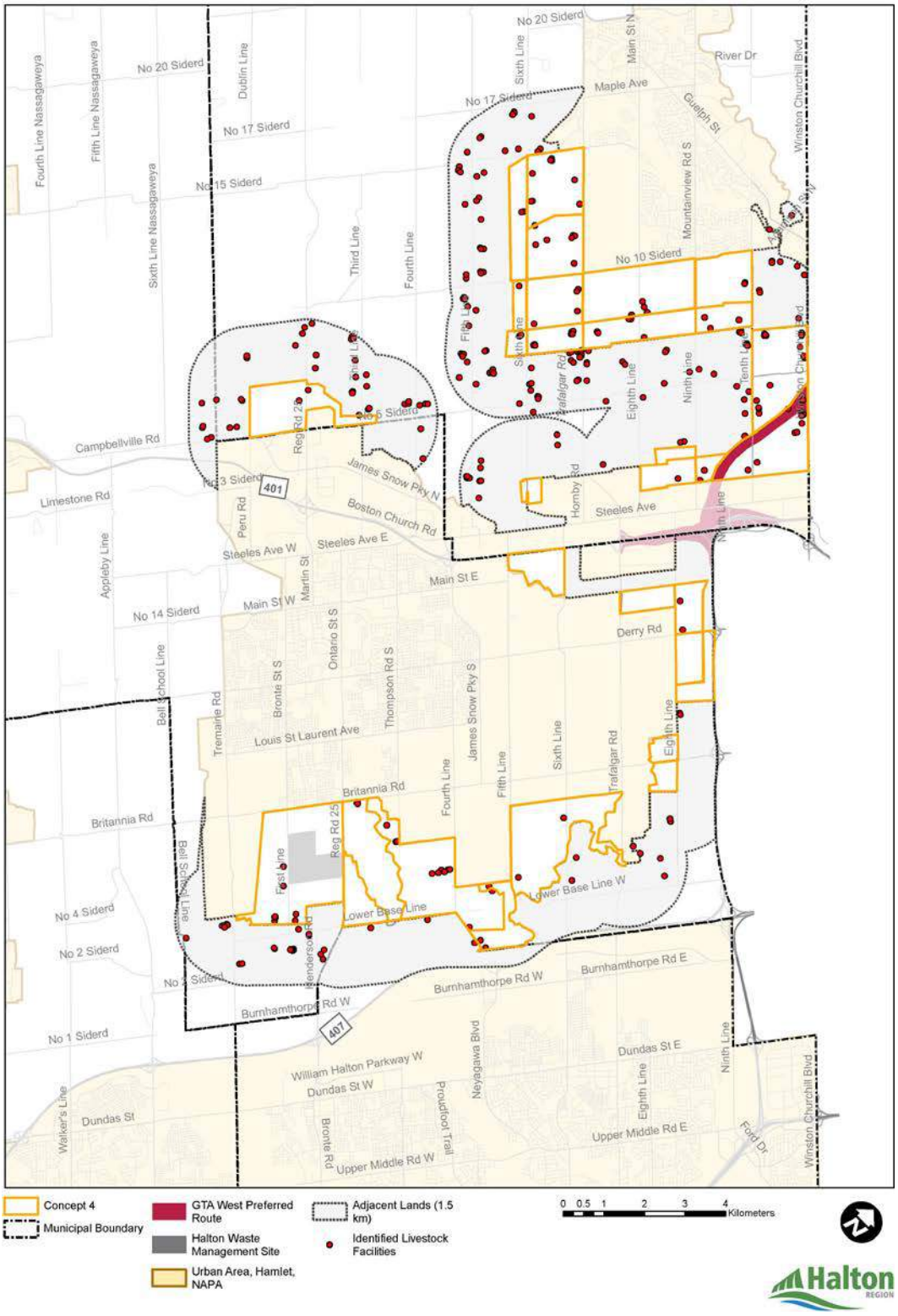
Map 9 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 2



Map 10 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 3



Map 11 - Location of Potential Livestock Facilities within and adjacent to Growth Concept 4



As mentioned previously, at the time of the writing of this Technical Backgrounder, an analysis of these potential livestock facilities is being carried out and a MDS analysis will be completed for each existing and potential livestock facility in support of the preferred Growth Concept.

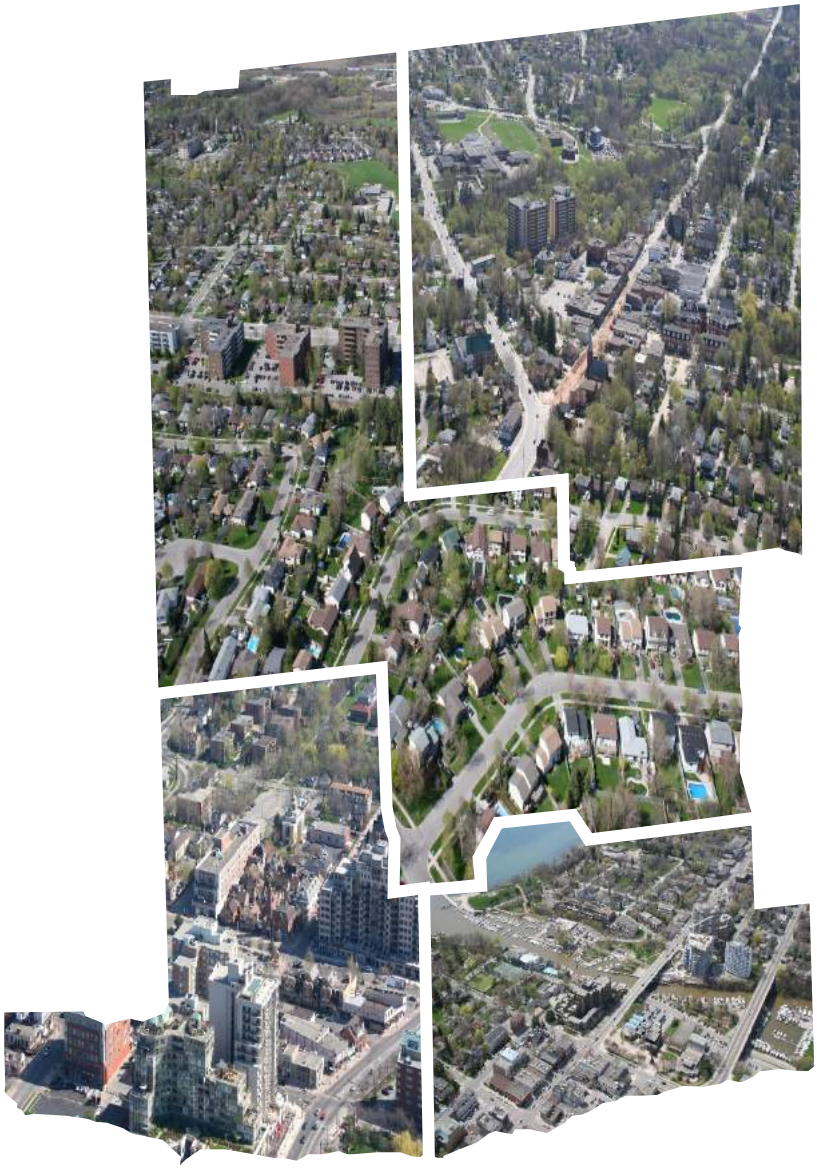
4.5 Measure 3.1.5: Recognizes the interconnectedness of agricultural and food assets and has the least impact on the Agricultural System

This measure partially addresses Section 2.2.8.3 g) and h) of the Growth Plan since both of these sub-sections again indicate that impacts on the overall Agricultural System should be avoided, and if avoidance is not possible, impacts are minimized and mitigated.

In this regard and in addition to completing MDS calculations as per the above, a detailed review of the impacts of the preferred Growth Concept on all of the components of the Agricultural System affected by the preferred Growth Concept will be carried out. This will ensure that all identified impacts will be minimized and mitigated to the greatest extent possible in order to ensure conformity with the Growth Plan (2019).

4.6 Conclusion

Based on an assessment of Measures 3.1.1, 3.1.2 and 3.1.3, Concept 3 achieves the overall goal of protecting the agricultural land base to the greatest extent in comparison to the other Growth Concepts simply because less prime agricultural land is being utilized for urban expansion purposes than in the other Growth Concepts.



Appendix H

Natural Heritage System and Water Resources Assessment

February 2021

Regional Official Plan Review

north-south ENVIRONMENTAL

Halton REGION

Technical Memorandum

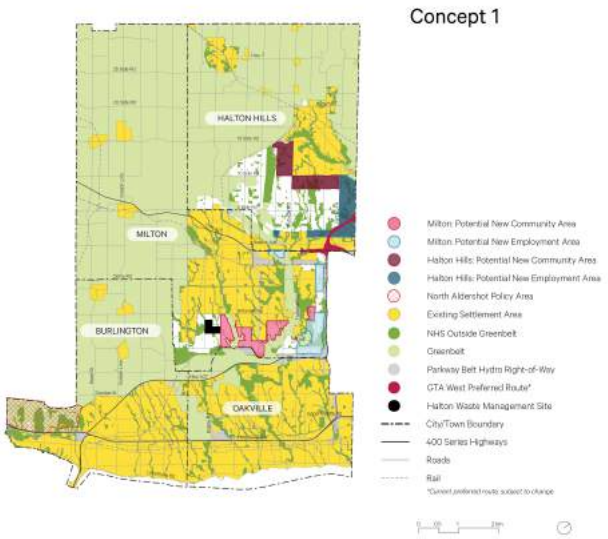
Natural Heritage System and Water Resources Assessment

1. PURPOSE

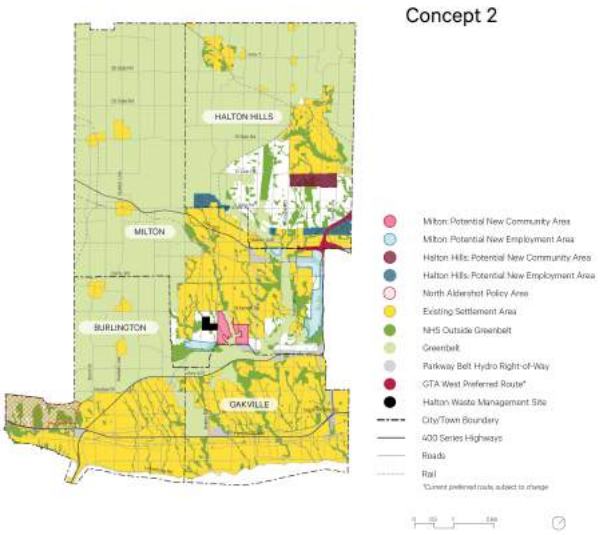
This memo summarizes the natural heritage screening assessment and options assessment completed to support Theme 3, with specific focus on measure 3.2 which assesses the ability of each concept to "*Enhance the NHS* [Natural Heritage System] *to strengthen Key Features and Areas and reduce impacts of new development*". This assessment additionally supports measures under 1.3 from Theme 1, which considers how well each concept "*provides a range of identifiable, inter-connected, complete communities*" (1.3) and specifically measure 1.3.2 which considers each concepts ability to "*Support[s] maintenance of contiguous Natural Heritage and Agricultural Lands"*. Information provided herein may also provide technical support in the evaluation of other NHS-related measures and/or intersections between natural heritage, water resources and other factors and themes of the evaluation.

2. OVERVIEW OF THE GROWTH CONCEPTS

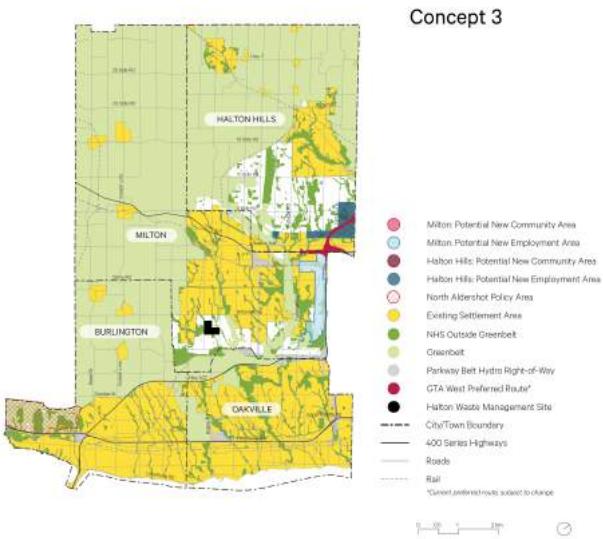
Concept 1 - 2,630 hectares of new urban land (area net of Natural Heritage System) which is made up of 1,460 hectares of Community Area land and 1,170 hectares of Employment Area land.



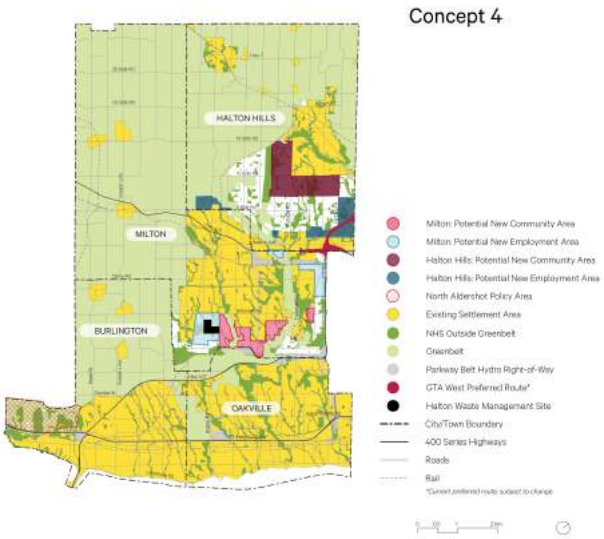
Concept 2 - 1,830 hectares of new urban land (area net of Natural Heritage System) which is made up of 730 hectares of Community Area land and 1,100 hectares of Employment Area land.



Concept 3 - 980 hectares of new urban land (area net of Natural Heritage System) which is made up of 980 hectares of Employment Area land and Community Area urban expansion.



Concept 4 - 3,300 hectares of new urban land (area net of Natural Heritage System) which is made up of 2,080 hectares of Community Area land and 1,220 hectares of Employment Area land.



3. METHODOLOGY / APPROACH TO ANALYSIS

3.1. Policy Requirements

The natural heritage screening assessment is guided by provincial and regional policies applicable to the concept areas. The focus is on consideration of the direction provided within these policy and legislative documents to inform and support the concept evaluation process. It is acknowledged and important to note, that this represents a level of detail appropriate to a screening-level exercise; more detailed levels of study as part of a subsequent Area-Specific Plan for settlement area boundary expansions (e.g., a subwatershed study) will provide a comprehensive assessment that confirms features on the landscape, their form, function, etc. A list of key plans and policy documents, applicable to the screening assessment, is provided in Table 1.

Table 1. Summary of Key Statutes and Policies Applicable to the Current Study Stage

Legislation or Policy Document	Key Sections for the Natural Heritage Assessment
Provincial Policy Statement (2020) *Provides direction for the wise use of resources and requires that municipalities identify and protect a Natural Heritage System and Water Resource System.*	**Section 2.1** Natural Heritage **Section 2.2** Water

Legislation or Policy Document	Key Sections for the Natural Heritage Assessment
Growth Plan for the Greater Golden Horseshoe *Provides additional direction and detailed policies for municipalities within to direct and provide guidance for areas of anticipated growth within the Plan Area. This includes identification and management of natural heritage and water resource systems, and transitional considerations for the protection of these systems through settlement area boundary expansions. Of specific note is refined direction for the identification and protection of a water resource system.*	**Section 2.2.8.3 (d) & (e)** Settlement Area Boundary Expansions **Section 4.2.1** Water Resource Systems **Section 4.2.2** Natural Heritage System **Section 4.2.3** Key Hydrologic Features, Key Hydrologic Areas and Key Natural Heritage Features
Greenbelt Plan *The Greenbelt Plan identifies where development should not occur to ensure permanent protection of the agricultural land base, and the ecological and hydrological features and functions that occur in the rural landscape of the Greenbelt Plan Area.*	**Section 3.2** Natural System
Niagara Escarpment Plan *Niagara Escarpment Plan (NEP) provides direction for the protection and wise use of lands within the Niagara Escarpment. It directs development away from escarpment areas based on geology and physiography that support agriculture, hydrologic and ecological form, function and value to Ontario in addition to their aesthetic and recreational values.*	**Section 1.3** Escarpment Natural Area **Section 1.4** Escarpment Protection Area **Part 2** Development Criteria
Halton Regional Official Plan (2019) *The Regional Plan provides direction as to how physical development should take place in Halton and outlines a long-term vision for Halton's physical form and community character. This includes its vision for 'sustainable development' with an overall goal to enhance the quality of life for all people of Halton, today and into the future. In form, Halton's vision includes settlement areas, rural countryside with predominantly agricultural activities, and an integrated Natural Heritage System.*	**Policies 113-114** Natural Heritage System **Policies 115-118** Regional Natural Heritage System **Policies 139.3.1-139.3.7** Greenbelt Natural Heritage System

Legislation or Policy Document	Key Sections for the Natural Heritage Assessment
Conservation Authorities Act (1990): O.Reg. 162/06 Halton Conservation Authority O.Reg. 160/06 Credit Valley Conservation *Provides authority to conservation authorities to protect wetlands, watercourses, shorelines, etc. with specific regard for hazards and management of water resources.*	Regulation of development, interference with wetlands and alterations to shorelines and watercourses.
Fisheries Act (2019) *Provides protection for fish and their habitats as well as setting out approval processes for any works that have potential to impact them.*	**Sections 34 and 35** Fish and Fish Habitat Protection and Pollution Prevention
Species at Risk Act (2002) *Federal legislation providing protection for species considered to be endangered, threatened in Canada. At project scale, primarily applicable for aquatic Species at Risk.*	**Section 32** Measures to Protect Listed Wildlife Species
Endangered Species Act (2007) *Primary legislation for protection of Species at Risk in the province of Ontario. Provides individual and habitat protection for Endangered and Threatened species in Ontario.*	**Section 10** Prohibitions on damage to habitat, etc.

It is important to note that the current in-force Regional Official Plan does not include a Water Resource System (WRS). Per the provincial plans identified in **Table 1** Halton is required to identify a WRS for the long-term protection of key hydrologic features and areas and their functions; this will occur through the Regional Official Plan Review process. Many hydrologic features are also captured as components of Halton's Natural Heritage System and as such are indirectly considered through the assessment of natural heritage features. Additionally, for the purpose of this analysis, hydrologic areas (i.e., significant groundwater recharge areas and highly vulnerable aquifers) are also considered, where mapping is available.

3.2. Approach to the Analysis

To support the IGMS Growth Concepts evaluation, several sub-measures with metrics were established that could be assessed using existing mapping and informed by policy:

- How well does each concept perform at avoiding provincial plan areas, the Province's and Region's NHS, and significant water resource areas?

- How well does each concept perform at reducing / avoiding impacts of new development?
- How strongly does the concept provide opportunities to strengthen the RNHS?
- How does the concept compare with respect to the potential impacts of the proposed RNHS on further development of the potential growth areas identified?

Each sub-measure is briefly discussed below and metrics for evaluating the sub-measures is provided in **Table 2**.

Avoidance

Settlement area boundary expansions should, where possible, avoid Key hydrologic areas and the Natural Heritage System for the Growth Plan (Growth Plan s. 2.2.8.3(e)). Additionally, they are to be planned and demonstrated to avoid, or if avoidance is not possible, minimize and mitigate any potential negative impacts on watershed conditions and the water resource system, including the quality and quantity of water (Growth Plan s. 2.2.8.3(d)).

In accordance with policies of the Greenbelt Plan, settlement areas outside the greenbelt are not permitted to expand into the greenbelt (Greenbelt Plan s. 3.4.2.1). Similarly, settlement area boundary expansions are to be directed away from Escarpment Natural Areas and Escarpment Protection Areas (Niagara Escarpment Plan s. 1.7.5).

Within the Study Area, small areas of Growth Plan NHS, and larger areas of the Greenbelt Plan NHS occur. Areas within the Escarpment Plan Area occur adjacent to, but not within the concepts identified. This measure assesses each concept against the direction to avoid these areas.

This sub-measure considers potential for impact to water resource areas that form potential components of a WRS for Halton by considering the relative amount or ability to avoid these areas in the growth planning process.

Reduce Impacts of New Development

At the scale of the IGMS, the potential for each Growth Concept to impact, or its ability to avoid impacts is assessed based on high-level metrics, appropriate to the current study[1]. Basic metrics are used to consider *potential* for impact(s) to inform regional-scale land planning decision making.

Although a Water Resource System has not been established for Halton; through this evaluation, effort has been made through the sub-measures to have regard for the features and areas which are anticipated to comprise the WRS. Please refer to Attachment 1 for the list of Water Resource features that can be mapped at the Regional scale at this time and are

[1] Detailed site-specific studies, impact assessments, etc. will occur through future stages of land planning (e.g., a subwatershed study, Area-Specific Plan, or Secondary Plan, EIS, etc.)

included in the constraints assessment. This has provided the means for conducting a preliminary and high-level analysis in advance of full WRS delineation.

Key Natural Heritage Features (KNHF) within each concept: As lands adjacent to the natural heritage features transition from a rural or agricultural form to an urban or built form, potential for impacts to features increases. As such, urban expansions with smaller total amounts (hectares [ha]) of natural heritage features have an increased potential to avoid impacts relative to other concepts. Although mapped KNHFs are used as the mapped feature type, there is substantial overlap between KNHFs and key hydrologic features that are expected to be part of a WRS for Halton (per provincial definitions and guidance). As such, this measure captures water resource features within the assessment.

Edge impacts: Impacts are most acutely felt at feature edges as lands adjacent to natural heritage features transition from rural / agricultural form to urban / built form. Conversely, impacts decrease as the distance from an 'edge' increases (i.e., as you move deeper into a natural heritage feature). The smaller the length of new intersections between natural and built form, the lower the *potential* for impact, and the less edge there is compared the total unit area of habitat, impacts can be anticipated to be less. This is measured as total linear length of 'new' urban-natural edges and as a ratio to establish many meters of 'edge' there are per unit area of habitat (ha). The greater the number of meters per unit area of habitat, the greater the potential for edge impacts to occur to a greater proportion of feature area.

Fragmentation. Fragmentation is a significant source of impacts to natural heritage features and systems, particularly in an urbanizing environment. A Natural Heritage System is intended to be a connected system that allows for movement of species and materials. When a system becomes fragmented – e.g., through feature isolation or barriers to movement, the system is impacted. Consideration is given to the potential for fragmentation of the RNHS associated with each Concept to inform its ability to avoid impacts; this is done through a qualitative assessment examining the mapped RNHS features, as details on development design, infrastructure (roads, etc.) are not known at this stage in the planning process.

Enhance the NHS to Strengthen Key Features and Areas

The RNHS includes corridor and enhancement areas. These areas offer potential areas to improve connectivity or enhance the system through habitat restoration or enhancement. Implementation of these enhancements and improvements generally occurs through land conversion and as such, they offer potential enhancements to the RNHS[2].

[2] Additional enhancements and opportunities to strengthen the RNHS can be identified through subsequent planning stages (e.g. Area-Specific Plans) as site-specific information becomes available (e.g., site-scale linkages, site-specific enhancements, etc.).

Impacts of the NHS on Future Development

Key Natural Heritage Features (RNHS), Linkages and Enhancement Areas, and Key Hydrologic Features (WRS) are constraints to development. Developments are to plan around these features. As such, their orientation on the landscape can impact development in terms of good community planning practice, transportation and servicing which has the potential to increase cost of development and/or long-term infrastructure costs.

To consider the implications of this, natural environment features (natural heritage and water resource), functions and areas representing known or potential constraints to development have been identified. Constraint categories have been assigned based on policy requirements and available secondary source information (See **Attachment 1**). Mapping for some natural heritage features and areas is not available at a regional scale or requires detailed field surveys to be conducted to collect information (e.g., Species at Risk or Significant Wildlife Habitat) as such, these have not been included in this evaluation. A summary of the natural heritage features and areas included in the constraint assessment is included in **Table 3**. Preliminary constraint categories are as follows:

- **High Constraint**: Includes natural environment features and areas (NHS and WRS), and Regulatory Floodplain with existing designations or *significance* that afford them protection under current provincial or municipal plans / policies. High Constraint areas represent features and areas that prohibit development.

- **Medium Constraint**: Includes natural environment features and areas (NHS and WRS) that may, through future assessment represent constraints to development or are indicators of potentially significant functions. Linkages and restoration / enhancement areas are captured under this category as their final position is not fixed to existing features on the current landscape. It is recognized that they will become high constraint through future planning stages as they are confirmed and/or refined. Determinations regarding level of constraint for features and areas in this category are to be informed by future studies that are undertaken to support Area-Specific Plans or Secondary Plans with appropriate levels of assessment / information.

- **Low Constraint**: Includes natural environment areas (NHS and WRS) that, based on current knowledge, do not represent constraints to development (i.e., do not preclude development), but may influence some aspects of land use planning decisions (e.g., densities, type of development) or may present additional study requirements, enhanced management requirements, etc. that could increase development complexity, management needs, or otherwise affect the planning and / or development processes. Areas and functions captured in this constraint category may also interact with / contribute to the form and/or function of natural heritage features and therefore have important influence on the ecological functions they provide.

Table 2: Sub-measure summary and metrics used to inform the evaluation.

Sub-Measure Component	Metric(s)	Evaluation Framework Measure
Avoidance		
Provincial Plan Areas	1. Encroachment into Plan Areas 2. Orientation of Plan Area(s) relative to the Concepts.	3.2 3.4
Water Resource Features and Areas	1. Total amount of mapped Water Resource Areas (i.e., Highly Vulnerable Aquifer and Significant Groundwater Recharge Areas). Key Hydrologic Features are consistent with features of the Natural Heritage System and are considered through that sub-measure.	3.2 3.4.1
Regional Natural Heritage System (RNHS)	1. Encroachment into the RNHS. 2. Orientation of the RNHS relative to the Concepts.	1.3.2 3.2 3.4
Reduce Impacts of New Development		
Key Features of the RNHS	1. Total area (ha) of key natural heritage features within each concept.	3.2 3.4.1
Edge Impacts	1. Total linear length of new edge interfaces between the RNHS and the built environment. 2. RNHS edge to habitat area ratio within each Concept.	3.2 3.2.1
Fragmentation	1. Qualitative assessment based on orientation of RNHS. Potential need to cross the RNHS with infrastructure (roads or servicing) within each Concept.	1.3.2 3.2 3.4
Enhance the NHS to strengthen Key Features and Areas		
RNHS Linkage & Enhancement Areas	1. Total area (ha) of Linkage and enhancement areas within each Concept. 2. Percent of Concept area captured within Linkage and / or Enhancement Areas.	3.2
Impacts of the NHS on Future Development		
Constraints to Development	1. Relative area (ha) of high, moderate, and low constraint features. 2. Qualitative assessment of potential site-scale linkages that may be required through future planning stages.	1.3 3.4.2

Sub-Measure Component	Metric(s)	Evaluation Framework Measure
	3. Qualitative assessment of implications of the orientation of high constraint features within each Concept. 4. Qualitative assessment of implications for presence of Key Hydrologic Areas within each Concept.	

4. EVALUATION

4.1 Avoidance

All concepts avoid encroachment into provincial plan areas (e.g., Greenbelt Plan NHS) and the RNHS and as such are considered comparable in this regard. The Growth Plan also directs municipal settlement area boundary expansions to avoid Key Hydrologic Areas (KHA) where possible. The evaluation considered total area (ha) within each concept. As may be expected, as land area decreases, less KHA (ha) is captured with Concept 3 capturing the smallest amount (ha) of KHA's and Concept 4 capturing the greatest amount of KHA's. When considered relative to concept land area, Concept 2 proportionally captures the least KHA followed by Concept 1, Concept 4 and Concept 3 capturing the greatest amount proportionally. This sub-measure component addresses the Evaluation Framework Measures 1.3.2. 3.2, 3.4 and 3.4.1.

4.2 Reduce Impacts on Development

Key Features of the RNHS

As the total land area within each concept increases, the total area of NHS occurring within the concept increases. This increases the total area of the NHS that will be influenced by, face pressures from and may be impacted by development (e.g., occupancy impacts, light impacts, increased access, runoff, etc.). Under this sub-measure Concept 3 includes the least NHS, followed by Concept 1, 2 and Concept 4 having the greatest amount of RNHS occurring within it. This metric addresses the Evaluation Framework Measures 3.2 and 3.4.1.

Edge Impacts

There is similar a relationship between the total land area within each concept and length of new edge interface with the RNHS (**Table 1**). Concept 3 has the least new urban-RNHS edge, followed by Concept 1, 2 and 4. Edge to interior ratio provides another metric which considers overall shape and form, which speaks to potential intensity of impacts on the RNHS and removes the influence of total land area. For this metric, the smaller number (ratio), the less edge there is for every unit area of habitat (i.e., there are more areas of RNHS away from the edges). Using this metric, Concept 2 reduces potential edge impacts relative to the other concepts, followed by Concept 1, 4, then 3. This metric addresses the Evaluation Framework Measures 3.2 and 3.2.1.

Fragmentation

Fragmentation cannot be assessed quantitatively at this planning stage; information on the form, nature and design of development and infrastructure are required for more detailed assessment and will not be established until future planning stages. In order to consider this potential impact, potential areas of concern for fragmentation have been identified (see attached maps). Fragmentation concerns include areas with potential for increased feature isolation on the landscape due to reduced landscape permeability under built conditions and the potential need to cross existing areas of the RNHS for roads or other infrastructure to facilitate development. It is important to note that this assessment is preliminary and conceptual and is intended to provide general qualitative input to the IGMS process only. Concepts 1 and 4 pose higher risk for potential fragmentation of the RNHS, followed by Concept 2. Concept 3 has a notably lower risk (qualitatively) for fragmentation compared to the other concepts. This metric addresses the Evaluation Framework Measures 1.3.2, 3.2 and 3.4.

4.3 Enhance the NHS to Strengthen Key Features and Areas

The RNHS identifies linkage and enhancement areas; consideration is given to opportunities through each of the concepts to provide improvements to the form of the RNHS through implementation (i.e., planting / establishment) of these areas over time. Concept 1 provides the largest total area of linkage / enhancement (117 ha) and is also the highest proportion of the concept land area at 4%. Concept 2 has the second largest area (59 ha), substantially smaller than Concept 1 and represents 3% of the concept land area. Concept 2 provides a slightly smaller area than Concept 2 (50ha) and comparable % of the concept land area (3%). Concept 3 has the lowest amount of linkage & enhancement area (23 ha) and has the lowest % relative to concept land area (2%). This sub-measure component addresses the Evaluation Framework Measure 3.2.

4.4 Impacts of NHS on Development

Consideration is given to the presence of high, medium and low constraint features within each concept to consider their potential impact / influence on development. Concept 2 has the greatest amount of High and Medium constraint by area (57%), followed by Concepts 1 and 3 (47% each) and with Concept 4 having the lowest amount by area (41%).

A qualitative review of RNHS orientation on the landscape was also undertaken to flag areas which may have impacts to the development form which could have community design or cost implications (e.g., increased cost of servicing / infrastructure). This are very preliminary review only; area identified are raised as having potential challenges and should be considered as informational to the review only. It does not indicate nor is it intended to imply development potential or feasibility. Areas where RNHS orientation may create development challenges have been outlined on the Concept Figures and are circled in blue. Concept 4 has three areas of potential concern, Concepts 1 and 2 both have two areas of potential concern and Concept 3

has one area of potential concern. This sub-measure component addresses the Evaluation Framework Measures 1.3 and 3.4.2.

4.5 Cumulative Evaluation Outcome

Concepts were assessed relative to one another; as such, the outcomes of this assessment do not represent discrete assessments of impacts associated with development within the Concept areas. Assessment of impacts and opportunities to avoid or mitigate potential impacts are to be addressed at future planning stages (e.g., a subwatershed study).

Overall, all concepts achieve the measures in the Evaluation Framework, as they all avoid the natural heritage system. However, based on the outcome of the metrics within this assessment, Concept 3 best achieves the objectives set out for protecting the NHS and maintaining a connected system followed by Concept 2 and 1. Concept 4 achieves the desired metrics least out of the evaluated concepts.

It should also be noted that through this technical assessment, it has been identified that all Concepts occur in areas with known existing levels of substantial stress on surface water quantity and generally poor surface water quality in the sub-watersheds. Over half of surface water takings in Halton are used for agricultural purposes; the relationship between water resources and agricultural communities should be explored as part of the subsequent planning for any settlement area boundary expansion.

