



CITY OF BRANTFORD
OFFICIAL PLAN
ENVISIONING OUR CITY: 2041

Envisioning Brantford - Municipal Comprehensive Review

Part 3: Preferred Settlement Area Boundary Expansion and Preliminary Land Use and Transportation Plan

DRAFT - April 2019



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1 INTRODUCTION

1.1 BACKGROUND

The City of Brantford started its Official Plan Review in 2013. Between 2013 and 2016, much work was accomplished, including the hosting of visioning sessions, the preparation of technical background papers and the creation of a new Draft Official Plan (Version 1, issued in July 2016). The Official Plan Review was put on hold while the Municipal Boundary Adjustment Agreement between the City of Brantford and County of Brant was being finalized and approved by the Province, and pending updates to the Growth Plan for the Greater Golden Horseshoe to which the new Official Plan must conform.

In 2016, the municipal boundary between the City of Brantford and the County of Brant was adjusted in order to secure additional lands in the City for future growth, effective January 1, 2017. These lands are known as the Boundary Adjustment Lands.

The boundary adjustment brought new lands into Brantford’s municipal boundary. However, that does not automatically bring the lands into the City’s urban area boundary, also referred to as a Settlement Area boundary. To bring additional lands into the City’s Settlement Area boundary, the Province requires municipalities to conduct a Municipal Comprehensive Review (MCR) as input into their new or amended Official Plan. The MCR is to determine the extent that the Settlement Area boundary is to be expanded. Once that is done, the new or amended Official Plan can designate urban land uses within the expanded Settlement Area boundary.

The City is now embarking on a Municipal Comprehensive Review and revisions to the 2016 Draft Official Plan to include the Boundary Adjustment Lands. The City of Brantford has established an eight-stage study process to complete the Municipal Comprehensive Review and finalize the new Official Plan – entitled Envisioning Brantford. To complete this work, the City has retained a consulting team led by SGL Planning & Design Inc., which includes The Planning Partnership, Cushman Wakefield, Hemson Consulting, AgPlan Limited, ASI (Archaeological Services Inc.), Ecosystem Recovery Inc., GM BluePlan Engineering, Plan B Natural Heritage, and Dillon Consulting.

Stages 2 and 3 of the study, which are documented in the Envisioning Brantford - Municipal Comprehensive Review - Part 1: Employment Strategy, Intensification Strategy, Housing Strategy and Land Needs report (MCR Part 1 Report), identified appropriate intensification and Designated Greenfield Area (DGA) density targets, lands to convert from employment use, and whether there is a need for a Settlement Area boundary expansion and the extent of that need. The MCR Part 1 Report identified a need for an additional 336 hectares of Employment Area lands and 460 hectares of Community Area lands beyond that currently located within the City’s existing Settlement Area boundary to accommodate 2041 employment and population forecasts.

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The Envisioning Brantford - Municipal Comprehensive Review - Part 2: Settlement Area Boundary Expansion report (MCR Part 2 Report) documented Stage 4 of the study and contained an extensive evaluation to determine the preferred lands for Community Area and Employment Area uses. The Boundary Adjustment Lands were delineated into 11 Expansion Blocks to accommodate the Community Area land need arising from the MCR Part 1 Report, and 7 Expansion Blocks to accommodate the Employment Area land need. Evaluation Principles and Criteria were developed for agricultural, archaeological, transportation, environmental, servicing, stormwater and land use components. The 11 Community Area and 7 Employment Area Expansion Blocks were evaluated based on these principles and criteria.

The evaluation of the Community Area Expansion Blocks identified two potential Options for Settlement Area boundary expansion. Option 1 shown on **Figure 1** includes Expansion Blocks C1, C2, C4, C5, C7, C10, C11 and the west portion of Block C8 to meet the Community Area land needs requirement of 460 hectares. Option 2 shown on **Figure 2** includes Expansion Blocks C1, C2, C4, C5, C7, C11 and the southern portion of Block C6 to meet the land needs requirement of 460 hectares. Both options also contain the preferred Employment Area Expansion Blocks E3, E4, E5, E6, E7 and the southern portions of Blocks E1 and E2 to meet the Employment Area land needs requirement of 336 hectares. These two Options were carried forward to Stage 6 of the Study.

Stage 6 of the study, which is documented within this report, Envisioning Brantford - Municipal Comprehensive Review - Part 3: Preferred Settlement Area Boundary Expansion and Preliminary Land Use and Transportation Plan (MCR Part 3 Report), prepared land uses, transportation networks and servicing options for the two Settlement Area boundary expansion options. These options were evaluated to determine the preferred Settlement Area boundary for the Community Area as well as to determine the preliminary land uses, transportation network and servicing solution for the northern Boundary Adjustment Lands. As well, this report evaluates two land use, transportation and servicing options for Tutela Heights in the south of Brantford. Similar to the MCR Part 2 Report, principles and criteria were developed to evaluate the options. The results of the evaluation are contained in this MCR Part 3 Report.

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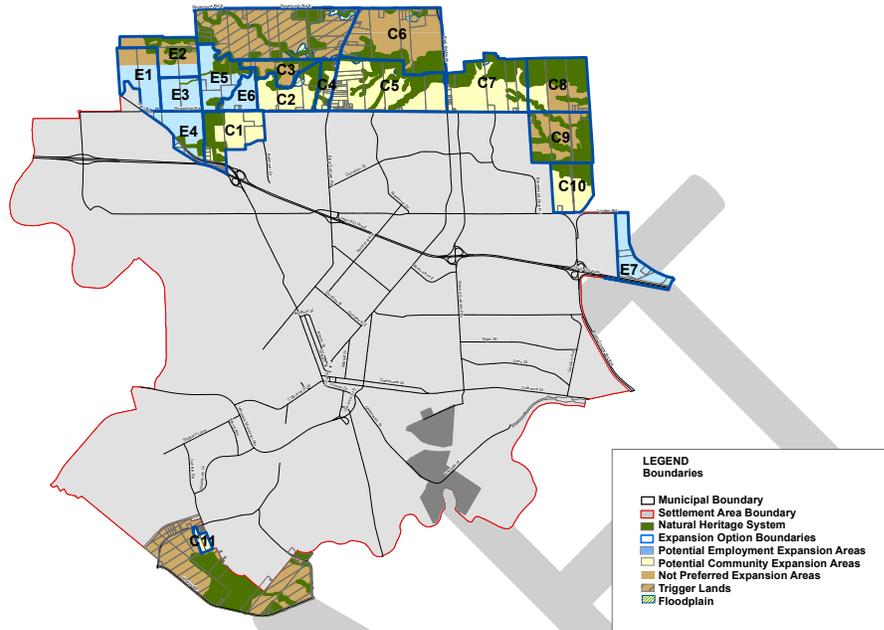


Figure 1: Settlement Area Boundary Expansion – Option 1

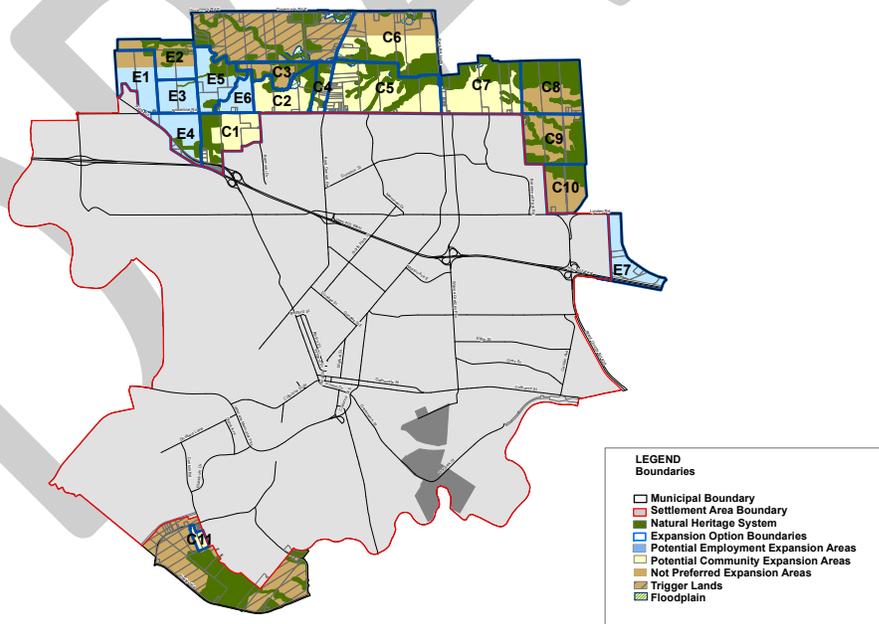


Figure 2: Settlement Area Boundary Expansion – Option 2

1.2 REPORT PURPOSE

The purpose of this report is to document the evaluation and selection of the preferred Settlement Area boundary along with the preliminary land uses and transportation network within it. The preliminary land use and transportation plan will form the basis of a preferred land use and transportation plan that will be refined into the new City of Brantford Official Plan. This report overviews the process and details the evaluation for how the preferred settlement area boundary and land uses were confirmed and includes:

- The description of the options that were evaluated to confirm the Settlement Area boundary as set out in Section 3 of this report;
- The principles and criteria used in the evaluation as listed in Section 5;
- The methodology used to evaluate the options as described in Section 5;
- The evaluation conducted by each of the disciplines – agriculture, environmental, transportation, servicing, stormwater and land use as described in Section 5; and
- The selection of the preferred Settlement Area boundary and preliminary land use option as set out in Section 7.

The report also describes key policy directions to guide development within the northern expansion area and Tutela Heights as set out in Section 7.4.

2 COMPONENTS OF THE MUNICIPAL COMPREHENSIVE REVIEW (MCR)

The MCR Part 2 Report evaluated a series of Expansion Blocks in the Boundary Adjustment Lands to determine where the Settlement Area boundary expansion should occur and recommended two options to be carried forward for further study. This MCR Part 3 Report further evaluates Options 1 and 2 based on a series of criteria, detailed in Section 5, that reflect in part Growth Plan requirements.

The Growth Plan for the Greater Golden Horseshoe (2017) requires that 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 following:

- a) There are existing or planned infrastructure and public service facilities to support the achievement of complete communities;
- b) The infrastructure and public service facilities needed would be financially viable over the full life cycle of these assets, based on mechanisms such as asset management planning and revenue generation analyses;
- c) The proposed expansion would align with a water and wastewater master plan or equivalent that has been completed in accordance with the policies in subsection 3.2.6 [of the Growth Plan];
- d) The proposed expansion would align with a stormwater master plan or equivalent that has been completed in accordance with the policies in subsection 3.2.7 [of the Growth Plan];
- e) Watershed planning or equivalent has demonstrated that the proposed expansion, including the associated servicing, would not negatively impact the water resource system, including the quality and quantity of water;
- f) Key hydrologic areas and the Natural Heritage System should be avoided where possible;
- g) For Settlement Areas that receive their water from or discharge their sewage to inland lakes, rivers, or groundwater, a completed environmental assessment for new or expanded services has identified how expanded water and wastewater treatment capacity would be addressed in a manner that is fiscally and environmentally sustainable;
- h) Prime agricultural areas should be avoided where possible. An agricultural impact assessment will be used to determine the location of the expansion based on avoiding, minimizing and mitigating the impact on the Agricultural System and evaluating and prioritizing alternative locations across the upper- or single-tier municipality in accordance with the following:
 - i. expansion into specialty crop areas is prohibited;

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- 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;
- i) The Settlement Area to be expanded is in compliance with the minimum distance separation formulae [for development near agricultural livestock facilities];
- j) Any adverse impacts on agricultural operations and on the agri-food network from expanding Settlement Areas would be avoided or, if avoidance is not possible, minimized and mitigated as determined through an agricultural impact assessment;
- k) The policies of Sections 2 (Wise Use and Management of Resources) and 3 (Protecting Public Health and Safety) of the Provincial Policy Statement (PPS) are applied.” (Growth Plan Section 2.2.8.3).

All of these matters are assessed in either this MCR Part 3 Report or the MCR Part 2 Report. The one exception is item g) which is assessed separately in Stage 5 of the Envisioning Brantford study. This report provides more detail particularly on assessment of infrastructure requirements and capital costs, stormwater management, infrastructure life cycle costs, minimum distance separation from livestock operations and impacts on agri-food network.

3 SETTLEMENT AREA BOUNDARY AND LAND USE OPTIONS

3.1 SETTLEMENT AREA BOUNDARY OPTIONS

As part of Stage 4, the study team evaluated 18 potential Expansion Blocks as delineated in **Figure 3**. Each block was analyzed and ranked from most preferred to least preferred for each principle and evaluation criteria as set out in the MCR Part 2 Report. The team identified specific constraints and trade-offs for each block as well as, potential for mitigation, management or phasing measures to address constraints for the blocks. Blocks C1, C2, C4, C5, C7 and C11 were identified as the preferred blocks for the Community Area. Further on the edges, Blocks C10, C8 and C6 each have constraints due to isolation and servicing. The MCR Part 2 Report recommended that two Community Area Options be carried forward to be evaluated as part of Stage 6. The preferred Employment Area included Blocks E3, E4, E5, E6, E7 and the south portion of Blocks E1 and E2.

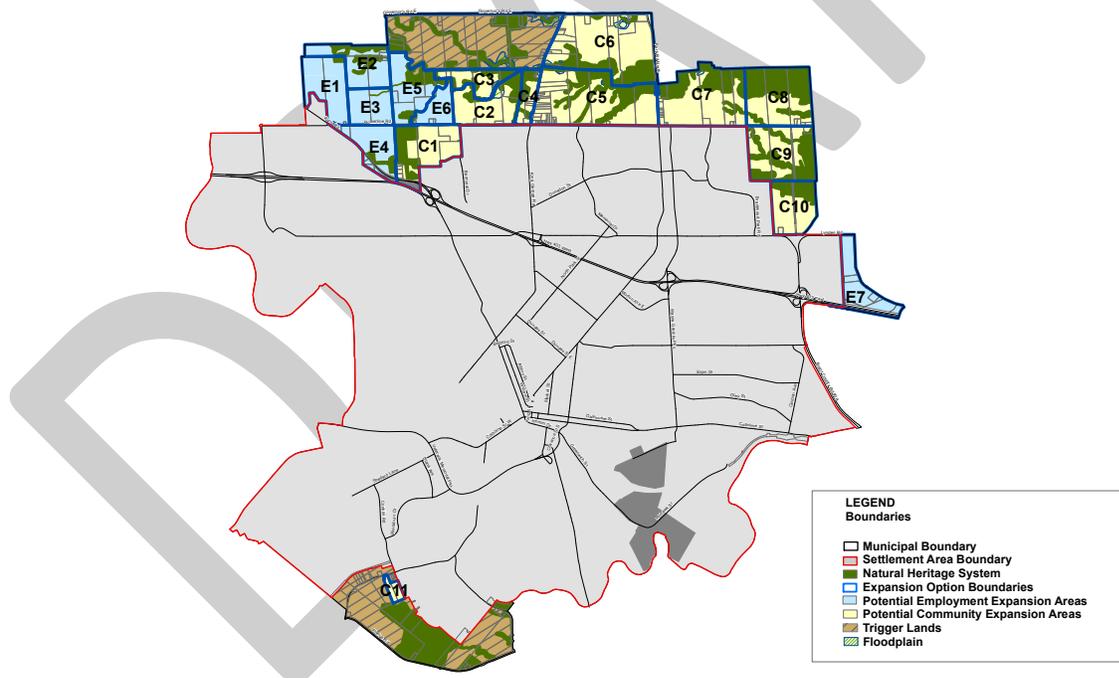


Figure 3: Community and Employment Expansion Blocks

Settlement Area Boundary Expansion Option 1 as shown on **Figure 4** includes the preferred Community Area (C1, C2, C4, C5, C7 and C11) and Employment Area blocks noted above as well as Community Area Expansion Block C10 and a portion of Block C8. These additional Blocks

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represent an eastern expansion approach. The northern Settlement Area boundary of Option 1 is largely dictated by the Natural Heritage System although a portion of the Settlement Area Boundary follows property lines within the Natural Heritage System. Development will be prohibited in the Natural Heritage System in all options.

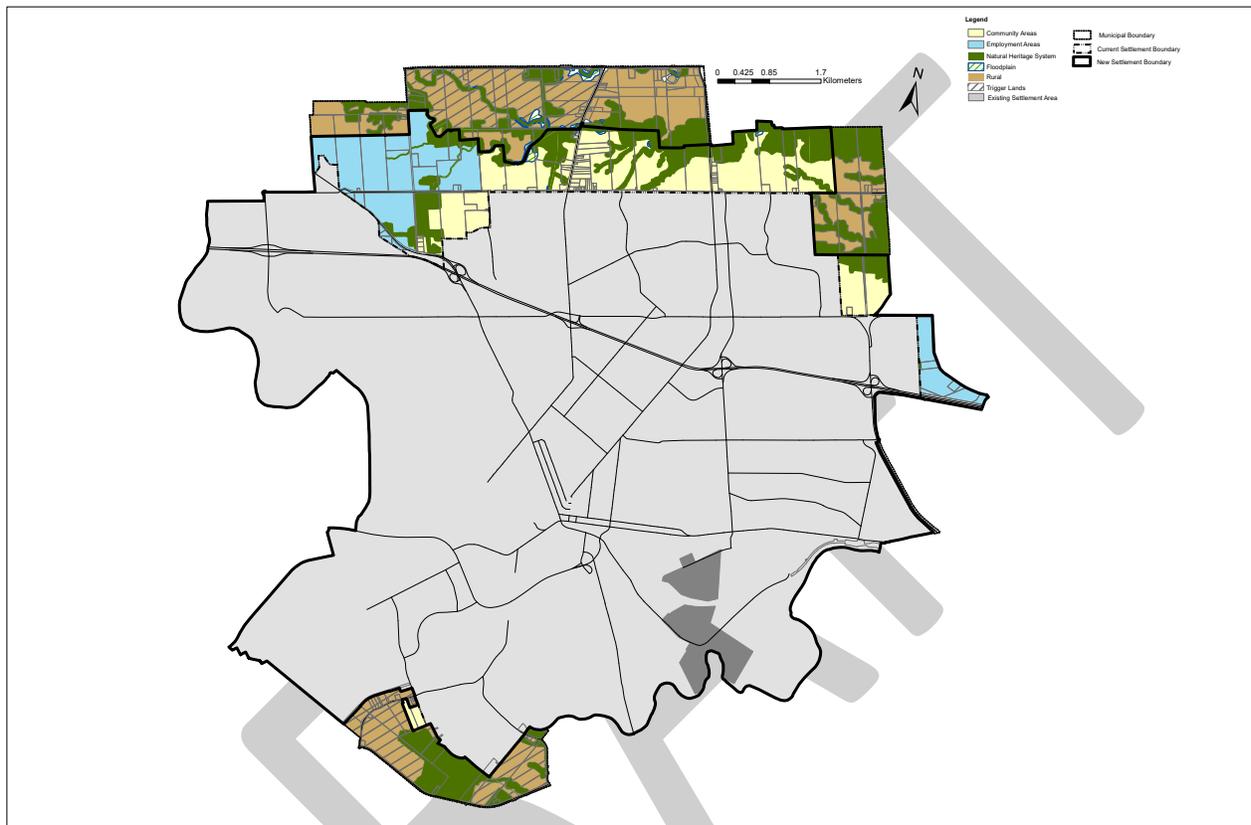


Figure 4: Settlement Area Boundary Expansion – Option 1

Settlement Area Boundary Expansion Option 2 as shown on **Figure 5** includes the preferred Community Area (C1, C2, C4, C5, C7 and C11) and Employment Area blocks E3, E4, E5, E6, E7 and the south portion of Blocks E1 and E2, as well as a portion of Community Area Expansion Block C6. This additional Block represents a northern expansion approach. Although a portion of the northern Settlement Area boundary in Option 2 follows the Natural Heritage System, between King George Road and Park Road, the northern boundary extends further north of the Natural Heritage System associated with Jones Creek to a straight line dictated by the maximum available Settlement Area boundary expansion of 460 hectares for Community Area uses.

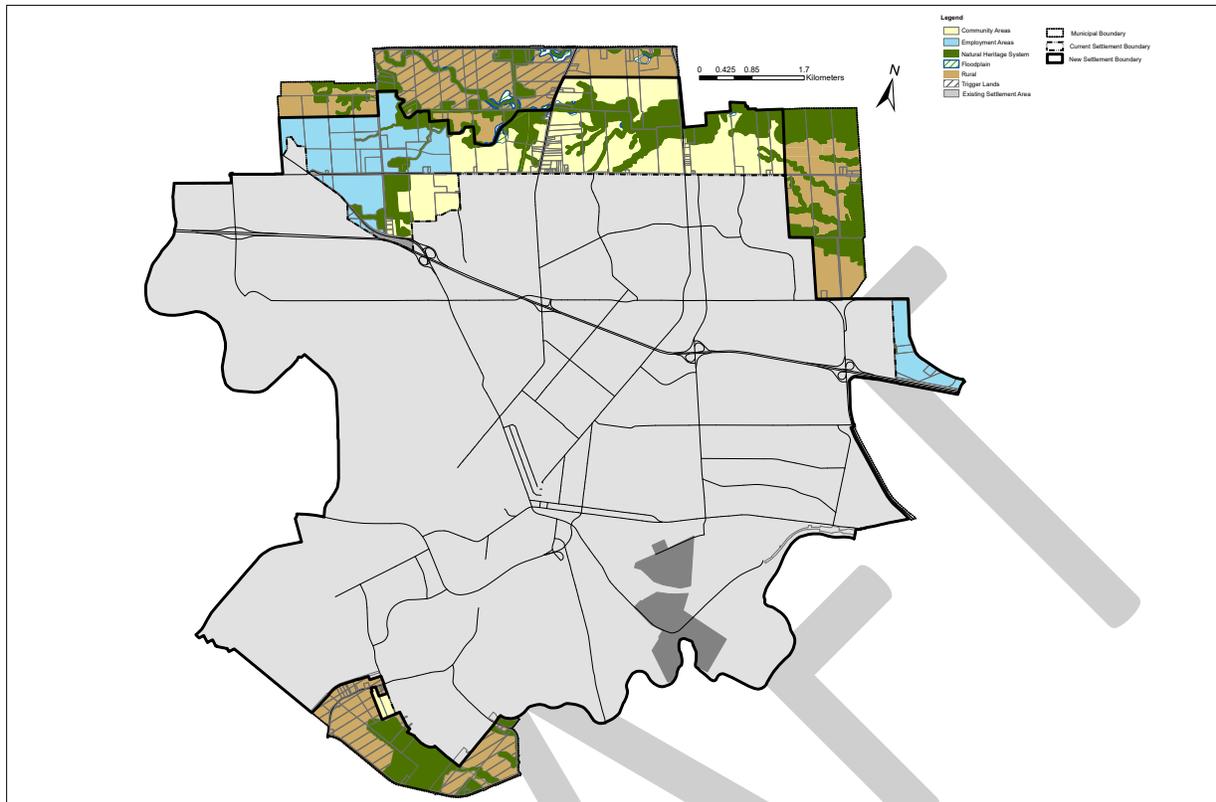


Figure 5: Settlement Area Boundary Expansion – Option 2

Both options include a small Community Area expansion (Block C11) in Tutela Heights. Both options total 460 hectares for Community Area uses and 336 hectares for Employment Area uses.

3.2 LAND USE SCENARIOS – NORTHERN EXPANSION

Two land use scenarios (Options A and B) were created for each of Settlement Area boundary expansion - Options 1 and 2. Options 1A (Figure 6) and 2A (Figure 8) have similar land uses proposed except for the difference in the Settlement Area boundary. Options 1B (Figure 7) and 2B (Figure 9) are similar except for the difference in the Settlement Area boundary.

