




CITY OF BRANTFORD
OFFICIAL PLAN
ENVISIONING OUR CITY: 2051

Envisioning Brantford - Municipal Comprehensive Review

DRAFT Infrastructure Staging Report

October 2020

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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 Horseshoe¹ 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 has undertaken an MCR and prepared a new Draft Official Plan to include the Boundary Adjustment Lands. The City of Brantford established an eight-stage study process to complete the Municipal Comprehensive Review and finalize the new Official Plan – entitled *Envisioning Our City: 2051*. 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.

Through the first six stages of the report, three reports have been produced. The MCR Part 1: Employment Strategy, Intensification Strategy, Housing Strategy and Land Needs report (December 2018) identified both growth and intensification targets as well as the Settlement Area boundary expansion needs. The MCR Part 2: Settlement Area Boundary Expansion report (December 2018) reviewed potential Settlement Area boundary expansion alternatives. The MCR Part 3: Preferred Settlement Area Boundary Expansion and Preliminary Land Use and Transportation Plan report (March 2019) further assessed a short list of Settlement Area boundary

¹ The Infrastructure Staging Report was completed prior to Amendment 1 to *A Place to Grow: Growth Plan for the Greater Golden Horseshoe* and the *Envisioning Brantford – Municipal Comprehensive Review – Addendum Report*, as such it will be revised as necessary

expansion alternatives, land use configurations and identified the recommended Settlement Area boundary expansion which was endorsed by Council on April 9, 2019. 1

This document supports the preferred land use concept developed in the MCR Part 3 Report with a proposed infrastructure staging plan, that provides further detail regarding the necessary servicing (water, wastewater and storm water), transportation infrastructure, as well as community facilities required to support development within each block within the north and east Brantford Settlement Area boundary expansion areas and within Tutela Heights.

SGL Planning & Design Inc., GM Blue Plan Engineering and Dillon Consulting provided their respective input on infrastructure and community facility needs for this Infrastructure Staging Report.

1.2 Purpose of the Report

The purpose of this report is to provide a clear outline of the required water, wastewater, stormwater and transportation infrastructure and community facilities necessary to support development within each of the eleven separate blocks located within the north and east Brantford Settlement Area boundary expansion areas and within Tutela Heights. The required infrastructure includes not only the infrastructure within each block to support development of the block but also infrastructure external to the block that is necessary for development to occur within the block.

Section 2 of this report describes the proposed land uses within each of the neighborhood and employment blocks.

Section 3 of this report analyzes the servicing requirements and preferred strategies for water, wastewater, stormwater, transportation and community facilities. The water, wastewater and stormwater servicing sections further identify the current conditions and strategies for water servicing within the area including water, wastewater and stormwater projects.

The transportation portion of Section 3 identifies current opportunities for integrating active transportation and transit service in the area. The section also identifies the preferred road infrastructure additions including proposed ultimate right-of-way widths, road hierarchies and road additions. The community facilities section details the requirements for schools, parks and other community facilities based on the projected growth anticipated within each Neighbourhood Block.

Section 4 of this report summarizes, in a matrix, the infrastructure requirements outlined in Section 3 by Block. It should be noted the table does not prescribe a preferred order for development of the Blocks but outlines the required internal and external infrastructure for each Block.

Section 5 of this report outlines further study requirements and implementation strategies through the planning process.

Section 6 provides a brief conclusion.

1.3 Block Plan Areas

Figure 1: Block Plan Boundaries, represents the extent of the Settlement Area boundary expansion which, for the purposes of this report, has been further subdivided into the following sub-areas:

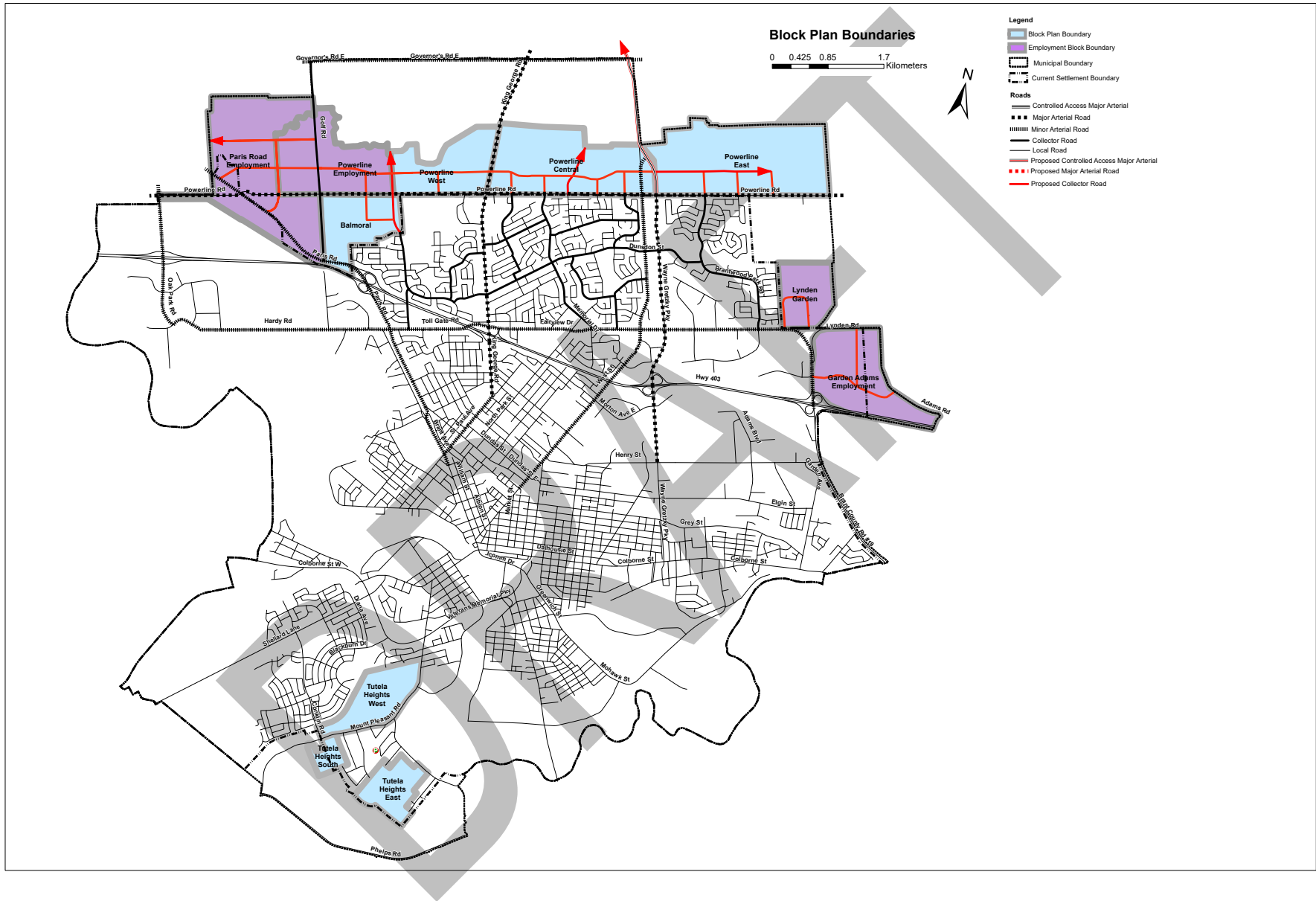
- North Expansion Lands;
- East Expansion Lands; and
- Tutela Heights.

Both the East Expansion Lands and Tutela Heights include lands previously within the Settlement Area boundary of the County of Brant and through the boundary adjustment became part of the City's Settlement Area. However, as these areas require municipal servicing infrastructure, they are included as part of the three expansion sub-areas for the purpose of this study. The three sub-areas were further divided into eleven Block Plan areas for future planning purposes. These Blocks include neighbourhood (i.e. residential, commercial and mixed use) Blocks and employment (i.e. manufacturing, warehousing and office) Blocks as follows:

- Paris Road Employment;
- Balmoral;
- Powerline Employment;
- Powerline West;
- Powerline Central;
- Powerline East;
- Lynden Garden;
- Garden Adams Employment;
- Tutela Heights West;
- Tutela Heights South; and
- Tutela Heights East.

The North Expansion Lands include the Paris Road Employment, Powerline Employment, Balmoral, Powerline West, Powerline Central and Powerline East. The East Expansion Lands include Lynden Garden and Garden Adams Employment. The Tutela Heights sub-area is made up of Tutela Heights South, Tutela Heights East and Tutela Heights West (see **Figure 1**).

Figure 1: Block Plan Boundaries



2 Proposed Land Uses within the Neighbourhood / Employment Blocks



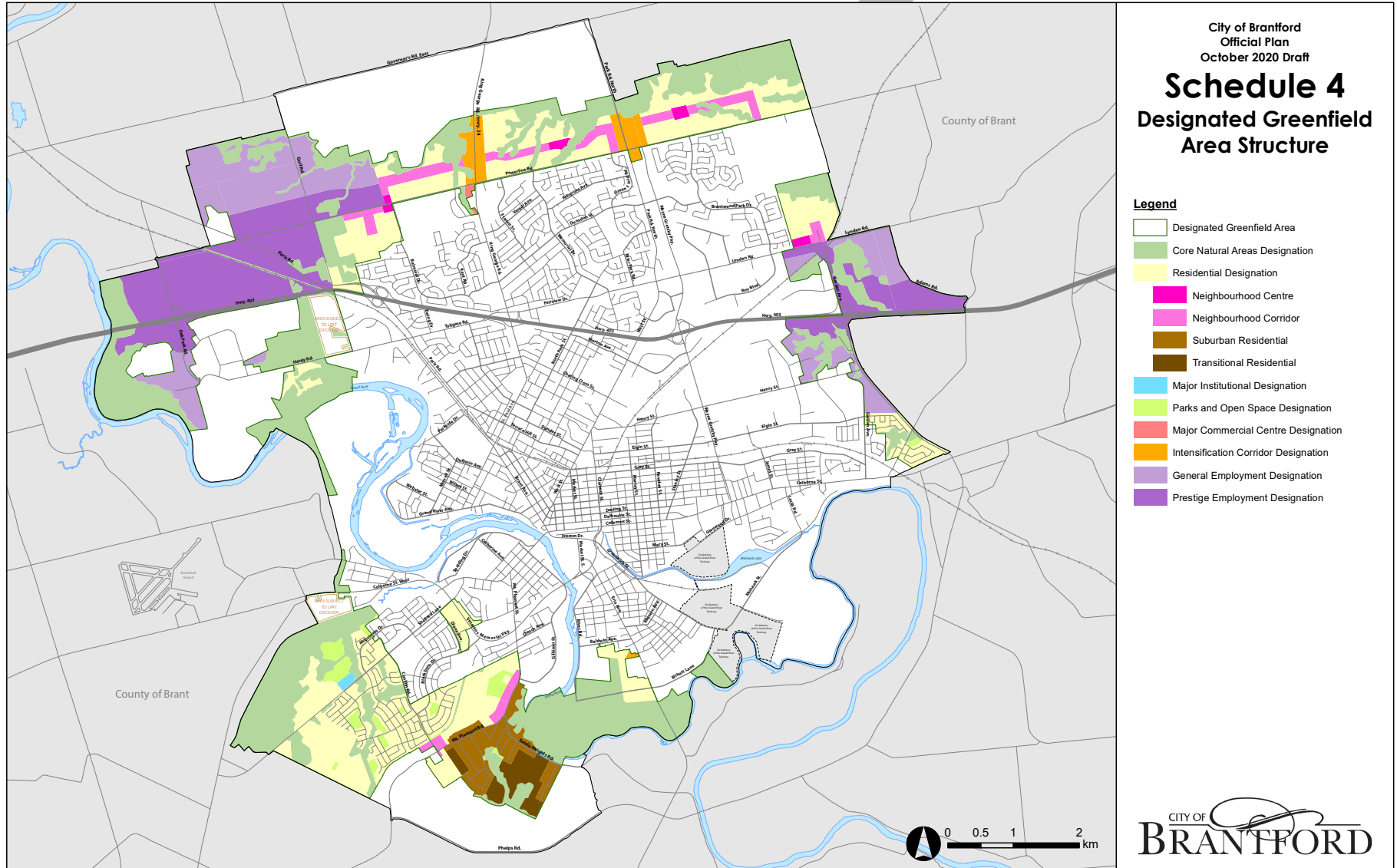
The proposed land use designations for the Settlement Area boundary expansion areas are illustrated in Schedule 4 of the Official Plan (see **Figure 2**). This Schedule is based on the preferred land use plan developed in the MCR Part 3 Report (see **Figures 11 and 12**).

