WATER AND SANITARY SYSTEMS

TECHNICAL STUDY – ARTHUR

SEPTEMBER 2020

Prepared for:

Township of Wellington North
7490 Sideroad 7 West
Kenilworth, Ontario
N0G 2E0

Prepared by:

Triton Engineering Services Limited
105 Queen Street West, Unit 14
Fergus, ON, N1M 1S6

Tale of Contents

List of Figures

List of Tables

List of Appendices

1 INTRODUCTION

1.1 General

The community of Arthur is a growing urban community located within the Township of Wellington North (Township) that is serviced by municipal water and sanitary systems. In 2011, the Township initiated a technical review of the water and sanitary infrastructure within the community. The technical review was completed by Triton Engineering Services Limited (Triton), on behalf of the Township, in accordance with the Class Environmental Assessment (Class EA) Master Plan (MP) process as outlined in the Municipal Engineers Association (MEA) Municipal Class EA document. The intention of the review was to formulate a long-term servicing strategy through the identification of specific infrastructure to maintain this level of municipal service for future development within Arthur, which was defined by the Master Plan problem statement as follows:

Develop a water supply and sanitary sewage servicing strategy for the existing and future development areas of Arthur that will allow the integration and coordination of new services with other on-going municipal infrastructure needs.

The Master Plan considered two development periods: the 2031 Scenario, which was used to identify infrastructure requirements needed to support the specific development identified in the Wellington County Planning and Development Department report entitled "*Comprehensive Review of Residential and Employment Growth, Township of Wellington North*" dated October 14, 2009; and the Long-Term Scenario, which was used to identify infrastructure requirements beyond the 2031 Scenario, particularly in areas where servicing extensions were considered. The results of the technical review were documented in the Township of Wellington North Class Environmental Assessment Master Plan Study for Water Supply and Sanitary Sewage System, Community of Arthur document by Triton dated January 2012 (Revision 2).

The purpose of this Water and Sanitary Systems Technical Study – Arthur (Technical Study) is to update the computer simulation models of the water and sanitary systems in Arthur based on current existing conditions to evaluate the adequacy of the systems to meet the needs of the existing community (i.e. calendar year 2020) and to service the future development scenarios to calendar year 2045. The expected population growth is based on the information presented in the Growth Management Plan (GMP), dated February 26, 2018 by GSP Group Inc. (GSP).

1.2 Wellington North Community Growth Plan Final Report (GSP Group Inc, February 2018)

GSP and Curtis Planning completed a Community Growth Plan (also referred to as a Growth Management Strategy or Growth Management Plan, GMP) to "*provide direction for policy development and decision-making regarding land development and growth-related investments and initiatives, to contribute to planning for positive growth and change in Wellington North*". The GMP provides details on the expected growth between 2016 and 2041 and focuses on the urban areas of the communities of Arthur and Mount Forest; however, rural settlements within the Township are also considered. Details of the GMP are documented in the Wellington North Community Growth Plan Final Report dated February 2018, which was prepared by GSP. A copy of the GMP is included in Appendix A1

With respect to infrastructure, the GMP indicates that "*majority of growth and development [is to] be located where it can be serviced by existing or planned municipal water and wastewater*

systems." additionally, *"…development that optimizes the efficient use of this infrastructure should be prioritized and balanced with the construction of new infrastructure. Future infrastructure planning is required to be undertaken on a watershed- and asset management basis, through servicing master plans and environmental assessments…".*

1.3 Township of Wellington North, 2018 Development Charges Background Study & By-Law Final Report (DFA Infrastructure International Inc., 2018)

DFA Infrastructure International Inc. (DFA) was retained by the Township to complete a development charges (DC) background study, calculate new rates and prepare a new DC By-law to meet the requirements of the Development Charges Act and replace the existing By-law 51-13. Development charges collected in the Township are for municipal services, which include: administration, fire protection, parks and recreation, water and wastewater, and roads and related services. Associated costs for the extent and delivery of these services considers the existing population and businesses and expected future growth, which was determined for the 10-year period of 2018 through 2027 and 2028 through 2041 build-out period and considered servicing studies completed for the Township, which identified growth related capital needs. New growth areas and population growth for the community are in accordance with the GMP. Historical growth (last 10 years) was considered to determine historical service levels. A copy of the 2018 DC Report is included in Appendix A2.

2 FUTURE DEVELOPMENT PROJECTIONS

2.1 General

Per the GMP, "*the 2036 and 2041 population, housing and employment growth forecasts for the Township of Wellington North, as established in the County Official Plan, should continue to be used for planning purposes to determine urban land requirements*." And "*The growth forecasts for Wellington North and the distribution of the population and housing forecasts within the Township should be revised and updated through future reviews of the County Official Plan, to align the forecasts with local growth patterns and infrastructure plans*".

The population growth forecast in the GMP for Arthur reflects the increase in available capacity resulting from the Phase 2 expansion of the Arthur Wastewater Treatment Facility and is focused within the existing built-boundary that was delineated by the Province as part of the 2006 Growth Plan for the Greater Golden Horseshoe. Additionally, consistent with the County Official Plan and 2006 Growth Plan, development within the existing built-up areas should intensify by 20%, although, this target may be increased as a result of the next Municipal Comprehensive Review (to be issued on or before July 1, 2022). "*The target is intended to focus growth and development within the existing built-up area of the urban centres, and to ensure outward growth in greenfields is compact",* which can be achieved through infilling and development of existing vacant land in the built-up area, building expansions or conversion, or redevelopment.

Development outside of the delineated built-up area (i.e. "intensification area"), but within the urban boundary that is designated for urban land uses (i.e., designated greenfield areas [DGA] or "urban expansion area") is called greenfield development. The current designated greenfield area target for the Township is 40 residents and jobs per hectare, consistent with the County Official Plan.

The GMP provided the expected growth to 2041, which is summarized in Table 2.1. As per Table 2.1, the 2016 population is greater than the existing serviced population (based on 2020 Reserve

Capacity Calculations (RCC); however, this is likely caused by a difference in total population versus serviced population. Therefore, for the purposes of this study, the 2016 serviced population is used as the existing population with growth added to this. It is anticipated that all future population will be connected to both water and sanitary systems.

Table 2.1 - Arthur Growth (as per GMP)

Arthur Growth (as per GMP)				
Year	Population (Capita)	Households (Equivalent Residential Units, ERUs)	Capita per ERU	Growth (Capita/Year)
2016	2,725	1,005	2.7	-
2036	4,115	1,525	2.7	69.5
2041	4,460	1,665	2.7	69.0

As per the Growth Plan for the Greater Golden Horseshoe, the Township can plan for infrastructure beyond the 2041 planning horizon presented in the current County Official Plan. Four future land development stages were identified in the GMP (refer to "Development Stages – Arthur" figure in the GMP in Appendix A1). Details for each development scenario are provided in Sections 2.2 through 2.5. The intensification and greenfield growth targets are applied to each development scenario to evaluate the adequacy of the systems for the existing and future population beyond calendar year 2045. Assuming that the 2041 population noted in the GMP (refer to Table 2.1) is achieved, growth to 2045 can be extrapolated and associated water demands and sanitary loading within Arthur can be estimated. The interpolated growth for Arthur 2020 to 2045 study period is provided in Table 2.2. Refer to Appendix A3 for additional information regarding interpolated growth projections.

Table 2.2 - Arthur Growth (Interpolated)

Arthur Growth (Interpolated)				
Year	Population (Capita)	Households (ERUs)	Capita per ERU	Growth (Capita/Year)
2020	2,410	970	2.5	-
2025	3,351	1,242	2.7	69.5
2030	3,698	1,370	2.7	69.5
2035	4,046	1,499	2.7	69.5
2040	4,391	1,639	2.7	69.0
2045	4,736	1,768	2.7	69.0

2.2 Development Scenarios

As presented in the GMP, the four Development Scenarios have been assessed to determine development potential based on land availability and reasonable/expected growth densities described herein. The expectation is that not all of the areas identified within the stages will fully develop, however when assessing linear infrastructures ability to service the future lands, full development of viable lands will be assumed. The expectation is that modelling the future serviceability this way will flag certain infrastructure as having insufficient capacity to service the full buildout of that Development Stage. This information will then help the municipality make informed decisions regarding development areas based on infrastructure expansion/remediation costs. Further, this information will used to size future infrastructure upgrades required to support development.

Vertical infrastructure, such as area wide water supply/storage and sewage treatment, will be assessed based on the overall growth targets set out in the GMP, not on specific development areas/parcels.

2.3 Stage 1 Development Scenario

The Stage 1 Development Scenario includes an additional 8.7 hectares (ha) of land within Arthur's urban area boundary, with lands zoned as low-density residential (5.5 ha with 212 ERUs as per the latest Draft Plans provided in support of these development areas), high-density residential (0.6 ha with 36 ERUs as per the latest Draft Plan), future development (0.5 ha with 15 ERUs as per zoning mapping) and highway commercial (2.1 ha with 55 ERUs assumed based on MECP Equivalents and Developable Land). The Stage 1 Development Area is presented on Figure 2.1 and the Future Land Use Table for the Stage 1 Development Area is presented in Appendix B1.

As per the County Official Plan and 2006 Growth Plan, development within the existing built-up areas should intensify by 20% to 2041; however, since these growth targets were developed in 2016 and this technical study is being completed in 2020, the intensification targets have been revised such that the 20% intensification targets will be reached by 2045. This intensification will be applied to the "Downtown Intensification Area" (refer Figure 2.1) and results in an additional 231 units added by 2045 in the Stage 1 Scenario.

2.4 Stage 2 Development Scenario

The Stage 2 Development Scenario includes an additional 15.2 ha of land within Arthur's urban area boundary including lands zoned as low-density residential and future development (9.8 ha with 250 ERUs), mixed high and low density residential (5.1 ha with 287 ERUs) and mixed highway commercial and future development (0.3 ha with 8 ERUs). The Stage 2 Development Area is presented on Figure 2.2 and the Future Land Use Table for the Stage 2 Development Area is presented in Appendix B1.

2.5 Stage 3 Development Scenario

The Stage 3 Development Scenario includes an additional 33.5 ha of land within Arthur's DGA (all adjacent to the delineated built-area boundary), with lands zoned as low-density residential (0.8 ha with 12 ERUs based on the residential growth target of 14.82 ERAs per ha), high density residential (1.7 ha with 51 ERUs based on the residential growth target of 14.82 ERUs per ha), future development (1.8 ha with 27 ERUs based on the future residential growth target of 14.82 units per ha) and industrial (29.2 ha with 771 ERUs). The Stage 3 Development Area is presented on Figure 2.3 and the Future Land Use Table for the Stage 3 Development Area is presented in Appendix B1.

2.6 Stage 4 Development Scenario

The Stage 4 Development Scenario includes an additional 66.6 ha of land within Arthur's DGA, with lands zoned as future development (66 ha with 1,742 ERUs) and highway commercial (0.6 ha with 16 ERUs). The ERUs are assumed based on MECP expected maximum day demands for Future Industrial/Commercial/Institutional (ICI) lands. The Stage 4 Development Area is presented on Figure 2.4 and the Future Land Use Table for the Stage 4 Development Area is presented in Appendix B1.

3 WATER SUPPLY AND STORAGE

3.1 Existing System

The Arthur water system is a single pressure zone watermain distribution network that is pressurized by two elevated towers. Water is supplied to the system from three bedrock wells. The system currently provides service to 939 homes and 109 Industrial/Commercial/Institutional (ICI) properties, according to Township records (2020). The system also provides fire protection to the entire service area.

Operation of the system is controlled by a Supervisory Control and Data Acquisition (SCADA) system. Generally, well pumps are called on and turned off based on water levels in the storage towers. These levels are set by the operators based on storage requirements, volume turnover needs and well pumping constraints. The SCADA system also provides real-time monitoring and record keeping.

3.2 Source Capacity

Water supply is provided by three bedrock wells, named Well No. 7B, and Well No. 8A and Well No. 8B. The locations of these wells are presented on Figure 3.1. A summary of details for each well is as follows:

Well No. 7B:

- Located at 109 Wells Street West near the Conestogo River.
- Commissioned in 1998.
- 46 m deep drilled.
- Well pump is a submersible type complete with a 30kW (40 hp) motor which discharges directly to the distribution system (i.e., no highlift pumps).
- Rated capacity is 22.7 l/s (1,961 m^3/day).
- Disinfection using sodium hypochlorite. Contact time is provided by oversized discharge main.
- Iron sequestering treatment provided.

Well No. 8A/8B:

- Located on Part of Lots 20 and 21, Concession A, approximately 1.15 km south of County Road 109 and 235 m east of Highway 6.
- Commissioned in 2005.
- Depth of wells are 61.9 m and 62.2 m for 8A and 8B, respectively.
- Well pumps are submersible type complete with a 30 kW (40hp) motor which discharges directly to the distribution system (i.e., no highlift pumps).
- Rated capacities are 26.1 l/s (2,255 m^3/day) each; however, the Permit to Take Water (PTTW) allows for the operator to pump either Well 8A or Well 8B, but not both wells concurrently. Therefore, total production from this facility is limited to 2,255 m^3/day.
- Disinfection using sodium hypochlorite. Contact time is provided by oversized discharge main.
- Treatment for high manganese is provided.
- Standby power provided by diesel generator.

Based on the above, the total production capability (i.e. source capacity) of the Arthur water system is 4,216 m^3/day. It is our understanding that the Township operates the system to achieve

balanced production from the three wells.

3.3 Future Water Demands

A review of the historical water usage rates within Arthur indicate that the maximum day demand of 652 L/day/capita as presented in the Reserve Capacity Calculation (RCC) is well above the typically expected rate for domestic use. This per person RCC value includes the ICI demands which inflates this value as compared to actual per person use. In a small town such as Arthur with significant ICI usage this value will be higher than typically expected. In communities of similar size and configuration, the MDD is typically between 300 and 500 L/day/capita. In addition, it is our expectation that a metering program will be implemented, which is expected to significantly reduce the current MDD per person. Given these factors, a maximum day per person flow rate of 500 L/day/capita will be applied for future demand calculations. The water system will require that any ICI users that are expected to be heavy/moderate users will need to be allocated Reserve Capacity in terms of ERUs. Based on Section 3.4.3 of MECP (formerly Ministry of the Environment [MOE] Design Guidelines for Drinking Water Systems 2008 (Guidelines), a demand of 28 m^3/ha/day is appropriate for estimating where actual demand is unknown, this equates to 26 ERU (Water) per hectare of ICI. For the purposes of this study, the ICI area demands are accounted for specifically, and therefore, not included in with the residential demands. Doing this ensures that the per capita demand is conservative.

The resultant demand rates (i.e. MDD) for the future growth, as per the GMP, is outlined in Table 3.1. Refer to Appendices A3 for the 2020 to 2045 Demand Projections.

Table 3.1 - Water Usage Projections

Year	Equivalent Population (Capita)	Households (ERU)	MDD (m^3/day/capita)	MDD (m^3/day/ERU)	Total MDD (m^3/day)
2020	2,410	949	0.652	1.656	1,572
2025	3,351	1,242	0.500	1.349	1,675
2030	3,698	1,370	↓	↓	1,849
2035	4,046	1,499			2,023
2040	4,391	1,639			2,195
2045	4,736	1,768			2,368

MECP Guidelines recommend that the Source Capacity should be greater than MDD so that daily demand can be met if storage is offline. These criteria have been used to assess the capability of Arthur's water production infrastructure (i.e. wells) to satisfy future growth.

3.3.1 Water Supply Reserve Capacity

Triton completed a Reserve Capacity Calculation (ROCK) for the Arthur water system for 2020, in accordance with the requirements outlined in the MECP's *Design Guidelines for Drinking Water Systems.* The reserve capacity is based on the system's Firm Capacity, which is defined as the capacity of the system (Source Capacity) with the largest pump or source out of service. Using the firm capacity to determine the reserve capacity ensures sufficient redundancy in the system for water supply and treatment in case of an equipment failure. For the Arthur water system, the largest source is Well 8A or 8B each with a capacity of 2,255 m^3/day, but failure of this entire system is unlikely given it is a dual system. However, failure of Well 7 is a greater possibility and without it, the usable capacity of the system will be reduced to 2,255m^3/day, this being the

individual capacity of Well 8a and 8b which cannot be pumped at the same time. With this understanding, and based on recent water demands (i.e. calendar years 2017, 2018 and 2019), the 2020 maximum day demand (1,572 m^3/day) in Arthur has not exceeded the firm capacity of its water system, and there is 683 m^3/day of surplus/reserve capacity, which corresponds to 632 available equivalent residential units. Refer to Table 3.2 and Appendix C1 for the existing water supply RCC.

Table 3.2 – Summary of Water Usage Projections and Reserve Capacity

Year	Population (Capita)	Households (ERU)	MDD (m^3/day)	Source Reserve Capacity (m^3/day)	Firm Reserve Capacity (m^3/day)
2020	2,410	949	1,572	2,644	683
2025	3,351	1,242	1,675	2,541	580
2030	3,698	1,370	1,849	2,367	406
2035	4,046	1,499	2,023	2,193	232
2040	4,391	1,639	2,195	2,021	60
2045	4,736	1,768	2,368	1,848	-113

3.3.2 Additional Source Capacity

Table 3.2 presents a summary of the reserve capacity for the future population projections based on the source capacity and the firm capacity. Based on the water usage projections presented in Table 3.1 and Firm Reserve Capacity listed in Table 3.2, MDD will exceed the Firm Capacity between 2040 and 2045 despite the current surplus of Source Capacity. It should be noted that this capacity is obtained from only three sources. If any of these sources were compromised, it would have a significant impact on the system's ability to meet MDD requirements. Therefore, it is crucial that the Township is proactive in securing future water sources since establishing these new sources, and the infrastructure required to deliver this water to the system can be a lengthy and onerous process, and may affect the configuration and sizing of future watermain upgrades and extensions.

The existing reserve capacity is anticipated to be nearing or in deficit by the year 2045, however prior to instigating a well exploration program, the Township should monitor the Water Supply RC trends on an annual basis. If the RC indicates that a deficit is expected within the next 5 to 10 years and well exploration program should be initiated. At this time, no new additional sources are required.

3.4 Storage

Storage for the Arthur water system is provided by two elevated facilities. A summarized description of each facility is as follows:

Charles Street Tower:

- Located near the intersection of Charles Street East and Isabella Street, in the southeast part of the system (195 Isabella Street East).
- Multi-legged steel tank
- Commissioned in 1932
- Volume is 227 m^3
- Operation range: 494.2 m – 499.6 m

Freud (Spheroid) Tower:

- Located just north of Smith Street between Preston and Wells Streets in the northwest part of the system (460 Smith Street).
- All steel spheroid tank
- Commissioned in 1967
- Volume is 1137 m^3
- Operation range: 494.0 m – 499.2 m

Based on discussions with Township staff, these facilities have been recently inspected and no significant deficiencies were noted. The total system storage volume currently available is 1,364 m^3. The locations of the existing storage facilities are presented on Figure 3.2.

Storage requirements for the water system are based on MECP Guidelines. The calculation for storage requirement is as follows:

Total Treated Water Storage Requirement = A + B + C

Where: A = Fire Storage (MECP suggested flow/duration based on population)
B = Equalization Storage (25% of MDD)
C = Emergency Storage (25% of A+B)

The calculated storage requirements for the current and future development are summarized in Table 3.3. Detailed calculations are provided in Appendix C2.

Table 3.3 - Water Storage Requirement Summary

Year	MDD (m^3/day)	Recommended Fire Flow (L/s)	Storage Required (m^3)
Current (2020)	964	100	1,201
2025	1,340	110	1,409
2030	1,479	120	1,542
2035	1,618	120	1,586
2040	1,756	130	1,719
2045	1,894	130	1,762

3.4.1 Existing

Based on Table 3.3, the current storage volume available (1,364 m^3) is more than the storage requirement for the existing population; however, MECP Guidelines indicate that the calculation is for systems where the water supply system is capable of satisfying only the MDD, and that where the supply available is greater than MDD, the storage requirement can be reduced accordingly. Given that the current source capacity is greater than the MDD (refer to Table 3.1), the current storage volumes are considered adequate for the immediate future.

A computer simulation model (i.e. WaterCAD V8i) of the Arthur water system was created as part of the Master Plan and has been updated to support this technical study. As per the updated computer model (WaterCAD), based on existing conditions, the normal pressure throughout the existing distribution network ranges from approximately 40 psi to 80 psi which is within an acceptable range.

3.4.2 Future Storage Requirements

The storage volume requirements to support the future growth, as per the GMP, is outlined in Table 3.3 . This calculation indicates that the existing available storage will be insufficient for the projected population by the year 2025. However, this deficit will initially be small (i.e. 45m^3) and may not be a concern depending on a variety of factors such as the MDD and fire flow requirements at that time. By the year 2045, however, the storage deficit will be 398m^3 which is significant. Therefore, it is recommended that additional storage be added to the system within the next 5 to 15 years to accommodate growth. Other factors such as retirement of the existing water towers (i.e. Charles Street Tower) should be considered when planning for a new facility, both the volume and timing of such a facility.

Some of the potential future development areas around the existing urban boundary are located at higher topographic elevations. Given this, it is recommended that consideration be given to increasing the operating range of a future elevated tower to adequately service these areas. An increase of approximately 10 m, to a maximum operating level of 510 m, would provide an overall pressure increase of 14 psi to the system. This would also improve the fire flow capability throughout the system whilst also keeping maximum system pressure under the acceptable limit of 90-100 psi. The difficulty of implementing this strategy is that all towers in a given pressure zone need to be operating at the same elevations. Therefore, the existing towers would have to be decommissioned, or separate pressure zones would need to be established for the existing and new towers. Creating multiple pressure zones in a system increases the operating complexity and infrastructure requirements and therefore should be avoided where possible.

The following sections review the storage options available;

- the dual zone system option which retains one or both of the existing tower along with the construction of a new small tower,

- option of replacing the existing towers with a single large tower at a higher elevation and maintaining a single zone system...

3.4.2.1 Freud Tower & New Tower

As indicated above, the storage deficit projected by the year 2045 is 398m^3, requiring a small tower be constructed. Although Arthur has a relatively consistent topography, the future development areas to the North and North East are at higher elevations than the rest of the existing community. The existing system pressures would not be sufficient to service these development areas, requiring that a separate higher-pressure zone be created. This new pressure zone would encompass Eliza Street from the southern end to the urban limit, Domville Street from Eliza Street to Tucker Street, and all the existing and future network east and north thereof. This would require the installation of pressure reducing valve chambers at six locations and the construction of a booster pumping station.

The expected costs associated with establishing this dual zone system including the addition of a new tower and decommissioning of the Charles Street Tower, whilst also keeping the Freud Tower are as follows:

Table 3.4.2.1 – Freud Tower & New Tower Expected Costs

Infrastructure	Cost ($) *
400m^3 Composite Elevated Tower	$2,522,838
Booster Station	$1,500,000
Pressure Reducing Valves (6)	$100,000
Total Cost	**$4,122,838**

* All costs include 10% for contingency, 10% for engineering and 13% HST.

The 2017 inspection of the (Spheroid) Freud Tower noted a number of recommended maintenance items, however there were no significant issues noted. Despite this, it should be noted that the Spheroid Tower was constructed in 1969, and assuming an 80-year service life, the tower will have reached its theoretical service life in 2049.

3.4.2.2 Single New Tower

Given that the future storage deficit is minor, and the existing towers are both exceeding or well into their service lives, we have also assessed the option of decommissioning both existing towers and constructing one, larger tower that would service the entire community. The new tower would be constructed at a higher elevation than the existing system to accommodate future development, however still able to service existing system without acceptable pressures.

The costs associated with the construction of a centrally located tower are as follows:

Table 3.4.2.2 – New Tower Expected Costs

Infrastructure	Cost ($) *
2,000m^3 Elevated Tower	**$3,675,438**

* All costs include 10% for contingency, 10% for engineering and 13% HST.

3.4.2.3 Recommended Approach

In summary, the recommended approach and reasoning related to system storage is outlined below:

- Decommissioning of the Charles Street Tower is recommended given its age, limited volume and on-going remedial/maintenance costs.

- Freud Tower is well into its service life and may require significant upgrades (i.e., mixing/ rechlorination system) and maintenance (i.e., painting, corrosion treatment) within the planning horizon of the required additional storage.

- The increase in volume required to service future development would result in a relatively small tower size. This size would have a higher cost per unit volume than a larger sized tower which could provide the entire required volume. Also, the tower could be oversized to accommodate beyond the 2045 requirements at minimal additional cost.

- The operating complexities and costs of three towers in a system verse one.

- Retaining the existing towers in the system would not allow for the higher operating range unless a separate pressure zone is created. A dual pressure zone would increase the complexity of the system and limit the benefit of the increased operating level.

- The new facility would be equipped with improved features (i.e., separate fill/draw risers, provisions for mixing/re-chlorination, improved safety/accessibility).

With respect to the location of a new tower, utilizing one of the existing sites was considered. The Charles Street Tower site is too small and constrained by existing development. The Freud Tower site is feasible, however, there are several considerations as outlined:

- The site may be large enough to accommodate a new larger tower, however, there is not enough room for the existing tower to remain in place while the new tower is constructed. Therefore, the available storage in the system would be reduced significantly (i.e., to volume of Charles Tower) for an extended period (i.e., up to a year) while the Freud tower is removed and the new tower constructed. Although this may not impact day to day servicing, it would have an impact on the fire flows available from the system during this period.

- It is situated near the industrial area and located adjacent to a trunk watermain; therefore, it will provide adequate fire flows to critical areas of the system.

- The site is at a moderate ground elevation, therefore, the height of the new tower, assuming the higher operating level, would be considerable (i.e., approx. 52m) resulting in an increased cost for the facility.

Alternately, a new site could be selected which would allow the existing facilities to remain in service during construction. Upon review of the existing topography within the town boundary and expected growth areas, a parcel within the future industrial lands M3-1, between Domville and McCauley, near Tucker Street would be suitable given its high elevation (ground elevation of approximately 465m) and proximity to existing and future industrial development. Refer to Figure 4.1.

If the new site is considered, it is important that the extension of watermains consider the new site and are sized accordingly.

Establishment of a new water storage facility and the decommissioning of the existing facilities are both considered Schedule B projects under the Municipal Class EA. This Class EA would be completed in the future as development warrants the new facility. At that time details regarding sizing, configuration, operating levels and location can be confirmed along with the status of the existing facilities will be considered.

4 WATER DISTRIBUTION NETWORK

4.1 Existing

The distribution network presently services all existing developed areas within Arthur's urban area boundary. The network includes approximately 19.1 km of watermain ranging in size from 50 mm to 600 mm with 1048 services. Type of watermain used to construct the network has varied throughout the years and includes cast iron, ductile iron and PVC. Within the last 10-15 years, any upgrades and extensions to the existing distribution system have been with PVC watermain. The existing distribution network by size and type is illustrated on Figure 4.1. The network includes a trunk main consisting of 250 mm and 300 mm pipe which runs from the Wells 8A/8B along Jones Baseline, Highway 6, George Street and Smith Street, past the Freud Tower to Wells Street and along Wells Street to Well 7B.

The information presented in Tables 2.1 and 2.2 can be used to determine the expected demands of the water system's vertical infrastructure (i.e., wells and water towers); however, the expected demand on horizontal infrastructure (i.e. watermains) and the associated capacities needs to consider the expected demand as a result of complete build out of the development scenarios (i.e. Stages 1 through 4 development scenarios as per the GMP).

The updated WaterCAD model was used to review the fire flow capabilities throughout the water distribution network for the current community and for each of the development scenarios. A minimum residual pressure of 20 psi was used to establish water taking capability, consistent with the normal accepted industry standard for firefighting. This review also assumes that the system is operating during maximum day demand, with the municipal wells running to support the fire effort. Results of this analysis, which reflects the available flow from the mains at a location in the system, rather than a specific hydrant, is provided in the following sections for each of the development scenarios.

Generally, higher fire flows are required in industrial and high-density commercial area (i.e., downtown core), with actual fire flow requirements being site specific. For evaluation of the existing system, the MOE population based recommended figure of 103 l/s was used. Further, the MOE recommends a minimum 30 l/s capability throughout a system that provides firefighting service. Based on these criteria, the Arthur system provides adequate fire flows throughout the network. The lower flow areas are generally restricted to dead-end areas. Fire flow scenarios can be simulated using the model to assess system performance for specific properties/developments or system conditions, as required.

There has been a number of network improvements completed in Arthur since the Master Plan Study was completed in 2012, however a number of watermains remain that are recommended for upgrade and/or replacement. A summary of these watermains is provided in Table 4.1 below.

Table 4.1 – Recommended Water System Replacements

Location	Size (mm)	Length (m)
Edward Street	150	260
Frederick Street West (Edward Street to George Street)	150	140
Walton Street (Clarke Street to Tucker Street)	150	175

The watermain extensions required to service the proposed Development Stages are detailed in

Sections 4.2 to 4.5 below.

Given that the existing water towers are likely to reach their capacity to service Arthur in the years 2025 to 2035, future modelling has been completed assuming the recommended upgrades are implemented including a new centrally located water tower with a maximum operating at an elevation of 510masl, and that the existing towers have been decommissioned. Note: as discussed in Section 3, the existing wells will have sufficient capacity to service almost to the 2045 growth as indicated in the GMP, therefore not changes to supply configuration was necessary in the future model.

4.2 Stage 1 Development Scenario

Table 4.2 – Stage 1 Development Water Serviceability

				Existing Towers		Future Tower(s)	
Map ID	Development Name/Description	Area (ha)	Units (ERU)	Fire Flow* (L/s)	Pressure* (PSI)	Fire Flow* (L/s)	Pressure* (PSI)
R1-1	Eastridge Subdivision	4.5	162	83	44	78	54
R1-2	Gordon Street Condo	0.6	36	62	51	65	63
R1-3	Forest View Estates (WN-50)	1.0	50	81	57	67	67
FD1-1	Undesignated Not Serviced	0.5	13	N/A	N/A	N/A	N/A
C1-1	Existing Residential on 6	0.1	3	101	44	78	55
C1-2	Existing Residential on 109	0.1	3	125	60	95	70
C1-3	Vacant Land on 6	1.0	26	89	61	87	72
C1-4	Vacant Land on 6	0.4	10	117	48	86	59
C1-5	Vacant Land on 6	0.5	13	99	43	77	53

*Expected pressure and fire flow based on existing topographical information (mapping).

Based on the above, there are no distribution system improvements/upgrades to the existing system required to service areas within the Stage 1 Development Scenario. However, watermain will need to be extended eastward on Highway 109 to service areas C1-2 and C1-3. The expectation is that when C1-3, C2-2 and R2-1 will offer interconnection and looping for the system, however will not be trunk mains. Sizing required for this extension will need to be confirmed at preliminary design stage.

Additionally, if the existing towers remain in service, the available pressures within R1-1, C1-1 and C1-4 are expected to be in the lower range, which may result in end user complaints.