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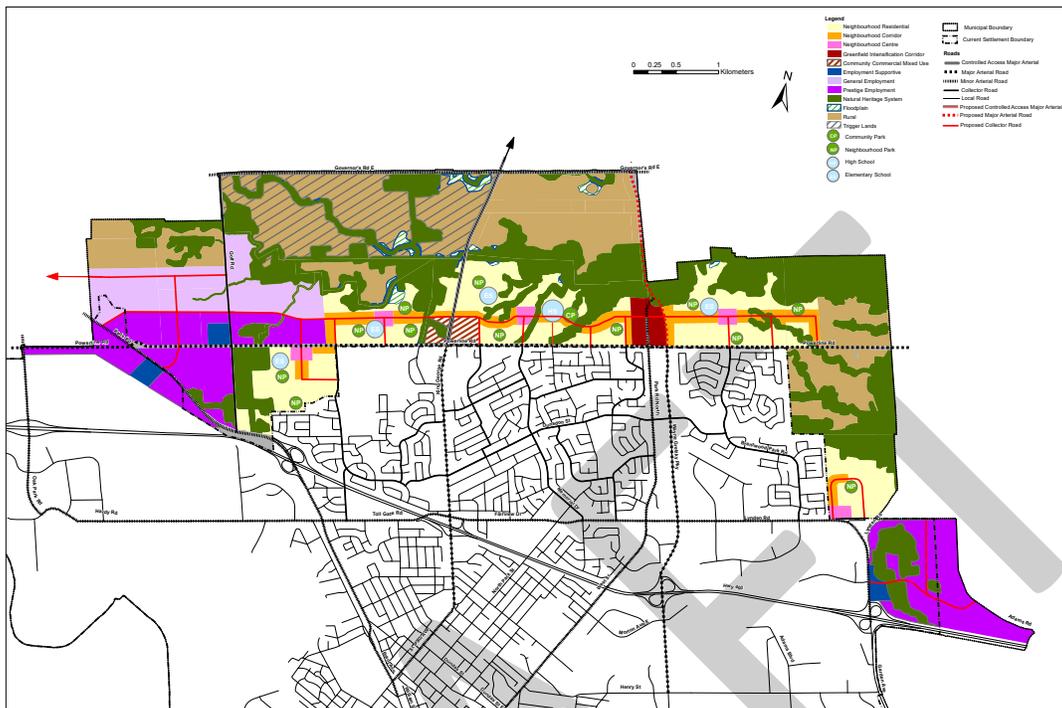


Figure 6: North Land Use and Transportation – Option 1A

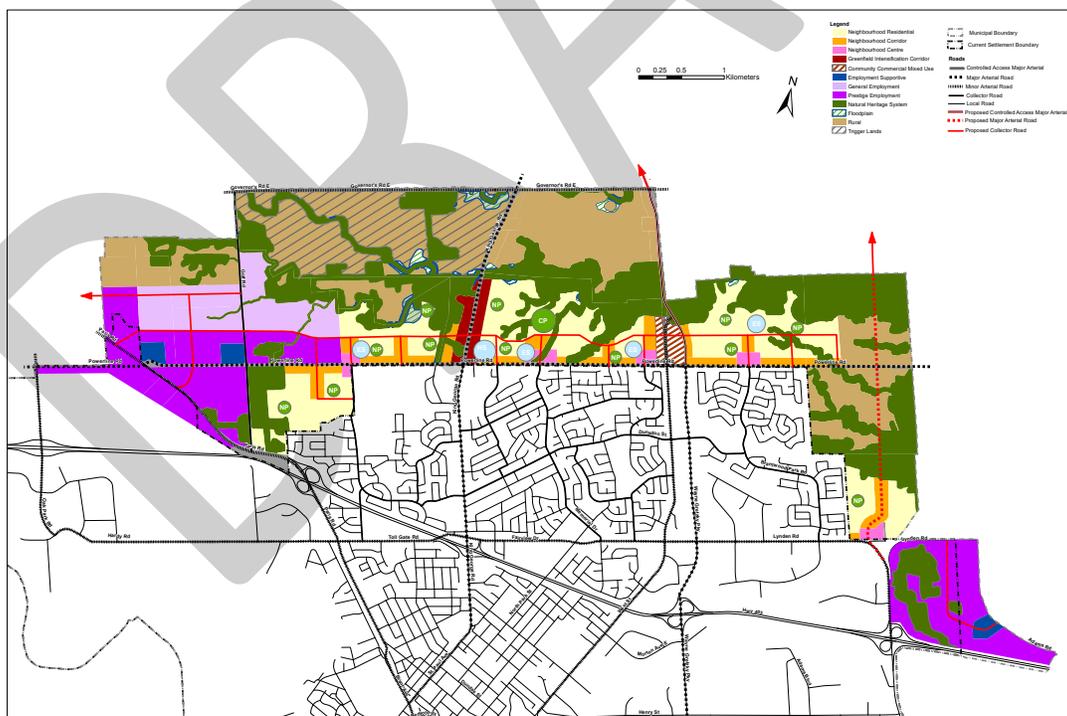


Figure 7: North Land Use and Transportation – Option 1B

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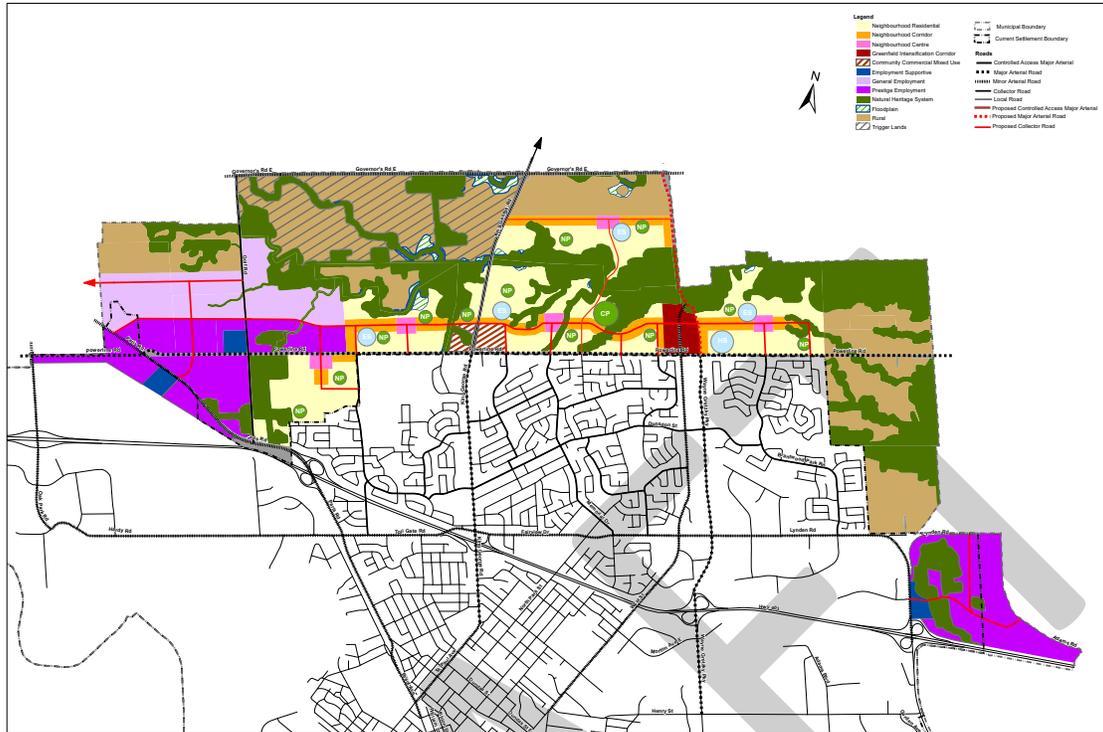


Figure 8: North Land Use and Transportation – Option 2A

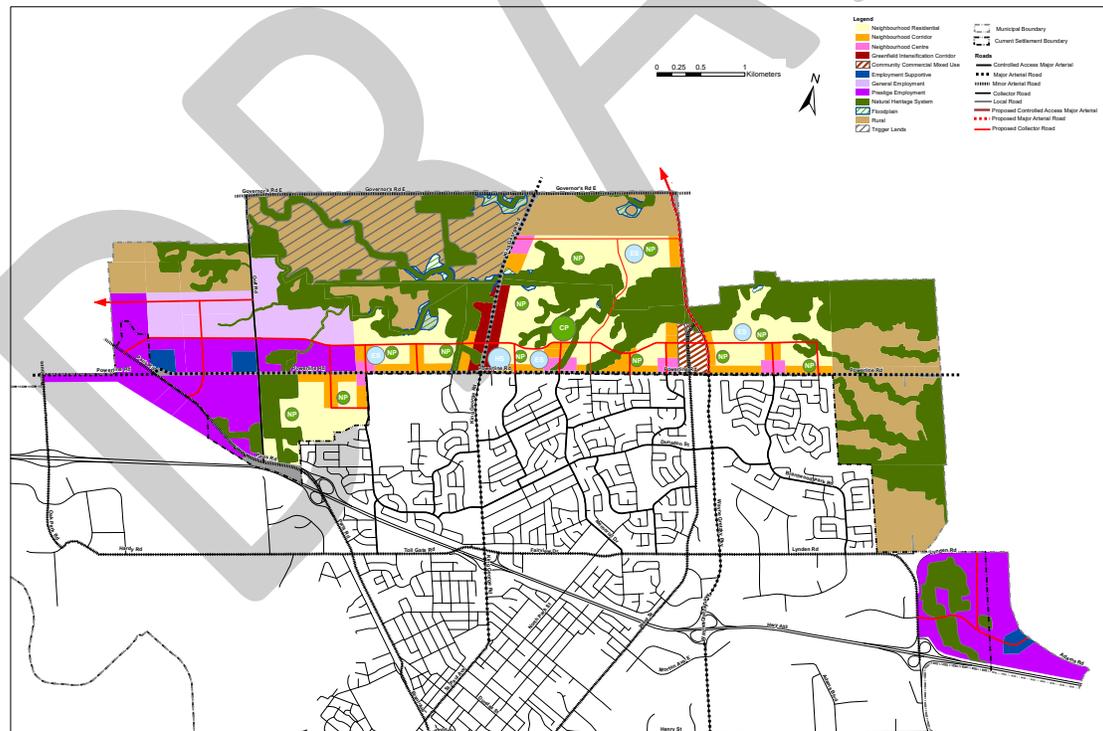


Figure 9: North Land Use and Transportation – Option 2B

3.2.1 Structural Elements – North Scenarios

A number of structural elements inform the land use boundaries and distribution of land uses. Some of these elements such as the Natural Heritage System are the same in all scenarios.

Natural Heritage System

The Natural Heritage System includes significant natural heritage features as well as headwater drainage features that have to be protected and maintained.

The significant natural heritage features were identified in the context of the Natural Heritage Reference Manual (MNR 2010), which is the companion document to the Provincial Policy Statement (MMAH 2014). The natural heritage features were previously evaluated by the Grand River Conservation Authority (GRCA) as part of the County of Brant Official Plan (2012). The natural heritage features in the North scenarios as well as in Tutela Heights consist of the following features:

- Provincially Significant Wetlands (PSWs);
- Unevaluated wetlands greater than 0.5 ha in area;
- Woodlands greater than 4.0 ha in area;
- Jones Creek and Fairchild Creek systems and Phelps Creek in Tutela Heights plus associated riparian vegetation; and
- A 30 m buffer from Natural Heritage System components.

Woodlands less than 4.0 ha, naturally occurring wetlands less than 0.5 ha, anthropogenic wetlands less than 2.0 ha, hedgerows, cultural vegetation features (old field meadows, thickets) and selective headwater drainage features were identified as “Other Environmental Features” to be evaluated in further detail at the draft plan of subdivision application stage. These other environmental features are shown on **Figure 10** for the North Study Area.

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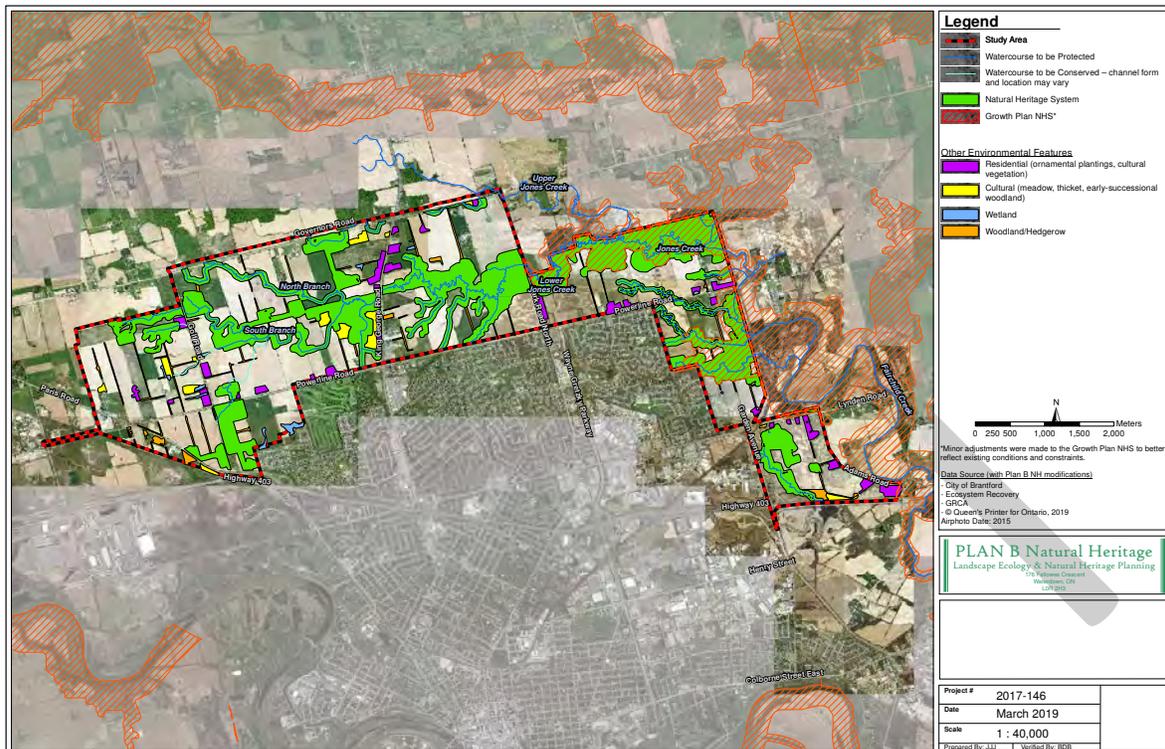


Figure 10: Other Environmental Features – North

Growth Plan Natural Heritage System

The Growth Plan for the Greater Golden Horseshoe (2017) contains policies for a natural heritage system, which is comprised of key hydrologic features, key hydrologic areas, and key natural heritage features. One of the objectives of the Growth Plan is to protect, restore and enhance the natural environment of the region for the long-term. The province released mapping and a technical report in February 2018 on “The Regional Natural Heritage System for the Growth Plan for the Greater Golden Horseshoe” (Growth Plan NHS).

The Growth Plan requires municipalities to incorporate the Growth Plan NHS as an overlay in official plans. However as part of its municipal comprehensive review, Brantford can refine the provincial mapping “with greater precision” in a manner that is consistent with the Growth Plan.

The Growth Plan NHS occurs within and adjacent to the North Brantford and Tutela Heights Secondary Plan study areas (**Figures 11a and 11b**). Within the North Brantford study area, the Growth Plan NHS is associated with Fairchild Creek and its tributaries, and the lower reaches of Jones Creek (east of Park Road North). For the most part, the NHS is associated with natural features such as valleylands, woodlands and wetlands, however, there are some locations where the NHS overlaps cultivated fields, existing farmsteads, roads and hedgerows. The portion of the NHS outside of a defined feature is intended to provide a buffer and/or enhancement function

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to adjacent natural heritage features/functions such as woodlands, wetlands and species dispersal corridors.

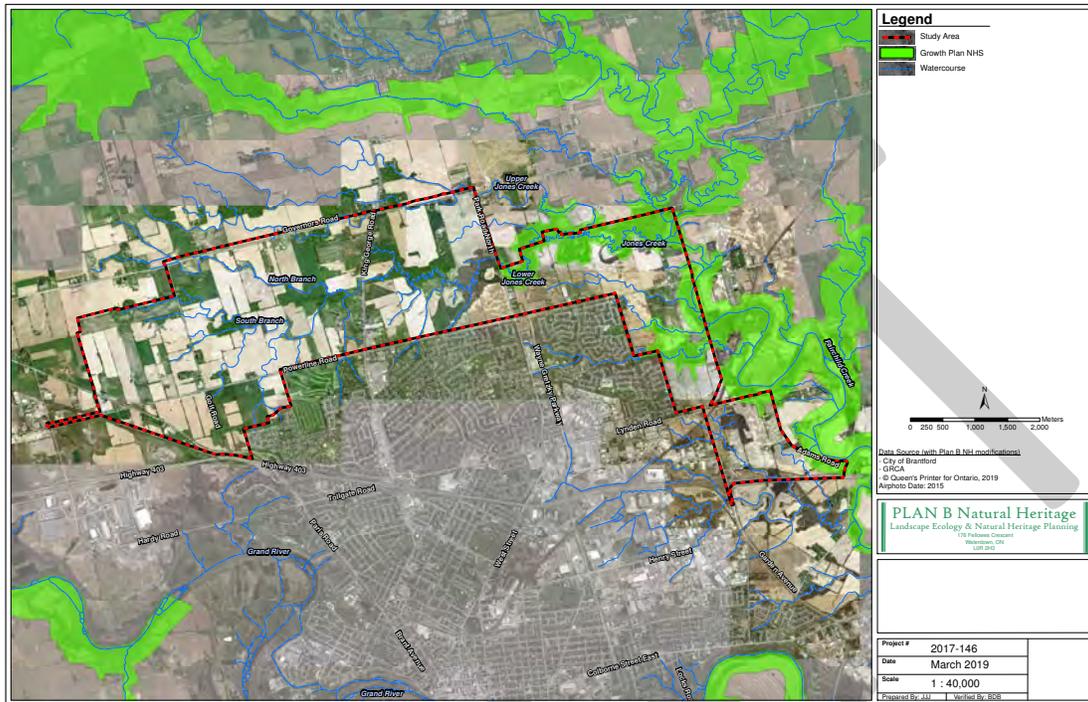


Figure 11a: Growth Plan NHS North Study Area

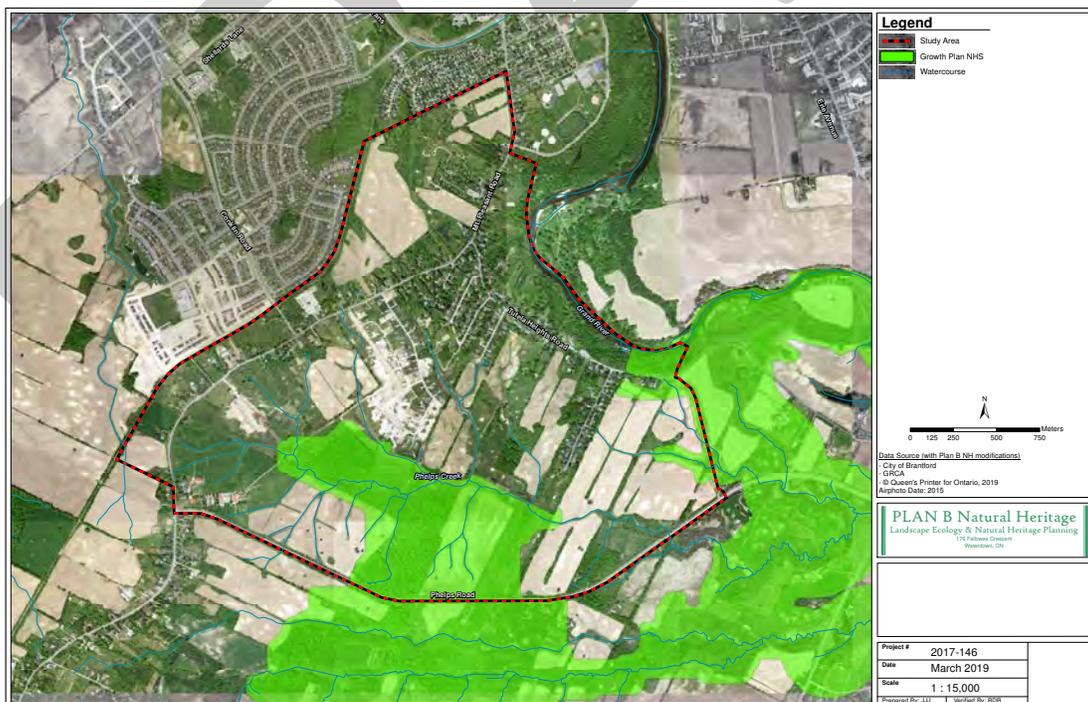


Figure 11b: Growth Plan NHS Tutela Heights Study Area

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In the Tutela Heights study area, the Growth Plan NHS is associated with portions of the Grand River valley, Phelps Creek, and connecting linkages between the Grand River and large blocks of forest/wetland habitat to the south and north of Phelps Road. The Growth Plan NHS also encompasses hedgerows, cultivated fields, and cultural habitat features as buffers and/or enhancements to key natural heritage features.

As part of the secondary plan exercise for North Brantford and Tutela Heights, a NHS was prepared as a “framework” for the preparation of an urban land use plan for the study area. The Growth Plan NHS is one of the components of the recommended NHS for the secondary plan exercise, which is shown on **Figures 12a and 12b**. Some minor modifications were made to the Growth Plan NHS where it was unclear as to why a particular feature was included (e.g. hedgerow, cultivated field, road, farmstead). In these instances, the Growth Plan NHS boundary was “adjusted” to coincide with the recommended NHS framework for the North Brantford and Tutela Heights Secondary Plan study area. The adjustments that were made to the Growth Plan NHS are summarized below:

- Lower Jones Creek (east of Park Road North, north of Powerline Road) - the Growth Plan NHS boundary extended marginally beyond the 30 m NHS buffer. In these locations the Growth Plan NHS boundary was modified to coincide with the 30 m buffer;
- Corner of Powerline Road and Karek Road - an area of open field and farmstead not associated with a NHS feature was omitted. The Growth Plan NHS overlay in this area appears to be a function of a buffer/enhancement to Fairchild Creek, which is approximately 200+ m to the east;
- Garden Avenue extension - two small field border hedgerows, extending southerly from a tributary valley (Fairchild Creek) with no connection to another NHS feature, were omitted. An area of open cultivated land and cultural habitat to the east surrounded by NHS features was included within the Growth Plan NHS, as compensation for the recommended changes. A parcel of cultural habitat to the north of the open field was also included as part of the Growth Plan NHS;
- SW corner of Lynden Road and Adams Road – an area of cultivated fields and hedgerows was omitted as there were no NHS features in this area. The Growth Plan NHS overlay in this area appears to be a function of a buffer/enhancement to Fairchild Creek, which is approximately 100+ m to the north of Lynden Road; and,
- SW corner of Adams Road and Johnson Road – an area of cultivated fields, hedgerows and farmsteads was omitted as there were no NHS features in this area. The Growth Plan NHS overlay in this area appears to be a function of a buffer to Fairchild Creek, which is approximately 100 m to the north of Adams Road.

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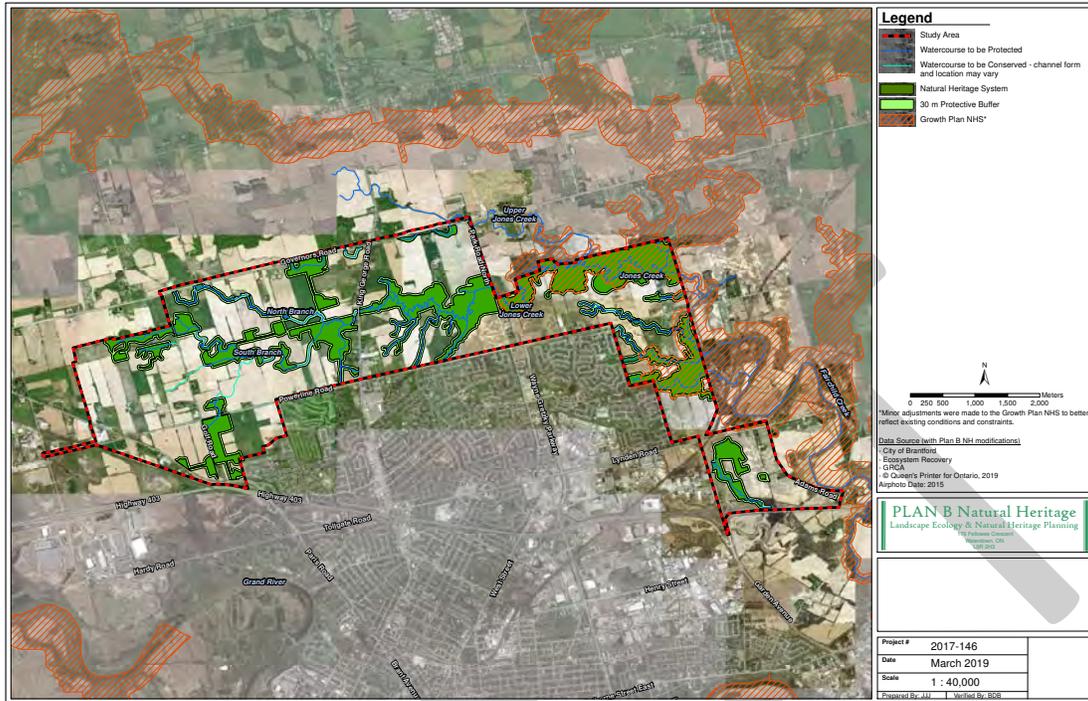


Figure 12a: Recommended NHS North Study Area

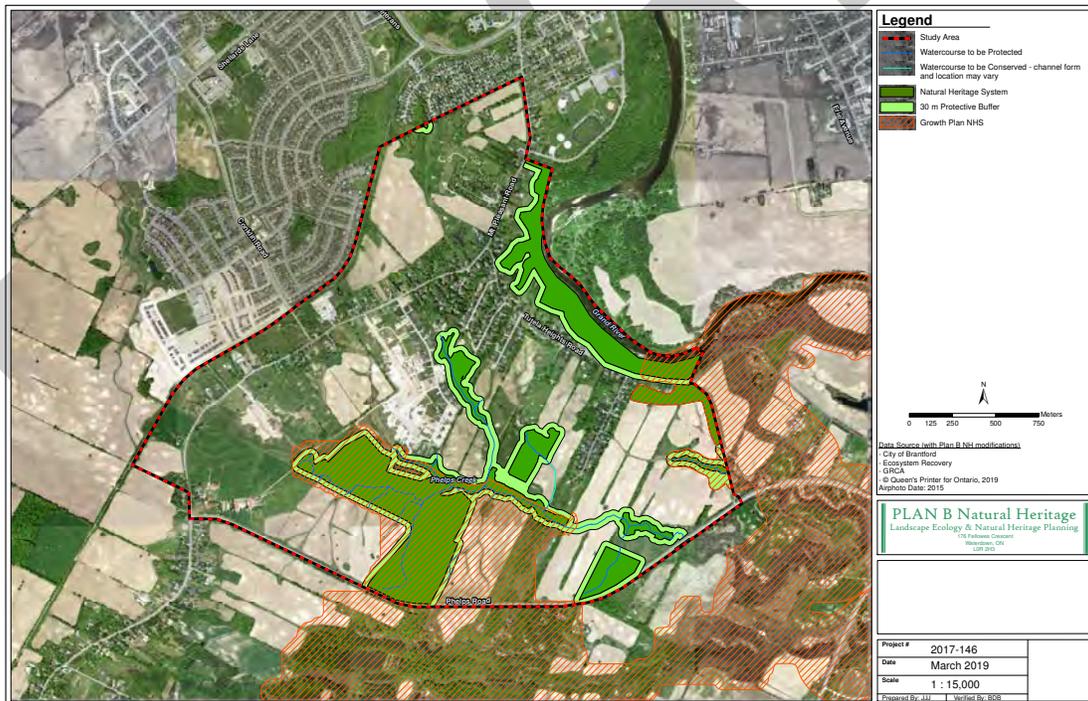


Figure 12b: Recommended NHS Tutela Heights Study Area

No revisions were made to the Growth Plan NHS in the Tutela Heights study area. The Growth Plan NHS in this portion of the study area coincides with “trigger lands” that are not currently

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being contemplated for development. The recommended revisions to the Growth Plan NHS in the North Study Area is shown on **Figure 13**.