Table 3[3]: Detailed Evaluation of Growth Concept Areas – Natural Heritage System

	Concept 1: 60% Densification / Moderate Greenfield Expansion	Concept 2: 70% Densification / Limited Greenfield Expansion	Concept 3: 80% Densification / Employment Only Greenfield Expansion	Concept 4: 50% Densification / Greatest Greenfield Expansion
NATURAL HERITAGE SYSTEM IMPACTS AND OPPORTUNITIES				
Avoidance				
Encroachment Within Plan Areas / NHS Key Hydrologic Areas (KHA's) within Concept(s) Orientation relative to Plan Areas / RNHS	Concept does not encroach into the Provincial Plan Areas or RNHS. Concept has second highest amount of KHA's (512 ha). Proportionally it has the second lowest amount (19%) Orientation of Greenbelt NHS through Concept (i.e., occurs on both sides). Concept includes two areas of complex orientation of RNHS features.	Concept does not encroach into the Provincial Plan Areas or RNHS. Concept has second lowest amount of KHA's (250 ha) and the lowest when considered proportionally (14%) Orientation of Greenbelt NHS through Concept (i.e., occurs on both sides). Concept includes one area of complex orientation of RNHS features.	Concept does not encroach into the Provincial Plan Areas or RNHS. Concept has lowest amount of KHA's (227 ha), but proportionally has the greatest (27%). Concept does not occur on both sides of the Greenbelt or other Plan area. Concept includes one area of complex orientation of RNHS features.	Concept does not encroach into the Provincial Plan Areas or RNHS. Concept has highest amount of KHA's (669 ha) and proportionally has the second highest (20%). Orientation of Greenbelt NHS through Concept (i.e., occurs on both sides). Concept includes two areas of complex orientation of RNHS features.
Outcome	**Achieves Less**	**Achieves More**	**Achieves More**	**Achieves Less**
Reduce Impacts of New Development				
Key Features of the Draft RNHS	Draft RNHS Key Features: ~523 ha Total watercourse length: 40,662 m Concept is the second most land consumptive (2,630 ha) overall and includes the second largest amount of RNHS and watercourse length.	Draft RNHS Key Features: ~442 ha Total watercourse length: 35,128 m Concept is the second least land consumptive (1,850 ha) overall and includes the second lowest total amount of NHS and stream length.	Draft RNHS Key Features: ~146 ha Total watercourse length: 14,480 m Concept is the least land consumptive (980ha) overall and includes substantially less RNHS and watercourse length compared to other concepts.	Draft RNHS Key Features: 533 ha Total watercourse length: 51,912 m Concept is the most land consumptive (3,300 ha) overall and includes the largest total amount of the RNHS and most watercourse length.
Edge Impacts	Total RNHS Perimeter: 151,335 m Total RNHS Area: 641 ha Edge to Area Ratio: 236m:1ha Concept 1 has second most new urban-RNHS edge but has the least edge for each unit (ha) of habitat.	Total RNHS Perimeter: 121,986 m Total RNHS Area: 493 ha Edge to Area Ratio NHS: 248m:1ha Concept 2 has the second least new urban-RNHS edge and has the	Total RNHS Perimeter: 54,616 m Total RNHS Area: 169 ha Edge to Area Ratio RNHS: 323m:1ha	Total RNHS Perimeter: 184,927 m Total RNHS Area: 592 ha Edge to Area Ratio RNHS: 312m:1ha Concept 4 has the most new urban-RNHS edge and has the second

[3] Minor revisions to the potential Employment Area in Concepts 2 and 3 are not reflected in the analysis for those concepts, but were addressed through the analysis of other concepts which included those areas.

	Concept 1: 60% Densification / Moderate Greenfield Expansion	Concept 2: 70% Densification / Limited Greenfield Expansion	Concept 3: 80% Densification / Employment Only Greenfield Expansion	Concept 4: 50% Densification / Greatest Greenfield Expansion
		second lowest amount of edge for each unit (ha) of habitat.	Concept 3 has the least new urban-RNHS edge but also has the most edge for each unit (ha) of habitat.	largest amount of edge for each unit (ha) of habitat.
Fragmentation	Higher likelihood for fragmentation of the RNHS both in terms of feature isolation and potential crossings.	Lower likelihood for fragmentation of the RNHS both in terms of feature isolation and potential crossings.	Notably lower likelihood for fragmentation of the RNHS both in terms of feature isolation and potential crossings.	Higher likelihood for fragmentation of the RNHS both in terms of feature isolation and potential crossings.
Outcome	**Achieves Less**	**Achieves More**	**Best Achieves**	**Achieves Least**
Enhance the NHS to strengthen Key Features and Areas				
RNHS Linkage & Enhancement Areas	Linkage & Enhancement Area: ~117 ha (4% of concept area) Greatest area and greatest % of total concept area identified as linkage and enhancement areas to enhance the NHS	Linkage & Enhancement Area: ~ 50 ha (3% of concept area) Third in terms of area and comparable to Concept 3 for % of total concept area identified as linkage and enhancement areas to enhance the NHS	Linkage & Enhancement Area: ~23 ha (3% of concept area) Least area and comparable to Concept 3 for % of total concept area identified as linkage and enhancement areas to enhance the NHS	Linkage & Enhancement Area: ~59 ha (2% of concept area) Second largest area but smallest % of total concept area identified as linkage and enhancement areas to enhance the NHS
Outcome	**Best Achieves**	**Achieves Less**	**Achieves Less**	**Achieves Least**
Cumulative Assessment Outcome				
	Achieves More	**Best Achieves**	**Best Achieves**	**Achieves Least**
DEVELOPMENT CONSIDERATIONS				
Impacts of NHS on Development				
Constraints to Development (ha (% concept land area))	High: ~857 ha (32%) Medium: ~400 ha (15%) Low: ~512 ha (19%) Second highest proportion of high and second medium constraints. Cumulatively these represent up to 47% of the land area. Second lowest proportion of low constraint lands.	High: ~754 ha (43%) Medium: ~254 ha (14%) Low: ~250 ha (14%) Highest proportion of high and second lowest proportion of medium constraints. Cumulatively these represent 57% of the land area. Lowest proportion of low constraint lands.	High: ~230 ha (27%) Medium: ~ 169 ha (20%) Low: ~227 ha (27%) Lowest proportion of high constraint and highest proportion of medium constraints. Cumulatively these represent 47% of the land area. Highest proportion of low constraint lands.	High: ~985 ha (30%) Medium: ~361 ha (11%) Low: ~669 ha (20%) Second lowest proportion of high and lowest proportion of medium constraints. Cumulatively these represent 41% of the land area. Second highest proportion of low constraint lands.

	Concept 1: 60% Densification / Moderate Greenfield Expansion	Concept 2: 70% Densification / Limited Greenfield Expansion	Concept 3: 80% Densification / Employment Only Greenfield Expansion	Concept 4: 50% Densification / Greatest Greenfield Expansion
	Two areas - south Georgetown and between Tenth Line and Winston Churchill - have feature orientations which have potential to constrain development.	Two areas - south Georgetown and between Hwy 25 and No. 5 Sideroad - have feature orientations which have potential to constrain development.	One area - between Tenth Line and Winston Churchill – has feature orientations which have potential to constrain development.	Three areas - south Georgetown, between Tenth Line and Winston Churchill, and between Hwy 25 and No. 5 Sideroad – have potential to constrain development.
Outcome	**Achieves Less**	**Achieves More**	**Achieves Less**	**Achieves More**

5. NEXT STEPS

5.1 Preferred Growth Concept Evaluation

This evaluation is intended to support a decision-making framework for a potential Settlement Area Boundary Expansion identified through the Growth Concepts Discussion Paper. Generally, increased development area will result in a greater extent and potentially magnitude of impacts to the NHS and Water Resource features and areas and should be factored into the overall evaluation and land use planning process. Increased urbanization will reduce landscape permeability and introduce new stressors to existing systems and functions (natural heritage and water resource).

Further assessment of the NHS and Water Resources will be used to develop the draft preferred growth concept and to support the determination of the final draft preferred growth concept for Regional Council's consideration.

5.2 Area-Specific Plans

Following the Region's Municipal Comprehensive Review (MCR) and the implementation of the Regional Official Plan Amendment, it is expected that further site-level assessment through Area-Specific Plans for new growth areas will be undertaken to comprehensively assess the features of and impacts on the Natural Heritage System and Water Resource System. This more comprehensive assessment will be completed through subwatershed studies.

The development of a sub-watershed study guideline would establish clear expectations and a consistent approach for sub-watershed studies required by Regional Official Plan policies in support of an Area-Specific Plan (or Secondary Plan). At a minimum, guidance should be developed for establishing Terms of Reference and/or other guidance documents that carry forward the work completed through the IGMS evaluation process and its consultation efforts through to the next stages of the planning process.

Some key elements that should be included in the subsequent subwatershed studies in support of Area-Specific Plans are briefly outlined below.

Water Resource System

As noted above, the current in-force Official Plan does not include a Water Resource System (WRS). The Region is committed to identifying a WRS in accordance with provincial guidance through the Regional Official Plan Review. More detailed consideration of the system, its composite elements (i.e. wetlands, watercourses, groundwater recharge areas, seeps and springs) and its interaction and influence on other systems (e.g., agricultural, natural heritage) are to be considered through subwatershed studies. Of specific note, concerns have been raised through consultation with the Halton Natural Heritage Advisory and Halton Agricultural Advisory Committees regarding potential impacts to water quality and quantity for rural settlements and agricultural landowners / operators.

In addition, as part of the Regional Official Plan Review and implementation, it is suggested that a rural water quality program be considered as a means of assess existing conditions to inform potential implications for future growth and the protection of Halton's water and natural heritage resources.

Natural Heritage System

A refined level of assessment will be required that should include the integration and consideration of the relationship between the WRS, NHS and agricultural system. This more detailed assessment through subwatershed studies would also examine the extent of natural hazards, such as floodplains, that are to be avoided and are a constraint to development.

Climate Change

Climate change will impact our water resource and natural heritage systems. The influence of climate change on these systems will need to be integrated into the subwatershed planning process for Area-Specific Plans.

ATTACHMENT 1 | CONSTRAINTS ASSESSMENT – POLICY CONSTRAINT ASSESSMENT

Halton Growth Concepts Natural Heritage System and Water Resources Impact and Constraints Assessment Framework

Prepared by Halton Region Policy Planning and North-South Environmental Inc.

Attachment 1 – January 27, 2021

(NH = Natural Heritage System Features and Areas; WR = Water Resource / Hydrologic Features or Areas)

Feature / Area	NHS	WR	Halton Regional Official Plan NHS Component	Constraint High/Medium/Low
Significant Wetlands *As defined under s.276.5 of the Regional Official Plan (ROP)*	X	X	x	High
Wetlands *All features meeting the definition of a wetland in accordance with the definition provided in the PPS and meeting the 50/50 rule for delineation under OWES*	X	X	X	High
Significant Woodlands *As identified using provincial and/or municipal guidelines (where they meet or exceed provincial guidance)*.	X		X	High
Life Science Areas of Natural and Scientific Interest (ANSI)	X		X	High
Earth Science Areas of Natural and Scientific Interest (ANSI)	X		X	High
Fish Habitat	X		X	High
Highly Vulnerable Aquifers		X		Low
Significant Groundwater Recharge Areas		X		Low
Permanent and Intermittent Streams / Watercourses	X	X	X	High
Inland Lakes / Inland Lakes and their Littoral Areas	X	X	X	High
Regulated Flood Plains as determined, mapped and refined from time to time by the appropriate Conservation Authority			X	High

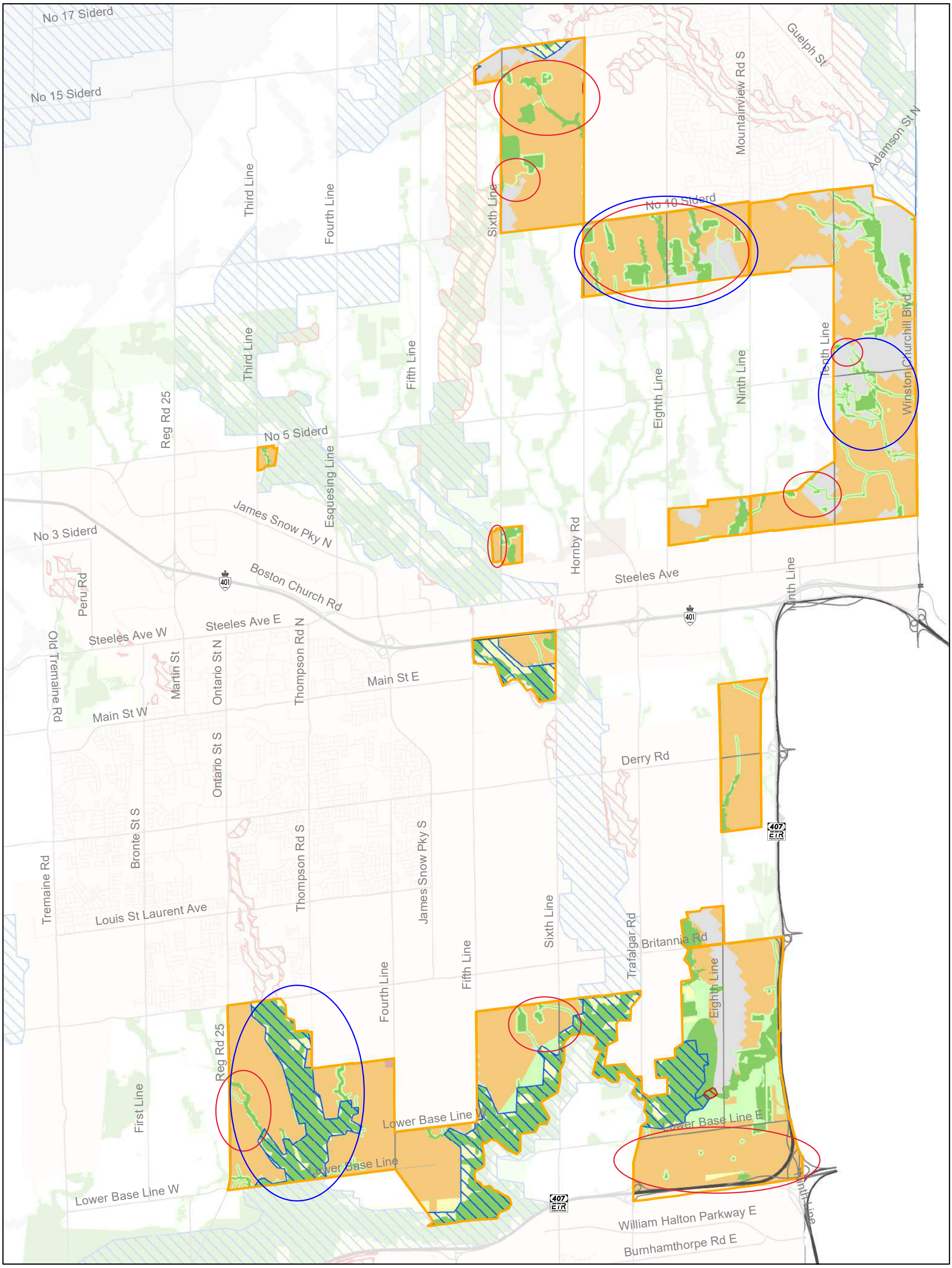
Feature / Area	NHS	WR	Halton Regional Official Plan NHS Component	Constraint High/Medium/Low
Sand Barrens, Savannahs, Tallgrass Prairies	X		X	High
Linkages	X	X	X	Medium
Buffers	X	X	X	High

FIGURES | GROWTH CONCEPTS, CONSTRAINTS ASSESSMENT AND EVALUATION SUPPORT

Growth Concept NHS Analysis - Concept 1

Constraints

February 2021



IGMS Concept 1
Minor
Highway
Major
Urban Boundary

IGMS NHS Evaluation Constraints

- Existing Settlement Area
- Other
- High
- Medium
- Low

Provincial Growth & Green Belt Plan Natural Heritage System

- Greenbelt Plan
- Growth Plan for the Greater Golden Horseshoe

0 0.5 1 2 3 4 Kilometers

Sub-Measure Qualitative Assessment Areas of Interest

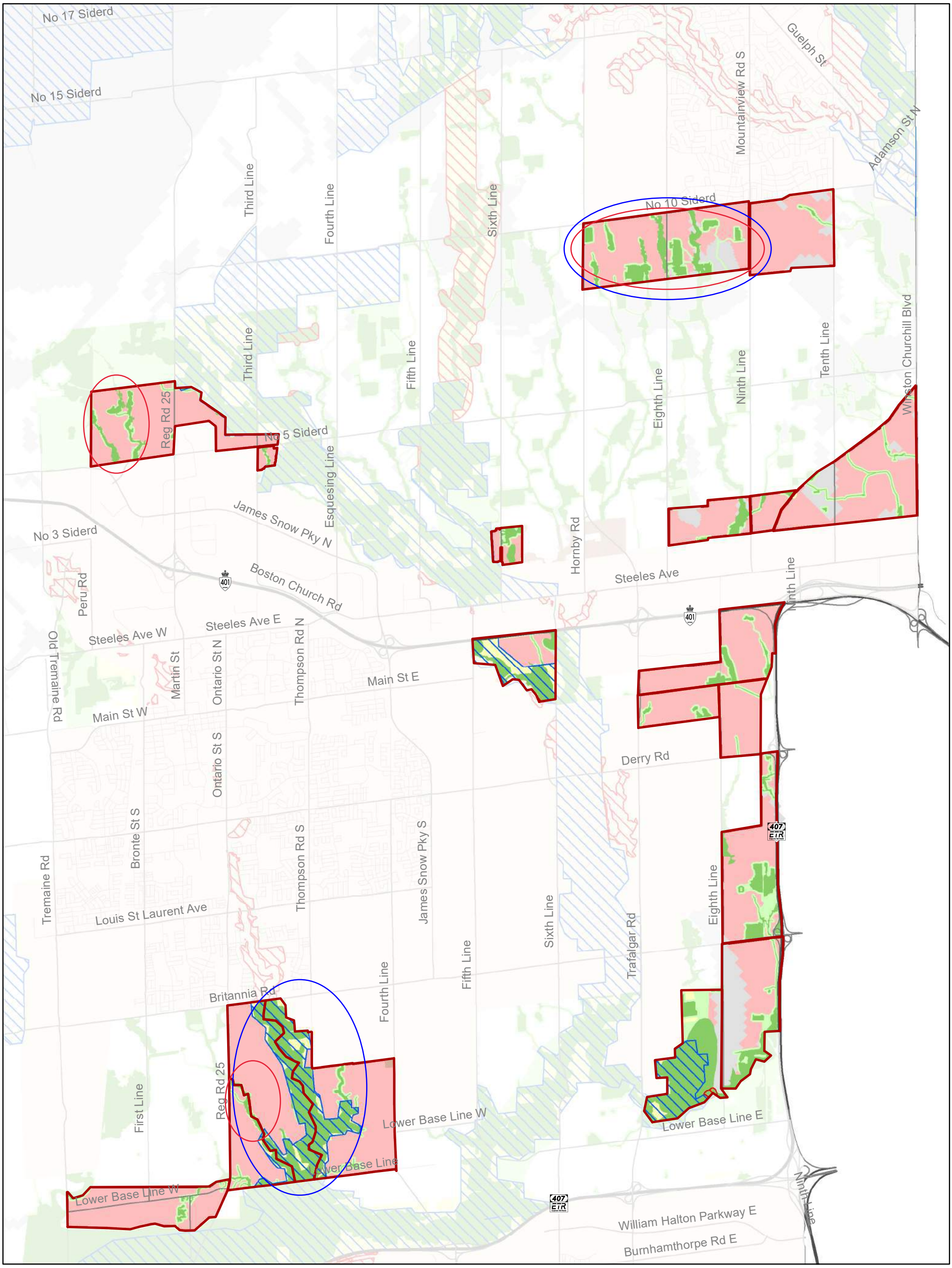
- Fragmentation
- Avoidance (Orientation, RNHS Complexity)

Halton REGION

Growth Concept NHS Analysis - Concept 2

Constraints

February 2021



IGMS Concept 2
Minor
Highway
Major
Urban Boundary

IGMS NHS Evaluation Constraints

Settlement Area
Other
High
Medium
Low

Provincial Growth & Green Belt Plan Natural Heritage System

Greenbelt Plan
Growth Plan for the Greater Golden Horseshoe

0 0.5 1 2 3 4 Kilometers

Sub-Measure Qualitative Assessment Areas of Interest

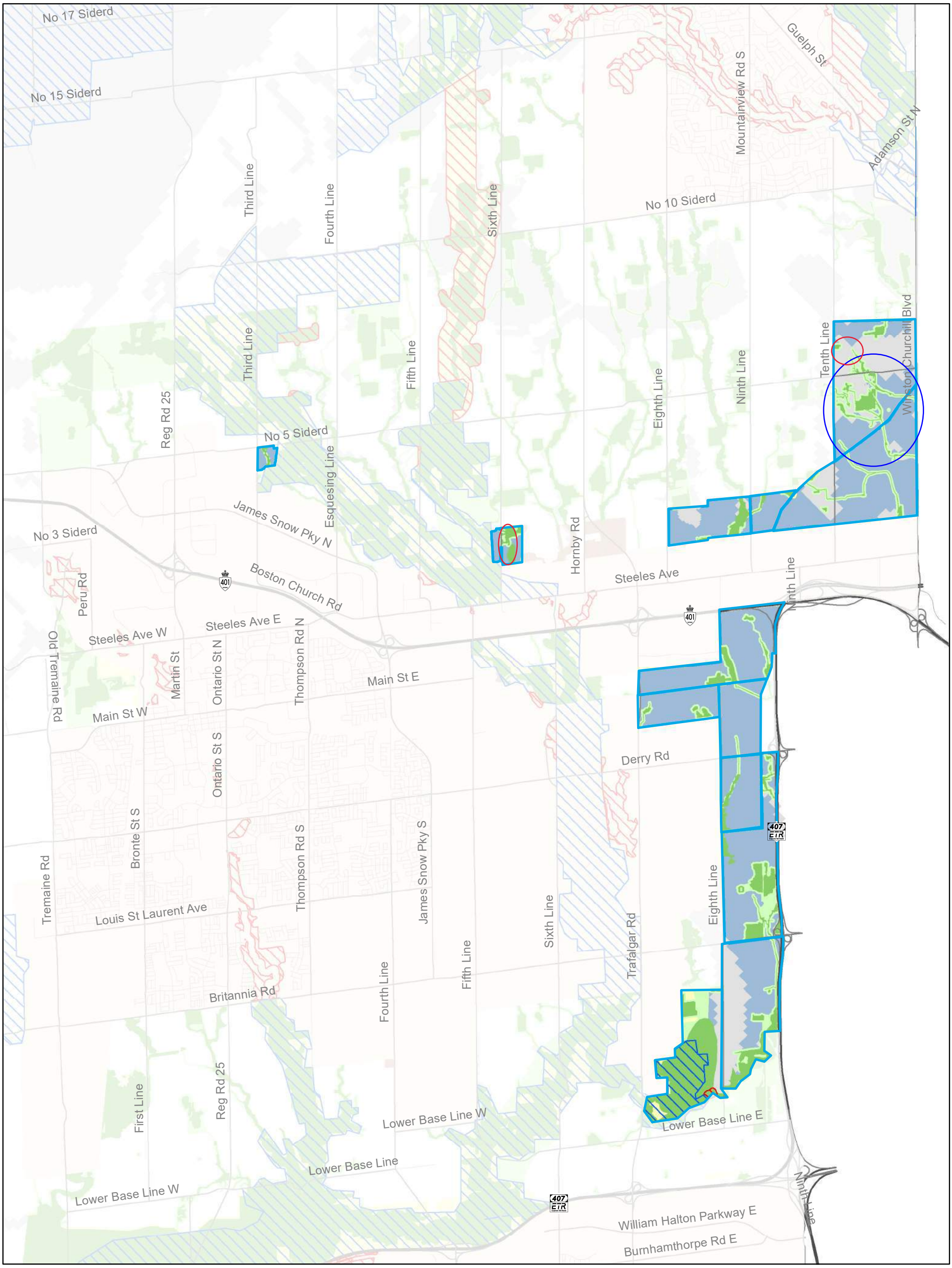
Fragmentation
Avoidance (Orientation, RNHS Complexity)

Halton Region

Growth Concept NHS Analysis - Concept 3

Constraints

February 2021



IGMS Concept 3
Minor
Highway
Major
Urban Boundary

IGMS NHS Evaluation Constraints

- Settlement Area
- Other
- High
- Medium
- Low

Provincial Growth & Green Belt Plan Natural Heritage System

- Greenbelt Plan
- Growth Plan for the Greater Golden Horseshoe

0 0.5 1 2 3 4 Kilometers

Sub-Measure Qualitative Assessment Areas of Interest

- Fragmentation
- Avoidance (Orientation, RNHS Complexity)

Halton Region

Growth Concept NHS Analysis - Concept 4

Constraints

February 2021

IGMS Concept 4
Minor
Highway
Major
Urban Boundary

IGMS NHS Evaluation Constraints

- Existing Settlement Area
- Other
- High
- Medium
- Low

Provincial Growth & Green Belt Plan Natural Heritage System

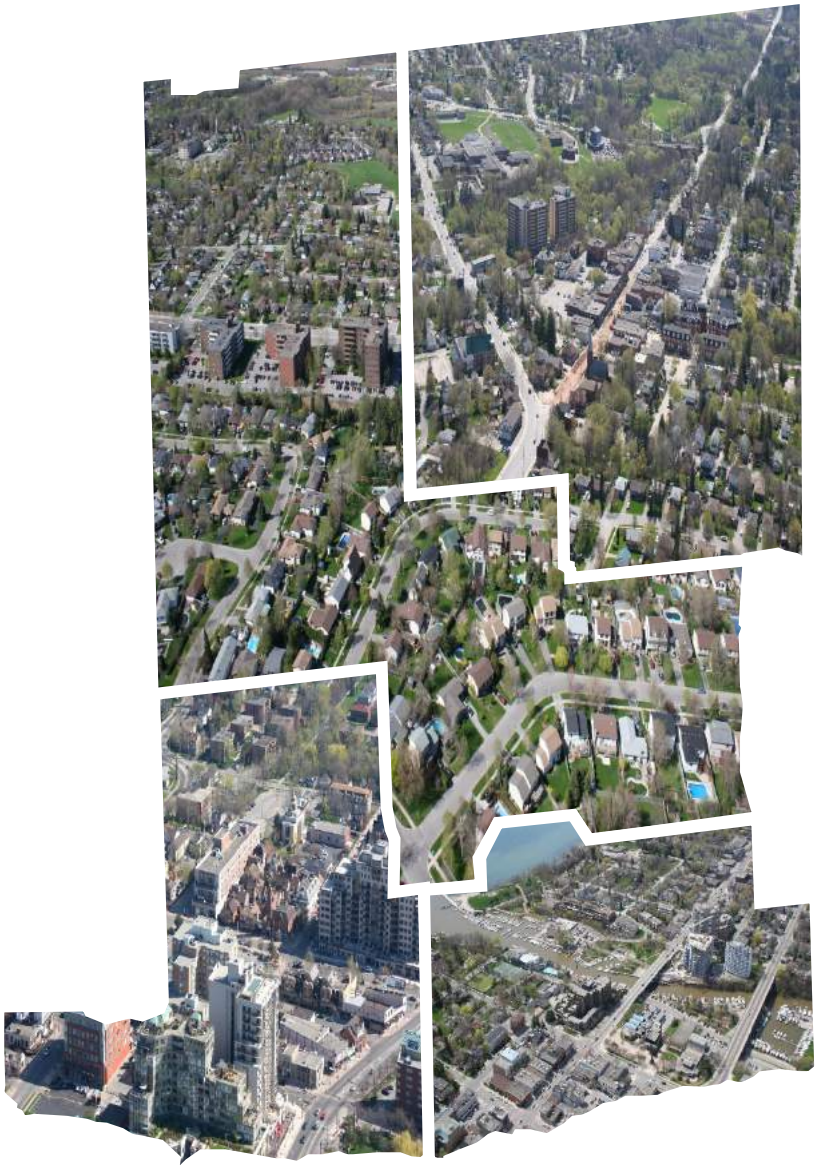
- Greenbelt Plan
- Growth Plan for the Greater Golden Horseshoe

0 0.5 1 2 3 4 Kilometers

Sub-Measure Qualitative Assessment Areas of Interest

- Fragmentation
- Avoidance (Orientation, RNHS Complexity)

Halton REGION



Appendix I

Mineral Aggregate Resources Assessment

February 2021

Regional Official Plan Review

MERIDIAN PLANNING

Halton REGION

Appendix I: Mineral Aggregate Resources Assessment

TABLE OF CONTENTS

1.0 PURPOSE

In 2016, Region initiated a review of the Halton Region Official Plan (ROP). A key element of the review is the Integrated Growth Management Strategy (IGMS), which is intended to ensure conformity with the Growth Plan (2019) and the requirement to accommodate 1,100,000 million people and 500,000 jobs by 2051 (with these population and employment targets being established by Amendment 1 to the Growth Plan in 2020).

In order to accommodate expected population and employment growth, a number of growth Concepts were developed in the Fall of 2020. Certain lands within each of the Concepts include lands that have been identified as shale resource areas by the Province.

At the present time, shale is required by the clay brick industry for the production of bricks for the construction industry. While there is no requirement in the Ontario Building Code for bricks in new construction, most new homes in the Greater Toronto Area ('GTA') are clad in brick and it has become the standard for new home construction in this area.

Shale used by the brick making industry is derived from the Queenston Formation. The map on the right identifies the location of the Queenston Formation, which extends from the Niagara Peninsula to just north of Owen Sound on the east side of the Niagara Escarpment.

In order to test the four Concepts, an Evaluation Framework comprised of four evaluation themes was developed by the Region, with Theme 3 dealing with Agriculture, Environment and Climate Change.

Within this theme are a series of measures that are intended to consider impacts on the Region's mineral resource areas. These measures are below:

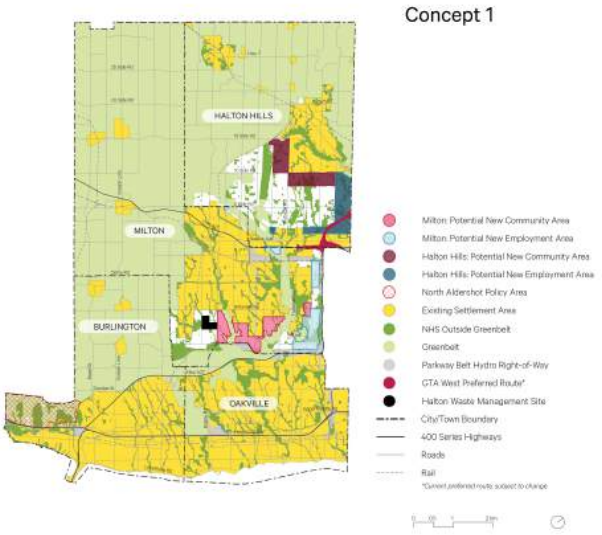
Measures
3.5.1 Limits proximity of incompatible uses to mineral aggregate operations and mineral extraction areas
3.5.2 Retains areas for mineral extraction, which can be rehabilitated to high value agricultural areas

The purpose of this Mineral Aggregate Resources Assessment is to assess the above measures in relation to the four Growth Concepts and it is intended to satisfy Section 2.2.8.3 i) of the Growth Plan (2019) which defers to Section 2 (Wise Use and Management of Resources) of the Provincial Policy Statement (2020).

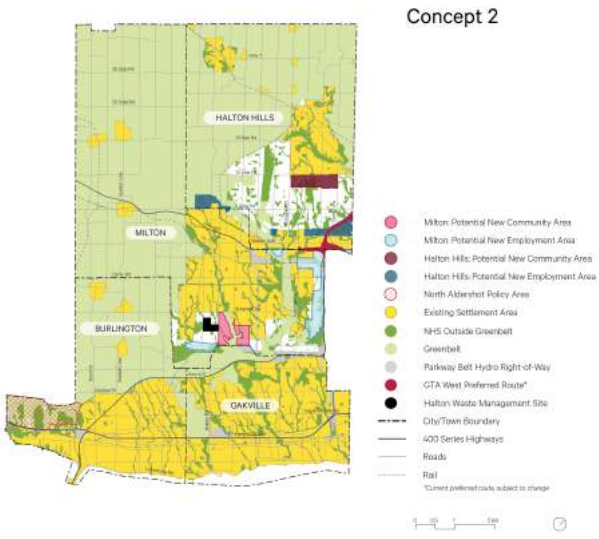
2.0 OVERVIEW OF THE FOUR GROWTH CONCEPTS

The Growth Concepts that are reviewed in the context of this Mineral Aggregate Resources Assessment are below:

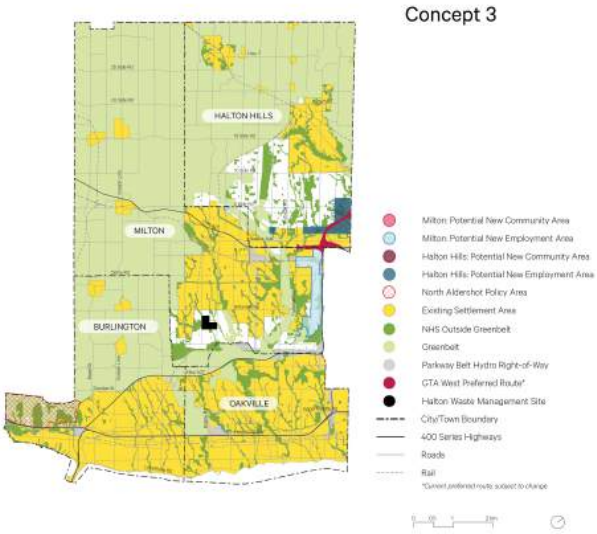
Concept 1 - 2,630 hectares of new urban land (area net of Natural Heritage System) which is made up of 1,460 hectares of Community Area land and 1,170 hectares of Employment Area land.



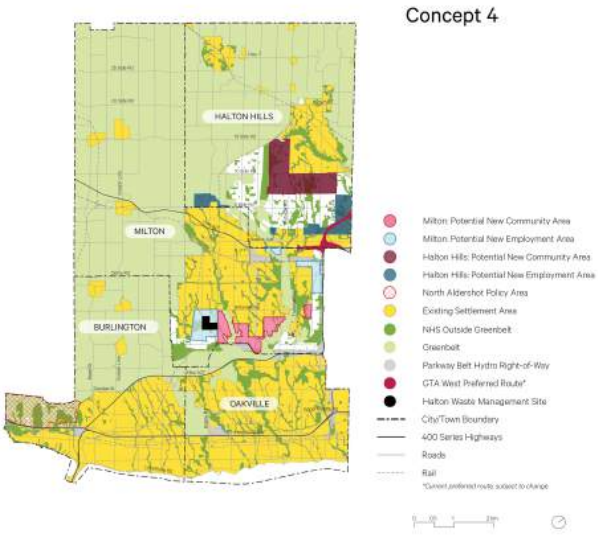
Concept 2 - 1,830 hectares of new urban land (area net of Natural Heritage System) which is made up of 730 hectares of Community Area land and 1,100 hectares of Employment Area land.



Concept 3 - 980 hectares of new urban land (area net of Natural Heritage System) which is made up of 980 hectares of Employment Area land and Community Area urban expansion.



Concept 4 - 3,300 hectares of new urban land (area net of Natural Heritage System) which is made up of 2,080 hectares of Community Area land and 1,220 hectares of Employment Area land.