Stage 2 Development Scenario

Table 4.3 – Stage 2 Development Water Serviceability

				Existing Towers		Future Tower(s)	
Map ID	Development Name/Description	Area (ha)	Units (ERU)	Fire Flow* (L/s)	Pressure* (PSI)	Fire Flow* (L/s)	Pressure* (PSI)
R2-1	Burnside Subdivision	9.8	250	103	45	82	56
R2-2	Cachet Subdivision	5.1	287	82	59	68	70
C2-1	Smith & Wells	0.3	8	150	64	91	74
C2-2	Highway 6 Vacant Commercial	5.1	132	92	45	76	56

*Expected pressure and fire flow based on existing topographical information (mapping).

Based on the above, there are no recommended improvements required to the existing water distribution system to service areas within the Stage 2 Development Scenario. However, watermain will need to be extended eastward on Highway 109 to service area C2-2. The expectation is that mains within C2-2 will provide a second connection to R2-1, and R2-1 will offer interconnection and looping to the remaining system, however these will not need to be trunk mains. Sizing required for the Highway 109 extension will be confirmed at preliminary design stage for the C2-2 development.

4.3 Stage 3 Development Scenario

Table 4.4 – Stage 1 Development Water Serviceability

				Existing Towers		Future Tower(s)	
Map ID	Development Name/Description	Area (ha)	Units (ERU)	Fire Flow* (L/s)	Pressure* (PSI)	Fire Flow* (L/s)	Pressure* (PSI)
R3-1	West Anderson	0.8	12	92	46	128	61
R3-2	East Anderson	1.8	27	66	46	88	61
R3-3	Vacant Residential	1.7	25	110	65	106	77
M3-1	North Arthur Industrial Lands	29.2	757	130	50	142	63

*Expected pressure and fire flow based on assumed land elevations based on high level existing topographical information (mapping).

Based on the above, there are no recommended improvements required to the water distribution system to service areas within the Stage 3 Development Scenario. However, watermain will need to extended on the Anderson Street ROW from Gordon Street and connect back into Eliza Street to provide service to R3-1 and R3-2. Additionally, a trunk (300mm) watermain will need to be constructed on Wells St. at Domville to the MaCauley Street ROW, along the McAuley ROW and on Eliza Street to provide service and looping for M3-1. Alternatively, this looping may be provided through M3-1 internally, however providing it along the McAuley Street ROW will provide additional interconnectivity to future development areas north of McAuley Street. Sizing required for these extensions will need to be confirmed at preliminary design stage.

4.4 Stage 4 Development Scenario

Table 4.5 – Stage 4 Development Water Serviceability

Map ID	Development Name/Description	Area (ha)	Units (ERU)	Existing Towers		Future Tower(s)	
				Fire Flow* (L/s)	Pressure* (PSI)	Fire Flow* (L/s)	Pressure* (PSI)
FD4-1	North of Lagoons	12.1	313	0	24	91	59
FD4-2	East of Eliza Street	36.6	948	0	20	136	55
FD4-3	West of Eliza	16.4	425	0	30	174	65
FD4-4	Preston-Conestoga (109) – Not Serviced	0.9	23	N/A	N/A	N/A	N/A
C4-1	Wells & 109 – Not Serviced	0.6	16	N/A	N/A	N/A	N/A

*Expected pressure and fire flow based on assumed land elevations based on high level existing topographical information (mapping) and that the entire system pressure will be increased as per recommendations.

Based on the above, there are no recommended improvements required to the existing water distribution system to service areas within the Stage 4 Development Scenario. However, significant watermain extensions would be required along Eliza Street or internal to these development areas to provide service to FD4-1, FD4-2 and FD4-3. These areas are high topographically, resulting in moderate operating pressures and fire flows. In order to maximize pressures and fire flows to these future industrial areas, watermain sizing and looping would need to be considered during preliminary development discussions.

4.5 Summary of Watermain Extensions

The following table provides a summary on the expected watermain system extensions, their service areas, as applicable and the expected costs of the watermain construction. Note, the costs indicated do not include any costs associated with the restoration or upgrade of the surface features, such as road urbanization or asphalt re-instatement since it is assumed these watermain extensions will be completed as part of a road construction/reconstruction project. Refer to Figure 4.1.

Table 4.6 – Water System Extensions

Location	Size (mm)	Length (m)	Service Area	Estimated Infrastructure Cost ($)
Wells St. (Domville St. to Macauley St.)	300	850	M3-1, FD4-1, FD4-2, FD4-3	$556,000
Macauley St. (Wells St. to Eliza St.)	300	640	M3-1, FD4-1, FD4-2, FD4-3	$418,000
Eliza St. (Macauley St. to Tucker St.)	300	191	M3-1, FD4-1, FD4-2, FD4-3	$125,000
Draper St. (Eliza St. to Anderson St.)	150	155	R3-1, R3-2	$95,000
Anderson St. (Draper St. to Farrell Lane)	150	440	R3-1, R3-2	$265,000

5 WASTEWATER COLLECTION AND TREATMENT

5.1 Existing Infrastructure

The Arthur wastewater system includes a dedicated sanitary sewer/forcemain collection network, two sewage pumping stations (SPS), a wastewater treatment plant (WWTP) and an effluent storage lagoon facility.

5.1.1 Collection System

The network services the entire developed area of Arthur (i.e. within the urban boundary) and currently provides 1032 service connections, according to Township records (2020). The network includes approximately 19.1 km of sewer, ranging in size (diameter) from 150 mm to 450 mm, approximately 4 km of forcemain that is 150 mm to 250 mm in diameter. The type of sanitary sewer pipes varies within the network and includes asbestos cement, concrete and PVC. Upgrades and extensions to the sanitary sewer network within the last 10-15 years have been PVC pipe. The existing sanitary sewer collection system is presented on Figure 5.1 and Figure 5.2.

A computer simulation model (i.e. SewerCAD V8i) of the Arthur sanitary collection system was created as part of the Master Plan and has been updated to support this technical study to estimate peak flows throughout the network and compare them to the hydraulic capacity of the various sewers and forcemain under the various development scenarios and expected population growth.

5.1.2 Treatment Plant

The Arthur WWTP is located at the south end of Preston Street near the Conestogo River. The plan provides tertiary treatment utilizing the extended aeration process. The treatment process components include:

- *Preliminary Treatment*: grit channels, comminutor, manual bar screen.
- *Secondary Treatment*: aeration, secondary clarifier.
- *Tertiary Treatment*: filtration, ultra-violet disinfection.
- *Biosolids Management*: aerobic digestion, biosolids storage.
- *Effluent Pumping Station*: two effluent pumps to transfer treated effluent from the WWTP to the lagoons during the non-discharge period.
- *Discharge*: to the Conestogo River during the discharge period, effluent is stored in the lagoons during the non-discharge period.

The rated average day flow (ADF) capacity of the WWTP is 1,465 m^3/day, and discharges to the Conestogo River (River); however, due to assimilative capacity limitations of the River, discharging to the River is restricted to between September 16 and April 30. Between May 1 and September 15, effluent from the WWTP must be pumped to the effluent storage lagoons for holding until discharging to the River is permitted.

A Schedule C Class Environmental Assessment (XCG, 2016) was completed for the WWTP, which recommended the plant and associated Fredrick St. SPS be expanded in a phased approach from the existing rated capacity a 1,465 m3/d to 1,860 m3/d (Phase 1) and 2,300 m3/d (Phase 2). Since WWTP information is available from this EA document, this Technical update will not provide information or comment on this infrastructure in detail.

5.1.3 Sewage Pumping Stations

The collection network for the Arthur wastewater system is divided into three service areas, and is collected by the following trunk sewer and sewage pumping stations:

Wells Street SPS:
The Wells Street SPS pumps via a 1 km - 150 mm diameter PVC/AC forcemain to a manhole at the intersection of Preston and Smith Streets. This SPS receives primarily industrial flows from the industry located in the west side of the town.

Preston Street Trunk Sewer:
Preston Street trunk sewer services Preston Street and the western portion of Domville Street along with the Wells SPS discharge. This area flows by gravity directly into the Arthur WWTP and services a mix of residential and industrial users.

Frederick Street SPS:
The Frederick Street SPS receives the majority of the flows in the community including the central, southern and eastern portions of the system. It pumps directly into the WWTP through a 750 m long, 250 mm diameter forcemain. This SPS services primarily commercial and residential flows.

5.1.4 Reserve Capacity

Triton completed a review of the reserve capacity for the Arthur WWTP for 2020, in accordance with the requirements outlined in the MECP guidelines. The ADF based on flows recorded at the WWTP in calendar years 2017, 2018, and 2019 is 1,400 m^3/day, which is in compliance with the Certificate of Approval for the WWTP. The WWTP reserve capacity of 65 m^3/day corresponds to an additional 45 equivalent residential units that can be served; however, given that 31 equivalent residential units are committed to Golden Valley Farm's, the reserve capacity corresponds to 14 uncommitted equivalent residential units. Refer to Appendix D1 for the 2020 Reserve Capacity Calculations for the Arthur WWTP.

5.1.5 Per Person Flow Rate

The existing average per person flow rate in Arthur is estimated at 581L./day, as presented in the Arthur 2020 RCC, however this value includes ICI flows which are significant within the community. Our expectation is that as the community continues to grow with residential development, the per person flow rate will begin to decrease to more typical values. Therefore, for future planning purposes, the MECP recommended per person flow rate of 400L/day was used. This rate should be reviewed as part of the annual RCC and adjusted accordingly if actual per person flows decrease significantly. As with the water RCC, it is recommended that any significant future ICI developments be required to apply for sewage treatment allocation to ensure that the RCC reflects future usage requirements.

5.1.6 Future Reserve Capacity

Based on the growth as described in section 2, the information presented in the Arthur Wastewater Treatment Plant Expansion Design Brief, and the calculations shown in Table 5.1.6 below, the proposed plant expansions will have sufficient capacity to treat the sewage until the year 2045, with a minor deficit of 25 ERUs remaining at that time. Further, in order to keep pace with the development, it is expected that the Phase 2 expansion should be implemented by 2030.

Table 5.1.6 – Future Sanitary Reserve Capacity

Year	Population (Capita)	Households (ERU)	ADF (m^3/day)	Phase 1 Reserve Capacity		Phase 2 Reserve Capacity	
				m^3	ERU	m^3	ERU
Rated Capacity				1,860m^3		2,300m^3	
2020	2,410	949	1400	460	402		
2025	3,351	1,242	1777	83	69		
2030	3,698	1,370	1915	-55		385	317
2035	4,046	1,499	2055	-195		245	202
2040	4,391	1,639	2193	-333		107	89
2045	4,736	1,768	2331	-471		-31	-25

5.2 Stage 1 Development Scenario

The following Developments have been included in the Stage 1 Development scenario.

Table 5.2 – Stage 1 Developments

Map ID	Development Name	Area (ha)	Units (ERU)
R1-1	Eastridge Subdivision	4.5	162
R1-2	Gordon Street Condo	0.6	36
R1-3	Forest View Estates (WN-50)	1.0	50
C1-1	Existing Residential on 6	0.1	3
C1-2	Existing Residential on 109	0.1	3
C1-3	Vacant Land on 6	1.0	26
C1-4	Vacant Land on 6	0.4	11
C1-5	Vacant Land on 6	0.5	13

To service the developments within Stage 1 there are no sanitary sewer extensions or upgrades required. However, the expectation is that in the event that a land area is not serviceable by gravity (i.e. C1-3) a sewage pumping station or low-pressure sanitary system will be installed on site to provide connection to the nearest municipal infrastructure serviced by gravity. The configuration of such infrastructure would need to be reviewed based on the specific development needs.

5.3 Stage 2 Development Scenario

In addition to the Developments included in Stage 1, the following Developments have been included in the Stage 2 modelling.

Table 5.3a – Stage 2 Developments

Map ID	Development Name	Area (ha)	Units (ERU)
R2-1	Burnside Subdivision	9.8	250
R2-2	Cachet Subdivision	5.1	287
C2-1	Smith & Wells	0.3	8
C2-2	Highway 6 Vacant Commercial	5.1	135

Under the Stage 2 development scenario the following sanitary sewers are over capacity as indicated in Table 5.3b.

Table 5.3b – Stage 2 Sanitary Sewers Over Capacity

Label	Start MH	End MH	Street	Length (m)	Diameter (mm)	Slope (%)	Percent Full (%)
CO-21	MH-179	MH-178	Francis Street	76.5	200	0.36	164.2
CO-22	MH-178	MH-177	Francis Street	45.1	200	0.41	159.5
CO-23	MH-177	MH-176	Francis Street	36	200	0.42	157.7
CO-24	MH-176	MH-175	Francis Street	22.9	200	0.53	140.7
CO-50	MH-78	MH-77	Intersection of George & Fredrick	20.9	300	0.13	115.2

5.4 Stage 3 Development Scenario

Table 5.4a – Stage 3 Developments

Map ID	Development Name	Area (ha)	Units (ERU)
R3-1	West Anderson	0.8	12
R3-2	East Anderson	1.8	27
R3-3	Vacant Residential	1.7	25
M3-1	North Arthur Industrial Lands	29.2	771

Under the Stage 3 conditions the following sanitary sewers are over capacity as indicated in Table 5.4b. Note, this assumes full development of lands within Stage 1, Stage 2 and Stage 3.

Table 5.4b – Stage 3 Sanitary Sewers Over Capacity

Label	Start MH	End MH	Street	Length (m)	Diameter (mm)	Slope (%)	Percent Full (%)
CO-21	MH-179	MH-178	Francis Street	76.5	200	0.36	164.2
CO-22	MH-178	MH-177	Francis Street	45.1	200	0.41	159.5
CO-16	MH-190	MH-189	Francis Street	87.5	200	0.32	159
CO-23	MH-177	MH-176	Francis Street	36	200	0.42	157.7
CO-24	MH-176	MH-175	Francis Street	22.9	200	0.53	140.7
CO-15	MH-191	MH-190	Francis Street	37.8	200	0.11	115.3
CO-50	MH-78	MH-77	Intersection of George & Fredrick	20.9	300	0.13	**121.3**

5.5 Stage 4 Development Scenario

Table 5.5a – Stage 4 Developments

Map ID	Development Name	Area (ha)	Units (ERU)
FD4-1	North of Lagoons	12.1	319
FD4-2	East of Eliza Street	36.6	966
FD4-3	West of Eliza	16.4	433

Under the Stage 4 conditions the following sanitary sewers are over capacity as indicated in Table 5.5b. Note, this assumes full development of lands within Stage 1, Stage 2, Stage 3 and Stage 4.

Table 5.5b – Stage 4 Sanitary Sewers Over Capacity

Label	Start MH	End MH	Street	Length (m)	Diameter (mm)	Slope (%)	Percent Full (%)
CO-21	MH-179	MH-178	Francis Street	76.5	200	0.36	164.2
CO-22	MH-178	MH-177	Francis Street	45.1	200	0.41	159.5
CO-16	MH-190	MH-189	Francis Street	87.5	200	0.32	159
CO-23	MH-177	MH-176	Francis Street	36	200	0.42	157.7
CO-24	MH-176	MH-175	Francis Street	22.9	200	0.53	140.7
CO-15	MH-191	MH-190	Francis Street	37.8	200	0.11	115.3
CO-50	MH-78	MH-77	Intersection of George & Fredrick	20.9	300	0.13	**144.8**

The expectation is that FD4-2 and FD4-3 will be serviced by the Preston Street Trunk.

6 CONCLUSION

6.1 General

This Water and Sanitary Systems Technical Study - Arthur provides current (based on available information) computer simulation models of the water and sanitary systems in Arthur. These models were used to evaluate the adequacy of the systems to meet the needs of the existing community (i.e. calendar year 2020) and to service the future development scenarios to calendar year 2045, consistent with the expected population growth and development Stages presented in the GMP (GSP Group Inc., February 26, 2018) and the Development Charges Background Study (DFA Infrastructure International Inc., 2018).

In addition to the modelling/evaluation of the collection/conveyance systems, the capabilities of key components of the system were assessed for their ability to accommodate the future growth including water supply/ storage and sewage treatment.

A summary of the infrastructure servicing upgrades and extensions identified, and the corresponding recommendations to phase/stage the implementation of these infrastructure improvements is provided in the following sections.

6.2 Water System

Source Capacity is a measure of the municipal water system's ability to supply water. Based on current information, the Source Capacity of the Arthur water system is sufficient to meet the estimated water demands of the 2045 growth scenario. However, if Well 7 fails, the usable capacity of the system will be limited to 2,255m^3/day given that Well 8a and 8b cannot be pumped at the same time. With this understanding, it is recommended that the Township closely monitor the water usage and available RC on an annual basis. The future RC should also be predicated based on recent development trends and known development interest. The process of securing future water sources and the infrastructure required to deliver this water to the system can be a lengthy, arduous and therefore should be instigated well in advance of the requirements.

Water storage within the system is provided for three purposes; fire storage to allow the system to achieve flow rates and volume necessary to effectively fight fires; equalization storage which provides water to the system during peak demand periods; and emergency storage intended to provide a safety factor for water supply. Based on the Ministry of Environment (MOE) guidelines, the existing storage is adequate for the current population and given the surplus in source capacity which can supplement storage requirements, the storage should be adequate for the immediate future. In considering the GMP growth projections, the storage requirements are significantly above the current volume available and as the surplus source capacity is diminished more storage will be required. Therefore, it is recommended that additional storage be added to the system within the next 5 to 15 years.

Given the age and limited volume of the existing facilities, and the fact that a tower with a higher operating level is needed to service outlying areas, consideration is to be given to constructing a new elevated tower that would replace the storage volume in the existing towers and provide additional storage for future development. This tower would also operate at a higher level in order to service outlying areas and improve fire flow capabilities of the existing system. Although the existing Freud Tower site may be suitable for the new tower, the Township should consider obtaining a site for this future tower as part of future development proposals in the industrial area. This would provide a higher base elevation (i.e., shorter tower) and allow for adequate system

storage during construction of the new tower. Establishment of a new water storage facility and the decommission of the existing facilities are both considered Schedule B projects under the Class EA.

Hydraulic analysis of the system indicates that system pressures and fire flow capabilities are adequate to meet existing development, and with watermain extensions, the future scenarios are accommodated as well. However, it is recommended that consideration be given to increasing the operating range of a future elevated tower to adequately service the potential future development areas to the north of the existing urban area which are located at higher topographic elevations. This would have the added benefit of increasing system pressures and fire flows through the entire service area.

Generally, the watermain within the existing system are in good condition, however, there remains a moderate amount of cast iron pipe in the system. This pipe should continue to be replaced as a part of road reconstruction projects as it is reaching the end of its service life.

Given the future expansion of the industrial area outlined in the development scenarios, it is recommended that trunk watermains be extended to service this area. It is recommended that these trunks would be extended on Wells Street East to Macauley Street, along Macauley Street to Eliza Street and on Eliza Street to complete the loop. However, the optimum routing for these trunks and connections to the existing system will depend on the configuration of the developments to a certain extent and should be reviewed in the context of future development proposals. Additional local watermain may be required along the Highway 109 corridor to service future highway commercial areas.

6.3 Sanitary System

The existing computer simulation model of the sanitary collection system was reviewed and updated to estimate flows throughout the network and compare them to the hydraulic capacity of the various sewers. Based on this analysis, the collection system has sufficient hydraulic capacity under existing and Stage 1 development conditions. However, under the Stage 2/3/4 Scenarios, hydraulic capacity in some of the existing sewers may be exceeded depending on the sewer routing of future development. Specifically, servicing of the future residential and highway commercial developments C1-3, C2-2 and R2-2 will need to be reviewed to ensure that existing sewer capacity can be optimized. Figure 5.8 illustrates upgrades that would be required under the worst-case scenario, but the hope it is sewage can be directed to alternative sewers routes thereby avoiding upgrades to the sewers on Francis Street. Figure 5.8 illustrates possible sewer extensions to service the future industrial development areas utilizing existing right-of-way. However, depending of the configuration of the developments, these sewers may be extended internal to the development areas. The optimum sewer configuration should be considered as development proposals are brought forward.

The theoretical flows modelled in the Stage 2 through 4 scenarios are approaching sewer capacity along Francis Street downstream of the Charles Street intersection up to the Fredrick Street SPS and a small section of sewer on the west side of George Street at the Fredrick St. intersection. However, actual flows at these locations should be confirmed with local flow monitoring in the future prior to replacement of sewers. Additionally, as discussed above, the future modelling is based on full occupancy of the lands. Therefore, before any reconstruction project, it is imperative that the potential future development upstream of the sewers be thoroughly investigated to determine the best servicing strategy for the area and the existing system.

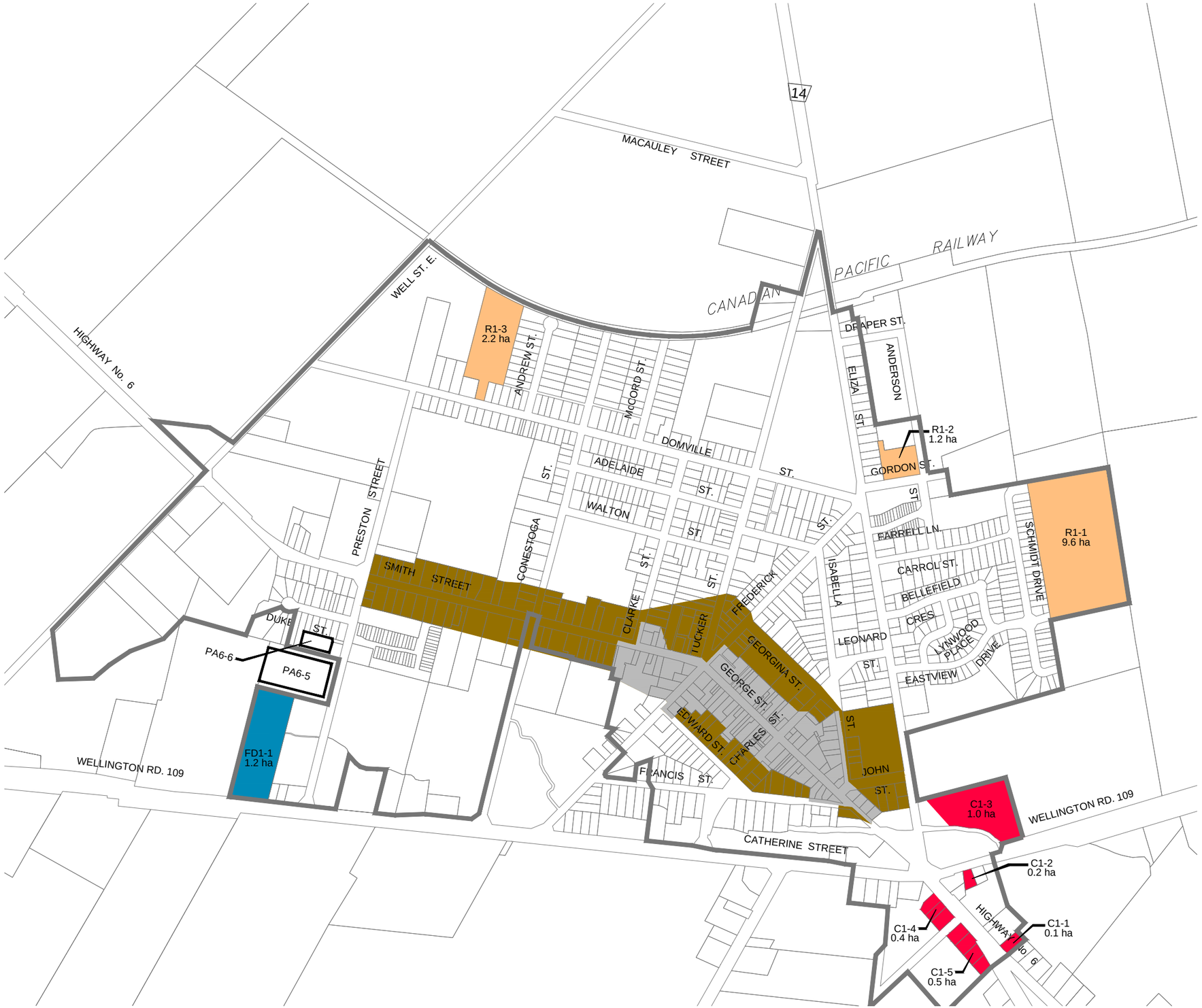
Based on the design flows, the recommended servicing strategy and staged Development, the Wells Street sewage pumping station, and associated forcemain are adequate to service the future development scenarios considered in this study and the Fredrick Street SPS is currently being upgraded to address future needs.

This report is respectfully submitted.

TRITON ENGINEERING SERVICES LIMITED

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y



LE□END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI□HWA□ COMMERCIAL
- CENTRAL □USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL □ COMMERCIAL
- STA□E □□OUNDAR□
- PA — POLIC□ AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA□LE LAND

FI□URE □.1

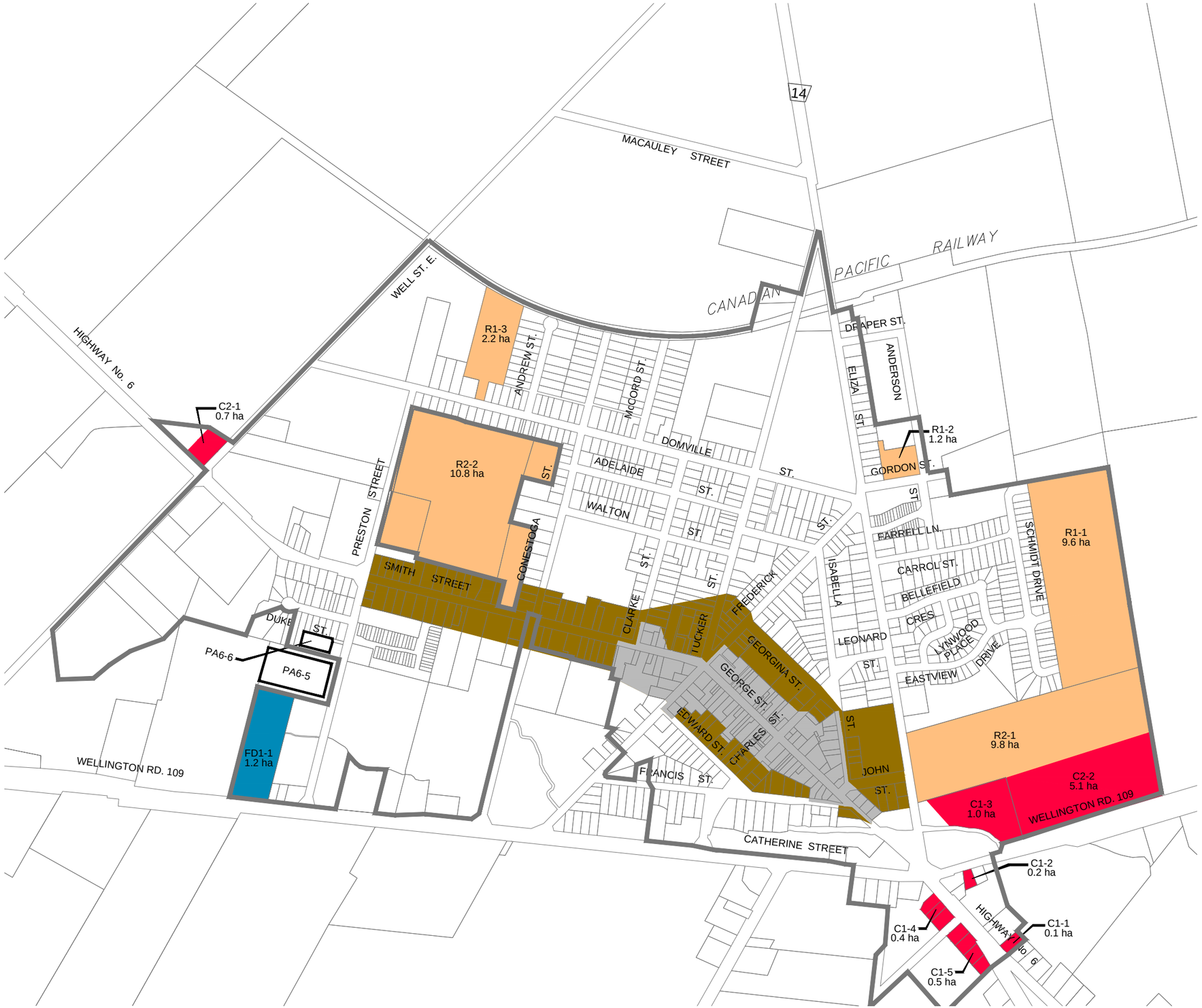
STAGE 1 □EVELOPMENT SCENARIO

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y



LE□END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI□HWA□ COMMERCIAL
- CENTRAL □USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL □ COMMERCIAL
- STA□E □□OUNDAR□
- PA — POLIC□ AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA□LE LAND

FI□URE □.□

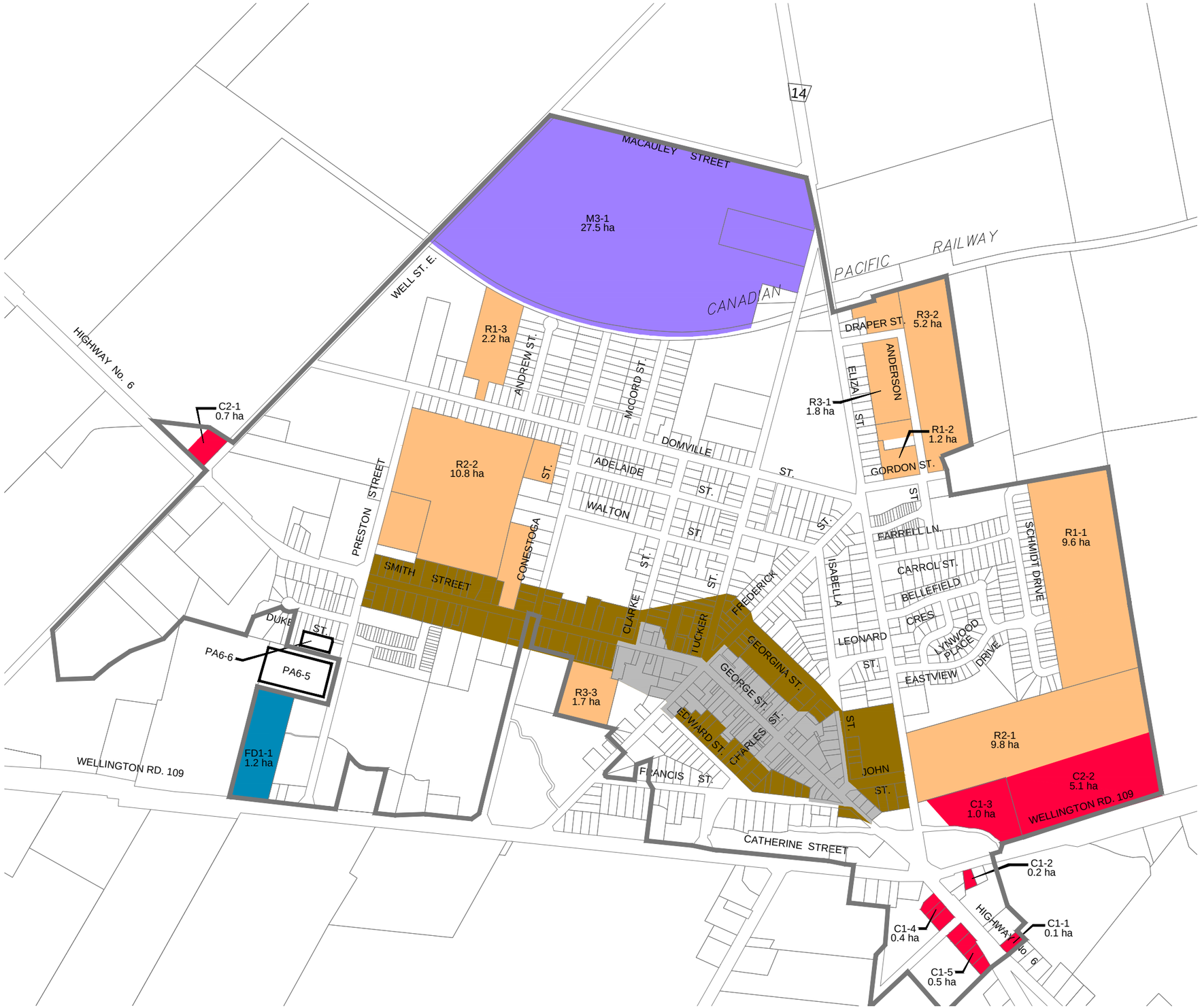
STAGE 2 □EVELOPMENT SCENARIO

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



LE END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI HWA COMMERCIAL
- CENTRAL USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL COMMERCIAL
- STA E OUNDAR
- PA — POLIC AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA LE LAND

FI URE .