Within the north expansion lands, the Powerline West, Powerline Central, Powerline East and Balmoral Blocks are comprised of Residential and Core Natural Areas Designations with Intensification Corridor Designation extending along King George Road and Wayne Gretzky Parkway. The Residential Designation is further comprised of a Neighbourhood Corridor along the future east-west collector road as well as a portion of Powerline Road and a Neighbourhood Centre generally within each Block at the intersection of two collector roads. The employment blocks: Paris Road Employment and Powerline Employment are made up of the Prestige Employment and General Employment Designations.

Within the east expansion lands, Lynden Garden Block is primarily designated Residential with a Neighbourhood Centre and Neighbourhood Corridor along Lynden Road. The Garden Adams Employment Block is comprised of the Prestige Employment Designation.

The three blocks in Tutela Heights contain a variety of categories within the Residential Designation, including Residential and Neighbourhood Corridor in Tutela Heights West, Residential and Transitional Residential in Tutela Heights South, and Transitional Residential in Tutela Heights East.

Figure 2: Designated Greenfield Area Structure



3 Overview of the Preferred Infrastructure Servicing Strategy



3.1 Preferred Water Servicing Strategy

**Note, the water, wastewater, and stormwater infrastructure sizing listed in this draft document is provisional and is being confirmed through the concurrent Master Servicing Plan Study. Infrastructure sizing will be finalized before issuance of the final Infrastructure Staging Report.*

3.1.1 North Expansion Lands Water Servicing

The preferred servicing strategy for the Settlement Area Boundary Expansion Lands along the northern boundary can be characterized by increasing elevations from east to west. As such, the North Expansion Lands can be categorized into lands to be serviced by Pressure District (PD) 2/3, and with higher elevations to be serviced by PD4. The general boundary can be characterized by an extension of Balmoral Drive, dividing the north neighbourhood lands to PD2/3 and north employment lands to PD4. The Pressure District boundaries are shown in **Figure 3**.

Water will be supplied to the north neighbourhood lands in PD2/3 through a primary trunk connection at King George Road. Additional watermain connections to the existing system in PD2/3 are recommended at Park Road and Brantwood Park Road. The existing King George Road watermain from Tollgate Road to the North Expansion Lands will need to be upsized to 750 mm to accommodate growth within the North Expansion Lands as well as intensification in the existing system. Storage in PD2/3 can be consolidated to a new 10.3 Million Liters (ML) Elevated Tower (ET) (pending final sizing to be confirmed), allowing the existing King George ET to be decommissioned and increasing operational flexibility in PD2/3. The preferred location for the ET is along King George Road; however, an Environmental Assessment (EA) is required to determine the exact location. PD2/3 will continue to be supplied by the Tollgate Pumping Station (PS) and Wayne Gretzky PS, which have sufficient capacity to support the intensification of existing lands and growth in the expansion lands. A new 600 mm trunk watermain will be required along the future collector road in the North Expansion Lands to provide east-west conveyance.

PD4 will continue to be supplied by the North West PS. The primary trunk connection for the north employment lands located in PD4 will be through a 600 mm trunk watermain extension at Oak Park Road, requiring both a Highway 403 and railway crossing. The new 600 mm trunk watermain will run north to the future east-west collector road and extend east along the collector road. This trunk watermain will extend from PD4 to PD2/3 with a combination of Pressure Reducing Valves (PRVs) and check valves to supplement operational flexibility and provide security of supply. An additional watermain connection to the existing system in PD4 will be made at Tollgate Road, extending along Paris Road to the north-south collector road trunk watermain. The Paris Road trunk watermain extension is intended to provide a secondary supply source within PD4. To support storage needs for PD4, a new 2.2 ML ET (pending final sizing to be confirmed) will be required. The preferred location for the ET is north of Highway 403; however, a separate EA will determine the exact location.

To service the future full buildout of the City's municipal boundary, trunk watermains will extend further north along King George Road and Park Road North and meet along an additional east-west collector road for a looped system north of Jones Creek. The proposed trunk watermains in the North Expansion Lands have been sized to accommodate the projected future buildout demand beyond 2051.

3.1.2 East Expansion Lands Water Servicing

Water servicing for the Settlement Area Boundary Expansion Lands along the eastern boundary are characterized by a general downward slope southwest to the northeast. 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.

To service the neighbourhood lands north of Lynden Road, a direct connection to the existing PD2/3 system on Lynden Road can be made. To service the employment lands, east of Garden Avenue a direct connection to PD2/3 can be made at either Lynden Road which requires a railway crossing, or at Sinclair Boulevard. Connections at both Lynden Road and Sinclair Boulevard are required to create a looped watermain system. East-west conveyance to the East Expansion Lands is limited by the trunk watermain on Fairview Drive/Lynden Road and upsizing of the Fairview Drive/Lynden Road trunk watermain is required to accommodate growth. Internal trunk watermains will be located along the proposed Collector Road within the east lands.

3.1.3 Tutela Heights Water Servicing

Water servicing for the Tutela Heights lands, within south Brantford, is characterized by increased elevations from the City's existing system. To integrate into the City's PD1 system, connections at both Mount Pleasant Street and Conklin Road will be required. The trunk watermain along Mount Pleasant Road and Conklin Road will be upsized in Tutela Heights' existing system to provide a better trunk loop. A new trunk watermain will extend along the future collector road (Conklin Road extension) and connect to Tutela Heights Road to service the expansion lands.

3.1.4 Water Projects

All water projects to service the Settlement Area Boundary Expansion Lands as discussed in Sections 3.1.1 to 3.1.3 are listed in **Table 1** and shown on **Figure 4**. All projects required to service the Expansion Lands are to be a direct developer responsibility and shall be paid by the respective developers. Projects are in no specific order.

Table 1: Area Water Projects

Project	Name	Description	Size
Watermain			
WM-01	King George Road Trunk Main Upgrades	Upsize existing 400 mm watermain from Tollgate Road to North Expansion Lands	750 mm
WM-02	Oak Park Road Trunk Main	New trunk main extending from Oak Park Road to Powerline Road	600 mm
WM-03	Powerline Road Trunk Main	New trunk main from Oak Park Road to north-south collector road	600 mm
WM-04	North-South Collector Road Trunk Main	New trunk main from Powerline Road to east-west collector road	600 mm
WM-05	North-South Collector Road Local Main	New local main from east-west collector road to North Expansion Lands Boundary	300 mm
WM-06	Paris Road Trunk Main	New trunk main from Tollgate Road to north-south collector road at Powerline Road	600 mm
WM-07	Powerline Road Distribution Mains	New distribution mains east of north-south collector road	300 mm
WM-08	Powerline Road Distribution Mains	New distribution mains east of north-south collector road	300 mm
WM-09	PD4 East-West Collector Road Trunk Main	New trunk main along east-west collector road from north-south collector road to PD4 boundary at Balmoral Drive Road extension	400 mm
WM-10	PD2/3 East-West Collector Road Trunk Main	New trunk main along east-west collector road in PD2/3 west of King George Road	400 mm
WM-11	PD2/3 East-West Collector Road Trunk Main	New trunk main along east-west- collector road in PD2/3 from east of King George Road to Ivanhoe Road extension	600 mm

WM-12	PD2/3 East-West Collector Road Trunk Main	New trunk main along east-west- collector road in PD2/3 from Ivanhoe Road extension to Park Road North	600 mm
WM-13	East-West Collector Road Trunk Main	New trunk main along east-west- collector road in PD2/3 east of Park Road North	400 mm
WM-14	Brantwood Park Road Trunk Main	New trunk main along Brantwood Park Road from Powerline Road to east-west collector road	400 mm
WM-15	Park Road Trunk Main	New trunk main from Powerline Road to east-west collector road	600 mm
WM-16	Powerline Road Local Main	New local main along Powerline Road from Brantwood Park Road to east-west collector road eastern limit	300 mm
WM-17	East-West Collector Road Local Main	New local main along east-west collector road from Powerline Road eastern limit to Brantwood Park Road	300 mm
WM-18	Lynden Road Trunk Upgrades	Upsize existing watermain from Brantwood Park Road to eastern limit	400 mm
WM-19	Lynden Road Distribution Main Extension	New distribution main extension from existing Lynden Road trunk main to East Expansion Lands limit	300 mm
WM-20	Residential Lands Loop	New distribution main loop in residential lands north of Lynden Road	300 mm
WM-21	East Lands Loop	New distribution mains along employment lands collector road and Sinclair Road	300 mm
WM-22	Mount Pleasant Road Upgrades	Upsize existing 200 mm watermain on Mount Pleasant Road from Beckett Drive new collector road	300 mm
WM-23	Conklin Road Upgrades	Upsize existing 200 mm watermain on Conklin Road from Blackburn Drive to Mount Pleasant Road	300 mm
WM-24	Tutela Heights Road Upgrades	Upsize existing 200 mm watermain on Tutela Heights from Mount Pleasant Road to Daven Road	300 mm

WM-25	Collector Road Distribution Main	New distribution main along collector road from Mount Pleasant Road to Phelps Road	300 mm
WM-26	Davern Road Distribution Main	New distribution main along Davern Road from Mount Pleasant Road southern limit to collector road	300 mm
Facilities			
ET-01	PD2/3 Elevated Tank	New ET along King George Road in North Expansion Lands	10.3 ML
ET-02	PD4 Elevated Tank	New ET along north-south collector road, north of Highway 403 in North Expansion Lands	2.2 ML
Valve Chambers			
PRV-01, PRV-02	East Expansion Lands Valve Chambers	Two new PRV chambers, one located along Lynden Road and one along Sinclair Road to create a new pressure district	N/A

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Figure 3: Water Pressure Districts