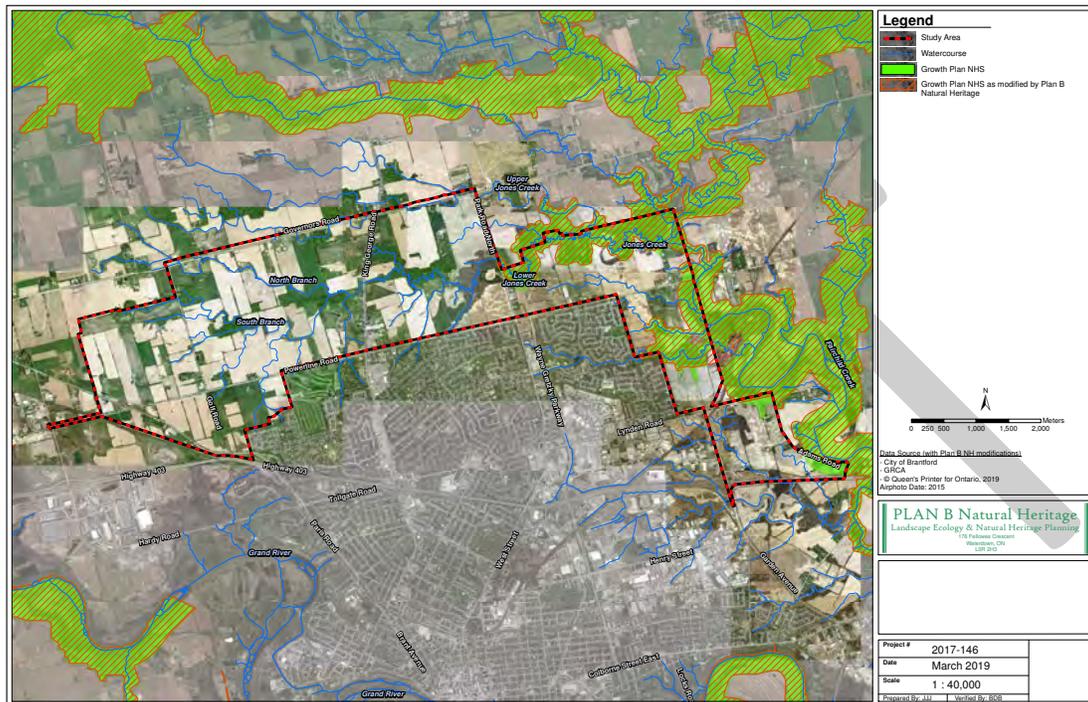


Figure 13: Recommended Adjustment to Growth Plan NHS

Headwater Drainage Features

The headwater drainage features (HDF) were evaluated and characterised as:

1. Protection – feature to remain with buffer
2. Conservation – feature to remain but can be altered
3. Mitigation – feature can be removed but function must be maintained

Within the Study Area, there are approximately 48 km of HDFs, with approximately 36 km in the North Study Area, and 12 km in the Tutela Heights Study Area. The Study Areas reflect the Boundary Adjustment Lands. Headwater features differ from downstream reaches by their close coupling to hillslope processes and greater temporal and spatial variation (Gomi et al., 2002). Although small, HDF can provide important functions within the surface water network and can account for 70-80 % of total drainage network length (Meyer et al, 2003). HDF functions typically include flow attenuation and storage, sediment source and storage, groundwater recharge potential, contribution of organic energy inputs, and provision of seasonal habitat.

The Toronto Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC) (2014) Headwater Drainage Feature Guideline document was used to evaluate, classify, and develop management recommendations for all HDF that were included in the Settlement Area field program. Inclusion in the field program was based on landowner permission to access properties for the purpose of completing surface water feature assessments. A summary of the HDF

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assessment is provided below. The detail assessment is described in **Appendix 1: Settlement Area Boundary Expansion: Geomorphic Assessment (March 2019)**.

Identification of HDF was based on a review of available surface drainage mapping from GRCA, aerial photography, and field identification. Assessment of the HDF followed the Rapid Method of evaluation (TRCA and CVC, 2014) which was considered appropriate for a secondary plan scale of study. This evaluation method requires that each feature be assessed with respect to feature type, hydrologic function, and riparian vegetation conditions during prescribed field observation events based on anticipated soil moisture content associated with snowmelt, early spring, and summer conditions.

While all features should be assessed in the first sampling event, inclusion in subsequent events depends on observed field conditions. In total, 26 km of headwater drainage features situated within the North Study Area, and 1 km within the Tutela Heights Study Area were identified and assessed at least once in 2018. The timing of landowner permission determined the completeness of the HDF assessment (i.e., not all features were assessed in the first sampling event, and some were not assessed at all, within the Settlement Area). For this reason, results of the HDF assessment are considered preliminary for some features.

The HDF management recommendations based on the TRCA and CVC (2014) guidance document are structured as a science-based decision-making framework that applies a precautionary principle. Based on the Rapid Method of HDF assessment, and consultation with GRCA, the preliminary management strategies for the HDF features were identified and defined in Table 1 and illustrated for the North Study Area on **Figure 14**. Review of the figures demonstrates that many of the HDF features are situated in the Natural Heritage System (NHS) and support terrestrial features and functions. For those features situated outside of NHS areas, further HDF assessment can be undertaken in the future once specific land use alterations and surface drainage network modifications are proposed so that the aquatic and terrestrial classifications can be incorporated into the determination of HDF management strategy, as per the TRCA and CVC (2014) guidance document.

Notwithstanding the HDF management strategy presented in this report, permission from the GRCA is required to develop in river or stream valleys, wetlands, shorelines or hazardous lands; alter a river, creek, stream or watercourse; or interfere with a wetland. Within these regulated areas, GRCA Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation apply (Ontario Regulation 150/06). Recommendations derived from the HDF assessment are in addition to, but do not supersede, regulatory requirements.

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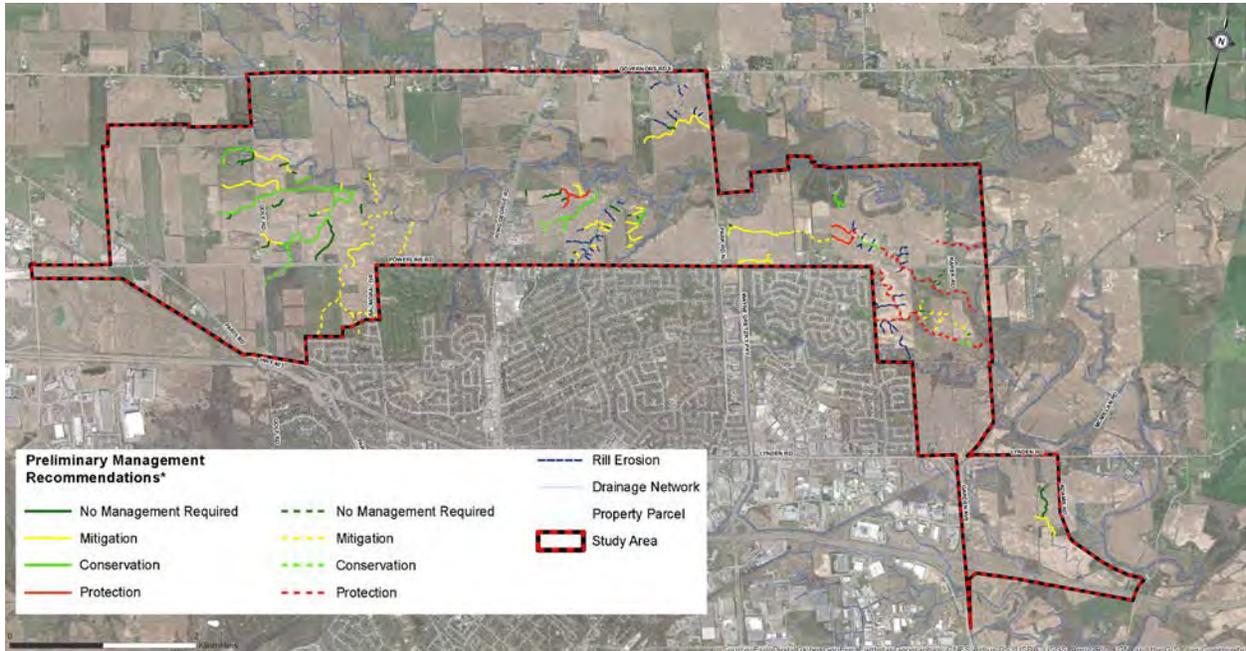


Figure 14: Preliminary Headwater Drainage Features Management Recommendations – North Study Area

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Management Strategy	Description
Protect	<ul style="list-style-type: none"> • Protect / enhance the existing feature and its riparian corridor, groundwater discharge or wetlands • Maintain hydroperiod • Natural channel design to restore and enhance existing habitat features • Design and locate the SWM system to avoid impacts to the feature
Conserve	<ul style="list-style-type: none"> • Maintain, relocate and/or enhance drainage feature and its riparian corridor • Maintain or replace external flows • Maintain or replace on-site flows using mitigation measures and/or wetland creation • Natural channel design to maintain/enhance overall productivity of the feature • Feature must connect to downstream
Mitigate	<ul style="list-style-type: none"> • Replicate or enhance function through enhanced lot level conveyance measures • Replicate functions by lot level conveyance measures connected to natural heritage systems and/or Low Impact Development (LID) stormwater options • Replicate on-site flow and outlet flows to maintain feature function (e.g., vegetated swales, bioswales, etc.)
No Management Required	<ul style="list-style-type: none"> • No feature and/or functions associated with headwater drainage features are present on the ground and/or there is no connection downstream. • No management recommendation is required.

Table 1: Overview of HDF Management Strategies (TRCA and CVC, 2014).

The Natural Heritage System is the same in all scenarios. In many places, the Natural Heritage System forms the boundary to the expanded Settlement Area. In other locations, property lines form the proposed Settlement Area boundary.

Transportation

The transportation network scenarios build on the broader expansion area assessment undertaken for the Expansion Blocks in the MCR Part 2 Report. Each of these has been identified as providing very good transportation service from the perspective of transportation capacity, access, opportunities for active transportation, and ability to provide connections to transit service.

The arterial road network differs between Option A and B. In 1A and 2A, King George Road/Highway 24 remains as a controlled access major arterial under the jurisdiction of the Province. Wayne Gretzky Parkway is extended to Park Road as a major arterial road ending at Governor's Road. Option 1B and 2B propose King George Road as a major arterial road. Wayne Gretzky Parkway is extended as a controlled access major arterial and Garden Avenue is proposed as a major arterial road. Garden Avenue is also extended as a north-south major arterial road in 1B and 2B.

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The collector road network differs between Option 1 and 2. In all scenarios, a new east-west collector road is situated north of Powerline Road as a new east-west spine of the community. New north-south collector roads connect to existing roads to the south of Powerline Road.

In Option 1A and 1B, the east-west collector road extends further east than in 2A and 2B. In Option 2A and 2B, an additional east-west collector road is located between King George Road and Park Road north of Jones Creek, with a north-south collector road extending from Powerline Road to north of Jones Creek connecting to the additional east-west collector road.

One additional looped collector road connecting to Lynden Road is shown in Option 1A versus a major arterial road extension of Garden Avenue in Option 1B.

3.2.2 Proposed Land Use Designations

The following describes the proposed land use designations and the differences in their distribution largely between Options A and B.

Neighbourhood Corridor and Neighbourhood Centre

The Neighbourhood Corridor designation will generally form higher density, pedestrian and transit-oriented corridors compared to the lower density residential neighbourhoods surrounding the corridors. It is envisioned that the corridors will be comprised of multi-unit housing such as a full range of townhouses and low-rise apartments.

The Neighbourhood Centre designation is envisioned to represent the centre of each neighbourhood. In addition to the residential housing forms in the Neighbourhood Corridors, these Neighbourhood Centres would also contain a range of commercial businesses serving the surrounding neighbourhood including grocery stores, drug stores, local retail, personal services, medical offices and community facilities such as a library or community centre.

Options 1A and 2A (Figures 6 and 8) focus these land uses along the new east-west collector road. Options 1B and 2B (Figures 7 and 9) focus these land uses along Powerline Road.

In Option 2A (Figure 7), an additional Neighbourhood Corridor and Neighbourhood Centre are focused along the second east-west collector road north of Jones Creek. In Option 2B (Figure 9), the Neighbourhood Corridor and Neighbourhood Centre north of Jones Creek are focused along King George Road and/or Park Road.

Greenfield Intensification Corridor and Community Commercial Mixed Use

The Greenfield Intensification Corridor designation is intended to be a higher density mixed use extension of the Intensification Corridors proposed south of Powerline Road in the 2016 Draft Official Plan. The Intensification Corridors are to be pedestrian and transit oriented places containing an array of compatible land uses including retail and service commercial uses, low-rise, mid-rise and high-rise multi-unit housing and community and institutional uses.

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The Community Commercial Mixed Use designation would include a full range of commercial uses including grocery stores and other major retail. In addition, multi-unit housing would be permitted in the initial development and/or through long-term intensification.

In Options 1A and 2A (Figures 6 and 8), the Greenfield Intensification Corridor is proposed along Park Road and the Community Commercial is proposed along King George Road. In Options 1B and 2B (Figures 7 and 9), the Greenfield Intensification Corridor is along King George Road and the Community Commercial is along Park Road. The location of the Greenfield Intensification Corridor is reflective of the road that will be the major arterial, whereas the location of the Community Commercial area is reflective of the road that will be the controlled access major arterial.

Parks and Schools

All four land use options include the same number of schools and parks. Elementary schools are located adjacent to a neighbourhood park. Neighbourhood parks are located to maximize a 5-minute walk to a park.

There is one secondary school in each option. Options 1A and 2A (Figures 6 and 8) have a central community park. The secondary school is centrally located in Option 1A, and near the Wayne Gretzky Parkway extension in Option 2A. Options 1B and 2B (Figures 7 and 9) propose the community park further to the west and the secondary school near King George Road.

Neighbourhood Residential

The Neighbourhood Residential designation is intended to be a low-rise residential area comprised primarily of single-detached and semi-detached homes with some townhouses and other multiple-unit housing. This land use represents the remaining Community Areas and differs between the options based on the locations of the other land uses around it.

Employment

Three employment designations are proposed. The General Employment and Prestige Employment designations are set out in the 2016 Draft Official Plan. The General Employment designation is comprised of full range of manufacturing uses including outdoor storage. The Prestige Employment designation permits a full range of manufacturing, research and business and professional offices. The Employment Supportive designation is intended to provide for ancillary commercial uses that support the Prestige Employment designation such as financial institutions, restaurants, hotels, personal services and convenience retail.

Options 1A and 2A (Figures 6 and 8) provide the same distribution of employment designations including Prestige Employment located close to Hwy 403 and Powerline Road, and Employment Supportive distributed along Paris Road, Powerline Road and Garden Avenue. Options 1B and 2B (Figures 7 and 9) include more Prestige Employment along Brantford's west boundary with the County of Brant, and the Employment Supportive designation situated along Powerline Road at Paris Road and at Golf Road, as well as along Adams Road.

3.3 LAND USE OPTIONS - TUTELA HEIGHTS

Only one small Settlement Area boundary expansion is proposed in Tutela Heights where Block C11 was confirmed as preferred in the MCR Part 2 Report. Much of Tutela Heights was already identified as a Secondary Urban Settlement Area in the County of Brant Official Plan. The municipal boundary adjustment brought Tutela Heights into the City’s Settlement Area boundary with the exception of Block C11 and the Rural designated lands to the south and east.

As part of the City’s new Official Plan, urban land uses need to be explored for Tutela Heights. Recognizing full municipal services will be available in the future to Tutela Heights, two options with slightly different road land uses in each option are explained in the following text. Option 1 is shown in **Figure 15** and Option 2 is shown in **Figure 16**.

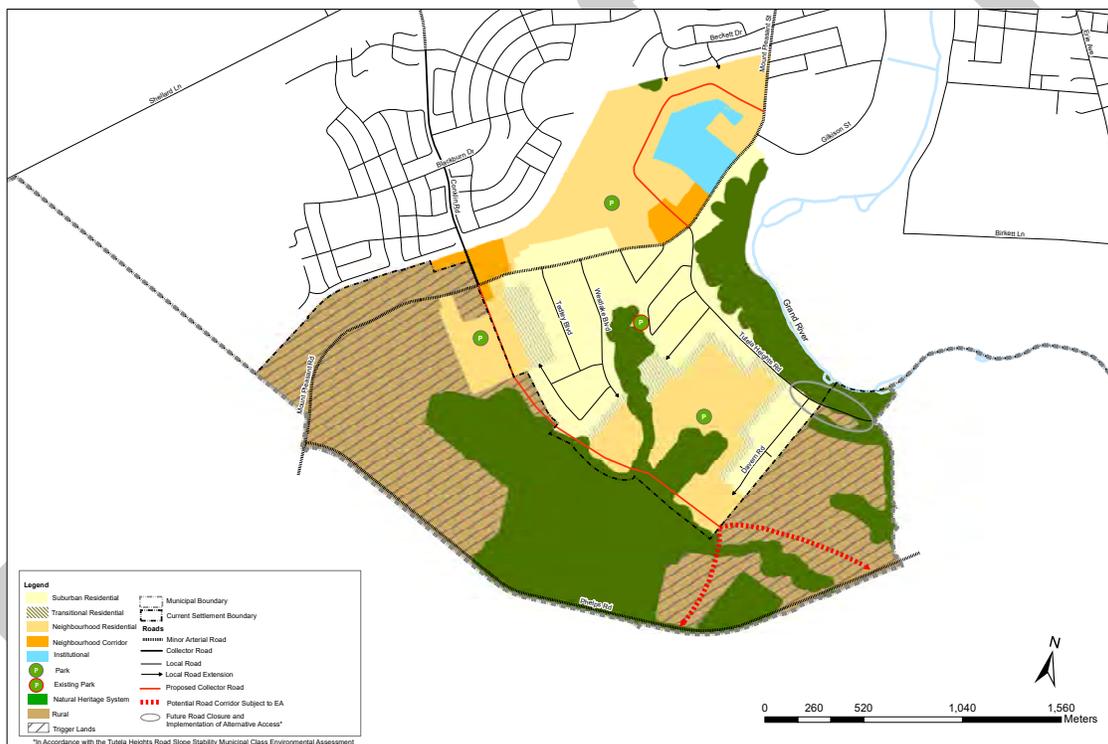


Figure 15: Tutela Heights Land Use and Transportation – Option 1

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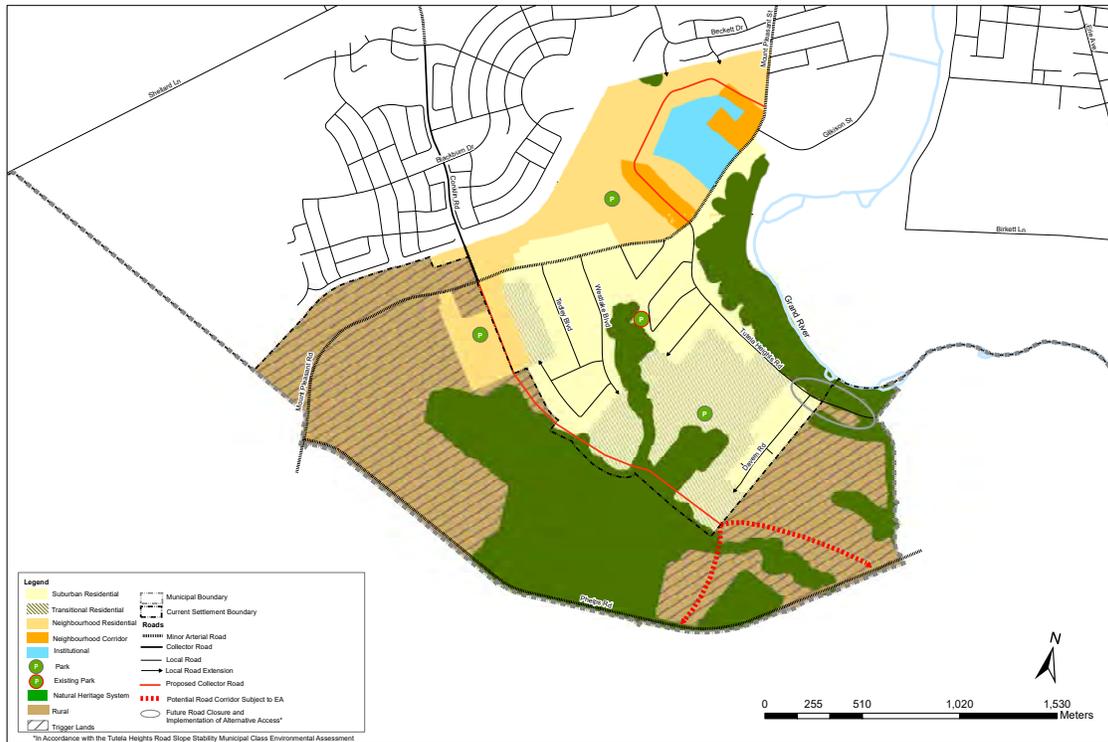


Figure 16: Tutela Heights Land Use and Transportation – Option 2

3.3.1 Structural Elements – Tutela Heights

Natural Heritage System

The Natural Heritage System is the same in both options in Tutela Heights. The system was identified the same as described in Section 3.2.1 of this report. **Figure 17** illustrates the other environmental features requiring further study at the next stage of the planning process, and **Figure 18** illustrates the headwater drainage features that were evaluated.

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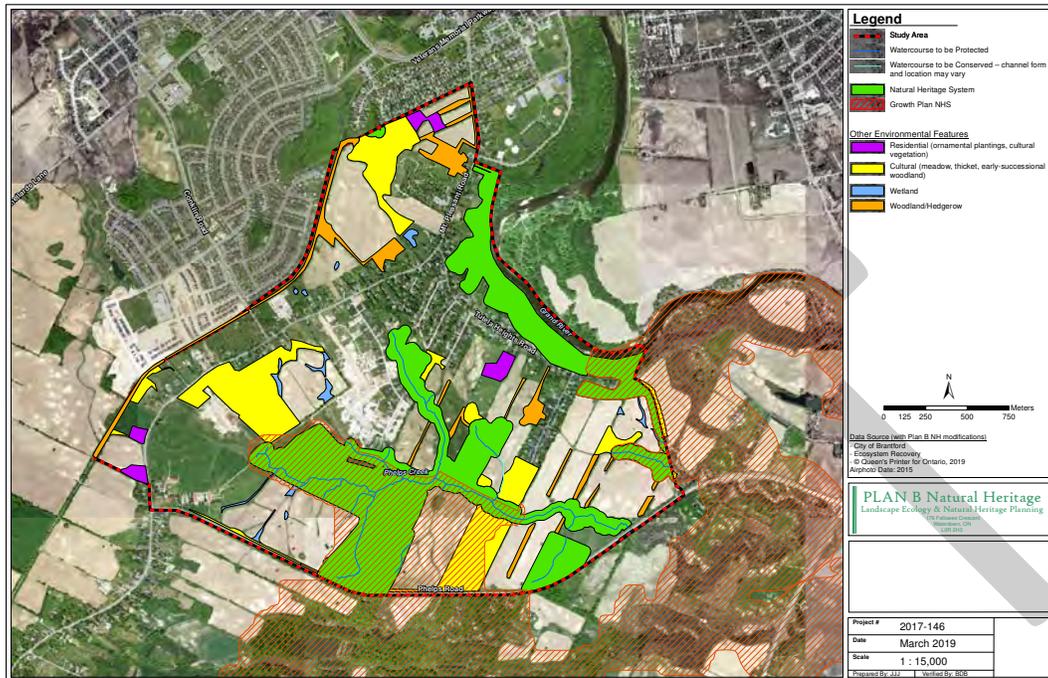


Figure 17: Other Environmental Features – Tutela Heights Study Area

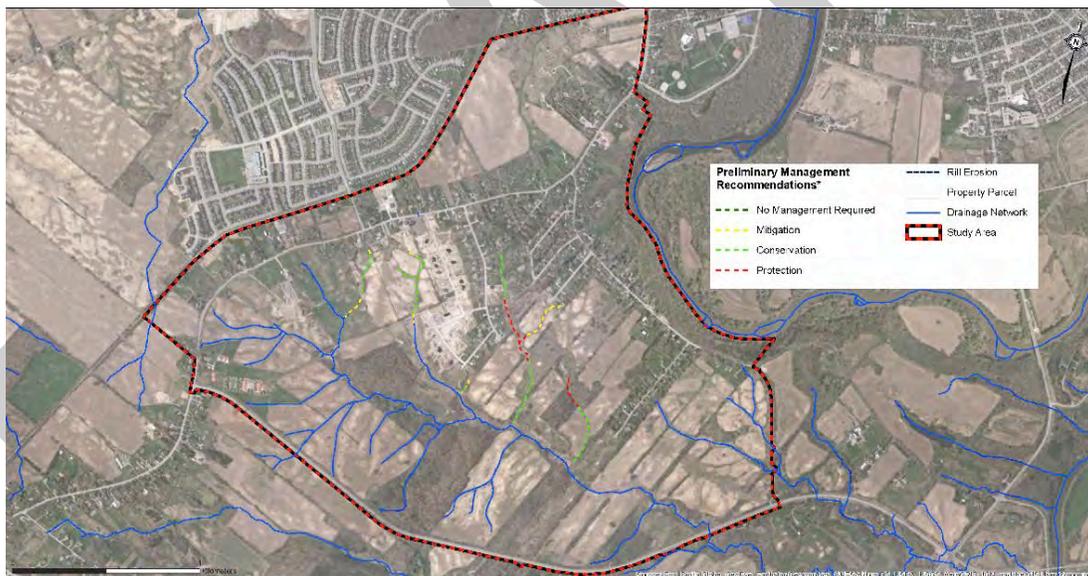


Figure 18: Preliminary Headwater Drainage Features Management Recommendations – Tutela Heights Study Area

Transportation Network

Two new collector roads are proposed in Tutela Heights. One is a looped collector road on the north and west side of Mount Pleasant Road. Its northern intersection with Mount Pleasant Road and separation distance from nearby intersections will need to be further explored in the next stage of the planning process. The second collector road is an extension of Conklin Road east to link to Phelps Road.