In order to test the four Growth Concepts, and Evaluation Framework comprised of four

evaluation themes was developed by the Region, with Theme 3 dealing with Agriculture, Environment and Climate Change.

Within this theme are measures that consider impacts on the Region's mineral resource areas. These measures are below:

Measures
3.5.1 Limits proximity of incompatible uses to mineral aggregate operations and mineral extraction areas
3.5.2 Retains areas for mineral extraction, which can be rehabilitated to high value agricultural areas

The purpose of this Mineral Aggregate Resource Assessment is to comparatively evaluate the Growth Concepts on the degree to which they consider impacts on the Region's mineral resource areas.

3.0 METHODOLOGY/APPROACH TO THE ANALYSIS

3.1 Growth Plan

The Growth Plan (2019) sets out the requirements that must be followed when an expansion to a settlement area is proposed. In this regard, the following is stated in Section 2.2.8.3 as it relates to mineral aggregate resources:

"Where the need for a settlement area boundary expansion has been justified in accordance with policy 2.2.8.2, the feasibility of the proposed expansion will be determined and the most appropriate location for the proposed expansion will be identified based on the comprehensive application of all of the policies in this Plan, including the following:

i) The policies of Sections 2 (Wise Use and Management of Resources) and 3 (Protecting Public Health and Safety) of the PPS are applied;

As a result, reference is made to Section 2.5 of the PPS 2020 for guidance on this issue. It is noted that there are two other relevant sections in the Growth Plan to consider as per below:

4.2.8.1 - *"Municipalities will develop and implement official plan policies and other strategies to conserve mineral aggregate resources, including:*

a) the recovery and recycling of manufactured materials derived from mineral aggregate resources for reuse in construction, manufacturing, industrial, or maintenance projects as a substitute for new mineral aggregate resources; and

b) the wise use of mineral aggregate resources, including utilization for extraction of on-site mineral aggregate resources prior to development occurring."

4.2.8.6 - *"Except as provided by the policies of this subsection, decisions on planning matters must be consistent with the policies in the PPS that pertain to the management of mineral aggregate resources."*

Section 4.2.8.1 b) is somewhat relevant because it suggests that consideration be given to permitting resource extraction before development, such as urban development, occurs. However, this is only a factor to consider when preparing updated Official Plan policies to support the recommended urban expansion.

Section 4.2.8.6 supports Section 2.2.8.3 i) in that it also defers back to the PPS 2020.

3.2 PPS (2020)

The overall context for municipal decision-making that is required to be consistent with the PPS 2020 is established in the first two paragraphs of the Part 1 Preamble to the PPS 2020:

"The Provincial Policy Statement provides policy direction on matters of provincial interest related to land use planning and development. As a key part of Ontario's policy-led planning system, the Provincial Policy Statement sets the policy foundation for regulating the development and use of land. It also supports the provincial goal to enhance the quality of life for all Ontarians.

The Provincial Policy Statement provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The Provincial Policy Statement supports improved land use planning and management, which contributes to a more effective and efficient land use planning system.

Mineral aggregate resources would be considered as 'resources of Provincial interest' as per the above.

Part IV of the PPS 2020 establishes the vision for Ontario's land use planning system and it clearly indicates that one of the keys to the long-term prosperity and social well-being of Ontario residents is a strong economy. Below are those components of the vision that are relevant to the location of growth and development and mineral aggregate resources (with under-lining for emphasis).

Paragraph 4 - *"The Provincial Policy Statement focuses growth and development within urban and rural settlement areas while supporting the viability of rural areas. It recognizes that the wise management of land use change may involve directing, promoting or sustaining development. Land use must be carefully managed to accommodate appropriate development to meet the full range of current and future needs, while achieving efficient development patterns and avoiding significant or sensitive resources and areas which may pose a risk to public health and safety. Planning authorities are encouraged to permit and facilitate a range of housing options, including new development as well as residential intensification, to respond to current and future needs."*

Paragraph 5 - *"Efficient development patterns optimize the use of land, resources and public investment in infrastructure and public service facilities. These land use patterns promote a mix of housing, including affordable housing, employment, recreation, parks and open spaces, and transportation choices that increase the use of active transportation and transit before other modes of travel. They support the financial well-being of the Province and municipalities over the long term, and minimize the undesirable effects of development, including impacts on air, water and other resources. They also permit better adaptation and response to the impacts of a changing climate, which will vary from region to region."*

Paragraph 7 - *"The Province's natural heritage resources, water resources, including the Great Lakes, agricultural resources, mineral resources, and cultural heritage and archaeological resources provide important environmental, economic and social benefits. The wise use and management of these resources over the long term is a key provincial interest. The Province must ensure that its resources are managed in a sustainable way to conserve biodiversity, protect essential ecological processes and public health and safety, provide for the production of food and fibre, minimize environmental and social impacts, provide for recreational opportunities (e.g., fishing, hunting and hiking) and meet its long-term needs."*

There clearly is a focus in the above vision on directing development to settlement areas and on the optimization of the use of land and public investment in infrastructure and public service facilities.

With respect to mineral resources, the vision indicates that the Province must ensure that its resources are managed in a sustainable way to meet its long-term needs.

The choice of words in the vision as it relates to mineral resources is of interest since one element of the decision to be made by Halton Region on the selection of a growth concept involves making a choice between protecting a shale resource area or providing for urban development to meet long terms needs.

In this regard, there are different types of mineral resources to consider in applying and understanding what the Provincial vision is based on, with shale resources being required for brick making (primarily for aesthetic reasons) and with other forms of bedrock being required for primarily roads and infrastructure.

In addition, there are alternatives to brick, in terms of the choice made on the exterior cladding of a home or other building. However, choices are very limited with respect to the raw materials used for infrastructure. In our view, this becomes a distinguishing factor to consider when applying Provincial policy.

With respect to the bedrock required for infrastructure, there is an overall public interest in ensuring that the sources of aggregate are as close to market at possible (when this is realistic) to ensure costs are low and to ensure that there is competition in the marketplace.

Given that it is the public that generally pays for infrastructure through taxation from one level of government or another, there is a clear public interest in ensuring that the cost to the general public of infrastructure is kept low when feasible and practical. This same starting point does not apply as definitively to shale used in brick production.

In addition, it is only because the shale extracted from the Queenston Formation is located in the vicinity of the fast growing Toronto region that there is a history of brick making in this part of Ontario where the cladding of new homes in brick has become the norm.

In other parts of Ontario and within the rest of Canada, bricks are not as common and if they are added to the projects, it becomes an added option that increases the cost of the product. What has happened in southern Ontario is that since virtually all new homes are constructed with brick, it has become a normalized part of the construction process.

All of the above provides some context for the consideration of Section 2 of the PPS (2020) as set out in Section 2.2.8.3 i) of the Growth Plan (2019). In this regard, Section 2.5 in particular deals with mineral aggregate resources and it starts off by saying the following inn Section 2.5.1:

"Mineral aggregate resources shall be protected for long-term use and, where provincial information is available, deposits of mineral aggregate resources shall be identified."

Deposits of mineral aggregate resources is defined by the PPS 2020 as per below:

"means an area of identified mineral aggregate resources, as delineated in Aggregate Resource Inventory Papers or comprehensive studies prepared using evaluation procedures established by the Province for surficial and bedrock resources, as amended from time to time, that has a sufficient quantity and quality to warrant present or future extraction."

Section 2.5.1 is particularly important in this case because the Halton Region Official Plan was amended by ROPA 38 to identify a significantly smaller shale resource area than identified in Provincial mapping, with this revised mapping being approved by the Province (more on this in Section 3.0 of this report). In any event, this section clearly indicates that mineral aggregate resources shall be protected for long-term use.

Section 2.5.2.1 below supports and re-in forces Section 2.5.1:

"As much of the mineral aggregate resources as is realistically possible shall be made available as close to markets as possible.

Demonstration of need for mineral aggregate resources, including any type of supply/demand analysis, shall not be required, notwithstanding the availability, designation or licensing for extraction of mineral aggregate resources locally or elsewhere."

While Section 2.5.2.1 is similar to Section 2.5.1, it indicates that as much of the mineral aggregate resources as is realistically possible shall be made available. There is no definition of what 'realistically possible' means; however, it does mean that other public policy objectives can be considered when looking at resource areas. It is also recognized that there are natural heritage features and area, natural hazards and existing land uses that also have an effect on what is 'realistically possible'.

The second component of Section 2.5.2.1 makes it clear that the demonstration of need for mineral aggregate resources is not a factor in the development of resource strategies or in the consideration of individual applications, regardless of the municipality or location.

The intent of this policy is to require that any application be considered on its land use merits only.

There are a number of other policies in the PPS 2020 that are directly or indirectly supportive of the mineral aggregate industry and the extraction of mineral aggregate resources, recognizing the important role that it plays in our economy and in the availability and efficient delivery of needed services and infrastructure

However, the key policy to consider in determining whether it is appropriate to expand an urban area into a shale resource area is Section 2.5.2.5, which is reproduced below:

"In known deposits of mineral aggregate resources and on adjacent lands, development and activities which would preclude or hinder the establishment of new operations or access to the resources shall only be permitted if:

a) resource use would not be feasible; or

b) the proposed land use or development serves a greater long-term public interest; and

c) issues of public health, public safety and environmental impact are addressed."

It is noted that items a) and b) in Section 2.5.2.5 are separated by the word "or". This means that a case can be made that a proposed land use or development serves a greater long-term public interest than a proposed resource use even if it is determined that resource use would be feasible.

With respect to feasibility, there are two factors to consider - technical and practical.

From a technical perspective, the PPS 2020 requires that applications to develop a new pit or quarry demonstrate that the social, economic and environmental impacts can be minimized and in this regard, it is recognized that the technical issues to resolve with any quarry application can be significant.

There are also a number of practical reasons to consider and they include the nature of existing and adjacent land uses, the need to assemble land for a viable quarry and the cost of acquiring the land itself, particularly in an area that is this close to existing urban areas in Halton and Peel Regions.

While 'feasibility' is certainly a factor as per the above, determining what is in the longer-term public interest is the key factor to consider in this IGMS process, which will result potentially in the identification of new urban land adjacent to an existing settlement area in Halton Region.

In this regard, and as required by the Growth Plan (2019), Halton Region is required to accommodate 1,100,000 million people and 500,000 jobs by 2051 and in order to accommodate this growth, expansion into identified deposits of mineral aggregate resources (along with prime agricultural areas) is required.

The Province's 1997 Non-Renewable Resources Training Manual (1997 Manual) does

provide some insights on how to deal with what is in the greater long term public interest. In this regard, the 1997 Manual states the following:

Before development is approved in or adjacent to a known deposit area, it must be demonstrated the development meets a high level of public need and that alternative locations for the proposed development are not available.

An example of a high level of public need would be additional lands needed to accommodate significant population and employment growth.

Lastly, the 1997 Manual states the following:

"Due to the inter-regional and provincial importance of aggregates, before development that may preclude or hinder access to aggregate deposits it must be demonstrated that the proposed incompatible use provides a significant advantage to the general public of the province and not just those in close proximity to the proposed development or in a particular community. In this context, the public interest should not be interpreted include opposition to aggregate extraction operations and associated activities.

The Growth Plan establishes the need to plan for additional housing and employment opportunities, which provides a significant advantage to the general public of the Province.

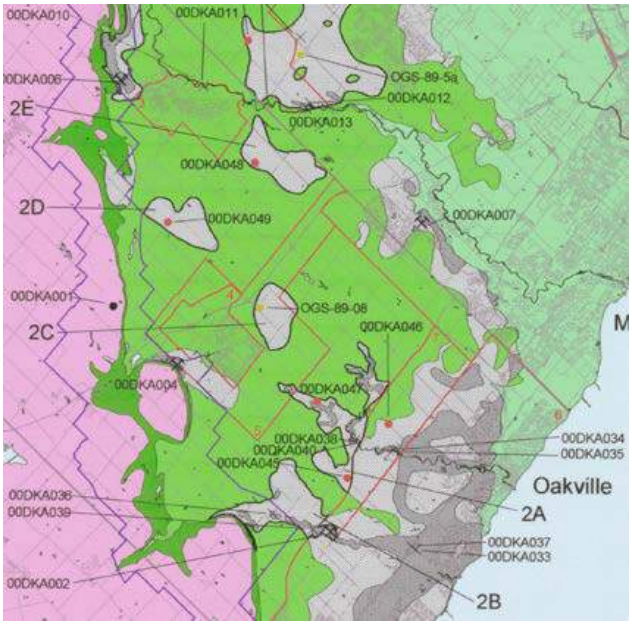
4.0 LOCATION OF SHALE RESOURCES IN HALTON REGION

4.1 2001 OGS Report

In 2001, the OGS released a report (2001 OGS Report) entitled '#6058: A Regional Evaluation of the Shale Resource Potential of the Upper Ordovician Queenston Formation, Southern Ontario' that evaluated shale resources of the Queenston formation across Southern Ontario.

The 2001 OGS Report indicated that shale resource quarries are primarily located in the area west of Mississauga and east of the Niagara Escarpment, in the Regional Municipalities of Halton and Peel. The 2001 OGS Report discussed the restrictions imposed by the Niagara Escarpment in some areas, but recognized that a considerable area of shale resource is located close to the surface and close to market.

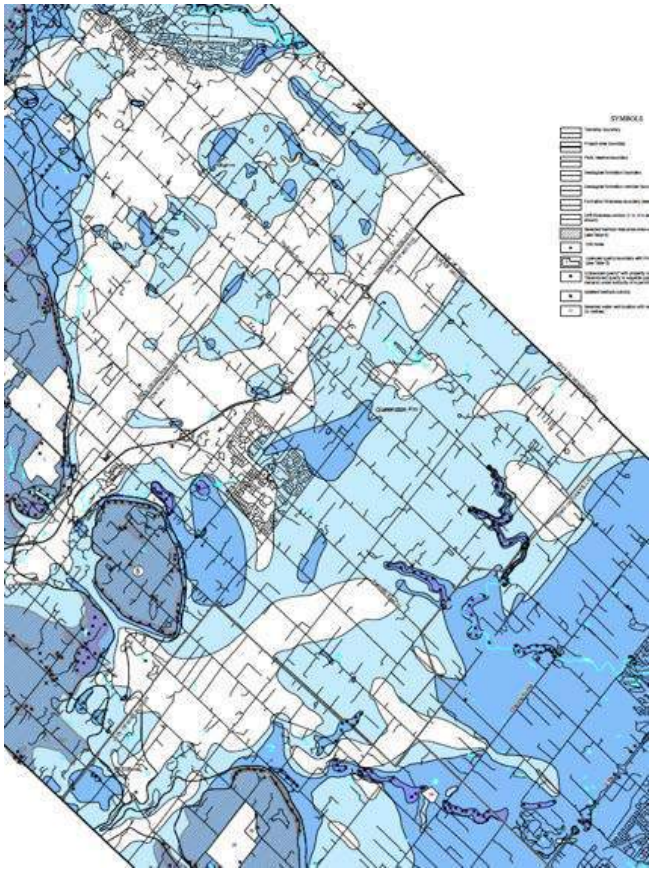
In addition to the above, the 2001 OGS Report reviewed shale resource in the Regional Municipalities of Halton and Peel. In this regard, it was noted in the 2001 OGS Report that these areas host the widest part of the Queenston Formation outcrop belt and the largest areas of thin drift. The 2001 OGS Report further identified that these areas are areas of rapid and intense urban development and thus access to future shale resources here are threatened.



With respect to Halton Region, the map at the end of the 2001 OGS Report (as shown on the right) identified the shale resource areas in Halton Region.

4.2 2009 OGS Report (ARIP 184)

In 2009, the OGS released Aggregate Resources Inventory Paper 184 ('ARIP 165'). ARIP 184 includes an inventory and evaluation of sand and gravel and bedrock resources in Halton Region. One of the products of ARIP 184 was map ARIM 184-2 that identified bedrock resources in Halton Region. ARIP 184 indicates the following with respect to this map:



"Three sets of contour lines delineate areas of less than 1 m of drift, areas of 1 to 8 m of drift, and areas of 8 to 15 m of drift. The extent of these areas of thin drift are shown by 3 shades of grey. The darkest shade indicates where bedrock outcrops or is within 1 m of the ground surface. These areas constitute potential resource areas because of their easy access.

The medium shade indicates areas where drift cover is up to 8 m thick. Quarrying is possible in this depth of overburden and these zones also represent potential resource areas.

The lightest shade indicates bedrock areas overlain by 8 to 15 m of overburden. These latter areas constitute resources which have extractive value only in specific circumstances. Outside of these delineated areas, the bedrock can be assumed to be covered by more than 15m of overburden, a depth generally considered to be too great to allow economic extraction (unless part of the overburden is composed of economically attractive deposits)."

In the abstract section of ARIP-184 it was indicated that three areas of sand and gravel resources of primary significance have been identified in Halton Region. The bedrock of the Amabel Formation was also identified as an important high-quality crushed stone resource and it was recommended for possible resource protection. However, with the Queenston

Formation, the following is indicated:

"The Queenston Formation is a provincially significant bedrock resource used in the production and manufacture of brick and tile. Areas of the Queenston Formation with less than 8 m of overburden have not been selected in this report but are identified on Map 2".

The decision to not identify components of the Queenston Formation as a Select Bedrock Resource Area was consistent with the direction taken in ARIP 165-REV which was also released in 2009, but which applied in Peel Region.

4.3 2012 OGS Shale Report

In 2012, the OGS prepared a report entitled 'Shale Resources of Southern Ontario: An Update.' For the balance of this report, it will be called the 2012 OGS Shale Report.

To some extent, the 2012 OGS Shale Report was prepared to specifically address the non-identification of portions of the Queenston Formation as a selected bedrock resource area in the ARIP 184 and 165-REV discussed previously in this report.

It was indicated in the introduction section of the 2012 OGS Shale Report that the focus of many ARIP's has been on “true” aggregate resources. In this context, the term "true" aggregate resources refers to material used in the production of such traditional aggregate products as granular A, granular B, select sub-base material (SSM), crushed stone products, hot-laid (asphalt) and concrete aggregate.

It was then further indicated that while older ARIP's did identify significant resources of the Queenston Formation shale used in the manufacture of brick and tile, ARIP 184 did not identify these important industrial minerals, because of the low load-bearing capacity of the Queenston Formation.

It is noted that ARIP 184 is the last ARIP produced for Halton Region, which means that the Queenston Formation continues to not be identified as a selected bedrock resource area.

The purpose of the 2012 OGS Shale Report was then stated as follows:

"Therefore, based on the concern that other important industrial minerals (e.g., high-purity dolostone from the Guelph Formation and shale resources from a variety of formations

across southern Ontario) would not be identified during the land-use planning process, it was decided to produce a report and map that would identify important shale resources used in the manufacture of brick and tile.

The principles that form the basis of this report are similar to the ARIP reports, including the requirement that the shale resource must be of sufficient quality to be used by the industry. It is hoped that this document and the accompanying map (Figure 1, back pocket) will be used by land-use planners in the same context and manner that ARIPs are."

The map referred to above is consistent with the mapping contained in ARIP 184.

It is important to note that the 2012 OGS Shale Report clearly recognizes that the shale extracted from the Queenston formation is required for the manufacture of tile and brick and that a key element of the work completed by OGS at the time was to ensure that land use planning authorities took the needs of the tile and brick making industry into account when making decisions.

This is contrasted with other types of bedrock resources that are required for road building and construction purposes, where the needs of the public authorities that fund the development of infrastructure need to be considered.

There is a considerable amount of discussion in the 2012 OGS Report on overburden thickness. In this regard, the following is stated:

"One of the fundamental and underlying principles of the aggregate resources inventory program is the assumption that aggregate producers can strip up to 8 metres of overburden and still produce an economically viable product."

It was also indicated that the 8-metre limit was initially established during the development of a document entitled “A Policy for Mineral Aggregate Resource Management in Ontario” in 1977.

The following was then indicated in the 2012 OGS Shale Report with respect to the relationship between the depth of overburden and the cost of producing brick:

"The cost of overburden stripping must be balanced with all other costs involved with producing a brick. If a producer can realize a price benefit or savings in one area of his

production cost, they may be able to endure higher than average costs in another aspect of production. The price of production and the price of the commodity greatly influence stripping and production costs.

The price of a commodity is extremely important. For example, the amount of overburden removed and the cost of stripping may be much higher and still economically feasible over a high-purity, high-quality dolostone used in the manufacture of metallurgical flux, than the amount of overburden and the cost of stripping over a lower cost aggregate product (e.g., crushed stone used in the production of hot-laid asphalt stone)."

In the end, the author of the 2012 OGS Shale Report made the following definitive statement:

"In 2008, the maximum or preferred stripping limit of 8 m was reconfirmed verbally and in written correspondence to the author by brick industry representatives.

Once again, the stripping of less than 8 m of overburden is certainly preferred but resource areas with less than 8 m of overburden are becoming rare because of urban expansion and restrictive land-use planning policies."

The depth of overburden in Halton Region will be a factor in the consideration of the measures in Section 5.0 of this Technical Memorandum.

4.4 ROPA 38 Mapping of Shale Resource Areas

In 2007, Halton Region initiated a review of its Official Plan. This broader Official Plan Review ('Sustainable Halton') eventually became ROPA 38 and ROPA 39.

As part of the ROPA 38 process, an analysis of the mapping provided to the Region of Halton by the OGS with respect to the location of shale resources was carried out.

On the basis of this analysis, it was determined that there were about 2,034 hectares included as potential primary shale resource areas on lands north of Highway 401. Lands south of Highway 401 were not considered.

After applying known Primary Constraints, about 1,785 hectares of shale resource area remained. Known Primary Constraints that could be mapped at the time included the

following:

- Provincially significant wetlands;
- Escarpment Natural Area designation (Niagara Escarpment Plan);
- Escarpment Protection Area designation (Niagara Escarpment Plan);
- Floodways;
- Urban areas, hamlets and rural clusters;
- Minor urban centres (Niagara Escarpment Plan); and,
- Public lands (Niagara Escarpment Plan).

It was also noted that the habitat of endangered and threatened species and significant woodlands would also be considered primary constraints once their locations were determined and confirmed.

In this regard, secondary constraints included the following:

- Lands within 500 metres of an urban area, hamlet area or a minor urban centre;
- Lands within 120 metres of a provincially significant wetland;
- Lands within woodlands outside of the Greenbelt Plan;
- Lands within the natural heritage system in the Protected Countryside (not including provincially significant wetlands and significant woodlands);
- Lands designated Greenlands A and Greenlands B outside of the Greenbelt Plan (not including provincially significant wetlands and floodways);
- Other wetlands;
- Environmentally sensitive areas; and,
- Areas of natural and scientific interest.

A series of maps in the report (Maps 8A, 8B, 8C and 8D) identified the shale resource areas north of Highway 401 with all known primary and secondary constraints.

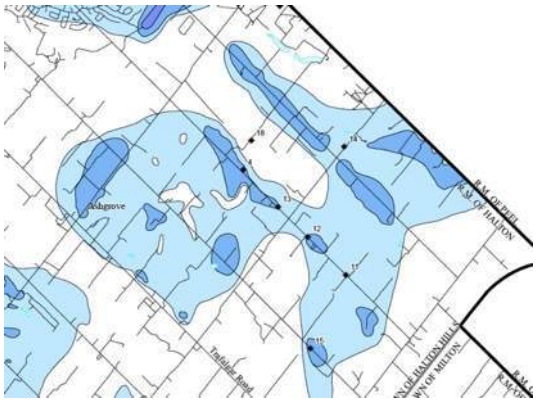
The mapping indicated that much of the land not subject to a Primary or Secondary constraint was in agricultural use, however there were certain areas that were also the site

of homes on lots created by consent.

It was then indicated that some of these existing land uses might have an impact on the feasibility of extracting the resource. In this regard, mapping was also prepared (Map 8E) which identified the extent of the areas within 500 metres of every single detached dwelling in the rural area in relation to the shale resource areas. The mapping indicated that very little land is not affected by this potential constraint.

However, it was also noted that Map 8E has only been prepared for illustration purposes and that the impacts of a shale quarry can often be mitigated in a manner that has an effect on the size of the setback.

Notwithstanding the above, it was determined that approximately 1,475 hectares of land was potentially suitable for shale extraction, net of all primary constraints and some secondary constraints. All of these lands were then identified in the ROP on Map 1F. However, the majority of the land so identified have a drift thickness of 8 to 15 metres, which is shown in the lighter shade of blue on the map on the right (the darker shade of blue applies to those lands where the drift thickness is 1 to 8 metres.



As the map above indicates, there are a few small pockets of lands with the lesser drift thickness throughout the area with one of the pockets being located on the west side of Winston Churchill Boulevard north of Steeles Avenue and another pocket located along the 10th Line between the 10th Sideroad and Steeles Avenue.

If it is assumed that only those areas that have a drift thickness of 8 metres or less are economically viable for extraction, the amount of available land in Halton Hills and the Region of Halton is much less than the 1,475 hectares that were mapped in the Region of Halton Official Plan.

Notwithstanding the above, the shale resource mapping that was net of Primary Constraints was included on Map 1F as a constraint in the Region of Halton Official Plan. In addition to Primary Constraints, an area within 500 metres of the Georgetown urban area was not

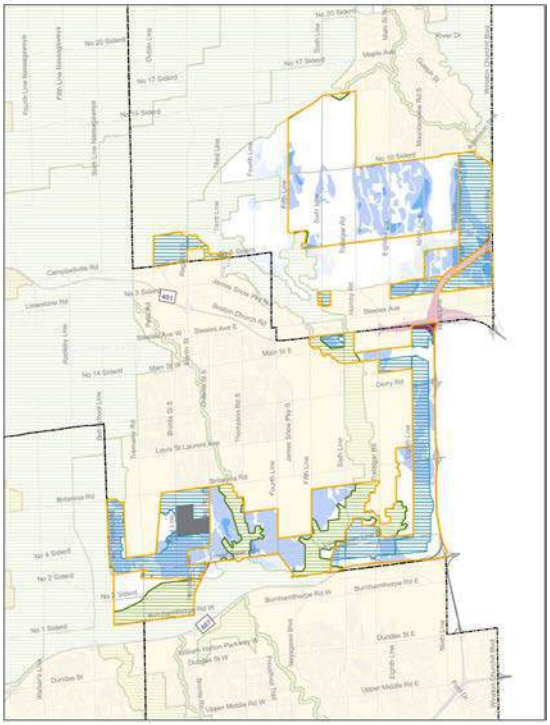
included in the mapping, which means that ROPA 38 did not identify lands within 500 metres of the Georgetown urban boundary as a resource area. The Ministry of Municipal Affairs and Housing participated in the approval process of ROPA 38.

5.0 ANALYSIS OF THE MEASURES

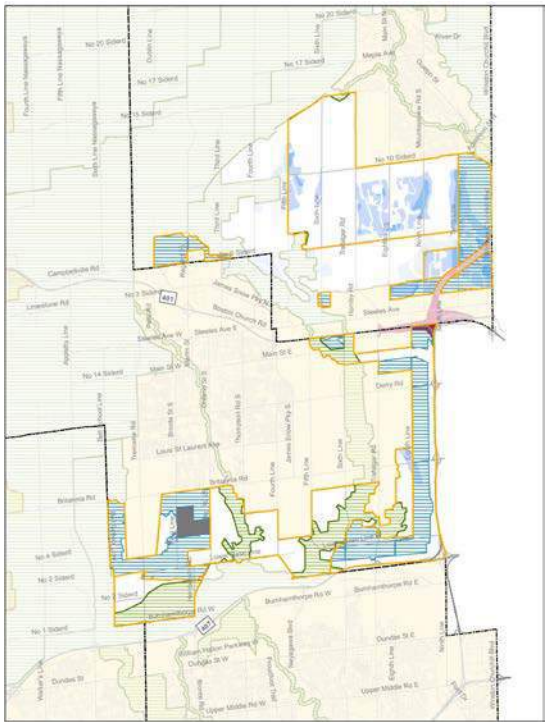
As noted previously, and in order to test the four Concepts, four evaluation themes have been developed by the Region, with Theme 3 dealing with Agriculture, Environment and Climate Change.

Within this theme are a series of measures that are intended to consider impacts on the Region's mineral resource areas. Before reviewing these measures, **Map 1** shows the location of the initial Primary Study Area in relation to the shale resource areas identified in the ARIP-184 mapping, with the various drift thicknesses shown. **Map 2** then shows the location of the initial Primary Study Area in relation to the shale resource areas identified in ROPA 38 with the various drift thicknesses shown.

Map 1 - Primary Study Area and Shale Resource Areas (ARIP-184)

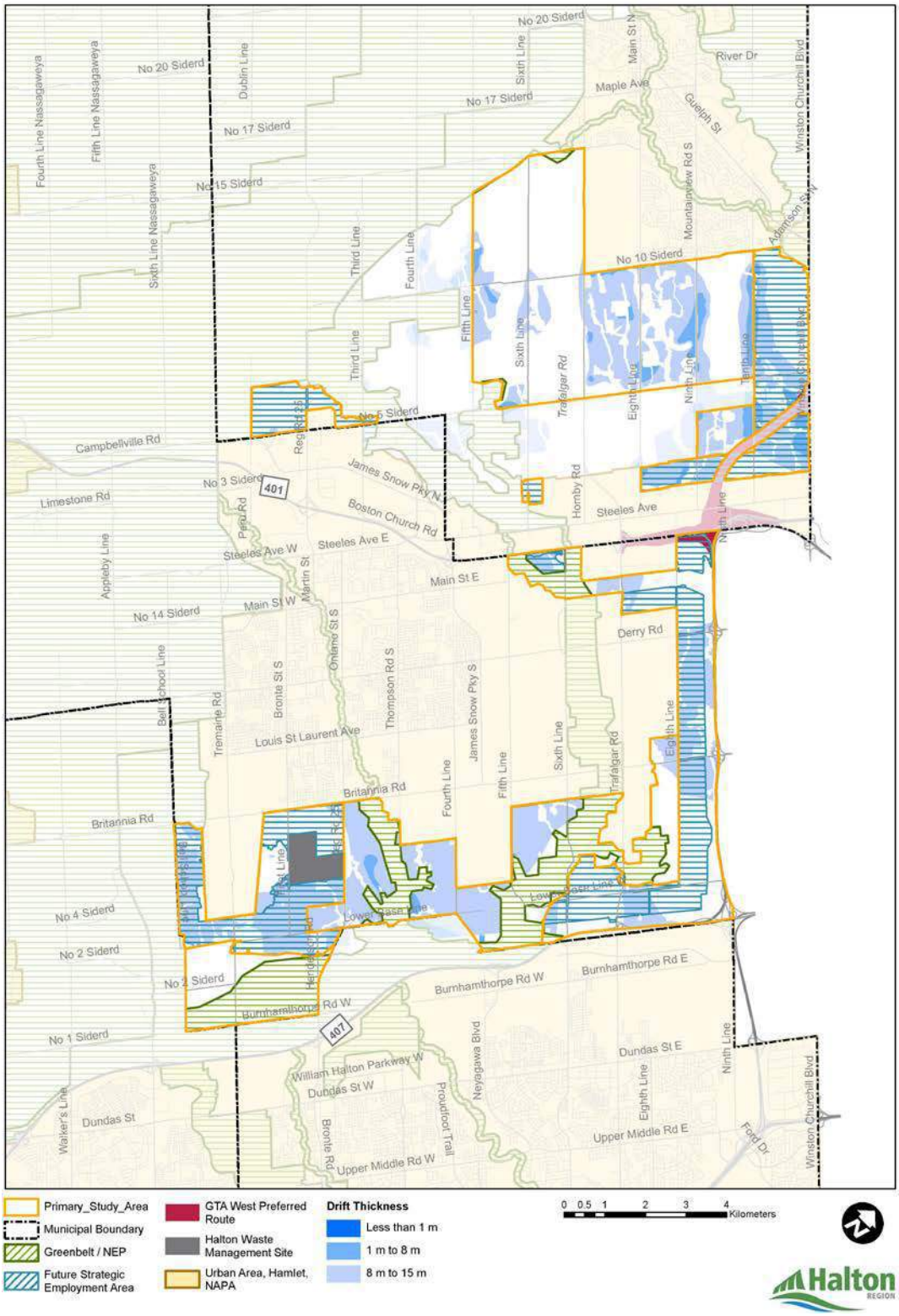


Map 2 - Primary Study Area and Shale Resource Areas (ROP)

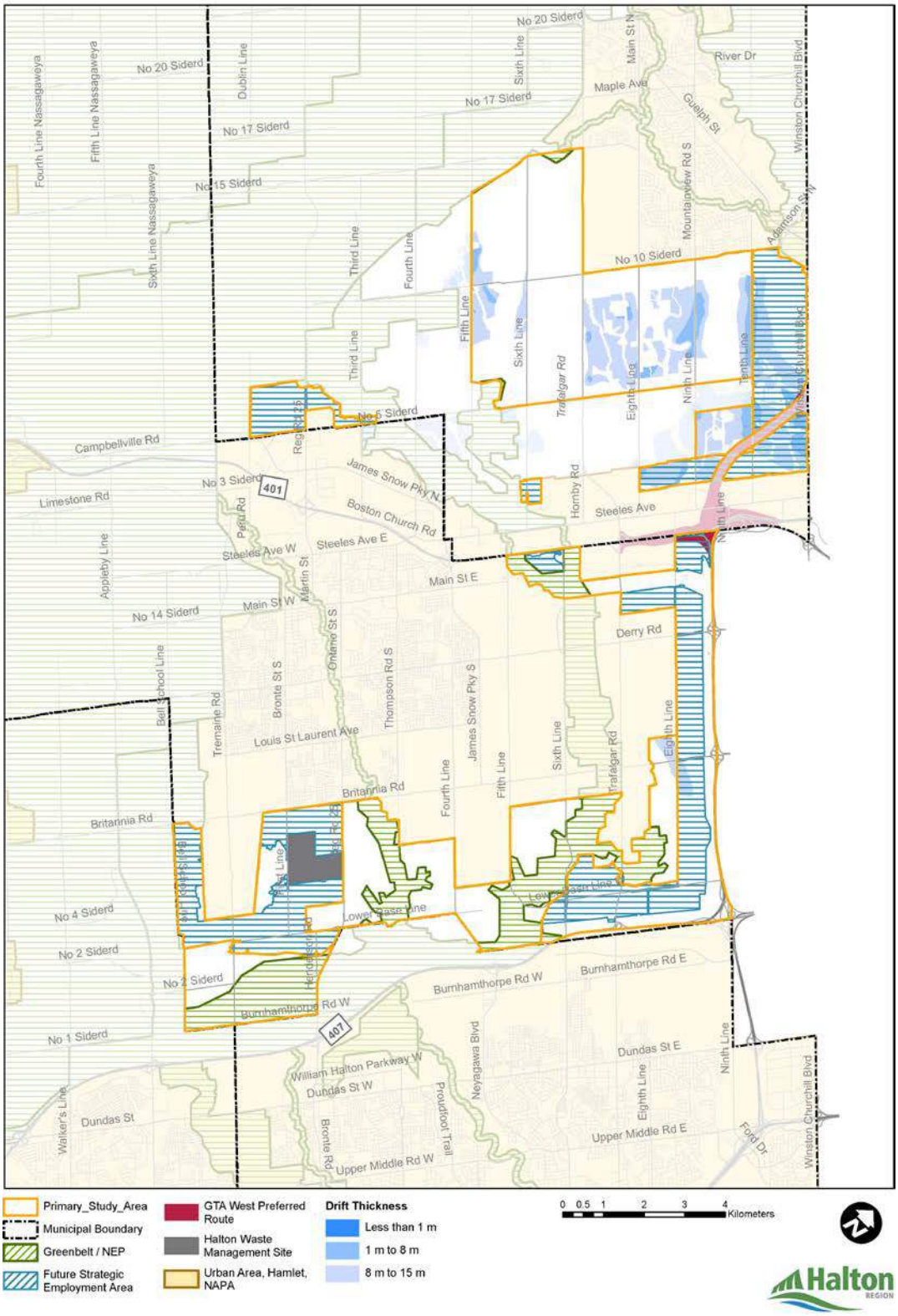


See next page for the full maps

Map 1 - Primary Study Area and Shale Resource Areas (ARIP-184)



Map 2 - Primary Study Area and Shale Resource Areas (ROP)



5.1 Limits Proximity of Incompatible Uses to Mineral Aggregate Operations and Mineral Extraction Areas

There are no mineral aggregate operations within or adjacent to the 4 growth Concepts with the Primary Study Area.