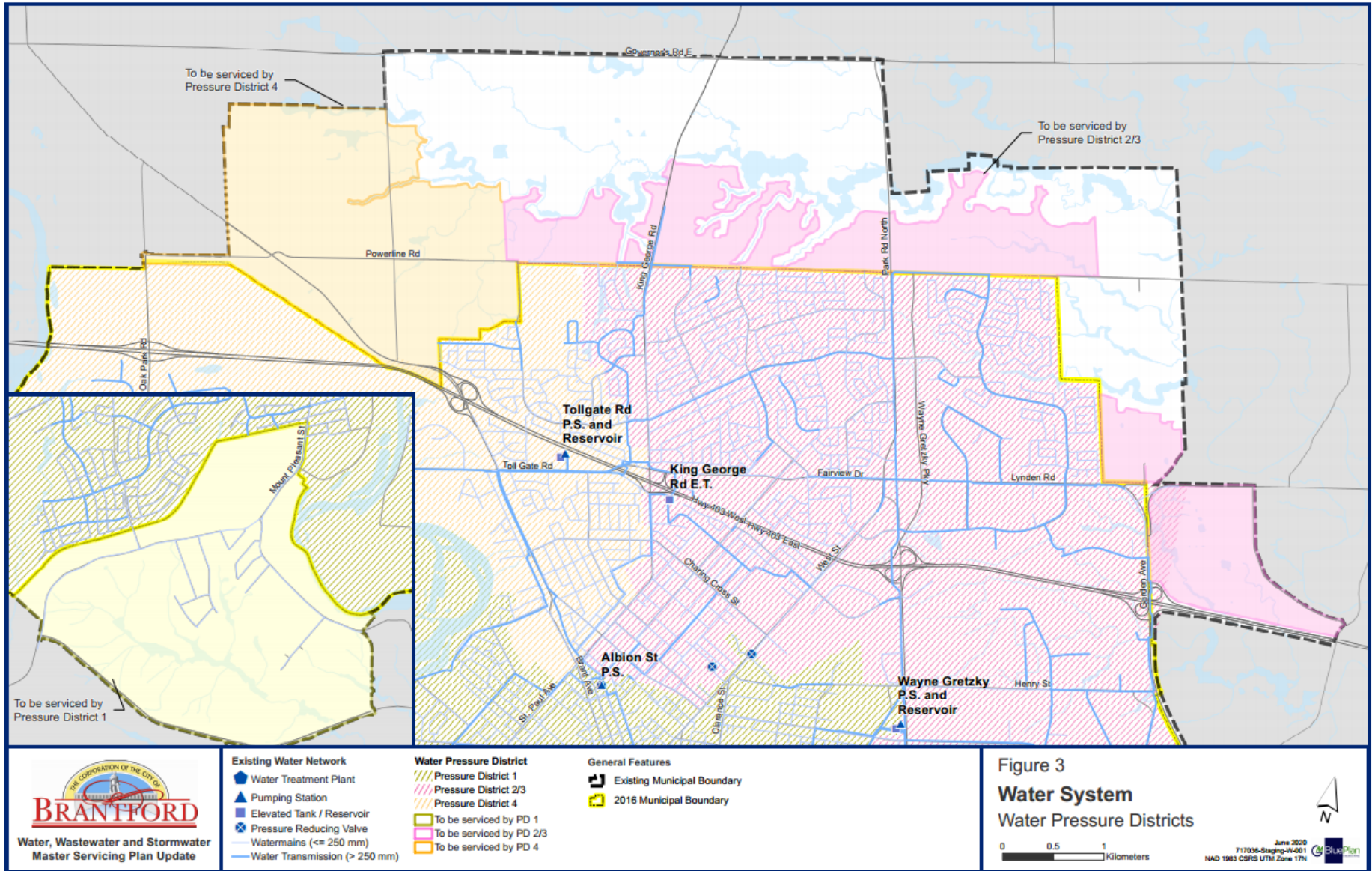
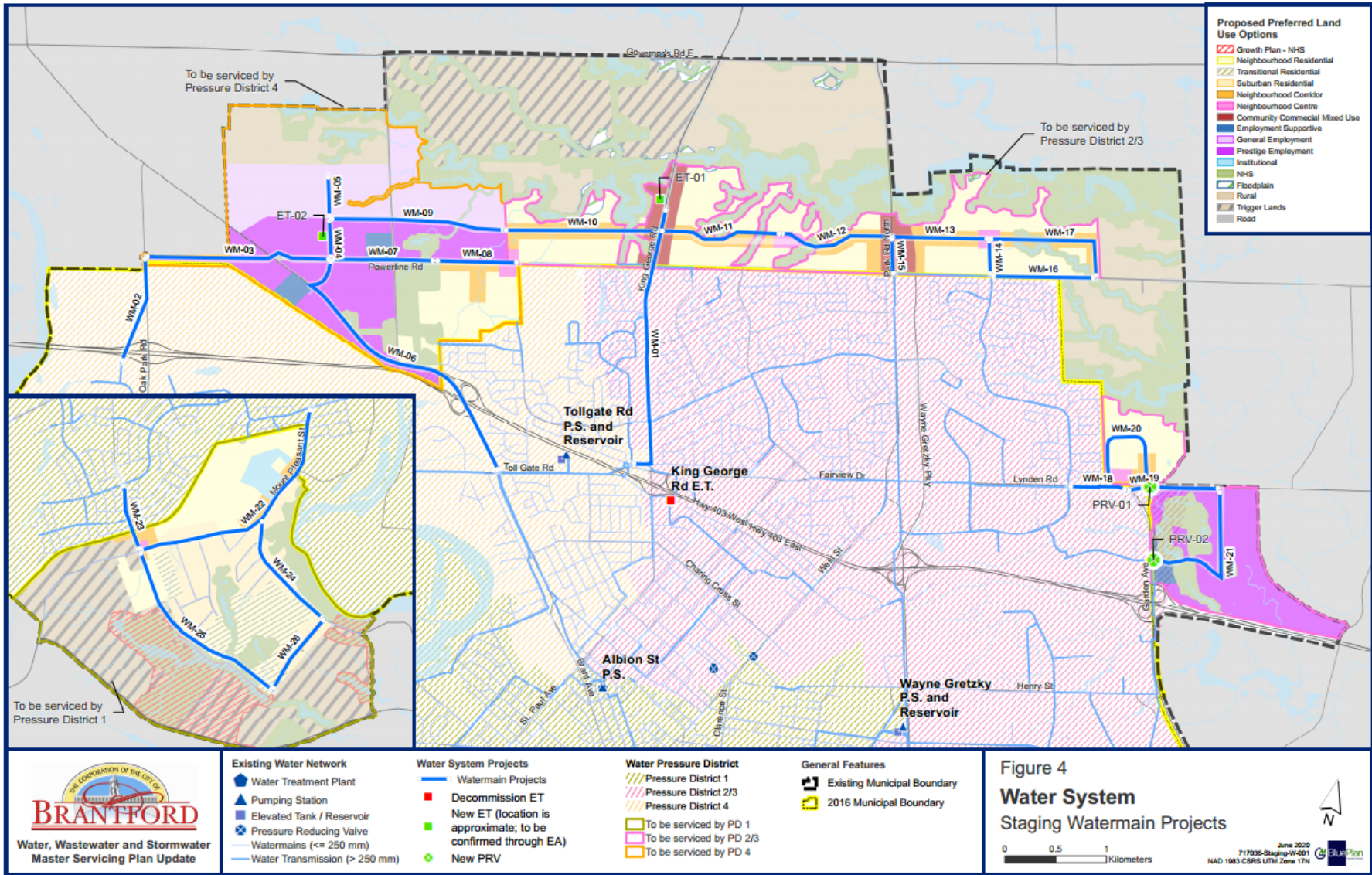


Figure 4: Staging Watermain Projects



3.2 Preferred Wastewater Servicing Strategy

3.2.1 North Expansion Lands Wastewater Servicing

The preferred wastewater servicing strategy for the expansion lands along the northern boundary can be characterized by splitting the flows between the two existing trunk sewers, Coulbeck Road and Oak Park Road as shown in **Figure 5**. The Coulbeck Road trunk sewer will be extended north and west along the future east-west collector road, with the objective of maximizing the total area that can be serviced by gravity. Growth areas approximately 1km west of Park Road North can be serviced by gravity by the Coulbeck Road trunk sewer extension. The east-west trunk sewer along the collector road will be oversized to service the future full buildout of the City's municipal boundary.

Expansion lands east of Coulbeck Road will drain to a new sewage pumping station (SPS) which will be pumped to the Coulbeck Road trunk sewer. Lands between King George Road and Park Road North, south of Jones Creek, will drain to a centralized North SPS and be pumped east to the east-west collector's road trunk sewer, draining east to Coulbeck Road.

The full buildout of the City's municipal boundary between King George Road and Park Road, North, north of Jones Creek will require 3 new SPS's that will be pumped to either the North SPS or the east-west collector road trunk sewer at Park Road North. The new North SPS and forcemain will be sized for the North Expansion Lands south of Jones Creek, with spatial requirements for a future twin forcemain and capacity upgrades to service the eventual inclusion of lands north of Jones Creek in a future Settlement Area boundary expansion. To service the full buildout of the City's municipal boundary, the capacity at the North SPS will be increased and the forcemain twin will be completed.

The Oak Park Road trunk sewer will be extended northeast, with the objective of maximizing the total area that can be serviced by gravity. The trunk sewer will extend north to Powerline Road and east to Golf Road, receiving all flows west of King George Road. Additionally, two new SPS will be required to service the north expansion lands west of King George Road. A centralized Northwest SPS will be located along the future east-west collector road and the forcemain will outlet to the trunk sewer along a future north-south collector road. The second SPS will be located northeast of Golf Road and will also outlet to the trunk sewer along another future north-south collector road.

A small portion X L/s (pending final sizing to be confirmed) of the neighbourhood lands south of Powerline Road and east of Golf Road can be serviced by gravity to the existing sewer network and Woodlawn pumping station, tying into the existing system at either Allensgate Road or Myrtleville Drive.

3.2.2 East Expansion Lands Wastewater Servicing

The expansion lands along the eastern boundary will be serviced by connecting to the existing system along Lynden Road. Flows from the neighbourhood lands north of Lynden Road will travel by gravity southeast to a new SPS in the east employment lands. A centralized SPS will collect all flows from the growth lands. The forcemain from the SPS will be conveyed to the Lynden Road

sewer. Upgrades will be required in the existing Lynden Road sewer to accommodate all East flows.

3.2.3 Tutela Heights Wastewater Servicing

The wastewater servicing strategy for Tutela Heights can be separated into two service areas: lands north of Mount Pleasant Road and lands south of Mount Pleasant Road. 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. An upgrade to the existing gravity sewer on Mount Pleasant Road will be needed to tie into the City’s southwest trunk sewer. These lands can be serviced via gravity as soon as the trunk sewer connection to the existing system is constructed.

Lands south of Mount Pleasant Road generally slope to the south and west, away from the City. Flows from these lands will be collected via a centralized pumping station and conveyed to the new trunk sewer on Mount Pleasant Road.

3.2.4 Wastewater Projects

All wastewater projects to service the Settlement Area Boundary Expansion Lands as discussed in Sections 3.2.1 to 3.2.3 are listed in **Table 2** and shown on **Figure 5**. All projects required to service the Expansion Lands are to be a direct developer responsibility and shall be paid by the respective developers. Projects are in no specific order.

Table 2: Area Wastewater Projects

Project	Name	Description	Size
Sewage Pumping Station			
SPS-01	Northwest-1 SPS	New SPS located northeast of Golf Road. Flows will be pumped to the trunk sewer along north-south collector road, draining to Oak Park Road.	15 L/s
SPS-02	Northwest-2 SPS	New SPS located east of Golf Road on east-west collector’s road. Flows will be pumped to the trunk sewer along the north-south collector road, draining to Oak Park Road.	107 L/s
SPS-03	North SPS	New SPS located along the east-west collector’s road between King George Road and Park Road, south of Jones Creek.	99 L/s
SPS-04	Northeast SPS	New SPS located along Powerline Road, east of Coulbeck Road. Flows will be pumped to Coulbeck Road trunk sewer.	25 L/s

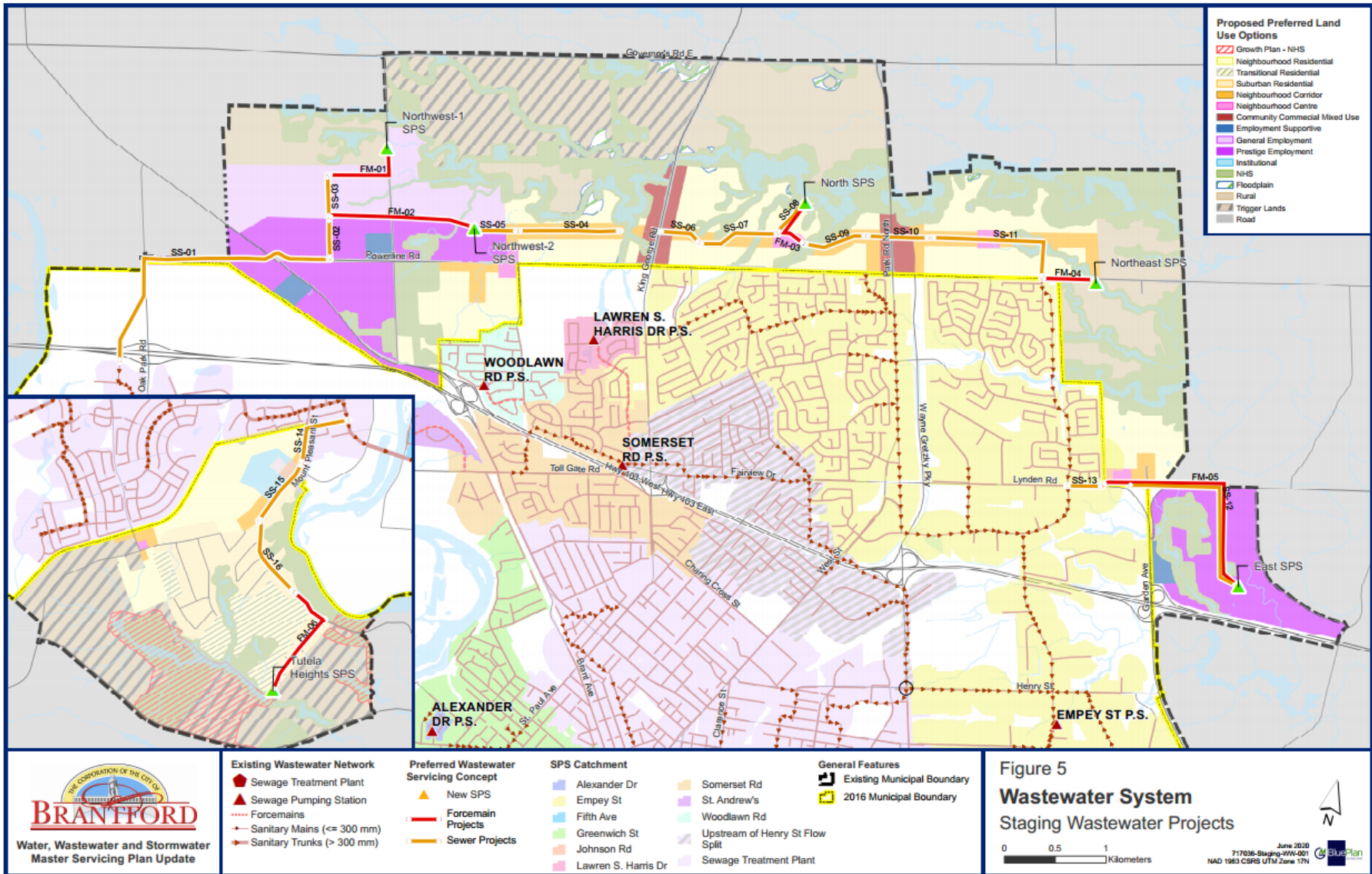
SPS-05	East SPS	New SPS located in southeast East Expansion Lands along collector road. Flows will be pumped to trunk sewer on Lynden Road	77 L/s
SPS-06	Tutela Heights SPS	New SPS located in south Tutela Heights along collector road. Flows to be pumped to trunk sewer on Tutela Heights Road, extending to Mount Pleasant Road trunk sewer.	45 L/s
Forcemain			
FM-01	Northwest-1 SPS FM	New forcemain extending from Northwest-1 SPS to north-south collector road trunk sewer.	150 mm
FM-02	Northwest-2 SPS FM	New forcemain extending from Northwest-2 SPS to north-south collector road trunk sewer.	350 mm
FM-03	North SPS FM	New forcemain from North SPS to east-west collector road trunk sewer.	350 mm
FM-04	Northeast SPS FM	New forcemain from Northeast SPS to Coulbeck Road trunk sewer	200 mm
FM-05	East SPS FM	New forcemain extending from East SPS to Lynden Road trunk sewer	300 mm
FM-06	Tutela Heights SPS FM	New forcemain extending from Tutela Heights SPS to Tutela Heights Road trunk sewer	250 mm
SS-01	Oak Park Trunk Sewer	New trunk sewer extending from north-south collector's road to Oak Park Road to service North Expansion Lands west of King George	750 mm
SS-02	North-South Collector's Road Trunk Sewer	New trunk sewer extending along north-south collector's road from east-west collector's road to Powerline Road	750 mm
SS-03	North-South Collector's Road Trunk Sewer	New trunk sewer extending along north-south collector's road from northern east-west collector's road to north-south collector's road to service lands north of east-west collector's road	525 mm
SS-04	East-West Collector's Road Trunk Sewer	New trunk sewer extending along east-west collector's road east of Northwest-2 SPS and west of King George Road	525 mm