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The Tutela Heights Road Slope Stability Municipal Class Environmental Assessment identified the need for a future closure of Tutela Heights Road just west of Davern Road. Alternative access options for houses on Tutela Heights Road and to access to Davern Road will be explored in a Road Closure Management Plan and the Transportation Master Plan. Appropriate policy to guide future access arrangements and closure of Tutela Heights Road will be included in the Draft Official Plan where necessary.

3.3.2 Proposed Land Use Designations

The following describes the proposed land use designations in the two options in Tutela Heights and the differences in their distribution.

Suburban Residential

The Suburban Residential designation recognizes existing clusters of large estate residential development. The extent of the Suburban Residential designation is the same in the two options.

Transitional Residential

The Transitional Residential designation provides for large urban lots abutting the existing Suburban Residential designation. Its purpose is to provide a transition in lot size to the existing large estate lots. In Option 1, the Transitional Residential designation is generally one lot deep. In Option 2, the Transitional Residential designation covers the area between Davern Road and Rue Chateaux Terrace.

Neighbourhood Corridor

The Neighbourhood Corridor designation is described in Section 3.2.2 of this report. For Option 1 in Tutela Heights, it is located at Conklin Road and Mount Pleasant Road, as well as opposite Tutela Heights Road on the west side of Mount Pleasant Road. Option 2 proposes this land use designation to be located on the new looped collector road north and west of Mount Pleasant Road.

Parks and Schools

Option 1 and 2 both propose three new neighbourhood parks generally in the same locations. It is not anticipated that a future school site will be identified in Tutela Heights. Students living in the area will continue to be accommodated at schools located nearby in other parts of Brantford.

Neighbourhood Residential

The Neighbourhood Residential designation is described in Section 3.2.2 of this report and applies to the remaining lands in Tutela Heights.

4 PRRELIMINARY SERVICING STRATEGY

4.1 WATER

To evaluate Settlement Area Boundary Expansion Options 1 and 2, a general water servicing strategy for the northern expansion options was developed. A separate servicing strategy was prepared for Tutela Heights. The servicing strategies were based on the existing water system configuration and capacity, existing ground elevations within the expansion lands, and the identified natural heritage system. They will be further refined following City Council's endorsement of the preferred Settlement Area and based on the preliminary land use and transportation plan. At that time, it will also consider the overall and integrated servicing of all future developable lands within the City's municipal boundary, and the overall cost effectiveness of the final servicing solution including infrastructure cost, grading cost, and life cycle cost. At the time of implementation, it is expected that further detailed servicing analysis will be undertaken to define and optimize the servicing strategy.

Figures 19 to 22 and the information below summarize the general water servicing strategy for each of the land use and transportation scenarios in the northern expansion options. The water servicing strategy for the northern expansion options is broken down into geographic areas: North Lands (Section 4.1.1) and East Lands (Section 4.1.2). The North Lands include the expansion areas generally north of Powerline Road and/or west of Balmoral Drive. The East Lands are adjacent to Garden Avenue. Tutela Heights is shown on **Figure 23** and is discussed in Section 4.1.3.

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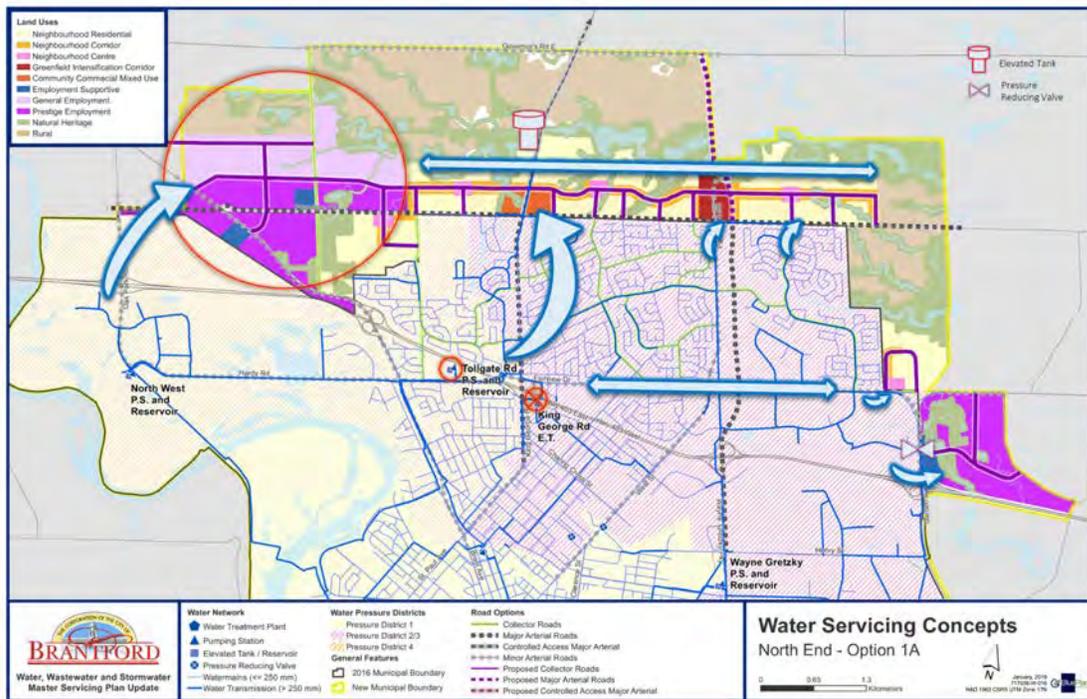


Figure 19: Water Servicing Concepts – Option 1A

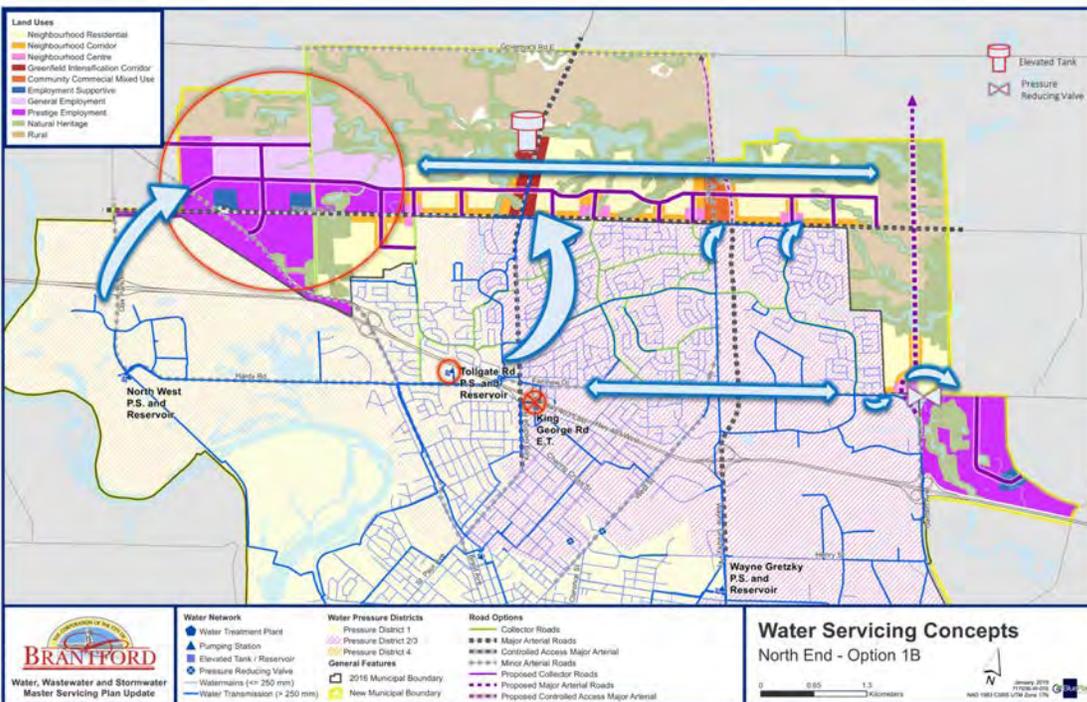


Figure 20: Water Servicing Concepts – Option 1B

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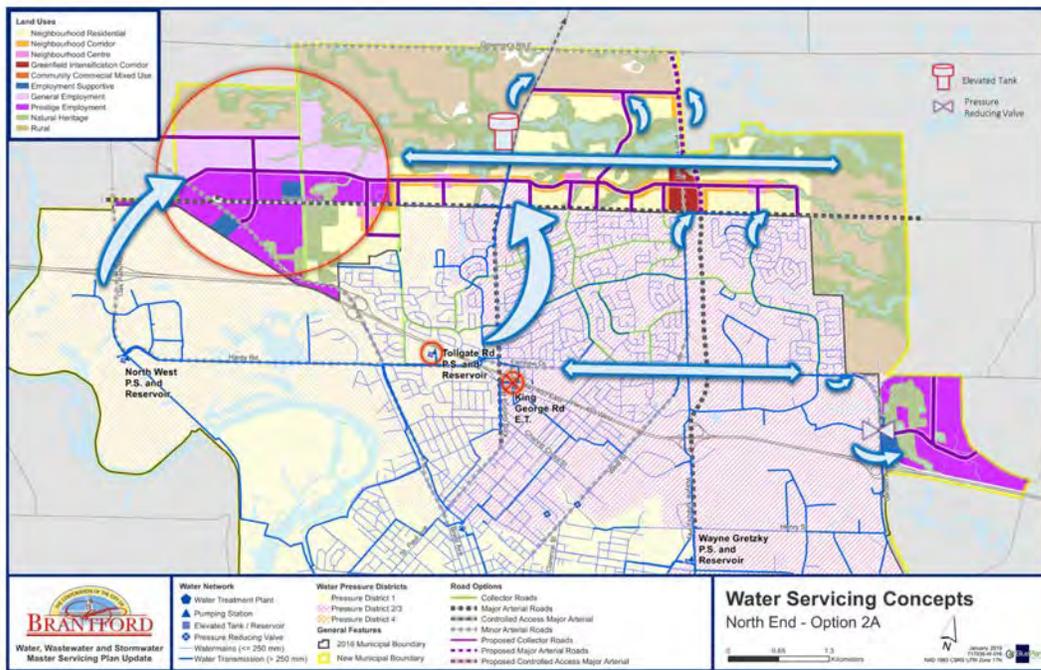


Figure 21: Water Servicing Concepts – Option 2A

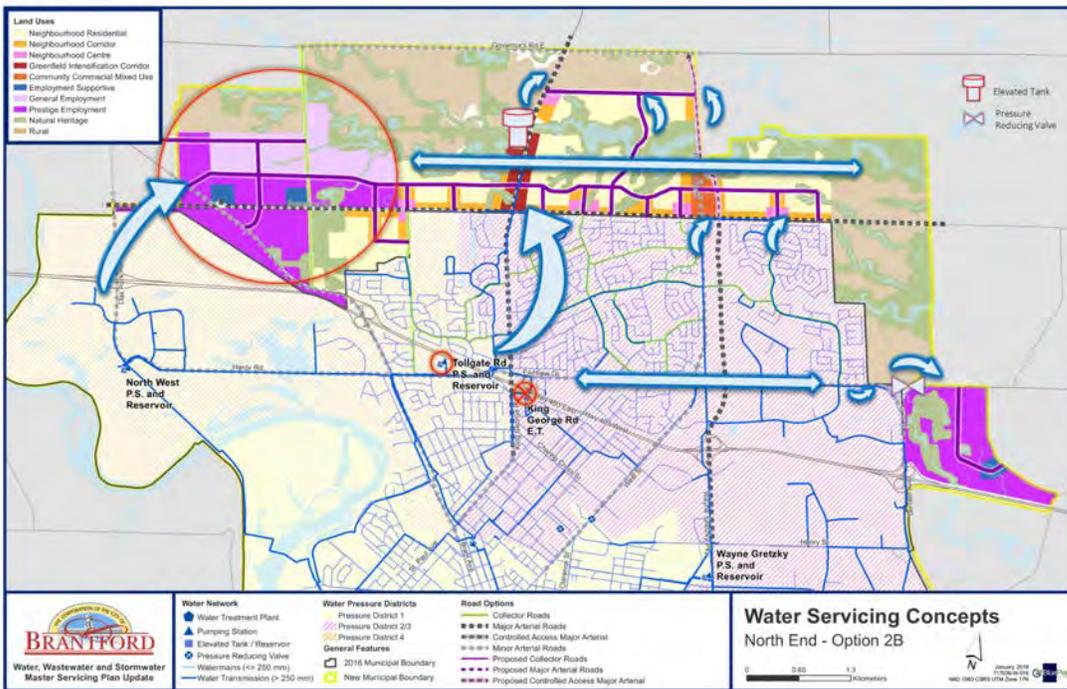


Figure 22: Water Servicing Concepts – Option 2B

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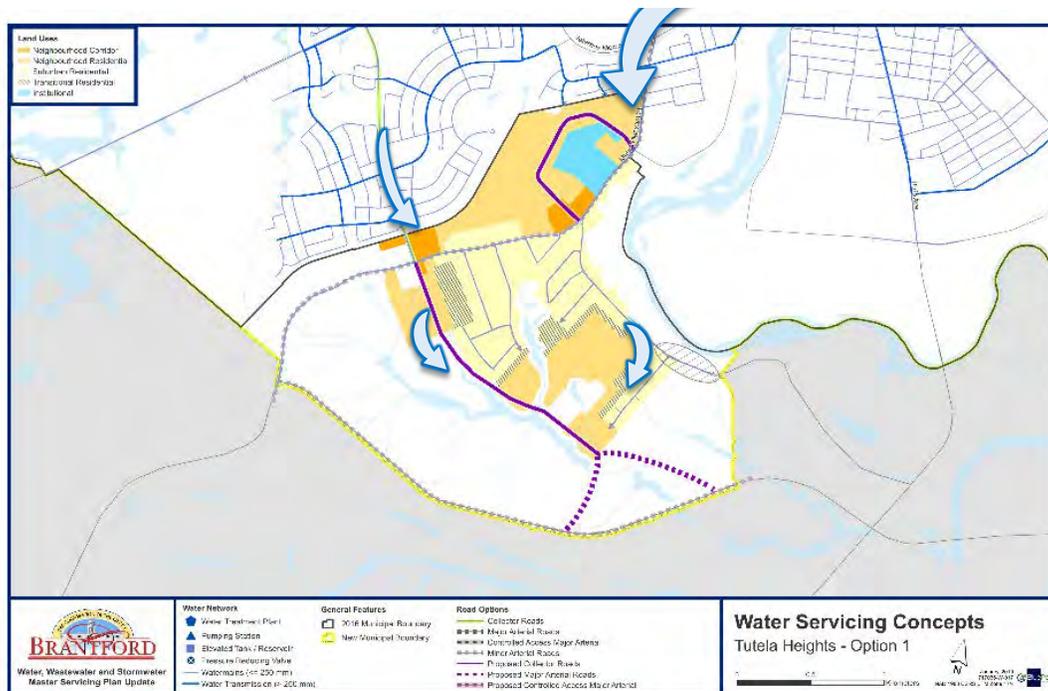


Figure 23: Water Servicing Concepts – Tutela Heights

4.1.1 North Lands

Water servicing for the expansion lands along the northern boundary is characterized by increasing elevations east to west. As such, the North Lands can be categorized into lands to be serviced by pressure district (PD) 2/3 and lands, with higher elevations, to be serviced by PD 4, as indicated on Figures 16 to 19. The extent of this boundary is subject to a more detailed review once a land use plan has been developed; however, the general boundary divides the north residential lands to PD 2/3 and the north employment lands to PD 4.

Further, as the majority of the north lands will be serviced by PD 2/3, a new elevated tank (ET) will need to be incorporated into the servicing strategy. The final location of the new ET will be subject to a separate study and preferred land use strategy.

The general water strategy is as follows:

- Servicing via PD 2/3
 - Primary trunk connection will be at King George Road: the existing system watermain will need to be upsized to accommodate growth within the north lands and intensification in the existing system; and
 - New ET within the north lands to increase operational flexibility of PD 2/3: preferred location to be along King George Road, however, a separate study will determine the exact location.
- Servicing via PD 4

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- Primary trunk connection will be at Oak Park Road: the watermain extension from the existing system requires both a Highway 403 and railway crossing; and
- Connection to the PD 2/3 system, to the east, with a combination of pressure reducing valves (PRV) and check valves to supplement operations and security of supply.
- Internal trunk watermain would be located along the new east-west collector road within the north lands.
- Additional trunk watermain would be required to service lands north of Jones Creek.

4.1.2 East Lands

Water servicing for the expansion lands along the eastern boundary are characterized by a general downward slope west to east and south to north. As elevations are decreasing, only a portion of these lands can be serviced by PD 2/3 and a new sub-pressure district will need to be created to service the eastern most lands.

East-west conveyance to the East Lands is limited by the trunk watermain on Fairview Drive/Lynden Road. As such, upsizing of this east-west trunk watermain is required to accommodate growth.

The general water strategy is as follows:

- Servicing residential lands, north of Lynden Road:
 - Direct connection to the existing PD 2/3 system on Lynden Road.
- Servicing employment lands, east of Garden Avenue:
 - Dependent on the preferred land use option, direct PD 2/3 connection can be made to the existing system at Lynden Road (requires a railway crossing) or at Sinclair Boulevard; and
 - At a minimum, one PRV is required to accommodate high pressures to create a new sub-pressure district.
- Upsizing watermain on Fairview Drive/Lynden Road to enhance east-west conveyance is required to accommodate growth within the East Lands and intensification in the existing system; and
- Internal trunk watermain would be located along the new east-west collector road within east lands.

4.1.3 Tutela Heights

Water servicing for the southern Tutela Heights lands is characterized by increasing elevations from the existing system as shown on **Figure 23**. Currently, Tutela Heights has water servicing from the County of Brant. However, Tutela Heights will be connected to the City of Brantford system in the short to medium term. The Tutela Heights system currently operates at a higher hydraulic grade line than the adjacent City of Brantford PD 1. This grade line will result in

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decreased pressures but increased fire flows from existing (FFE) once the connection to the City of Brantford is complete.

The general water strategy is as follows:

- Integration into the existing PD 1 system with connections at both Mount Pleasant Street and Conklin Road. Both the existing Mount Pleasant Street and Conklin Road watermains, within the City of Brantford, are proposed to be upsized on Conklin Road from Shellard Lane to Mt Pleasant Street and on Mount Pleasant Street from Conklin Road to Beckett Drive/Brookln Avenue to accommodate growth;
- Upsizing of the existing trunk watermains within the Tutela Heights water system, on Mount Pleasant Road, Conklin Road, and Tutela Heights Road, is required to increase the local level of service up to the City's standards (higher than the County's) and accommodate growth; and
- A looped watermain is required on Phelps Road to supplement fire flows and security of supply.

4.2 WASTEWATER

To evaluate Settlement Area Boundary Expansion Options 1 and 2, a general wastewater servicing strategy for the northern expansion options was developed. A separate strategy was developed for Tutela Heights. The servicing strategy was based on the existing wastewater system configuration and capacity, existing ground elevation within the expansion lands, and the identified natural heritage system. Additionally, some consideration for potential site grading, to optimize wastewater and stormwater servicing, was incorporated into the servicing review.

Figures 24 and 25 and the information below summarize the general wastewater servicing strategy for each of the land use and transportation scenarios in the North and East lands. The wastewater servicing strategy will be further refined following City Council's endorsement of the preferred Settlement Area and based on the preliminary land use and transportation plan. It will also need to consider the overall and integrated servicing of all future developable lands within the City's municipal boundary, and the overall cost effectiveness of the final servicing solution including infrastructure cost, grading cost, and life cycle cost. At the time of implementation, it is expected that further detailed servicing analysis and site grading will be undertaken to further define and optimize the servicing strategy.

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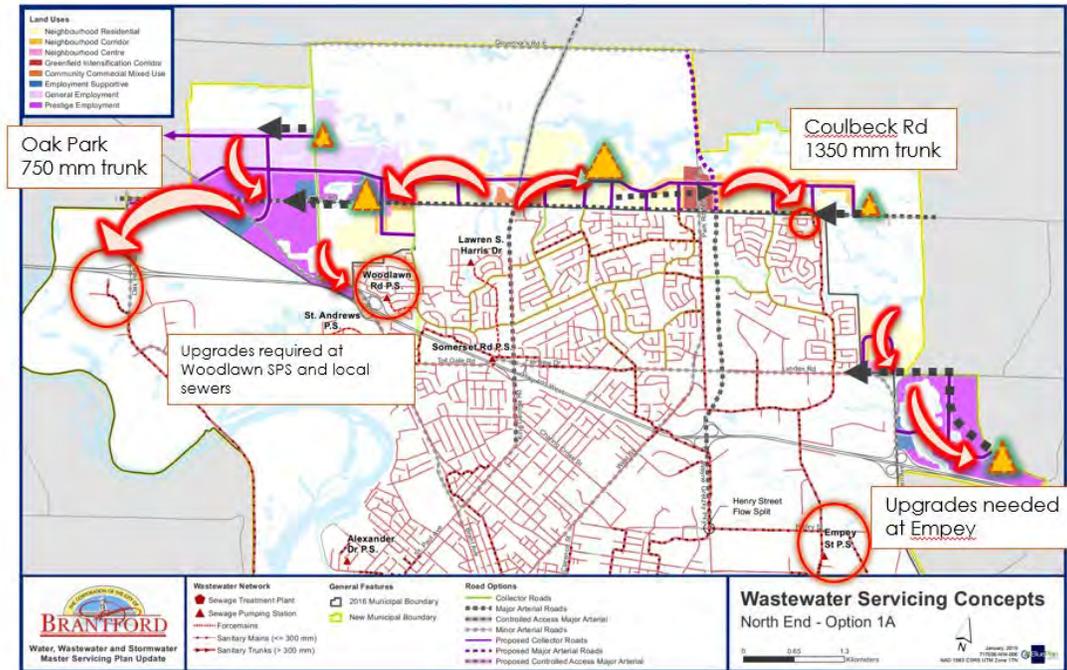


Figure 24: Wastewater Servicing Concepts – Option 1A/1B

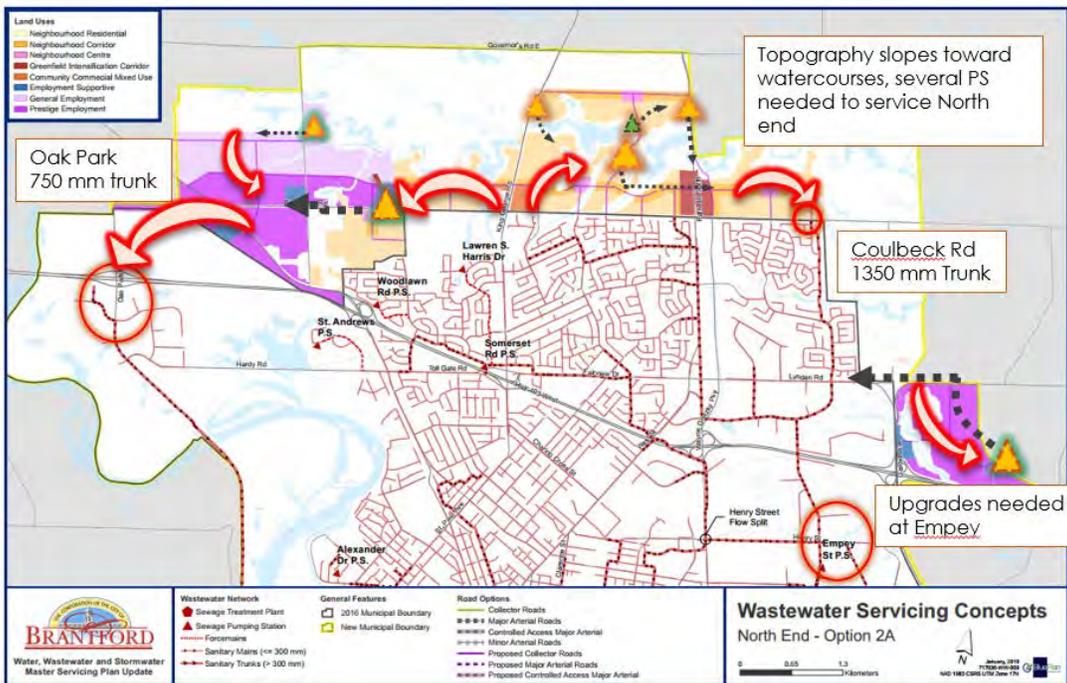


Figure 25: Wastewater Servicing Concepts – Option 2A/2B

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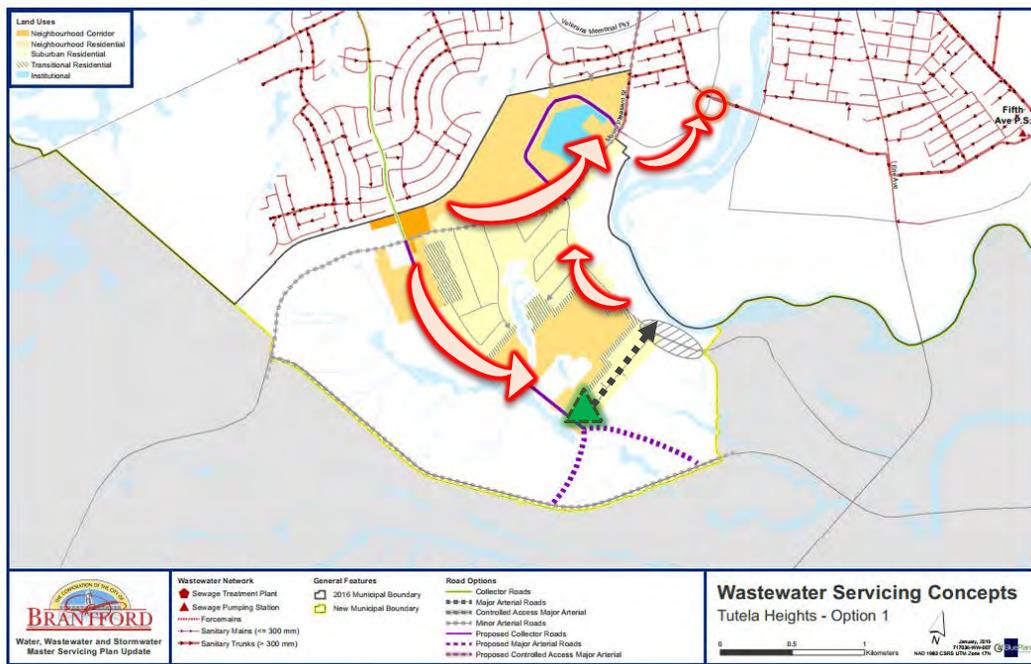


Figure 26: Wastewater Servicing Concepts – Tutela Heights

4.2.1 North Lands

Wastewater servicing for the expansion lands along the northern boundary is characterized by challenging topography with a general downward slope west to east and south to north (away from the existing wastewater network). Further, the expansion lands are bisected by several south to north watercourses.