Analysis of ARIP-184 Mapping

Maps 3, 4, 5 and 6 on the next page show each of the concepts based on the ARIP-184 mapping, with the proposed Regional Natural Heritage System, existing road allowances, the Halton Waste Management Site and the location of the proposed GTA West Highway netted out.

In terms of the amount of shale resource area that would be lost in each concept, **Table 1** shows the results of this analysis:

Table 1 (ARIP Mapping) - Amount of Shale Resource Lands affected by each Concept

	Area net of RNHS, Existing Road Allowances, Halton WMS and GTA West (based on drift thickness)			
Growth Concept	Less than 1 m	1 m to 8 m	8 m to 15 m	Total
1	0	140	1,490	1,630
2	0	90	1,120	1,210
3	0	70	590	650
4	0	160	1,740	1,900

On the basis of the above, Concept 3 would support this measure the best because it affects the least amount of shale resource lands. Concept 2 and then Concept 1 would be next, with Concept 4 least supporting the measure. It is noted however that if the higher priority lands having a drift thickness of 1 metre to 8 metres was considered instead, Concept 3 would continue to support this measure the best.

Map 3 - Concept 1 and Shale Resource Areas (ARIP-184)

Map 4 - Concept 2 and Shale Resource Areas (ARIP-184)

Drift Thickness

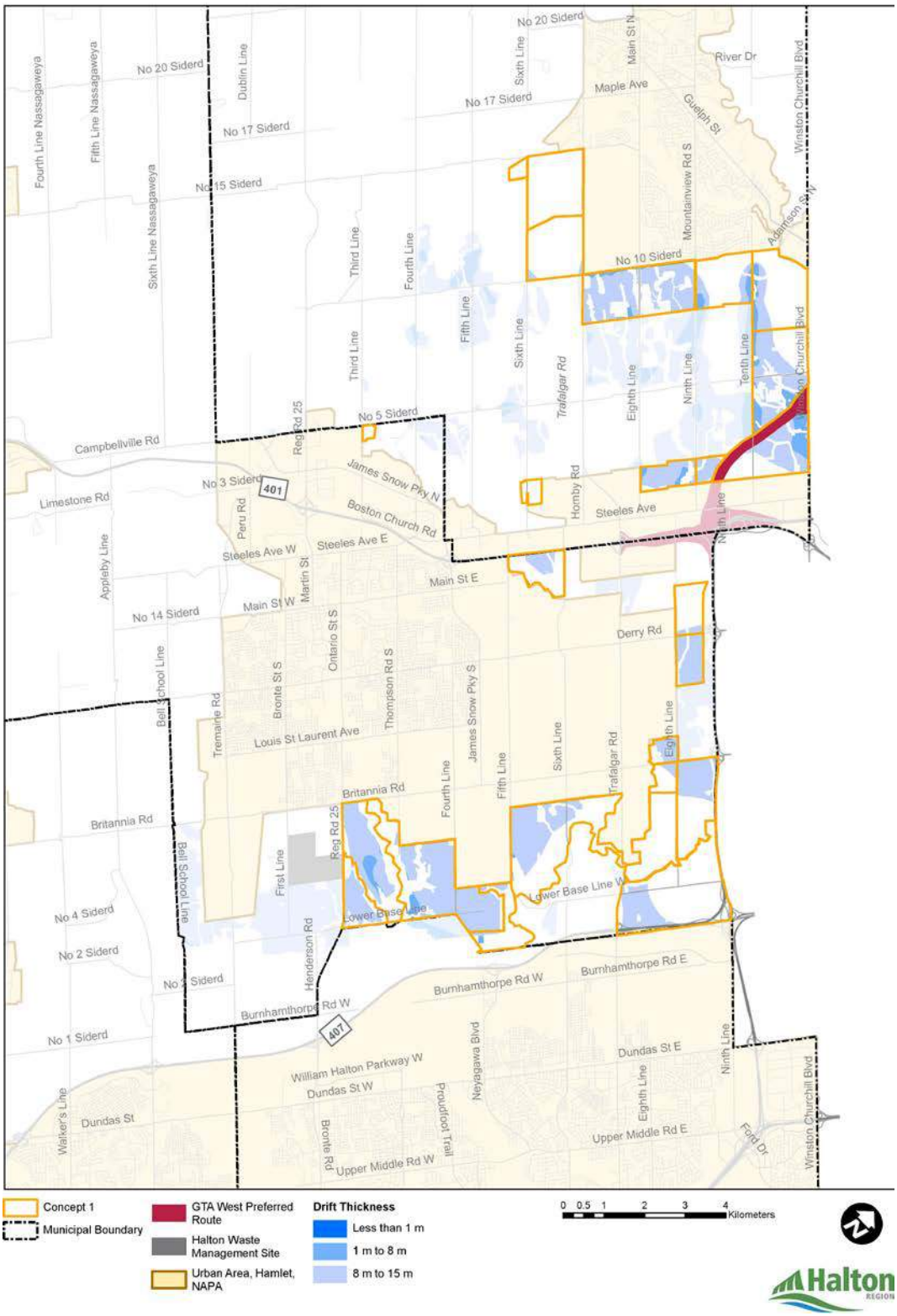
- Less than 1 m
- 1 m to 8 m
- 8 m to 15 m

Map 5 - Concept 3 and Shale Resource Areas (ARIP-184)

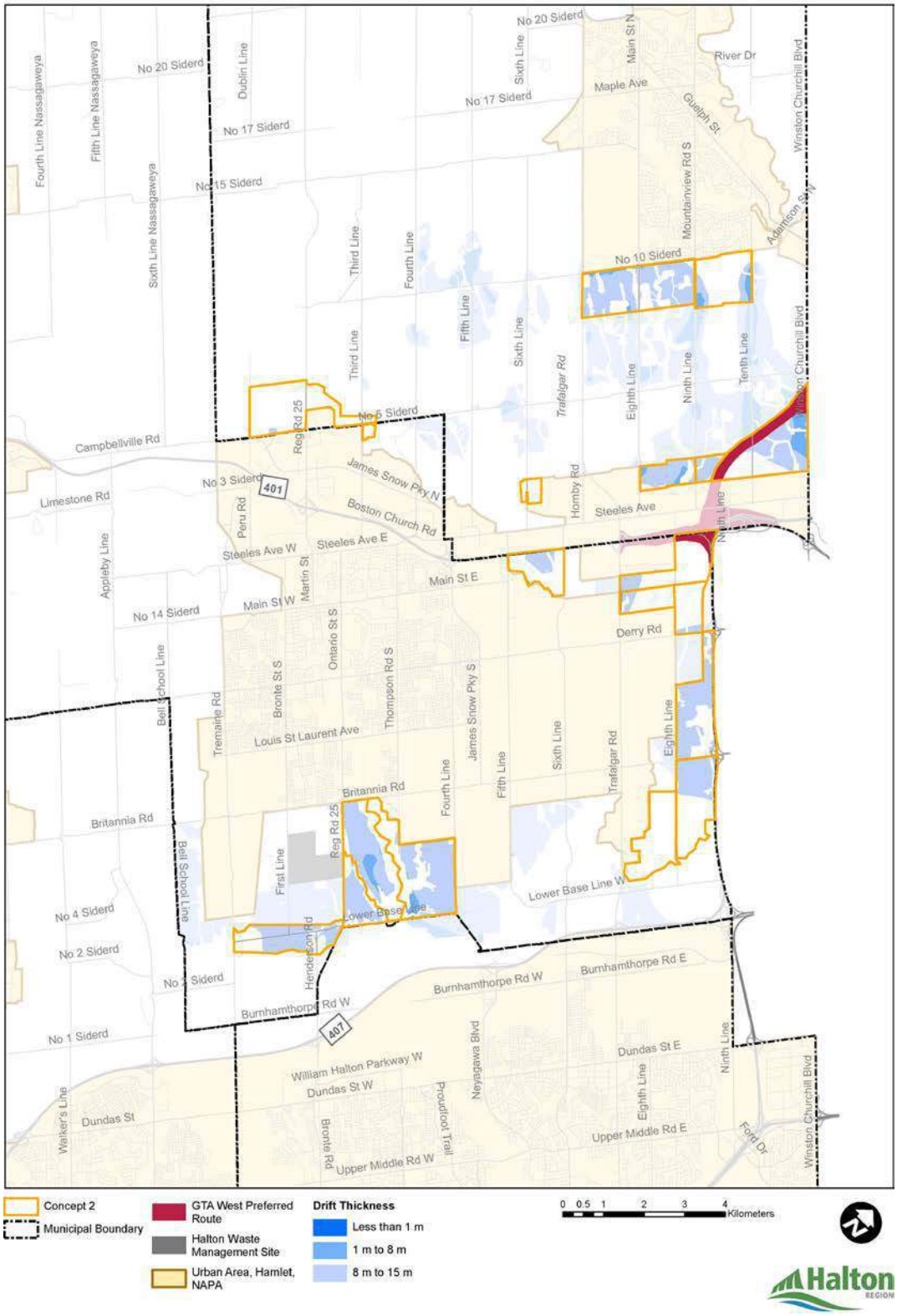
Map 6 - Concept 4 and Shale Resource Areas (ARIP-184)

See next page for the full maps

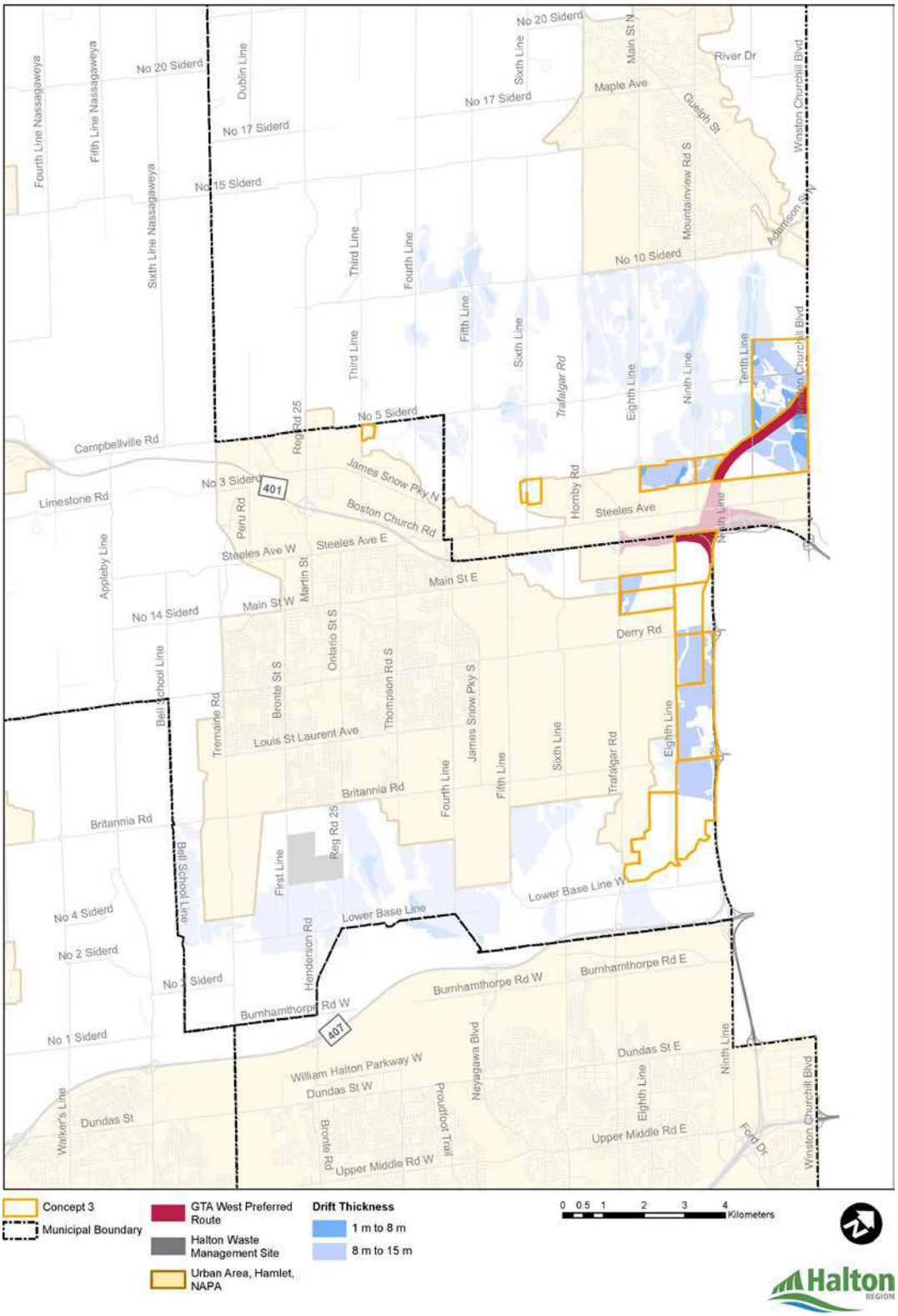
Map 3 - Concept 1 and Shale Resource Areas (ARIP-184)



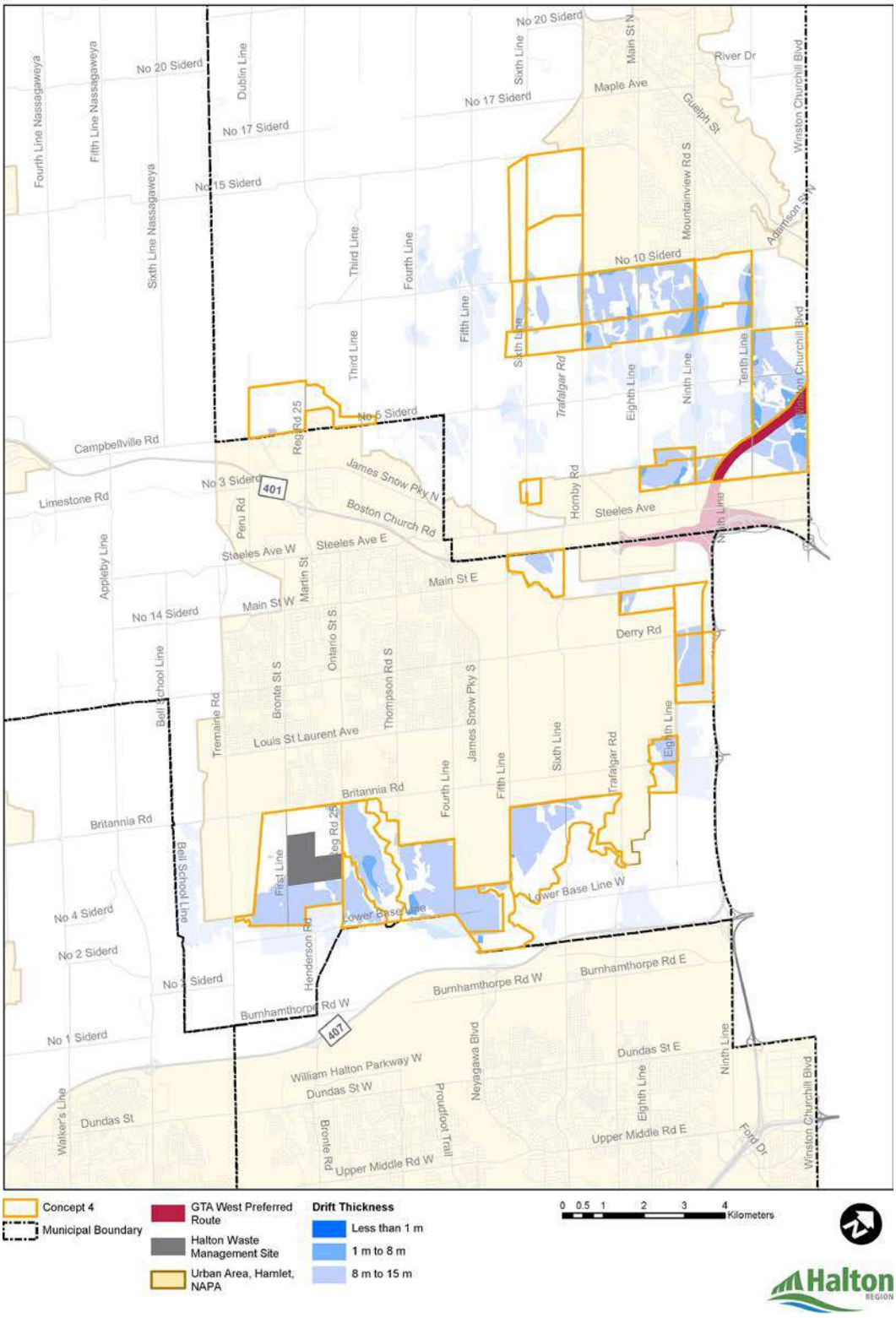
Map 4 - Concept 2 and Shale Resource Areas (ARIP-184)



Concept 3 and Shale Resource Areas (ARIP-184)



Map 6 - Concept 4 and Shale Resource Areas (ARIP-184)



Analysis of ROPA 38 Mapping

Maps 7, 8, 9 and 10 on the next page show each of the concepts based on the ROPA 38 mapping, with the with the proposed Regional Natural Heritage System, existing road allowances, the Halton Waste Management Site and the location of the proposed GTA West Highway netted out.

In terms of the amount of shale resource area that would be lost in each concept, **Table 2** shows the results of this analysis.

Table 2 (ROP Mapping) - Amount of Shale Resource Lands affected by each Concept

	Area net of RNHS, Existing Road Allowances, Halton WMS and GTA West (based on drift thickness)			
Growth Concept	Less than 1 m	1 m to 8 m	8 m to 15 m	Total
1	0	100	460	560
2	0	60	280	340
3	0	70	280	350
4	0	120	570	680

In this case, and for all Growth Concepts, the amount of land that is the site of a shale resource area is less for reasons mentioned in Section 4.0 of this Technical Memorandum. In addition, the shale resource area identified by the ROP is limited to Halton Hills.

On the basis of the above, Concept 3 would support this measure the best because it affects the least amount of shale resource lands. However, Concept 2 is very close behind, which is then followed by Concept 1 and Concept 4, which would support this measure the least because of the higher amount of shale resource land in Halton Hills that would be affected.

It is noted however that if the higher priority lands having a drift thickness of 1 metre to 8 metres was considered instead, Concept 2 would marginally support this measure the best, with Concept 3 being very close behind.

Map 7 - Concept 1 and Shale Resource Areas (ROP)

Map 8 - Concept 2 and Shale Resource Areas (ROP)

Drift Thickness

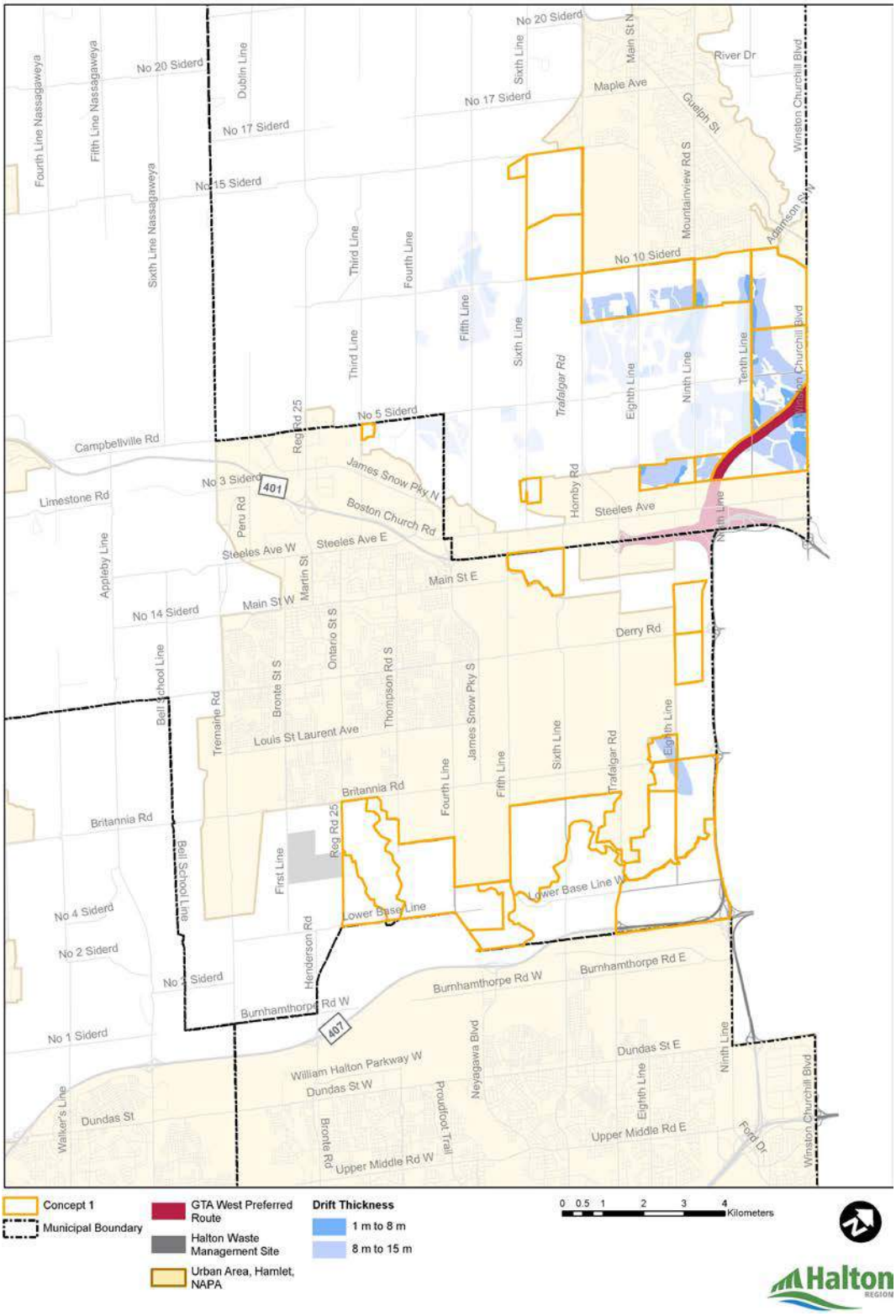
- Less than 1 m
- 1 m to 8 m
- 8 m to 15 m

Map 9 - Concept 3 and Shale Resource Areas (ROP)

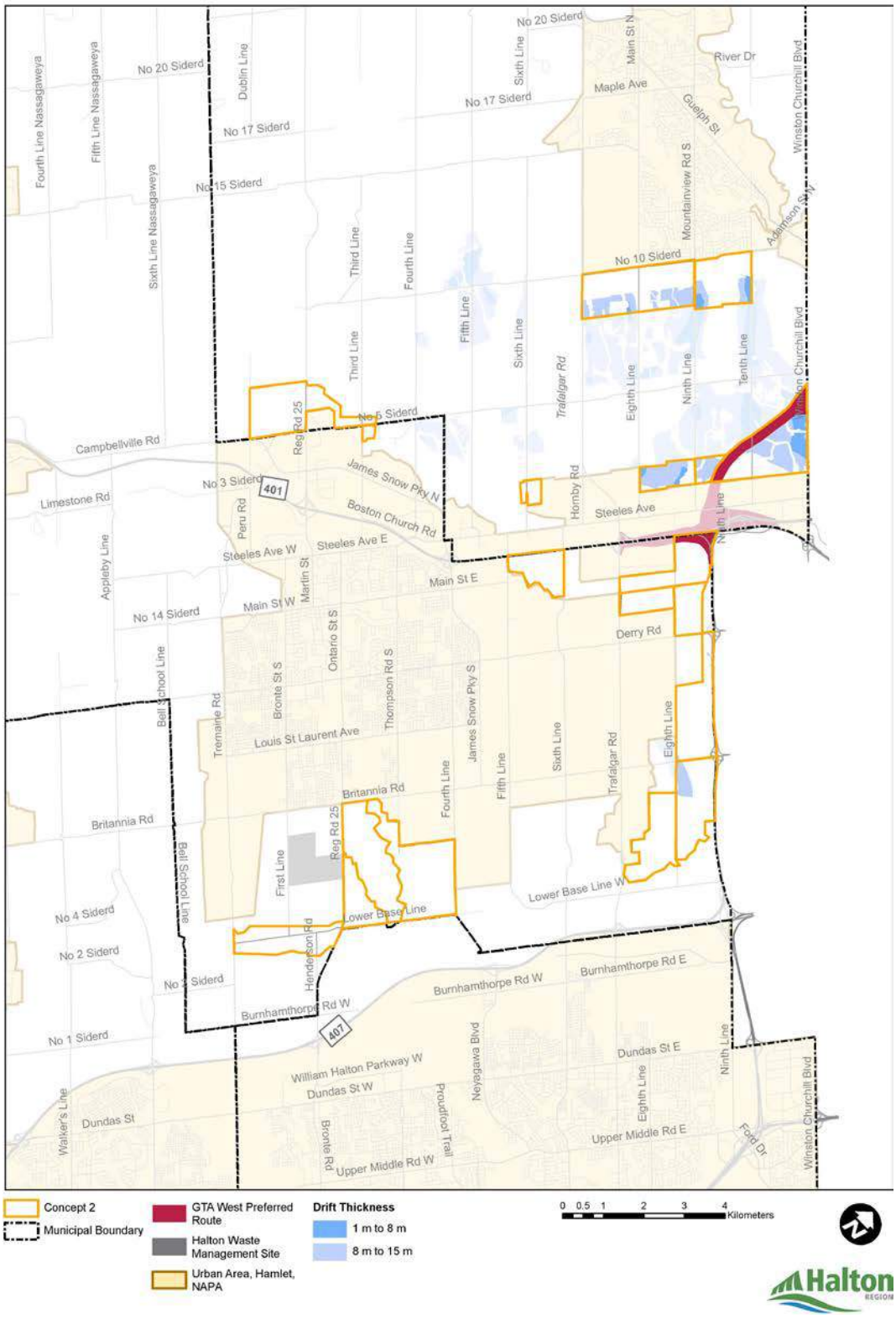
Map 10 - Concept 4 and Shale Resource Areas (ROP)

See next page for the full maps

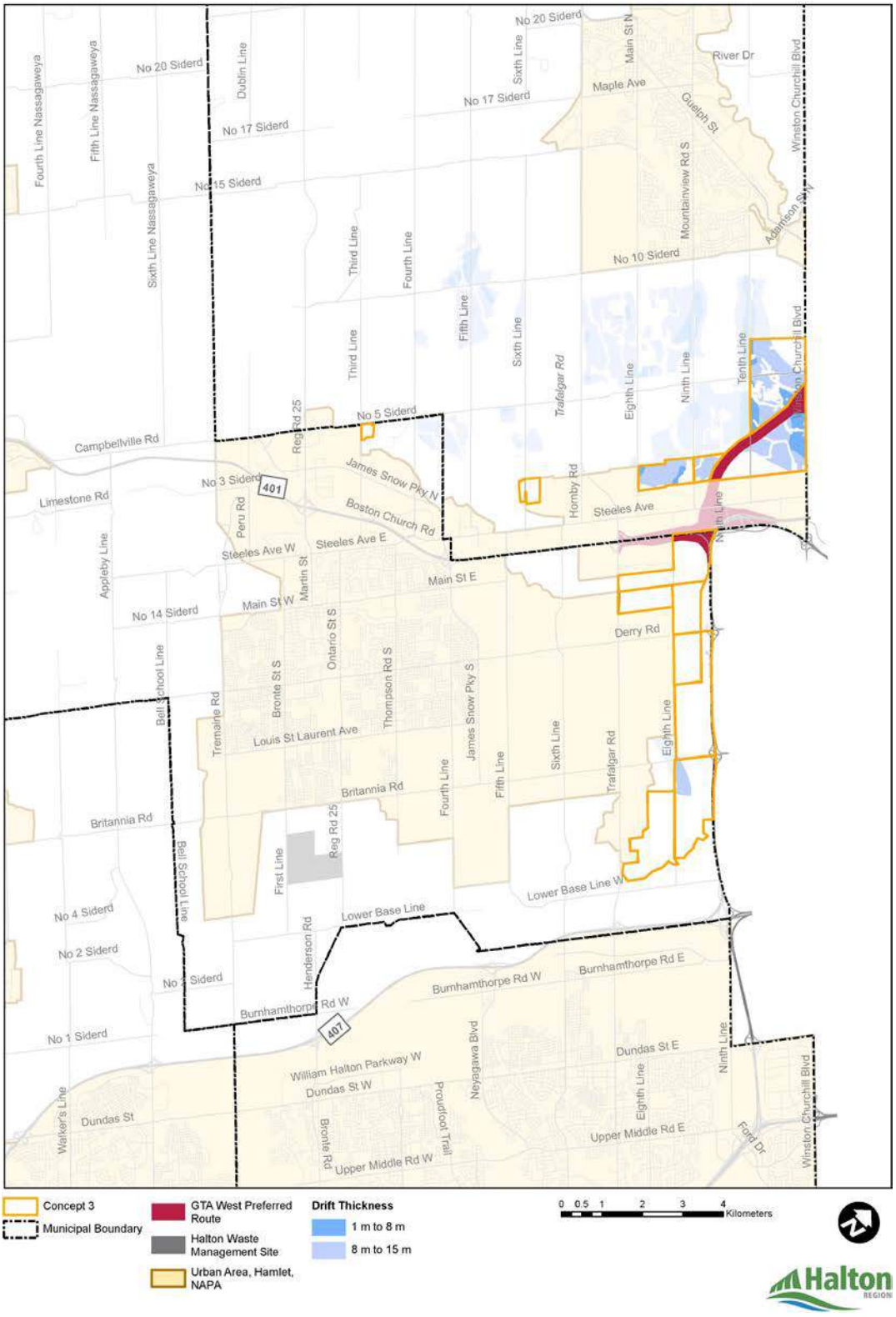
Map 7 - Concept 1 and Shale Resource Areas (ROP)



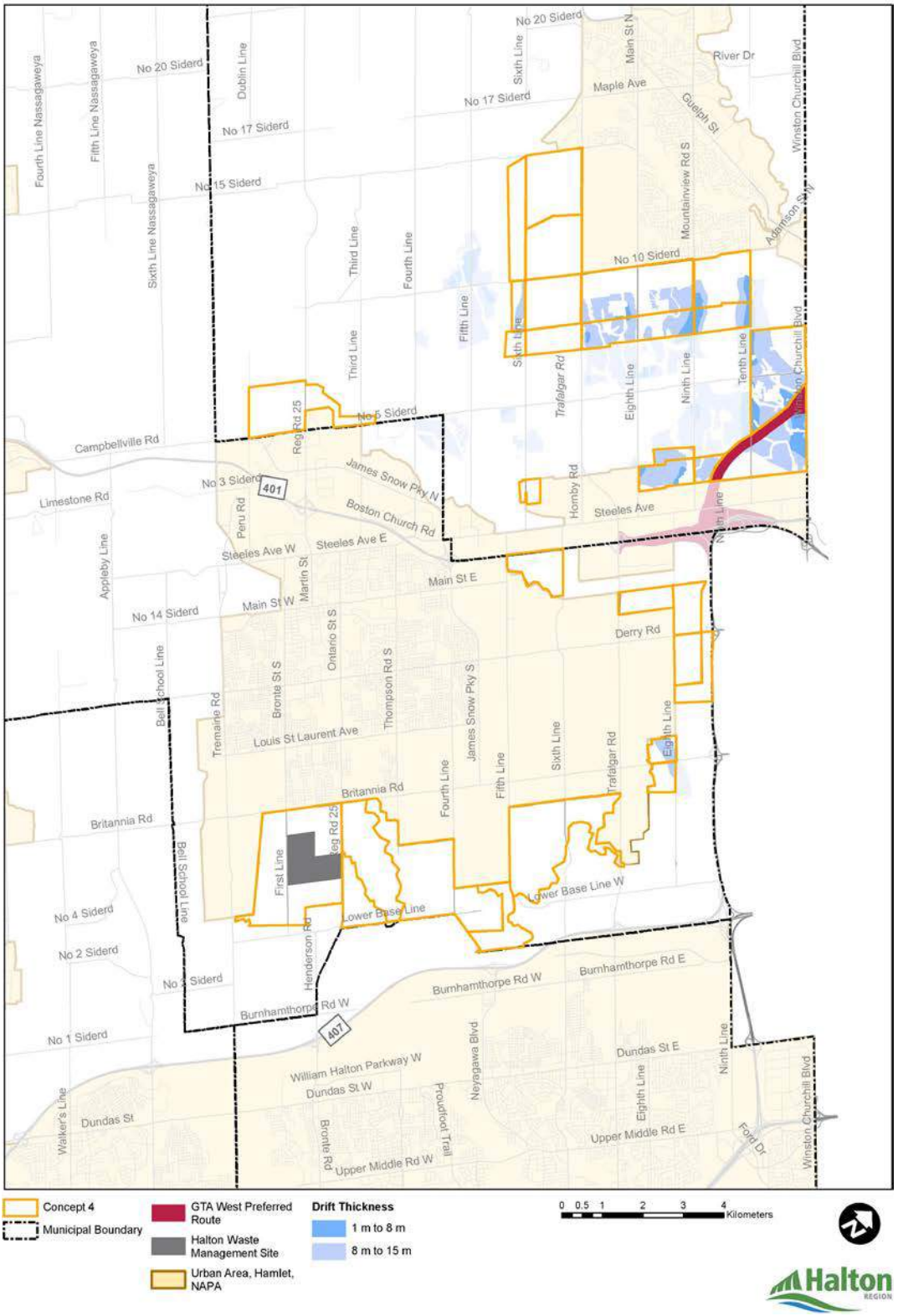
Map 8 - Concept 2 and Shale Resource Areas (ROP)



Map 9 - Concept 3 and Shale Resource Areas (ROP)



Map 10 - Concept 4 and Shale Resource Areas (ROP)



5.2 Retains areas for mineral extraction, which can be rehabilitated to high value agricultural areas

In contrast to the first measure, this measure is about how much shale resource area is retained, based on the selection of each Growth Concept, and in consideration of both ARIP 184 and ROPA 38 mapping.