SS-05	East-West Collector's Road Trunk Sewer	New trunk sewer extending along east-west collector's road east of Northwest-2 SPS and west of King George Road	525 mm
SS-06	East-West Collector's Road Trunk Sewer (East of King George Road)	New trunk sewer extending along east-west collector's road east of King George Road	525 mm
SS-07	East-West Collector's Road Trunk Sewer (East of King George Road)	New trunk sewer extending along east-west collector's road east of King George Road and west of North SPS	600 mm
SS-08	East-West Collector's Road Trunk Sewer (East of King George Road)	New trunk sewer extending along east-west collector's road east of King George Road extending to North SPS	675 mm
SS-09	East-West Collector's Road Trunk Sewer (East of North SPS)	New trunk sewer extending from North SPS forcemain to west of Park Road North	675 mm
SS-10	East-West Collector's Road Trunk Sewer (East of North SPS)	New trunk sewer extending from west of Park Road North to east of Wayne Gretzky Parkway	750 mm
SS-11	East-West Collector's Road Trunk Sewer (East of North SPS)	New trunk sewer extending from east of Wayne Gretzky Parkway to Coulbeck Road trunk sewer	900 mm
SS-12	East Expansion Lands Trunk Sewer	New trunk sewer from Lynden Road to East SPS along East collector's road	450 mm
SS-13	Lynden Road Trunk Sewer Upgrades	Upgrades along Lynden Road to Brantwood Park Road trunk sewer	450 mm

SS-14	Mount Pleasant Road Trunk Sewer Upgrades	Upgrades to trunk sewer along Mount Pleasant Road	525 mm
SS-15	Mount Pleasant Road Trunk sewer	New trunk sewers along Mount Pleasant Road from Tutela Heights Road to existing trunk sewer.	525 mm
SS-16	Tutela Heights Road Trunk Sewer	New trunk sewers along Tutela Heights Road from forcemain to Mount Pleasant Road	450 mm

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Figure 5: Staging Wastewater Projects



3.3 Preferred Stormwater Servicing Strategy

Historically, a “traditional approach” to stormwater management consisting predominantly of conveyance to stormwater ponds was identified as the preferred stormwater servicing approach. As development within southern Ontario and the Greater Golden Horseshoe has progressed, the industry has shifted its stormwater management philosophy to include sustainable stormwater practices. The “traditional approach” to stormwater management was designed to provide relief to the receiving bodies of water, limiting the impacts of development; however, traditional stormwater management practices overlooked the impacts of infiltration on groundwater recharge and ultimately the water balance that exists in a pre-development scenario. The *Low Impact Development Stormwater Management Planning and Design Guide*² recommends a “treatment-train” approach to stormwater management in which multiple stormwater management technologies and strategies, such as Low Impact Developments (ex. Infiltration trench, bioretention, vegetative swales, etc.), ponds, and oil-grit separators are implemented in series or parallel to better simulate the natural environment (pre-development scenario) following development. A detailed design level of effort is required to confirm the viability of project specific Low Impact Development strategies. As such, the recommended projects in **Table 5** consist only of stormwater management ponds. Upon initiation of the design of specific stormwater servicing projects, site-specific Low Impact Development strategies should be explored to reduce required pond volumes and better simulate the pre-development environment.

3.3.1 Stormwater Projects

Stormwater projects are listed in **Table 3** and shown on **Figure 6**, in no specific order. **Table 3** provides a summary description of all stormwater service areas and projects as described in **Section 3.3**. As previously discussed, Low Impact Development strategies are not currently included in the listed projects, as the complexity required to adequately select site/project-specific Low Impact Development Strategies is outside of the scope of this report.

Table 3: Area Stormwater Projects

Project	Service Area	Description	Size (m ³)
Pond 1	Paris Road Employment	The Paris Road Employment Area subcatchment consists of approximately 109 ha of Prestige Employment and General Employment lands along the northern and western boundary of the North Expansion Lands.	67,000
Pond 2			62,000

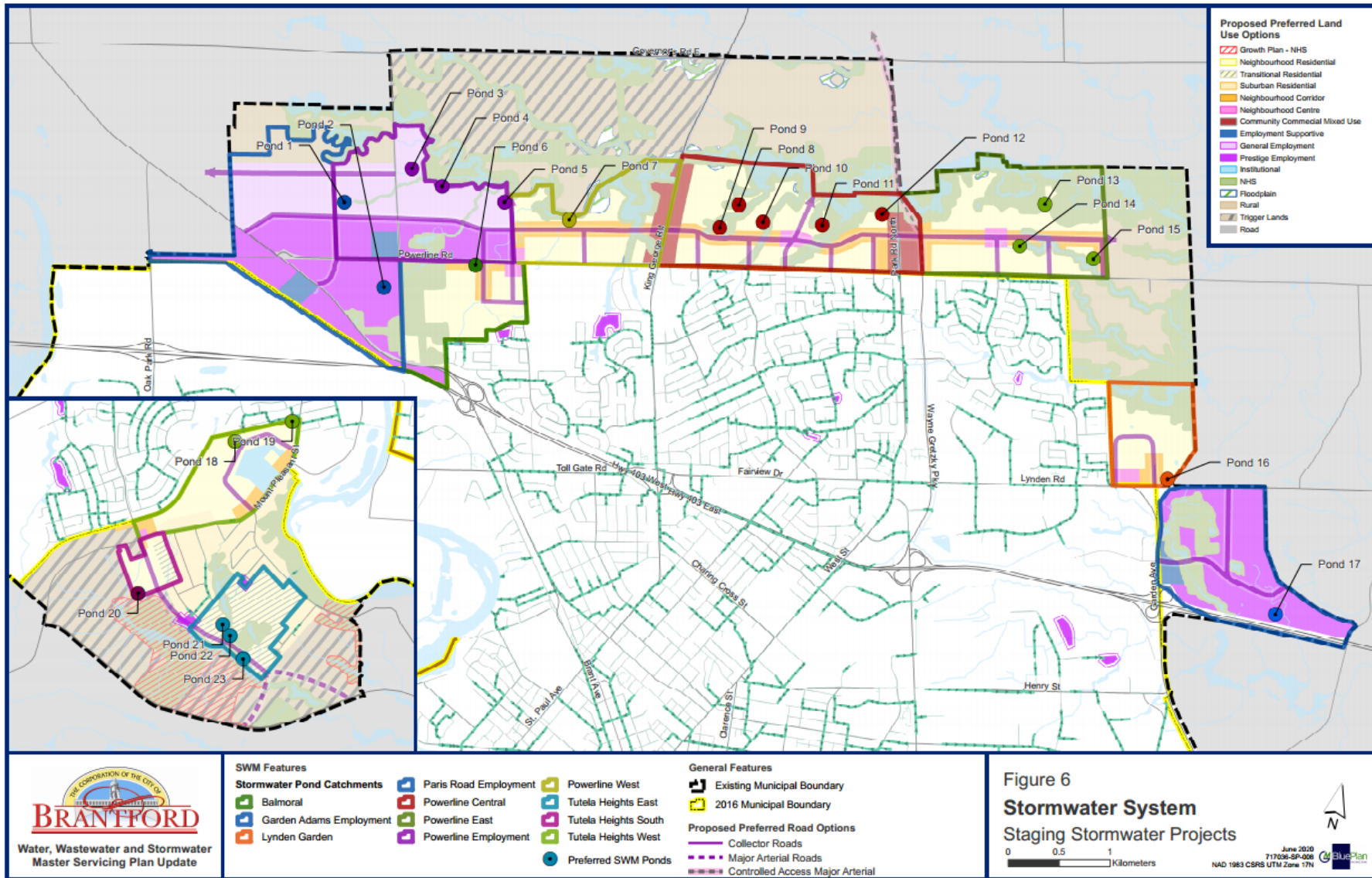
² Credit Valley Conservation & Toronto and Region Conservation Authority. (2010). *Low Impact Development Stormwater Management Planning and Design Guide*. Retrieved from: <https://sustainabletechnologies.ca/home/urban-runoff-green-infrastructure/low-impact-development/low-impact-development-stormwater-management-planning-and-design-guide/>

Pond 3	Powerline Employment	The Powerline Employment Area subcatchment consists of Prestige Employment and General Employment lands along the northern and western boundary of the North Expansion Lands.	16,000
Pond 4			40,000
Pond 5			25,000
Pond 6	Balmoral	The Balmoral subcatchment consists of approximately 60 ha of predominantly Residential lands, including portions of the Neighbourhood Corridor lands and Neighbourhood Centre lands south of Powerline Road.	19,000
Pond 7	Powerline West	The Powerline West subcatchment consists of predominantly Residential and Neighbourhood Corridor lands north of Powerline Road, as well as Intensification Corridor along King George Road.	14,000
Pond 8	Powerline Central	The Powerline Central subcatchment consists of Residential and Neighbourhood Corridor, Neighbourhood Centre, and Intensification Corridor lands north of Powerline Road and west of Wayne Gretzky Parkway.	16,000
Pond 9			10,000
Pond 10			6,000
Pond 11			7,000
Pond 12			13,000
Pond 13	Powerline East	The Powerline East subcatchment consists of Residential, Neighbourhood Corridor and Neighbourhood Centre lands north of Powerline Road and east of Wayne Gretzky Parkway.	13,000
Pond 14			22,000
Pond 15			5,000
Pond 16	Lynden Garden	The Lynden-Garden Residential subcatchment consists of Residential, Neighbourhood Corridor, and Neighbourhood Centre lands north of the intersection of Lynden Road and Garden Avenue.	15,000
Pond 17	Garden Adams Employment	The Garden Adams Employment subcatchment consists of Prestige Employment lands northeast of the intersection of Highway 403 and Garden Avenue.	72,000

Pond 18	Tutela Heights West	The Tutela Heights West subcatchment consists of Residential, Suburban Residential, Neighbourhood Corridor, and Institutional lands north of Mount Pleasant Road.	17,000
Pond 19			9,000
Pond 20	Tutela Heights South	The Tutela Heights South subcatchment consists of Residential, and Transitional Residential lands south of Mount Pleasant Road and north of Phelps Road.	4,000
Pond 21	Tutela Heights East	The Tutela Heights East subcatchment consists of Suburban Residential and Transitional Residential lands south of Mount Pleasant Road and north of Phelps Road.	12,000
Pond 22			19,000
Pond 23			6,000

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Figure 6: Staging Stormwater Projects



3.4 Preferred Transportation Network

The primary objective of the transportation network is to allow for the safe and efficient movement of residents, employees, visitors, students and goods in a system that supports all modes of travel, including walking, cycling, public transit, and vehicles (including trucks). This is accomplished through the thoughtful design and provision of appropriate facilities for pedestrians, cyclists, vehicles, and transit with good connectivity to community destinations within Brantford. A hierarchy of streets is proposed to assist in directing traffic flows quickly, efficiently, and safely from local roads to collector roads and arterial roads.