Generally, the existing northern limit of the wastewater network was not designed with consideration for future expansion beyond the pre-existing municipal boundary. As such, there are only two trunk sewers along the northern boundary which have sufficient depth and capacity to support servicing of the expansion lands without triggering substantial downstream capacity upgrades. These consist of the existing Coulbeck trunk sewer at the far east of the City and the Oak Park trunk sewer at the far west of the City.

Due to the challenging topography and limited connection points, several pumping stations are required to support the wastewater servicing strategy. The general wastewater servicing strategy is as follows:

- Extension of the Coulbeck sewer north and west, with the objective of maximizing the total area that can be serviced via gravity. The limits of gravity servicing will be approximately:
 - 0.5 km west of Park Road;
 - North to Jones Creek; and

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- 0.4 km east Coulbeck Road;
- Lands between King George Road and Park Road, south of Jones Creek, would drain to a centralized sewage pump station and be pumped to the Coulbeck trunk sewer:
 - Infrastructure sizing will need to accommodate potential future flows from the north and east;
- Lands between King George Road and Park Road, north of Jones Creek, would drain to several sewage pump stations and be pumped south either directly to the Coulbeck trunk or via secondary pump stations;
- Extension of the Oak Park trunk sewer northeast, with the objective of maximizing the total area that can be serviced via gravity:
 - Limits of gravity servicing will be approximately 0.5 km west of Golf Road; and
 - Northern limits of employment blocks E2 and E5 would require a sanitary pump station to convey flows to the Oak Park trunk sewer extension;
- The remaining lands west of King George Road and Golf Road would be collected via a centralized pumping station and conveyed either west to the Oak Park trunk or east to the Coulbeck trunk;
- Final servicing strategy to be determined following identification of the preferred land use plan; and
- There may be an opportunity to service a small portion of the proposed residential lands south of Powerline Road (Block C1) via the existing sewer network and Woodlawn pumping station; this subject to available capacity.

4.2.2 East Lands

Wastewater servicing for the expansion lands along the eastern boundary is characterized by challenging topography with a general downward slope west to east and south to north away from the existing wastewater network.

Further, the existing eastern limits of the wastewater network were generally not designed with consideration for further expansion beyond the pre-existing municipal boundary. As such, there is only one sewer, along Lynden Road, that has limited capacity to support growth. However, full buildout of the employment lands is expected to trigger the upgrade needed to this sewer.

The general wastewater servicing strategy is as follows:

- Extension of the Lynden Road sewer to service the residential lands via a direct gravity connection; and
- Flows from the employment lands would be collected via a centralized pumping station and flows conveyed to the Lynden Road sewer.

4.2.3 Tutela Heights

Wastewater servicing for the Tutela Heights area, as shown on **Figure 26**, can be separated into two service areas:

- Lands north of Mount Pleasant Road slope to the north and east toward the City’s existing sewer network, allowing for a direct gravity connection to the existing system. Upgrades to the local sewer network on Mount Pleasant Road, or new gravity sewer on Gilkison Street will be needed to tie-into the City’s southwest trunk sewer; and
- Lands south of Mount Pleasant Road generally slope to the south and west away from the City. Flows from these lands would be collected via a centralized pumping station and conveyed to the new trunk sewer on Mount Pleasant Road.

4.3 STORMWATER

Figures 27 to 30 and the information below summarize the general stormwater servicing strategy for each of the land use and transportation scenarios in the North and East lands. Tutela Heights is shown on **Figures 31 and 32**. This strategy will be further refined following City Council’s endorsement of the preferred Settlement Area and based on the preliminary land use and transportation plan. It will also need to consider the findings of the Subwatershed Study, and costs related to construction and maintenance of trunk conveyance systems and stormwater management ponds

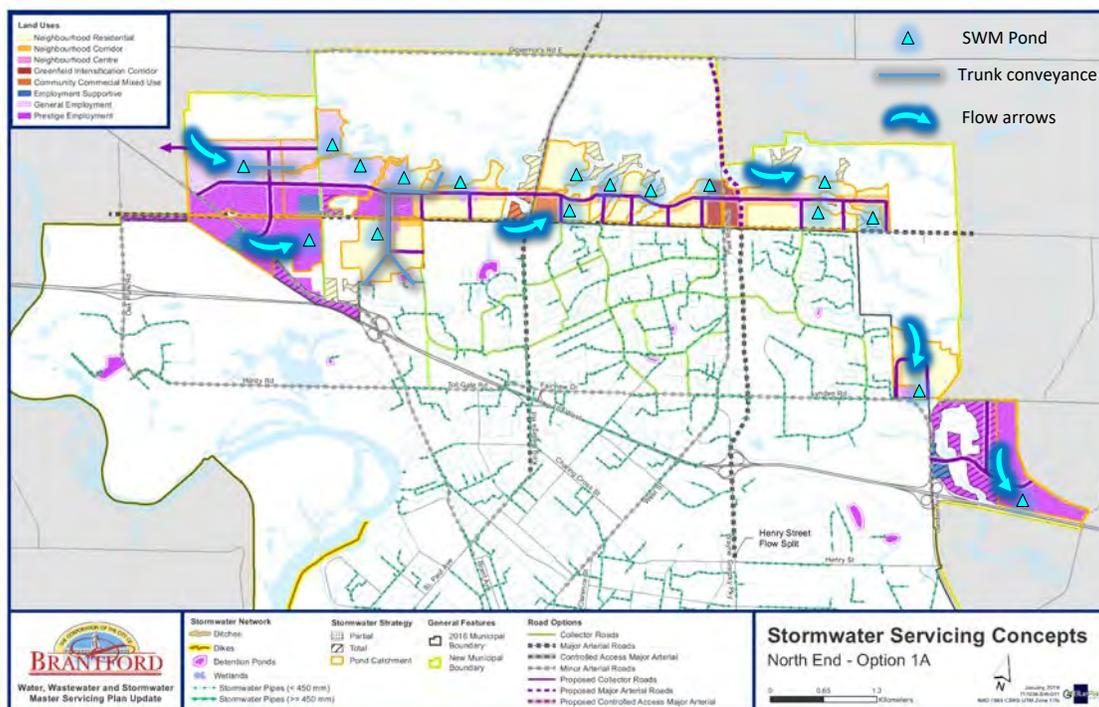


Figure 27: Stormwater Servicing Concepts – Option 1A

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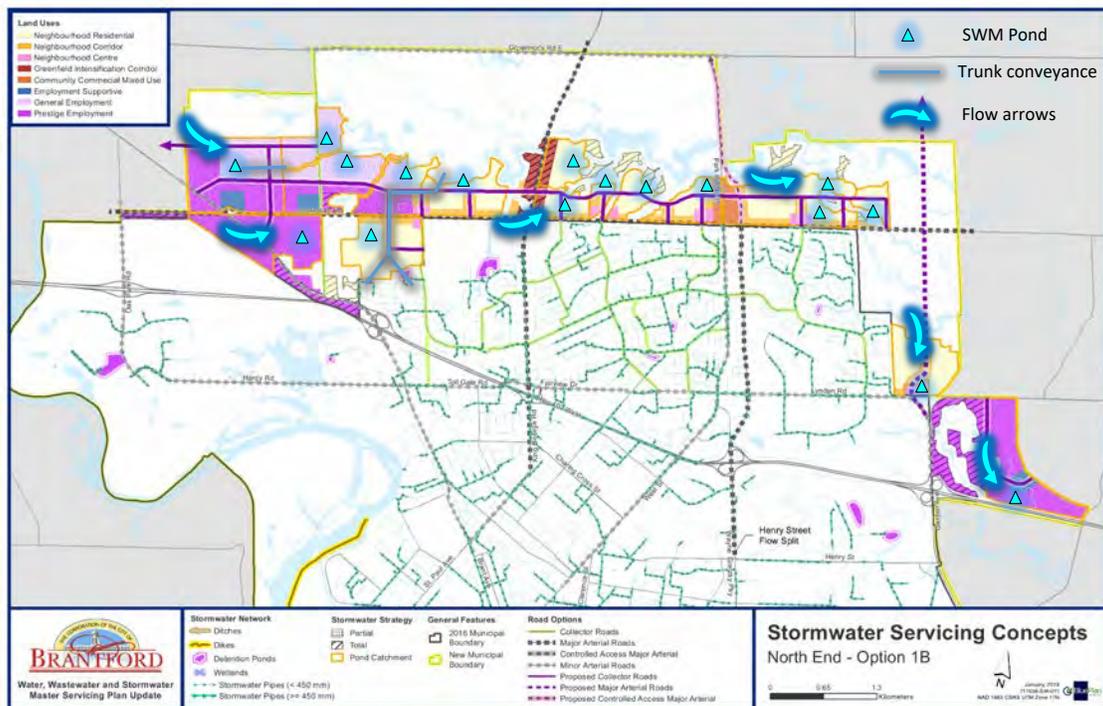


Figure 28: Stormwater Servicing Concepts – Option 1B

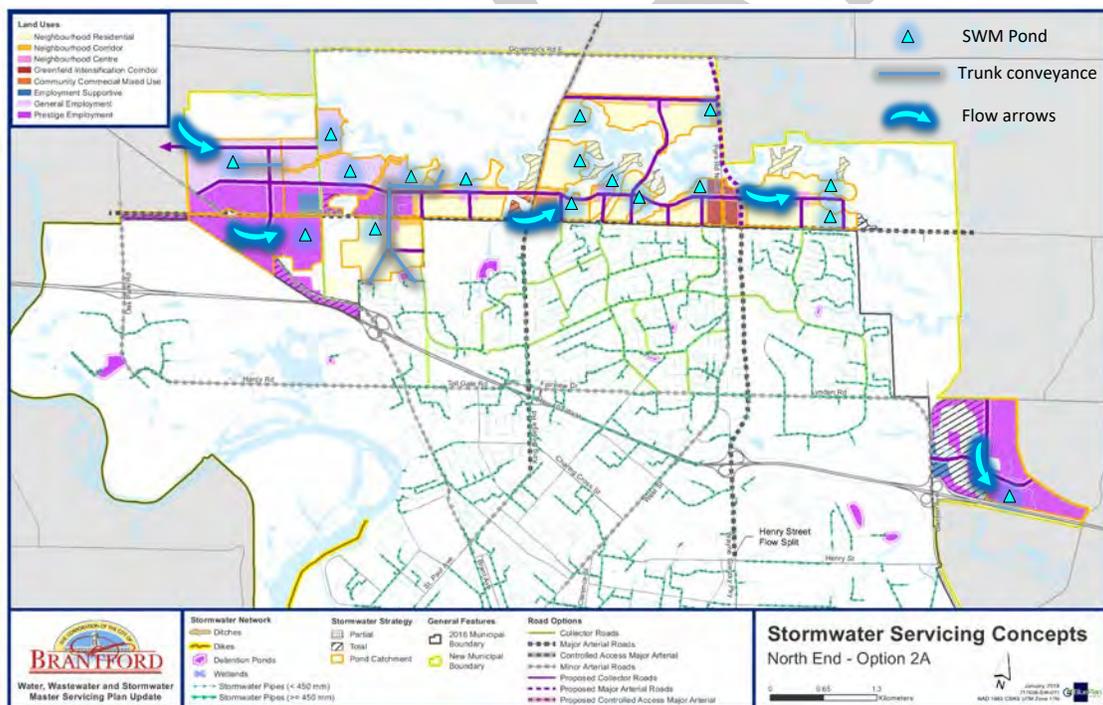


Figure 29: Stormwater Servicing Concepts – Option 2A

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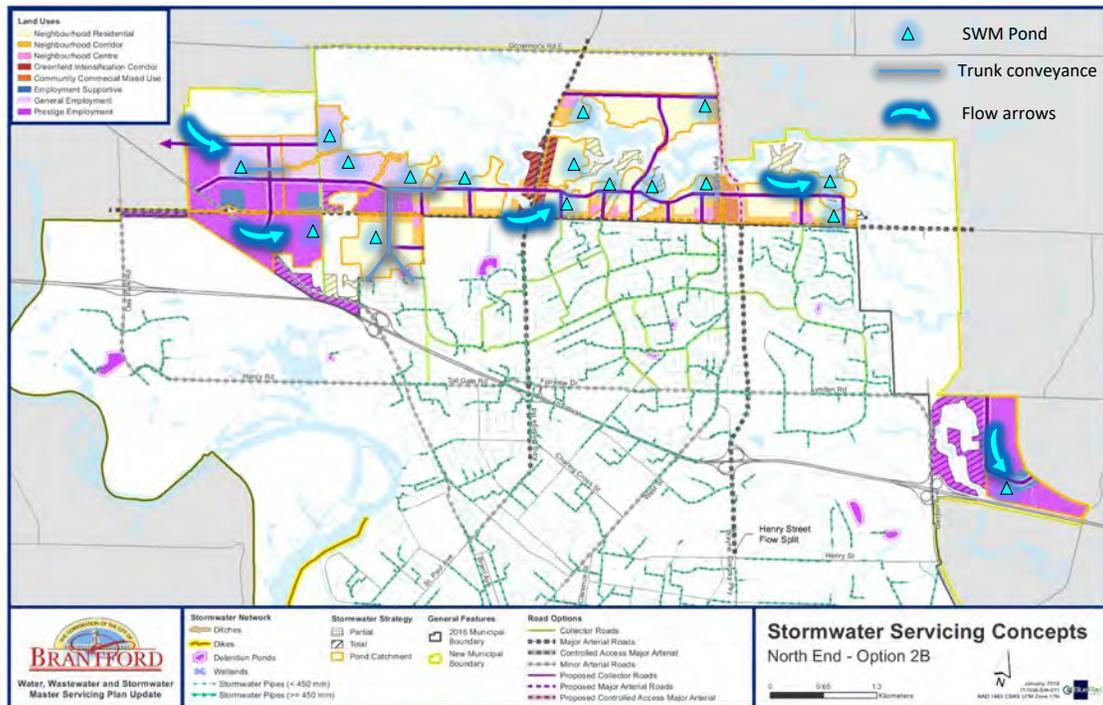


Figure 30: Stormwater Servicing Concepts – Option 2B

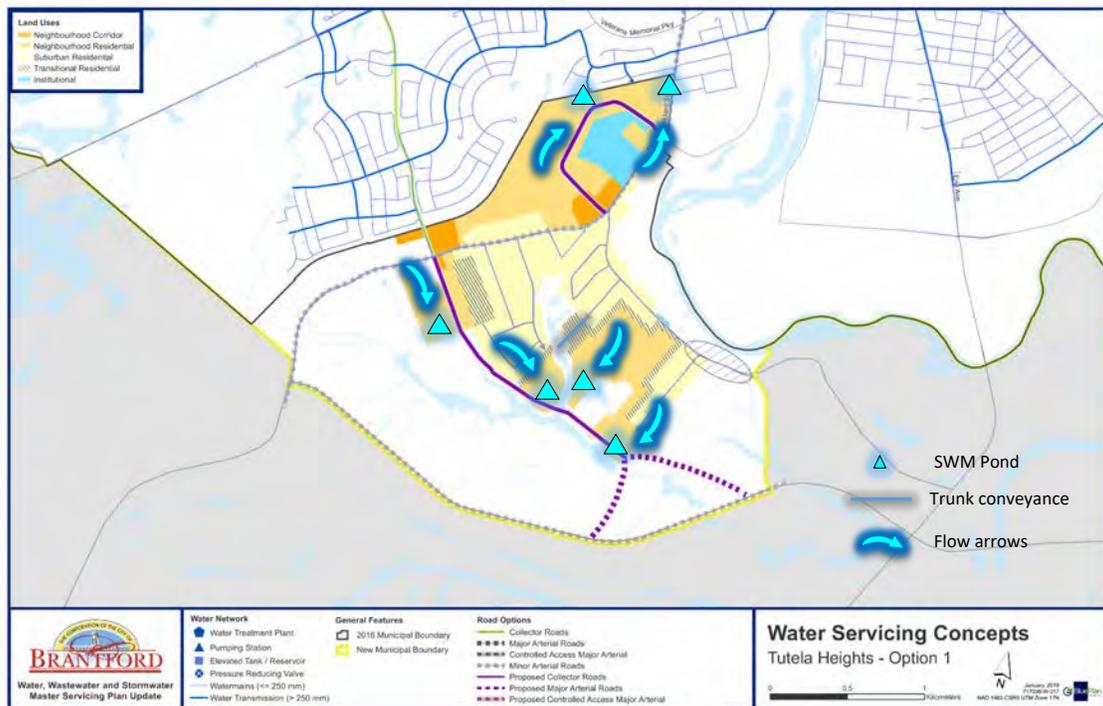


Figure 31: Stormwater Servicing Concepts – Tutela Heights Option 1

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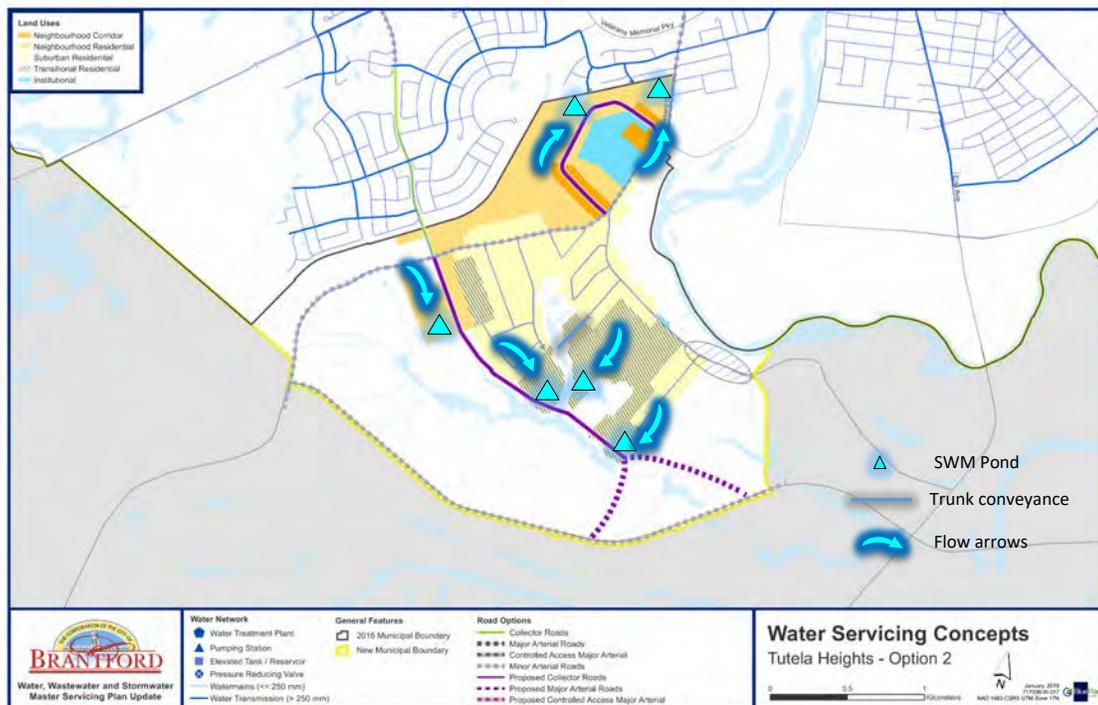


Figure 32: Stormwater Servicing Concepts – Tutela Heights Option 2

4.2.2 North Lands

Stormwater servicing for the expansion lands along the northern boundary is characterized by the vast number of watercourses, headwater drainage features, and natural heritage systems. There are a few existing outfalls from the existing stormwater system that will need to be conveyed as part of the servicing strategy. In addition, the natural topography of the lands has a number of high and low points, making it necessary to plan for many stormwater outlets to the existing drainage network in order to maintain baseflow.

The general stormwater servicing strategy for the North Lands is as follows:

- Provide quantity and quality control for the stormwater flows through the use of end-of-pipe stormwater management ponds;
- For some lands backing onto the existing drainage network, where topography will not allow drainage to discharge to the proposed ponds, provide on-site stormwater management quantity and quality controls, and discharge directly to the watercourse;
- Infiltrate rooftop runoff within the employment and commercial lands to maintain groundwater recharge;
- Incorporate other low impact development techniques (LID's) as appropriate through the stormwater management system;
- Provide trunk conveyance from the existing outfalls to the drainage network; and
- Provide temperature and sediment and erosion controls at the outlets from the stormwater management ponds to the watercourses, as needed.

4.2.2 East Lands

Stormwater servicing for the expansion lands along the eastern boundary is characterized by challenging topography and significant drainage features. The general stormwater servicing strategy for the East Lands is as follows:

- In general, provide quantity and quality control for the stormwater flows through the use of end-of-pipe stormwater management ponds;
- For lands backing onto the existing drainage network, provide on-site stormwater management quantity and quality controls, and discharge directly to the watercourse;
- Infiltrate rooftop runoff within the employment and commercial lands to maintain groundwater recharge;
- Incorporate other LID's as appropriate through the stormwater management system; and
- Provide temperature and sediment and erosion controls at the outlets from the stormwater management ponds to the watercourses, as needed.

4.2.2 Tutela Heights

Stormwater servicing for Tutela Heights is characterized by some existing storm sewers available for connection, as well as existing watercourses and drainage features, as shown on **Figures 31 and 32**. The general stormwater servicing strategy for the Tutela Heights lands is as follows:

- Provide quantity and quality control for the stormwater flows through the use of end-of-pipe stormwater management ponds located upstream of the connections to the existing storm network and outlets to the existing watercourse;
- Incorporate other LID's as appropriate through the stormwater management system; and,
- Provide temperature and sediment and erosion controls at the outlets from the stormwater management ponds to the watercourses, as needed.

5 EVALUATION CRITERIA AND METHODOLOGY

In this MCR Part 3 Report, further evaluation of the two Settlement Area Boundary Expansion Options (Options 1 and 2), and the evaluation of the North land use scenarios (Options 1A, 1B, 2A, and 2B) and the Tutela Heights land use scenarios (Options 1 and 2), was based on criteria and methodology for the following disciplines: agriculture, environment, water, wastewater, stormwater, transportation and land use. The evaluation assessed the scenarios to determine the preferred Settlement Area boundary expansion. The land use scenarios were used to help inform the analysis and selection of a preferred Settlement Area boundary. Along with the preferred Settlement Area boundary, a Preliminary Land Use and Transportation Plan has been developed for both the Northern Lands and Tutela Heights.

The criteria and methodology used by each discipline to evaluate the options is described in this section of the report. The evaluation matrix for the north options, as set out in **Appendix 2**, provides the detailed evaluation applying the methodology to the criteria. Tutela Heights is discussed in Section 5.6. The evaluation matrix for the Tutela Heights options is set out in **Appendix 6**.

The evaluation of the preferred Settlement Area boundary in this report builds on the evaluation conducted in the MCR Part 2 Report and does not seek to repeat that evaluation. Evaluation of archaeology, and land use and transportation connectivity criteria assisted in developing the short list Settlement Boundary Expansion Options (Options 1 and 2). The criteria and measures described below, provide a more detailed analysis of the differences between the options. The land use and transportation scenarios also provide further detail from the generic Community Area and Employment Area land use assumptions in the Part 2 Report and were used to inform the evaluation of the preferred Settlement Area Boundary.

5.1 AGRICULTURE

5.1.1 Criteria

Two criteria and associated measures were used to evaluate the Settlement Area Boundary Expansion Options from an agricultural perspective as follows.

Loss of Agricultural Infrastructure

- Number of agricultural business/processors identified in the Agricultural Portal and/or Golden Horseshoe Food and Farming Alliance and/or fieldwork database in the potential expansion areas.

Potential Conflict with Agricultural Operations

- Amount of potential developable area within the Minimum Distance Separation (MDS).
- Ability to phase or mitigate MDS impacts.

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- Presence/size of existing separation buffers between agriculture uses and potential expansion areas.

5.1.2 Methodology

The agriculture methodology for determining the Minimum Distance Separation (MDS) is based on published literature (see **Appendix 3**), aerial photo interpretation and visual observations from the roadside. Limitations associated with the methods and findings include the following:

- The use of statistics from Statistics Canada and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) is subject to the limitations of the surveys completed by these government groups;
- Visual observations are limited by distance and screening caused by changes in topography and/or the presence of tree cover;
- The use of past conditions to project/estimate future conditions is subject to the extrapolation of existing measurements and is subject to the general limitations associated with extrapolation (as outlined in many statistics texts); and
- The scale at which information is available. For example, the agricultural census information, at its most detailed, is available at the Census Consolidated Subdivision (CCS) level which corresponds with sub-tier municipalities or townships. As well, when there are relatively few census farms providing data, that data is subject to suppression for reasons of confidentiality.

Calculation of the MDS requires some interpretation based on factors such as:

- the MDS calculation method in force at the time the calculation is made;
- type and intensity of new land-use proposed (type “A” or type “B” land use);
- whether to increase the size of the MDS study area when large livestock operations are observed nearby outside of the 1.5 km limit;
- number and kind of animals producing manure;
- manure handling system;
- barn and manure storage placement;
- what constitutes a “livestock facility” (barn) intended for livestock use;
- whether a livestock facility is structurally sound enough to allow for the housing of livestock;
- maximum tillable area;
- maximum livestock facility housing capacity given an allowance for feed bins, feed preparation areas, field shade shelters, livestock assembly areas, livestock loading chutes, machinery sheds, milking centres, offices, riding arenas, silos, and/or washrooms; and
- the presence, location, and size of existing non-agricultural development adjacent or near to the proposed new non-agricultural development.