In this regard, **Table 3** shows how much shale resource area is retained by drift thickness and by Concept based on ARIP 184 mapping. In this case, the proposed Regional Natural Heritage System, existing road allowances, the Halton Waste Management Site and the location of the proposed GTA West Highway have been netted out. The location of the retained shale resource areas according to ARIP mapping is shown on Maps 11, 12, 13 and 14.

Table 3 (ARIP Mapping) - Amount of Shale Resource Lands retained based on each Growth Concept

	Area net of RNHS, Existing Road Allowances, Halton WMS and GTA West (based on drift thickness)			
Growth Concept	Less than 1 m	1 m to 8 m	8 m to 15 m	Total
1	0	210	1,740	1,960
2	0	260	2,110	2,370
3	0	290	2,640	2,930
4	0	190	1,490	1,690

On the basis of the above, Concept 3 would support this measure the best because it affects the least amount of shale resource lands. Concept 2 and then Concept 4 would be next, with Concept 1 least supporting the measure.

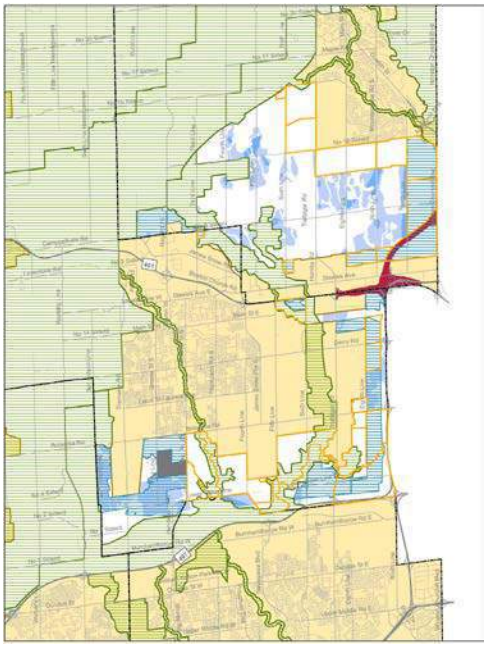
Table 4 shows how much shale resource area is retained by drift thickness and by Concept based on ROPA 38 mapping. The location of the retained shale resource areas according to ROP mapping is shown on Maps 15, 16, 17 and 18.

Table 4 (ROP Mapping) - Amount of Shale Resource Lands retained based on each Growth Concept

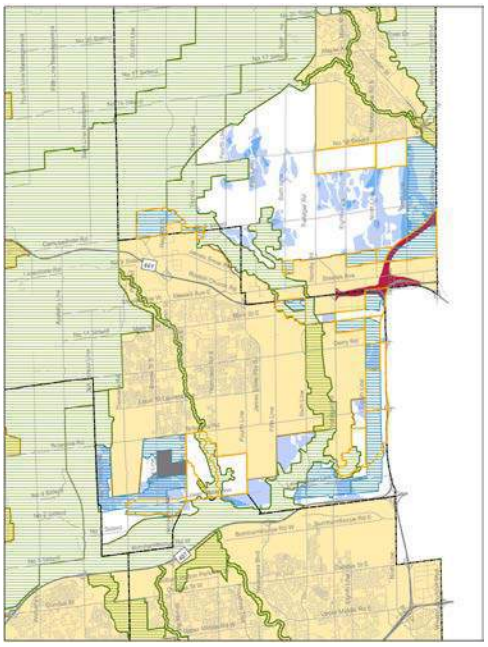
	Area net of RNHS, Existing Road Allowances, Halton WMS and GTA West (based on drift thickness)			
Growth Concept	Less than 1 m	1 m to 8 m	8 m to 15 m	Total
1	0	150	760	910
2	0	190	950	1,140
3	0	180	940	1,120
4	0	130	660	790

On the basis of the above, Concept 3 would support this measure the best because it affects the least amount of shale resource lands. However, Concept 2 is very close behind, which is then followed by Concept 1 and Concept 4, which would support this measure the least because of the higher amount of shale resource land in Halton Hills that would be affected.

Map 11 - Concept 1 and Retained Shale Resource Areas (ARIP-184)



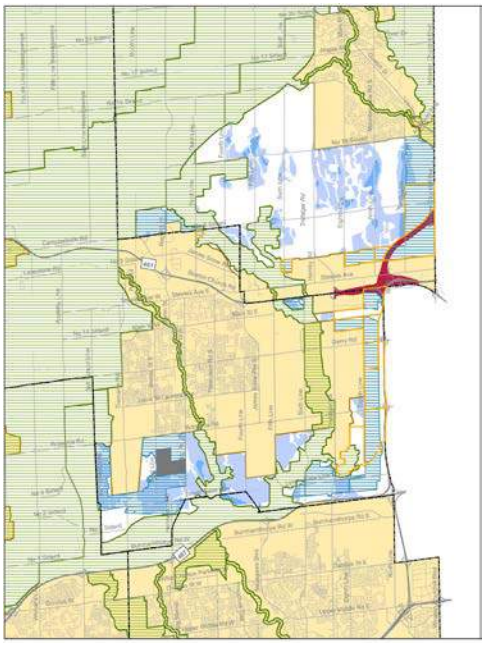
Map 12 - Concept 2 and Retained Shale Resource Areas (ARIP-184)



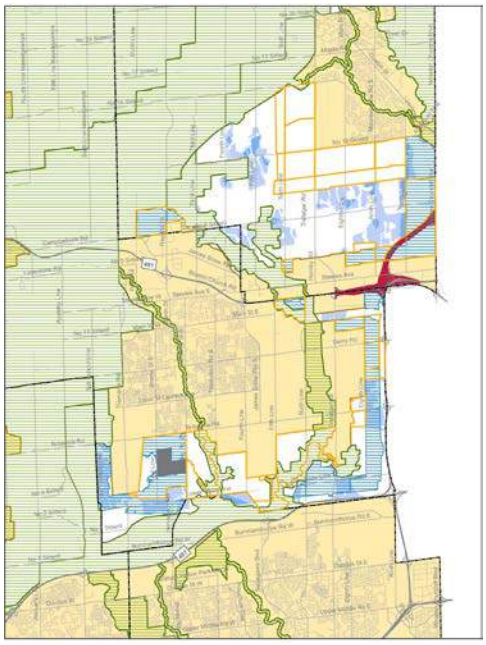
Drift Thickness

- Less than 1 m
- 1 m to 8 m
- 8 m to 15 m

Map 13 - Concept 3 and Retained Shale Resource Areas (ARIP-184)

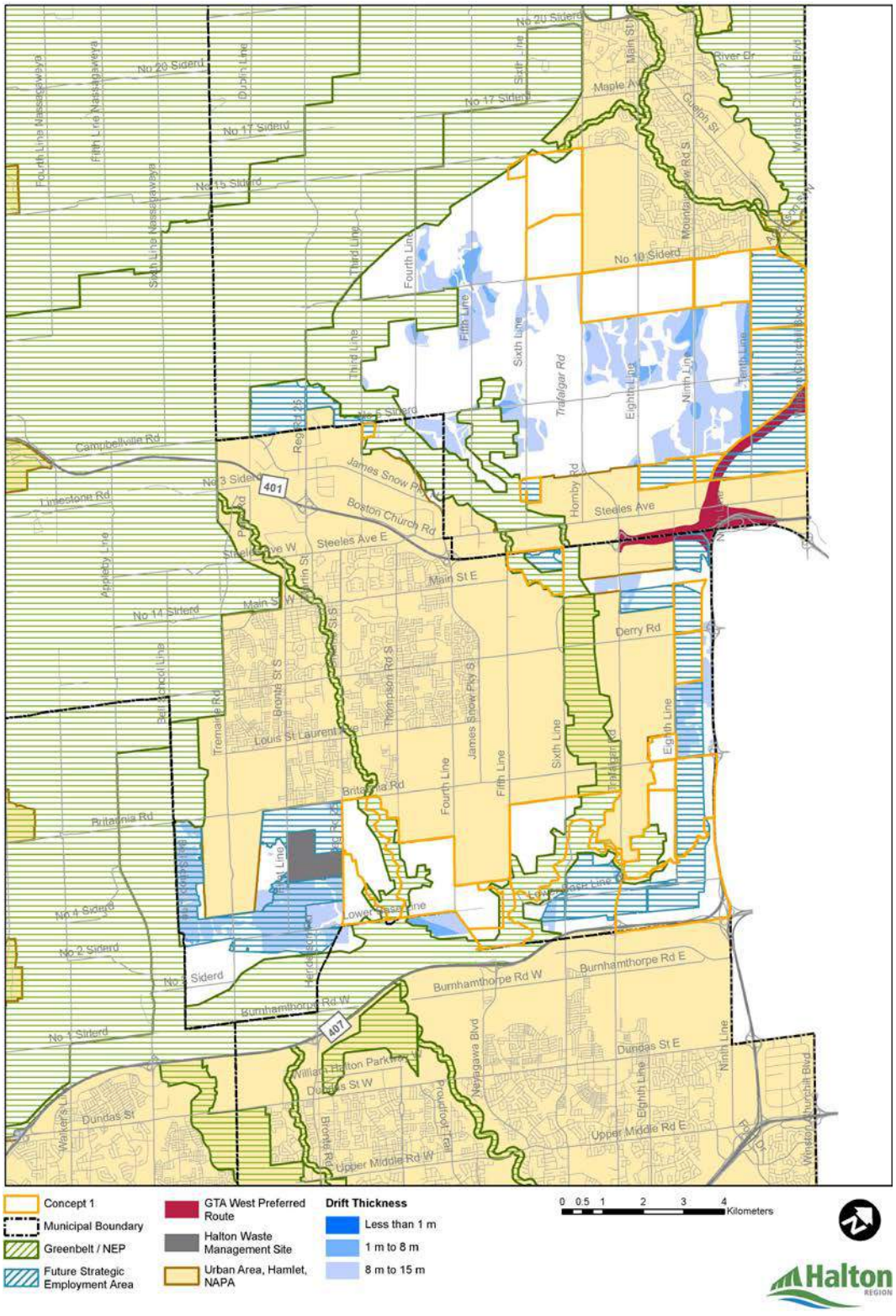


Map 14 - Concept 4 and Retained Shale Resource Areas (ARIP-184)

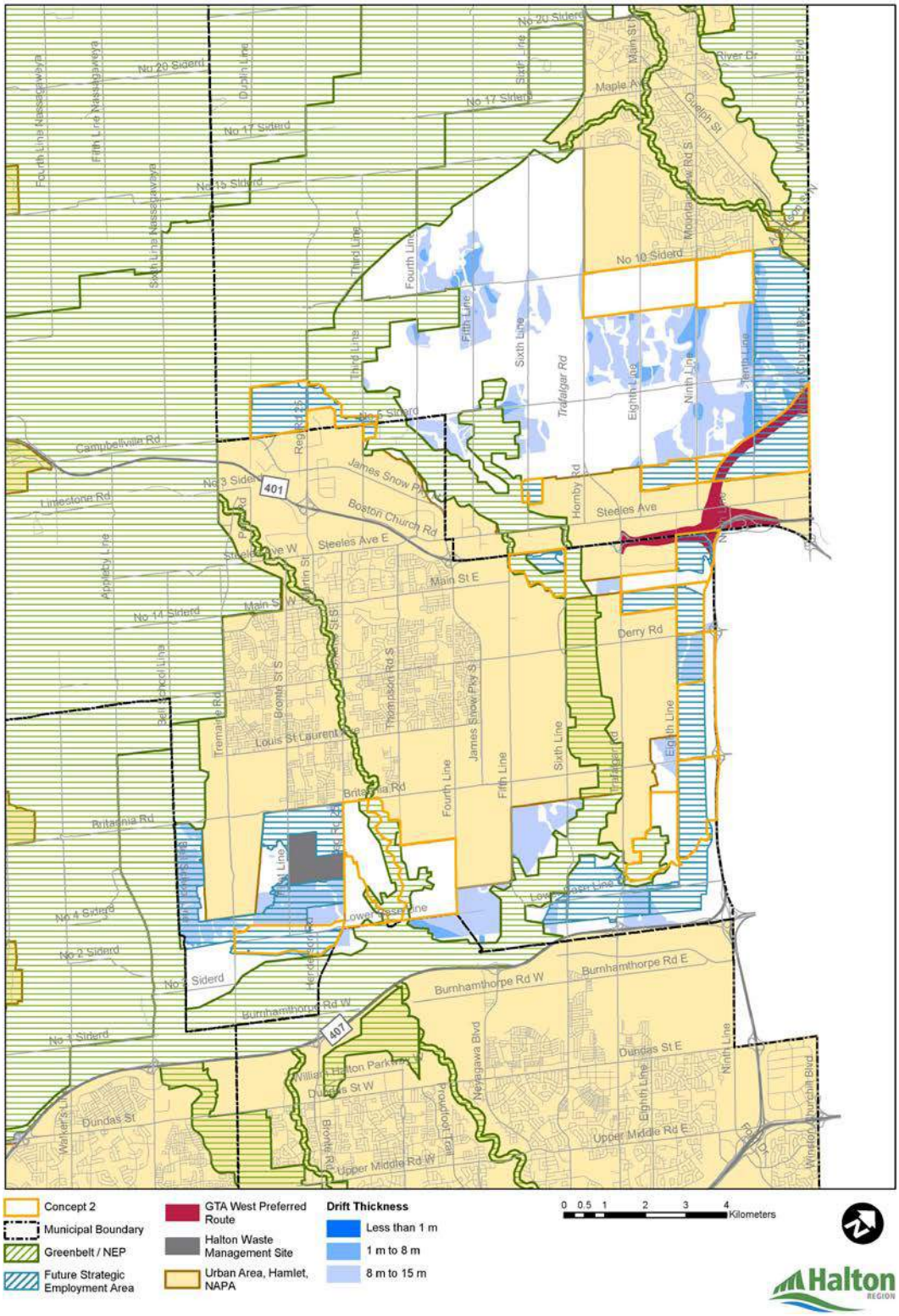


See next page for the full maps

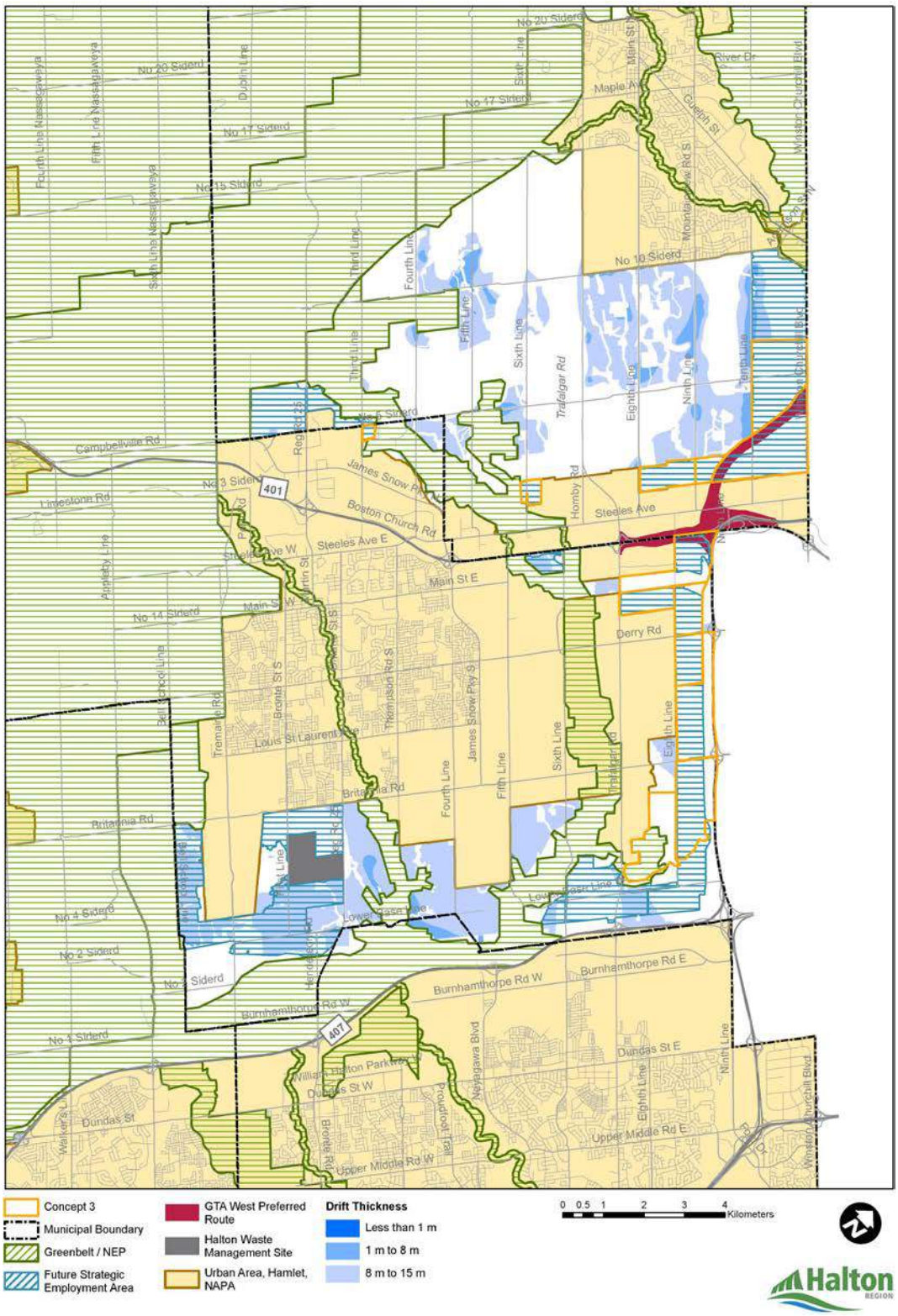
Map 11 - Concept 1 and Retained Shale Resource Areas (ARIP-184)



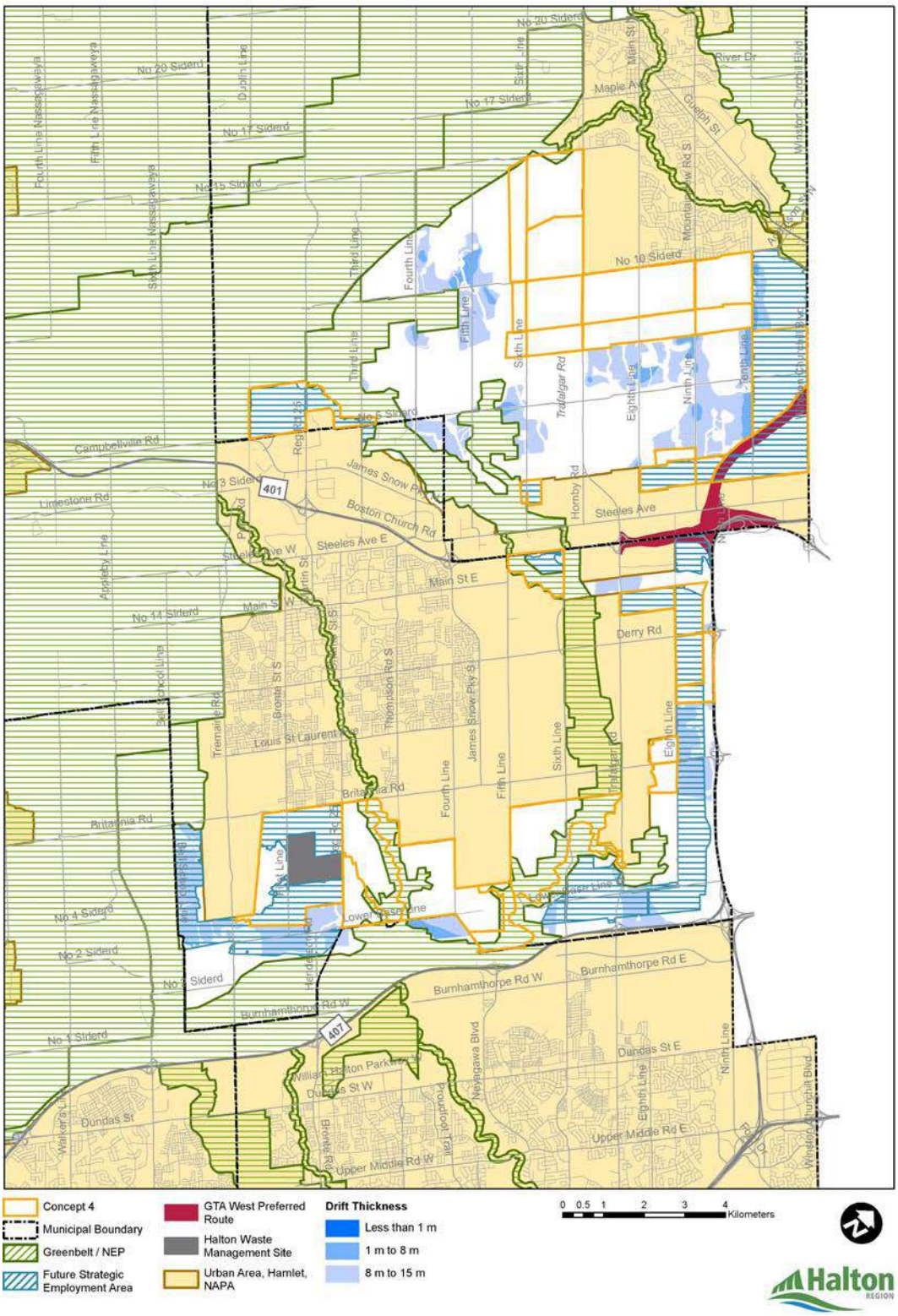
Map 12 - Concept 2 and Retained Shale Resource Areas (ARIP-184)



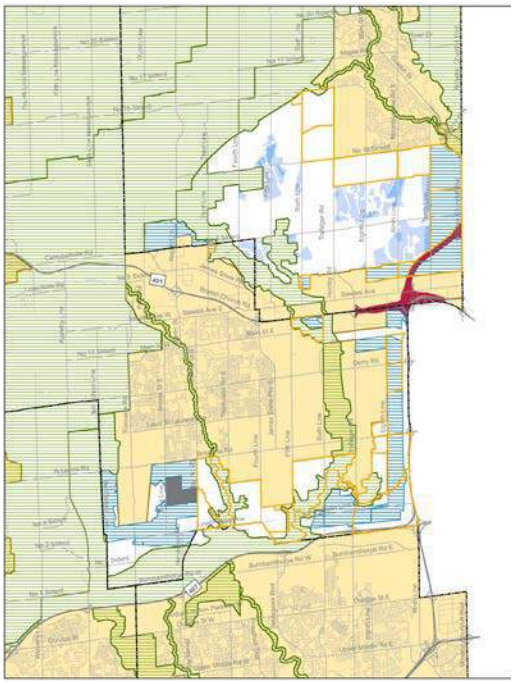
Map 13 - Concept 3 and Retained Shale Resource Areas (ARIP-184)



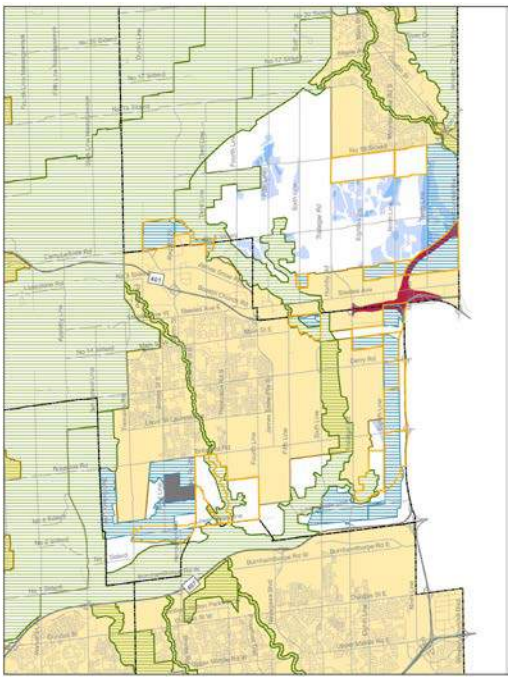
Map 14 - Concept 4 and Retained Shale Resource Areas (ARIP-184)



Map 15 - Concept 1 and Retained Shale Resource Areas (ROP)



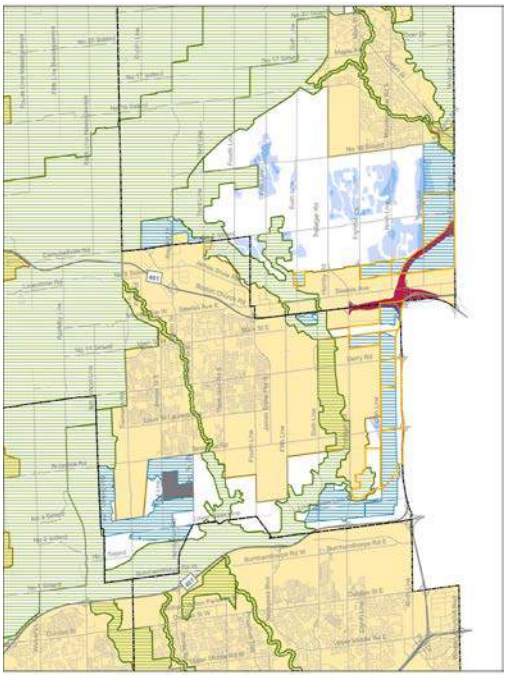
Map 16 - Concept 2 and Retained Shale Resource Areas (ROP)



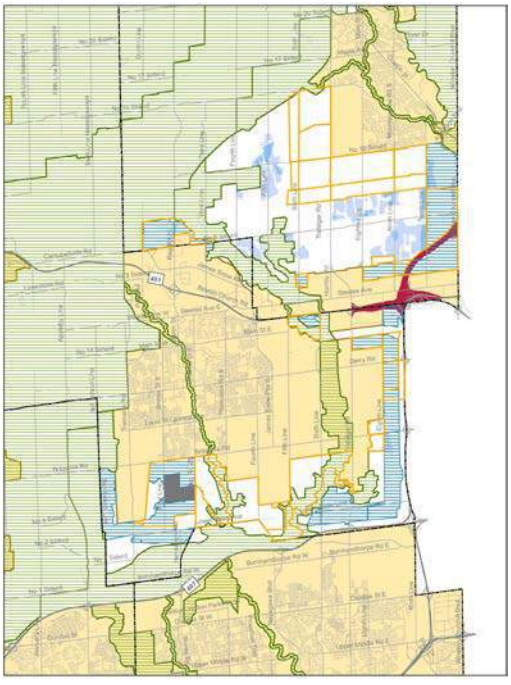
Drift Thickness

- Less than 1 m
- 1 m to 8 m
- 8 m to 15 m

Map 17 - Concept 3 and Retained Shale Resource Areas (ROP)



Map 18 - Concept 4 and Retained Shale Resource Areas (ROP)