Active transportation is encouraged through the implementation of new connections and infrastructure such as sidewalks, bicycle lanes, and off-street boulevard trails (including multi-use paths and trails). As well, an expansion of the existing transit service will be required to serve the new growth areas.

The following sections provide an overview of the transportation plan elements required to support the North Expansion, East Expansion and Tutela Heights areas.

3.4.1 Road Infrastructure

Consistent with the objectives set out above, the plan for the North Expansion, East Expansion and Tutela Heights areas consists of arterial, collector, and local roads. Arterial and collector roads within the Plan have generally been proposed to align with the City's Design and Construction Manual for Linear Municipal Infrastructure pertaining to roads and transportation.

Collector roads have been located to optimize intersection spacing along the arterial roads. In this regard, the plan has been developed using a minimum arterial intersection spacing of 240 metres between signalized intersections, and an optimum intersection spacing of 300 - 500 metres between intersections. The minimum signalized intersection spacing distance is consistent with the City of Brantford's linear design guidelines.

Adjustments to the collector and local road street pattern in the plan area have been made to avoid watercourses or environmental features. Where possible and appropriate, new collector roads are generally proposed to align with existing streets where planned development is adjacent to existing developed areas. The precise alignment of collector and arterial roads will be confirmed through Municipal Class EA studies and technical studies (Traffic Impact Studies) submitted in support of development applications.

The Plan relies on several existing north-south arterial roads to receive development related traffic growth. These arterial roads (existing and future) include Golf Road, Paris Road, King George Road, Wayne Gretzky Parkway, and Garden Avenue. The key east-west arterial is Powerline Road. These roads will need to be enhanced (urbanization, widening, active mode accommodation, improved intersection control and design) to align with their increased role in the network.

A two-tier hierarchy of collector roads consistent with City of Brantford design guidelines has been applied to the proposed network. Major collector roads are envisioned to provide significant connectivity through different parts of the Plan and provide connections between key destinations such as retail areas, schools, external trails, and arterial roads. Due to the level of use, major collector roads are recommended to have in-boulevard bike paths or multi-use trails to accommodate cyclists and are candidates for use by transit. An east-west major collector road is planned north of and parallel to Powerline Road.

Minor collector roads are roads with less connectivity through the Plan and may not require the same level of cyclist and pedestrian accommodation (i.e. cycling can be accommodated on-street). Several of the north-south roadways connecting the east-west collector to Powerline Road are intended as minor collector roads. The remaining roads within the Plan consist of local streets, the alignment of which is subject to site specific development applications.

The Plan illustrates a preliminary road network within the North Expansion, East Expansion and Tutela Heights areas. The preliminary road hierarchy is illustrated in **Figures 7** and **Figure 8**.

Each road classification in the Plan area will be required to meet minimum design standards for their specific role and function. At this level of analysis, the most significant element to protect as part of the plan is an appropriate Right of Way (ROW) for each road. Space within the ROW is allocated to each transportation mode (auto, transit, active transportation), utilities, and design element of the roadway. **Table 4** summarizes the preliminary right-of-way widths to be protected for the proposed network on the Plan.

Table 4: Proposed Right-of-Way Widths

Facility Type	Preferred ROW	Proposed ROW
Major Arterial	36-40m	40m
Minor Arterial	30-36m	36m
Major Collector	26m to 30.5 m	30m
Minor Collector	20 to 24.5 m	20-24m
Local	15m to 18.5 m	18.5m
Note: Arterial and Collector right-of-way widths are to be determined through MCEA and Development Application processes.		

The appropriate intersection control for arterial road intersections with other arterial roads and collector roads will be determined through future EA process and/or Draft Plan stage. Intersection control for collector road intersections with other collector roads and local roads will be determined

through the draft plan of subdivision process for individual sites. Roundabouts within each draft plan of subdivision will be considered at key locations using appropriate feasibility screening criteria and through an intersection control study as appropriate.

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Figure 7: North Expansion Area: Future Road Network

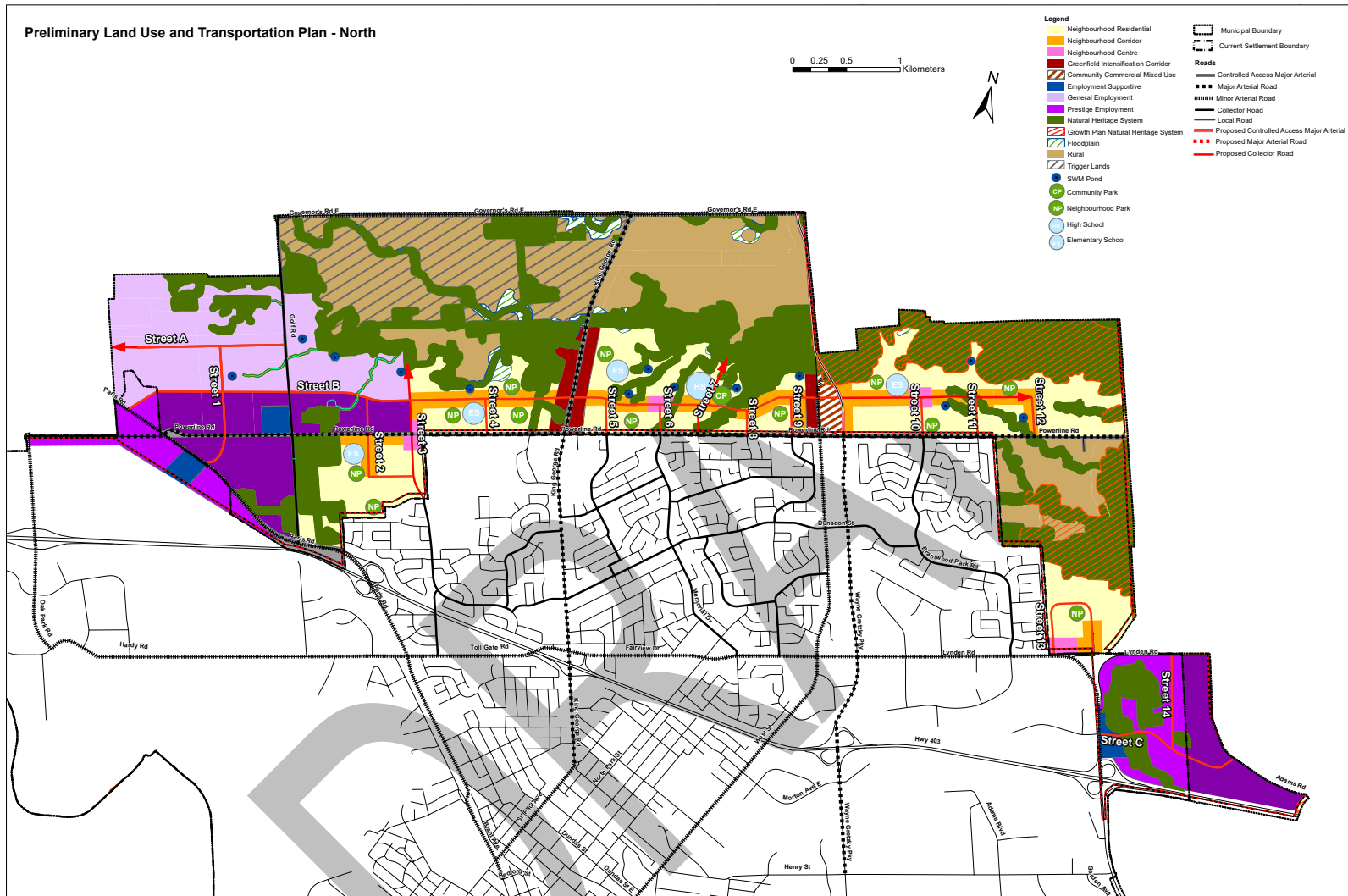
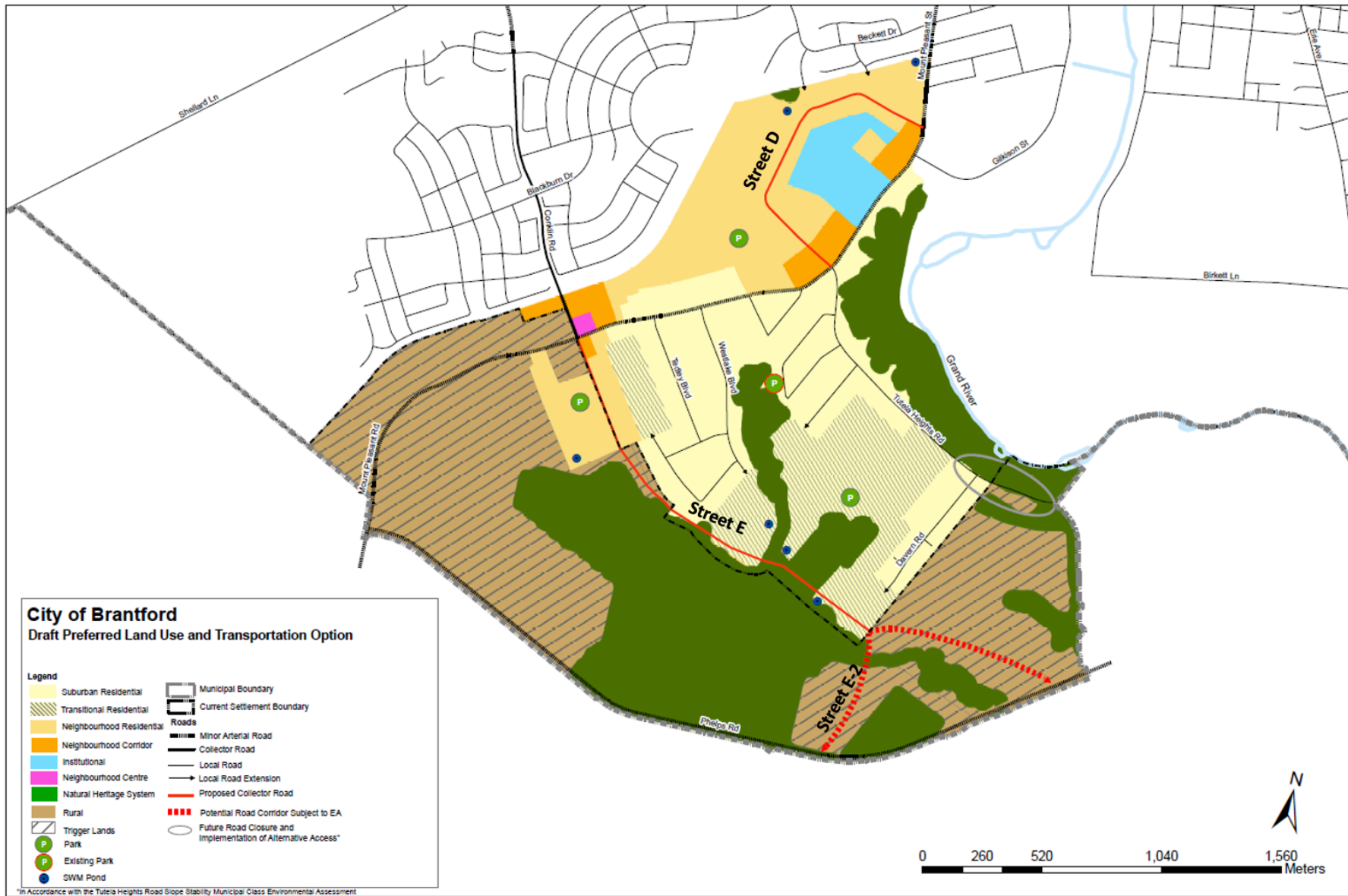