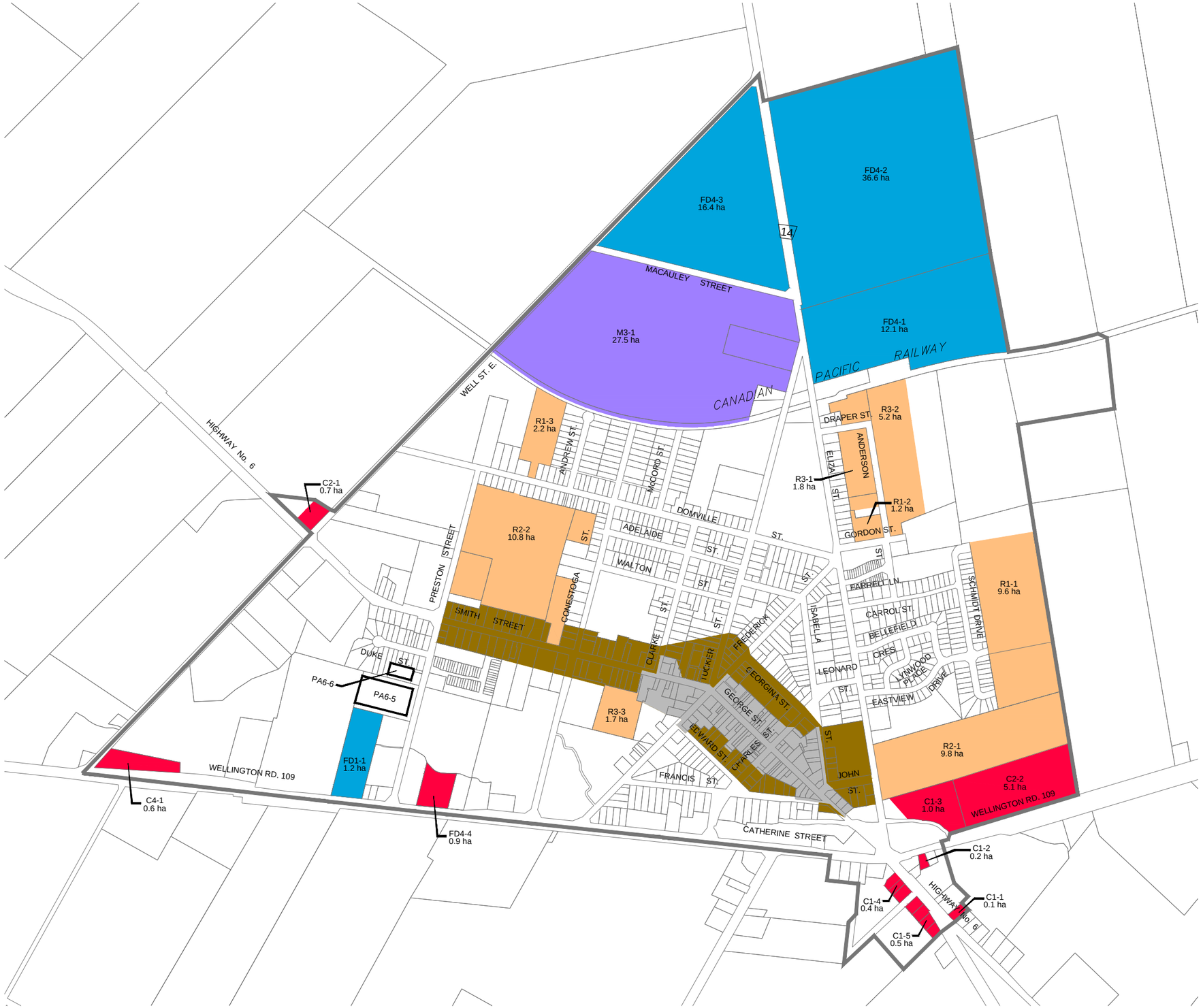
STAGE 3 EVELOPMENT SCENARIO

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y



LE□END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI□HWA□ COMMERCIAL
- CENTRAL □USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL □ COMMERCIAL
- STA□E 4 □OUNDAR□
- PA — POLIC□ AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA□LE LAND

FI□URE □.4

STAGE 4 □EVELOPMENT SCENARIO

SCALE 1:1□,500
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y

WATERMAIN SI□IN□:

- □.100□ □
- 150□ □
- □00□ □
- □50□ □
- □00□ □

□UNCTION PRESSURE RAN□ES

- 40 □50 □□□
- 50 □□0 □□□
- □0 □70 □□□
- 70 □80 □□□

FI□URE □.1

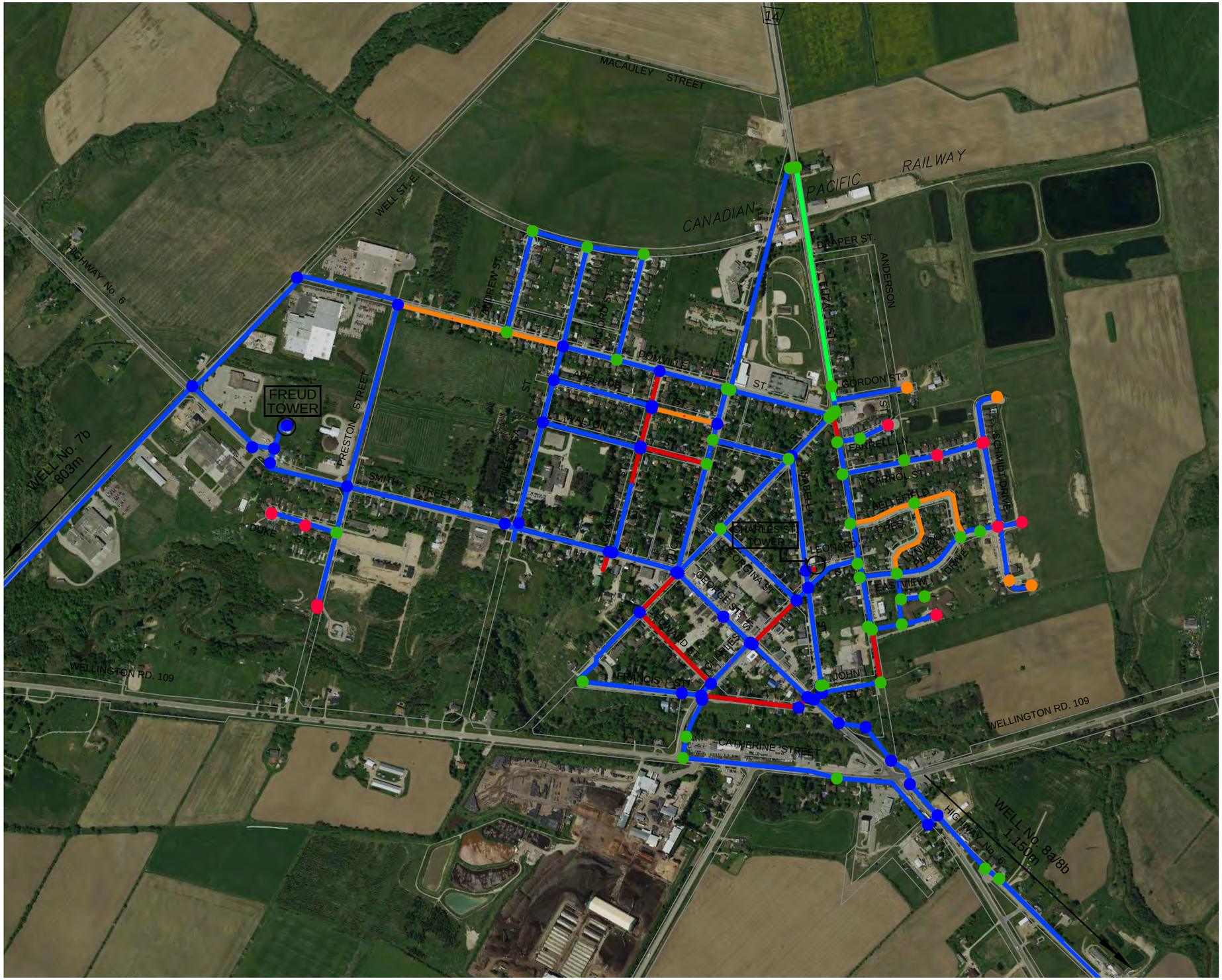
WATER SYSTEM WATERMAIN SI□ E □ SYSTEM PRESSURE

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



WATERMAIN MATERIAL

- PVC
- CAST IRON
- DUCTILE IRON
- THIN WALL PVC

UNCTION FIRE FLOW RAN E

- 70 80 L/
- 80 10 L/
- 10 00 L/
- 00 50 L/

FI URE .

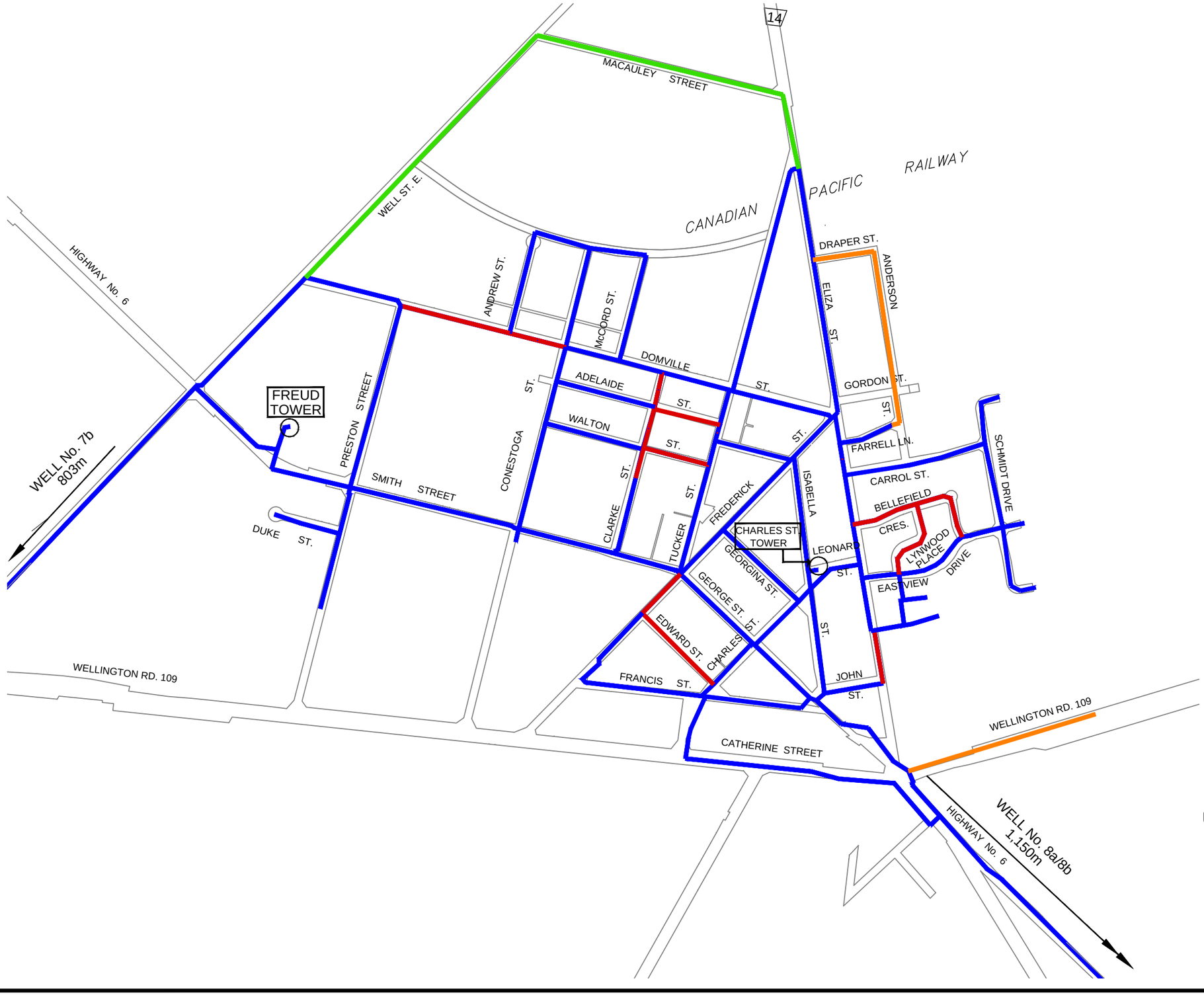
WATER SYSTEM WATERMAIN MATERIAL FIRE FLOW CAPA ILITIES

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y



LE□END

- E□ISTIN□ WATERMAIN TO REMAIN
- REPLACEMENT OF CAST IRON
- TRUN□ MAIN E□TENSION
- LOCAL MAIN E□TENSION

FI□URE 4.1

RECOMMEN□ E□ WATER UPGRA□ ES AN□ E□TENSIONS

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y

SEWER SI□IN□ :

- □00□ □
- □50□ □
- □00□ □
- □75□ □
- 450□ □
- FORCEMAINS
- LA□ OON OVERFLOW

FI□URE 5.1

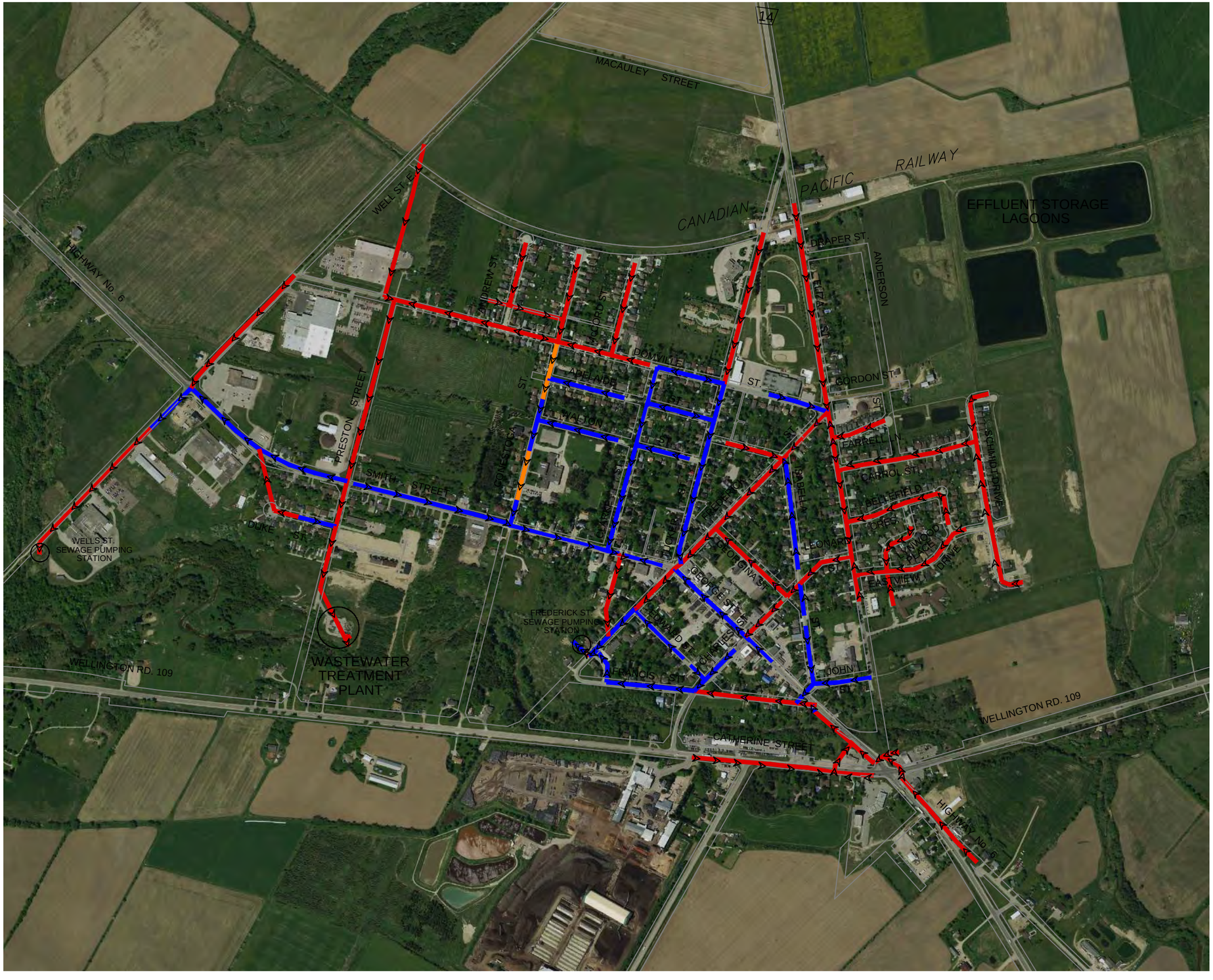
SANITARY SYSTEM SEWER SI□ E

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y



LE□ END:

- CONCRETE
- PVC
- AS□ESTOS CEMENT

FI□URE 5.□

SANITARY SEWER MATERIAL

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y

PEA□ FLOW / CAPACIT□ □□□

- □.□5□
- □.50□
- □.75□
- □.100□

FI□URE 5.□

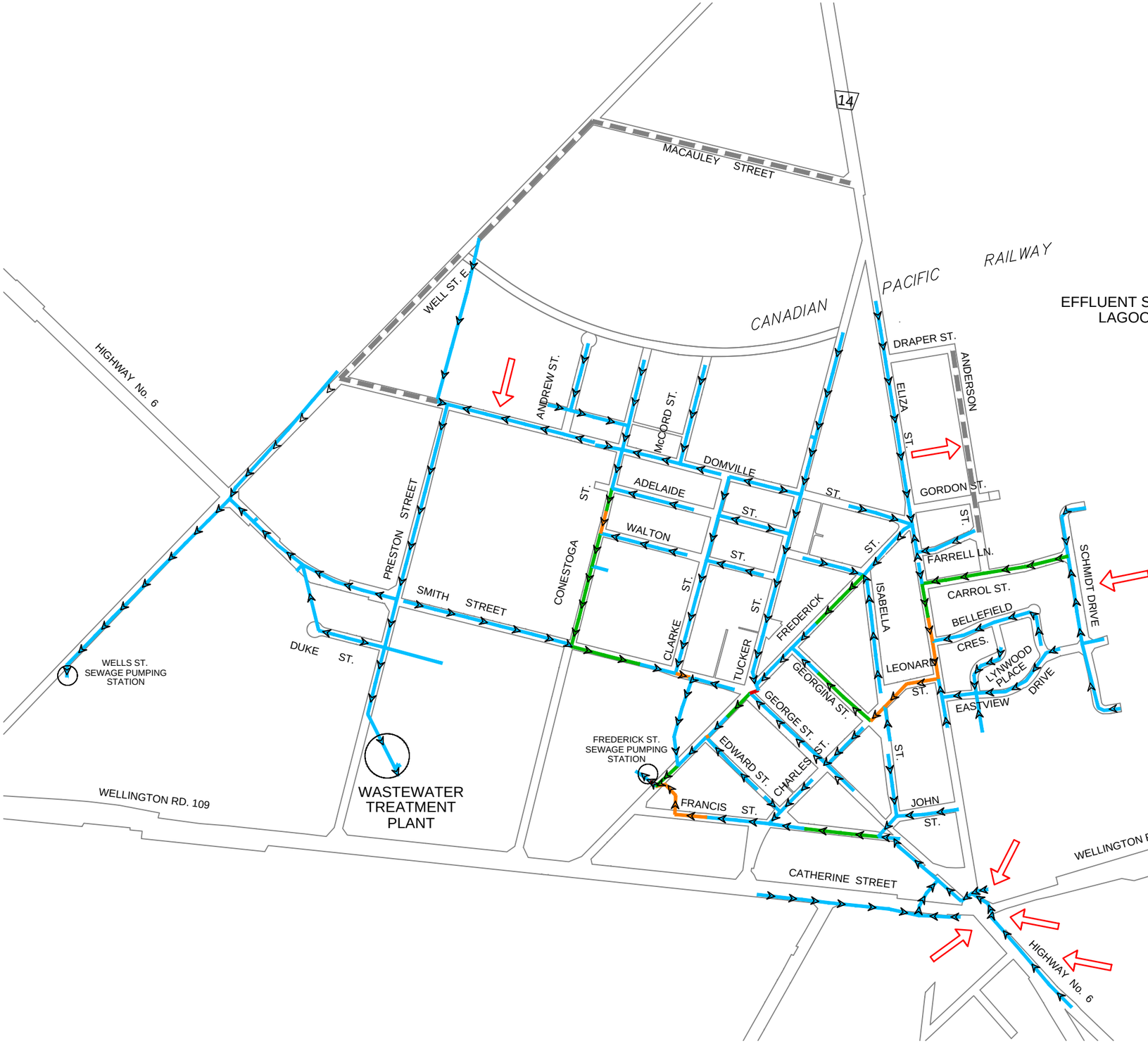
PEA□ SEWAGE FLOWS □E□ISTING CON□ ITIONS□

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



PEA FLOW / CAPACIT

- 50
- 75
- 100
- 100
- FUTURE SEWER E TENSIONS
- FUTURE DEVELOPMENT CONTRI UTION

FI URE 5.4

PEA SEWAGE FLOWS STAGE 1

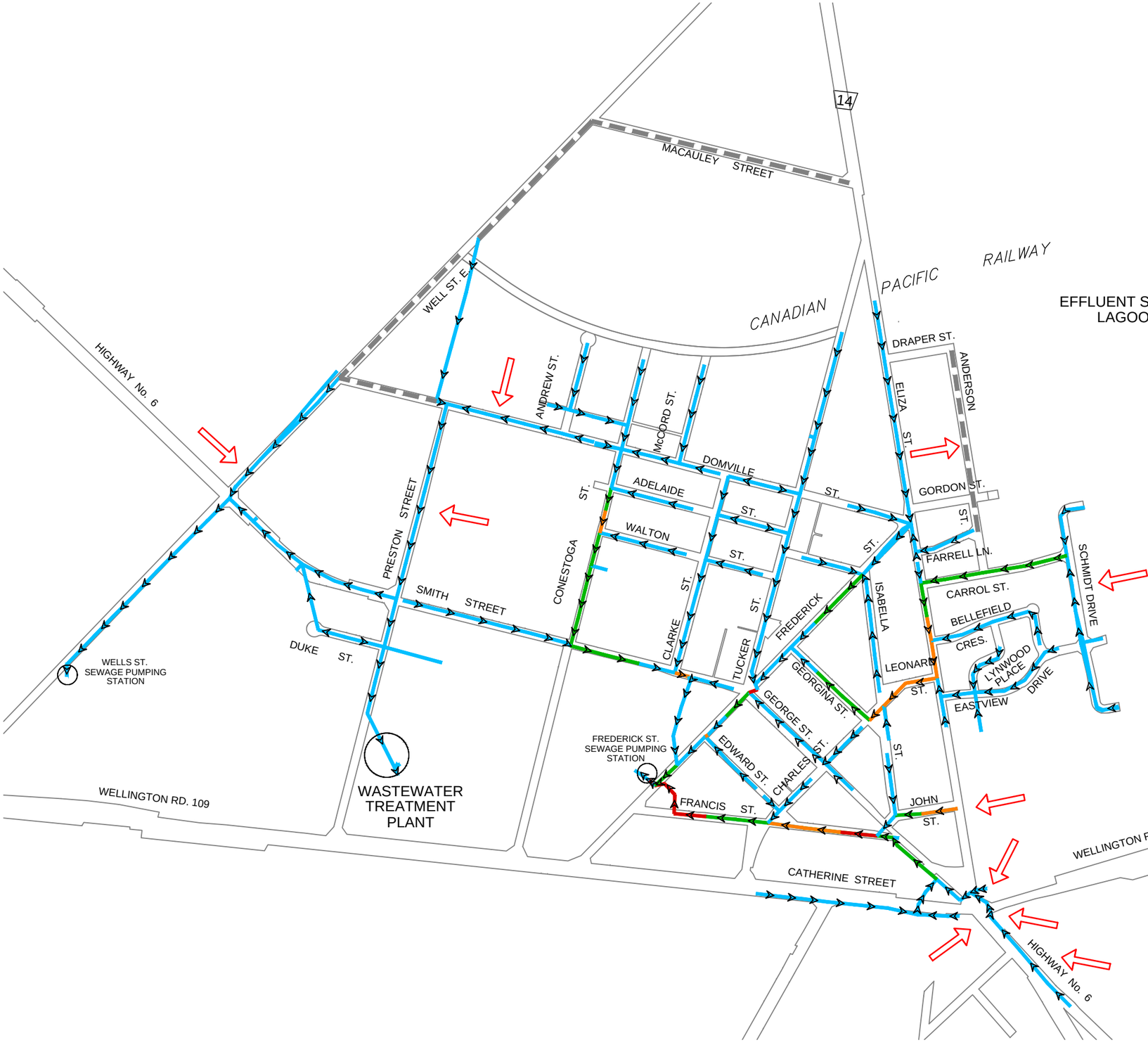
SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y

EFFLUENT STORAGE LAGOONS



PEA FLOW / CAPACIT

- 50
- 75
- 100
- 100
- FUTURE SEWER E TENSIONS
- FUTURE DEVELOPMENT CONTRI UTION

FI URE 5.5

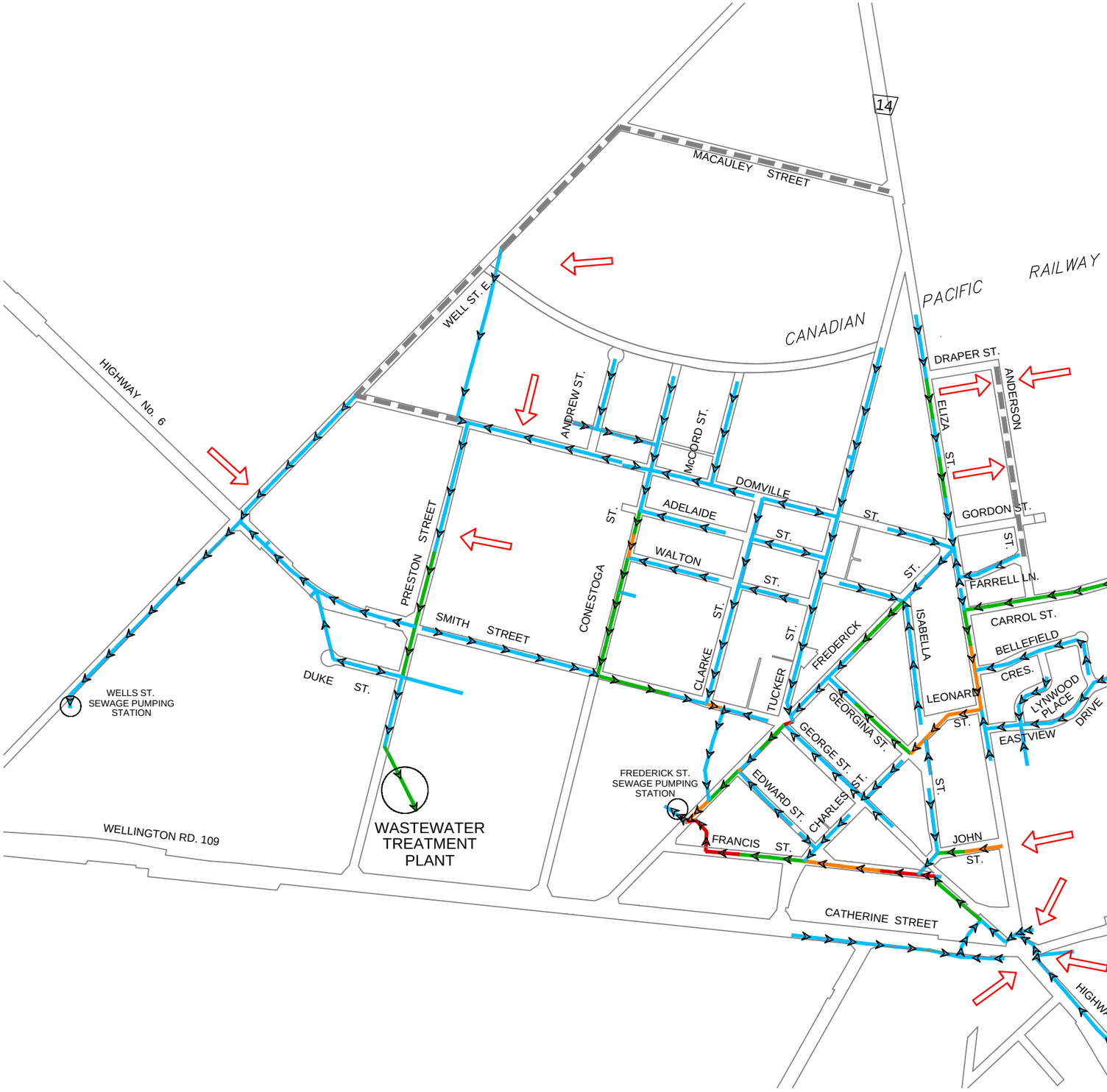
PEA SEWAGE FLOWS STAGE 2

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



PEA FLOW / CAPACIT

- 50
- 75
- 100
- 100
- FUTURE SEWER E TENSIONS
- FUTURE DEVELOPMENT CONTRI UTION

FI URE 5.