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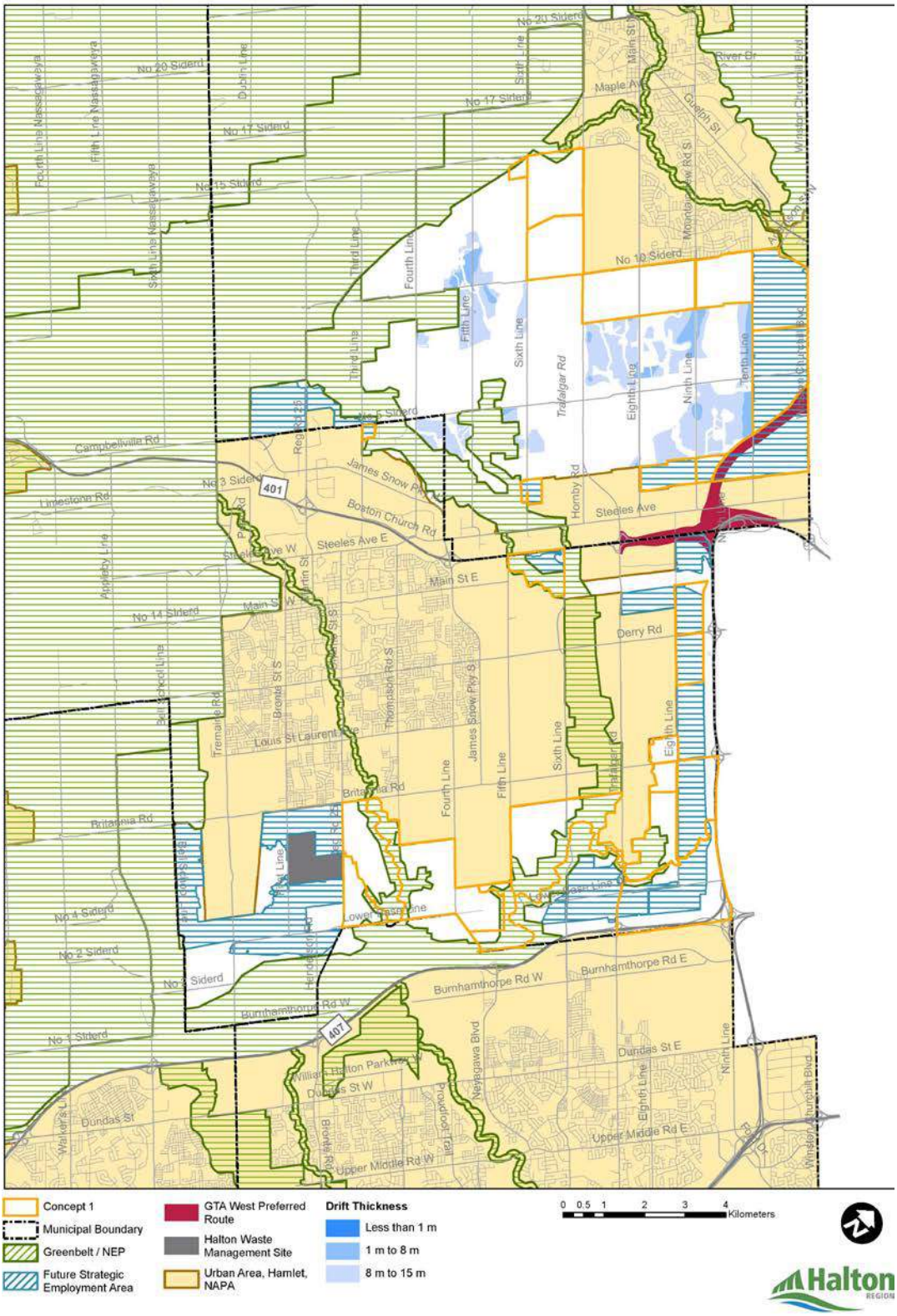
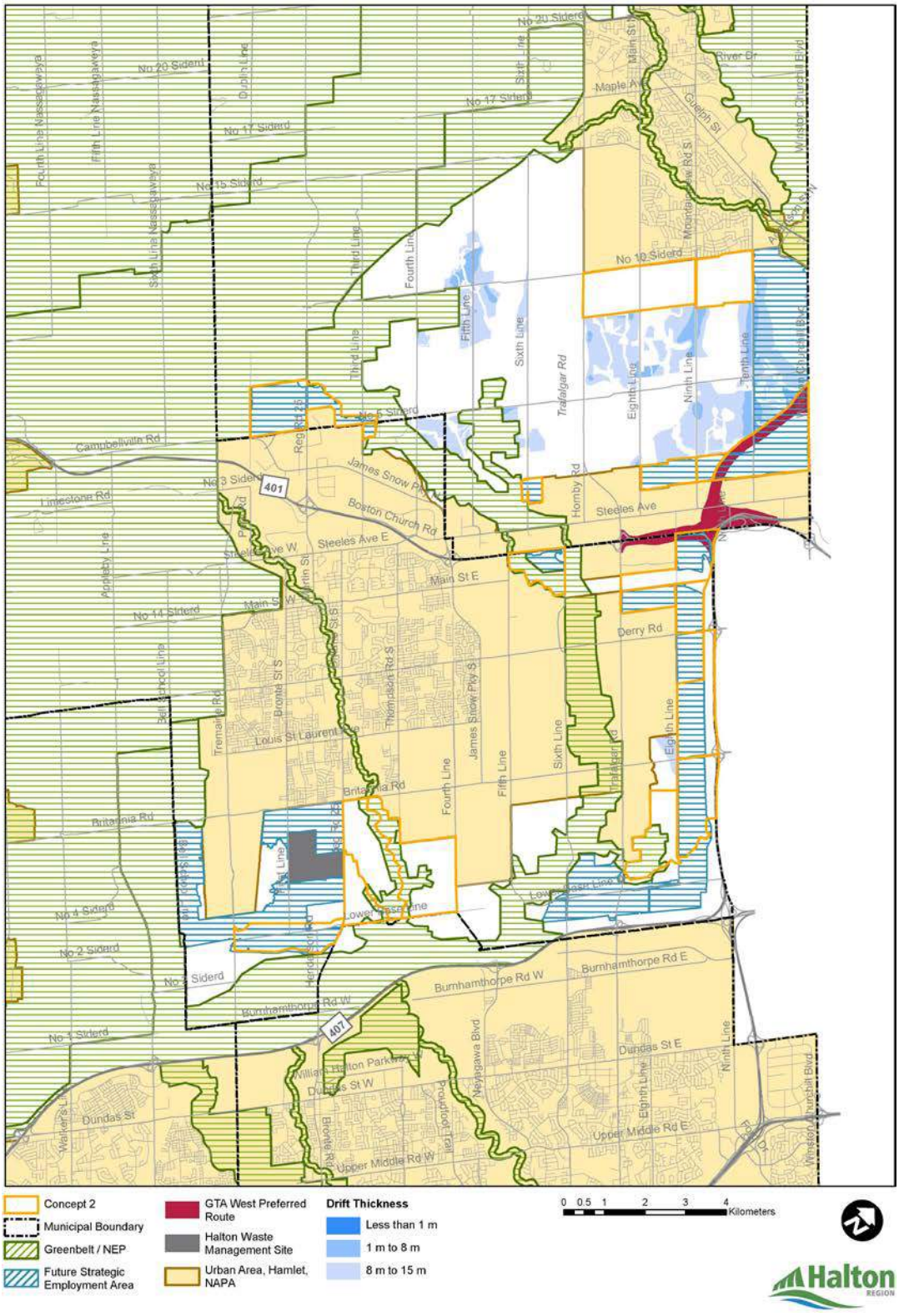
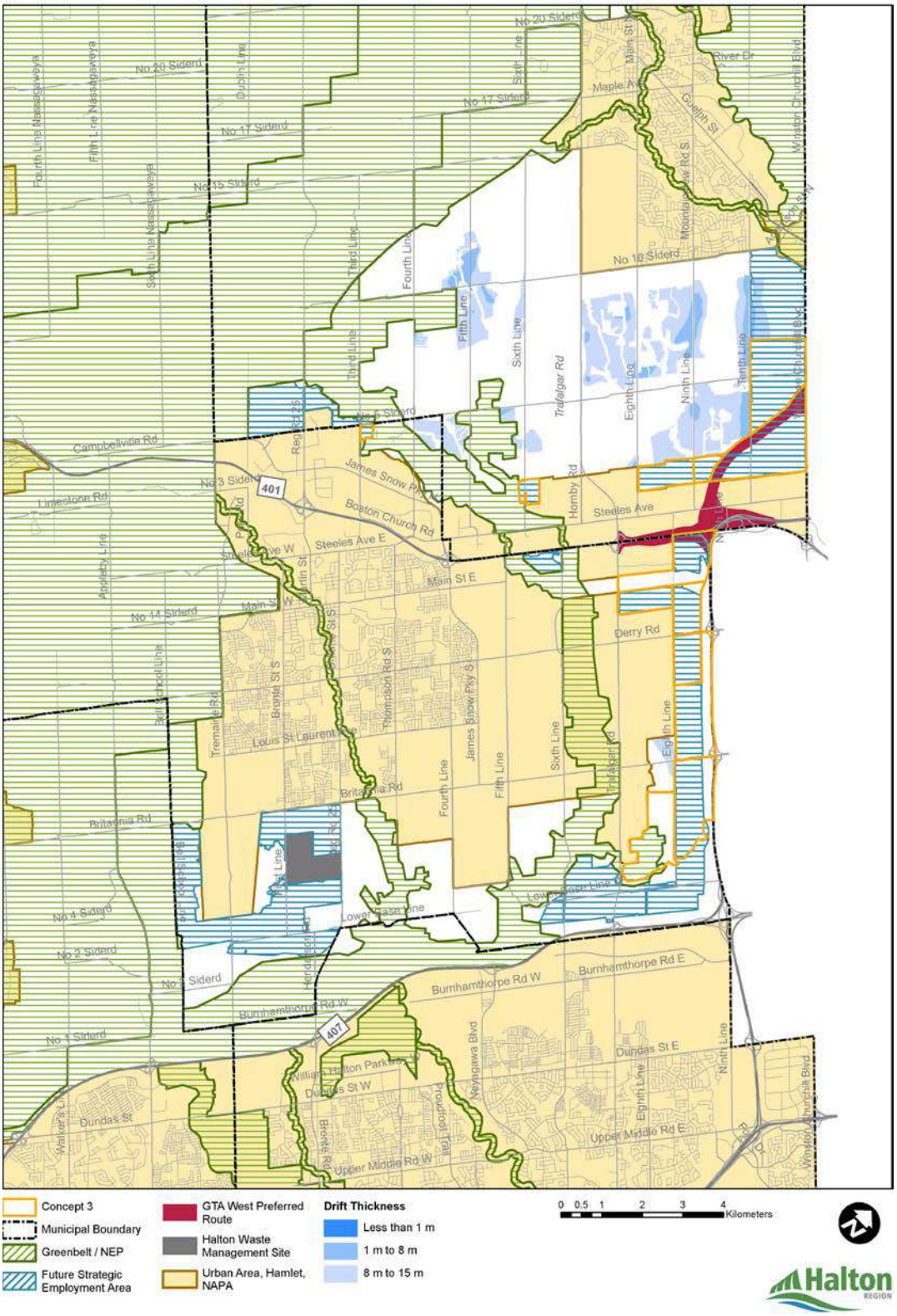
Map 15 - Concept 1 and Retained Shale Resource Areas (ROP)



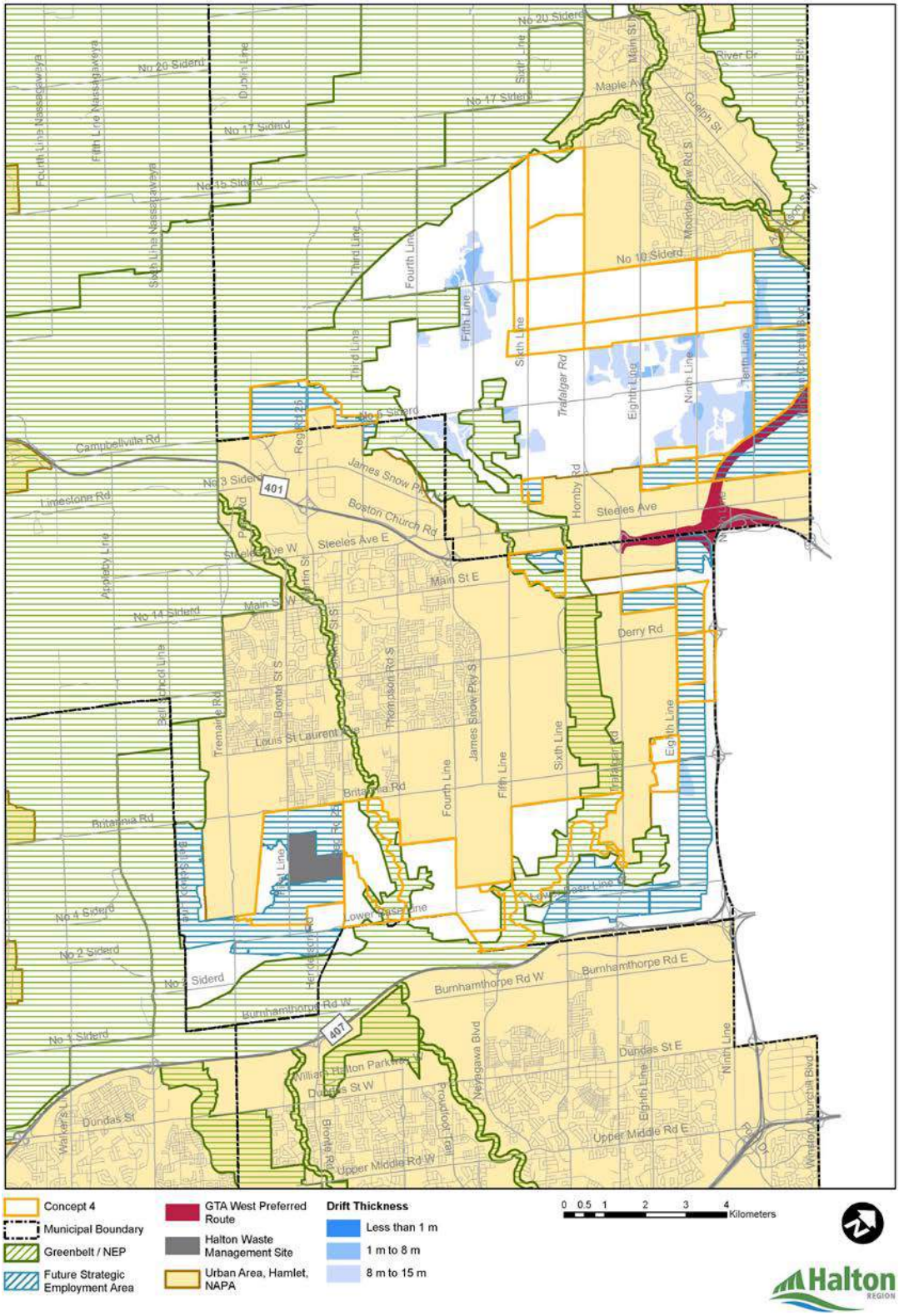
Map 16 - Concept 2 and Retained Shale Resource Areas (ROP)

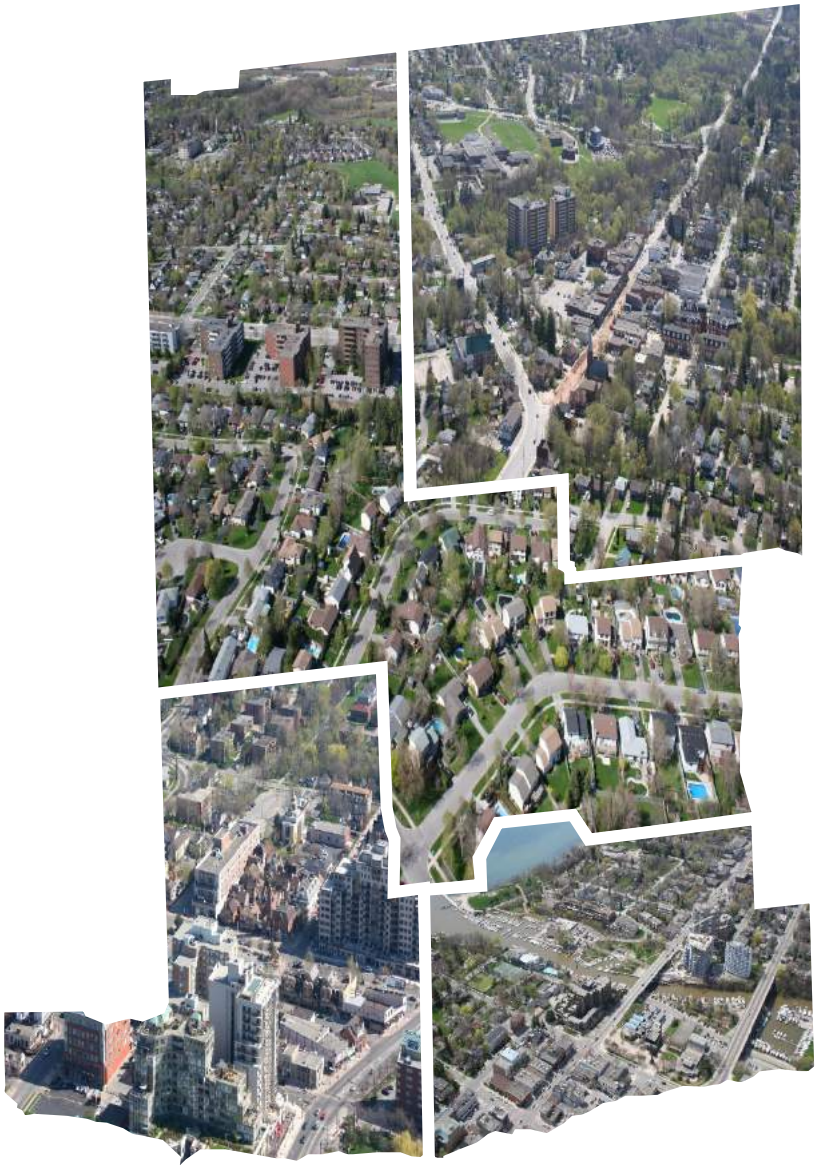


Map 17 - Concept 3 and Retained Shale Resource Areas (ROP)



Map 18 - Concept 4 and Retained Shale Resource Areas (ROP)





Appendix J

North Aldershot Policy Area Urban Expansion Assessment

February 2021

Regional Official Plan Review

MERIDIAN PLANNING

Halton REGION

Halton Region Integrated Growth Management Strategy
North Aldershot Policy Area Urban Expansion Assessment

TABLE OF CONTENTS

1.0 PURPOSE

In 2016, the Region initiated a review of the Halton Region Official Plan (ROP). A key element of the review is the Integrated Growth Management Strategy (IGMS), which is intended to ensure conformity with the Growth Plan (2019) and the requirement to accommodate 1,100,000 million people and 500,000 jobs by 2051 (with these population and employment targets being established by Amendment 1 to the Growth Plan in 2020).

In order to accommodate expected population and employment growth, a number of Growth Concepts were developed in the Fall of 2020. Each of these Growth Concepts proposed the expansion of the urban area beyond current urban boundaries. These Growth Concepts did not include lands within the North Aldershot Policy Area (NAPA).

The purpose of this Technical Memorandum is to determine whether the decision to not include lands within the NAPA in a Growth Concept was appropriate. In developing this Technical Memorandum, the primary document considered was the Growth Plan 2019 as amended by Amendment 1.

2.0 IS ANY PART OF THE NAPA WITHIN A SETTLEMENT AREA AT THE PRESENT TIME?

It is recognized that there are components of the NAPA that are 'eligible for urban services' as per the work completed in the mid-1990's that was incorporated into the Regional Official Plan (ROP) through ROPA 2. However, being eligible for urban services does not mean that the lands so identified are within the urban area in the ROP.

This is because the NAPA is a mutually exclusive land use designation in the ROP that is separate from the Urban Area designation and it is only within the Urban Area designation where urban uses are permitted. In addition, Section 89 (21) of the ROP prohibits the extension of urban services beyond the boundary of the urban area, with one of the exceptions being 'designated locations within the North Aldershot Policy Area as shown on Map 1', which reinforces the above.

Given that the NAPA is not within an urban area, the Growth Plan 2019 provides some direction on whether the NAPA (or a component of it) can be considered a rural settlement

area. In this regard, the Growth Plan defines 'rural settlement ' as follows:

"Existing hamlets or similar existing small settlement areas that are long-established and identified in official plans. These communities are serviced by individual private on-site water and/or private wastewater systems, contain a limited amount of undeveloped lands that are designated for development and are subject to official plan policies that limit growth. All settlement areas that are identified as hamlets in the Greenbelt Plan, as rural settlements in the Oak Ridges Moraine Conservation Plan, or as minor urban centres in the Niagara Escarpment Plan are considered rural settlements for the purposes of this Plan, including those that would not otherwise meet this definition."

On the basis of the above, rural settlement areas are existing hamlets or similar existing small settlement areas that have been long established and identified in Official Plans. As the ROP does not identify any part of the NAPA as being within a hamlet or rural cluster, which is how rural settlements have been classified in the ROP, there are no rural settlement areas in the NAPA. The Burlington Official Plan also does not identify any component of NAPA as a settlement area either, since it was confirmed through OPA 197 (discussed below) that Highway 403 was the northern urban boundary of the Burlington urban area.

3.0 THE REGION'S HISTORICAL APPROACH TO GROWTH MANAGEMENT AS IT RELATES TO NAPA

3.1 Halton Urban Structure Plan - the 1990's

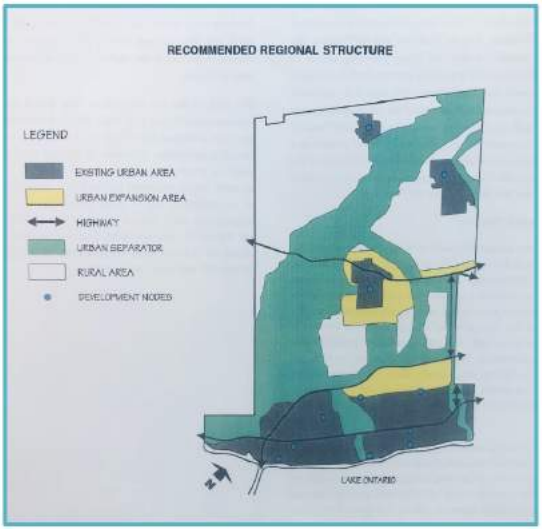
Halton Region's growth management history began in earnest with the Halton Urban Structure Plan (HUSP) that was approved by Regional Council in 1994 and implemented in the ROP in 1999. This process was initiated in the late 1980's and involved considerable research and consultation.

The key decision made as a result of the HUSP was that urban growth would be accommodated through intensification within existing communities and as extensions of existing communities and that growth would not simply continue north from the lake as an incremental northward extension of Oakville.

Instead, and in addition to accommodating additional growth in Oakville, a conscious decision was made to significantly expand the Milton urban area. To allow for this development to occur, services were extended from Oakville up Regional Road 25.

In the end the HUSP process established Halton's regional structure as shown on **Figure 1** and led to the identification and associated phasing of about 5,200 hectares of residential land within the Milton and North Oakville areas.

Figure 1: HUSP Regional Structure



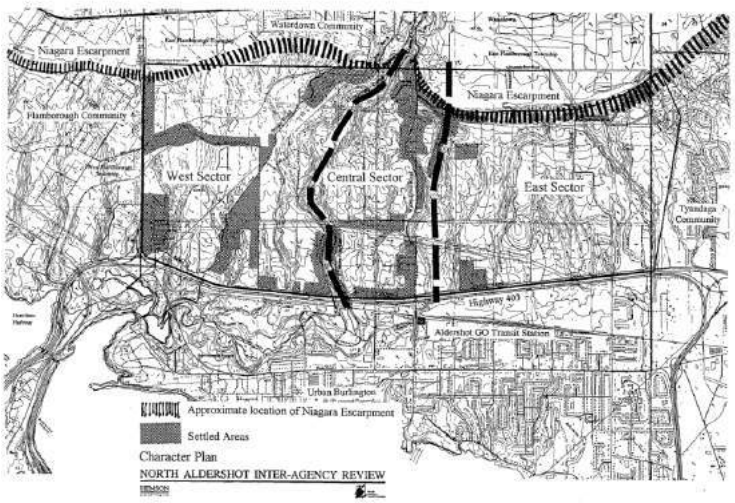
It is noted on **Figure 1** that the NAPA was identified as being included within the 'urban separator' category, and that the focus of development at the time was clearly Milton and North Oakville. This reflected the awareness that existed at the time on the sensitivity of NAPA to urban development. This awareness would have been as a result of the work completed on the North Aldershot Inter-Agency Review (NAIR), which was initiated in 1993, before the first Provincial policy statement containing direction on growth management was released (this was the Comprehensive Set of Policy Statements (CSPS), which came into effect on March 28, 1995).

The NAIR was carried out under the direction of Halton Region in partnership with the City of Burlington, Ministry of Municipal Affairs and Ministry of the Environment, Halton Region Conservation Authority and the Niagara Escarpment Commission. The purpose of the NAIR was to determine the extent to which development should be permitted in North Aldershot.

The land use plan developed as part of the review concluded that additional development in the Central Sector could be supported from a servicing and environmental perspective in discrete pockets of land that were surrounded by environmental features. In this regard, the NAIR estimated that up to 550 new dwellings could potentially be developed in these pockets in the Central Sector along with 45 additional infill houses along existing roads. The three sectors identified by NAIR are shown on **Figure 2.**

For the West Sector, it was recommended that only limited infilling be permitted along existing roads. In this regard, it was suggested that the development of about 45 new dwellings could be accommodated in the West Sector. However, it was also indicated that up to 350 units could 'theoretically' be located in an Estate Residential Cluster designation in the West Sector subject to additional study.

Figure 2: North Aldershot Sectors



A similar recommendation was made for the East Sector and only limited infilling was suggested for this area as well, with up to 45 additional dwellings possible; with an additional 390 units also 'theoretically' possible. The total number of dwelling units anticipated based on the land use concept was therefore up to a maximum of 685, assuming that only the Central Sector would be on full services.

It was recognized in the NAIR report as per the above that up to 740 additional units could be 'theoretically' located on other lands in the East and West Sectors, however; the report also indicated that the feasibility of achieving this level of development was very limited for a variety of servicing and environmental reasons.

City of Burlington Council approved the NAIR Final Report on June 13, 1994. In addition, Burlington Council adopted the Land Use Concept contained in the NAIR report as the framework for future land use in North Aldershot and directed staff to carry out the necessary studies and prepare an Official Plan Amendment to implement the recommended Land Use Concept.

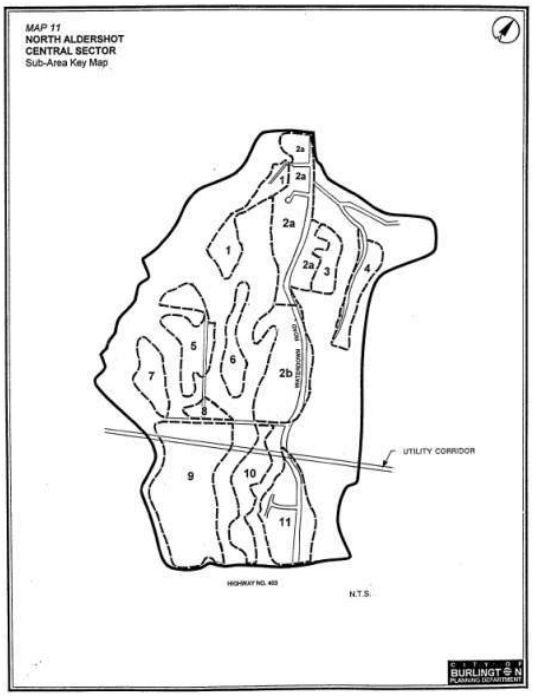
The only amendment prepared at the time was Official Plan Amendment 197 ('OPA 197'), which applied to the Central Sector only, and which the Ontario Municipal Board approved

in 1996.

The goal of OPA 197 was to permit further development in the Central Sector on the basis that the subject lands were outside of the City's urban area and that the location and intensity of development would be determined by its compatibility with the existing character, landscape and environment. On this basis, it was clear at the time that anticipated development in the Central Sector would be located on lands that were outside of the City's urban area. This is supported by one of the objectives of OPA 197, which was to confirm Highway 403 as Burlington's northern urban boundary in the west part of the City. This means that at no time was any component of the NAPA considered an urban area.

OPA 197 included a series of land use designations for the Central Sector that were intended to guide the development of a range of uses in a manner that was sensitive to the natural environment (larger and varied lot sizes, maximum lot coverage etc.). These policies collectively permitted over 500 dwelling units in a number of sub-areas (shown on **Figure 3**), with all of the sub-areas except one (sub-area 4) to be on full municipal services. With respect to sub-area 4 (which applies to a small area on the east of Old Waterdown Road), OPA 197 indicated that a decision regarding servicing was deferred pending a Local Improvement Area Study by the Region of Halton.

Figure 3: OPA 197 Central Sector Sub-Area Key Map



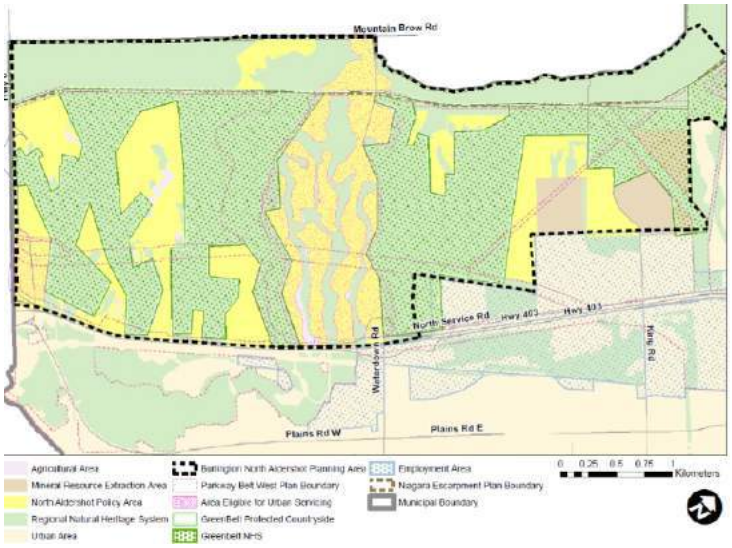
Regional Council endorsed the NAIR Study Final Report in June 1994 as the planning framework for the North Aldershot area. Regional Council also directed staff to undertake the appropriate studies to consider the financial feasibility and servicing options for the NAIR study area. The options for servicing concluded that only limited areas of the NAIR study area would be feasible.

Halton Region Official Plan Amendment Two ('ROPA 2') then established the North Aldershot Policy Area and it was adopted by Regional Council on June 3, 1998 and approved by the Minister of Municipal Affairs on November 17, 1998, which was after the Ontario Municipal Board approved OPA 197 in 1996. The policies of the ROP as they apply to NAPA have not been updated since that time.

The ROP permits a range of uses in the NAPA. One of these is identified in Section 138(14) – which indicates that permitted uses included those *"permitted in local Official Plan and zoning by-laws established in accordance with the planning framework set out in the North Aldershot Inter-Agency Review Final Report (May 1994)".* This means that the uses permitted are those that are specifically identified and permitted in the planning instruments prepared to implement the NAIR.

ROPA 2 identified an area that would be 'Area Eligible for Urban Services' in accordance with OPA 197, with this area shown on Map 1 of the ROP and reproduced here as **Figure 4.**

Figure 4: Area Eligible for Urban Services



With respect to this area, Section 139(3) of the ROP states:

"It is the policy of the Region to:

Permit the extension of urban services to those locations within the North Aldershot Policy Area shown as "Eligible for Urban Services" on Map 1 provided that:

- *Feasibility study has been prepared to the satisfaction of the Region;*
- *Regional Council deems it prudent to extend services;*
- *The landowners/developer has met the financial obligations as specified by the Region; and,*

- *Sufficient servicing capacity is available as determined by the Region."*

It is noted that sub-area 4 on the east side of Old Waterdown Road was not included within the area that was identified as being eligible for urban services. This means that if a decision were made to extend services into this area, an amendment to the ROP would be required.

It is also noted that a small area in the southwest corner of the NAPA was also identified as being eligible for urban services as well. This area is known as being part of the Bridgeview Survey where full services were extended to then existing developed areas from the City of Hamilton to address failed services in the 1980's.

At some point after OPA 197 was approved, the City's Official Plan was amended to include policies and land use designations for the East and West Sectors as well. In this regard, areas along existing roads that were not constrained from an environmental perspective were designated Infill Residential, the existing cemeteries, parks and landfill sites were designated Recreation/Open Space, existing and planned commercial areas were designated North Aldershot Commercial and the large remaining undeveloped areas in the East and West Sectors were designated North Aldershot Special Study Area. This latter designation applied to lands identified in the NAIR study as 'theoretically' being the site of additional residential development as discussed above.

3.2 Sustainable Halton (ROPA 38) - the 2000'

In 2006, the Region initiated a further review of its Official Plan to conform to the then just released first iteration of the Growth Plan in 2006. At the time, the Region was required to plan for a 2031 population of 780,000 people along with 390,000 jobs.

In the early parts of the work program that eventually led to the adoption of ROPA 38 in 2009, a Primary Study Area was identified, with this Primary Study Area including those lands that were contiguous to the existing Georgetown and Milton urban areas as shown on **Figure 5** in red outline from the document entitled 'Sustainable Halton Phase 2: Working Paper #1: Locating New Urban Lands'. Key elements that led to the identification of the Primary Study

Areas at that time included a desire to:

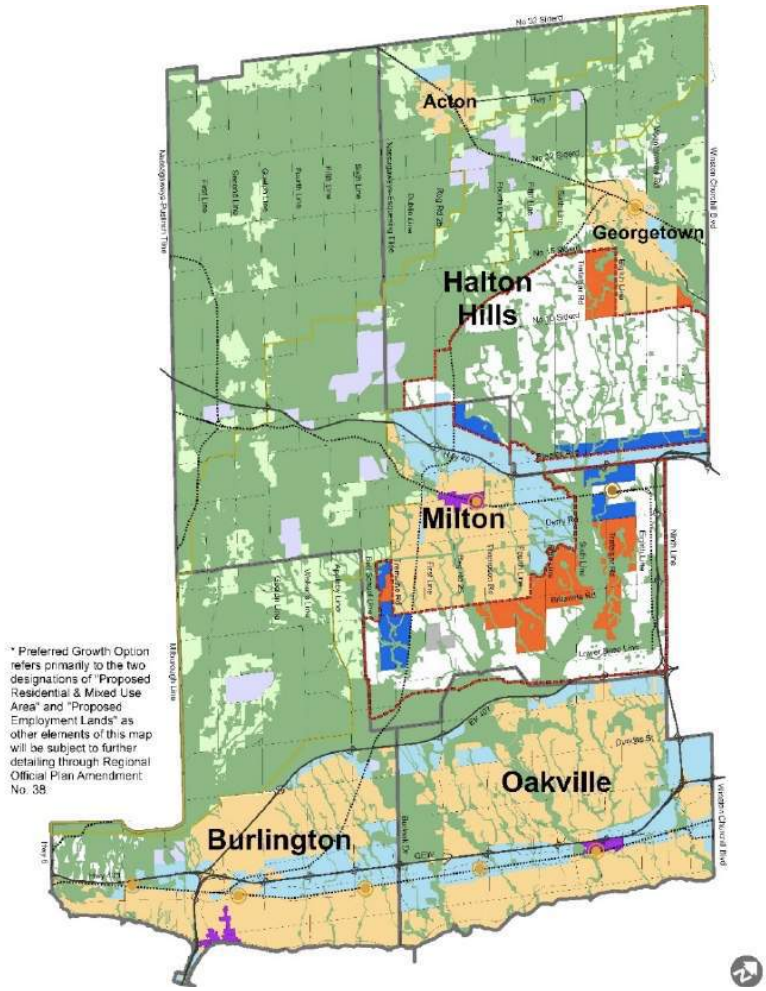
Figure 5: Sustainable Halton Primary Study Areas

- Enhance the Greenlands system in the Region, as supported by Council's endorsement of Option 3 (Enhanced Ecological Integrity), which resulted in the addition of 1,500 hectares of land into a new Regional Natural Heritage System (which would replace the previous Greenlands system);
- Maintain and improve the urban system from a transit perspective, which meant focusing higher density development along major transit routes that were then in place or proposed;
- Extend the pattern of mixed-use nodes and corridors (such as Trafalgar Road, Dundas Street and Plains Road), which were considered to be the main streets and avenues of the Region, which in terms of City building, represent a significant investment, both private and public and are the 'bones' around which a Region is built;
- Establish employment areas along major highways such as Highways 401 and 407; and,
- Make the best use of existing infrastructure (such as extension of sewer and water services from Oakville to Milton) and protecting other critical infrastructure in the Region (such as the landfill site on Regional Road 25 and existing wastewater treatment plants).

In the end, ROPA 38 resulted in the addition of 1,700 hectares of residential land to the Milton and Georgetown urban areas (shown in red on **Figure 6**) and an additional 1,100 hectares of employment land north of Milton in Halton Hills and along the Highway 401 and Steeles Avenue corridors (shown in blue in **Figure 6**).

Future Strategic Employment Areas were also established along the Highway 407 corridor and along the proposed GTA West corridor. The identification of these Future Strategic Employment Areas signalled the optimal location for new urban employment land, if determined to be required to accommodate future employment growth.

Figure 6: New Urban Land as per ROPA 38



The Regional Natural Heritage System (RNHS) was created as well through this process and it replaced the previous Greenlands system.

Within the NAPA, the RNHS was applied to about 55% of the land area, which closely corresponded to the work that was completed as part of the NAIR, when much of this land was identified as being within a number of Environmentally Sensitive Areas (ESA's) at the time.

3.3 Integrated Growth Management Strategy - 2016 - 2022

In 2016, the Region initiated a further review of the ROP. A key element of the current review is the Integrated Growth Management Strategy (IGMS) addressing the Growth Plan (2019) and its requirement to plan to accommodate 1 million people and 470,000 jobs by 2041 (Amendment 1 to the Growth Plan in 2020 moved the planning horizon to 2051 and required the Region to plan for a population of 1,100,000 and 500,000 jobs by 2051).

On June 19, 2019, Regional Council received the first in a series of reports prepared as part of the IGMS: 'INTEGRATED GROWTH MANAGEMENT STRATEGTY GROWTH SCENARIOS: Halton Region to 2041.' It was noted in the introduction section of this report that previous growth management initiatives largely focused on designating new lands for development (HUSP and ROPA 38), and the current IGMS places greater emphasis on accommodating growth in existing urban areas.