Figure 8: Tutela Heights Expansion Area: Future Road Network



3.4.2 Active Transportation

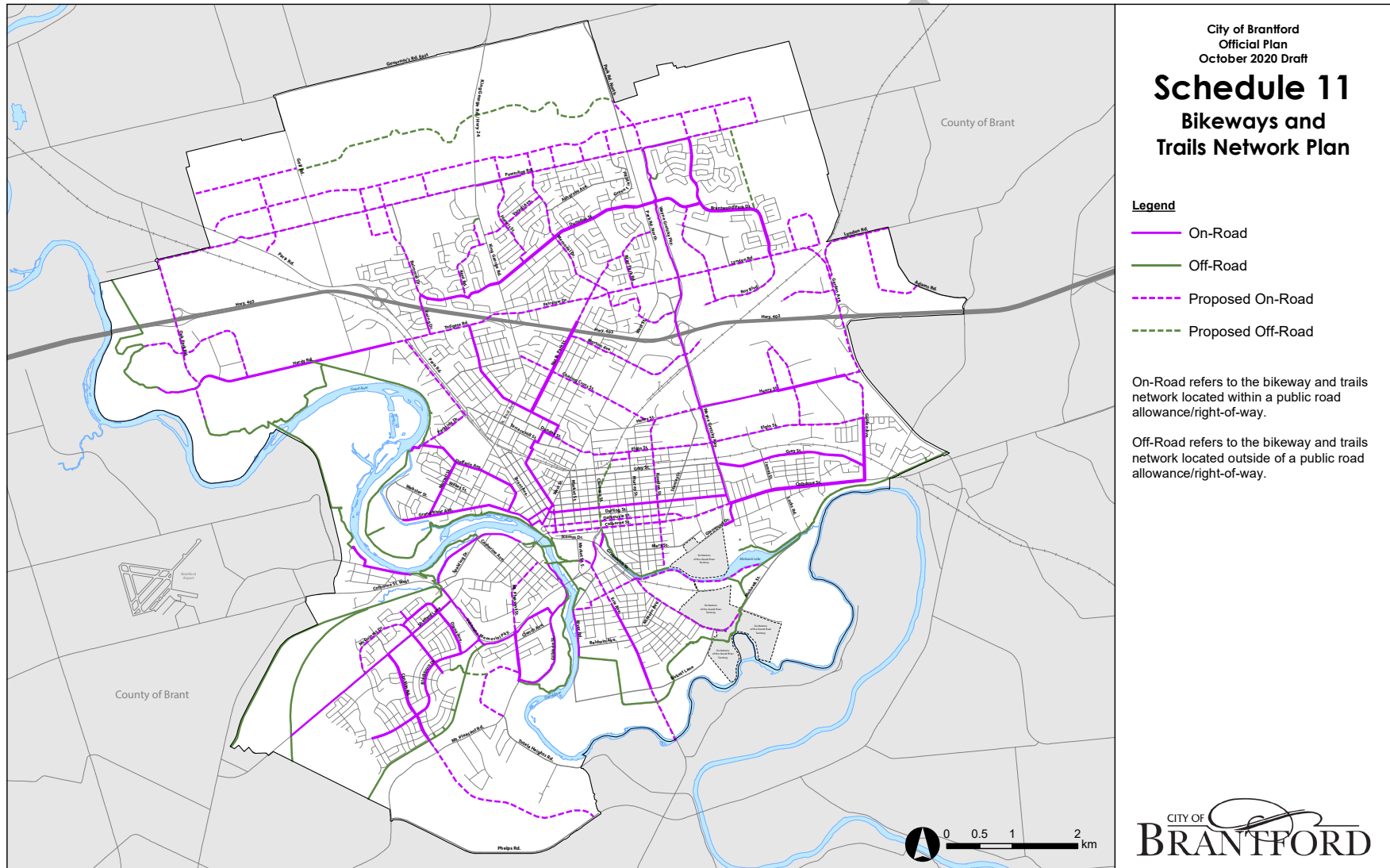
The proposed plan for Active Transportation for the City, as seen in **Figure 9** (Draft Schedule 11 from the Official Plan) shows both the existing and future active transportation routes in the City. This is consistent with the vision set out in the City of Brantford's 2020 Transportation Master Plan (TMP). The TMP identifies on-road and off-road cycling provisions.

Major collector and arterial roads within the Plan will provide important connections for cyclists between different destinations (i.e. schools) and existing/planned trails within the Plan area. As such, major collector roads will be allocated increased right-of-way widths as these streets are either shown to have active transportation (i.e. cycling) accommodation or will be connectors between active transportation routes.

The design, cross-section, and right-of-way requirements for major collector roads and arterial roads of these active transportation facilities will be confirmed through future EA process and Draft Plan stage. It is expected that this process will take into consideration the outcome of the TMP, which is expected to be finalized in late 2020.

With respect to sidewalks, it is envisioned that all collector and arterial roads within the Plan will have sidewalks on one or both sides of the road, depending on the provision of a Multi-Use Path. Local roads will have sidewalks on both sides of the road. The locations of sidewalks on local roads will be reviewed in detail at the draft plan of subdivision stage.

Figure 9: Active Transportation Network



3.4.3 Transit Service

Brantford's conventional transit service, Brantford Transit (BT), consists of 9 daytime and 5 evening and Sunday fixed routes including peak hour services. All of the routes operate radially from the Brantford Transit Terminal located in the downtown. Service does not currently extend north of Powerline Road, east of Garden Avenue, or into Tutela Heights (i.e. south and west of Mount Pleasant Road).

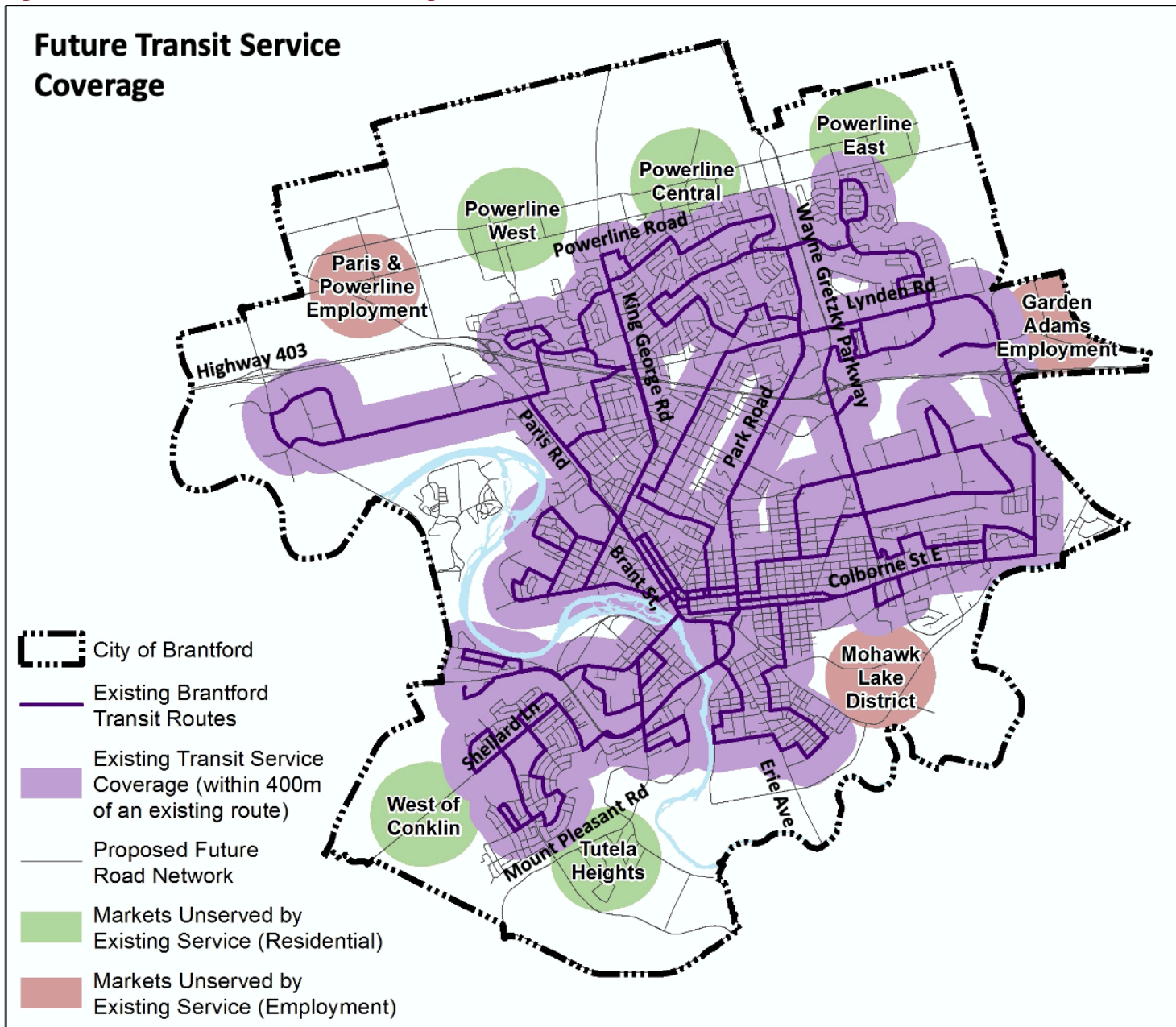
New transit service is required to serve the growth area north of Powerline Road. This could be through extension on several existing routes or the addition of a new route that serves north Brantford specifically. This new service would ideally circulate along Powerline Road and along the new east-west collector road extending the service into both the new employment and new residential markets. A future hub north of Highway 403 in the area of Wayne Gretzky Parkway/Fairview Drive would expand transit service opportunities into the east expansion community, as well as into the industrial growth area east of Garden Avenue, providing employees in the industrial area an alternative transportation method to driving to work.

Likewise, in South Brantford the transportation system would benefit from the expansion of transit service into the Tutela Heights area, either by extending existing service or introducing a new route to serve the Mount Pleasant corridor.

A detailed transit plan for the expansion areas has not yet been developed by Brantford Transit. It is expected that transit service will ultimately be offered in a similar route system operating on future collector roads with good through connectivity and arterial roads within the Plan areas. As such, the Plan proposes a network of collector roads that will allow the flexibility for Brantford Transit in operating a route to serve both Plan areas that can maximize area ridership. **Figure 10** provides an illustration of the future system coverage required to serve the growth areas.

The location and routing of transit service within the North Expansion area, East Expansion area and the Tutela Heights will be confirmed by Brantford Transit as part of future works. Site specific requirements such as stop locations, bus pads and transit shelters will be confirmed through the draft plan of subdivision process for individual sites as they proceed.

Figure 10: Future Transit Service Coverage



3.5 Community Facilities

A number of new community facilities are proposed within the Northern Expansion area, Eastern Expansion area and Tutela Heights based on the preferred land use plan prepared as part of the MCR Part 3 Report (March 2019) (see **Figures 11** and **12**). These community facilities include parks and schools. In addition, other community services such as local retail, grocery stores, personal services, and other community facilities required to support the achievement of complete communities will be developed within the Neighbourhood Corridors and Neighbourhoods Centres. Land use principles such as walkability, neighbourhoods with a sense of place, a variety of housing choices and employment opportunities are addressed in the Official Plan to ensure appropriate distribution of these community services and facilities and achievement of complete communities.

The section focuses on the community facilities required to support the North Expansion, East Expansion and Tutela Heights areas.

Within the North Expansion lands, 11 proposed neighbourhood parks are distributed through this area to generally achieve a 5-minute walk to a park (see **Figure 11**). The proposed neighbourhood parks are approximately 1.5 hectares in size and are intended generally to include a playground and a sports field.

One centrally located community park is proposed within the Powerline Central Block next to the only proposed secondary school site. The community park is approximately 4 hectares and situated north of the proposed east-west collector road. It is proposed to include a number of sports fields and a playground. It is also in close proximity to the Natural Heritage System and proposed trails providing opportunities for connections to the extensive active transportation network and open space system.

Four elementary school sites are situated along the proposed east-west collector (see **Figure 11**). The schools are in the Balmoral, Powerline West, Powerline Central and Powerline East neighbourhoods. The elementary schools are located adjacent to a neighbourhood park and fronting onto a collector road.

The Lynden Garden Block within the East Expansion lands contains one proposed neighbourhood park central to the Block (see **Figure 11**). There is not an anticipated need for an additional school site as students can likely be accommodated by existing schools located nearby.

Within Tutela Heights, three new neighbourhood parks are proposed with one located in each of the Tutela Heights Blocks (see **Figure 12**). There is not an anticipated need for an additional school in Tutela Heights as students can likely be accommodated by existing schools located nearby.

The remainder of required community facilities such as libraries will generally be located within the Neighbourhood Corridor and Neighbourhood Centre areas.