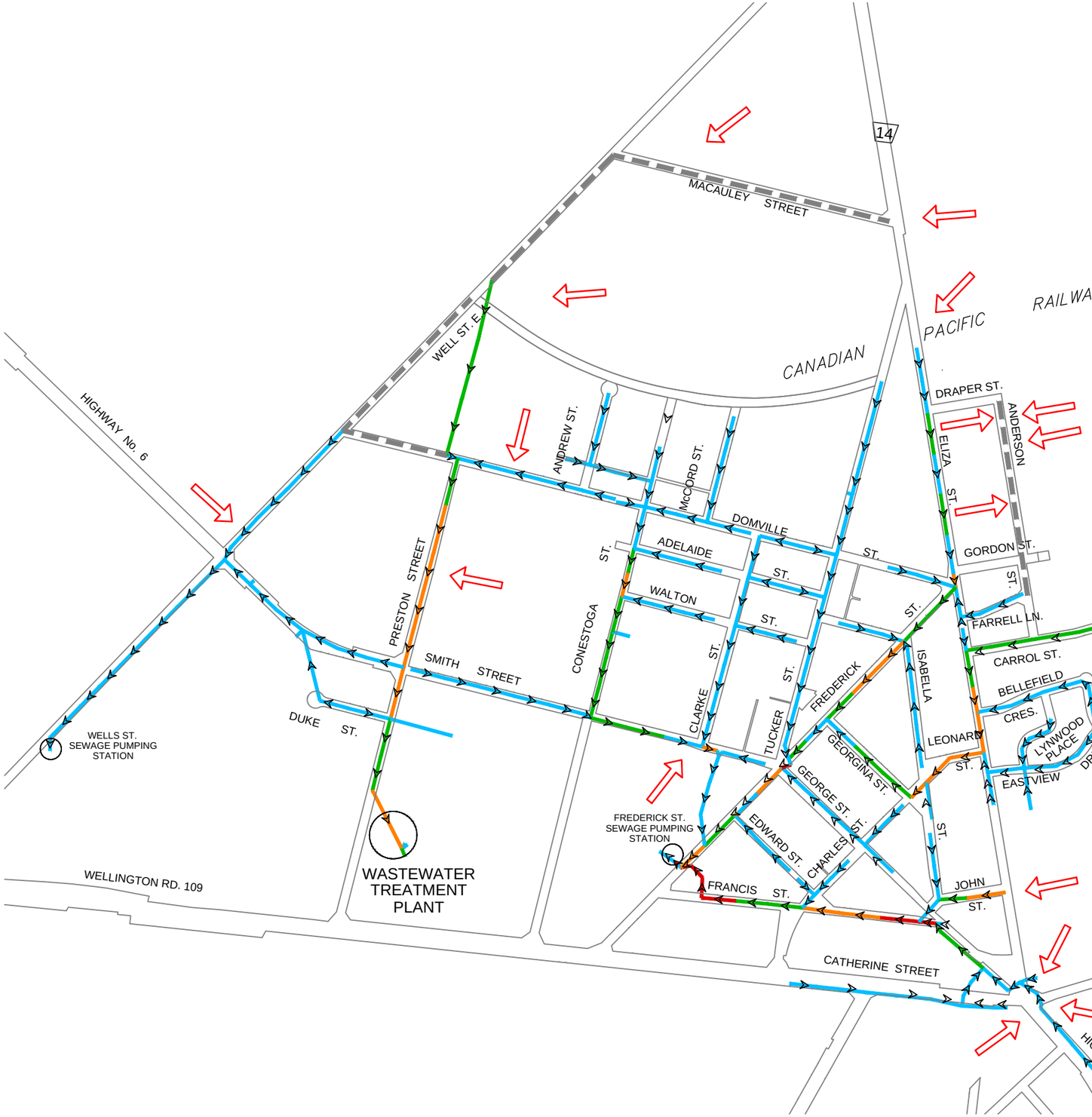
PEA SEWAGE FLOWS STAGE 3

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



PEA FLOW / CAPACIT

- 50
- 75
- 100
- 100
- FUTURE SEWER E TENSIONS
- FUTURE DEVELOPMENT CONTRI UTION

FI URE 5.7

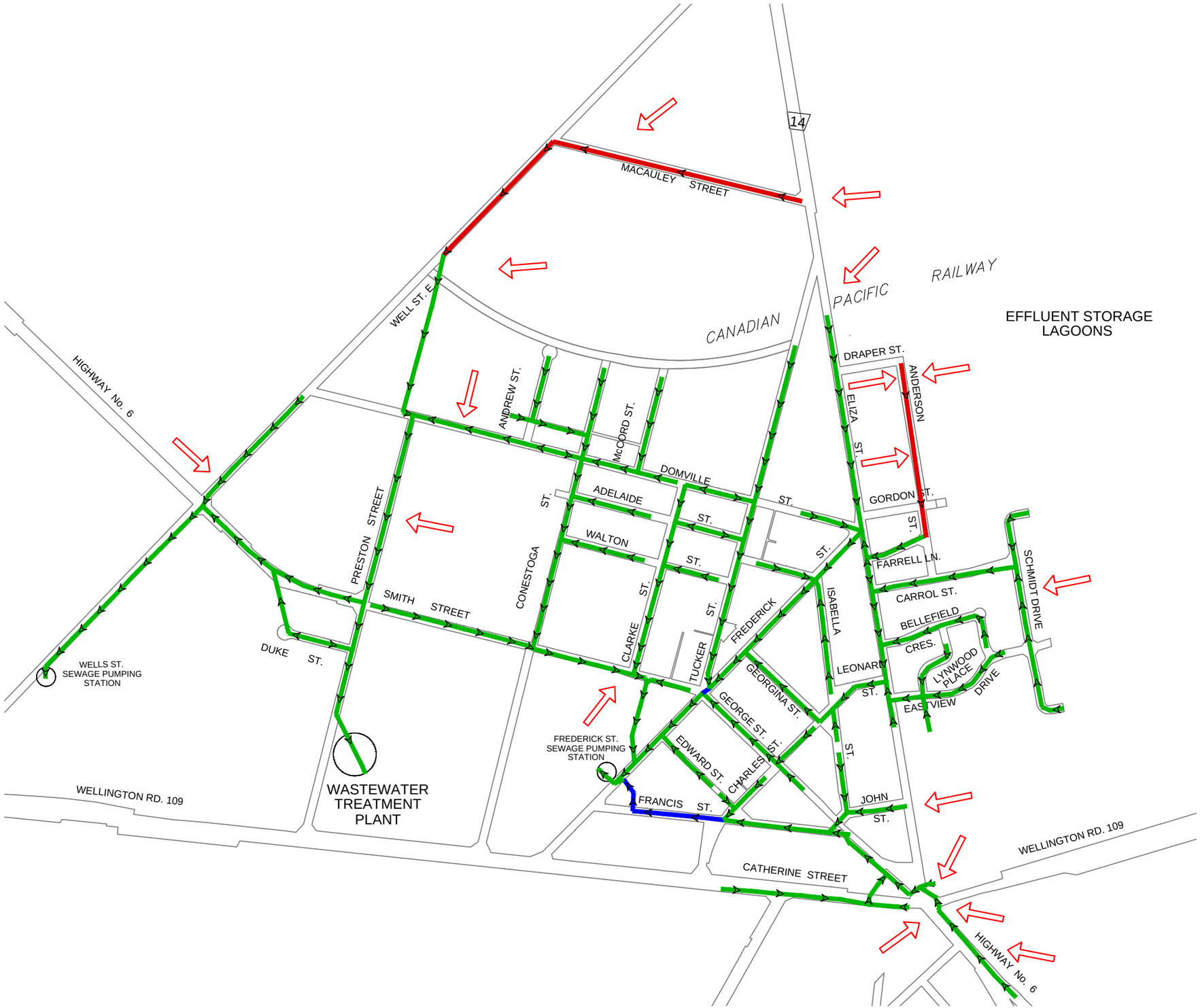
PEA SEWAGE FLOWS STAGE 4

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y



LE□END

- E□ISTIN□ SEWER TO REMAIN
- UP□RADES
- E□TENSIONS

FI□URE 5.8

RECOMMEN□ E□ SANITARY UPGRA□ ES AN□ E□TENSIONS

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

Appendices

Appendix A

Supporting Studies

Appendix A.1

2018 Growth Management Plan

WELLINGTON NORTH COMMUNITY GROWTH PLAN

FINAL REPORT

Township of Wellington North

Final – February 2018

WELLINGTON NORTH COMMUNITY GROWTH PLAN

FINAL REPORT

Township of Wellington North

Final – February 2018

Prepared for:
Township of Wellington North
7490 Sideroad 7 W, PO Box 125
Kenilworth, ON N0G 2E0

Prepared by:
GSP Group Inc.
72 Victoria St. S., Suite 201
Kitchener, ON N2G 4Y9

ACKNOWLEDGEMENTS

Community Growth Plan Steering Committee
Mayor Andy Lennox
Councilor Sherry Burke
Councilor Lisa Hern
Councilor Steve McCabe
Councilor Dan Yake
Aldo Salis, Director of Planning & Development, County of Wellington
Marianne Christie
Jim Coffey
Paula Coffey
James Craig
Mike Givens, CAO, Township of Wellington North
Teresa Hutchinson
Jim Klujber
Brett Parker
Julie Silva
Jim Taylor
Murray Townsend
Marty Young

Community Growth Plan Working Group
Dale Small, Economic Development Officer, Township of Wellington North
Darren Jones, Chief Building Official, Township of Wellington North
Linda Redmond, Manager of Planning & Environment, County of Wellington
Derek McCaughan, Interim Director of Public Works, Township of Wellington North
Barry Trood, Water & Sewer Superintendent

Consulting Team
Steve Wever, GSP Group Inc.
Kevin Curtis, Curtis Planning
Megan Gereghty, GSP Group Inc.
Michelle Nichol, GSP Group Inc.

A special thank you to the residents, business owners, public agency representatives and others who participated in the consultation program to contribute to shaping this *Community Growth Plan* for Wellington North.

CONTENTS

1. INTRODUCTION

GSP Group Inc. and Curtis Planning have been retained by the Township of Wellington North to complete a *Community Growth Plan*, also referred to as a *Growth Management Strategy*.

This Plan is intended to provide direction for policy development and decision-making regarding land development and growth-related investments and initiatives, to contribute to planning for positive growth and change in Wellington North, by assisting the Township to:

- Initiate community preparedness and readiness for investment and development;
- Align land uses, infrastructure, transportation and community services;
- Facilitate consultation and consensus-building on the future vision of the Township;
- Provide an inventory and status of available lands and infrastructure capacities; and,
- Support County planning initiatives with local information and direction to assist in meeting Provincial conformity requirements under the *Planning Act*, and the direction provided in the *Growth Plan for the Greater Golden Horseshoe*.

While the Plan is comprehensive in nature, its purpose is to outline recommendations for the direction and management of potential future urban growth, which will occur primarily in the urban areas of Arthur and Mount Forest.

The Plan also recognizes that Township-wide opportunities should continue to be supported to promote rural economic development, tourism, recreation, protection of agricultural lands and natural environment conservation, as well as continued community improvement in the rural settlement areas of Conn, Damascus, Kenilworth and Riverstown.

This Plan also builds on and promotes a continued and strengthened community partnership, and the Township's leadership role in engaging and working with the community, public and private partners, stakeholders and investors, to shape the future of Wellington North. Community and stakeholder consultation is a key part of the process of developing the *Community Growth Plan*, and will continue to be a core element of the continued success and evolution of Wellington North.

Development of the Plan involved extensive community engagement and collaboration. At the outset of this initiative, a Steering Committee of residents, stakeholders, Township Council and County Planning staff was formed. The Committee met at key points in the process to provide input and feedback on the research, and to discuss ideas and strategies to guide planning for the future in Wellington North. The development and refinement of the *Community Growth Plan* has been informed and guided by input from this Committee.

To engage the community and stakeholders more broadly, workshops and themed focus groups were held in Arthur and Mount Forest, and an online survey was launched in September 2017. The consultation sessions were initiated through presentations, maps, handouts and other materials provided to residents and stakeholders to establish the project purpose and goals, identify the range of topics and key issues being considered, and to stimulate discussion and feedback.

Figure 1: Community Growth Plan Study Elements

A Working Group of Township staff and County Planning staff was also created and met periodically to coordinate the study process and consultation, gather and review technical information, and to provide input and feedback on the reports, presentations, maps and other documents created by the consultants.

A complete summary of the research, consultation and analysis undertaken in support of the *Community Growth Plan* development is provided in the *Background Report* available as a separate document. The *Background Report* provides important context for the *Community Growth Plan*, and discusses the implications of trends, growth projections, demographic shifts and other factors influencing planning for community growth. The *Final Report* builds on the background information, emerging themes and growth scenarios that were identified and explored through the earlier phases of the study process.

2. VISION & GOALS

The Community Vision and Goals are intended to describe the overall community planning and growth management direction for Wellington North, and to capture the core themes that emerged from the input received. These statements also help to provide a consistent, long-term framework through which future planning decisions and investments are considered and evaluated towards a desired common outcome, and to articulate and embed key growth management concepts, ideas and terminology that link to related Provincial and County planning policies and directions and related Township strategies and initiatives. As recommended by the Steering Committee for the *Community Growth Plan*, the following Vision and Goals were approved by Wellington North Council on January 8, 2018.

Recommendation #1: Community Vision

Wellington North is a **place for everyone** where a **high quality of life** is supported and defined by:

- A **sense of community** with active volunteers, local leaders, government and service providers working together to support capacity building, engagement, participation and well-being;
- A **range of housing, jobs** and **services** that **meet local needs**, focused within Arthur and Mount Forest as **complete communities** and service centres;
- A **strong** and **diverse economy** that has grown within **settlement areas** and in **agricultural, rural** and related business sectors;
- **Healthy** natural, social and built **environments** that promote **conservation** of land and resources, community **wellness**, **safety**, **inclusiveness** and a range of **recreation** opportunities;
- **Infrastructure, facilities** and **services** that are **cost-effective**, optimally used, technologically advanced, **environmentally responsible** and resilient;
- Connected **transportation routes and options** that safely and efficiently move people and goods, offering **choice** and **convenience** for all;
- **Small town atmosphere** and **rural landscape character** with a rich cultural and built **heritage** that is recognized and celebrated.

Recommendation #2: Growth Management Goals

Direct / Focus Development

1. To direct and focus development to the urban areas of Arthur and Mount Forest as the primary centres and complete communities with a mix of land uses, housing, jobs and services.

2. To protect prime agricultural land and rural resources for farming and rural economic development.

3. To improve walking, cycling and other options as convenient, safe and efficient modes of transportation.

Orderly, Appropriate and Compact Development

4. To plan for and promote orderly, compact development within the urban areas, based on phasing to align with planning for infrastructure, transportation, facilities and services.

5. To prioritize appropriate, context-sensitive intensification within the urban areas and optimize the efficient use of existing infrastructure and services.

6. To promote inclusive development through integrated land use, infrastructure and transportation planning and community design.

To Have Growth Pay for Itself

7. To fund and recover growth-related capital costs for infrastructure, transportation, facilities and services via Development Charges.

8. To incentivize and reduce costs for priority development, including: downtown revitalization, special needs housing, on-farm businesses, education/training facilities, and local transit services.

9. To plan for and invest in infrastructure, facilities and services that are cost-effective, environmentally responsible, resilient to climate change and sustainable over the long term.

3. STRATEGIES & INITIATIVES

In Wellington County, provincial and regional planning direction for accommodating population and employment growth and related development is provided by the *Provincial Policy Statement (PPS)*, the *Growth Plan for the Greater Golden Horseshoe (Growth Plan)* and the *County of Wellington Official Plan (County Plan)*.

Under the *Planning Act*, municipalities are required to be consistent with the *PPS* and, within the *Greater Golden Horseshoe (GGH)* area, are required to conform to the *Growth Plan*. The *PPS* and *Growth Plan* apply to County and local land use decision-making on applications for development, and municipalities are required by legislation to amend their official plans to address *Growth Plan* requirements.

The *County Plan* establishes the upper-tier, regional-level policy framework and implementation of the *PPS* and the *Growth Plan*. In the Township, the *County Plan* also serves as the local Official Plan for Wellington North.

Key policy directions from these documents and implications for directing and managing growth in Wellington North are summarized in the *Background Report*.

This section of the *Community Growth Plan* recommends strategies and initiatives related to growth management, based on the policy directions of the Province and the County, the findings of the background research and consultation, and the themes identified in Sections 1 and 2. Reference should be made to the *Background Report* for further context and discussion regarding each topic area.

Note: The County is required to initiate a municipal comprehensive review (MCR) to develop a new *County Plan*, or an amendment to the current *County Plan*, to comprehensively apply the policies and schedules of the *Growth Plan*, by July 1, 2022. Recommendations that would require further review through a MCR of the *County Plan* to implement the *Growth Plan* are denoted by *MCR throughout this report.

3.1 Growth Forecasts and Locations

As required by the *Growth Plan*, the *County Plan* allocates population and employment to each local municipality based on the *Growth Plan's* total population and employment growth forecast for Wellington County. Table 1 identifies the population and employment forecasts identified for Wellington North.

Table 1: Wellington North Growth Forecasts

Township of Wellington North			
	2016	**2036**	**2041**
Population	12,490	17,085	17,685
Households	4,635	6,330	6,590
Employment	7,070	9,320	9,440

SOURCE: COUNTY OF WELLINGTON OPA 99, TABLE 2.

Population and Housing Forecasts

In keeping with the direction of the *PPS* and *Growth Plan*, and the policies of the *County Plan*, the majority of future population and housing growth in the Township is directed to the serviced urban areas of Arthur and Mount Forest. Table 2 identifies the population and household growth forecasts for the two primary urban areas in the Township, as established in the *County Plan*.

Table 2: Wellington North Growth Forecasts by Area

Township of Wellington North			
	2016	**2036**	**2041**
Arthur			
Population	2,725	3,700	3,670
Households	1,005	1,370	1,370
Mount Forest			
Population	5,190	8,550	9,230
Households	2,150	3,365	3,625
Outside Urban Centres			
Population	4,575	4,835	4,785
Households	1,480	1,595	1,595

SOURCE: COUNTY OF WELLINGTON OPA 99, TABLE 2.

The forecasts direct the most population and housing growth to Mount Forest as the largest urban area with the greatest servicing capacity available for future development. Of the Township's total population growth, 65% is expected to be accommodated in Mount Forest. This would increase Mount Forest's population by 78% to the year 2041, for an average annual growth rate of 3.1%. Comparatively, Mount Forest's average annual growth rate for the period of 2011 to 2016 was 1.6%. Achieving the 2041 population growth forecast in Mount Forest will require a significant, sustained increase in housing development activity. Recent development activity and applications suggest that such an increase is possible.

The forecast population growth in Arthur reflects a 35% population increase, or 1.8% annually on average from 2016 to 2036, and 18% of the total Township-wide population

forecast to the year 2041. After 2036, the forecast reflects no further residential growth, which would result in a small decline in Arthur's population. While this has been attributed to servicing factors, a desire to direct a greater share of the forecast population growth to Arthur was expressed by some through the consultation process. It was also noted that Arthur's location closer to other urban centres may lead to greater housing demands and a faster rate of growth. Although wastewater treatment servicing capacity is a constraint to growth in Arthur, the Township is making investments to increase the available servicing capacity for development through phased improvements to the Arthur Wastewater Treatment Plant.

Available residential lands are generally sufficient to address future needs based on the population and housing growth forecasts; however, potential additional intensification, integration of a greater housing mix on available residential lands, and the positioning of greenfield development opportunities in opportune locations would optimize the land supply towards achieving the current and future targets.

To further direct and clarify the intent of the growth forecasts and how they are to be applied and used in decision-making at the County and local level, the *Growth Plan* directs that:

a) Municipalities may plan for development beyond the 2041 planning horizon, for:
   - Strategic Growth Areas that are delineated in official plans and subject to minimum density targets for these areas, integrated planning for infrastructure and facilities to meet related servicing capacity needs, contextually appropriate built form, and that will support complete community development;
   - Infrastructure, public service facilities and the long-term protection of employment areas, provided lands are not designated for urban development beyond what is needed for the 2041 planning horizon.

b) Outside of a municipal comprehensive review (MCR), the forecasts are not to be applied on a site-specific scale as the basis for approving or refusing development proposals that would otherwise conform with the *Growth Plan*.

c) Upper- and single-tier municipalities in the outer ring (e.g. the County) will determine if they have excess lands:
   - Excess lands are defined as lands within settlement areas, outside of built-up areas, that have been designated for development in an official plan but are in excess of what is needed to accommodate forecasted growth to the year 2041;
   - Excess lands will be determined through a land needs assessment to be completed in accordance with a methodology to be established by the Province;

- As of the date of this report, a draft land needs methodology has been issued by the Province for consultation, and the methodology indicates that it is to be used to determine the quantity and type (residential or employment), but not the location, of excess land.

The balance of the population growth is expected to be distributed among the rural settlement areas, as larger lot development on private services within the existing settlement area limits. Outside of settlement areas, population growth in the rural area of the Township will be primarily limited to that which can be accommodated within the existing housing stock, accessory dwellings on existing agricultural and rural properties, and new dwellings on vacant lots of record.

Provincial planning policies limit lot creation in the rural area to protect the agricultural land base and farm operations, and to focus residential development in areas where full municipal water and wastewater services are available. In 2018, the Province issued an Agricultural Land Base Map which identifies nearly all the land outside of the settlement areas in Wellington North as prime agricultural areas, where new lot creation is not permitted for residential development. While this mapping may be refined through a municipal comprehensive review of the *County Plan*, it is anticipated that residential development will be very limited outside of settlement areas in the Township over the long-term. Moreover, the *County Plan* already designates most of the rural part of the Township as prime agricultural and restricts non-farm lot creation in these areas.

Employment Forecast

Wellington North has experienced strong employment growth and has a high ratio of employment to population at approximately 1 job for every 1.75 persons, and is well-positioned to continue to be a destination for a range of employment opportunities through intensification of existing businesses and new business development.

The employment growth forecasts in the County Official Plan are identified for the Township as a whole. It is expected that this growth in employment will occur throughout the Township, with urban employment located in serviced industrial, commercial and institutional developments focused within Arthur and Mount Forest. In the rural area, agricultural and related sectors, on-farm business and continued rural economic development opportunities also contribute to local job growth.

Population-related employment (PRE), including population-serving jobs and work-at-home employment, are expected to increase with the growth of the population, while employment-land employment (ELE) and industry-specific employment growth is more closely linked to other factors such as location, labour force, transportation, infrastructure, technology, market conditions and broader trends and influences.

As summarized in the *Background Report*, several potential opportunities and constraints related to continued employment growth have been identified through the research and consultation. The County and Township have also identified key industry sectors through the Wellington County Economic Development Strategic Plan (2012) and opportunities emerging from the Business Retention and Expansion Project (2014), where efforts to promote continued business and employment growth should be focused. Land is available for residential, industrial, commercial and institutional development to accommodate future growth in a range of sectors, and continued growth in agricultural and other rural employment is also anticipated.

Recommendation #3: Growth Forecasts & Locations

Growth Forecasts

1. The 2036 and 2041 population, housing and employment growth forecasts for the Township of Wellington North, as established in the County Official Plan, should continue to be used for planning purposes to determine urban land requirements (see Table 1 on page 6 of this report).

2. The growth forecasts for Wellington North and the distribution of the population and housing forecasts within the Township should be revisited and updated through future reviews of the County Official Plan, to align the forecasts with local growth patterns and infrastructure plans. *MCR

Location / Distribution of Growth

3. The current hierarchy of settlement areas in Wellington North as established in the *County Plan*, which focuses urban growth and development within the urban centres, and provides for limited growth and development on private services in the Hamlet areas, should be maintained.

Urban Centres:	Hamlets:
Arthur	Conn
Mount Forest	Damascus
	Kenilworth
	Riverstown

4. If continued monitoring of the Arthur wastewater treatment capacity utilization and/or average per capita flows demonstrates a sustained increase in available capacity that can be relied upon for planning purposes, and a commitment is made by the Township to complete Phase 2 of the treatment plant expansion with a planned completion date between the years 2031 to 2036, the forecast population and housing distribution among Arthur and Mount Forest should be adjusted to align with the related infrastructure capacities and investments (see Table 3). *MCR

Table 3: Wellington North Growth Forecasts by Area
Adjusted Forecasts to Align with Arthur Servicing Plans
(see Recommendation #4)

Township of Wellington North			
	2016	**2036**	**2041**
Arthur			
Population	2,725	4,115	4,460*
Households	1,005	1,525	1,665*
Mount Forest			
Population	5,190	8,135*	8,440*
Households	2,150	3,200*	3,330*
Outside Urban Centres			
Population	4,575	4,835	4,785
Households	1,480	1,595	1,595
***Adjusted forecasts based on Phase 2 Arthur Wastewater Treatment Facility Expansion.**			

3.2 Intensification and Greenfield Density Targets

As required by the *Growth Plan*, the *County Plan* establishes intensification and greenfield density targets for the Township. These targets are intended to focus growth and development within the existing built-up area of urban centres, and to ensure outward growth in greenfields is compact, so that:

- Infrastructure can be provided and used more efficiently;
- Transportation choices including walking, cycling and transit systems are supported;
- Urban expansion needs are deferred and minimized; and,

- Vibrant, mixed use, complete communities with a range of housing types and diversity of jobs are created.

Intensification

All municipalities in the GGH are required to develop an intensification strategy to achieve the applicable intensification targets, which have increased in the new *Growth Plan*. Figure 2 on page 12 summarizes the goals and illustrates the various forms of intensification.

The *Growth Plan* intensification target is a measurement of the proportion of all new residential units that are to be located within the delineated built-up area of larger settlement areas. Arthur and Mount Forest have delineated built-boundaries, which were determined by the Province as part of the *2006 Growth Plan* and have not changed since that time.

The rural settlement areas in the Township have undelineated built-boundaries, and therefore the development of the remaining lands within these smaller settlement areas is not counted towards the achievement of the intensification target.

When the *County Official Plan* was amended to conform to the *2006 Growth Plan*, an intensification target of 20% was established, and will continue to apply until the completion of the next County MCR (by mid-year 2022). This target was authorized by the Province as an alternative to the 40% intensification target identified for the GGH in the *2006 Growth Plan*.

Effectively, this means that planning and servicing policies and related decision-making should be based on at least 20 out of every 100 new dwelling units in the Township being located within the built-up areas of Arthur and Mount Forest. At this intensification rate, by 2041 a total of 391 new residential units would be required to be accommodated on lands within these built-up areas.

The *2017 Growth Plan* identifies a new intensification target of 50% for the period from the completion of the next County MCR (mid-year 2022) to the year 2031, and 60% from the year 2031 to 2041. As permitted under the *Growth Plan*, alternative targets may be approved by the Province, subject to meeting specified criteria. Figure 3 on page 13 illustrates the expected phasing in of increased intensification targets over time as directed by the *Growth Plan*.

As summarized in the *Background Report*, alternative scenarios have been tested to evaluate the impacts of applying the current intensification target of 20% across the entire planning period to the year 2041 (Scenario 1), increasing the intensification target to an alternative target as part of the next County MCR (Scenario 2), and fully adopting the *Growth Plan* intensification targets of 50% from mid-year 2022 to 2031, and 60% from 2031 to 2041

(Scenario 3). Based on input from the community and an analysis of the available land inventory data and intensification potential in Arthur and Mount Forest, it was concluded that the existing intensification target is achievable and that an increased target could be achieved over time, but the full *Growth Plan* targets are not reasonably achievable. A balanced option (Scenario 2) has also been assessed that would increase the overall intensification with more gradual increments targeting 30% and 40% by 2022 and 2031, respectively. This aligns with the intent of the *Growth Plan* by increasing intensification over time while also respecting the character and scale of the existing communities, a goal expressed by the participants in the consultation program. Figure 4 on page 13 illustrates the comparative impact of the alternative intensification scenarios.

Figure 2: Goals and Forms of Intensification

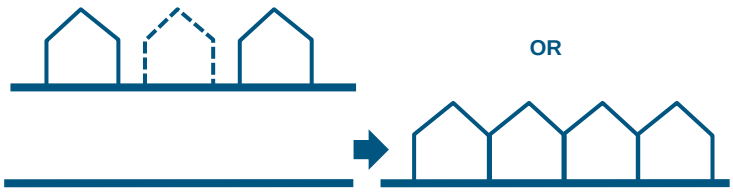
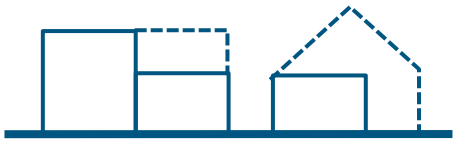
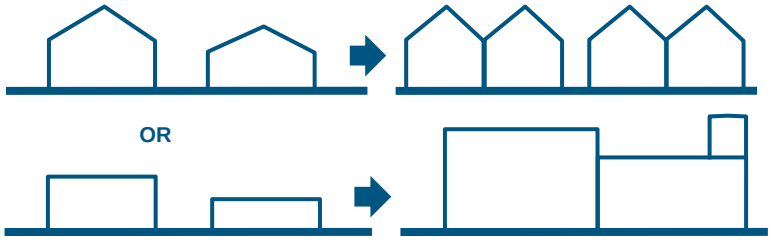
Intensification Goals	
• Encourage intensification generally to achieve the desired urban structure; • Identify the appropriate type and scale of development and transition of built form to adjacent areas; • Identify strategic growth areas to support achievement of the intensification target and recognize them as a key focus for development; • Ensure lands are zoned and development is designed in a manner that supports the achievement of complete communities; • Prioritize planning and investment in infrastructure and public service facilities that will support intensification; and, • Be implemented through official plan policies and designations, updated zoning and other supporting documents (*Growth Plan, s.2.2.2*).	
Forms of Intensification	
1. Infilling and development of existing vacant lands in the built-up area	
2. Building expansion or conversion	
3. Redevelopment	

Figure 3: Phasing in of Intensification Targets

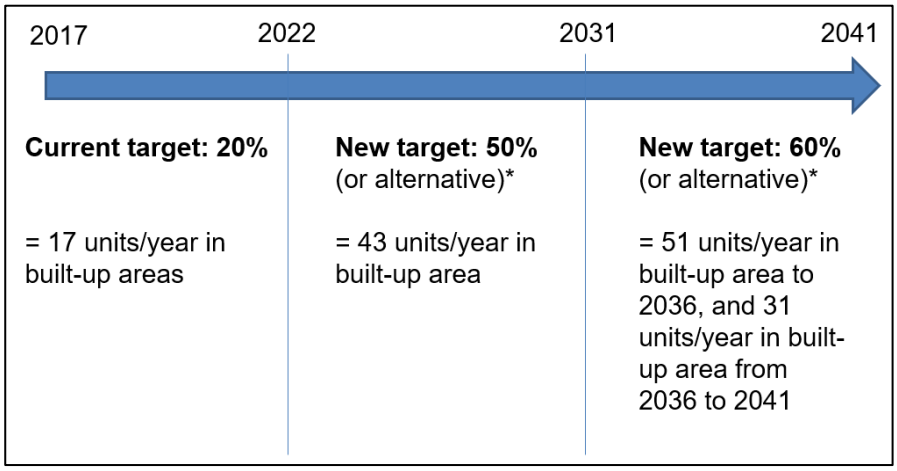
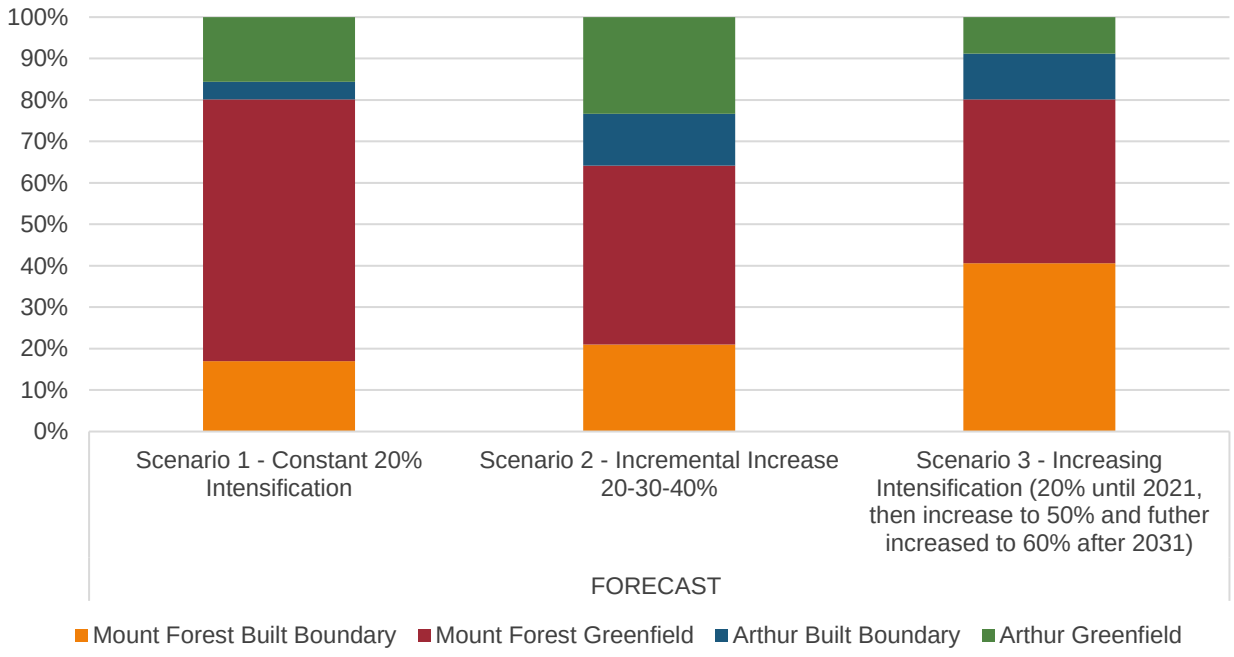


Figure 4: Distribution of Forecast Housing Growth Using Different Intensification Targets, Wellington North



Scenario 1 maintains the existing intensification target and provides for the same level of intensification as is currently planned for in Arthur and Mount Forest, and would not contribute to achieving an increased target across the County pursuant to the *Growth Plan*. Although this scenario is achievable, it does not contribute to nor encourage development to further intensify over time and would not increase the expected overall level of intensification to the year 2041. Conversely, Scenario 3 would require a level of intensification that is not achievable based on the amount and distribution of developable lands and intensification potential in the built boundary, even with a significant increase in the level of intensification within Arthur and Mount Forest.