The June 2019 report further indicated that this approach is consistent with current Provincial, Regional and local land use planning principles and policies. It was further indicated in the June 2019 report that most of the expected growth in Halton to 2041 will be accommodated in existing settlement areas, either as intensification within built up areas or as new development in the existing Designated Greenfield Area. Depending upon the intensification rate chosen, the June 2019 report indicated that a portion of growth between 2031 and 2041 may require new Greenfield areas to be designated through settlement area boundary expansions.

A key element of the current IGMS approach is accommodating growth through the redevelopment and intensification of existing urban areas and more specifically within the three Urban Growth Centres (UGCs) in Halton: Downtown Burlington, Midtown Oakville, and Downtown Milton and the 9 existing and proposed Major Transit Station Areas (MTSA) in the Region: 3 in Burlington; 2 in Milton (one proposed); and 2 each in Oakville and Halton Hills. It was also noted that as of 2019, there was capacity for about 107,000 additional residential units within the existing Designated Greenfield Areas in the Region, with most of this potential being in Oakville and Milton, with a limited number in Halton Hills (Georgetown).

The June 2019 report further indicated that Milton and Halton Hills are the only two municipalities with the potential to expand settlement area boundaries to accommodate additional Designated Greenfield Area; either for new community uses or for employment uses. This is because of the decisions that have already been made on the urban structure of the Region. On this basis, four areas in Milton and two areas adjacent to Georgetown were identified as shown on **Figure 7.**

In order to test the range of growth options available to the Region, eight growth scenarios were developed in 2019 (these were later reduced to four Growth Concepts in 2020). Regional Council endorsed the advancement of the four Growth Scenarios that represented the 'Local Plans and Priorities' as the foundation for analysis and refinements to four growth concepts.

Figure 7: Potential Locations for new DGA in 2019

However, the scenarios implemented the current Provincial policy framework, and the overriding priority to accommodate growth within existing urban areas. All of scenarios maintained the Natural Heritage System and Greenbelt boundaries as currently mapped and had regard for Halton's longstanding goal to protect agricultural lands. All scenarios accommodated 157,400 new housing units between 2016 and 2041. For all eight scenarios, the pattern of growth planned for by the current in force Halton Region Official Plan, through Regional Official Plan Amendment (ROPA) 38 to 2031 was largely maintained. The infrastructure assessment demonstrated that there were no substantial differences in infrastructure (water, wastewater and transportation) opportunities and constraints to 2041 between the eight scenarios.

Lands within the NAPA were not included in this analysis. The report did however recognize that the NAPA is unique within Halton Region with *" some limited development and significant environmental features."* The following was also indicated in the June 2019 report as it relates to future development in the NAPA: *"Potential development in the North Aldershot area has not been included in the urban supply for the scenarios at this time. Should the conclusions of the current analysis of North Aldershot indicate future*

development approvals (as discussed elsewhere in the report), units would be incorporated in the Preferred Growth Concept as either rural communities or new DGA, as appropriate."

The June 2019 report also indicated the following with respect to the NAPA: *"The review and update of land use permissions and policies in the NAPA is being undertaken as part of the larger ROPR process. The growth potential and associated potential servicing requirements, as well as the costing of potential servicing are being considered through the IGMS. Analysis of the Natural Heritage System, and revision of the NHS maps for the NAPA, are being undertaken through the Natural Heritage Review."* Consequently, a servicing review was carried out and it is summarized in Section 3.4 of this Technical Memorandum. A review of the extent of the Regional Natural Heritage System in the NAPA was also carried out and it is summarized in Section 3.5 of this Technical Memorandum.

3.4 Water and Wastewater Servicing in the NAPA

GM BluePlan was retained by Halton Region to review opportunities and constraints for water and wastewater servicing of the NAPA and in this regard a memorandum dated December 2020 was prepared (attached as **Appendix 1** to this Technical Memorandum).

The GM BluePlan memorandum:

- Provides an overview of the extent of the existing water and wastewater infrastructure and municipal services in the NAPA;
- Summarizes servicing strategies for the NAPA as outlined in the 2011 Sustainable Halton Master Plan; and
- Presents water and wastewater servicing opportunities and constraints for existing and planned infrastructure.

One of the items noted in the GM BluePlan memorandum is that the lands within the NAPA slope down from the Niagara Escarpment towards Highway 403 with a difference in elevation of approximately 100 metres as shown in Figure 2 of their memorandum. This significant change in elevation has an impact on how services can be provided.

The areas that were considered to be potential development areas in the NAPA by GM

BluePlan were those areas outside of the proposed to be updated boundaries of the Regional Natural Heritage System (RNHS) as discussed in Section 3.5 of this Technical Memorandum.

GM BluePlan confirms that there are three City of Hamilton fed water systems in the NAPA (Waterdown Road/Old Waterdown Road, Snake Road and Bridgeview). With respect to wastewater, sewer services are provided to Bridgeview, the lower portion of Waterdown Road and one of the closed waste disposal sites in the East Sector, all of which are connected to the Halton Region wastewater network with wastewater eventually ending up at the Skyway Wastewater Treatment Plant in Burlington.

GM BluePlan also reviewed the Sustainable Halton Water and Wastewater Master Plan (Master Plan) prepared in 2011 to support Regional implementation of the Official Plan Amendment (ROPA 38/39) based on the Region's Best Planning Estimates (June 2011). The Master Plan established a Region-wide water and wastewater servicing strategy that was designed to accommodate growth from 2011 to 2031. In this regard, it is noted that the areas included in the Best Planning Estimates in 2011 were those areas that were identified as being eligible for municipal services in the Central Sector. The Master Plan identifies a number of water and wastewater improvements to service this development.

GM BluePlan notes that areas that are potentially available for development in the whole of the NAPA (because they are not constrained by environmental features) will be significantly less if the changes proposed to the boundaries of the RNHS are changed as discussed in Section 3.5 of this Technical Memorandum. In consideration of these changes and other factors, GM BluePlan make the following conclusions with respect to extending municipal water services to the NAPA:

"Currently, there are no municipal water services for the central and eastern areas within the West Sector. In addition, Regional drinking water infrastructure is not within close proximity; therefore, extension of water services to these areas from the Halton system will be challenging and require substantial new infrastructure. Potential water servicing solutions for these areas will need to overcome ground elevation differences of over 70 metres and potentially requiring multiple crossings of environmental features and Highway 403.

Servicing of new areas of the remaining policy area pockets within North Aldershot may be technically challenging due to topography and new infrastructure will be required to service the areas which would lie within multiple water pressure zones. Watermains, valves and potentially new facilities may be required to extend servicing to currently unserviced areas.

When compared to other potential new service areas in the Region, the remaining policy area pockets throughout North Aldershot pose various technical, environmental and financial challenges. Due to several factors such as topography, proximity to environmental features and the general sparse and uneven distribution of each pocket of potential development, extending servicing can be costly, inefficient and technically challenging compared to other potential growth areas in the Region which are more contiguous to existing service areas

Other potential growth areas within the Region generally have flatter topography, are clustered closer together and have fewer physical boundaries (e.g. creeks, pressure zone boundaries, major elevation changes, etc.) to overcome; all of the above characteristics can bring water servicing efficiencies. However, the servicing comment provided above generally applies to local servicing needs. It should be noted that the full upstream needs of the potential growth areas vary widely depending on existing and planned trunk infrastructure and proximity to water treatment facilities."

With respect to extending wastewater services to the NAPA, GM BluePlan makes the following conclusions which are similar to the conclusions above:

"Extension of wastewater servicing to other remaining areas or pockets within the North Aldershot Policy Area will carry environmental risks due to proximity to environmental sensitive areas with potential adverse effects to water features and resources. At a high level, there is greater potential risk and uncertainty of servicing needs for the remaining of North Aldershot Policy Area due to variability in topography and potential requirement for pumping solutions to overcome changes in ground elevation.

Currently there is no municipal wastewater services for the central and eastern areas within the West Sector, as well as the north areas around Waterdown Road in the Central and East sectors. In addition, Regional wastewater infrastructure is not within close proximity to these areas; therefore, extension of wastewater services to these areas from the existing Halton

wastewater system will be challenging and will require substantial new infrastructure. Potential wastewater solutions would require overcoming environmental features, crossings (creeks, highway, among others) and significant changes in ground elevations that may drive the need for pumping flows in places were a gravity conveyance solution is not feasible.

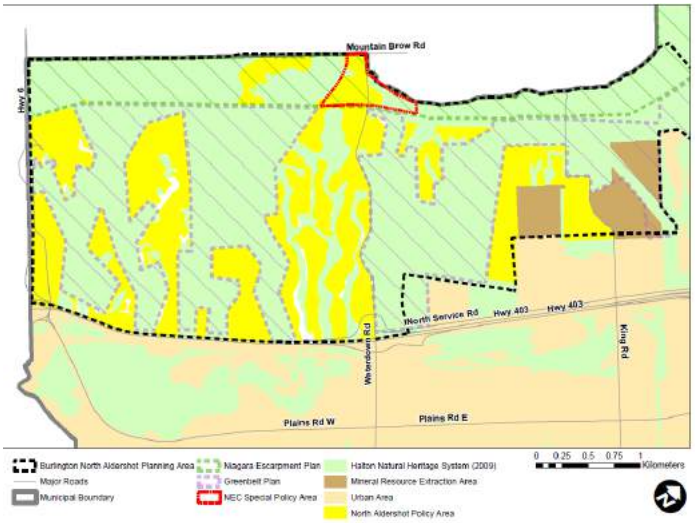
When compared to other potential new service areas in the Region, the remaining policy area pockets throughout North Aldershot pose various technical, environmental and financial challenges. Due to several factors such as topography, proximity to environmental features and the general sparse and uneven distribution of each pocket of potential development, extending servicing can be costly, inefficient and technically challenging compared to other potential growth areas in the Region which are more contiguous to existing service areas.

Other potential growth areas within the Region generally have flatter topography, are clustered closer together and have fewer physical boundaries (e.g. creeks, pressure zone boundaries, major elevation changes, etc.) to overcome; all of the above characteristics can bring water servicing efficiencies. However, the servicing comment provided above generally applies to local servicing needs. It should be noted that the full downstream needs of the potential growth areas vary widely depending on existing and planned downstream trunk infrastructure and proximity to wastewater treatment facilities."

3.5 Updating the Extent of the RNHS in the NAPA

Concurrent with the current IGMS process was a review of the RNHS and the implications of the NHS for the Growth Plan on the ROP. As noted in the NAPA Discussion Paper, about 55% of the lands within the NAPA are currently within the RNHS as per ROPA 38 as shown on **Figure 8.**

Figure 8: RNHS in NAPA as per ROPA 38



With the ROPA 38 mapping as a base, a review of the RNHS mapping in

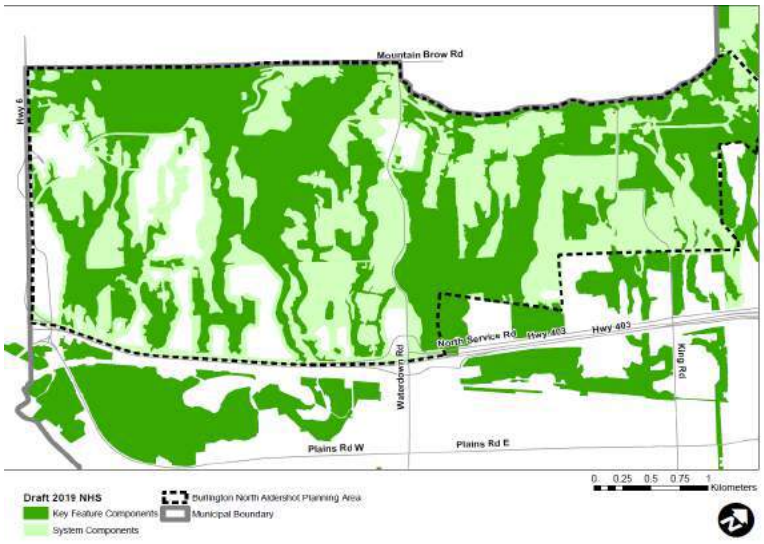
Halton Region and the NAPA was undertaken.

The review of the RNHS mapping followed a process that is outlined in detail in Section 4.3 of the Natural Heritage Discussion Paper.

The review of the RNHS mapping within the NAPA was carried out to determine if:

- There were additional key features as defined in Section 115(3)(4) of the ROP in North Aldershot that should be mapped on Map 1G of the ROP;
- The boundaries of the key features in North Aldershot shown on Map 1G of the ROP should be refined; and,
- There were additional linkages and enhancement areas that should be included within the RNHS on Map 1 of the ROP.

Figure 9: Updated RNHS Mapping

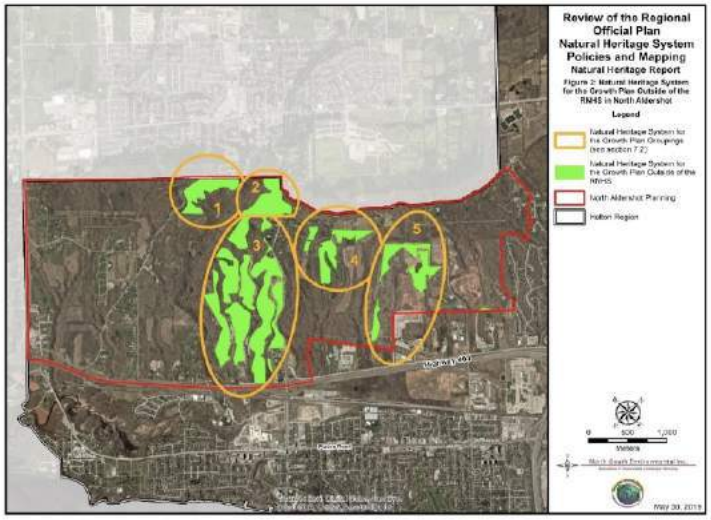


On the basis of the work completed, draft 2019 Natural Heritage System mapping was prepared. **Figure 9** shows the updated and refined limits of the key features and system components (including linkages, enhancement areas and buffers) in the NAPA based on the additional analysis completed (it is noted that the map includes the Natural Heritage System for the Growth Plan as a system component and this is discussed below).

As mentioned above, the refined mapping includes the NHS for the Growth Plan. In this regard, Provincial mapping was released in 2018 and within North Aldershot, the Provincial mapping of the NHS for the Growth Plan extends into the majority of the Central and East

Sectors (onto lands that are not the subject of the Greenbelt Plan and the Niagara Escarpment Plan), as shown on **Figure 10** below.

Figure 10: Growth Plan NHS in NAPA



Section 4.2.2.5 of the Growth Plan (2019) indicates that upper tier municipalities such as Halton Region may refine Provincial mapping at the time of initial implementation in their Official Plans. In this regard, the Provincial document entitled 'THE REGIONAL NATURAL HERITAGE SYSTEM FOR THE GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE - SUMMARY OF CRITERIA AND METHODS' provides some guidance on refinements and it states the following:

Refinements that are consistent with the policies of the Growth Plan are as follows:

Minor, technical adjustments (e.g., to account for distortion from map projections, discrepancies based on map scales);

Addition of natural features continuous with the boundary of the provincially mapped NHS. When natural features are added, the boundary of the NHS will be extended to include a 30 m vegetation protection zone beyond the edge of the feature consistent with the methods used for provincial mapping (see figure 3);

Removal of small portions of the provincial NHS where there is built-up impervious development or infrastructure (that would act as barriers) that was not identified and stamped out of the provincial mapping;

Removal of small, isolated portions of the NHS that protrude from the Greenbelt Plan boundary or settlement areas provided these areas have no natural features and are not

connected to the larger provincial NHS.

On the basis of the above, consultants retained by the Region reviewed the NHS for the Growth Plan in the NAPA recommended that refinements to the NHS for the Growth Plan should not be made, as discussed in Section 4.3 of the NAPA Discussion Paper.

Retaining the NHS for the Growth Plan in the NAPA has significant implications on development potential. Firstly, Section 4.2.3.1 of the Growth Plan establishes a general prohibition on development and site alteration within key natural heritage features and key hydrologic features that are included within the NHS for the Growth Plan. Included in the list of key features where development is prohibited are significant woodlands.

Secondly, Section 4.2.4.1 requires a 30-metre wide minimum vegetation protection zone (VPZ) adjacent to key natural heritage features that are within the NHS for the Growth Plan and in key hydrologic features that are both within and outside of the NHS for the Growth Plan. **Figure 11** identifies the implications of the 30-metre VPZ in the NHS for the Growth Plan, the Greenbelt Plan NHS and the areas subject to the RNHS (assuming that a 30 metre wide VPZ is applied in those areas as well).

Figure 11: Implications of Growth Plan NHS, Updated RNHS and new Vegetation Protection Zone Requirements

On the basis of the above, much of the lands in the NAPA are considered to be environmentally sensitive, and with respect to the Central Sector in particular (which is the area eligible for urban services as per ROPA 2), it has been recommended that the majority of the lands be retained in the NHS for the Growth Plan, meaning that the net developable

areas outside of the key features and the related VPZ will be further minimized.

It is also noted that in 2005, the Province of Ontario created the Greenbelt Plan, which was intended to permanently protect approximately 728,000+ hectares (1.8 million acres) of agricultural lands and ecological features/systems from urban development within the Greater Golden Horseshoe and beyond.

In recognition of the presence of a number of environmentally sensitive areas in the NAPA, the Greenbelt Plan was applied to about 362 hectares of land in the NAPA, which when added to the 236 hectares of land in the NAPA that is subject to the Niagara Escarpment Plan, meant that about 44% of the NAPA was subject to restrictions on the type of development that may occur. It is also noted that all of the lands within the Greenbelt Plan area in the NAPA are within the Greenbelt Natural Heritage System (with some very minor exceptions).

4.0 CONCLUSION

The current IGMS is being undertaken in accordance with the Growth Plan (2019) as amended by Amendment 1 and decisions on where and how to grow are to be in accordance with the Growth Plan (2019). In this regard, the IGMS process to date has identified a number of options respecting growth (as discussed previously), with none of these options including as a component, the expansion of the Burlington urban area into the NAPA.

In this regard, the purpose of this Technical Memorandum is to determine whether this decision is appropriate. In making this determination, reference is made first to Section 2.2.8.3 of the Growth Plan (2019), which states the following (with under-lining for emphasis):

"Where the need for a settlement area boundary expansion has been justified in accordance with policy 2.2.8.2, the feasibility of the proposed expansion will be determined and the most appropriate location for the proposed expansion will be identified based on the comprehensive application of all of the policies in this Plan, including the following:"

When considering whether an expansion area is the 'most appropriate location', this means that the merits of one location over another need to be considered and the one(s) that most

support the policies of the Growth Plan as it relates to the location of growth and development are the ones that should be selected.

As reviewed earlier in this Technical Memorandum, a key foundational element of the HUSP process was that urban growth would be accommodated through intensification within existing communities and as extensions of existing communities. The ROPA 38 process that came later confirmed this direction by:

- Enhancing the Greenlands system in the Region;
- Maintaining and improving the urban system from a transit perspective;
- Extending the pattern of mixed-use nodes and corridors;
- Establishing employment areas along major highways such as Highways 401 and 407; and,
- Making the best use of existing infrastructure.

In both of the above processes, extending the urban area into the NAPA was not a consideration because lands in the NAPA would not have been a logical extension of the Burlington urban area and were not contiguous to the existing urban areas in the same manner as the urban expansions implemented through the HUSP process and the ROPA 38 process were. In addition, including lands in the NAPA would not have been supportive of the Region's desire to focus development in nodes and corridors.

The actions of the Region through its growth management processes have been to consistently direct growth to existing urban areas and those lands that were adjacent to and contiguous to existing urban areas. In addition, the lands considered through the HUSP and ROPA 38 processes along with the current IGMS process for urban expansion were generally flat agricultural lands that were immediately adjacent to (meaning abutting or across the road) from existing urban areas.

To a very large extent, the historical growth management processes carried out by the Region conforms to Section 2.2.1.3 a) and c) of the current Growth Plan (2019) which states the following:

"Upper-and single-tier municipalities will undertake integrated planning to manage

forecasted growth to the horizon of this Plan, which will:

a) Establish a hierarchy of settlement areas, and of areas within settlement areas, in accordance with policy 2.2.1.2;

c) Provide direction for an urban form that will optimize infrastructure, particularly along transit and transportation corridors, to support the achievement of complete communities through a more compact built form;"

The current IGMS process is also designed to achieve the above as well, since it builds upon and reinforces the decisions that were made through the HUSP and ROPA 38 processes. Nothing has changed since those processes that would lead to a different conclusion today.

Another key policy that deals with the location of expansion areas is Section 2.2.8.3 e) of the Growth Plan (2019) which states the following:

"Key hydrologic areas and the Natural Heritage System for the Growth Plan should be avoided where possible."

As mentioned previously, the majority of the Central and East Sectors (not including lands that are subject to the Greenbelt Plan and Niagara Escarpment Plans) are within the Growth Plan NHS, which has been confirmed as being appropriate by consultants retained by the Region. This means that if the Region has a choice of location in terms of urban expansion, it should avoid the Growth Plan NHS, where possible.

In this regard, none of the other expansion areas currently being contemplated (with the exception of a portion of the lands west of Trafalgar Road and west of Georgetown) is within the Growth Plan NHS. With the one area affected, the Region has asked to Province to remove the Growth Plan NHS in accordance with Provincial guidance material.

As a result, and given the priority the Region has placed on developing and protecting a natural heritage system, the inclusion of lands within the Growth Plan NHS is not supportable, particularly when there are multiple other options available for consideration. Selecting one of these other locations already identified adjacent to Milton and/or Georgetown means that it is possible to avoid the Growth Plan NHS, which is what is directed by the Growth Plan (2019).

In addition to the above, Section 1.1.3.6 of the PPS (2020) also indicates that whenever the outward expansion of urban areas is contemplated, the new development should occur adjacent to the existing built-up area and should have a compact form, mix of use and densities that allow for efficient use of land, infrastructure and public service facilities. Implementing this policy in the NAPA would be difficult, given that the environmental constraints that exist in the Central Sector of the NAPA (after the Growth Plan NHS and the required vegetation protection zones are applied) which would result in scattered residential development instead of the more compact residential development that typically occurs adjacent to existing urban areas.

A similar policy also exists in Section 2.2.1.4 e) of the Growth Plan (2019) which states the following:

"Applying the policies of this Plan will support the achievement of complete communities that:

e) Provide for a more compact built form and a vibrant public realm, including public open spaces;"

The Growth Plan (2019) defines compact built form as follows:

"A land use pattern that encourages the efficient use of land, walkable neighbourhoods, mixed land uses (residential, retail, workplace, and institutional) all within one neighbourhood, proximity to transit and reduced need for infrastructure. Compact built form can include detached and semi detached houses on small lots as well as townhouses and walk-up apartments, multi-storey commercial developments, and apartments or offices above retail. Walkable neighbourhoods can be characterized by roads laid out in a well-connected network, destinations that are easily accessible by transit and active transportation, sidewalks with minimal interruptions for vehicle access, and a pedestrian-friendly environment along roads to encourage active transportation."

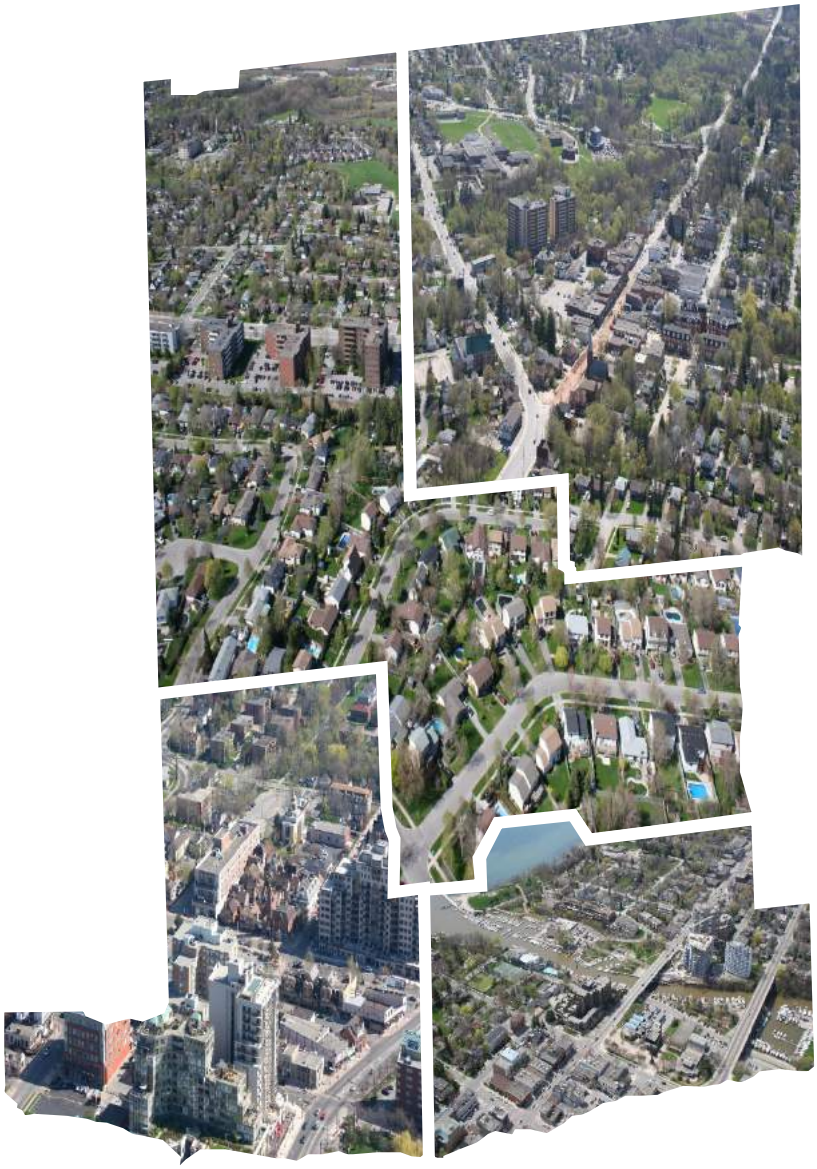
In the case of the NAPA, many of the elements of what makes up compact built form are not achievable because of the fragmented nature of proposed development areas in the NAPA, its lower density and its distance from goods and services and public service facilities such

as schools.

Lastly, and with respect to servicing, it has been concluded extending municipal services into the NAPA is potentially costly, inefficient and technically challenging compared to other potential growth areas in the Region.

For all of the above reasons, expanding the urban area into the NAPA is not supportable.

APPENDIX 1 - MEMORANDUM FROM GM BLUEPLAN



Appendix J.1

North Aldershot Water and Wastewater Constraints and Opportunities

February 2021

Regional Official Plan Review

BluePlan ENGINEERING

Halton REGION

Prepared By:

Halton Region Integrated Growth Management Strategy

Technical Memo – North Aldershot Water and Wastewater Opportunities and Constraints

GMBP File: 717052

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HALTON REGION INTEGRATED GROWTH MANAGEMENT STRATEGY

GMBP FILE: 717052

1. INTRODUCTION

As part of Halton Region's Integrated Growth Management Strategy (IGMS), Halton Region and GM BluePlan Engineering are identifying and reviewing the Water and Wastewater requirements to support existing and future growth to 2041 and 2051.

Hemson Consulting Ltd has developed several planning scenarios that focus growth in different areas and achieve different Regional and Local goals. This includes a total of eight (8) scenarios that were further refined into four (4) concepts which were provided for evaluation and analysis. The four (4) concepts were reviewed to identify the impact each concept could have on the existing and planned water and wastewater infrastructure. Ultimately, a preliminary water and wastewater servicing plan will be developed for the preferred growth option.

As part of the IGMS process, a review of opportunities and constraints for water and wastewater servicing of the North Aldershot Policy Area was undertaken. This memorandum is intended to:

- Provide an overview of the extent of the Remaining North Aldershot Policy Area and existing water and wastewater infrastructure and municipal services.
- Summarize servicing strategies as outlined in the 2011 Sustainable Halton Master Plan.
- Present water and wastewater servicing opportunities and constraints for existing and planned infrastructure.

This information will feed into the IGMS process where water and wastewater servicing strategies will be further refined based on a final preferred growth concept for Halton Region.

2. STUDY AREA

The North Aldershot area is located in the City of Burlington as shown in Figure 1. It comprises a total land area of approximately 1,365 hectares bounded by Highway 403 to the south, Highway 6 to the west, the Hamilton/Halton Region boundary (Niagara Escarpment Brow) to the north; and from Highway 403 to Waterdown Road and the City of Burlington urban boundary to the east.

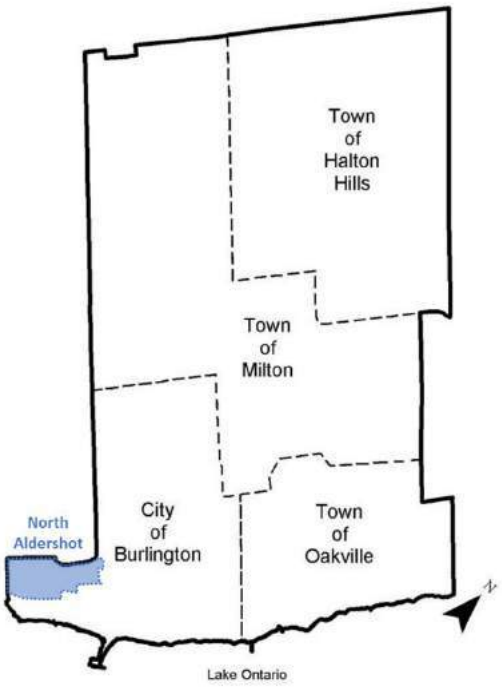


Figure 1 – North Aldershot Planning Area

The North Aldershot planning area is primarily non-urban. It is defined by the Niagara Escarpment to the north as well as the waterways and valleys running through the area. The lands within North Aldershot slope down from the Niagara Escarpment towards Highway 403 with a difference in height of approximately 100 metres as shown in Figure 2. North Aldershot also features pockets of rural and residential development.

North Aldershot is comprised of three sectors: East Sector, Central Sector and West Sector. The division of North Aldershot into sectors is generally based on the location of Grindstone Creek and its valley systems.

The East Sector is bounded on the south by Highway No. 403, on the west by Old Waterdown Road and the Sassafras Woods Environmentally Sensitive Area, on the north by the Dundas-Burlington Ontario Hydro Transmission Line, and on the east by the easterly boundary of the North Aldershot Planning District.

The Central Sector is bounded on the south by Highway No. 403, on the west by the Grindstone Creek Valley, on the north by the boundary of the City of Burlington and the City of Hamilton, and on the east by Old Waterdown Road and the Sassafras Woods Environmentally Sensitive Area.

The West Sector is bounded on the south by Highway No. 403, on the west by Highway No. 6, on the north by the Dundas-Burlington Ontario Hydro Transmission Line and on the east by the Grindstone Creek Valley.

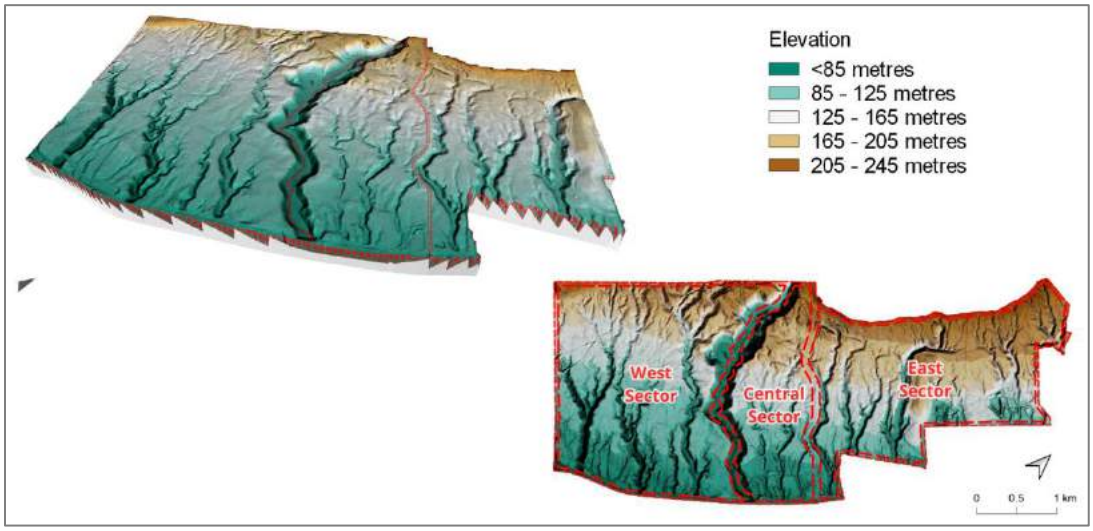


Figure 2 – Ground Elevations in the North Aldershot Planning Area

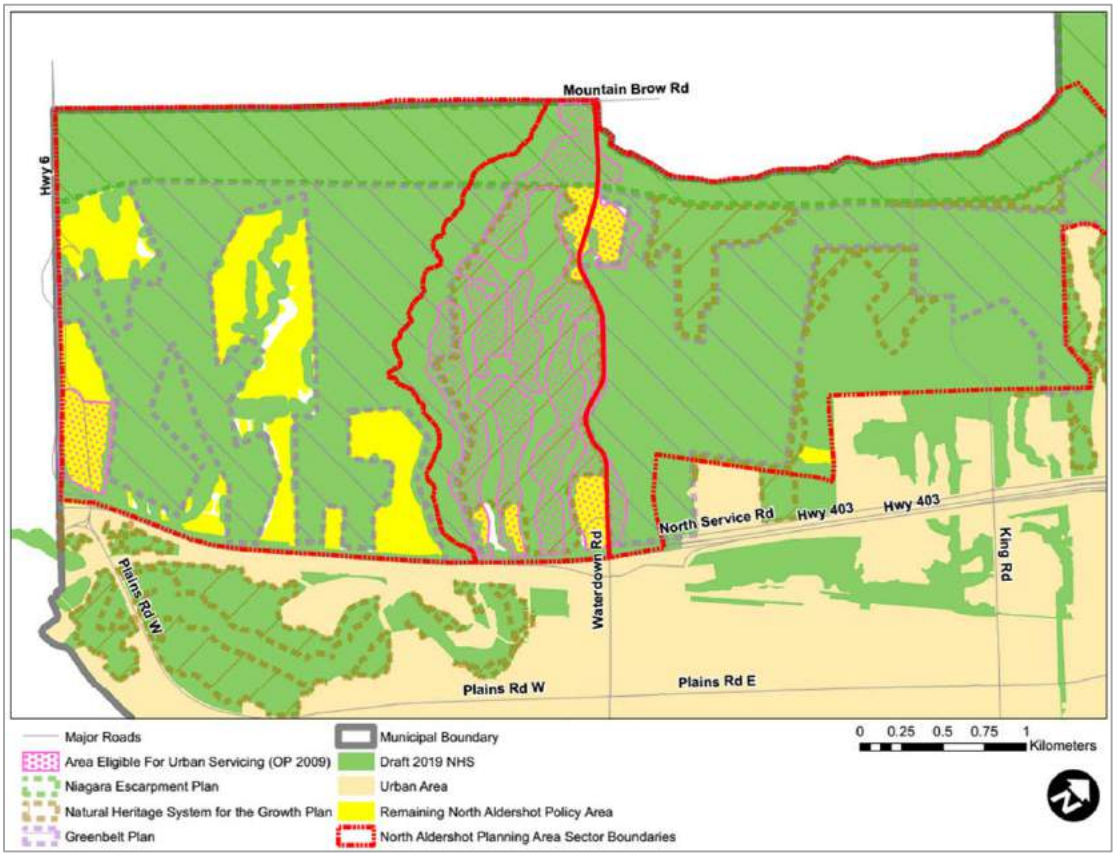
Figure 3 presents the North Aldershot Planning Area and identifies the three sector boundaries, municipal boundary and the City of Burlington urban area boundary. The current Regional Official Plan (ROP) indicates that the extension of urban services to areas within the North Aldershot Policy Area as Eligible for Urban Services within the Central and West sectors, can only be done provided that a feasibility study be prepared to the satisfaction of the Region, requires that Council deem it prudent to extend services, that the landowners meet the financial obligations specified by the Region and that there is sufficient servicing capacity as determined by the Region.