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The methods can also include farmer interviews. However, the MDS document (2017) suggests that the information obtained through interviews needs to be checked concerning whether the interview information is reasonable. In order to restrict MDS calculations to a single step/calculation and to avoid any problems associated with biosecurity on farms, livestock numbers were based on barn area measurements used as input to the OMAFRA MDS software to obtain maximum barn housing capacity. In this way, MDS distances have been maximized and are conservative.

The sequence for the work completed for MDS is noted below:

1. Access aerial photographs for the lands surrounding the proposed non-agricultural development area;
2. Plot a 1.5 km study area boundary from the boundary of the proposed development area;
3. Complete field work and aerial photo interpretation to identify structurally sound livestock barns or buildings capable of housing livestock, livestock type, manure handling system and plot the results on the aerial photography;
4. Assign a number to each barn identified by field work;
5. Obtain and map areas of non-agricultural use based on one, or a combination of, farm tax rating, land use designation and/or zoning, as well as by properties equal to or less than 2 ha and/or having less than or equal to 2 ha of tillable land;
6. Identify those barns where MDS calculations are not necessary after application of Guideline 12;
7. Using the Agricultural Information Atlas, measure the area of land on the property having a barn or barns, and the area of barns;
8. Complete additional photo interpretation of the photography provided as part of the Agricultural Information Atlas;
9. Input land area and barn(s) area into the OMAFRA MDS (*AgriSuite*) software to calculate MDS;
10. Summarize MDS assumptions and results in tabular form (Table 2); and
11. Map MDS arcs as shown on **Figures 33 to 36** for Options 1A, 1B, 2A and 2B and **Figures 37 and 38** for Tutela Heights Options 1 and 2.

Due to the characteristics of the study area and that the Stage 6 evaluation relates to a Settlement Area boundary expansion, the following matters were used in the MDS calculations:

1. Guideline 12 was not applied to any of the barns and MDS calculations;
2. No measurements of farm parcel size were made (as they are not included when MDS is calculated for a Settlement Area expansion);
3. Information on farm tax rated parcels was not used in the analysis;
4. Land parcels which are less than or equal to 2 ha in size or have less than or equal to 2 ha of tillable area were not assessed as non-farm and used in the MDS analysis; and

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5. The MDS circles or arcs mapped are based on the distance required for the manure pile but were measured from the closest barn to the proposed area of non-agricultural development.

In addition to calculating the MDS, the identification of agricultural business / processors was completed. Three sources of information were consulted concerning agricultural business / processors found adjacent to or within the study area:

- Field observation;
- OMAFRA agricultural system portal; and
- Golden Horseshoe Food and Farming Alliance data.

The types of agricultural businesses and processors listed in **Appendix 4** were mapped in and around the study area. Only one farm direct sales business was identified within the study area based on fieldwork.

For existing separation buffers, the existing areas mapped as Natural Heritage System (NHS) were evaluated for presence/absence as appropriate buffers separating the proposed urban uses from adjacent agricultural uses. The NHS areas provide distance as well as screening.

MDS 1 calculations were completed following the sequence of steps and methods described above. Specific information on MDS assumptions and results associated with each calculation is summarized in **Appendix 5**. Those MDS arcs/circles that result in conflict are highlighted within **Appendix 5**.

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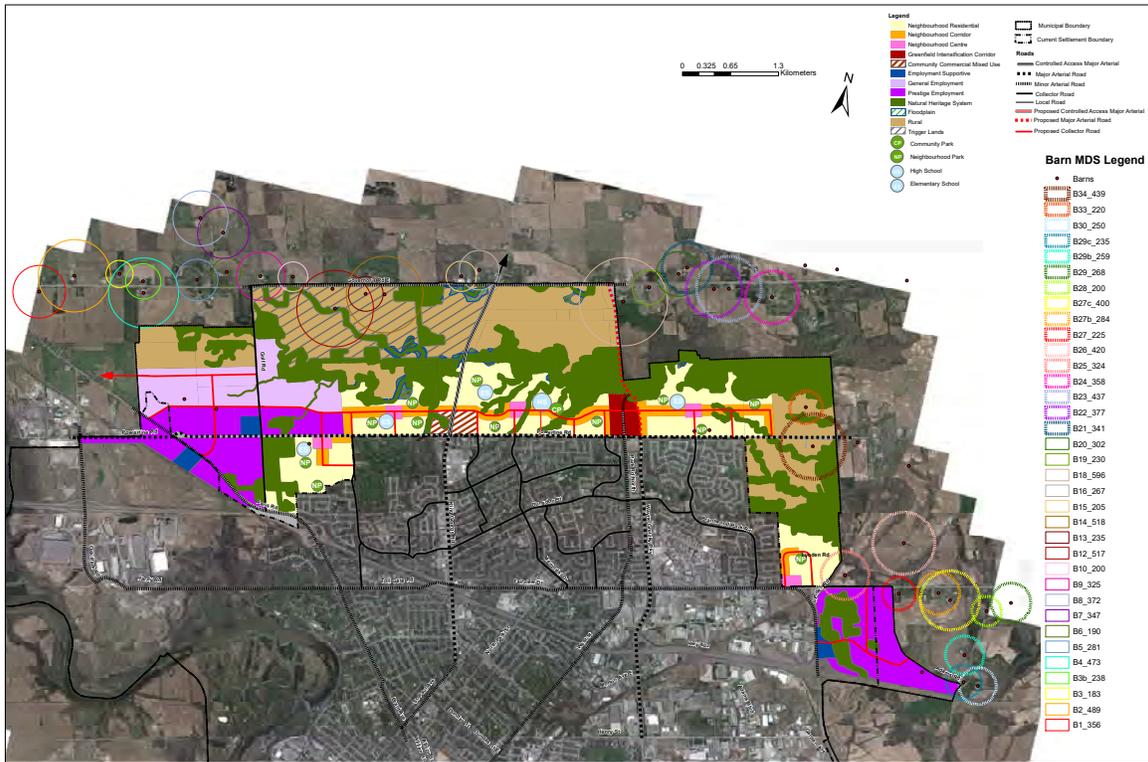


Figure 33: Barn MDS Analysis – Option 1A

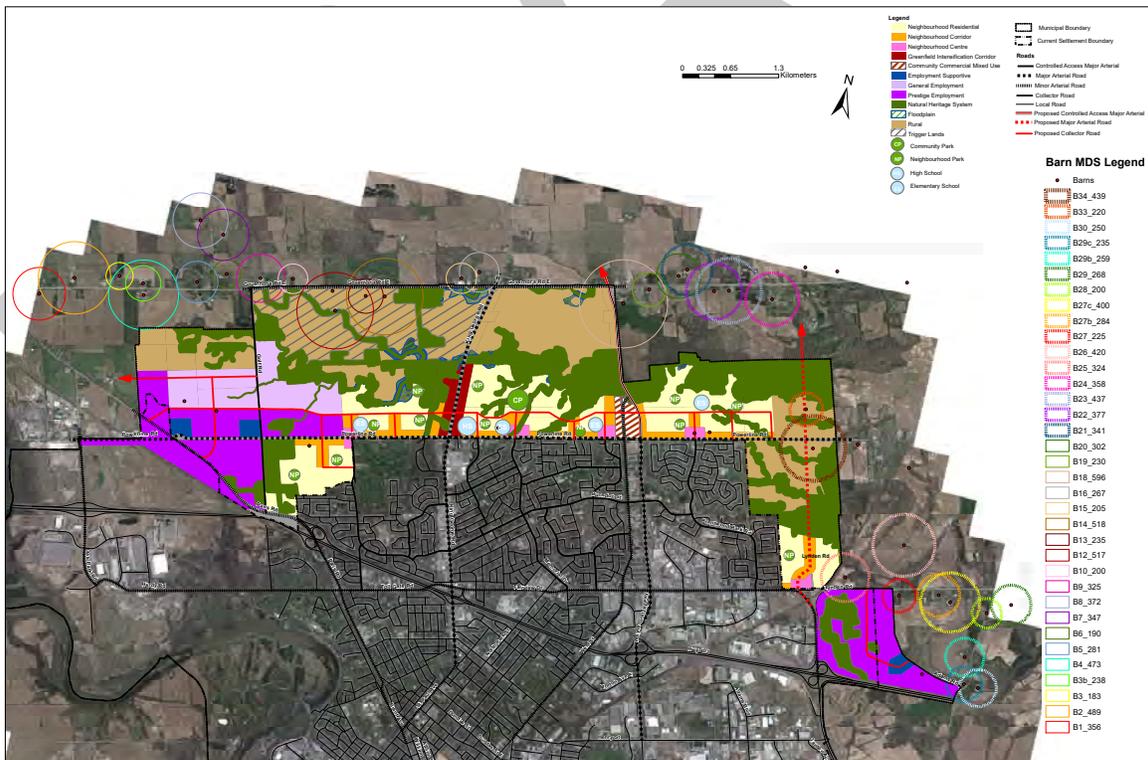


Figure 34: Barn MDS Analysis – Option 1B

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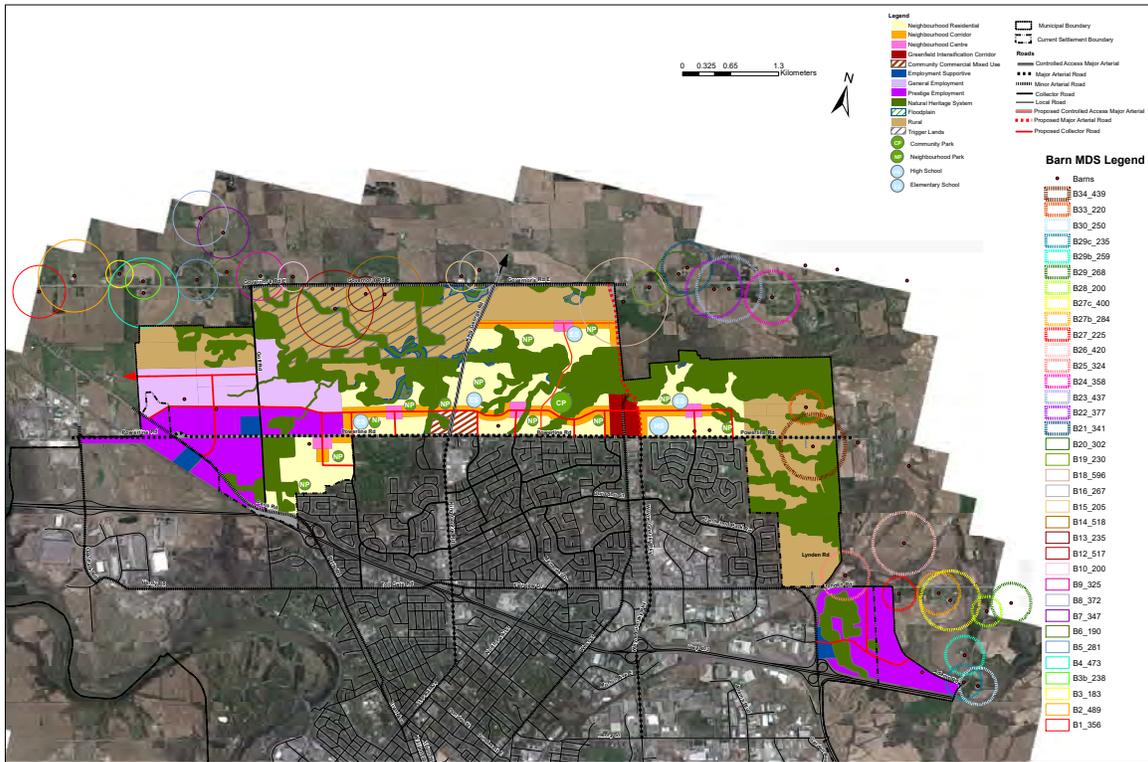


Figure 35: Barn MDS Analysis – Option 2A

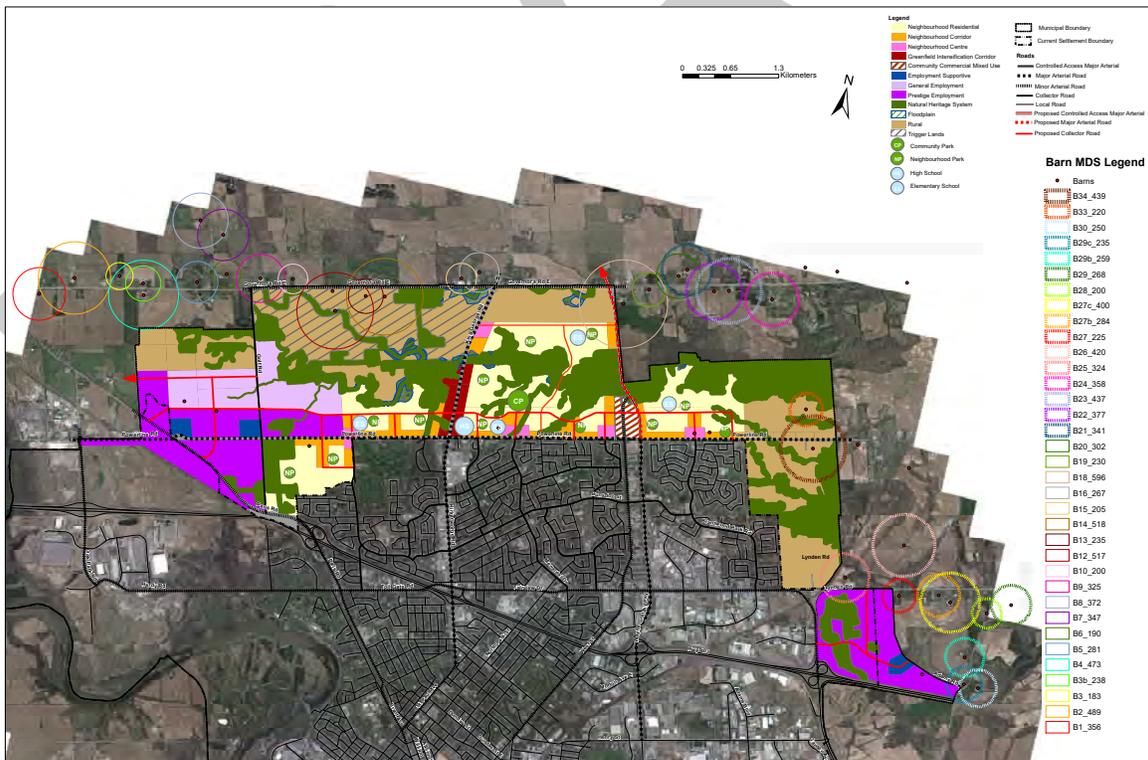


Figure 36: Barn MDS Analysis – Option 2B

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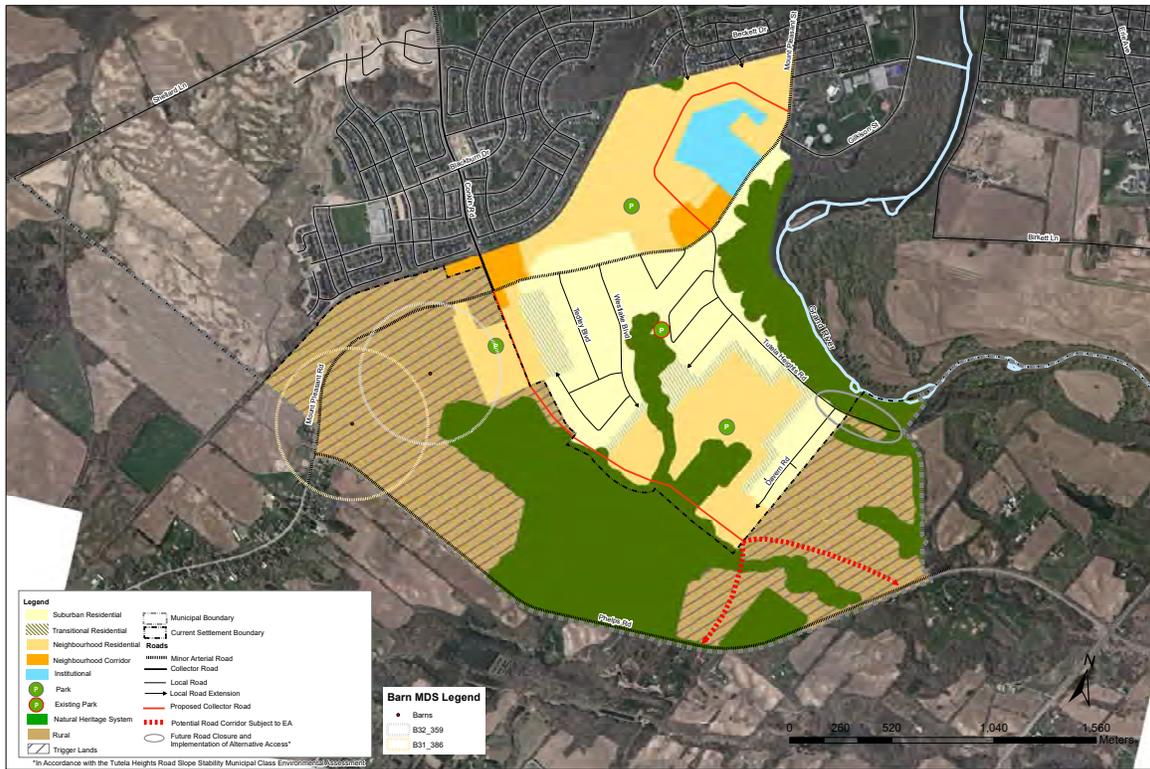


Figure 37: Barn MDS Analysis – Tutela Heights Option 1

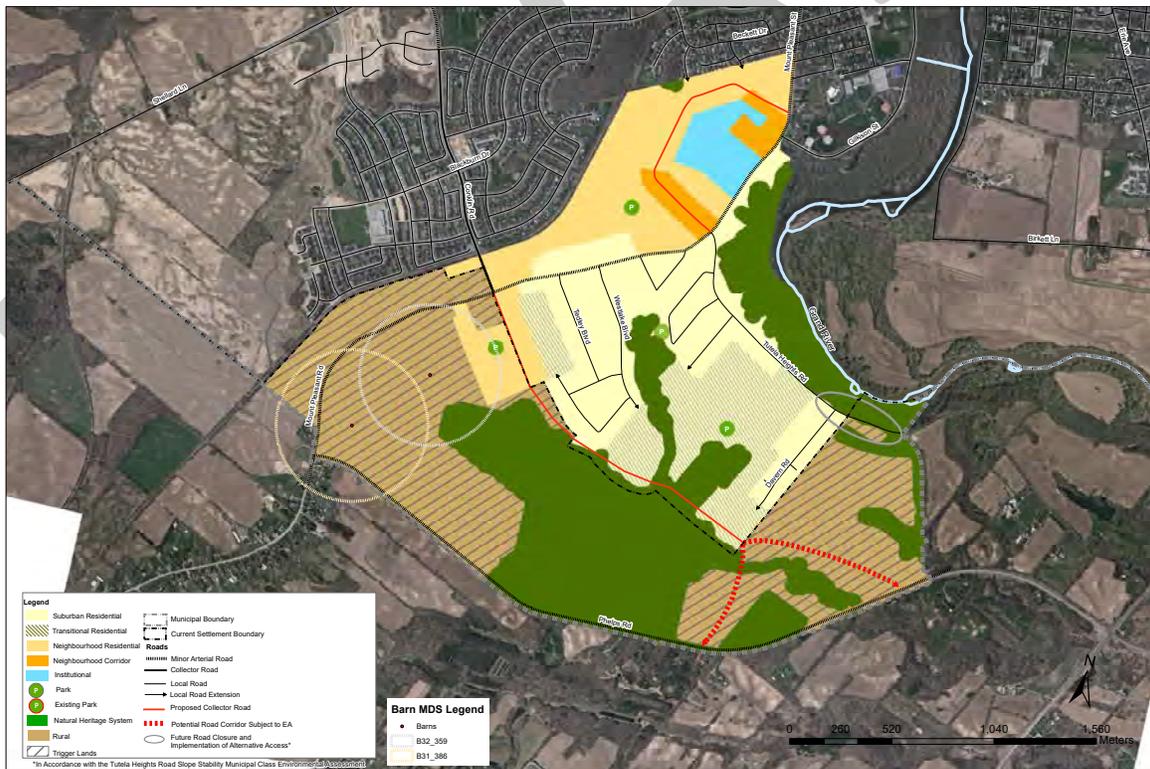


Figure 38: Barn MDS Analysis – Tutela Heights Option 2

5.1.3 Evaluation

The MDS I analysis completed for barns adjacent to the Settlement Area Boundary Area, as shown on **Figures 33 to 38**, indicates that there are potential MDS conflicts associated with the proposed expansion. There are differences in the amount of land that is affected by MDS conflicts for each of the options.

The relative number of agricultural business/processors is constant at 1 for 1A, 1B, 2A, and 2B.

The largest portion of the Settlement Area boundary where a land use separation is not provided by NHS features is associated with Options 2A and 2B. The agricultural analyses indicate that the preference for reducing agricultural impacts are 1A and 1B. For the Tutela Heights options, there is no preference.

Based on the above findings, Settlement Area Boundary Expansion Option 1 is preferred from an agricultural perspective.

5.2 ENVIRONMENT

5.2.1 Criteria

The criterion and associated measures used to evaluate the Settlement Area boundary expansion options and land use and transportation scenarios are as follows:

Potential impact of proposed land uses and transportation network on the NHS

- Ability to integrate NHS with compatible land uses such as parks, schools, condominium common element space, and low density residential.
- Number of potential road crossings of the NHS.
- Ability of roads to cross the NHS in less sensitive locations.
- Ability of road to avoid wetland features.

5.2.2 Methodology

The natural heritage features such as wetlands, woodlands and valleylands were evaluated for the ability to be integrated with compatible land uses such as parks, schools, condominium common element space, and low density residential as well as the ability for proposed roads to avoid wetland features. Aerial mapping was compared to the preliminary land use maps in each of the options to determine the ability of parks, schools etc. to be adjusted as well as where roads could be re-aligned where there was a potential conflict.

The methodology used to assess road crossings of the proposed transportation network included the number of potential crossings over headwater drainage features and perennial watercourses and was quantified for each option. Equally considered was the identification of

any watercourses that were considered to be ‘degraded’ which may require enhanced crossing design (e.g., wider span, deeper footings etc.). Where relevant, input was provided with respect to placement of a collector road over Jones Creek. From a geomorphic perspective, those options with fewer road crossings, or fewer crossings over impacted watercourses are preferred over those with more crossing and/or over more of the ‘degraded’ watercourses.

5.2.3 Evaluation

Option 1A was preferred based on the results of the matrix evaluation and selected as the preferred land use alternative. The number of potential road crossings of the NHS has been kept to a minimum. The proposed transportation network generally avoids sensitive NHS features such as wetlands and valleylands. Re-alignment of the proposed road system, however, is recommended in some locations (where feasible) to avoid/minimize negative impacts to the NHS.

5.3 TRANSPORTATION

5.3.1 Criteria

Two criteria and associated measures were used to evaluate the Settlement Area boundary expansion options and land use and transportation scenarios, as follows:

Appropriate access and connectivity to new urban areas

- Connectivity to arterial corridors and Highway 403.
- Constraints to connectivity and access (e.g. physical features).

Appropriate transportation capacity is maintained

- Ability of the existing/planned transportation and transit capacity to accommodate new trips.
- Availability of opportunities to expand capacity if needed.
- Transit service can be maximized.
- Ability of the potential transit network to serve the most future residents.

5.3.2 Methodology

For the transportation network, each option was evaluated based on access, connectivity, roadway capacity and transit service.

Access and connectivity were evaluated to confirm that there is appropriate access and connectivity to new urban areas. This evaluation considered the ease of connectivity to arterial corridors and Highway 403, constraints to connectivity and access (e.g. physical features, parcel shapes) and the impact that physical constraints place on the collector road framework.

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Transportation capacity was assessed to confirm that appropriate transportation capacity can be provided to serve development. The evaluation assessed the ability of the existing/planned transportation and transit capacity to accommodate new trips, and whether there were existing constraints to capacity or planned expansion for the corridors. The scenarios were also evaluated for their ability to connect to opportunities where expanded capacity could be provided if needed.

Transit service was assessed to confirm the ability of each option to maximize service penetration into new development areas. This included an assessment of whether service extension was logical from a routing perspective (collector arterial road connections, and circulation potential) and provided adequate coverage for development blocks (i.e. likely distance from potential routes).

5.3.3 Evaluation

Based on access and connectivity, Option 2A and 2B are preferred. Option 2A provides the best option for land access, while 2B provides the better arterial connectivity to Highway 403. For capacity, 1B and 2B are preferred as both provide connectivity to good existing arterial capacity with opportunities for expanded capacity in the future for expanded roles of Wayne Gretzky Parkway and the Garden Avenue extension. Option 2A provides the best opportunity for transit service connections into each development block.

As the development areas in these options were identified as preferred in the broader Stage 4 evaluation, there is little separating the options from a transportation perspective. However, on balance, and in consideration of all of the transportation criteria, Option 2A is identified as the preferred option.

5.4 WATER, WASTEWATER AND STORMWATER

5.4.1 Criteria

Three criteria and associated measures were used to evaluate each infrastructure type (water, wastewater and stormwater) for each of the Settlement Area boundary expansion options and land use and transportation scenarios, as follows. The criteria used for water and wastewater were the same.

Water and Wastewater

Configure new water and wastewater services to integrate with existing trunk network

- Ability to integrate with existing water and wastewater trunk network.
- Upgrades to existing water and wastewater network needed to support growth areas.

To limit impacts on infrastructure implementation, phasing, and servicing flexibility

- Impacts on the trunk infrastructure requirements, including infrastructure sizing, configuration, and requirements for new facilities.

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- Impact on Infrastructure phasing.
- Impacts on servicing flexibility.

Cost to provide additional infrastructure

- Capital Costs.
- Lifecycle Costs.