The *Growth Plan* directs that alternative targets can be requested through a MCR where it can be demonstrated that the targets cannot be achieved and that the alternative target will:

a) Maintain or improve the minimum intensification target in the Official Plan that is approved and in effect;
b) Be appropriate given the size of the delineated built-up area;
c) Account for existing infrastructure, public services facilities, and capital planning;
d) Account for existing planning approvals and other related planning studies;
e) Consider the actual rate of intensification being achieved annually across the upper- or single tier municipality;
f) Support diversification of the total range and mix of housing options in delineated built-up areas to the horizon of this Plan, while considering anticipated demand;
g) Account for lands where development is prohibited or severely restricted; and,
h) Support the achievement of complete communities. (Section 2.2.2.5)

Scenario 2 provides a balanced option with a target of 30% intensification after 2021 and 40% after 2031. These targets remain lower than the *Growth Plan* targets but would satisfy the requirement to increase the current target.

Table 4 compares the residential land inventory available and the forecasted growth distribution in each area under all three Scenarios. When compared to the Land Inventory information collected through the *Background Report*, the number of units required in the built boundary for Scenario 2 at 30% and 40% is better aligned with the available and potential supply of intensification units. There is less discrepancy between the available and the forecasted housing growth, so the targets are more achievable; however, additional intensification would still be required through a greater mix of unit types and/or further intensification or redevelopment of potential intensification sites.

In Scenario 2, it has been assumed that Phase 2 of the Arthur Wastewater Treatment Plant will be approved and implemented to increase the share of total residential growth in Arthur, which would also increase the intensification potential in Arthur.

Table 4: Intensification Scenarios

		Residential Units			
	Area	Avail. Supply	Scenario 1*	Scenario 2*	Scenario 3*
Mount Forest	Mount Forest Built Boundary	217	313	387	747
	Mount Forest Greenfield	1,036	1,162	793	728
Arthur	Arthur Built Boundary	203	78	231	203
	Arthur Greenfield	235	287	429	162
Rural Areas	Rural Areas and Hamlets	93	115	115	115
TOTAL	Built Boundary	420	391	618	950
	Greenfield	1,271	1,449	1,222	890
	Rural/Hamlet	115**	115	115	115

*Scenario 1 – Maintain existing intensification target (20%) to the year 2041
*Scenario 2 – Increasing intensification at alternative increments (20% until 2021, then increase to 30% and further increased to 40% after 2031)
*Scenario 3 - Increasing Intensification (20% until 2021, then increase to 50% and further increased to 60% after 2031)
**The actual supply of available units identified in land inventory is 93; however, it was assumed that additional severances and second units would be introduced over time to increase this number to 115, which matches the forecast.

Factors for determining appropriate or primary areas of intensification and growth include:

- Areas that have or are planned to be provided with adequate servicing;
- Access to major transportation routes;
- Access to public facilities (including recreation facilities, parks, libraries, schools etc.); and,
- Access to local and affordable food.

All of these elements, together with increased growth of a variety of housing and employment types will contribute to the creation and expansion of complete communities.

Greenfield Density Target

Designated Greenfield Areas (DGAs) are those lands within settlement areas that are designated for urban land uses and that are outside of the delineated built-up area. In Wellington North, development that is located within the urban limits of Arthur and Mount Forest, outside of their respective built-boundaries, is classified as greenfield development.

Based on the new policy direction introduced by the *2017 Growth Plan*, the DGA in the Township also includes the four hamlets, since these settlement areas do not have delineated built-boundaries but rather have undelineated built-boundaries. In the previous, *2006 Growth Plan*, settlement areas with undelineated built-boundaries were considered as part of the built-up area, and therefore development within the hamlet areas contributed

towards meeting the intensification target. This change has implications for the Township's achievement of the intensification and greenfield density targets.

All municipalities in the GGH are required to set and monitor the achievement of a greenfield density target. Greenfield density is measured as the total number of residents and jobs within the greenfield area, divided by the total greenfield land area, and is expressed as residents and jobs per hectare. Certain lands that are undevelopable, such as natural heritage and hazards lands, are excluded from the land area.

The current density target for Wellington North's DGA is 40 residents and jobs per hectare, as identified in the County Official Plan. This target, and how it is measured, will continue to apply until after the completion of the next County MCR (by mid-year 2022), through which justification must be provided to maintain the current target, or to increase this target. Similar to the intensification target, the *Growth Plan* has increased the greenfield density target, from 50 to 80 people and jobs per hectare for the GGH and permits an alternative target in Outer Ring municipalities subject to meeting specified criteria.

The *Growth Plan* directs that DGAs will be planned, designated, zoned and designed in a manner that:

- Contributes to creating complete communities;
- Supports active transportation; and,
- Encourages the integration and sustained vitality of transit services (*Growth Plan, s.2.2.7.1 (a-c)*).

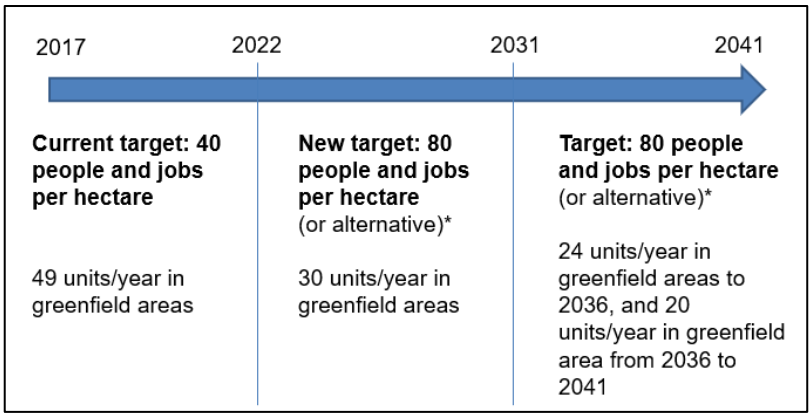
Figure 5 illustrates the concept of the urban structure comprised of built-up area and DGA, and how the greenfield density target is measured.

Figure 5: Greenfield Density Targets

Greenfield Density Target:
Number of people and jobs to be accommodated per hectare of land in the Greenfield Area

Figure 6 illustrates the expected phasing in of increased DGA density targets over time as directed by the *Growth Plan*.

Figure 6: Phasing in of Designated Greenfield Area Density Targets



As summarized in the *Background Report*, the land inventory in Arthur and Mount Forest has been quantified and assessed, and existing densities in both communities have been calculated and reviewed, to evaluate the suitability of the current DGA density target and whether this target should be increased over time.

The amount of land that would be required in the DGA under each of three alternative scenarios was also determined, aligned with the intensification scenarios, to evaluate the impacts of maintaining the current greenfield density target of 40 residents and jobs per hectare (Scenario 1), increasing the alternative target to 50 people and jobs per hectare as part of the next County MCR (by mid-year 2022) and maintaining that target to the year 2041 (Scenario 2), and using the *Growth Plan* greenfield density target of 80 people and jobs per hectare from the year 2022 to the year 2041 (Scenario 3). Table 5 summarizes the results of this analysis for Arthur and Mount Forest.

Table 5: Greenfield Housing Units and Residential Land Needs Using Different Greenfield Density Targets, Wellington North

Arthur	**Scenario 1** (40 people and jobs / ha)	**Scenario 2** (50 people and jobs / ha after next MCR)	**Scenario 3** (80 people and jobs / ha after next MCR)
Greenfield units	287	429	162
Greenfield land need (ha)	18	22	5
Mount Forest			
Greenfield units	1,162	793	728
Greenfield land need (ha)	73	43	30

NOTE: The above analysis did not factor in the offsetting impact of existing low density development in parts of the existing DGAs of Arthur and Mount Forest, nor the impact of including the four hamlet areas as part of the DGA.

Through the consultation program, there was general community support for a balance of intensification and greenfield development, and for more compact development based on providing a greater range of housing types and densities, including more multi-unit housing including ground-related dwellings (townhouses, semi-detached) and apartments.

To re-evaluate the current greenfield density target of 40 people and jobs per hectare for Wellington North, the following factors were reviewed and considered:

- The amount, location and surrounding land use context of land available for residential and non-residential development in the DGAs of Arthur and Mount Forest, net of permitted take-outs identified in the *Growth Plan* (land designated as Industrial, Greenlands and Future Development were excluded);
- The impact of including existing, low density development and committed development approvals in the DGAs of Arthur and Mount Forest when measuring the greenfield density across the DGA;
- Existing and future housing mix and potential to incorporate more higher density, multi-unit dwelling types;
- The impact of including the hamlet areas as part of the DGA when measuring the greenfield density across the DGA; and,
- Available servicing capacity and staging/phasing of development considerations – if targets are increased, they should be phased in over time based on the current land inventory and committed development, and to allow time for market demands to shift to higher density housing types.

The results of the above analysis are briefly summarized as follows, providing supporting rationale for maintaining an alternative greenfield density target for forecast growth to the year 2041 for Wellington North:

- Approximately 25% of the existing DGA in Arthur and Mount Forest contains existing land uses, predominantly low density residential, yielding an existing density of 25 people and jobs per hectare in the developed portion of the DGA;
- Registered and committed (draft approved) development in the DGA in Arthur and Mount Forest will occupy approximately 8% of the DGA in Arthur and Mount Forest and will yield a density of 40 people and jobs per hectare in the committed, vacant portion of the DGA;
- Only 3 vacant, uncommitted sites designated for residential development in the DGA are 5 hectares or greater in land area (5.1 ha, 12.9 ha and 27 ha), with several smaller properties comprising the balance of the DGA land inventory;

- Most vacant residential lands in the DGA are within or adjoining existing low density residential neighbourhoods, and are located at the periphery of the settlement areas;
- The land within the 4 hamlets is 40% of the total net DGA, has an estimated existing density of 5 people and jobs per hectare, has limited opportunity for new development, and requires larger lot sizes for private individual servicing systems;
- If the hamlet areas are included in the greenfield area for purposes of calculating the density target, the existing, developed portion of the DGA of all settlement areas in the Township has a combined existing density of 11 people and jobs per hectare;
- Assuming that new development to the year 2022 will meet the existing density target of 40 people and jobs per hectare, and excluding the 4 hamlets from the calculation of the greenfield density target, achieving a density target of 65 people and jobs per hectare by the year 2041 measured across the DGA of Arthur and Mount Forest would require new development to meet average densities exceeding 250 people and jobs per hectare for the period 2022 to 2031, and 500 people and jobs per hectare for the period 2031 to 2041;
- If future greenfield development is predominantly ground-related medium density housing (e.g. townhomes) with an increasing proportion of low-rise apartments (2-4 storeys) and fewer single detached dwellings, averaging 50 people and jobs per hectare for new development during the period 2022 to 2031 and 60 people and jobs per hectare for new development during the period 2032 to 2041, the current density target of 40 people and jobs per hectare measured across the DGA of Arthur and Mount Forest can be achieved by the year 2041, as shown in Table 6.

Table 6: Analysis of Recommended Greenfield Density Targets, Wellington North

Period	Forecast		Density Target for New Development (people and jobs / ha)	Land Area Required (ha)	Total DGA Density (people and jobs / ha)
	New Greenfield Units	Population and Jobs Estimate			
2016-2021	200	521	40	13.0	**28**
2022-2031	637	1,749	50	34.9	**36**
2032-2041	385	1,054	60	17.6	**40**
Totals	**1,222**	**3,324**	-	**65.6**	-

Assumptions:
Average Household Size: 2.7 persons per unit (Arthur) and 2.4 persons per unit (Mount Forest)
Work-at-Home Ratio: 0.0858
Employment Density on Commercial Lands: 40 jobs / hectare
Net DGA Land Area:

Land Use Designation	Land Area in Arthur (ha)	Land Area in Mount Forest (ha)
Total DGA (all designations)	392.03	228.67
Greenlands	10.68	3.31
Core Greenlands	33.95	27.72
Future Development	113.26	106.20
Industrial	118.54	55.70
Net DGA	**115.6**	**35.74**

Recommendation #4: Intensification and Greenfield Density Targets & Strategies

Current and Future Targets

1. The recommended alternative intensification and greenfield density targets should be considered for Wellington North (see Table 7 on page 21). *MCR

2. Density targets for employment areas should be identified as part of the County Employment Strategy required under the *Growth Plan*. For Wellington North, an employment density target of 30 jobs per hectare should be considered and analyzed further based on a reasonable increase to existing employment area densities, along with policies and permitted uses to encourage intensification of jobs within existing employment areas through business expansion, and to encourage higher density employment types in new employment areas. *MCR

Intensification Strategy and Greenfield Development Opportunities

3. The Intensification Strategy for Wellington North should include consideration of a range of tools and approaches (see Figure 7 on pages 21-22).

4. Consider Medium and High Density Residential designations in the Official Plan, with minimum and maximum density provisions to promote a broader range of housing and designate appropriate locations for this type of development (refer to the land inventory information in the *Background Report* for further information on potential locations).

5. Consider the re-designation of Future Development land in east Arthur (area "F" on the *Background Report* maps), for Residential and Commercial development to improve connectivity of existing and planned residential development to the north to County Road 109, through re-positioning of other vacant residential land in this area of Arthur if needed.

6. Consider the re-designation of land surrounding the high school in Mount Forest for residential development, including a mix of housing unit types, through re-positioning of greenfield land designated for residential and employment purposes. *MCR

Table 7: Recommended Alternative Intensification and Greenfield Density Targets, Wellington North

Targets		2017-2021	2022-2031	2032-2041
Intensification	Current Target	20%		
	Growth Plan Targets	40%	50%	60%
	Recommended Targets	**20%**	**30%**	**40%**
Greenfield Density (people + jobs per hectare)	Current Target	40		
	Growth Plan Targets	50	80*	
	Recommended Targets	**40**	**40***	
	Urban Area DGA Total			
	(New DGA Development)		(50*)	(60*)

*Excluding employment areas, as per the *Growth Plan, 2017*.
Note: the recommended greenfield density targets assume that lands designated as Future Development and Hamlet are excluded from the calculation. This should be reviewed further in consultation with the Province to clarify if settlement areas with undelineated built-boundaries are to be excluded from the greenfield density calculation.

Figure 7: Intensification Strategy

Official Plan

- Designate downtown Arthur and Mount Forest as priority locations for intensification and redevelopment with provisions to allow for free-standing residential as a permitted use in the CBD designation, subject to appropriate criteria to maintain a balance and mix of commercial, residential and other supporting land uses in the downtown areas;
- Consider re-framing the Residential Transition Area designation as a Mixed-Use designation with less non-residential range and consider applying it to areas adjoining the CBD in Arthur in addition to Mount Forest;
- Consider potential re-designation of the Mount Forest Fairgrounds to permit redevelopment for medium density residential uses, including a community park / open space to support the redevelopment and to provide access to parkland amenities for the surrounding area and the community more broadly;
- Develop a phasing/staging of development plan and servicing allocation policies that reserve adequate servicing capacity for lands within the built-up areas to achieve the intensification target, and that may prioritize higher density, multi-unit housing developments and housing that meets specified needs (e.g. affordable, rental, etc.), and to direct the orderly progression and timing of development aligned with related infrastructure capacities and improvements.

Zoning By-law
• Amend zoning provisions to expand opportunities for second units within existing dwellings, including single detached, semi-detached and townhouse dwellings, with appropriate standards for parking, and, where a second unit is not provided within the dwelling, provide for a second unit within a residential accessory building, in accordance with the Planning Act and the policies of the County Plan; • Consider increasing the maximum building height within the downtown area of Mount Forest to 15 metres in the Zoning By-law, to permit up to 5-storey mixed-use or residential buildings, updated parking provisions, and consider provisions for a discounted payment in lieu of a portion of required parking spaces where the available land is insufficient to provide the required off-street parking. The current maximum building height of 12 metres for downtown Arthur is appropriate, although specific properties could be considered for increased building heights, where appropriate.
Community Improvement Plan & Design Guidelines
• Continue to incentivize and invest in improvements and redevelopment within the downtown as intensification areas, through the CIP Programs; • Prepare and adopt design guidelines for intensification and medium and high density residential and mixed use developments, to identify appropriate design measures for the integration of these developments with the surrounding area.
Planned Development
• Where possible, revisit committed development plans within the built-up area to incorporate a greater range of housing types at higher densities.

3.3 Housing Strategy

A high priority emerging from the research and consultation is the need for an overall housing strategy, building on earlier research and analysis that has been completed at the County level, to address housing needs in Wellington North. Several key opportunities and challenges have been identified as it relates to current and future housing needs:

- Outward growth pressures from larger centres and communities that are closer to the GTA, and related impacts on demand levels and housing prices;
- Opportunity to address the lack of available housing supply in Arthur with planned servicing improvements, where it is anticipated that there is a pent-up demand that could trigger rapid growth when new housing becomes available;

- Demands for a greater range of housing options with variety in dwelling types, sizes, tenure, prices, and ages of households, to meet the needs of the current and future population at every stage in life and including employees of local businesses and industries as part of addressing a growing labour shortage;
- A shortage of available rental housing and housing that meets the needs of people in the full range of income levels and those with fixed incomes;
- Attractiveness of the area and opportunities for more seniors housing and assisted living / care facilities, with good access to health care and other supporting services and amenities available locally;
- Opportunity to update zoning provisions for second units / accessory dwellings to create more housing within the existing housing stock.

The *Guelph Wellington Housing and Homelessness Plan (2012)* provides key data at the regional level, and insight for the housing characteristics and needs within specific areas of the County, and provides a summary of housing needs and demands.

This study should be considered in the context of developing a housing strategy under the *2017 Growth Plan*. The *Growth Plan* directs upper-tier municipalities to develop a housing strategy in consultation with the lower-tier municipalities, to:

- Support the identification and achievement of the intensification and greenfield density targets; and,
- Establish affordable housing targets, implementation tools, and direction for updating Official Plan policies and zoning by-laws.

This would also provide an opportunity to consider the recent amendments to the *Planning Act* that establish new tools for municipalities to implement inclusionary zoning to increase access to affordable housing, and how that could be implemented in the County and the Township, when the related regulations are available under the *Act*.

Recommendation #5: Housing Strategy

1. Participate with the County to develop a *Housing Strategy* as set out in the *Growth Plan*, which should recommend an affordable housing target for Wellington North and related strategies, tools and policies to meet identified housing needs. *MCR

2. Housing strategies for Wellington North should:

    - Align with and support the Intensification Strategy and further support the achievement of the recommended intensification and greenfield density targets (see Recommendation #4); and

    - Incentivize, and reduce barriers to increasing the supply of rental housing through:

        - Flexible policies and zoning for residential and mixed use redevelopment in the downtown areas;

        - Zoning provisions for second units, and a broader range of housing types and densities;

        - Consideration of incentives and programs for purpose-built rental housing that will meet local needs, such as reduced fees and charges, prioritization of servicing allocation, relief from parking standards and/or discounts to payments required in lieu of parking and/or in-lieu of parkland dedications;

        - Designating lands, and/or consideration of opportunities on publicly-owned properties for housing that meets local needs;

        - Provide direction for the use of available tools under the Planning Act and other enabling legislation to support the supply of, and access to, appropriate affordable housing (e.g. inclusionary zoning); and,

        - Consider submitting an Expression of Interest to participate in the *Fair Housing Plan Development Charges Rebate Program*.

3.4 Employment Strategy

The *Growth Plan* defines Employment Areas as areas designated in an official plan for clusters of business and economic activities, including but not limited to manufacturing, warehousing, offices, and associated retail and ancillary facilities. It requires upper-tier municipalities to develop an employment strategy to determine appropriate minimum density targets that reflect the current and anticipated type and scale of employment that characterize the employment areas.

Several key opportunities and challenges have been identified related to current and future employment in the Township and that provide important context for the development of an Employment Strategy:

Provincial and County Directions

- The *Growth Plan* requires the County to designate and protect employment areas, and the conversion of lands from employment (including industrial, highway commercial and rural employment areas designated in the *County Plan*) to non-employment land may only be permitted through a MCR;
- The *County Plan* seeks to provide for an appropriate mix and range of economic development opportunities and employment uses.

Employment, Tourism and Economic Development Trends and Factors

- The largest employment sectors in the Township are manufacturing, construction, agriculture/forestry/fishing/hunting, retail, and health care and social assistance[1], with industrial facilities and operations representing the largest share of employment;
- Shifting demographics and labour force development and retention are key factors:
  - With the aging work force, increasing immigration is expected to play a vital role in offsetting the decreasing labour force as the workforce ages;
  - Some local employers have identified that filling available jobs is a challenge;
  - Education and training opportunities and other services and facilities are important to support local labour force development and attraction / retention;
- Other factors and trends include commuting patterns (see Figures 8 and 9 on page 28), labour force demographics, technology changes, and market conditions at the local, regional, provincial, national and global scales;

[1] Statistics Canada, 2011 National Household Survey.

- The main employment generator in the rural areas will be resource-based industries such as agriculture, aggregate operations, forestry and supporting businesses;
- There may be opportunity for more on-farm businesses in the rural and agricultural areas to support employment growth throughout the community;
- Home based business opportunities are also encouraged in the *County Plan* which directs these businesses towards a service-based market rather than a retail market;
- The area is relatively inexpensive compared to other areas closer to Toronto;
- Start-up/incubator type facilities may help to add variety in the types of jobs available in the area and could fill some of the empty retail space along the main streets;
- Tourism and business would benefit from the development of more overnight accommodations.

Employment Growth Forecast

- The Township is expected to grow by 2,370 jobs within the forecast horizon from 7,070 jobs in 2016 to 9,440 jobs in 2041, including:
  - *Population-Related Employment (PRE)*: jobs in population-servicing businesses such as retail stores, banks and restaurants, institutional facilities and services such as schools and local government offices, and work-at-home employment;
  - *Employment Land Employment (ELE)*: employment that may be unrelated to the growth of the local population as determined by market, location or other factors, such as industrial or resource-based growth;
  - *Rural Area Employment (RAE)*: jobs in agriculture, on-farm and related businesses, resource-based and other rural-related employment;
  - *No Fixed Workplace Address (NFWA)*: jobs with no usual place of work, such as construction and transportation-related employment.
- Most of the forecast employment growth is expected to be located in the serviced urban centres of Arthur and Mount Forest, including PRE growth of 1,400 jobs and ELE growth of 365 jobs, to the year 2041;
- A limited amount of forecast employment growth is expected in the hamlet areas, including PRE growth of 68 jobs and ELE growth of 50 jobs, to 2041;
- In the rural area, future ELE growth on rural employment lands is forecast to be 46 jobs, and the forecast growth in RAE is 92 jobs to 2041;

- The balance of the employment growth forecast, approximately 413 jobs, is expected to be in the NFWA category;

Employment Densities

- The current greenfield density target of 40 residents and jobs per hectare will continue to apply with respect to Employment Areas, until a new employment density target is established through the Employment Strategy required to be completed by the County as part of a MCR to implement the *Growth Plan*;

- Employment densities are expected to remain relatively low over the forecast period to 2041:

    - Existing employment density is estimated to be less than 20 jobs per hectare for the combined area of developed industrial, commercial and recreational land in the urban centres, including Arthur (10-15 jobs per hectare) and Mount Forest (15 to 20 jobs per hectare), based on available employment data for existing employers in each community and the calculated land area of occupied industrial, commercial and institutional lands in both settlement areas;

    - The density of employment can vary significantly from higher density employment such as offices to lower density employment where larger building and land areas are required such as warehousing operations;

    - Future employment growth in the Township is expected to be predominantly low density in the range of 20 to 30 jobs per hectare in employment areas, and 40 to 50 jobs per hectare in commercial, institutional and mixed-use areas;

Land Supply and Locations for Future Employment Growth

- An inventory and mapping of vacant non-residential lands is provided in the *Background Report*, and includes 148 hectares of land designated for industrial and commercial purposes in Arthur and Mount Forest;

- Existing industries and lands designated for additional industrial growth are located along the north and westerly limits of Arthur and in the north part of Mount Forest;

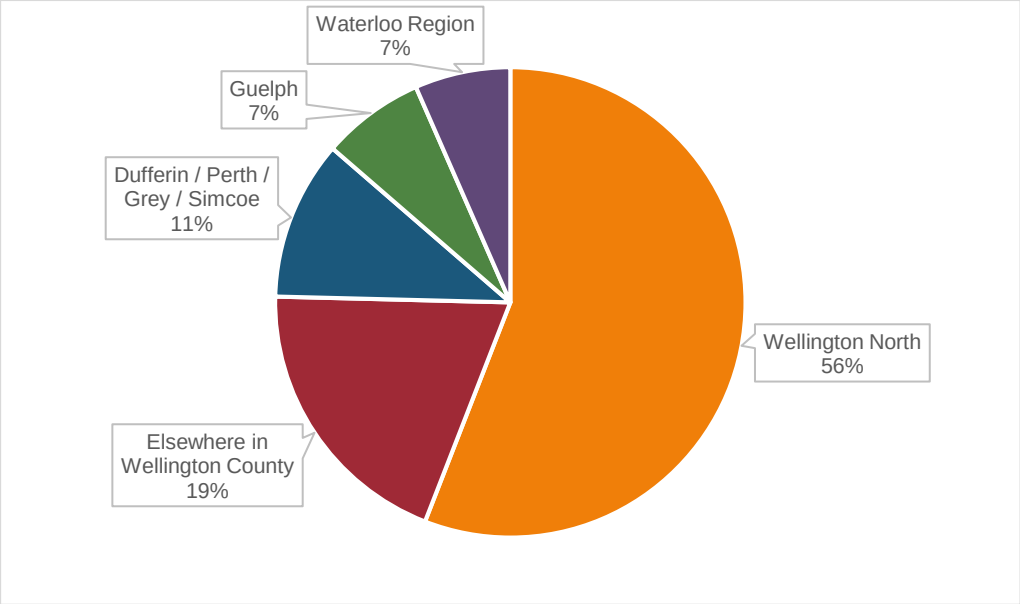
- To the south-east of Mount Forest along Highway 6, within and adjacent to Riverstown, there are two existing industries and some vacant land in the hamlet area that is suitably sized and located for future dry industrial development, some of which is also zoned for rural industrial land uses;

- In 2017, there were some vacancies in the commercial core areas of Arthur and Mount Forest, and there are opportunities for new, and intensification of existing,

population-related employment to further expand on the mix of retail, restaurants, offices, financial and other services within the downtown areas;

Figure 8: Employment by Place of Residence, Wellington North, 2016

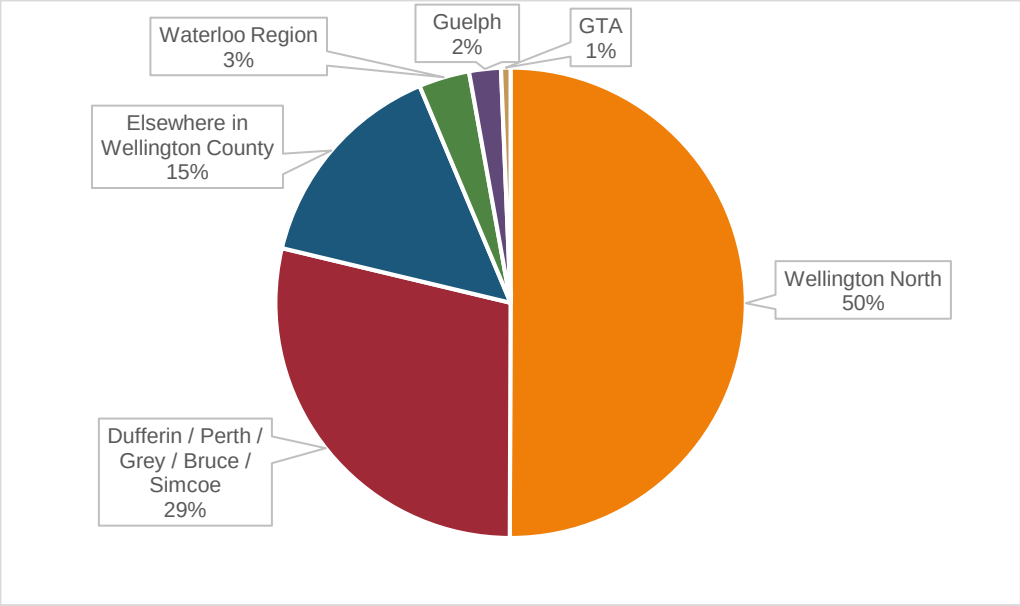
(This chart illustrates where residents of Wellington North commute to for work)



SOURCE: Statistics Canada 2016 Census

Figure 9: Employment by Place of Work, Wellington North, 2016

(This chart illustrates where people commute from to work at jobs in Wellington North)



SOURCE: Statistics Canada 2016 Census

- There are limited commercial land opportunities for new, larger format retail stores, service- and automobile-oriented businesses on urban land along arterial roads;
- There are no lands designated specifically for institutional land uses in the Township, and the *County Plan* permits these uses to be integrated into residential and commercial areas except for large institutions that have significant impacts may require a specific land use designation.