Figure 3 also presents the areas defined by the Niagara Escarpment Plan, Greenbelt Plan, Natural Heritage System (NHS) for the Growth Plan and Draft 2019 Natural Heritage System. In addition, Figure 3 outlines the "Remaining North Aldershot Policy Area" (highlighted in yellow). As part of the Regional Official Plan Review recent adjustments to the Natural Heritage System have dramatically reduced the land area designated as North Aldershot Policy Area for the ROP to be consistent with the Provincial Policy Statement (2020) and conform to a Place to Grow: The Growth Plan for the Greater Golden Horseshoe (2019), the Greenbelt Plan (2017) and the Niagara Escarpment Plan (2017). The Remaining North Aldershot Policy Area is summarized in Table 1 and is the major focus of the servicing opportunities and constraints identified in this memorandum.

Table 1 – North Aldershot Policy Area

Sector	North Aldershot Policy Area (with NHS removed)
West	116.33 ha
Central	15.13 ha
East	7.33 ha

Source: Halton Region



Source: Halton Region

Figure 3 – North Aldershot Planning Area

3. WATER SERVICING

3.1 Existing Water System

Currently there are customers in the North Aldershot area who have municipal water services. These customers consist mainly of detached residential dwellings. More information on how these customers are serviced is outlined below.

North Aldershot

The North Aldershot water system is currently supplied by the City of Hamilton (through the Woodward Avenue Water Treatment Plant) through an interconnection to their distribution system on Waterdown Road. For emergency servicing, the area can also be supplied by the Waterdown Road Pumping Station which is owned and operated by Halton Region. Due to elevations of lands being serviced, pressures exceed 700 kPa, and pressure reducing valves are required on individual service connections. The Waterdown Standpipe provides storage and regulates pressure. The North Aldershot system is connected to the South Halton Lake-Based System, but the connection is normally closed to prevent mixing of water which contains a free chlorine residual (Halton) with water than contains a combined chlorine residual (Hamilton).

Snake Road

The Snake Road system is also supplied by the City of Hamilton through an interconnection on Snake Road. However, unlike the North Aldershot system, the Snake Road system is currently not connected to the South Halton Lake-Based System.

Bridgeview

The Bridgeview system is located at the west end of the City of Burlington and is currently supplied by the City of Hamilton through an interconnection on Plains Road. The Bridgeview system is not connected to the South Halton Lake-Based System.

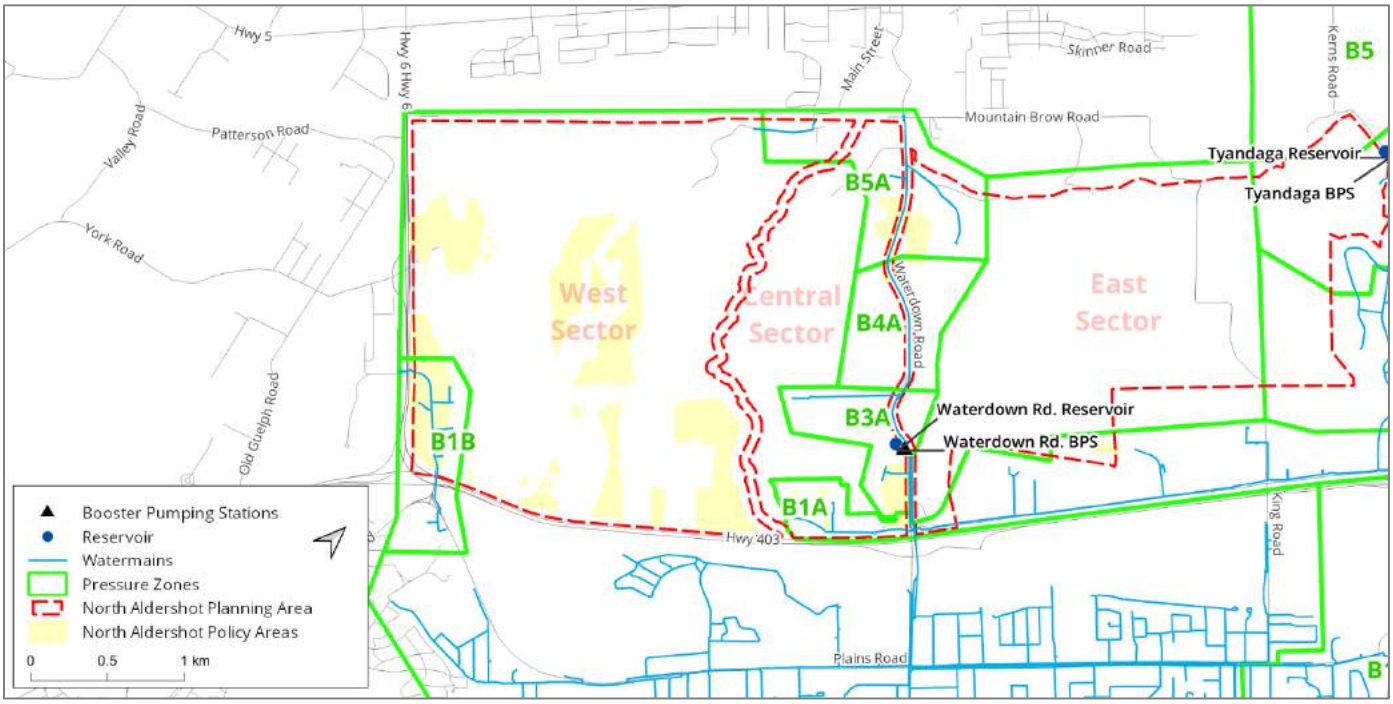


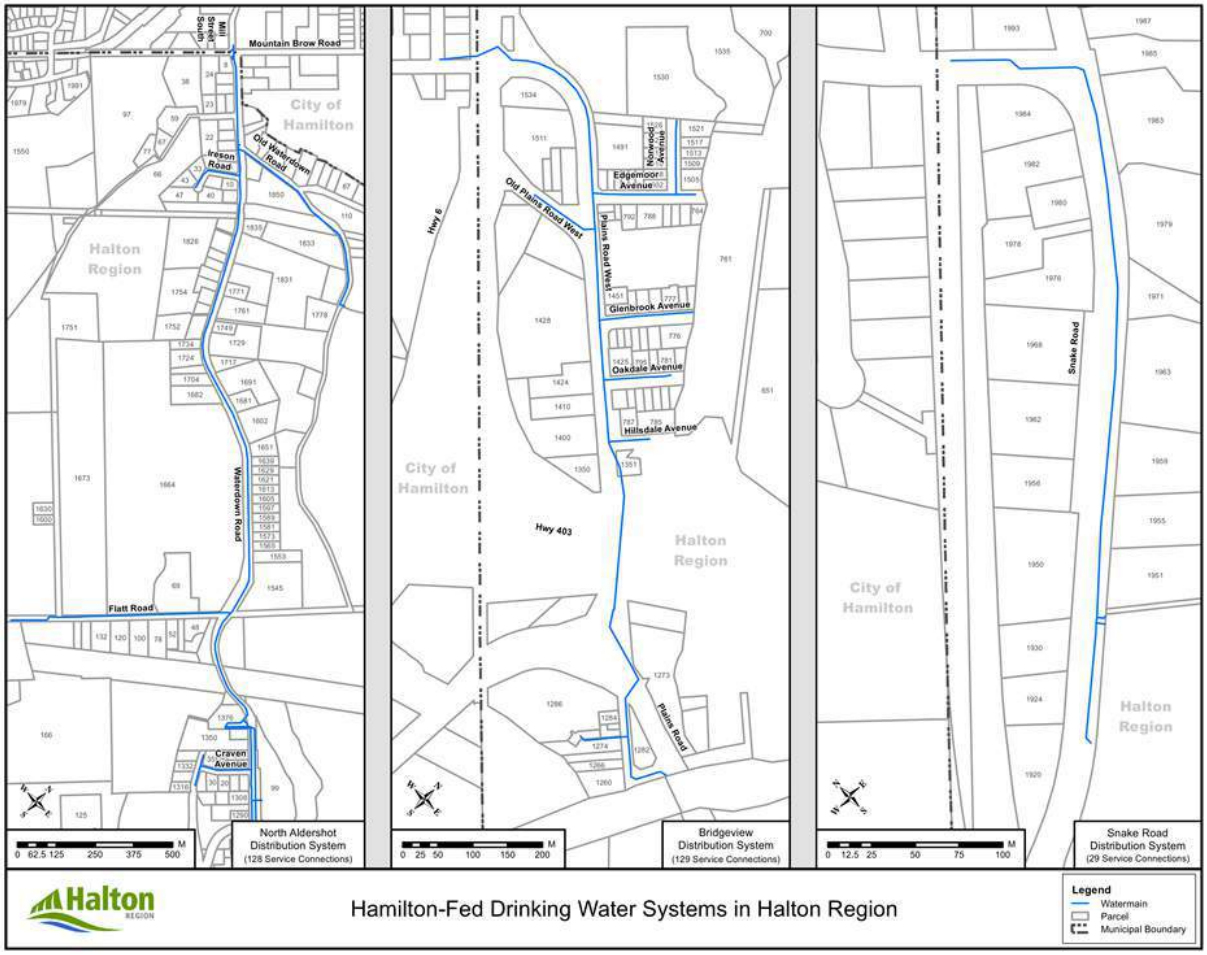
Figure 4 – North Aldershot Existing Water System

3.2 Halton-Hamilton Water Supply Agreement

Since the early 1990s, the City of Hamilton has supplied municipal water to several properties within Halton Region along the City of Burlington/City of Hamilton border. On November 17, 2011 a formal Agreement was entered into between Halton Region and the City of Hamilton for the City of Hamilton to supply water to the Bridgeview, Snake Road and North Aldershot communities in the City of Burlington as show in Figure 5. Currently, there are approximately 219 service connections in Halton Region serviced by the City of Hamilton's water system.

The term of the present Agreement is 10 years with an option for both parties to renew the Agreement for an additional 10 year period. The agreement was recently renewed for a 10 year extension to commence November 18, 2021 and end on November 18, 2031, with the same terms and conditions originally agreed upon by the two municipalities.

The agreement sets a prescribed maximum water consumption amount (maximum taking of 1.0 mega-litre per day (ML/d) and a maximum flow rate of 7.95 ML/d peak hour basis from the Hamilton system). Halton Region shall pay for all water delivered with each municipality and is fully responsible for the maintenance of all works and/or infrastructure associated with the water supply located within their respective municipal boundaries. The agreement also includes a communication protocol to be used in the event of any issues and for the provision of notice to Halton Region for interruption of supply or temporary discontinuation, with Halton Region being responsible to provide an emergency supply of water until the regular supply is restored.



Source: Halton Region

Figure 5 – North Aldershot - Hamilton-Fed Drinking Water System

3.3 Sustainable Halton Water Servicing Strategy

Halton Region completed the Sustainable Halton Water and Wastewater Master Plan (Master Plan) in 2011 to support Regional implementation of the Official Plan Amendment (ROPA 38/39) based on the Region's Best Planning Estimates (June, 2011). The Master Plan provided a Region-wide water and wastewater servicing strategy to accommodate growth from 2011 to 2031.

As part of the Master Plan, the North Aldershot area was considered in the development of the preferred water servicing strategy for South Halton. Components of the servicing strategy for North Aldershot include:

- Stage Burlington upgrades to maximize existing capacity
- Provide additional water supply capacity at Burloak WPP
- This strategy maximizes available capacity in existing infrastructure in Burlington and integrates capacity and timing with infrastructure required for Oakville
- Inter-Regional servicing from Hamilton for areas in Bridgeview and Snake Road continues to be a preferred solution. Additional coordination of inter-Regional servicing for areas in North Aldershot will be undertaken. At this time, a Halton-only solution is identified. However, a water supply interconnection from Hamilton for North Aldershot will be maintained for emergency purposes.

It should be noted that during the development of the Master Plan servicing strategies, a larger area for North Aldershot that was eligible for urban servicing (Official Plan 2009) was considered. Therefore, if implementation of the strategy were to proceed, the servicing strategies outlined in the master plan would have to be further refined to account for the recent changes to the North Aldershot Policy Area including the refinements to the Regional Natural Heritage System.

Figure 6 presents the Sustainable Halton preferred water servicing strategy and capital projects for the North Aldershot Area.

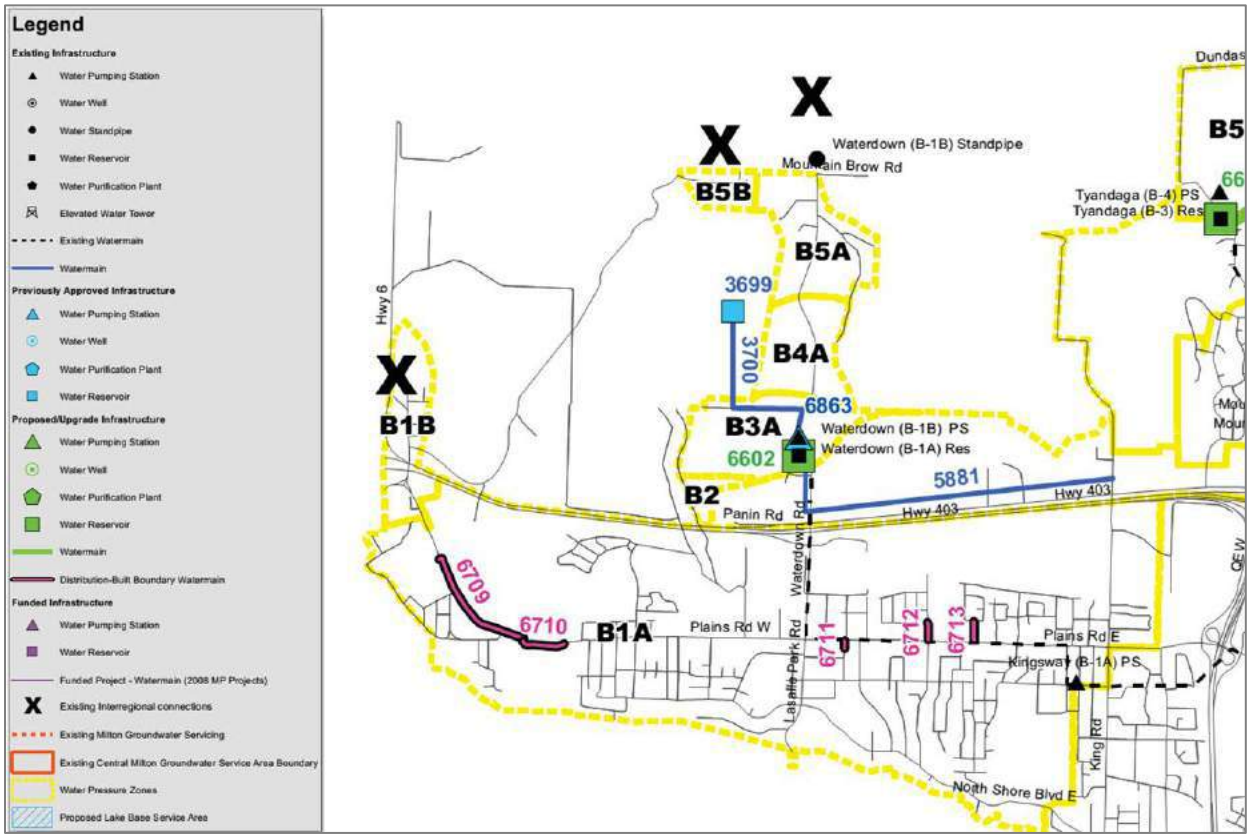


Figure 6 – Sustainable Halton Preferred Water Servicing Strategy (North Aldershot Area)

3.4 Water Servicing Opportunities and Constraints

The following section presents a high-level review of opportunities and constraints for potential water servicing of the remaining North Aldershot Policy Areas as depicted in Figure 3, as well as a comparative analysis with respect to other potential growth areas in the Region that are being considered through the Integrated Growth Management Strategy.

3.4.1 Opportunities and Constraints

- There is opportunity to continue providing municipal water services to Bridgeview, Snake Road and North Aldershot communities through the existing Halton-Hamilton Water Servicing Agreement. However, development within these existing service areas will be limited by the maximum water consumption amount prescribed in the water servicing agreement with the City of Hamilton as well as the limits of the existing infrastructure extents.

- Due to the reduced extent of the North Aldershot Policy Area within the Central Sector, there may be an opportunity to reduce and/or eliminate water capital projects (e.g. North Aldershot Reservoir) that were previously identified to service a larger area within this sector. In addition, the remaining North Aldershot Policy Area within this sector is located adjacent to existing watermains which enables continued water servicing. Should any capital projects be reduced or eliminated, future work required to service existing approved development will be reviewed against the Region's Local Servicing Policy to determine DC eligibility.

- Extension of water servicing to other remaining areas or pockets within the North Aldershot Policy Area will carry environmental risks due to proximity to environmental sensitive areas with potential adverse effects to water features and resources.

- Currently, there are no municipal water services for the central and eastern areas within the West Sector. In addition, Regional drinking water infrastructure is not within close proximity; therefore, extension of water services to these areas from the Halton system will be challenging and require substantial new infrastructure. Potential water servicing solutions for these areas will need to overcome ground elevation differences of over 70 metres and potentially requiring multiple crossings of environmental features and Highway 403.

- Servicing of new areas of the remaining policy area pockets within North Aldershot may be technically challenging due to topography and new infrastructure will be required to service the areas which would lie within multiple water pressure zones. Watermains, valves and potentially new facilities may be required to extend servicing to currently unserviced areas.

- When compared to other potential new service areas in the Region, the remaining policy area pockets throughout North Aldershot pose various technical, environmental and financial challenges. Due to several factors such as topography, proximity to environmental features and the general sparse and uneven distribution of each pocket of potential development, extending servicing can be costly, inefficient and technically challenging compared to other potential growth areas in the Region which are more contiguous to existing service areas

- Other potential growth areas within the Region generally have flatter topography, are clustered closer together and have fewer physical boundaries (e.g. creeks, pressure zone boundaries, major elevation changes, etc.) to overcome; all of the above characteristics can bring water servicing efficiencies. However, the servicing comment provided above generally applies to local servicing needs. It should be noted that the full upstream needs of the potential growth areas vary widely depending on existing and planned trunk infrastructure and proximity to water treatment facilities.

4. WASTEWATER SERVICING

4.1 Existing Wastewater System

The North Aldershot wastewater system is located in the service area of the Skyway Wastewater Treatment Plant (WWTP) in Burlington. The wastewater system in North Aldershot is currently limited to servicing the Bridgeview system located at the west end of the West Sector, the lower portion of Waterdown Road in the Central Sector, and a former waste disposal site located in the East sector. The remainder of residents in the North Aldershot area remain on private septic systems.

Bridgeview

Municipal sewers on Bridgeview are currently connected to the Regional wastewater network on Plains Road. From that point, wastewater flows are conveyed through a series of gravity sewers and sewage pumping stations until its final destination at the Skyway WWTP for final treatment and discharge to Lake Ontario.

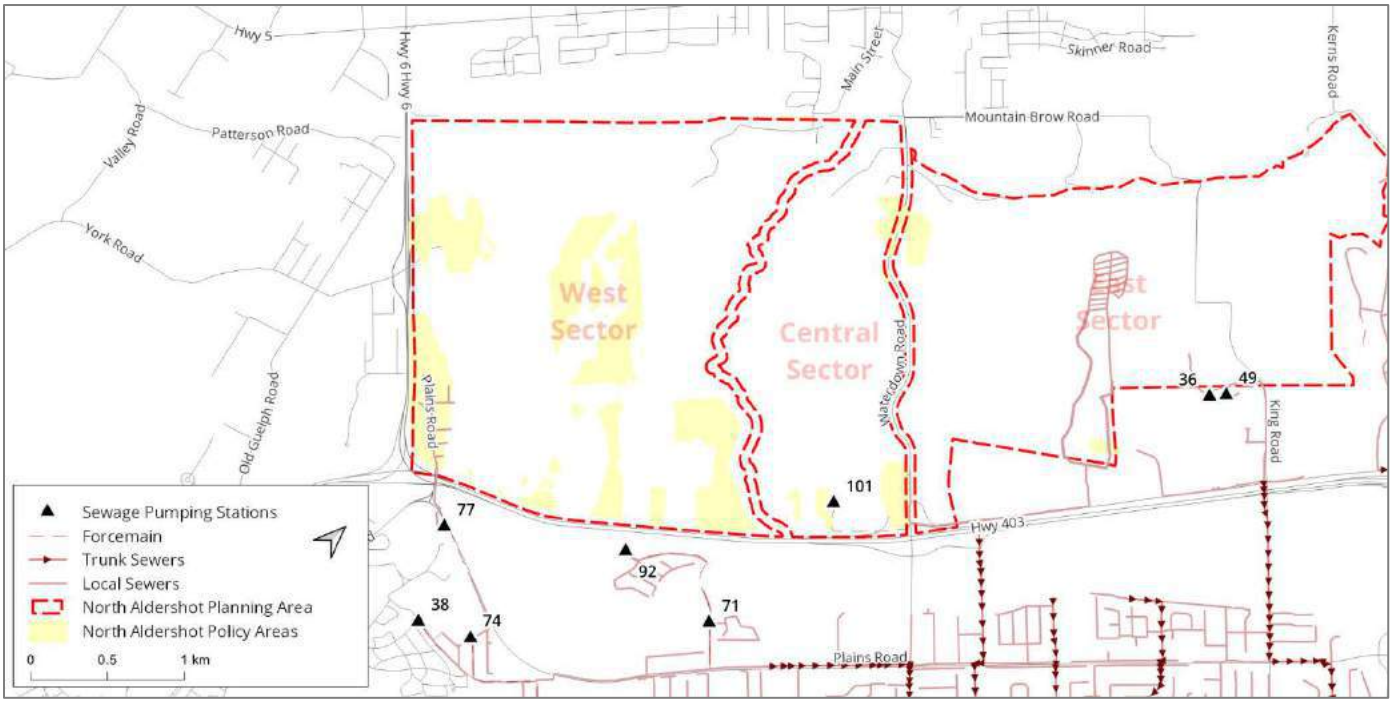


Figure 7 – North Aldershot Existing Wastewater System

4.2 Sustainable Halton Wastewater Servicing Strategy

Halton Region completed the Sustainable Halton Water and Wastewater Master Plan (Master Plan) in 2011 to support Regional implementation of the Official Plan Amendment (ROPA 38/39) based on the Region's Best Planning Estimates (June, 2011). The Master Plan provided a Region-wide water and wastewater servicing strategy to accommodate growth from 2011 to 2031.

As part of the Master Plan, the North Aldershot area was considered in the development of the preferred wastewater servicing strategy for South Halton. Components of the servicing strategy for North Aldershot include:

- Maximize available capacity within existing infrastructure
- Provide new trunk gravity servicing through North Aldershot to existing trunk sewers near Waterdown Road and Hwy 403. Localized wastewater pumping stations may be required.
- Provide additional WWTP capacity at Skyway WWTP.

It should be noted that during the development of the Master Plan servicing strategies, a larger area for North Aldershot that was eligible for urban servicing (Official Plan 2009) was considered. Therefore, if implementation of the strategy were to proceed, the servicing strategies outlined in the master plan would have to be further refined to account for the recent changes to the North Aldershot Policy Area including the refinements to the Regional Natural Heritage System.

Figure 8 presents the Sustainable Halton preferred wastewater servicing strategy and capital projects for the North Aldershot Area.

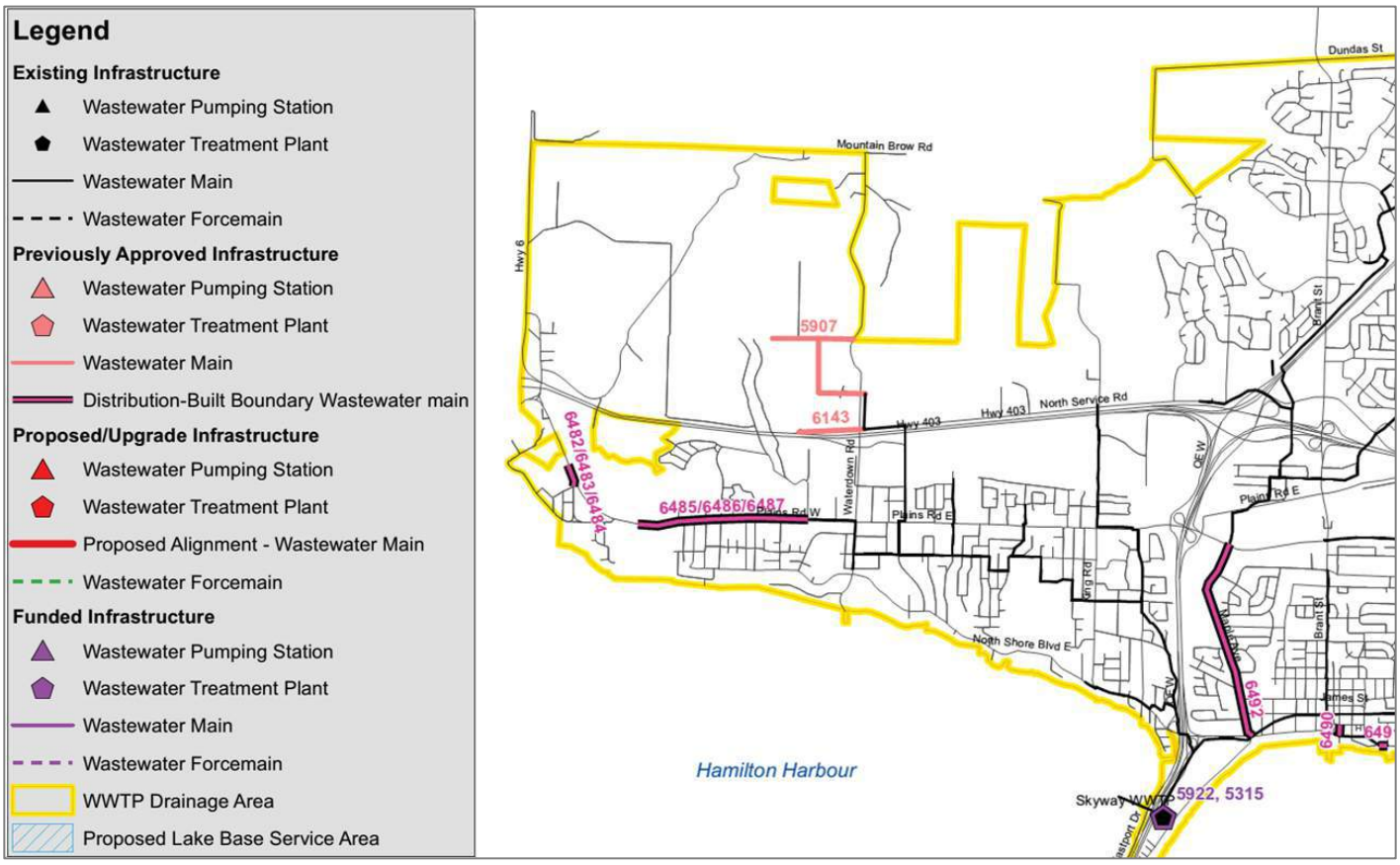


Figure 8 – Sustainable Halton Preferred Wastewater Servicing Strategy (North Aldershot Area)

4.3 Wastewater Servicing Opportunities and constraints

The following section presents a high-level review of opportunities and constraints for potential wastewater servicing of the remaining North Aldershot Policy Areas as depicted in Figure 3, as well as a comparative analysis with respect to other potential growth areas in the Region that are being considered through the Integrated Growth Management Strategy.

4.3.1 Opportunities and Constraints

- There is opportunity to continue providing municipal wastewater services to Bridgeview and lower portion of Waterdown Road. However, further development within these existing service areas may be limited by the capacity and extents of the existing wastewater infrastructure.

- Due to the reduced extent of the North Aldershot Policy Area within the Central Sector, there may be an opportunity to reduce and/or eliminate wastewater capital projects (e.g. Capital Project #5907) previously identified to service a larger area within this sector. In addition, the remaining lower portion of the North Aldershot Policy Area within this sector is located along existing wastewater infrastructure, which enables continued wastewater servicing. Should any capital projects be reduced or eliminated, future work required to service existing approved development will be reviewed against the Region's Local Servicing Policy to determine DC eligibility.

- Extension of wastewater servicing to other remaining areas or pockets within the North Aldershot Policy Area will carry environmental risks due to proximity to environmental sensitive areas with potential adverse effects to water features and resources. At a high level, there is greater potential risk and uncertainty of servicing needs for the remaining of North Aldershot Policy Area due to variability in topography and potential requirement for pumping solutions to overcome changes in ground elevation.

- Currently there is no municipal wastewater services for the central and eastern areas within the West Sector, as well as the north areas around Waterdown Road in the Central and East sectors. In addition, Regional wastewater infrastructure is not within close proximity to these areas; therefore, extension of wastewater services to these areas from the existing Halton wastewater system will be challenging and will require substantial new infrastructure. Potential wastewater solutions would require overcoming environmental features, crossings (creeks, highway, among others) and significant changes in ground elevations that may drive the need for pumping flows in places were a gravity conveyance solution is not feasible.

- When compared to other potential new service areas in the Region, the remaining policy area pockets throughout North Aldershot pose various technical, environmental and financial challenges. Due to several factors such as topography, proximity to environmental features and the general sparse and uneven distribution of each pocket of potential development, extending servicing can be costly, inefficient and technically challenging compared to other potential growth areas in the Region which are more contiguous to existing service areas

- Other potential growth areas within the Region generally have flatter topography, are clustered closer together and have fewer physical boundaries (e.g. creeks, pressure zone boundaries, major elevation changes, etc.) to overcome; all of the above characteristics can bring water servicing efficiencies. However, the servicing comment provided above generally applies to local servicing needs. It should be noted that the full downstream needs of the potential growth areas vary widely depending on existing and planned downstream trunk infrastructure and proximity to wastewater treatment facilities

5. SUMMARY AND CONCLUSIONS

As part of the Integrated Growth Management Strategy, a high level review of opportunities and constraints for water and wastewater servicing of the Remaining North Aldershot Policy Area was undertaken. The results of the review can be summarized as follows:

- The lands designated as “Remaining North Aldershot Policy Area” have been significantly reduced through several planning exercises including the latest refinements to the Regional Natural Heritage System.

- In 2011 the Region completed the Sustainable Halton Water and Wastewater Master Plan which considered North Aldershot in the development of the Master Plan servicing strategies. At the time, the North Aldershot areas eligible for urban services where significantly different, especially in the Central Sector, which was the major focus of the servicing strategies.

- **Existing Water Servicing** - There are currently three areas in North Aldershot (Bridgeview, Snake Road and Waterdown) that are supplied with municipal water services through an Inter-Regional agreement with the City of Hamilton. There is opportunity to continue providing municipal water services to these communities, but further development will be limited by the capacity and extents of the existing infrastructure and the maximum water consumption amount prescribed in the Halton-Hamilton Water Servicing Agreement.

- **Future Water Servicing Potential** - Extending municipal water services to other pockets of land within the Remaining North Aldershot Policy Area may be technically challenging and costly due to the topography of the area and have a potential for environmental risks due to proximity to environmental sensitive areas with potential adverse effects to water features and resources.

- **Existing Wastewater Servicing** -There are currently few areas in North Aldershot with municipal wastewater services (Bridgeview, lower portion of Waterdown Road, and former waste disposal site). There is opportunity to continue providing municipal wastewater services to these areas, but further development will be limited by the capacity and extents of the existing infrastructure.

- **Future Wastewater Servicing Potential -** Similar to the findings of the water system review, extending municipal wastewater services to other pockets of lands within the remaining North Aldershot Policy Area may be technically challenging and costly due to the topography of the area with potential for environmental risks.

- The remaining lands in the North Aldershot Policy Area pose various technical, environmental and financial challenges. When compared to other potential new services area in the Region, the remaining North Aldershot Policy Area is very sparse with several pockets that are not contiguous to existing service areas which makes extending servicing potentially costly, inefficient and technically challenging compared to other potential growth areas in the Region.