Figure 11: North Preferred Land Use Option

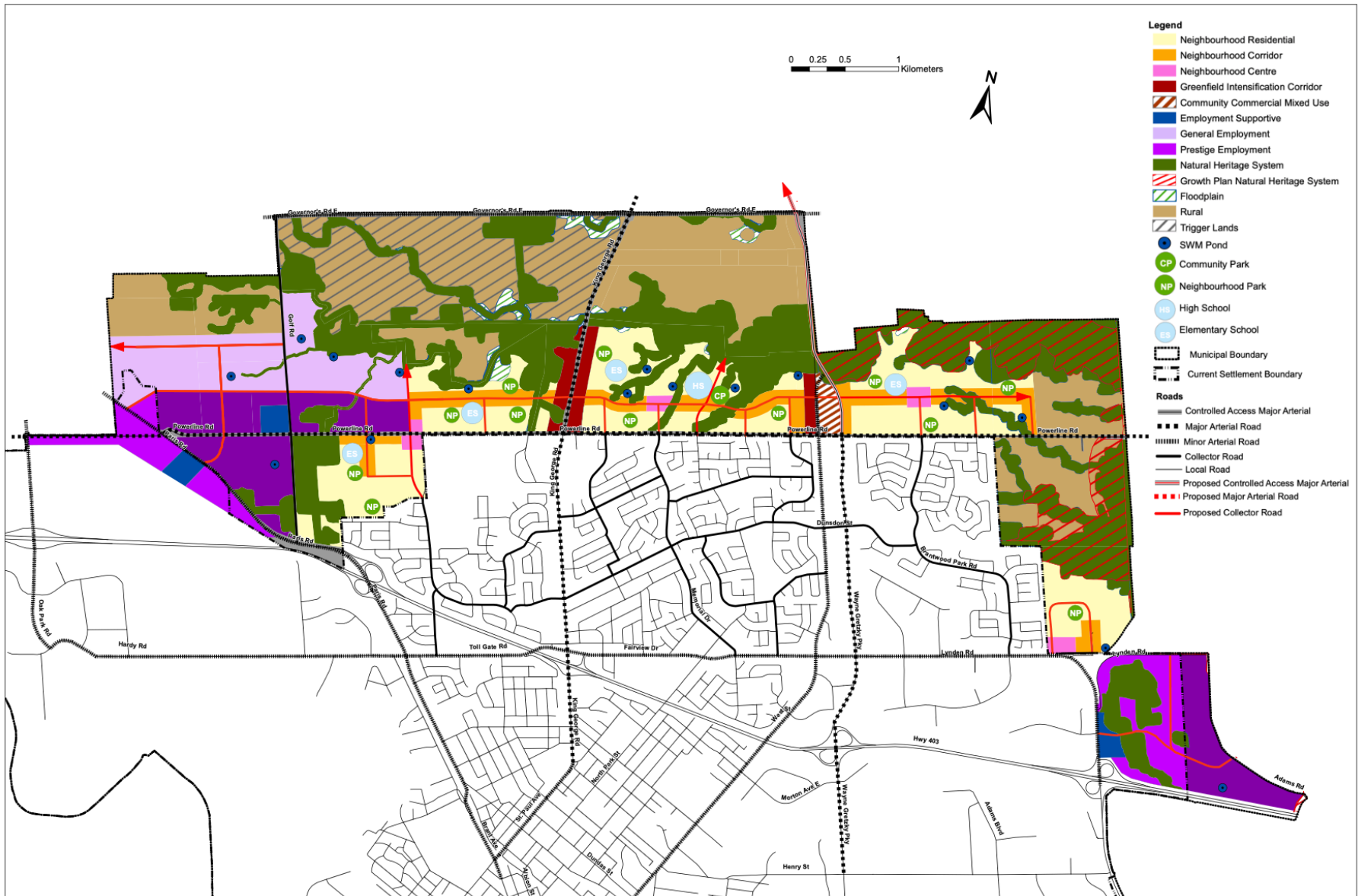
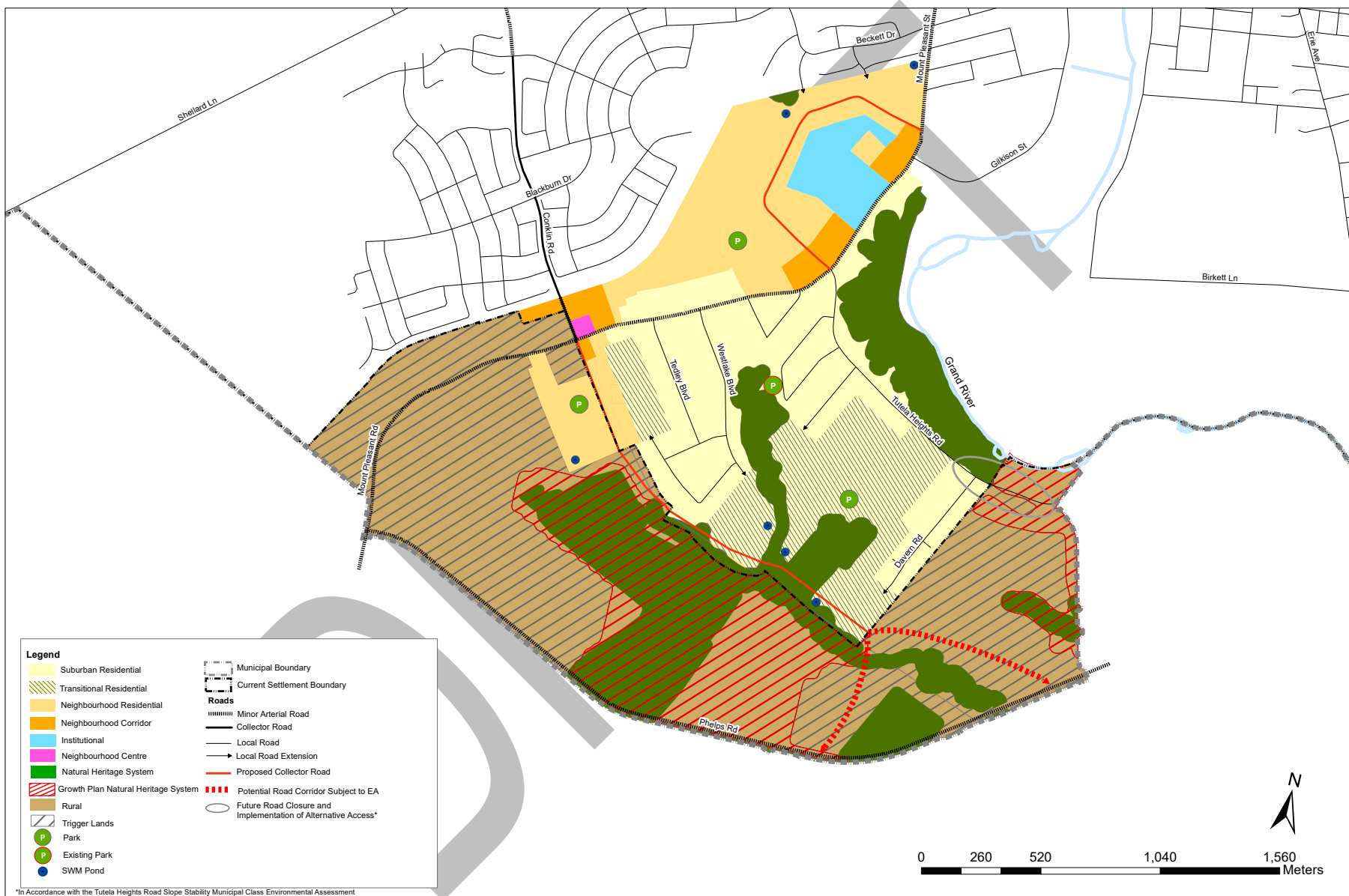


Figure 12: Tutela Heights Preferred Land Use Option



4 Infrastructure Staging Requirements by Block



This section of the report takes the required water, wastewater, stormwater and transportation infrastructure information and community facility information from Section 3 and summarizes it for each Block in **Table 5: Infrastructure and Community Facility Staging Requirements by Block**. **Table 5** describes the internal and external infrastructure prerequisites for the development of each Block but does not prescribe an order or preference for development. The Table is intended to provide a clear outline of the required water, wastewater, stormwater, transportation, and community facilities for each Block, while also outlining key constraints that will need to be considered in the future development.

The first column in **Table 5** identifies the name of the respective block. The second, third and fourth columns identify the infrastructure projects required both internal to the Block as well as external to the Block to allow development to occur within the Block.

The fifth column sets out the transportation works that are required to support development in that Block. The transportation works can be categorized as two main types:

- i) those serving a City-wide role and function, in addition to supporting local development; and
- ii) those that serve primarily local development.

Those that provide a City-wide role are typically arterial or major collector roads. These roadways are required to support the individual Blocks but may not represent the entire justification for the required improvement, as several Blocks may contribute to the volume demand and the ultimate design needs of the road. Whereas those that serve local development are major or minor collector roads. The need for these road improvements are directly related to adjacent local development.

The sixth column identifies community facilities requirements within each Neighbourhood Block including specified numbers of neighborhood parks and schools.

Key staging prerequisites that are external to the Block and need to be developed prior to development occurring within the Block are summarized in the seventh column.

Table 5: Infrastructure and Community Facility Staging Requirements by Block

Servicing Block	Water Infrastructure Project	Wastewater Infrastructure Project	Stormwater Infrastructure Project	Transportation Works	Community Facilities	Key Staging Prerequisite
Paris Road Employment	WM-02, WM-03, WM-04, WM-05	SS-01, SS-02, SS-03	Pond #1, #2	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> Paris Road, Highway 403 to Street B, Arterial, Widen Golf Road, Paris Road to Powerline Road, Arterial, Widen Powerline Road, Oak Park Road to Golf Road, Widen Street B, Paris Road to Street 1, Collector, New <p>Serving Local Development</p> <ul style="list-style-type: none"> Street 1, Paris Road to Street A, Collector, New Street A, City Limits to Street 1, Collector, New 	None	<p>Highway 403 and railway crossing for watermain and sanitary sewer</p> <p>Available PD 4 Storage and timing of new PD4 ET</p>
Balmoral	WM-02, WM-03, WM-07, WM-08	SS-01 SS-02, FM-02, SPS-02	Pond #6	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> Paris Road, Highway 403 to Golf Road, Arterial, Widen Golf Road, Paris Road to Governors Road, Arterial, Widen Powerline Road, Oak Park Road to Street 3, Arterial, Widen Street B, Street 1 to Street 3, Collector, New <p>Serving Local Development</p> <ul style="list-style-type: none"> Street 1, Powerline Road to Street, Collector, New Street 2, Powerline Road to Street B, Collector, New Street 3, Powerline Road to extension north of Street B, Collector, New Street A, Street 1 to Golf Road, Collector, New 	<p>2 Neighbourhood Parks</p> <p>1 Elementary School</p>	<p>Highway 403 and railway crossing for watermain and sanitary sewer</p> <p>Available capacity of the existing Woodlawn SPS</p> <p>Available PD 4 Storage and timing of new PD4 ET</p>
Powerline Employment	WM-02, WM-03, WM-04, WM-05, WM-09	SS-01, SS-02, SS-03, SS-05, SPS-01, FM-01, SPS-02, FM-02	Pond #3, #4, #5	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> Paris Road, Highway 403 to Golf Road, Arterial, Widen Golf Road, Paris Road to Powerline Road, Arterial, Widen Powerline Road, Oak Park Road to Street 3, Arterial, Widen <p>Serving Local Development</p> <ul style="list-style-type: none"> Street 2, Street 3 to Powerline Road, Collector, New Street 3, Balmoral Drive to Powerline Road, Collector New 	None	<p>Highway 403 and railway crossing for watermain and sanitary sewer.</p> <p>Northwest-1 SPS and</p>

						<p>forcemain and Northwest-2 SPS and forcemain.</p> <p>Available PD 4 Storage and timing of new PD4 ET</p>
Powerline West	WM-01, WM-10	SS-01, SS-02, SS-04, SS-05, FM-02, SPS-02	Pond #7	<ul style="list-style-type: none"> • King George Road, Powerline Road to Governors Road, Arterial, Widen • Powerline Road, Oak Park Road to King George Road, Arterial, Widen • Street B, Street 3 to King George Road, Collector, New <p>Serving Local Development</p> <ul style="list-style-type: none"> • Street 3, Powerline Road to extension north of Street B, Collector, New • Street 4, Powerline Road to Street B. Collector, New 	<p>3 Neighbourhood Parks</p> <p>1 Elementary School</p>	<p>Highway 403 and railway crossing for sanitary sewer, and Northwest-2 SPS and forcemain.</p> <p>Available PD 2/3 Storage and timing of new PD2/3 ET</p> <p>Provincial Plans for Highway 24 corridor. MTO setbacks and access limitations.</p>
Powerline Central	WM-01, WM-15, WM-11, WM-12	SS-06, SS-07, SS-08, SS-09, SS-10, SS-11,	Pond #8, #9, #10, #11, #12 (Subject to local grading plans)	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> • Wayne Gretzky Parkway, Powerline Road to Governors Road, Arterial, Extension and Widen • Park Road, Powerline Road to Wayne Gretzky Parkway, Arterial, Realignment • King George Road, Powerline Road to Governors Road, Arterial, Widen 	<p>3 Neighbourhood parks</p> <p>1 Community Park</p>	<p>Coulbeck Road trunk sewer extension and North SPS and forcemain</p>