Employment Land Needs

- Future employment land needs have been estimated based on the 2041 employment growth, as follows:
  - A grand total of 32 to 64 hectares of urban land to accommodate PRE and ELE employment growth in Arthur and Mount Forest, including industrial, commercial and institutional employment growth, comprised of:
    - A total of 9 to 18 hectares of urban land for ELE employment growth;
    - A total of 23 to 46 hectares of urban land for PRE employment growth (commercial and institutional portion, excluding work-at-home employment);
  - Assumptions:
    - Future employment density range of 20 jobs per hectare and the current greenfield density target of 40 (people and) jobs per hectare;
    - Some future employment will be accommodated in the hamlets and rural area (as summarized on page 26);
    - PRE forecast used for calculating land needs limited to commercial and institutional employment (excludes work-at-home employment);
    - Excludes NFWA employment.
- The current inventory of 33 hectares of vacant industrial land in Arthur and 109 hectares of vacant industrial land in Mount Forest, for a total of 142 hectares of vacant industrial land, far exceeds the land needs for the 2041 ELE growth forecast;
- The current inventory of 0.8 hectare of vacant commercial land in Arthur and 5.2 hectares of vacant commercial land in Mount Forest, for a total of 6 hectares, is insufficient to meet the PRE growth forecast to the year 2041, which requires an additional 17 to 40 hectares of land for commercial and institutional development;
- The shortfall of land designated for commercial and institutional development could be addressed through the re-designation of some of the surplus industrial land inventory and through mixed-use opportunities and intensification.

Recommendation #6: Employment Strategy

1. Develop an *Employment Strategy* as set out in the *Growth Plan*, which should recommend an employment density target for Wellington North and related strategies, tools and policies to meet identified employment needs. An employment density of 30 jobs per hectare should be considered as an initial target, for further review and analysis. *MCR

2. Employment strategies and policies for Wellington North should:
   - Continue to protect a sufficient land base within the employment areas in the Township to accommodate the 2041 employment growth forecast and in consideration of longer term opportunities;
   - Help to maintain and continue to diversify the employment and economic base of the Township and attract and retain a range of traditional and emerging business sectors, with a focus on the key sectors identified through the County Economic Development Strategy and the Business Retention and Expansion Project;
   - Establish land use permissions and zoning that provide for workforce training, entrepreneurship and business development opportunities, such as compatible home- and farm-based businesses, accommodations, and facilities, services and resources that support incubator functions (e.g. makerspaces), to promote labour force development and retention;
   - Encourage mixed use buildings in the downtown areas and identify other potential areas for integrated institutional, commercial and residential development and live-work opportunities;
   - Official Plan policies and zoning should be updated based on the Province's *Guidelines for Permitted Uses in Prime Agricultural Areas*, which provides direction for permitting agriculture-related and on-farm diversified land uses in these areas;
   - Contribute to defining needs and planning for infrastructure, transportation, services and technologies to support existing and new industries and employment land development;
   - Consider programs, incentives and guidelines to promote and incentivize the development of employment lands;

- Provide direction for the intensification and expansion of existing industries and businesses in the Township;
- Ensure policies and zoning provide for appropriate separation between industrial and other facilities and sensitive land uses and avoid land use patterns that may result in land use conflicts or that could negatively impact the viability of existing and future employment areas, industries and farm operations;
- Consider tourism and recreational opportunities in the Township and related economic development and employment growth opportunities.

3. Designate additional land for commercial (including neighbourhood and community commercial and mixed use) and institutional development, and develop policies that provide for the intensification of commercial, institutional and mixed use areas, to address the shortfall of urban land available for population-related employment to meet the 2041 employment growth forecast, including the consideration of re-designating some industrial land to provide land for commercial, institutional and other land uses (see Recommendation #4) and based on optimizing the location of employment land aligned with supporting infrastructure and transportation access.

3.4 Transportation Strategy

As summarized in the *Background Report*, key factors that will continue to enhance growth opportunities in Wellington North include the level of access available to Provincial and regional transportation networks and connections with other growing communities that provide a series of nodes of development in the area.

Transportation within the urban centres, throughout the Township and connected with surrounding areas is primarily by private automobile. There are no existing public transit services within the Township, and transit is limited to private and volunteer-based transportation services as well as student transportation for elementary and secondary schools. On- and off-road pedestrian and cycling pathways and routes provide active transportation opportunities, primarily within Arthur and Mount Forest. A segment of the growing Mennonite population in the Township relies upon horse-drawn vehicles.

Current planning policies emphasize alignment of land use and transportation, transit-oriented development and promoting alternatives, including active transportation. Through the consultation program for the *Community Growth Plan*, a community desire was expressed for more transportation options/alternatives, particularly within and between Mount Forest and Arthur, which could build on existing local business approaches and partnerships. With anticipated future growth, there is an opportunity to align land use and transportation planning to support the development of viable transportation options and reduce car dependency.

The following points summarize key information, opportunities and challenges that provide important context for the development of a Transportation Strategy for Wellington North:

Transportation and Regional Location Context as Future Growth Factors

- The existing road network in the Township includes:
  - Provincial Highways 6 and 89 as the primary arterial roads, providing north-south and east-west transportation connections through the Township and with the surrounding areas:
    - These arterial roads typically carry the highest traffic volumes and also serve as the local main streets of Arthur (Highway 6) and Mount Forest (Highways 6 and 89);
    - A Connecting Link Agreement between the Township and the Ministry of Transportation Ontario (MTO) establishes local responsibilities and controls for access, maintenance and improvements for portions of the Provincial Highways through the built-up areas of Arthur and Mount Forest;
  - Wellington County Roads 6, 14, 15, 16 and 109 provide additional through-traffic arterial road functions and regional connections;
    - These roads are under the jurisdiction of the County including ownership, access control and maintenance;
  - Township Roads that provide arterial, collector and local road functions;
    - These roads have a total length of 331 kilometres[2] and represent 65% of the total value of all Township-owned assets and have the greatest annual funding deficit in relation to future repair and replacement needs;[3]
    - In Arthur and Mount Forest, the local streets provide access to residential, commercial, industrial and institutional properties and areas;

[2] Township of Wellington North Winter Road Maintenance Information, October 3, 2016.
[3] Township of Wellington North Asset Management Plan, 2013.

- The Wellington County Economic Development Strategic Plan ("Strategic Plan") from 2012 attributes growth in the County to be in part the result of growing and shifting populations in neighbouring communities with contributing population coming from Guelph, Kitchener-Waterloo and to a lesser extent from the Greater Toronto and Hamilton Area (Strategic Plan, s.2.1);

- Several communities near Wellington North experienced steady population growth over the 2011 to 2016 census period, including Shelburne, Fergus and Grand Valley;

- In 2016, nearly 90% of Wellington North residents who commuted for work travelled by car, truck or van, and 10% by active transport (walking, cycling);[4]

Transit Services

- There are no existing public transit systems in Wellington North;

- Student transportation services provide bussing to local schools;

- Private bus lines provide service connections to and from Toronto through several communities including Arthur and further west to Harriston, and taxi services complete this connection from Harriston to Mount Forest;

Active Transportation

- The *Wellington County Active Transportation Plan* ("County ATP") identifies existing and planned on- and off-road cycling and trail routes;

- Existing trails in the urban centres include the Conestogo River Trail, the West Luther Trail and the Historic Walking Tour in Arthur, and the Saugeen Trail in Mount Forest;

- Proposed off-road trail routes identified in the County ATP are shown along the former rail corridors in Arthur and Mount Forest, and extending west of Highway 6 along the south side of the Saugeen River in Mount Forest, with additional smaller trail loops also proposed;

- On-road routes are shown along several County and local roads to create a connected and integrated trail system and to link with planned trails outside of the communities to destinations beyond;

- Existing trails and cycling routes in the Township are primarily recreational in nature and appears to serve limited active transportation functions;

---

[4] Statistics Canada, 2016 Census.

- Sidewalks, where provided, are generally on one side of local streets in both urban centres;
- Safe access to schools could be improved by adding more sidewalks.

Recommendation #7: Transportation Strategy

1. Develop a County-level and locally-integrated, comprehensive *Transportation Master Plan* to:
    - Review the future feasibility of local and regional transit services and potential partnership models and working with health service providers;
    - Identify growth-related transportation improvements and funding sources including opportunities for active transportation (e.g. bicycle lanes, multi-use trails and pedestrian pathways);
    - Establish a "complete streets" policy and guidelines, and identify potential locations to improve existing and develop new public streets that provide safe and comfortable access for pedestrians, cyclists, transit users and the mobility-impaired, for all ages, abilities and modes of travel, appropriate to the specific location;
    - Review potential future truck traffic by-pass options for Arthur and Mount Forest (e.g. Wells Street in Arthur, Sideroad 3 in Mount Forest);
    - Develop a parking plan for the Arthur and Mount Forest downtown areas to support future intensification of these areas;
    - Consider the current and future role and opportunity for ride-sharing programs and other transportation services (e.g. rural uber).
2. Continue to plan for and implement on-road and trails-related pedestrian and cycling infrastructure to support well-connected, safe, convenient active transportation choices, including implementation of the *County ATP*, and to maximize safe access to schools.
3. Continue to work with local, inter-municipal and regional providers of public or privately-operated transit services to support seniors' mobility and other high needs groups.

4. For new commercial development and other facilities and services that are accessible to the public, address the access and parking needs of horse-drawn vehicles, where required.

3.5 Infrastructure Strategy

Accommodating the future growth forecasts for Wellington North and achieving related targets will require continued planning for and investment in related infrastructure, including municipal water and municipal wastewater services in Arthur and Mount Forest, storm sewers and stormwater management facilities, and utilities including hydro, gas and telecommunications services.

Provincial plans and policies and the *County Plan* direct that the majority of growth and development be located where it can be serviced by existing or planned municipal water and wastewater systems. Through planning for intensification and greenfield development in serviced urban areas, development that optimizes the efficient use of this infrastructure should be prioritized and balanced with the construction of new infrastructure. Future infrastructure planning is required to be undertaken on a watershed- and asset management basis, through servicing master plans and environmental assessments, and low-impact development standards should be used, with the goal of securing long-term sustainability and creating resiliency to climate change and other impacts.

The Township provides full municipal water and wastewater services in Arthur and Mount Forest, and portions of these communities are also serviced by storm sewers and stormwater management facilities. The preferred or required method of servicing should continue to be municipal water and wastewater services in these communities, while privately serviced development in the hamlets and rural areas will be more limited.

Infrastructure planning through updates to existing servicing master plans and through new studies, initiatives and projects will be a significant component of the Township's growth planning. The following points summarize key information from the *Background Report* that provides context for aligning infrastructure, growth management and land use planning through the development of an overall Infrastructure Strategy:

Municipal Water and Wastewater Services

- The *County Plan* directs that the Township has the responsibility for ensuring there is adequate municipal water and sewage service capacity to provide for residential and economic development in Wellington North;

- The *County Plan* does not permit development on individual on-site servicing in urban centres which have municipal services, except to provide continued use of developed lots on individual sites, to allow small scale use on an existing lot where servicing is not reasonably anticipated, and to recognize previous development approvals where on-site services are appropriate. In hamlet and rural areas, the norm is expected to remain as individual on-site services.

- Mapping provided in the *Background Report* illustrates the locations of existing watermains, sanitary sewers, wastewater treatment facilities, and storm sewers, as well as existing environmental features and hazard lands in Arthur and Mount Forest;

- The *Arthur Master Servicing Plan (2012)* provides information and direction regarding the water and wastewater servicing systems in Arthur:

    - The existing water system in Arthur is considered sufficient to meet water supply needs for residential and non-residential growth to the year 2031, and additional capacity may be needed for longer-term growth;

    - Monitor water usage and secure additional water supply capacity as a contingency if any of the existing supply wells were compromised and for future growth needs;

    - The existing water towers have adequate capacity to address fire flow requirements for the immediate future, and additional storage capacity should be constructed prior to 2031 and consider the potential retirement of existing towers as well as an extended operating range into the northerly future development lands, as well as location alternatives;

    - Sufficient fire flow is provided throughout the watermain distribution network;

    - Replace older cast iron watermains, loop dead-end mains and extend trunk mains;

    - The existing Water Pollution Control Plan (WPCP) in Arthur requires upgrades to provide the required capacity for additional growth;

    - An upgrade and expansion to the Frederick Street SPS is also required;

    - The existing sanitary sewer collection system generally has sufficient available capacity for accommodating the 2031;

    - Upgrades and extensions are required for some existing sewers that may approach sewer capacity with future development;

    - Undertake flow monitoring and inspections to confirm design flows and identify inflow and infiltration (I/I) into the system;

- SPS capacities are identified as adequate to address future requirements; however, it was noted that 3 bypasses of the Frederick Street SPS occurred between 2006 and 2009, prior to some improvements made in 2010, and that this situation should continue to be monitored and any further bypasses documented;

- The *Mount Forest Master Servicing Plan Update (2011)* provides information and direction regarding the water and wastewater servicing systems in Mount Forest:

  - The existing water system is supplied by four municipal wells and distributed via a watermain distribution network pressurized by an elevated storage facility and booster pumping station;

  - Some areas of the community are not serviced by the municipal water system, and some areas are not serviced by municipal sanitary sewers;

  - The firm capacity of the existing wells was determined to be sufficient for future growth needs for approximatley 23 years (to the year 2034), and beyond if the actual capacities of the wells is increased to the rated capacities;

  - An additional well supply is identified as a longer-term requirement;

  - A need for additional water storage and conveyance capacity was identified for fire protection requirements and future growth capacity needs, including construction of a second storage structure as an elevated tank and related watermains to service the north area, as well as investigations of replacing existing undersized watermains (and cast iron watermains over the long-term), looping the system and eliminating dead ends in the distribution network;

  - Sanitary servicing in Mount Forest is provided by a piped collection network of gravity sewers and forcemains with four sewage pumping stations and a treatment plant which discharges to the South Saugeen River;

  - The system services existing residential and Industrial, Commercial and Institutional (ICI) lands in Mount Forest;

  - There is adequate capacity in the existing gravity trunk sewers to accommodate 50 years of growth-related sanitary flows;

  - A new SPS will be required to service lands in the north possibly including the adjoining lands in West Grey, and a new SPS will also be required to service lands south of the South Saugeen River;

  - It may be necessary to increase the size of sewers from Industrial Drive to the Durham Street SPS;

- Two alternate sewer routes are identified for servicing future development along the London Road corridor;

Stormwater Management

- Parts of Arthur and Mount Forest are serviced by existing municipal storm sewers and stormwater management facilities;
- Grading, drainage and stormwater management requirements are generally determined through the development review and engineering design process;
- An overall Stormwater Management Master Plan and/or community-based master plans should be considered;

Utilities

- Hydro services in Arthur and Mount Forest are provided by Wellington North Power, and Hydro One is the service provider for the rural areas;
- Energy-related recommendations are provided in the Township's *Energy Conservation and Demand Management Plan (2014)*. The availability and capacity of energy generation and electricity supply and distribution, conservation and efficiency will continue to be important factors in relation to servicing future growth and working towards setting and contributing to meeting targets for reducing greenhouse gas emissions as required by the Province;
- Natural gas services are available in both Arthur and Mount Forest and are supplied by Union Gas;
- There are several telecommunications providers that offer telephone and internet services within the Township including high-speed connections;
- Technological infrastructure could be updated to attract more people and provide better services to current residents (e.g. fiberoptics in Arthur);
- Planning for the provision and enhancement of the full range of utility and service needs of current and future residents and the business community and coordination with service providers will continue to be an important part of the planning and land development process.

Servicing Costs

- The Township's *2013 Development Charges (DC) Study* identifies the following capital costs for the recommended infrastructure investments from the servicing master plans

(note: the cost figures reflect estimates prepared at the date of the studies and should be indexed / updated accordingly at the time of budgeting / capital planning):

- A new water tower for Arthur in 2025 at a total estimated gross capital cost of $1,731,000;
- Watermains/improvements in Arthur along Wells Street (Domville Street to Eliza Street) in 2020 at an estimated capital cost of $676,000 and along McCauley Street (Wells Street to Eliza Street) in 2025 at an estimated cost of $510,000;
- Re-rating of the Arthur WPCP, including lagoon expansion, at an estimated capital cost of $9,676,000;
    - An Environmental Assessment (EA) has since been completed for a phased re-rating of the plant, with estimated capital costs of $4.8 million for Phase 1 and a range of $8.1 million to $13.2 million for Phase 2[5];
- For the Mount Forest, the *DC Study* identifies the estimated capital costs for sanitary pumping station and forcemain improvements or expansions including:
    - The Murphy Lands/Bristol Street/Bentley Street SPS in 2016 for $555,700, the Coral Lea Drive SPS and forcemain in 2018 for $1,441,000
    - The trunk sanitary sewerage forecemain / SPS (Queen Street West) for $462,000 in 2023;
    - Cost estimates for new sanitary sewers along London Road and Birmingham Street and/or Sligo Road (two alternatives) are provided in the 2011 Servicing Master Plan Update and included in the DC Study capital forecast as $467,000 for Sligo Road (Church Street to London Road), $692,000 for London Road (Sligo Road to Wellington Street), and $375,000 for Birmingham Street (London Road westerly);
- The *DC Study* identifies a total gross capital cost of $2,387,500 for Mount Forest water distribution improvements and extensions from 2017 to 2012 and $1,950,000 for a new elevated water storage tank;
    - Cost estimates for these works are also identified in the 2011 report and include $555,000 to correct existing water distribution system problems, and $2,955,000 for water storage and related watermain upgrades and extensions;

[5] XCG Consultants Inc., Arthur Wastewater Treatment Plan Class Environmental Assessment Environmental Study Report, 2016.

Recommendation #8: Infrastructure Strategy

1. Update the *Master Servicing Plans* for Arthur (2012) and Mount Forest (2011), the Township's Asset Management Plan (2013) and Development Charges Background Study (2013), to:
   - Align with the growth forecasts, targets and directions of the *Community Growth Plan;*
   - In conjunction with the timing of the *County MCR*, address Provincial *Growth Plan* policy direction for watershed- and asset-management based infrastructure planning, long-term sustainability and building resiliency to climate change impacts; *MCR
   - Provide direction to optimize the efficient use of existing infrastructure, including strategies for Inflow and Infiltration (I & I) reductions and water conservation measures;
   - Integrate *Low Impact Development (LID)* and green infrastructure with planning policies, servicing plans, and development standards;
   - Define growth-related infrastructure costs and funding sources / cost recovery from future development.
2. Adopt a phasing / staging of development plan and servicing allocation policies to direct the orderly development of land in Arthur and Mount Forest aligned with infrastructure capacities and planned investments. A preliminary draft staging plan is appended to this report.
3. Continue to plan for the implementation of the Phase 1 and 2 Wastewater Treatment Plant Improvements in Arthur and cost recovery of the growth-related share of these investments through Development Charges.
4. Work with the conservation authorities to develop watershed / sub-watershed plans as a basis for Township-wide and community-based *Stormwater Management Master Plans* and infrastructure planning, pursuant to the *Growth Plan*, the *County Plan* and *Source Protection Plans*, and incorporate the cost of future facilities that are not local services as part of the capital forecasts and Development Charges.

5. Develop a local or County-level and locally-integrated *Community Energy Plan*, building on the Township's *Energy Conservation and Demand Management Plan (2014)* and addressing the *Growth Plan* direction to build resilience, reduce greenhouse gas emissions, and contribute towards the achievement of low-carbon communities.

3.6 Community Facilities and Services Strategy

Along with growth and development, community facilities and services in the Township will continue to be focused within Arthur and Mount Forest. As summarized in the *Background Report*, both communities currently offer a range of facilities and services, including:

- Child care and school facilities, including public and catholic elementary schools, and a secondary school in Mount Forest;
- Libraries;
- Seniors housing and assisted living facilities;
- Health care facilities including a hospital and a health clinic in Mount Forest and a medical centre in Arthur, and dental facilities and other health services in both communities;
- Emergency services including EMS provide by Guelph-Wellington Emergency Medical Service, police services provided by the OPP with a detachment in Mount Forest, and Wellington North Fire Services with a fire station in each community;
- A range of recreation facilities including the Arthur & Area Community Centre and Mount Forest & District Sports Complex, parks, trails, curling clubs and outdoor pools in both urban centres; and,
- Service clubs, youth and seniors organizations and places of worship.

Several key community strengths and assets were identified through the *Community Growth Plan* consultations, which highlighted the importance of community facilities and services and related attributes, including:

- Hospitals/Health Care services
- New Schools
- Small town family friendly community/ sense of community
- Fiber optic connectivity, availability of Hydro
- Strong Community/Volunteers
- Strong presence of parks and recreation facilities in Mount Forest and Arthur

- Many natural amenities and features that are unique to the area
- Quality of Life
- Mennonite community shops locally.

Identified areas for improvement and potential future opportunities related to community services include:

- New commercial/retail options, areas for new retail sectors
- Hotel accommodations to support larger events held at the community centre
- Schooling options, satellite locations for post-secondary education and/or connection of agricultural and related services and employment opportunities
- Using existing built heritage as a resource
- On farm business / other agricultural centric support
- Bus routes from Guelph Transit, transit between communities
- Increased co-op programs to showcase jobs available locally
- Attract spin off jobs through the industrial and agricultural sectors
- Educate local youth about local employment opportunities
- Promote and enhance year-round recreation opportunities
- Need for additional childcare services to meet the needs of young families moving into the community
- More doctors are needed as well as home care for seniors and mental health services throughout the Township.

Planning for the continued provision of these facilities and services and addressing the needs of future growth are integral to establishing the urban centres, and the Township as a whole, as complete communities. Continued population and employment growth in the Township will increase demands for a range of community facilities and services, and also provides opportunities for diversified, new or improved facilities and services contributing to complete community development. The aging demographic trend is also expected to influence future facility and service needs.

The key priorities identified in the Township's *Strategic Plan* include a completing a *Recreation Master Plan* and conducting a Township-wide *Community Service Review*. In 2017, the Township initiated the preparation of a *Recreation Master Plan*. This will be an important strategy to guide the Township's investments, initiatives and community engagement to meet current and future community recreation needs. The recommendations of the *Recreation Master Plan* should be considered through the Township's next *Development Charges Study* and By-law to recover the growth-related capital costs of capital projects and improvement that will contribute to meeting the needs of future growth, to the extent permitted by the Development Charges Act.

Future community facility and service needs should continue to be determined and further recommended through the Township's other related initiatives and in consultation with community partners and service providers, such as the School Boards, Health Service Providers, Conservation Authorities, emergency services, housing providers, the County, surrounding municipalities, and other levels of government.

Recommendation #9: Community Facilities & Services Strategy

1. Complete the development, and plan for the implementation of, the *Wellington North Recreation Master Plan* to define service levels for parks and recreation facilities, future community needs, and investment priorities. Capital costs for future parks and recreation projects that will contribute to meeting the needs of future growth should be identified in the *Development Charges Study* to recover growth-related costs to the extent permitted by the legislation.
2. Continue to work with the School Boards to:
   - Provide growth-related forecasts and information regarding land development plans and proposals to monitor and evaluate future school accommodation needs, including expansion opportunities within existing school sites;
   - Integrate planning for parks, recreation facilities and schools, and coordinate community access to and use of school facilities;
   - Maximize safe access to schools and transportation efficiency;
3. Conduct a Township-wide *Community Service Review* and continue to plan for and work with service providers for health care, emergency services, housing, employment, childcare, youth, seniors, education, recreation, libraries and related organizations and volunteer groups to support the integrated planning for community facilities and services, including growth-related capacity needs and to support complete community development.

3.7 Environment & Heritage Conservation Strategy

The natural and cultural heritage of Wellington North are defining features of the area that are valued by residents and visitors. Long-term conservation of natural and cultural heritage resources will continue to be an important part of planning for community well-being and

character, environmental sustainability, small town feel, maintaining connections with nature and the past, as well as tourism opportunities

To conserve natural features and areas and their ecological functions, and to establish requirements to minimize and mitigate negative impacts of development, a Natural Heritage System (NHS) has been designated in the *County Plan* as Core Greenlands and Greenlands, with related policies to protect environmental features and areas such as wetlands, woodlands, valleylands, water resources and habitats.

The Township is at the headwaters and drainage divide of three watersheds: the Saugeen Valley Watershed in the north, the Grand River Watershed in the south-east, and the Maitland Valley Watershed in the west. The Luther Marsh, a large provincially significant wetland complex, is located in the easterly part of the Township and is conserved as a Wildlife Management Area by the Grand River Conservation Authority.

In the urban centres, the Conestogo River flows through the south part of Arthur and the South Saugeen River through the south part of Mount Forest. The health of these river systems is fundamental to servicing future growth and assimilating the wastewater generated from urban development, receiving stormwater runoff, and also provide important natural corridors and recreational amenities.

The *Growth Plan* directs to municipalities to integrate climate change considerations into planning and managing growth, towards the goal of developing more resilient communities and infrastructure that are adaptive to the impacts of a changing climate and moving towards low-carbon communities, with the long-term goal of net-zero communities, by incorporating approaches to reduce greenhouse gas emissions.

Cultural heritage resources should also be conserved with new development to maintain and enhance community identity and character, tourism opportunities, and to recognize historically significant buildings, structures, landscapes and events. Through the *Community Growth Plan* consultations, it was also noted that there may be an opportunity for rebranding of the community to attract a broader demographic to the area.

Recommendation #10: Environment & Heritage Conservation Strategy

1. Further develop and refine the proposed *Natural Heritage System for the Greater Golden* Horseshoe as it applies to the County and Wellington North, including linkages in the urban areas with a focus on sustaining and improving the health of the river systems, through the *County Natural Heritage Study*. *MCR
2. Integrate climate change considerations and a watershed-based planning approach with infrastructure planning (see also Recommendation #8).
3. Develop urban forest policies and identify and adopt best practices and municipal by-laws and other tools and programs such as the *Wellington County Green Legacy Program* to preserve, and where possible expand, tree canopy cover in the urban areas and across the Township.
4. Amend the Township's *Zoning By-law* to implement the requirements of the applicable *Source Protection Plans* to protect municipal drinking water sources.
5. Continue to require land use compatibility and avoidance/mitigation or risks associated with natural and human-made hazards (e.g. flooding, noise, odour, etc.).
6. Design guidelines for intensification and new development areas should address protection of heritage resources and integration of context-sensitive development.
7. Continue to work with the *Wellington North Cultural Roundtable* to implement, review, update and monitor the success of the *Municipal Cultural Plan.*
8. Continue to identify and protect cultural heritage resources and landscapes with new development and through local, inter-municipal and regional initiatives.
9. Continue to develop and support tourism and related marketing including cultural heritage, recreation/sport, outdoor-adventure, cycling, eco-tourism, and other opportunities, and regional integration with Guelph-Wellington tourism and RTO4.