Stormwater

Impacts on Natural Heritage Systems and Watercourse Stability

- Impacts on Natural Heritage System.
- Impacts on watercourse stability.

Land use suitability to address local stormwater servicing needs

- Suitability of land use to address local stormwater servicing needs.

Impacts on infrastructure phasing and servicing flexibility

- Impacts on the trunk infrastructure requirements for new facilities.
- Impacts on infrastructure phasing.
- Impacts on servicing flexibility.

5.4.2 Methodology

Water, wastewater, and stormwater servicing considerations and impacts were completed using the following methodology:

1. Multiple water, wastewater, and stormwater servicing strategies and concepts, to service the potential Settlement Area boundary expansion lands, were developed;
2. Each concept identified high level servicing constraints, upgrade needs, and costing considerations;
3. Preliminary servicing concepts were reviewed with City staff and the preferred servicing concepts, for the potential Settlement Area boundary expansion lands, were identified;
4. Utilizing the preferred servicing concepts, a servicing needs assessment was completed for each of the land use scenarios. The servicing needs assessment included:
 - Identifying connection points to the City's existing water, wastewater, and stormwater systems and identifying any downstream upgrades needed to support the north expansion lands;
 - Identifying trunk infrastructure needs, including infrastructure location, alignment, and sizing;
 - Identifying infrastructure phasing requirements and system operational impacts; and
 - Completing a Class D life cycle cost estimate for the preferred servicing strategy.

Based on the results of the servicing needs assessment, each of the land use scenarios were evaluated by the criteria described in this section of the report.

For stormwater impacts on the Natural Heritage System, the number of potential stormwater outlets was reviewed, in the context of existing conditions (i.e., impacted watercourse due to urban hydromodification with few SWM controls). The option with fewer SWM outlets along one watercourse was preferred over the option with more SWM outlets.

5.4.3 Evaluation

Water

Options 1A, 1B, 2A and 2B are similar in terms of impacts and upgrade needs to the existing water distribution, including servicing flexibility. The primary difference is the increased infrastructure needs in Options 2A/2B related to the servicing of Block C6. In Options 1A/1B, the extension of the City's water system east, to service the east employment lands, provides an opportunity to extend servicing to Block C10 without triggering additional trunk watermain upgrades relative to Options 2A/2B. Extending water service to Block C6, in Options 2A/2B, triggers additional trunk watermain needs increasing the relative cost compared to Options 1A/1B. Further, servicing flexibility is limited in Options 2A/2B, as servicing to Block C6 is dependent on the extension through adjacent blocks, while Block C10 can be supported via a direct extension of the existing water network. Additionally, the east employment lands configuration in Options 1B/2B results in a slightly more difficult and costly trunk servicing needs relative to Option 1A/2A. Therefore, Option 1A is preferred.

Wastewater

In terms of impacts and upgrade needs to the existing wastewater collection system, all land use options are similar. The difference between Options 2A/2B is the increased infrastructure needs related to the servicing of Block C6. In Options 1A/1B, the extension of the City's wastewater system east, to service the east employment lands, provides an opportunity to extend servicing to Block C10 without triggering additional trunk sewer upgrades relative to Options 2A/2B. Extending wastewater service to Block C6, in Options 2A/2B would initiate additional trunk wastewater needs, increasing the total number of pumping stations needed to service the expansion lands, and substantially increasing both the capital and long-term operation and maintenance cost relative to Options 1A/1B. Further, in Options 2A/2B servicing flexibility is limited, as servicing to Block C6 is dependent on the extension through adjacent blocks, while Block C10 can be supported via a direct extension of the existing wastewater system.

Additionally, the location of high density land use along Park Road in Options 1A/2A as compared to high density land use along King George Road in Options 1B/2B, allows for greater total population to be serviced via gravity under Options 1A/2A. This solution provides a slightly optimized servicing strategy and reduction in life cycle cost relative to Options 1B/2B. Therefore, Option 1A is preferred.

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Stormwater

For stormwater, the land use options are similar in terms of impacts, infrastructure needs, and servicing flexibility. Minor differences in servicing cost and impacts on the natural heritage system and watercourse stability are noted; however, these differences are relatively minor in nature. For stormwater, Options 1A, 1B, 2A, 2B are considered equal.

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5.5 LAND USE

5.5.1 Criteria

Three criteria were used to evaluate the land use and transportation scenarios. The criteria and associated measures are as follows:

Create walkable communities

- Proportion of units within 400 metres of a park.
- Proportion of units within 500 metres to commercial services (Neighbourhood Centres).
- Mix of densities on collector and arterial roads to promote walking and transit.
- Elementary schools are located centrally within their catchment area (catchment based on a 5-10-minute walk).

Create new Neighbourhoods with a sense of place

- Neighbourhood Centres are located in a viable location to create a focal area.
- Provide for Housing choice.
- Mix of Housing in each neighbourhood.
- Ability to integrate with adjacent neighbourhoods.
- Ability to provide for a compatible transition to existing residential.

Provide a range of employment opportunities

- Ability to maximize exposure along the highway and arterial roads for prestige employment.

5.5.2 Methodology

Land use principles such as walkability, neighbourhoods with a sense of place, a variety of housing choices and employment opportunities were used to evaluate each of the land use scenarios. The ability of a community to facilitate and encourage walking as a mode of transportation is measured by access to transit, mix of housing types and proximity to elementary schools, parks and Neighbourhood Centres. A neighbourhood with a focal area creates a sense of place. This evaluation intends to confirm the preferred land use concept delivers a walkable community with complete neighbourhoods offering residents a strong sense of place. Both qualitative and quantitative criteria were used to evaluate the options.

Walkability was evaluated by delineating a 400m radius from parks. The radiuses were assessed to determine which option had the highest proportion units within the 400-metre radius as shown on **Figures 39 to 42**. Using the same analysis as parks, a 500-metre radius from the Neighbourhood Centres was created as shown in **Figures 43 to 46**. As well, the location of schools centrally within a neighbourhood was evaluated. A sense of place was determined by the ability for residents to walk to shops, services and compatibility with existing neighbourhoods. The potential for a range of employment opportunities was evaluated by its proximity to the highway and arterial roads, as well as the ability of residents to easily access employment areas.

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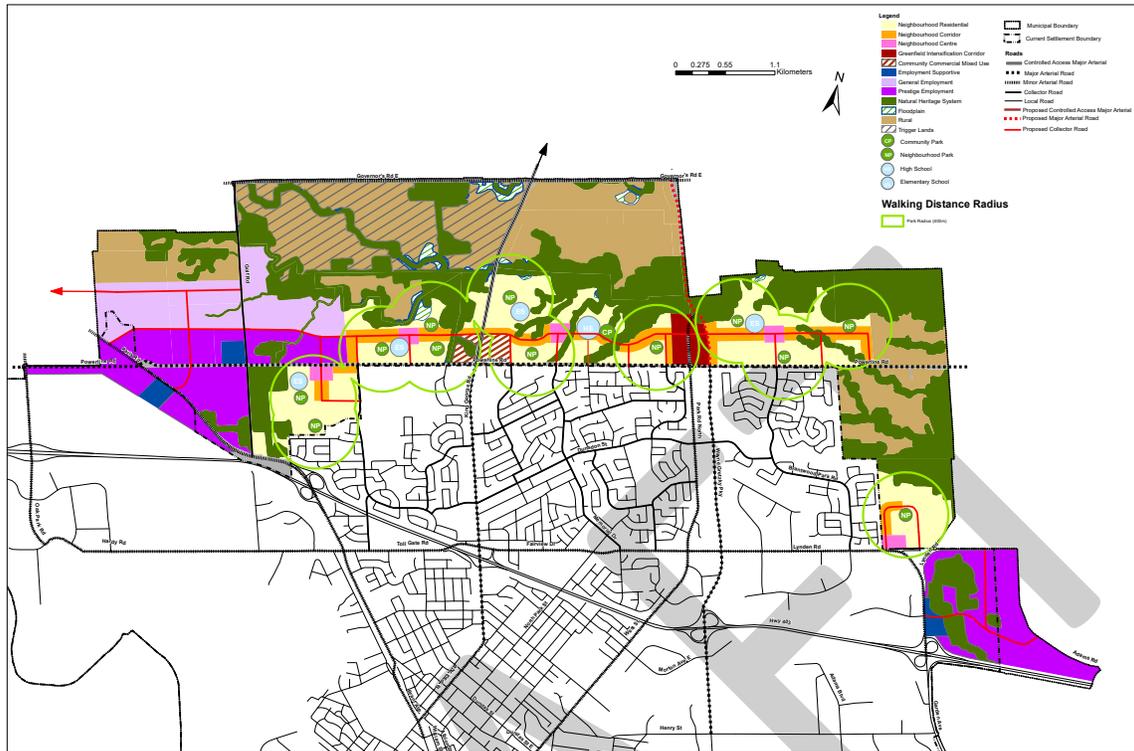


Figure 39: Parks Walking Distance Radius – Option 1A

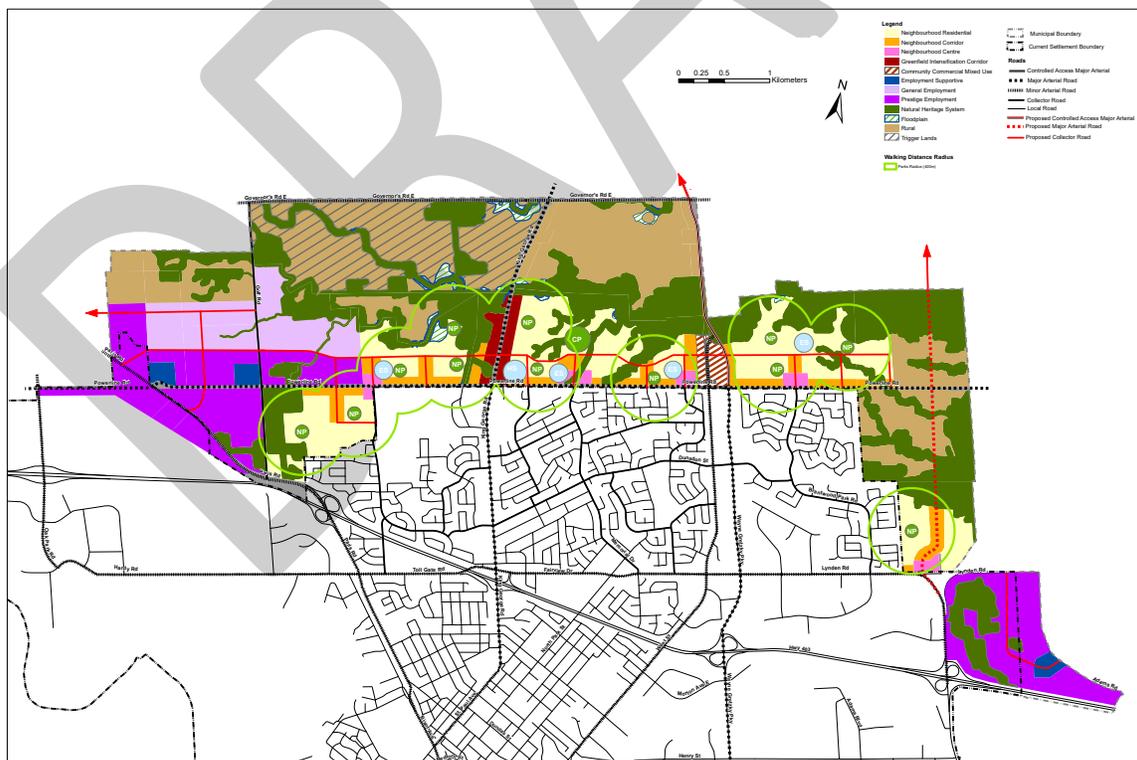


Figure 40: Parks Walking Distance Radius – Option 1B

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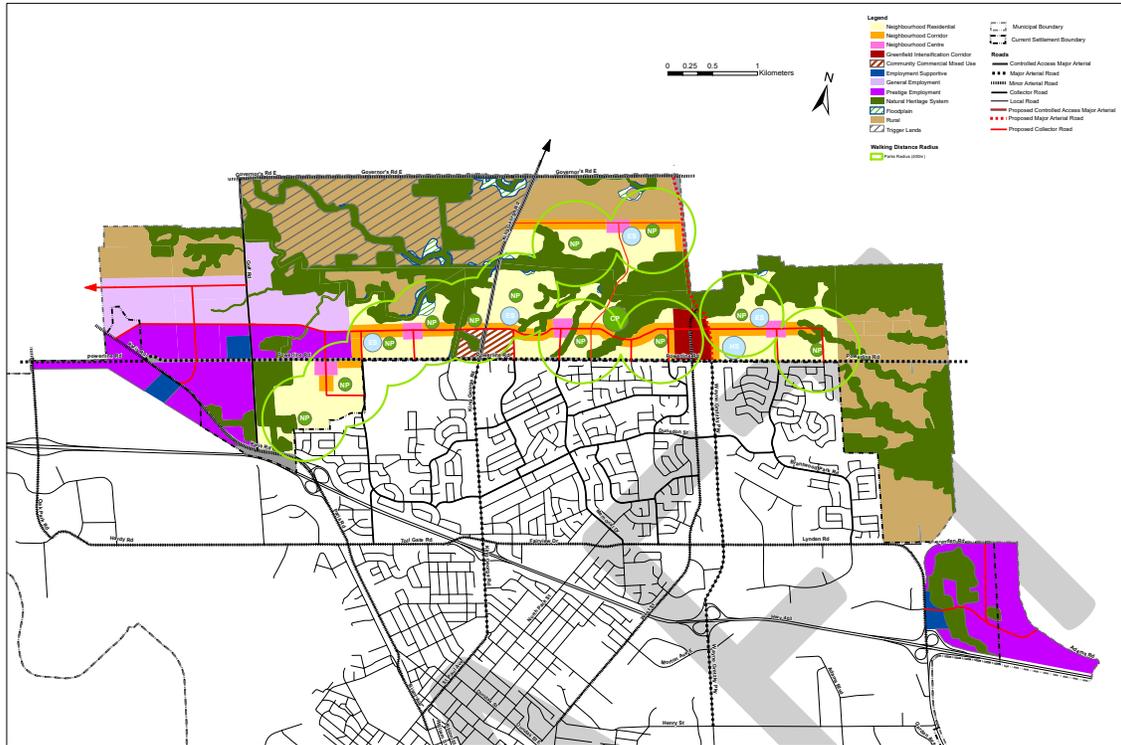


Figure 41: Parks Walking Distance Radius – Option 2A

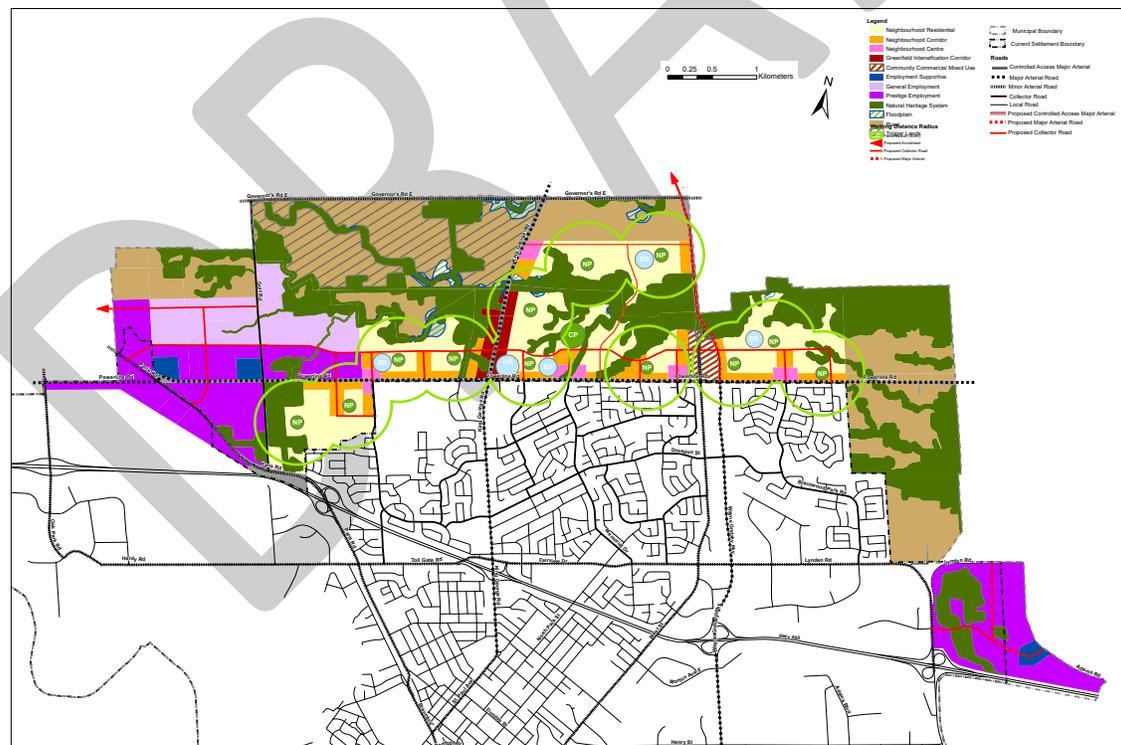


Figure 42: Parks Walking Distance Radius – Option 2B

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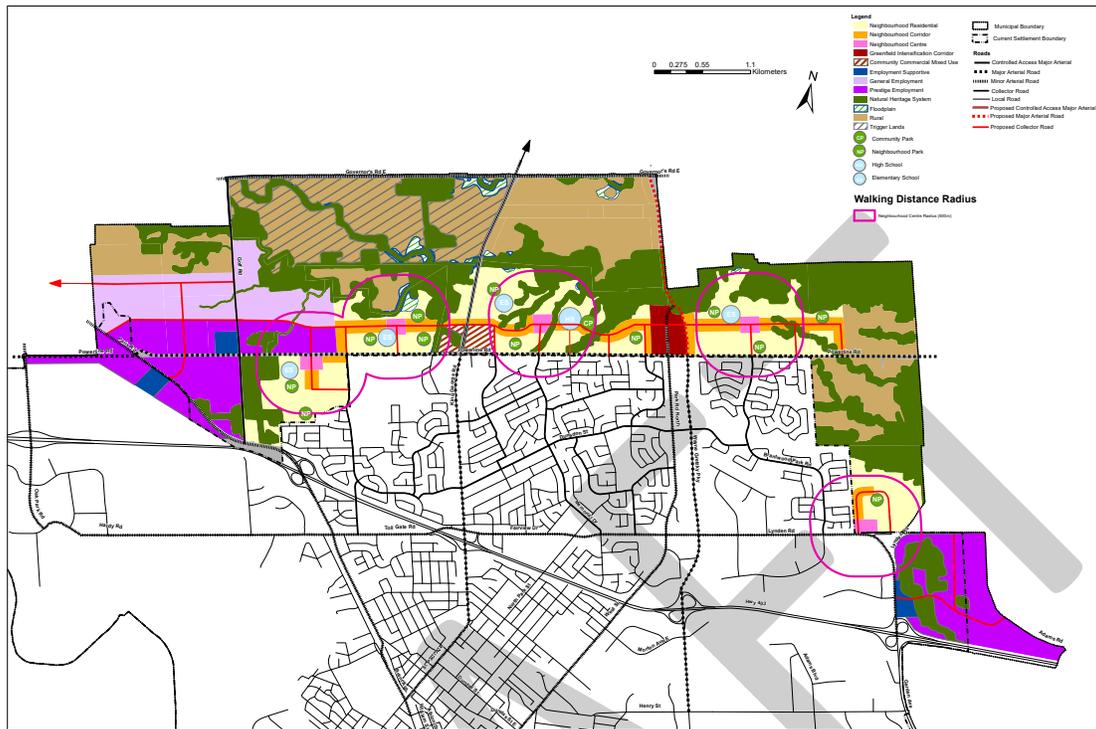


Figure 43: Neighbourhood Centre Walking Distance Radius – Option 1A

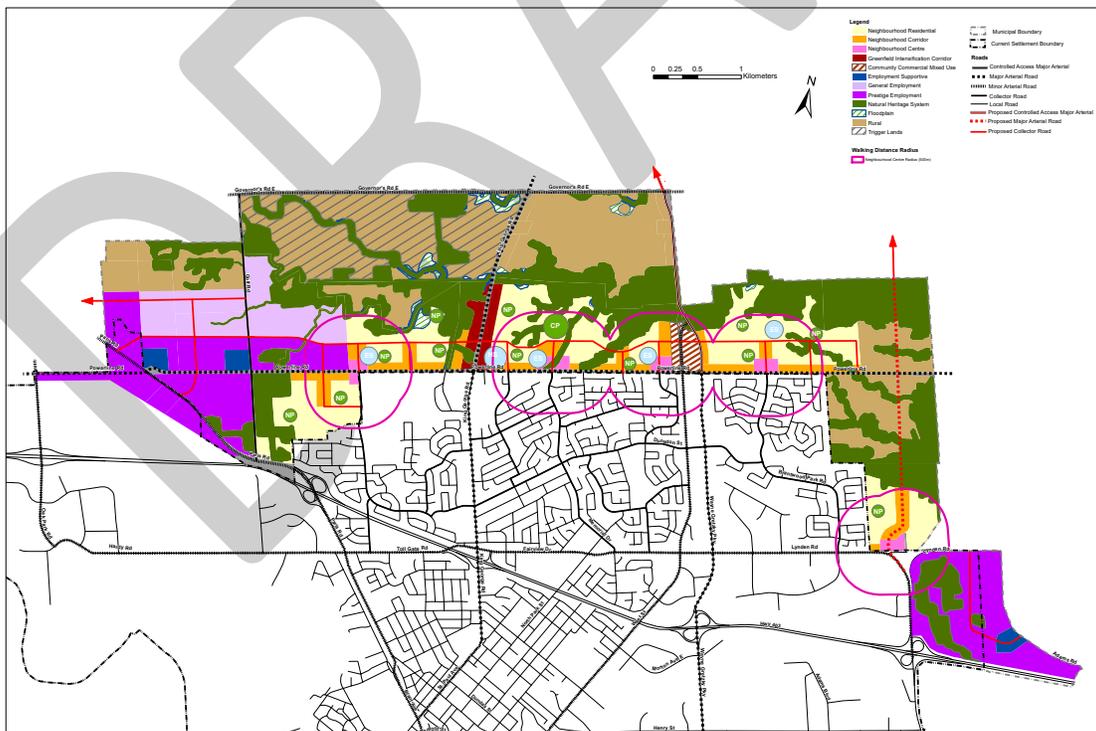


Figure 44: Neighbourhood Centre Walking Distance Radius – Option 1B

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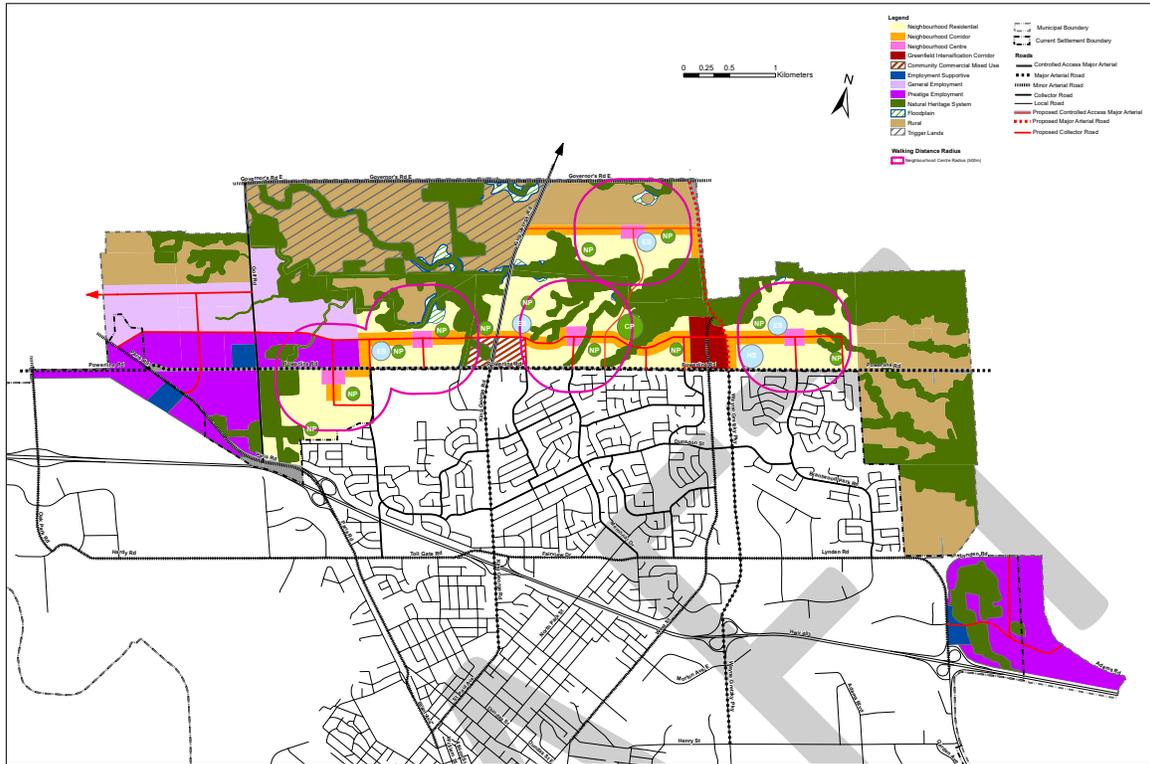


Figure 45: Neighbourhood Centre Walking Distance Radius – Option 2A

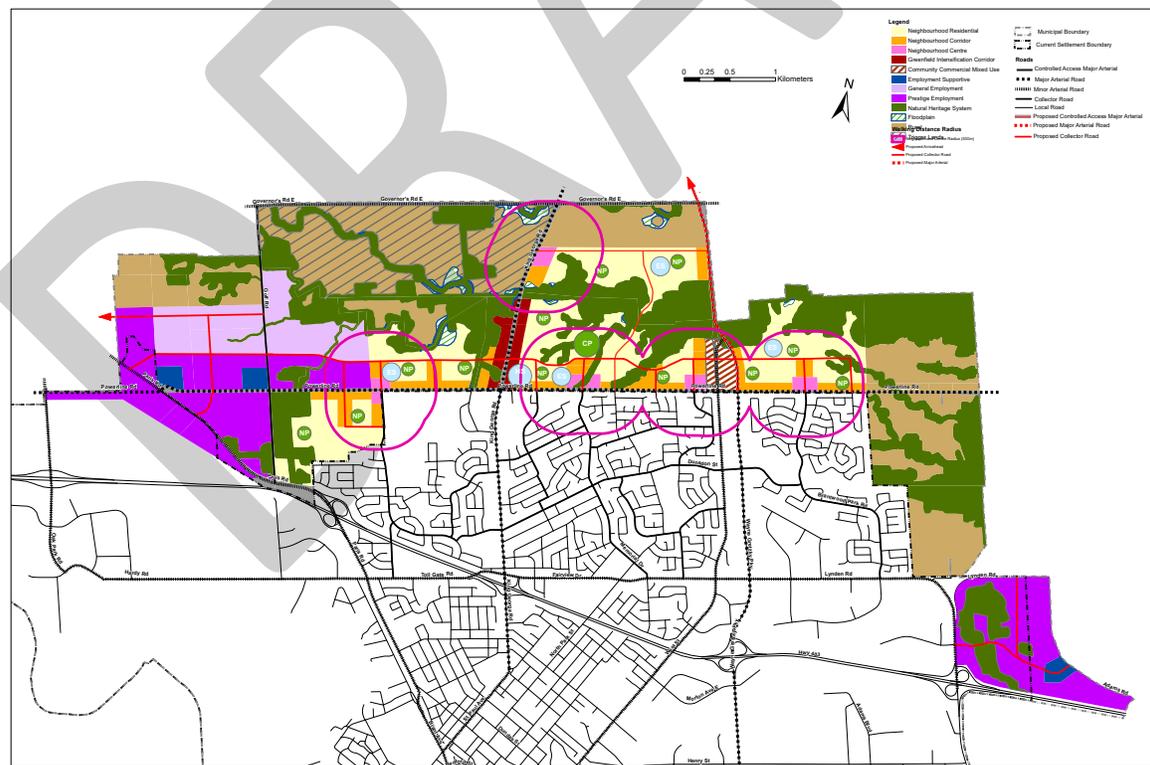


Figure 46: Neighbourhood Centre Walking Distance Radius – Option 2B

5.5.3 Evaluation

Walkability

For walkability Option 2B has the most units within walking distance of a park. Option 1A, although marginally, has the least number of units within walking distance of parks. Similar to the evaluation of the parks, the walkability to neighbourhood centres was measured. Option 2A has the highest proportion of units within walking distance of a neighbourhood centre. Options 1A and 1B have the least number of units within walking distance of a neighbourhood centre. For all options, elementary schools are generally located centrally within neighbourhoods.