		SPS-03, FM-03		<ul style="list-style-type: none"> • Powerline Road, King George Road to Wayne Gretzky Parkway, Arterial, Widen • Street B, King George Road to Wayne Gretzky Parkway, Collector, New <p>Serving Local Development</p> <ul style="list-style-type: none"> • Street 5, Powerline to Street B, Collector, New • Street 6, Powerline to Street B, Collector, New • Street 7, Powerline to extension north of Street B, Collector, New • Street 8, Powerline to Street B, Collector, New • Street 9, Powerline to Street B, Collector, New • Street B, King George Road to Wayne Gretzky Parkway, Collector, New 	<p>1 Secondary School</p> <p>1 Elementary School</p>	<p>Available capacity at the Empey SPS and Coulbeck Trunk Highway 403 crossing and timing of upgrades.</p> <p>Available PD 2/3 Storage and timing of new PD2/3 ET</p> <p>Provincial Plans for Highway 24 corridor. MTO setbacks and access limitations.</p>
Powerline East	WM-13, WM-14, WM-15, WM-16, WM-17	SS-11, SPS-04, FM-04	Pond #13, #14, #15 (Subject to local grading plans)	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> • Wayne Gretzky Parkway, Powerline Road to Governors Road, Arterial, Extension and Widen • Park Road, Powerline Road to Wayne Gretzky Parkway, Arterial, Realignment • Powerline Road, Wayne Gretzky Parkway to Street 12, Arterial, Widen <p>Serving Local Development</p> <ul style="list-style-type: none"> • Street 10, Powerline Road to Street B, Collector, New • Street 11, Powerline Road to Street B, Collector, New • Street 12, Powerline Road to Street B, Collector, New • Street B, Wayne Gretzky Parkway to Street 12, Collector, New 	<p>3 Neighbourhood Parks</p> <p>1 Elementary School</p>	<p>Coulbeck Road trunk sewer extension and Northeast SPS and FM.</p> <p>Available capacity at the Empey SPS and Coulbeck Trunk Highway 403 crossing and timing of upgrades.</p>

						Available PD 2/3 Storage and timing of new PD2/3 ET Provincial Plans for Highway 24 corridor. MTO setbacks and access limitations.
Lynden Garden	WM-18, WM-20	SS-12, SS-13, SPS-08, FM-06	Pond #16	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> Garden Avenue, Highway 403 to Street 13, Arterial, Improvement <p>Serving Local Development</p> <ul style="list-style-type: none"> Street 13, North of Lynden Road to North of Lynden Road, Collector, New 	1 Neighbourhood Park	<p>Available capacity at the Empey SPS and timing of upgrades.</p> <p>Lynden Road watermain and sanitary sewer upsizing, East SPS and FM;</p> <p>Railway crossing for sanitary forcemain</p>
Garden Adams Employment	WM-18, WM-19, WM-21, PRV-1, PRV-2	SS-12, SS-13, SPS-05, FM-05	Pond #17	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> Garden Avenue, Highway 403 to Lynden Road/ Street 11, Arterial, Improvement Lynden Road (East of Garden), Garden Avenue to Adams Road / East City Limits, Arterial, Improvement Street C, Garden Avenue to Adams Road, Collector, New <p>Serving Local Development</p> <ul style="list-style-type: none"> Street 14, Street C to Lynden Road/Street 11, Collector, New 	None	<p>Available capacity at the Empey SPS and timing of upgrades.</p> <p>Lynden Road watermain and sanitary sewer upsizing, East SPS and FM;</p>

						<p>Railway crossing for watermain and sanitary forcemain</p> <p>Available PD 2/3 Storage and timing of new PD2/3 ET</p>
Tutela Heights West	WM-22, WM-23	SS-14, SS-15	<p>Pond #18, #19</p> <p>(Subject to local grading plans)</p>	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> Phelps Road, Street E to Cockshutt Road (CR4), Arterial, Improvement Mt Pleasant Road, Veterans Memorial Parkway to Street D (North), Arterial, Improvement Mt Pleasant Road, Street D (North) to Gilkison Street, Arterial, Widen Mt Pleasant Street, Gilkison Street to Street D (South)/ Tutela Heights Road, Arterial, Widen Mt Pleasant Street, Street D (South)/Tutela Heights Road to Conklin Road, Arterial, Widen <p>Serving Local Development</p> <ul style="list-style-type: none"> Street D, Mt Pleasant Road to Mount Pleasant Road, Collector, New 	1 Neighbourhood Park	<p>Watermain and gravity sewer connections to existing system..</p> <p>Upsizing of existing water network.</p> <p>Future EA required to determine the alignment of Street E at Phelps Road (CR-18).</p>
Tutela Heights South	WM-22, WM-23, WM-25	SS-14, SS-15, SS-16, SPS-06, FM-06	<p>Pond #20</p> <p>(Subject to local grading plans)</p>	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> Conklin Road Extension (Street E), Mt Pleasant Road to Street E-2, Collector Road, Extension Conklin Road Extension (Street E), Street E-2 to Phelps Road (CR-18), Collector Road, Extension Phelps Road, Street E to Cockshutt Road (CR4), Arterial, Improvement Mt Pleasant Road, Veterans Memorial Parkway to Street D (North), Arterial, Improvement Mt Pleasant Road, Street D (North) to Gilkison Street, Arterial, Widen 	1 Neighbourhood Park	<p>Watermain and gravity sewer connections to existing system.</p> <p>Upsizing of existing water network.</p> <p>Future EA required to</p>

				<ul style="list-style-type: none"> • Mt Pleasant Street, Gilkison Street to Street D (South)/ Tutela Heights Road, Arterial, Widen • Mt Pleasant Street, Street D (South)/Tutela Heights Road to Conklin Road, Arterial, Widen 		determine the alignment of Street E at Phelps Road (CR-18).
Tutela Heights East	WM-22, WM-23, WM-24, WM-25, WM-26	SS-14, SS-15, SS-16, SPS-06, FM-06	Pond #21, #22, #23 (Subject to local grading plans)	<p>Serving Broader City-Wide and Local Development</p> <ul style="list-style-type: none"> • Conklin Road Extension (Street E), Mt Pleasant Road to Street E-2, Collector Road, Extension • Conklin Road Extension (Street E), Street E-2 to Phelps Road (CR-18), Collector Road, Extension • Phelps Road, Street E to Cockshutt Road (CR4), Arterial, Improvement • Mt Pleasant Road, Veterans Memorial Parkway to Street D (North), Arterial, Improvement • Mt Pleasant Road, Street D (North) to Gilkison Street, Arterial, Widen • Mt Pleasant Street, Gilkison Street to Street D (South)/ Tutela Heights Road, Arterial, Widen <p>Serving Local Development</p> <ul style="list-style-type: none"> • Rue Chateau Terrace, Tutela Heights to Street E, Local, Extension • Davern Road, Tutela Heights to Street E, Local, Extension • West Lake Boulevard, Moore Boulevard to Rue Chateau Terrace, Local, Extension 	1 Neighbourhood Park	<p>Tutela Heights SPS</p> <p>Upsizing of existing water network.</p> <p>Future EA required to determine the alignment of Street E at Phelps Road (CR-18).</p>

5 Implementation Mechanisms



5.1 Neighbourhood Block Plan Study Requirements

The Draft Official Plan requires in Section 5.1 requires the preparation of a Block Plan for any development within a Block Plan Area identified on Schedule 2: DGA Density and Block Plan Boundaries which are the same as the Neighbourhood Blocks shown on **Figure 1**.

The Draft Official Plan states that, “the City shall require, prior to the submission of any development application, that a Block Plan be prepared for the whole of the applicable Block Plan Area. The purpose of the Block Plan is to promote comprehensive planning, and to:

- i. Identify the detailed land use and density distribution, and to ensure that required density targets will be achieved;
- ii. Confirm the boundaries of the Natural Heritage System through an Environmental Impact Study;
- iii. Identify the parkland system, community facilities and the active transportation network;
- iv. Identify the detailed road pattern, including Local Roads;
- v. Articulate the details for the provision of water, sewer and storm water management systems in a Block Servicing Strategy;
- vi. Identify network and system connections to properties adjacent to the Block Plan Area; and,
- vii. Form the basis for a Developer's Cost Share Agreement, where the Block Plan Area includes multiple landowners”.

The Draft Official Plan further states that the preparation of Block Plans shall have regard for the policies of this Plan, the Urban Design Manual and the Comprehensive Block Plan Terms of Reference.

Lastly, the Draft Official Plan states that the Block Plans will be endorsed by City Council and shall include all of the necessary supporting technical studies, to the satisfaction of the City. The endorsed Block Plans will form the basis for the subsequent approval of Draft Plans of Subdivision and implementing Zoning By-laws.

Terms of Reference for a Comprehensive Block Plan have been prepared by the City and form an appendix to the Draft Official Plan.

5.2 Functional Servicing Study Requirements

A comprehensive Functional Servicing Study will be required prior to draft plan approval as part of the Block Plan process. This comprehensive functional servicing plan will need to include a local water and wastewater infrastructure plan to demonstrate how the City's servicing and design criteria will be achieved, how local water and wastewater servicing will conform to the City's trunk water and wastewater servicing plan as outlined in the Master Servicing Plan, and how the trunk infrastructure appropriately accounts for external contributing areas. For block plan areas containing water or wastewater facilities, such as a pump station or reservoirs, the block planning process must work jointly with the City to ensure that the appropriate locations and alignments are identified, and that all planning and approval requirements are satisfied. Further, where identified in the Master Servicing Plan, subject to changes in the MCEA regulation, projects may require the completion of a Municipal Class Environmental Assessment. The comprehensive functional servicing plan will need to include a local stormwater management plan that demonstrates how the City's servicing, design criteria, and management requirements as outlined in the City Master Servicing Plan and Subwatershed Study will be achieved.

5.3 Transportation Study Requirements

5.3.1 Municipal Class Environmental Assessment (EA)

A Municipal Class EA study will be required for all of the Schedule C projects, i.e. new or improvement Arterial and Major Collector Roads. These are generally the new and improved roads identified in the Brantford Transportation Master Plan, as they have the potential for broader city-wide effects and impacts (i.e. environment, community, and cost impacts), and are identified in **Table 5** as the roadways serving a city-wide and local development role. The EA will complete Phases 3 and 4 of the Municipal Class EA process for these roads, identifying a preferred design solution for the arterial and collector roads. This design solution will include the right-of-way requirements, intersection control (including the potential location of roundabouts), and location and type of active transportation infrastructure. It is anticipated that changes or alterations to the routes identified in the Block Plan or Secondary Plan may be required, particularly to avoid and minimize impact on natural environment features.

Draft plans with areas that require the completion of road EAs may be subject to development in stages, where draft plan approval with conditions may be granted. However, final registration of the areas containing Schedule C collector roads will require the completion of the EA and revisions to incorporate the findings of respective EAs.

5.3.2 Draft Plan Approval

Major and Minor Collector Roads that serve the local development area fall into the category of MCEA Schedule B projects. These roads have the potential for some adverse environmental effects. The proponent is required to undertake a screening process, involving mandatory contact with directly affected public and relevant review agencies, to ensure that they are aware of the project and that their concerns are addressed. This can be facilitated through the Development Application Process.

A Traffic Impact Study (TIS) will be prepared for the Block Plan area in accordance with City's Transportation Impact Study Guidelines from the 2014 Transportation Master Plan Update, Appendix 4. The scope of work will be prepared and submitted to the City for approval prior to the initiation of the work. The Block Plan will include a road schedule that builds upon Schedule 12 of the Official Plan. Roads shall generally be designed and built in accordance with the standards outlined in the City of Brantford's Design and Construction Manual, Linear Municipal Infrastructure Standards.

5.4 Phasing

The intent of this infrastructure Staging Plan is to identify all internal and external infrastructure and community services that are required to support development in each Block. There is no requirement for the Blocks to be sequentially phased. However, in some cases, development within a Block will rely on external infrastructure extension in an adjacent Block(s). The required external infrastructure is also listed in **Table 5**. If a landowner group wishes to proceed with development in a Block prior to the extension of required external infrastructure in an adjacent Block(s), the landowner group will be required to pay for and construct the external infrastructure through the adjacent Block(s).

Within each Neighbourhood Block, a Comprehensive Block Plan will be required to identify how the community facilities will be provided in the early phases of development of the Block in tandem with residential development.

6 Conclusion



This Report is a companion document to the Draft Official Plan and seeks to implement the infrastructure servicing strategy, Transportation Master Plan and preferred land use concept for the City's Settlement Area expansions.

The report outlines the required internal and external infrastructure related to water, wastewater, stormwater and transportation infrastructure and community facilities within each of eleven Blocks within the Settlement Area boundary expansion. There is no requirement for the Blocks to be sequentially phased; rather, the report outlines the external infrastructure that are necessary for each Block to proceed independently.