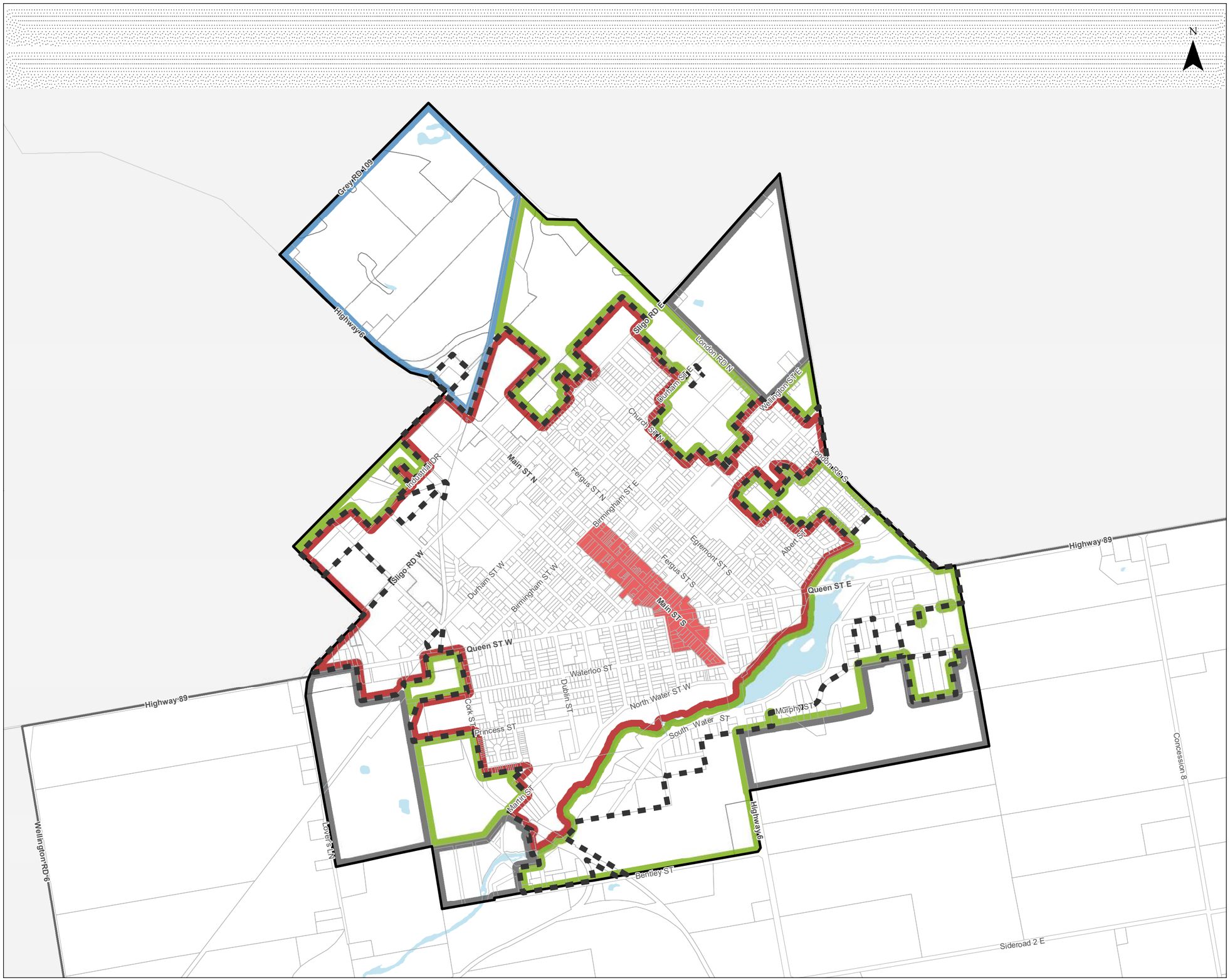
Devemopment Stages
Arthur

Wellington North
Growth Management Study

GSP group

Devemopment Stages
Mount Forest

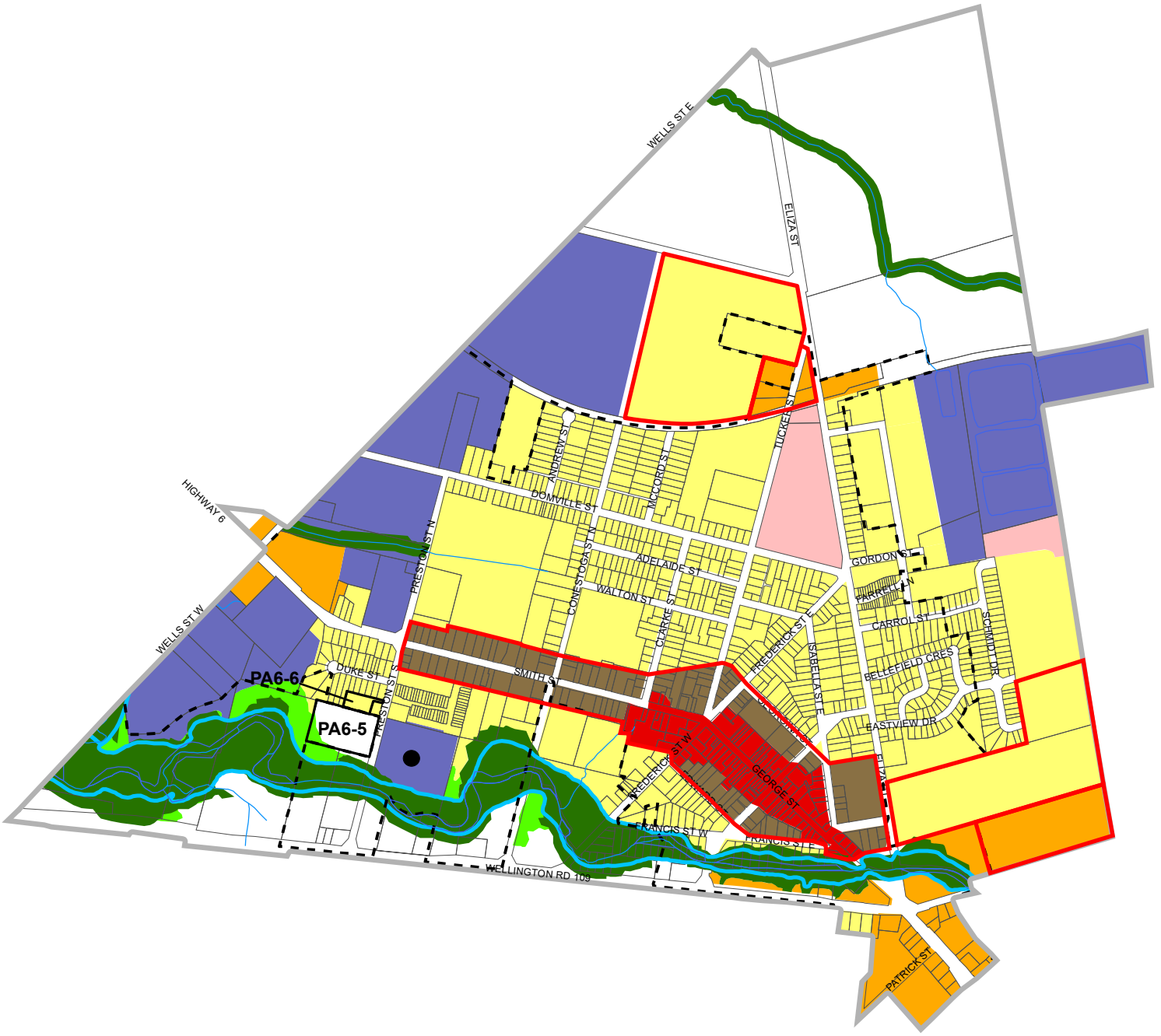
Wellington North
Growth Management Study



- Built Boundary
- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Urban Area Boundary
- Central Business District

0 500 1,000 Meters

GSP group



Legend :

- Residential
- Commercial
- Industrial
- Central Business District
- Core Greenlands
- Greenlands
- Recreation
- Future Development
- Lakes, Rivers, Streams
- Regulatory Floodline
- PA — Policy Area
- Waste Water Facility
- Built Boundary

ARTHUR
Township of Wellington North

Schedule A6-2

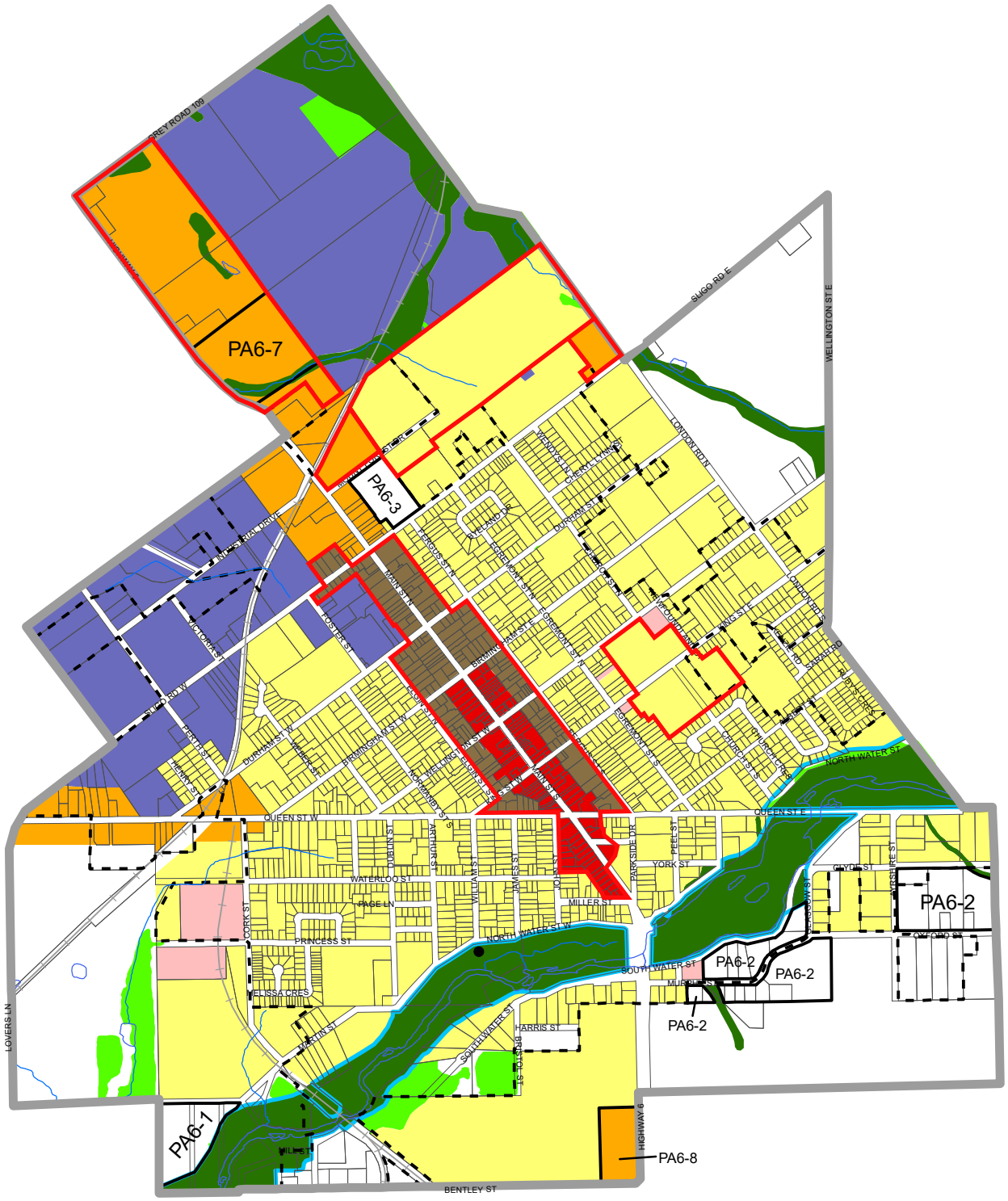
N

0 125 250 500

Metres

May 6, 1999
Updated: March 3, 2016.
Date Printed: March 3, 2016.

Document Path: F:\Land Information System\Official Plan 2012\OPA 81 - New Official Schedules\Urban\Arthur\Arthur - Schedule A6-2.mxd



Legend

- Residential
- Central Business District
- Commercial
- Industrial
- Recreational
- Residential Transition Area
- Core Greenlands
- Greenlands
- Regulatory Floodline
- PA — Policy Area
- Lakes, Rivers, Streams
- Railways
- Built Boundary
- Waste Water Facitlity
- Future Development

MOUNT FOREST

Township of Wellington North

Schedule A6-1

N

0 200 400 800

Metres

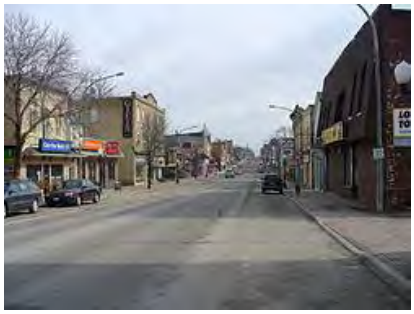
May 6th, 1999
Updated: March 3, 2016.
Date Printed: March 3, 2016.

Document Path: F:\Land Information System\Official Plan 2012\OPA 81 - New Official Schedules\Urban\Mount Forest\Mount Forest - Schedule A6-1.mxd

Appendix A.2

2018 DC Report

TOWNSHIP OF WELLINGTON-NORTH



2018 DEVELOPMENT CHARGES BACKGROUND STUDY & BY-LAW

FINAL REPORT

DFA Infrastructure International Inc.

June 5th 2018

DFA Infrastructure International Inc.

33 Raymond Street St. Catharines Ontario Canada L2R 2T3
Telephone: (905) 938 -0965 Fax: (905) 937-6568

June 5, 2018

Adam McNabb
Director of Finance & Treasury
Township of Wellington-North
7490 Sideroad 7 W, PO Box 125,
Kenilworth, Ontario, N0G 2E0

Dear Adam,

Re: Township of Wellington-North
2018 Development Charges (DC) Background Study & By-law

We are pleased to submit the *Final* 2018 DC Background Study and *Final* By-Law for approval. This report and by-law present the development charges for the period June 17, 2018 to June 16, 2023 and the basis for the calculations in accordance with the requirements of the Development Charges Act 1997 (DCA) and O.Reg.82/98. These documents also address comments received from stakeholders held on May 24, 2018, and Council direction from the June 4th Council meeting

The requirements for notices and preparing a pamphlet are set out in O.Reg. 82/98 Section 10 and O.Reg. 82/98 Section 14 respectively. We recommend that notices be issued and a pamphlet be prepared in accordance with these requirements following approval of the By-Law by Council.

Please do not hesitate to call if you have any questions.

Respectfully Submitted by,

DFA Infrastructure International Inc.

Derek Ali, MBA, P.Eng.
President

Executive Summary

ES-1 Purpose

This document is the DC Background Study and its main purpose is to:

- Document the Development Charge policies and calculations of the new rates that inform the preparation of the new DC By-law;
- Present the new DC By-Law to replace the existing by-law upon its expiry on June 17, 2018; and
- Meet the requirements of the DCA and O.Reg.82/98.

ES-2 Services Included

The services identified in Table ES1 were covered in this development charges background study and new by-law based on the eligibility requirement of the Development Charges Act (DCA) and the existing By-law 51-13.

Table ES-1: Eligible Services

Services Included in DC Calculations	
• Administrative Services - Studies • Roads & Related Services - Roads - Sidewalks & Streetlights - Bridges & Culverts - Facilities - Vehicles & Equipment - Stormwater (Drainage) • Park Services - Parkland Development - Parkland Amenities - Parkland Paths & Trails - Vehicles & Equipment	• Recreation Services - Recreation Facilities • Fire Protection Services - Facilities - Vehicles - Equipment • Water Services - Treatment - Storage & Distribution - Vehicles • Wastewater Services - Treatment - Collection

ES-3 Population and Employment Growth

The population and employment growth are summarized in Table ES-2, Table ES-3 Table ES-4, and Table ES-5. These population projections were used to calculate the service level caps, allocating costs between residential and non-residential growth and calculating the rates.

The residential population growth over the 10-year period is projected to be 2,244 and 5,382 to build out. The growth in number of units is 771 over the next 10 years and 1,879 to build out. Residential growth represents approximately 74% of total growth over the 10-year period and 76% over the longer term.

Table ES-2: Population Growth & Dwelling Units

Dwelling Type	Persons Per Unit (PPU)[1]	10-Year Development Charges Study Period (2018-2027)		Beyond 10 Years (2028-2041)		Total to Build Out (2018-2041)	
		No. of Units	Population Growth	No. of Units	Population Growth	No. of Units	Population Growth
Single Detached & Semis	3.19	566	1,804	738	2,354	1,304	4,158
Multiples	2.52	99	250	166	419	266	669
Apartments	1.79	106	189	204	365	310	554
Population Increase in New Units (GROSS)		**771**	**2,244**	**1,108**	**3,138**	**1,879**	**5,382**
Decline In Population [2]			(138)		(247)		(385)
Total Population Increase (NET)			**2,106**		**2,891**		**4,997**

1. County of Wellington DC Study Table 6-2. Apartments PPU is the average for all apartments

2. Population decline due to resident life cycle, economy,etc.

The employment growth projections over the same periods are 808 for the first 10 years and 1,661 to build out. These equate to an additional 626,600 ft^2 of Gross Floor Area (GFA) in the first 10 years and 1,319,600 ft^2 to build out.

Table ES4 summarizes the population growth in new dwelling units in Arthur and Mount Forest to build out (2018-2041). These allocations are based on the Community Growth Plan. The residential population growth to be accommodated in new units is projected to be 5,046 to build out. The increase in new units is estimated to be approximately 1,762.

Table ES-3: Employment Growth

Employment Sector	10-Year Development Charges Study Period (2018-2027)	Beyond 10 Years (2028-2041)	Total to Build Out (2018-2041)	% of Total to Build Out (2018-2041)
Population				
Industrial Employment	234	281	515	31%
Commercial Employment	514	504	1,018	61%
Institutional Employment	60	68	128	8%
Total Employment Population Increase	**808**	**853**	**1,661**	**100%**
[1] Gross Floor Area (ft²)				
Industrial Employment	327,600	393,400	721,000	55%
Commercial Employment	257,000	252,000	509,000	39%
Institutional Employment	42,000	47,600	89,600	7%
Total GFA Increase (ft²)	**626,600**	**693,000**	**1,319,600**	**100%**

1. Based on GFA Per Employee from 2016 Wellington County DC Study, Table 9-b. (1400 ft² industrial; 700 ft² institutional; 500 ft² commercial)

Table ES-4: Urban Area Population & New Dwelling Units to Build Out (2018 - 2041)

Growth Item	Persons Per Unit (PPU)[1]	Inside Urban Area - Arthur & Mount Forest	
		Units	Population
Single Detached & Semis	3.19	1,222	3,899
Multiples	2.52	249	628
Apartments	1.79	290	520
Population Growth (Gross)		1,762	5,046
Population Decline			(244)
Population Growth (Net)			4,802

1. County of Wellington DC Study Table 6-2. Apartments PPU is the average for all apartments

2. Population decline due to resident life cycle, economy,etc.

The employment growth estimate over the same period is 1,465 which is equivalent to a GFA of approximately 1,085,656 ft^2 as shown in Table ES5. These urban area projections form the basis for the water and wastewater charges

Table ES-5: Employment Growth – Urban Areas

Employment Sector	Total to Build Out (2018-2041)
Population	
Industrial Employment[1]	365
Commercial Employment[2]	977
Institutional Employment[2]	123
Total Employment Population Increase	**1,465**
[3] Gross Floor Area (ft^2)	
Industrial Employment	511,000
Commercial Employment	488,640
Institutional Employment	86,016
Total GFA Increase (ft^2)	**1,085,656**

1.Wellington North Community Growth Plan 2018 - Section 3.4 Employment Growth Strategy

2.Prorated based on population in urban areas vs. municipal wide

3. GFA Per Employee from 2016 Wellington County DC Study, Table 9-b. (1400 ft^2 industrial; 700 ft^2 institutional; 500 ft^2 commercial)

ES-4 Recoverable Growth Related Capital Needs

The capital cost eligible for recovery through the development charges after deductions and adjustments and their respective allocations to the residential and non-residential sectors are summarized by service in Table ES-6.

Table ES-6: Allocation of Costs to Residential & Non-Residential

Service	Net Capital Needs to be Recovered	Residential Share	Non-Residential Share	Basis for Allocation
Municipal Wide Services				
Administration - Studies	$ 57,663	$ 42,395	$ 15,268	% of Population and Employment Growth
Parks Services	$ 148,837	$ 141,395	$ 7,442	95% residential - 5% non residential
Recreation Services	$ 731,911	$ 695,316	$ 36,596	95% residential - 5% non residential
Fire Protection Services	$ 418,778	$ 320,013	$ 98,765	% of Population and Employment Growth
Roads and Related	$ 3,235,949	$ 2,472,783	$ 763,166	% of Population and Employment Growth
Total Municipal Wide Services	**$ 4,593,138**	**$ 3,671,902**	**$ 921,236**	
Urban Services				
Water Servcies	$ 8,193,423	$ 6,349,681	$ 1,843,741	% of Population and Employment Growth
Wastewater Services	$ 22,278,780	$ 17,265,453	$ 5,013,327	% of Population and Employment Growth
Total Urban Services	**$ 30,472,203**	**$ 23,615,135**	**$ 6,857,068**	
Total Adjustments	**$ 35,065,341**	**$ 27,287,037**	**$ 7,778,304**	

ES-4 Calculated Development Charges

The calculated residential development charges by type of dwelling unit and the non-residential development charges per square foot are presented in Tables ES-7 and ES-8. The charges were based on:

- Occupancy rates (persons per unit - PPU) of 3.19, 2.07, 1.51 and 2.52 for single & semi-detached, apartments - 2 or more bedrooms, apartments - bachelor and 1 bedroom and other multiples respectively.
- Applying the charges for water and wastewater to development within the urban area only.
- Setting the DC for Semi- Detached Dwellings the same as the DC for Single Detached Dwelling;
- Creating a new residential category for small Other Multiples which meet certain conditions;
- Setting the DC for Wind Turbines the same as the DC for a Single Detached Dwelling for Road & Related and Fire Protection Services;
- Setting the DC for Commercial/ Institutional at 100% of the calculated charges;
- Setting the DC for Industrial at 50% of the calculated charges;
- Setting the DC for Warehouses at 25% of the calculated charges; and
- No phasing in
- All charges will be subject to annual indexing in accordance with O.Reg.82/98 Section 7.

Table ES-7: Calculated Residential Development Charges

Service	RESIDENTIAL			
	Single/Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments-Bachelor and 1 bedroom	Other Multiples
Municipal Wide Services				
Administration - Studies	$ 61	$ 39	$ 29	$ 48
Parks Services	$ 196	$ 127	$ 93	$ 155
Recreation Services	$ 995	$ 646	$ 471	$ 786
Fire Protection Services	$ 193	$ 125	$ 92	$ 153
Roads and Related	$ 1,509	$ 979	$ 715	$ 715
Total Municipal Wide Services	**$ 2,955**	**$ 1,917**	**$ 1,399**	**$ 1,856**
Urban Services				
Wastewater Services	$ 11,177	$ 7,253	$ 5,291	$ 8,829
Water Services	$ 4,147	$ 2,691	$ 1,963	$ 3,276
Total Urban Services	**$ 15,324**	**$ 9,944**	**$ 7,254**	**$ 12,105**
GRAND TOTAL RURAL AREA	$ 2,955	$ 1,917	$ 1,399	$ 1,856
GRAND TOTAL URBAN AREA	**$ 18,279**	**$ 11,861**	**$ 8,652**	**$ 13,962**

Table ES-8: Calculated Non-Residential Development Charges

Service	NON-RESIDENTIAL			
	Commercial/ Institutional (per ft^2 of Gross Floor Area)	Industrial		
		Industrial (per ft^2 of Gross Floor Area)	Warehouse (per ft^2 of Gross Floor Area)	Wind Turbine
Municipal Wide Services				
Administration - Studies	$ 0.02	$ 0.01	$ 0.01	$ 61
Parks Services	$ 0.01	$ 0.01	$ 0.00	
Recreation Services	$ 0.06	$ 0.03	$ 0.01	
Fire Protection Services	$ 0.08	$ 0.04	$ 0.02	$ 193
Roads and Related	$ 0.59	$ 0.30	$ 0.15	$ 1,509
Total Municipal Wide Services	**$ 0.76**	**$ 0.38**	**$ 0.19**	**$ 1,764**
Urban Services				
Wastewater Services	$ 4.71	$ 2.35	$ 1.18	
Water Services	$ 1.75	$ 0.87	$ 0.44	
Total Urban Services	**$ 6.45**	**$ 3.23**	**$ 1.61**	**$ -**
GRAND TOTAL RURAL AREA	$ 0.76	$ 0.38	$ 0.19	$ 1,764
GRAND TOTAL URBAN AREA	**$ 7.22**	**$ 3.61**	**$ 1.80**	**$ 1,764**

ES-5 Comparison with Existing Charges

The existing and calculated residential and non residential development charges are compared in Table ES-9 and ES-10 respectively. Table ES-9 shows an increase in residential charges for urban services but a decrease for municipal wide services for the new period. Similarly the non-residential urban services charges are higher than existing charges but lower for municipal wide services.

Table ES-9: Proposed vs. Existing Residential Development Charges

Service	RESIDENTIAL				
	Single Dwelling	Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments-Bachelor and 1 bedroom	Other Multiples
EXISTING CHARGES					
Total Municipal Wide Services	$ 4,228	$ 2,693	$ 2,724	$ 1,843	$ 3,505
Total Urban Services	$ 11,116	$ 11,116	$ 7,162	$ 4,880	$ 9,213
GRAND TOTAL RURAL AREA	$ 4,228	$ 2,693	$ 2,724	$ 1,843	$ 3,505
GRAND TOTAL URBAN AREA	$ 15,344	$ 13,809	$ 9,886	$ 6,723	$ 12,718
CALCULATED CHARGES					
Total Municipal Wide Services	$ 2,955	$ 2,955	$ 1,917	$ 1,399	$ 1,856
Total Urban Services	$ 15,324	$ 15,324	$ 9,944	$ 7,254	$ 12,105
GRAND TOTAL RURAL AREA	$ 2,955	$ 2,955	$ 1,917	$ 1,399	$ 1,856
GRAND TOTAL URBAN AREA	$ 18,279	$ 18,279	$ 11,861	$ 8,652	$ 13,962
DIFFERENCE					
Total Municipal Wide Services	$ (1,273)	$ 262	$ (807)	$ (444)	$ (1,649)
Total Urban Services	$ 4,208	$ 4,208	$ 2,782	$ 2,374	$ 2,892
GRAND TOTAL RURAL AREA	$ (1,273)	$ 262	$ (807)	$ (444)	$ (1,649)
GRAND TOTAL URBAN AREA	$ 2,935	$ 4,470	$ 1,975	$ 1,929	$ 1,244

Table ES-10: Proposed vs. Existing Non-Residential Development Charges

NON-RESIDENTIAL						
Commercial/ Institutional		Industrial				
		Urban Service Area		Outside Urban Service Area		
Urban Service Area (per ft2 of Gross Floor Area)	Outside Urban Service Area (per ft2 of Gross Floor Area)	Industrial (per ft^2 of Gross Floor Area)	Warehouse (per ft^2 of Gross Floor Area)	Industrial (per ft^2 of Gross Floor Area)	Warehouse (per ft^2 of Gross Floor Area)	Wind Turbine
$ -	$ 1.43	$ -	$ -	$ 0.72	$ 0.36	$ 2,721
$ 5.22	$ -	$ 2.62	$ 1.31	$ -	$ -	$ -
$ -	$ 1.43	$ -	$ -	$ 0.72	$ 0	$ 2,721
$ 5.22	$ -	$ 2.62	$ 1.31	$ -	$ -	$ 2,721
$ 0.76	$ 0.76	$ 0.38	$ 0.19	$ 0.38	$ 0.19	$ 1,764
$ 6.45		$ 3.23	$ 1.61			
	$ 0.76			$ 0.38	$ 0.19	$ 1,764
	$ -	$ 3.61	$ 1.80			$ 1,764
$ 0.76	$ (0.67)	$ 0.38	$ 0.19	$ (0.34)	$ (0.17)	$ (957)
$ 1.23		$ 0.61	$ 0.30			$ -
	$ (0.67)			$ (0.34)	$ (0.17)	$ (957)
	$ -	$ 0.99	$ 0.49			$ (957)

ES-6 Recommendations

The following recommendations are presented for consideration by the Township.

1. The 2018 Development Charges Background Study and accompanying Development Charges By-law be approved by Council and become effective on June 17, 2018.
2. That following approval of the by-law, the required notices are issued to the public and stakeholders and a pamphlet is prepared, in accordance with O.Reg.82/98 Section and O.Reg. 82/98 Section 14 respectively.
3. That the growth related capital projects forecast identified in this Development Charges Background Study be approved by Council as a statement of its intention to meet the increased need for service due to growth, as required under O.Reg.82/98 Section 3.
4. That any excess capacity created as a result of undertaking the growth related capital projects identified in this background study would be paid for by development charges and therefore deemed to be "committed" in accordance with the requirements of O.Reg.82/98 Section (5).

Table of Contents

Appendices

Tables

1 Introduction

1.1 Background

The Township of Wellington-North (Township) is a lower tier municipality within Wellington County with a population of approximately 12,000 residents. It provides a wide range of services to its residents and businesses for which development charges are currently collected. These services include:

- Administration
- Fire Protection Services
- Parks
- Recreation
- Water Services
- Wastewater Services
- Roads and Related

The extent to which these services are delivered and the costs depend not only on the existing residents and businesses but also on the anticipated growth. The recovery of the capital costs of development driven service expansions is governed by the Development Charges Act (1997) (DCA) and Ontario Regulation 82/98 (O.Reg. 82/98). These were amended by the Smart Growth for Our Communities Act (2015) (Bill 73) which became effective on January 1, 2016. Changes include the requirement for municipalities to have approved Asset Management Plans, increased lead time for public review of DC Studies prior to final approval and the need for consideration of the use of area specific charges. The calculation and implementation of development charges (DCs) including the requirement for municipalities to prepare DC Background Studies and pass by-laws setting out the DCs to be collected from developers are prescribed by the DCA and O.Reg. 82/98.

The Township's current DC By-Law No. 51-13 will expire on June 16, 2018. It needs to be updated through the preparation of a new Background DC Study and By-law and become effective by June 17, 2018.

1.2 Purpose of this Document

This document is the DC Background Study and its main purpose is to:

- Document the Development Charge policies and calculations of the new rates that inform the preparation of the new DC By-law;
- Present the new DC By-Law; and
- Meet the requirements of the DCA and O.Reg.82/98.

2 Study Methodology

2.1 Steps in Calculating Development Charges

The methodology for this study very closely followed the methodology prescribed by the DCA particularly Section 5(1) and O.Reg. 82/98. The steps are outlined in Table 2-1.

Table 2-1: Study Methodology

DC Background Study Steps
Step 1:Review Development Charges Act, 1997 (DCA) Requirements (See Section 3)
• The DCA and O.Reg.82/98 were reviewed to confirm requirements and their application to the Township's situation
Step 2: Develop Policy Framework (See Section 4)
• The existing By-law No.51-13 was reviewed to identify existing policies, rules and charges set by the Township. • Input will be obtained from Council and senior staff on relevant polices and services to be included in the DC calculations • A presentation will be delivered to Council on April 17, 2018 outlining requirements of the DCA and O.Reg.82/98 and items for consideration by Council
Step 3: Identify Services Eligible for DCs (See Section 5)
The services identified for preliminary consideration for inclusion in the study are listed below. These meet the eligibility requirements of O.Reg.82/98 Section 2.1 : • Administrative Services - Studies • Roads & Related Services - Roads - Sidewalks & Streetlights - Bridges & Culverts - Facilities - Vehicles & Equipment - Stormwater (Drainage) • Park Services - Parkland Development - Parkland Amenities - Parkland Paths & Trails - Vehicles & Equipment • Recreation Services - Recreation Facilities • Fire Protection Services - Facilities - Vehicles - Equipment • Water Services - Treatment - Storage & Distribution - Vehicles • Wastewater Services - Treatment - Collection

DC Background Study Steps

Step 4: Determine Population & Employment Growth (See Section 6)

- The growth related data and information were reviewed
- Residential population growth was determined for the 10-year period 2018 – 2027 inclusive and the build out period 2028 – 2041 inclusive. This considered the decline in population as well such that the "net" growth was used.
- Household growth was determined for the 10-year period 2018 – 2027 inclusive and the build out period 2028 – 2041 inclusive
- The number of persons per household (PPU) was determined for each type of household.
- Employment population growth was determined for the 10-year period 2018 – 2027 inclusive and the build out period 2028 – 2041 inclusive
- Employment population growth was converted to non-residential gross floor area (GFA)
- The location of new growth was assumed to be across the Township but focused in the urban areas as noted in the Wellington North Community Growth Plan

Step 5: Determine Historical Service Levels (See Section 7)

- The services for which historical service levels are required were identified. Historical service level calculations for water and wastewater were not required as these services are governed by other legislation.
- The historical population served by each service was determined
- The quantity (floor area, number of equipment, etc.) and quality (cost per square foot, per unit, etc.) of services for each year over the historical 10 years were determined.
- The average service level (cost per population) for the historical 10-year period 2008 – 2017 inclusive was determined

Step 6: Determine the Net Capital Costs to be Recovered from Development Charges (See Section 8)

Step 6.1: Identify Growth Related Capital Needs (Gross)

- Current available servicing studies were reviewed to identify growth related capital needs.
- The forecast period used for projecting capital costs was 10 years (2018-2027) except for water, wastewater, roads and fire protection. These costs were projected over a longer term (2018 to 2041) in accordance with the DCA Section 5(1)4.
- Input from staff was obtained on growth related capital projects
- The growth related capital forecasts were developed for each service for the period 2018-2027 inclusive showing the gross capital cost of each project.

Step 6.2: Undertake Statutory & Other Deductions

- Any approved grants or third party funding that are expected to be received to reduce the cost of each project were deducted from the gross cost
- The portion of each project that will benefit the existing population was determined and deducted from the net cost after grants and third party funding were deducted

DC Background Study Steps

- Deduct the statutory 10% of the remaining cost after deducting grants, third party funding and benefit to existing population.