Sense of Place

Neighbourhood Centres proposed in Options 1A and 2A are viable locations for mixed use neighbourhood centres which will be neighbourhood focal points provided they are located at the intersection of two major collector roads. The neighbourhood centre north of the Northridge Municipal Golf Course would be less viable due to the minor function of the north-south collector road. Options 1B and 2B propose Neighbourhood Centers along Powerline Road. These locations would be viable commercial locations. However, the locations at Memorial Drive and Powerline Road and Brantwood Park Drive and Powerline Road are not centrally located to serve as neighbourhood focal points. For Option 2B, the Neighbourhood Centre in Block C6 is located in a viable location along King George Road and could provide opportunity for a gateway into the City, but it is not centrally located.

Mix and Variety of Housing

The mix of housing evaluation revealed that the preliminary land uses for all options provide for a mix of housing within each neighbourhood. Option 2A provides a greater mix in Block C6 than Option 2B.

The land use for Options 1A and 2A allow for a mix of densities along the proposed east-west collector, which will promote walkability along the spine of community. Options 1B and 2B have less ability to promote walking due to mostly Neighbourhood Residential land uses adjacent to the proposed east-west collector and back lotting along the south side of Powerline Road.

Employment Opportunities

All the land use options maximize exposure along arterial roads and Hwy 403. Options 1A and 2A have three Employment Supportive areas centrally located within the employment areas. The Paris Road location is currently designated commercial and is a preferred location. In Options 1B and 2B, the Employment Supportive area on Adams Road is not as centrally located or as likely to be successful as the location on Garden Avenue.

5.6 TUTELA HEIGHTS

The evaluation of Tutela Heights was conducted using the same criteria and methodology as the North. The evaluation matrix in **Appendix 6** provides the detailed evaluation for Tutela Heights.

For the two land use scenarios for Tutela Heights, the evaluation revealed no difference between the options for the agriculture, environment, water and stormwater disciplines. The evaluation for wastewater, transportation and land use are detailed below.

5.6.1 Wastewater Evaluation

The difference in the Tutela Heights land use are such that Option 2 allows for greater total population to be serviced via gravity providing a slightly optimized servicing strategy and reduction in life cycle cost relative to Option 1.

5.6.2 Transportation Evaluation

For access, Options 1 and 2 are considered very similar. Capacity is also similar for Option 1 and 2. From the perspective of transit, Option 1 is considered marginally better than Option 2 as it provides a higher density along a longer stretch of Neighbourhood Corridor lands by providing two activity nodes: Mount Pleasant/Tutela Heights Road intersection, and Mount Pleasant/Conklin Road intersection. The transportation network in Options 1 and 2 for Tutela Heights are identical. The difference from a transportation perspective is the provision of two higher density nodes that can be served more effectively by transit service on two corridors: Mount Pleasant Street and Conklin Road.

5.6.3 Land Use Evaluation

Both Option 1 and Option 2 are similar, but Option 1 provides more units within walking distance of parks, a greater mix of uses along Conklin Road and Mount Pleasant Road, as well as a slightly greater range of housing choices.

5.7 SUMMARY OF EVALUATION AND PREFERRED OPTION

Overall, the preferred Settlement Area Boundary Expansion Option is Option 1.

From a land use perspective, Option 1A would be preferred as it provides for a greater mix of uses and higher density oriented along an east-west transit spine following the new east-west collector road. However, from a transportation perspective, the extension of Wayne Gretzky Parkway north connecting to Park Road as a controlled access arterial is proposed due to the limited number of accesses to Wayne Gretzky Parkway south of Powerline Road. As a result, the configuration of Greenfield Intensification Corridors and Community Commercial Mixed Use Areas in Option 1B would be preferred. As such, a hybrid land use and transportation plan combining elements of Options 1A and 1B is proposed. This hybrid option is discussed in Section 7 of this report.

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For Tutela Heights, Option 1 is generally preferred, but elements of Option 2 such as a larger Transitional Residential area would be preferred to provide for an upscale, executive housing area and a larger a buffer between existing estate residential and future low density residential, along with the opportunity to accommodate a Neighbourhood Centre at Conklin Road and Mount Pleasant Road. As such, a hybrid land use and transportation plan is proposed for Tutela Heights as described further in Section 7.

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6 PUBLIC, STAKEHOLDER AND AGENCY COMMENTS

A Public Information Centre (PIC #5) five was held on January 17, 2019 to present the two Settlement Area boundary expansion options along with the land use and transportation scenarios. About 120 people attended this event. The input received at PIC #5 is summarized in “What We Heard” summary report attached as **Appendix 7**.

Since PIC #5, a number of comments have been received from the public and landowners. These comments are summarized in **Appendix 8** with a response from the consulting team.

A brief overview of these comments includes:

- Location and number of schools and parks;
- Consideration for more frequent Official Plan/Municipal Comprehensive Reviews to address housing and employment market conditions;
- Ensure future municipal infrastructure is planned for beyond the 20 year planning horizon of the Official Plan;
- Secondary Plan policy should require a cost sharing plan and compensation measures to fairly distribute contributions to the provision of stormwater management facilities among benefiting landowners;
- Suggestions for road re-alignments and alternative road connections;
- Requests for specific lands to be included in the Settlement Area boundary;
- Concerns around the proposed alternative density targets and how it will be monitored and achieved; and
- Comments on which options should be preferred.

7 PREFERRED SETTLEMENT AREA BOUNDARY AND DRAFT PRELIMINARY LAND USE AND TRANSPORTATION PLAN

The Preferred Settlement Area boundary expansion and the Preliminary Land Use and Transportation Plan for the northern expansion area are illustrated in **Figures 47 and 48**, and for Tutela Heights in **Figure 50**.

7.1 PREFERRED SETTLEMENT AREA BOUNDARY

The rationale for the preferred Settlement Area boundary as shown in **Figure 47** was based largely on servicing and agriculture constraints. The evaluation criteria and ranking revealed that an expansion including Blocks C8 and C10, and not Block C6, was the best option to minimize conflict with existing agriculture and keep capital costs and life cycle costs for municipal services to a minimum.

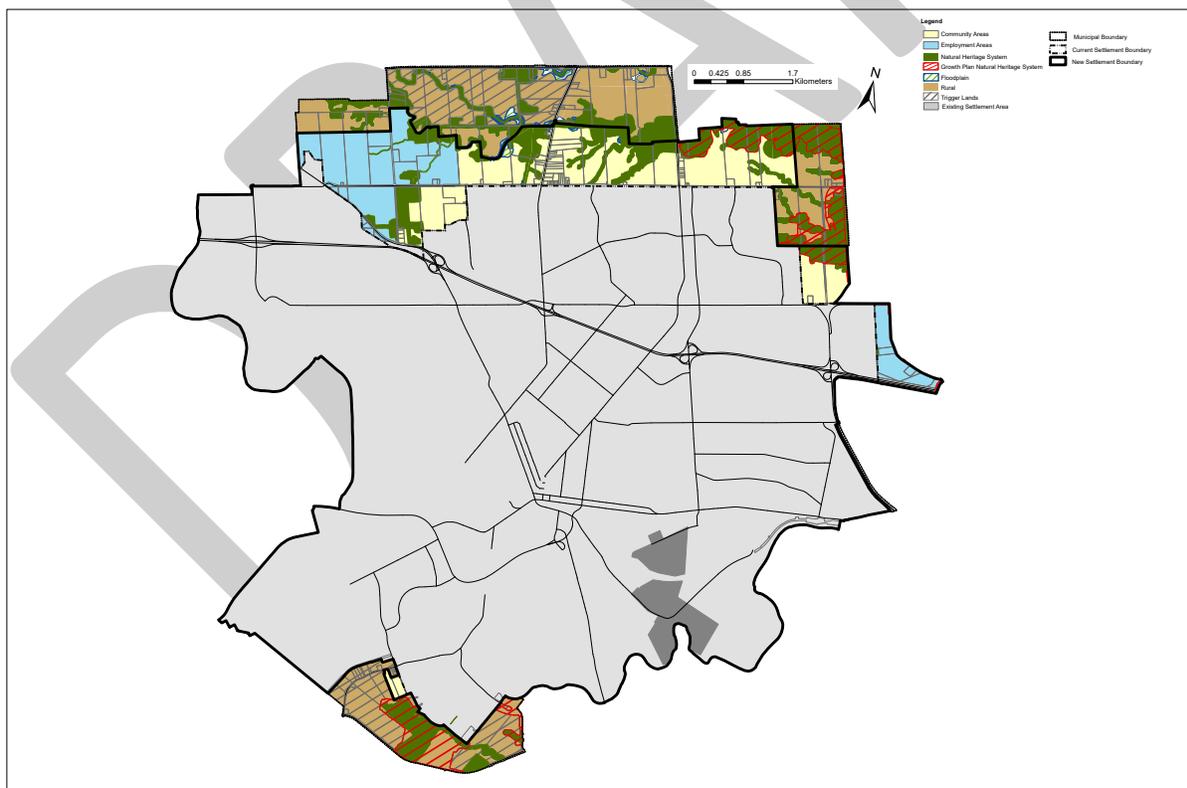


Figure 47: Preferred Settlement Area Boundary Expansion

7.2 PRELIMINARY LAND USE AND TRANSPORTATION PLAN FOR NORTH BRANTFORD

Land Use Plan

The preliminary land use and transportation plan for the north is illustrated in **Figure 48** and largely reflects the structure of land use Option 1A by orientating the Neighbourhood Corridor designation and Neighbourhood Centres along the east-west collector road. These designations create a pedestrian and transit focused spine through the community with a central Neighbourhood Centre providing a sense of place to each neighbourhood. The Neighbourhood Centres are located to facilitate walkability within the neighbourhoods and easy access to daily needs such as convenient retail and services. The Neighbourhood Centres are located at the intersection of proposed collector roads for accessibility and visibility to serve the residents.

The Neighbourhood Centres west of King George Road, as illustrated in **Figure 48**, were shifted (from where shown in **Figures 6 and 7**) to ensure they are located in a viable location for commercial uses. One Neighbourhood Centre is proposed to straddle the intersection of Balmoral Drive extension and Powerline Road, which would provide a focal area to both the neighbourhoods to the north and south of Powerline Road.

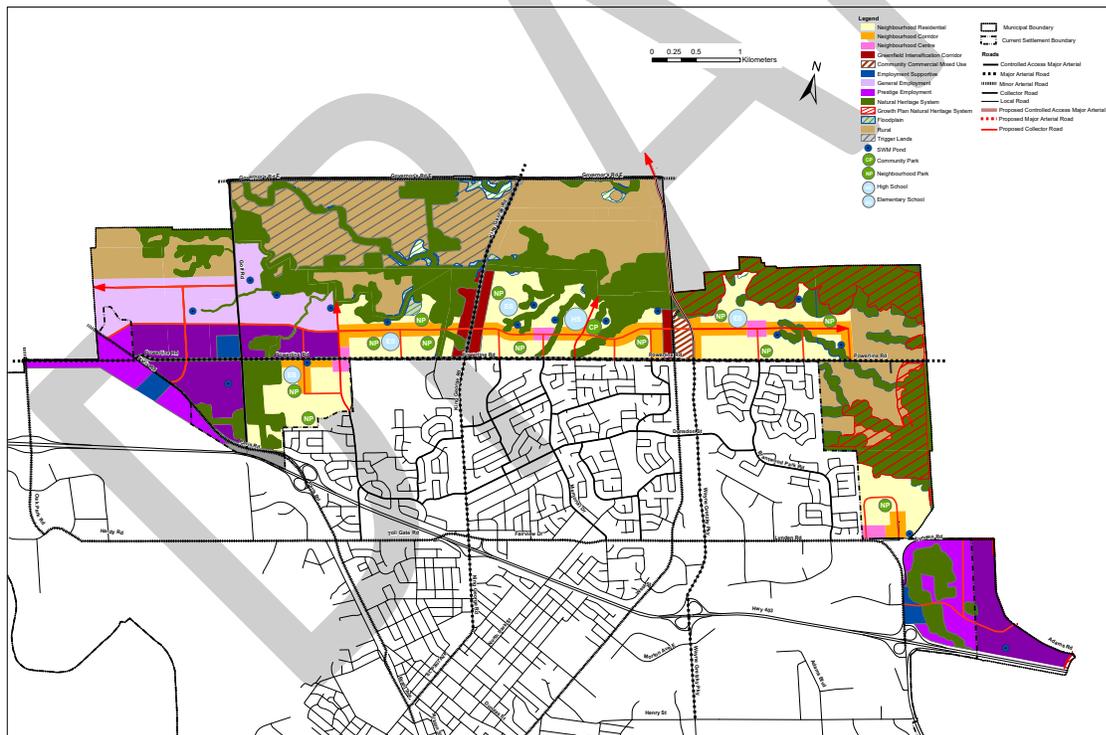


Figure 48: Preliminary Land Use and Transportation Plan – North

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The Greenfield Intensification Corridor is located along King George Road as an extension of the Intensification Corridor south of Powerline Road. The Community Commercial Mixed Use designation is proposed between Park Road and the extension of Wayne Gretzky Parkway, which is proposed as a Controlled Access Arterial Road. The west side of Park Road is also proposed as a Greenfield Intensification Corridor to provide for a mix of higher density and commercial uses, extending the Intensification Corridor from the south of Powerline Road.

One community park of approximately 4 hectares is proposed to be located between King George Road and Wayne Gretzky Parkway north of the proposed east-west collector road. The community park is centrally located within the north expansion lands. The park is proposed to be located close to a secondary school to provide opportunity for co-location synergies for facilities and programming. The park is proposed to include a number of sports fields and a playground. The community park and secondary school are proposed to be located between fingers of the Natural Heritage System which provide for a larger open space campus with connection to the trail system within the Natural Heritage System.

Twelve neighbourhood parks of approximately 1.5 hectares each are proposed in the northern expansion area. The neighbourhood parks are distributed to achieve a 5-minute walk to a park. Neighbourhood parks generally include playgrounds and some sports fields. Elementary school sites are centrally located within the neighbourhood they serve, fronting onto a collector road. The elementary schools are also proposed to be co-located with a neighbourhood park.

Stormwater management ponds are conceptually located in anticipated locations. These facilities can be partially located in the buffers to the Natural Heritage System.

The Prestige Employment designation is located close to Highway 403 and Powerline Road with three Employment Supportive designations located along Paris Road, Powerline Road and Garden Avenue.

Transportation Plan

The extension of Wayne Gretzky Parkway is proposed to be a Controlled Access Major Arterial. This road will have the highest level of restricted access of all the arterial roads. The intent of restricted access is to move people and vehicles with very little disruption.

King George Road will be a Major Arterial road will carry a large volume of traffic as well as transit. It is also intended to transition to a complete street providing for a comfortable pedestrian environment.

The collector roads are intended to serve low to moderate traffic providing access to residential areas and connecting to collector roads south of Powerline Road. It is intended that collector roads will have sidewalks on both sides.

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An active transportation network is also proposed as shown on **Figure 49** providing for both on-road, boulevard and off-road facilities for pedestrians and cyclists.

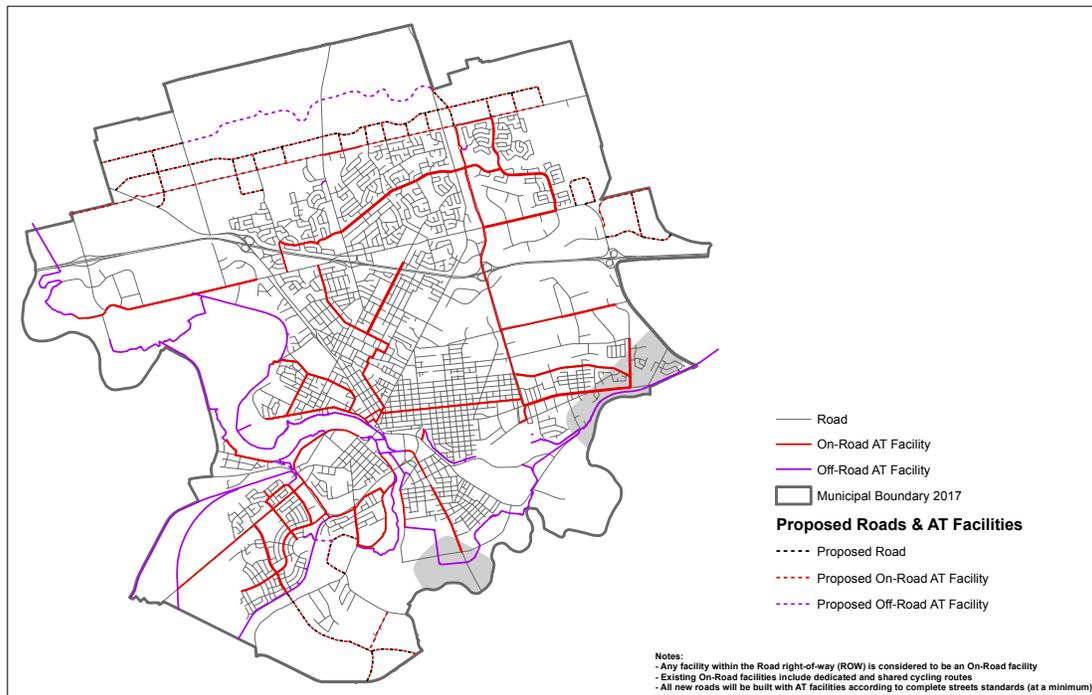


Figure 49: Roads and Active Transportation Networks

7.3 PRELIMINARY LAND USE AND TRANSPORTATION PLAN FOR TUTELA HEIGHTS

The preliminary land use and transportation plan for Tutela Heights is illustrated in **Figure 50**. It largely reflects the structure of Option 1 but provides for a larger Transitional Residential designation between Davern Road and Rue Chateaux Terrace. This larger designation would provide for an upscale, executive housing area contributing to a full mix of housing.

The plan orientates the Neighbourhood Corridor designation in three clusters along Mount Pleasant Road. A Neighbourhood Centre designation is proposed at the corner of Conklin Road and Mount Pleasant Road

Three new neighbourhood parks are distributed to achieve a 5-minute walk to a park.

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Figure 50: Preliminary Land Use and Transportation Plan – Tutela Heights

7.4 PROPOSED POLICY DIRECTIONS

The following sets out potential policy directions for each of the proposed land uses in the preliminary land use and transportation plan for North Brantford and for Tutela Heights. Policy directions regarding implementation matters to be addressed through draft plans of subdivision or prior to submission of those subdivision plans are also described.

Neighbourhood Residential

Lands within the Neighbourhood Residential designation are intended to be developed with a range of ground-related housing types such as single-detached, semi-detached and all townhouse forms at a minimum density of 25 units per net hectare and a maximum height of 3 storeys. The Neighbourhood Residential designation is also intended to accommodate most of the community facilities needed to support a new community including elementary schools, a secondary school, neighbourhood parks and a community park.

Suburban Residential

The Suburban Residential designation is intended to apply only to existing large lot residential areas in Tutela Heights. These areas can remain on partial services with private septic systems.

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Transitional Residential

The Transitional Residential designation is intended to accommodate larger single-detached residential lots on full municipal services. The permitted residential density shall be approximately 10 to 20 units per net residential hectare. Larger lot frontages shall be required abutting existing residential lots in the Suburban Residential designation.

Neighbourhood Corridor

The Neighbourhood Corridor designation is proposed to be developed with a mix of low-rise multiple unit housing forms such as townhouses, stacked townhouses and low-rise apartments and mixed-use buildings. Single-detached and semi-detached dwellings would not be permitted within the Neighbourhood Corridor designation. Development shall have a minimum density of 45 units per net hectare and a maximum height of 4 storeys. Small scale convenience retail, personal services and restaurants are also permitted in stand-alone or mixed use buildings.

Neighbourhood Centre

The Neighbourhood Centre designation is intended to provide for a range of retail and service commercial uses serving the surrounding neighbourhood including a grocery store. The Neighbourhood Centres shall accommodate up to approximately 10,000 sq. m. of gross floor area and shall be built with primary doors and windows facing the collector roads to create a strong pedestrian focused area. Residential dwellings units above commercial uses would be permitted to a maximum of 4 storeys.

Greenfield Intensification Corridor

The Greenfield Intensification Corridor is intended to provide for a mix of land uses including retail, service commercial, office and high density residential. The minimum residential density shall be 80 units per net hectare. Despite this minimum density, stand-alone commercial uses shall be permitted provided an intensification plan is submitted to demonstrate how the site can be intensified over time. The range of permitted uses, maximum building heights and development policies should reflect the Intensification Corridor designation in the 2016 Draft Official Plan.

Community Commercial Mixed Use

The Community Commercial Mixed Use designation is intended to accommodate high density residential uses similar to the Greenfield Intensification Corridor as well as major retail and service commercial uses. The range of permitted uses, maximum building heights and development policies should reflect the Major Commercial Centre designation in the 2016 Draft Official Plan.

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Prestige Employment

The Prestige Employment designation will be comprised of offices and light industrial land uses. It is intended that this designation will have a high standard of building design and public realm. The range of permitted uses and development policies should reflect those set out in the Prestige Employment designation in the 2016 Draft Official Plan, except that the ancillary uses shall be clustered in the Employment Supportive designation.

General Employment

The General Employment designations shall comprise of full range of manufacturing uses following the permitted uses and development policies of the General Employment designation in the 2016 Draft Official Plan.

Employment Supportive

The Employment Supportive designation is intended to accommodate a range of ancillary retail and service commercial uses supporting the surrounding employment area.

Natural Heritage System

The Natural Heritage System helps to define the structure of the plan. The system includes such natural features as wetlands, woodlots, valleylands and wildlife habitat areas. The Natural Heritage System includes a buffer to ensure maximum protection of the natural heritage features. The permitted uses and development policies should reflect those of the Natural Heritage System designation in the 2016 Draft Official Plan.

Implementation

Prior to development in the northern expansion area and Tutela Heights, further planning and assessment is required. A subwatershed study is underway and will need to be completed to guide future development.

The northern expansion area consists of five logical neighbourhoods separated by arterial roads. Tutela Heights represents a sixth neighbourhood. Prior to development in each neighbourhood, a neighbourhood wide functional servicing study should be required to identify specific locations of stormwater management facilities, trunk services and pumping stations. A neighbourhood block plan will also be required prior to development to set out the specific locations of collector roads, parks, schools, community facilities, commercial areas and stormwater management ponds, as well as the general pattern of local streets and blocks.

All new development must be on full municipal services, except within the Suburban Residential designation.

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A phasing plan will also be required and will be completed prior to adoption of the new Official Plan. The phasing plan will identify infrastructure required in each neighbourhood and the general progression from one neighbourhood to the next.

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8 NEXT STEPS

The preferred Settlement Area boundary expansion option (Option 1) will be presented to City Council for endorsement on April 2019. The Preliminary Land Use and Transportation Plan for the north expansion area and for Tutela Heights will then be presented at a Public Information Centre for additional public input and comment in June 2019.

A number of implementation studies are to be finalized as part of the Stage 6 work such as Urban Design Guidelines, Environmental Impact Study, Stormwater Assessment, Active Transportation Plan, Area Servicing Plans, and Infrastructure Staging and Phasing. These studies along with any comments received on the draft plan and policies will inform the Preliminary Land Use and Transportation Plan and the proposed policy directions and will be considered as part of the next draft of the Official Plan. The next draft of the Official Plan will be presented at a Public Information Centre for public input and comment in September 2019.

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