Step 6.3: Further Adjustments after Deductions

- The DCA Section 5(1) does not define uncommitted excess capacity but requires that it be deducted from the increased need for services to accommodate the new growth.
- Any credits related to existing front end agreements were identified and added to the capital projections in accordance with O.Reg. 82/98 Section 5.
- Post period capacity amounts from the last DC Study were identified and added to the capital forecast
- The deduction of uncommitted excess capacity was deemed to have been done during the planning stages for services when capacity was assessed to determine the need for capacity expansions hence the new projects.
- Any eligible debt or reserve deficits were identified and added to the to the capital forecasts
- The remaining amounts were adjusted by any uncommitted reserve balances because these funds are available for use to offset the growth related costs.

Step 6.4: Apply Service Level Caps

- The historical average service level (Cost per Population) was multiplied by the projected population growth for the forecast period to obtain the maximum amount (cap) that could be recovered through the DCs.
- The lower of the service level cap or the net capital cost for the forecast period was used as the amount to be recovered through DCs.

Step 7: Calculate the Residential and Non-Residential Development Charges (See Section 9)

Step 7.1: Allocate the Net Capital Cost of each Service to Residential and Non-Residential

- The basis for allocating costs to the residential and non-residential sectors was identified. In this case the allocation to residential growth was based on residential population as a percentage of the total residential plus employment population growth over the applicable period. The allocation to non-residential growth was the remainder. The allocations within the non-residential sector were made based on the policies noted in Section 4.2 Policy Direction
- Although Parks and Recreation services are mostly for the benefit of the residential sector. Their respective allocations recognized that the non-residential sector has access to these services. 95% allocated to residential and 5% non-residential

DC Background Study Steps

Step 7.2: Calculate the Residential and Non-Residential Unadjusted Rates

- The cost allocated to the residential sector for each service was divided by the residential population growth over the applicable period to arrive at a cost per residential population (cost per capita). The result was the unadjusted residential development charge per capita
- The cost allocated to the non-residential sector for each service was divided by the employment population growth over the applicable period to arrive at a cost per employment population.

  The cost per employment population was converted to cost per square foot of Gross Floor Area (GFA) based on conversions of 1,400 ft^2, 500 ft^2, 700 ft^2 per employment population for industrial commercial, and institutional respectively. The result was the unadjusted non-residential rate per square foot.

Step 7.3: Undertake Cash Flow Analyses

- A cash flow analysis was completed for each service using an opening reserve balance of zero, anticipated expenditures, anticipated revenues based on the calculated development charges, interest earned on positive annual balances and interest accrued on negative annual balances over the 10-year period or 24-year period as the case may be. Expenditures, revenues and rates were inflated over the period.
- The residential and non-residential development charges (cost per population for residential and cost per square foot for non-residential) for each service were adjusted to obtain a net zero balance for each reserve at the end of the 10^{th} or 24^{th} year. These became the "adjusted" development charge rates.

Step 7.4: Calculate Proposed Development Charges

- The adjusted rate per population was converted to a charge per unit for single detached dwelling units, multiple dwelling units and apartments using the appropriate persons per unit (PPU).
- The adjusted rate per square foot was deemed the proposed non-residential development charges rate for the by-law.

Step 8: Proposed Development Charges Comparison (See Section 10)

- The proposed development charges were compared with the existing charges.
- The proposed development charges were compared with those in other jurisdictions

Step 9: Assess Long-term Capital & Operating Cost Impacts (See Section 11)

- The long-term increase to operating costs of each service as a result of implementing the growth related
- The long-term increases to capital costs of each service as a result of implementing the

DC Background Study Steps

infrastructure was estimated. The existing operating cost per capital dollar invested times the projected capital costs were used as the basis for estimating operating costs along with professional judgment and discussions with staff.

- The life expectancy for each asset to be funded by the development charges was estimated based on the Township's Asset Management Plan
- Annuities were calculated for the future replacement of the growth related assets and funding

growth related infrastructure were estimated. This was based on the portion of capital costs not funded by the DCs but funded from taxes or user fees.

- The future replacement cost of each asset was determined

Step 10: Prepare Draft Background Study & Draft By-Law (See Section 12)

- The Draft Background Study (this document) was prepared in accordance with the requirements of the DCA Section (10) and O.Reg.82/98 Section (8)
- The Draft By-Law (proposed) was prepared in accordance with the DCA Section (6)

Step 11: Undertake Stakeholder Consultation (See Section 13)

- The Draft Background Study and Draft By-law was made available for public/ stakeholder review at least 60 days prior to approval of the by-law.
- Public notice for a meeting to be held on June 14, 2018 to obtain public/ stakeholder comments on the Draft Background Study and Draft By-law was issued at least 20 days in advance of the meeting on May 23, 2018
- The Draft Background Study and Draft By-law will be made available to the public/ stakeholders at least 2 weeks prior to the public meeting
- A Stakeholder Meeting will be held on May 24, 2018 at 7pm at the Kenilworth Council Chambers

Step 12: Approval & Implementation of Final Background Study and Final By-Law (See Section 14)

- Comments received from stakeholders will be considered and necessary changes made to the Draft Background Study and Draft By-law.
- Approval by Council will be sought in time for the new by-law to become effective by June 17, 2018
- The Final Background Study and Final By-law will be prepared
- Notice of approval of DC By-law will be given within 20 days of final approval by Council.
- A pamphlet will be prepared (within 60 days of approval of the by-law) containing the items noted in O.Reg.82/98 Section 14(1) and make available to the public.

2.1 Data Sources

The primary sources of data used to prepare this Background Study are listed in Table 2-2. In addition, information was also developed from discussions with and input from the Township's staff, as required.

Table 2-2: Background Study Data Sources

Item	Data Source
Services to be Included	• By-Law No. 51-13 • Council Direction • Input from staff
Historical Residential Population and Future Growth	• Wellington-North Community Growth Plan February 2018 • Wellington County Official Plan November 2017 • Statistics Canada 2016 Census • Wellington County 2016 DC Study • 2013 Development Charges Background Study • Information from the Township on new development
Historical Employment Population and Future Growth	• Wellington-North Community Growth Plan February 2018 • Wellington County Official Plan November 2017 • Statistics Canada 2016 Census • Wellington County 2016 DC Study • 2013 Development Charges Background Study • Information from the Township on new development • Input from staff
Household Projections	• Wellington-North Community Growth Plan February 2018 • Wellington County Official Plan November 2017 • Statistics Canada 2016 Census • Wellington County 2016 DC Study • 2013 Development Charges Background Study • Information from the Township on new development • Input from staff
Historical Service Level Information	• The Township's PSAB 3150 Data • Information supplied by the Town • 2013 Development Charges Background Study
Growth Related Capital Costs	• Township's Capital Budget • 2013 Development Charges Background Study • Recreation Master Plan • Staff Input • Township's Tangible Capital Asset Reporting Policy •
Operating Costs	• Township's 2018 Budget

Item	Data Source
	• Township's 2016 FIR
Policies & Rules	• By-Law No. 51-13 • Council Direction • Input from staff

3 Step1: Development Charges Act 1997 (DCA) Requirements

3.1 General Requirements

In Ontario the governing legislation for development charges is the Development Charges Act (1997), O.Reg. 82/98 and O.Reg.192/07. The latter regulation applies only to the Toronto-York Subway Station and is not relevant to this background study.

The DCA Section 2 (1) allows municipalities to establish by-laws to impose development charges "against land to pay for increased capital costs required because of increased needs for services arising from development of the area to which the by-law applies". In accordance with the DCA Section 2(2),

"A development charge may be imposed only for development that requires,

(a) the passing of a zoning by-law or of an amendment to a zoning by-law under section 34 of the Planning Act;

(b) the approval of a minor variance under section 45 of the Planning Act;

(c) a conveyance of land to which a by-law passed under subsection 50 (7) of the Planning Act applies;

(d) the approval of a plan of subdivision under section 51 of the Planning Act;

(e) a consent under section 53 of the Planning Act;

(f) the approval of a description under section 9 of the Condominium Act, 1998; or

(g) the issuing of a permit under the Building Code Act, 1992 in relation to a building or structure. "

The DCA and O.Reg. 82/98 are very prescriptive in the services and costs that can be included in the DC calculations and how the calculations are to be undertaken. They also prescribe the stakeholder consultation and other requirements for implementation of development charges.

In general the DCA and O.Reg.82/98 identify the following:

- The information must be presented in the background study.
- The services for which DCs may be recovered.
- The need to calculate the 10-year historical service levels to determine the maximum cost (cap) that may be included in the DC calculations. This does not apply to engineered services such as transportation, water, wastewater and stormwater.
- The requirement to determine "excess capacity" within the current services and whether or not such excess capacity is committed or available to facilitate new growth.
- The period for forecasting costs. This is typically 10 years for most services but longer for others such as water, wastewater, stormwater, transportation, etc.
- The eligible and ineligible capital costs for inclusion in the DC calculations.
- Required reductions to gross capital costs of DC related projects.
- Creation and maintenance of dedicated reserve funds for each service.
- Stakeholder consultation and notices and their timing.
- The contents and effective period of the by-law (5 years).
- Protocol for appealing the proposed development charges.
- Rules for collection of development charges including mandatory exemptions.

Further details on the requirements of the DCA and O.Reg.82/98 are available by referencing these documents at www.ontario.ca/laws/statute/97d27 .

3.2 Prescribed Calculation Methodology

The methodology for calculating development charges is defined by the specific requirements of the DCA and O.Reg. 82/98 and is very consistent across Ontario.

The DCA Section 5(1) states that*: "The following is the method that must be used, in developing a development charge by-law, to determine the development charges that may be imposed:*

1. *The anticipated amount, type and location of development, for which development charges can be imposed, must be estimated.*

2. *The increase in the need for service attributable to the anticipated development must be estimated for each service to which the development charge by-law would relate.*

3. *The estimate under paragraph 2 may include an increase in need only if the council of the Township has indicated that it intends to ensure that such an increase in need will be met. The determination as to whether a council has indicated such an intention may be governed by the regulations.*

4. *The estimate under paragraph 2 must not include an increase that would result in the level of service exceeding the average level of that service provided in the Township over the 10-year period immediately preceding the preparation of the background study required under section 10. How the level of service and average level of service is determined may be governed by the regulations. The estimate also must not include an increase in the need for service that relates to a time after the 10-year period immediately following the preparation of the background study unless the service is set out in subsection (5).*

5. *The increase in the need for service attributable to the anticipated development must be reduced by the part of that increase that can be met using the Township's excess capacity, other than excess capacity that the council of the Township has indicated an intention would be paid for by new development. How excess capacity is determined and how to determine whether a council has indicated an intention that excess capacity would be paid for by new development may be governed by the regulations.*

6. *The increase in the need for service must be reduced by the extent to which an increase in service to meet the increased need would benefit existing development. The extent to which an increase in service would benefit existing development may be governed by the regulations.*

7. *The capital costs necessary to provide the increased services must be estimated. The capital costs must be reduced by the reductions set out in subsection (2). What is included as a capital cost is set out in subsection (3). How the capital costs are estimated may be governed by the regulations.*

8. *The capital costs must be reduced by 10 per cent. This paragraph does not apply to services set out in subsection (5).*

9. *Rules must be developed to determine if a development charge is payable in any particular case and to determine the amount of the charge, subject to the limitations set out in subsection (6).*

10. The rules may provide for full or partial exemptions for types of development and for the phasing in of development charges. The rules may also provide for the indexing of development charges based on the prescribed index".

4 Step 2: Policy Framework

4.1 Existing Development Charges By-Law No. 51-13

The existing DC By-Law No. 51-13 was approved by the Township's Council on June 17, 2013 and will remain effective until expiry on June 16, 2018. Some of the main features of the existing by-law include:

- Identifying the following services for which the DCs are currently collected:
  - Roads & Related;
  - Fire Protection;
  - Parks;
  - Recreation;
  - Administration;
  - Water;
  - Wastewater; and
  - Water & Wastewater Vehicles

- Establishing rules for exemptions, industrial buildings expansions and redevelopment of existing properties.

- Establishing DC reserve funds for each service;

- Collecting residential DCs on per "dwelling unit" the basis times the number of dwelling units;

- Setting residential DCs for the following types of dwelling units:
  - Single Detached Dwelling;
  - Semi-Detached Dwelling;
  - Apartments - 2 or more Bedrooms;
  - Apartments – Bachelor and 1 Bedroom; and
  - Other Multiples.

- Setting the DC for Semi- Detached Dwellings at 90% of the DC for Single Detached Dwelling;

- Collecting non-residential DCs on the basis of GFA which is consistent with industry practise;

- Setting non-residential DCs for the following types development:
  - Commercial Institutional;
  - Industrial;
  - Warehouse; and
  - Wind Turbines.

- Setting the DC for Wind Turbines the same as the DC for a Single Detached Dwelling for Road & Related and Fire Protection Services;

- Setting the DC for Commercial/ Institutional at 100% of the calculated charges for Water, Wastewater and Water & Wastewater Vehicles;

- Setting the DC for Industrial at 50% of the calculated charges for Water, Wastewater and Water & Wastewater Vehicles;

- Setting the DC for Warehouses at 25% of the calculated charges for Water, Wastewater and Water & Wastewater Vehicles; and

- Phasing in of the charges over 3 years.

A copy of the existing DC By-law No. 51-13 is available on the Township's website at: www.wellington-north.com/government/by-laws/by-law-51-13-development-charges

4.2 Policy Direction

The policies used in preparing the background study and by-law were guided by:

- the existing DC By-law 51-13 as described in Section 4.1;
- input from Council at a workshop held on April 17, 2018 to provide members of Council with background information on development charges, policy items for consideration and solicit feedback; and
- a Stakeholder Consultation session that was held on May 24, 2018 to present and obtain input on the draft Development Charges Background Study and proposed Development Charges By-law (version 3).
- Direction from Council at the June 4th Council meeting regarding the Development Charges Background Study and Development Charges By-law.

Input received at the Council Workshop, Stakeholder Meeting and Council Meeting resulted in the policies and rules listed below. These were incorporated into the final documents.

- No phasing in of the DCs;
- Including DCs for Commercial/Institutional, Industrial & Warehouses at 100%, 50% and 25% respectively, of the calculated charges Municipal Wide Services and Urban Area services;

- Setting the charge for Wind Turbines equal to the Single Detached charge for Roads & Related, Fire Protection and Administration.
- Setting the charge for Semi-Detached the same as the charge for Single Detached Dwellings. This is consistent with best practise in other municipalities;
- Including the following discounts:
  - 10% for developments within the Built Boundary
  - 25% for development within the Central Intensification Corridor.
  - An additional 25% for purpose built rental units within the in the Built Boundary and Central Intensification Corridor.

It is important to note that reduction in revenues due to discounts and exemptions result in increase needs in tax and rate budgets. A table outlining policy items, including those discussed at the Council Workshop, Stakeholder Meeting and Council direction following the June 4th Council meeting is listed in Appendix A.

5 Step 3: Services Eligible for Development Charges

The services identified for inclusion in the study are listed in Table 5-1. These met the eligibility criteria noted in O.Reg.82/98 Section 2.1.

Table 5-1: Eligible Services

Services Included in DC Calculations	

• Administrative Services
  - Studies
• Roads & Related Services
  - Roads
  - Sidewalks & Streetlights
  - Bridges & Culverts
  - Facilities
  - Vehicles & Equipment
• Park Services
  - Parkland Development
  - Parkland Amenities
  - Parkland Paths & Trails
  - Vehicles & Equipment
	• Recreation Services
	  - Recreation Facilities
	• Fire Protection Services
	  - Facilities
	  - Vehicles
	  - Equipment
	• Water Services
	  - Treatment
	  - Storage & Distribution
	  - Vehicles
	• Wastewater Services
	  - Treatment
	  - Collection

6 Step 4: Population and Employment Growth

The DCA Section 5(1) requires that *"the anticipated amount, type and location of development, for which development charges can be imposed, must be estimated".* Therefore estimated future growth in new households over the study period and the location of such growth is required for the calculations. Determination of net historical growth over the last 10 years is also required to determine the historical service levels. The projected net residential and employment population growth are used to determine the service level caps. Population growth in new households and employment growth are used to allocate costs between residential and non-residential growth and calculate the development charges on a per capita and per square foot basis for residential and non-residential respectively.

In Wellington County, provincial and regional planning direction for accommodating population and employment growth and related development is provided by the Provincial Policy Statement (PPS), the Growth Plan for the Greater Golden Horseshoe (Growth Plan) and the County of Wellington Official Plan (County Plan). In 2013, the Province of Ontario released Amendment No. 2 to the Growth Plan 2006, outlining upgrades to the population and housing forecast.

Wellington County has prepared a population, household and employment forecast to 2041. The County Plan establishes the upper-tier, regional-level policy framework and implementation of the PPS and the Growth Plan. In the Township, the County Plan also serves as the local Official Plan for Wellington North.

Appendix B provides the residential and employment projections for:

- The 10-year historical period 2008 to 2017;
- The 10-year study period 2018 to 2027; and
- The build out period 2028 to 2041

The annual growth is assumed to be linear between the milestone years. The growth in population, employment and dwelling units are based on growth information contained in the Wellington North Community Growth Plan, 2018, Wellington County's Official Plan (2017), Wellington County's 2016 DC Study and Statistics Canada 2016 census data.

6.1 Municipal Wide Growth

Table 6-1 summarizes the growth in residential population over the next 10 years (2018 - 2027) and to build out (2018 -2041). The municipal wide growth in population for the 10-year period is 2,106 and 4,997 to 2041. Approximately 96% of the growth is expected in the urban areas.

Table 6-1: Municipal Wide Population Growth (2018-2041)

Geographical Area	10-Year Development Charges Study Period (2018-2027)	Beyond 10 Years (2028-2041)	Total to Build Out (2018-2041)	% of Total
Arthur - Urban Area [1]	617	1,059	1,676	34%
Mount Forest - Urban Area [1]	1,297	1,830	3,126	63%
Outside Urban Area [1]	192	2	195	4%
Total Population Increase	**2,106**	**2,891**	**4,997**	**100%**

1. County of Wellington DC Study Table 6-2. Apartments PPU is the average for all apartments

Table 6-2 shows the number of new dwelling units to be 771 over 10 years and 1,879 to build out. The residential growth to be accommodated in these new units is projected to be 2,244 by 2027and 5,382 to build out. The net population growth considers the decline in population due to life expectancies, economic situations, etc.

Table 6-2: Municipal Wide Population Growth in New Dwelling Units

Dwelling Type	Persons Per Unit (PPU)[1]	10-Year Development Charges Study Period (2018-2027)		Beyond 10 Years (2028-2041)		Total to Build Out (2018-2041)	
		No. of Units	Population Growth	No. of Units	Population Growth	No. of Units	Population Growth
Single Detached & Semis	3.19	566	1,804	738	2,354	1,304	4,158
Multiples	2.52	99	250	166	419	266	669
Apartments	1.79	106	189	204	365	310	554
Population Increase in New Units (GROSS)		**771**	**2,244**	**1,108**	**3,138**	**1,879**	**5,382**
Decline In Population [2]			(138)		(247)		(385)
Total Population Increase (NET)			**2,106**		**2,891**		**4,997**

1. County of Wellington DC Study Table 6-2. Apartments PPU is the average for all apartments

2. Population decline due to resident life cycle, economy,etc.

The employment growth projections over the same periods are shown in Table 6-3. The projected employment growth is 808 for the first 10 years and 1,661 to build out. These equate to an additional 626,600 ft^2 of Gross Floor Area (GFA) in the first 10 years and 1,319,600 ft^2 to build out. The floor area was calculated based on the Wellington County DC Study 2016, Schedule 9-b. These were applied to the following employment densities which are consistent with the conversions used for the County's Development Charges Background Study, to arrive at the employment growth:

- 1,400 ft^2 per employee – industrial
- 500 ft^2 per employee – commercial employment
- 700 ft^2 per employee – institutional

Table 6-3: Municipal Wide Employment Growth

Employment Sector	10-Year Development Charges Study Period (2018-2027)	Beyond 10 Years (2028-2041)	Total to Build Out (2018-2041)	% of Total to Build Out (2018-2041)
Population				
Industrial Employment	234	281	515	31%
Commercial Employment	514	504	1,018	61%
Institutional Employment	60	68	128	8%
Total Employment Population Increase	**808**	**853**	**1,661**	**100%**
[1] ***Gross Floor Area (ft^2)***				
Industrial Employment	327,600	393,400	721,000	55%
Commercial Employment	257,000	252,000	509,000	39%
Institutional Employment	42,000	47,600	89,600	7%
Total GFA Increase (ft^2)	**626,600**	**693,000**	**1,319,600**	**100%**

1. Based on GFA Per Employee from 2016 Wellington County DC Study, Table 9-b. (1400 ft^2 industrial; 700 ft^2 institutional; 500 ft^2 commercial)

6.2 Urban Area Growth

In keeping with the direction of the PPS and Growth Plan, and the policies of the County Plan, the majority of future population and housing growth in the Township will be directed to the serviced urban areas of Mount Forest and Arthur. Mount Forest has the infrastructure capacity to accommodate the increased growth representing approximately 63% of the municipal growth to 2041 (build out). It is anticipated that the growth in the urban areas will be supported by the installation of new or expansion of existing water and wastewater systems, as necessary.

Table 6-4 summarizes the population growth in new dwelling units in Arthur and Mount Forest to build out (2018-2041). These allocations are based on the Community Growth Plan. The residential population growth to be accommodated in new units is projected to be 5,046 to build out. The increase in new units is estimated to be approximately 1,762.

Table 6-4: Urban Area Growth in New Dwelling Units to Build Out (2018 - 2041)

Growth Item	Persons Per Unit (PPU)[1]	Inside Urban Area - Arthur & Mount Forest	
		Units	Population
Single Detached & Semis	3.19	1,222	3,899
Multiples	2.52	249	628
Apartments	1.79	290	520
Population Growth (Gross)		1,762	5,046
Population Decline			(244)
Population Growth (Net)			4,802

1. County of Wellington DC Study Table 6-2. Apartments PPU is the average for all apartments

2. Population decline due to resident life cycle, economy,etc.

The employment growth estimate over the same period is 1,465 which is equivalent to a GFA of approximately 1,085,656 ft^2 as shown in Table 6-5. These urban area projections form the basis for the water and wastewater charges.

Table 6-5: Urban Area Employment Growth to Build Out (2018 - 2041)

Employment Sector	Total to Build Out (2018-2041)
Population	
Industrial Employment[1]	365
Commercial Employment[2]	977
Institutional Employment[2]	123
Total Employment Population Increase	**1,465**
[3] Gross Floor Area (ft^2)	
Industrial Employment	511,000
Commercial Employment	488,640
Institutional Employment	86,016
Total GFA Increase (ft^2)	**1,085,656**

1.Wellington North Community Growth Plan 2018 - Section 3.4 Employment Growth Strategy

2.Prorated based on population in urban areas vs. municipal wide

3. GFA Per Employee from 2016 Wellington County DC Study, Table 9-b. (1400 ft^2 industrial; 700 ft^2 institutional; 500 ft^2 commercial)

7 Step 5: Historical Service Levels

The DCA Section 5(1)4 limits the level of service to be provided to new customers to the same as the average level of service over the 10-year period immediately preceding the year of the new DC Background Study. This requirement ensures that improvements to existing service levels are not funded by the new development charges. Accordingly, the capital cost to be recovered through the development charges must not exceed an amount (referred to as the service level "cap") using the 10-year historical service level as the basis. This requirement applies to all eligible service except for administrative studies, water, wastewater and water and wastewater vehicles.

The amount of the cap is calculated by first determining the average historical cost per population. The inventory of historical services (e.g. facilities gross floor areas, number of units of equipment, etc.), current replacement costs and the historical populations are used to calculate the average historical service level. These satisfy the requirements of O.Reg. Section 4(1) which state that the quantity (number of units of equipment, etc.) and quality (e.g. cost per unit) of the services must be taken into account. The cap is calculated by multiplying the average service level (cost per population) by the projected population over the next 10 years. The inventory and replacement costs were provided by the Township.

The detailed tables showing the historical service level calculations for each service are included in Appendices C1 to C4. Table 7-1 summarizes the historical average service level for each eligible service. The service level cap for each service was used to adjust the capital costs in calculating the net to be recovered through the development charges. This is further described in Section 8.4. Service level caps do not apply to studies, water and wastewater.

Table 7-1: Average Historical Service Levels

Service	10 Year Historical Average Service Level Per Capita	Population Used
Administration - Studies	N/A	N/A
Parks Services	$ 733.29	Residential
Recreation Services	$ 2,768.50	Residential
Fire Protection Services	$ 707.41	Residential and Employment
Roads and Related	$ 19,839.05	Residential and Employment
Water Servcies	N/A	N/A
Wastewater Services	N/A	N/A

8 Step 6: Net Growth Related Capital Costs

This Section presents the capital investments required to facilitate the projected residential and employment growth. All required deductions and allowable adjustments were made in accordance with the DCA and O.Reg.82/98 to arrive at the net capital investment required for each service. The service level caps were applied to these amounts to identify the net costs to be recovered from the development charges. The detailed calculations are presented by service in Appendices D1 to D7.

8.1 Step 6.1: Growth Related Capital Needs

Table 8-1 summarizes the gross capital needs for each service before required deductions and allowable adjustments were made. The respective periods over which these costs would be incurred for each service are also shown. The amounts shown are the costs of the projects that are required to facilitate growth as identified by staff and/or master servicing plans.

All or a portion of the funding for each of these projects would be from development charges. Approximately $16.3 million in capital investment (not including water and wastewater) is required to support future growth over the periods indicated. Additional investments of approximately $12.30 million in the water systems and $29.27 million in wastewater systems would also be required in areas where these services would be offered. The total requirement is approximately $57.87 million.

Table 8-1: Growth- Related Capital Needs (Gross)

Service	Gross Cost	Period
Municipal Wide Services		
Administration - Studies	$ 65,000	2018 - 2027
Parks Services	$ 1,840,000	2018 - 2027
Recreation Services	$ 5,050,621	2018 - 2027
Fire Protection Services	$ 639,202	2018 - 2041
Roads and Related	$ 8,702,656	2018 - 2041
Total Municipal Wide Services	**$ 16,297,479**	
Urban Services		
Water Servcies	$ 12,300,098	2018 - 2041
Wastewater Services	$ 29,270,596	2018 - 2041
Total Urban Services	**$ 41,570,695**	
Total	**$ 57,868,174**	

8.2 Step 6.2: Deductions

Table 8-2 summarizes the net capital needs for each service *after* making the required deductions. These deductions reduce the amounts recoverable from development charges and are in accordance with the requirements of the DCA and O.Reg.82/98.

The net recoverable amount after deductions is approximately $5.68 million (not including water and wastewater) and approximately $8.64million for water and $23.98 million for wastewater. The total recoverable amount is approximately $38.29 million. Appendix D shows the detailed deductions for each service.

Table 8-2: Net Recoverable Capital Costs after Deductions

Service	Gross Cost	Grants/ Subsidies	Benefit To Existing Development	Required 10% Discount	Total Development Recoverable Costs Net of Stat. Deduction
Municipal Wide Services					
Administration - Studies	$ 65,000	$ -	$ -	$ 6,500	$ 58,500
Parks Services	$ 1,840,000	$ -	$ 1,556,600	$ 28,340	$ 255,060
Recreation Services	$ 5,050,621	$ -	$ 3,997,057	$ 105,356	$ 948,207
Fire Protection Services	$ 639,202	$ 78,000	$ -	$ -	$ 561,202
Roads and Related	$ 8,702,656	$ 2,564,601	$ 2,283,425	$ -	$ 3,854,630
Total Municipal Wide Services	**$ 16,297,479**	**$ 2,642,601**	**$ 7,837,082**	**$ 140,196**	**$ 5,677,599**
Urban Services					
Water Servcies	$ 12,300,098	$ 13,729	$ 3,651,260	$ -	$ 8,635,109
Wastewater Services	$ 29,270,596	$ 13,729	$ 5,275,825	$ -	$ 23,981,042
Total Urban Services	**$ 41,570,695**	**$ 27,458**	**$ 8,927,085**	**$ -**	**$ 32,616,151**
Total	**$ 57,868,174**	**$ 2,670,059**	**$ 16,764,168**	**$ 140,196**	**$ 38,293,751**

8.3 Step 6.3: Adjustments

Adjustments to the projected capital costs considered:

- positive and negative reserve balances. Positive balances were deducted and negative balances added to the recoverable amounts;
- amounts that were deemed to be "post period capacity" from the last study. There were no amounts to be added to the recoverable amounts; and
- any credits owed to developers based on existing front end agreements. In the Township's case there were no credits;

Existing growth related debt amounts that were not considered in the last study were included in the capital requirements.

Table 8-3 summarizes the adjustments made. The only adjustments were to reduce the respective capital projections for each service by the amounts of existing positive reserve balances. There were no credits or post period capacity to be brought forward. The respective reserve fund balances are available cash that were applied to the growth related costs to reduce the amount required from the new development charges. The total adjustments made were approximately $3.23 million.

Table 8-3: Summary of Adjustments

Service	Post Period Capacity Carried Forward	Reserve Balance	Reserve Deficits	Credits
Municipal Wide Services				
Administration - Studies	$ -	$ 837	$ -	$ -
Parks Services	$ -	$ 106,223	$ -	$ -
Recreation Services	$ -	$ 216,296	$ -	$ -
Fire Protection Services	$ -	$ 142,425	$ -	$ -
Roads and Related	$ -	$ 618,681	$ -	$ -
Total Municipal Wide Services	**$ -**	**$ 1,084,462**	**$ -**	**$ -**
Urban Services				
Water Servcies	$ -	$ 441,686	$ -	$ -
Wastewater Services	$ -	$ 1,702,262	$ -	$ -
Total Urban Services	**$ -**	**$ 2,143,948**	**$ -**	**$ -**
Total Adjustments	**$ -**	**$ 3,228,410**	**$ -**	**$ -**

Table 8-4 summarizes the recoverable net capital for each service ***after*** making the required deductions ***and*** adjustments but before the service level caps were applied.

The net recoverable amount after deductions and adjustments is approximately $4.59 million for municipal wide services and approximately $8.19 million for water and $22.28 million for wastewater. The total requirement is approximately $35.07 million. The adjustments are also shown in Appendices D1 to D7 for each service.

Table 8-4: Net Recoverable Capital Costs after Deductions & Adjustments

Service	Total Development Recoverable Costs Net of Stat. Deduction	Adjustments	Total DC Eligible Costs for Recovery
Municipal Wide Services			
Administration - Studies	$ 58,500	$ 837	$ 57,663
Parks Services	$ 255,060	$ 106,223	$ 148,837
Recreation Services	$ 948,207	$ 216,296	$ 731,911
Fire Protection Services	$ 561,202	$ 142,425	$ 418,778
Roads and Related	$ 3,854,630	$ 618,681	$ 3,235,949
Total Municipal Wide Services	**$ 5,677,599**	**$ 1,084,462**	**$ 4,593,138**
Urban Services			
Water Servcies	$ 8,635,109	$ 441,686	$ 8,193,423
Wastewater Services	$ 23,981,042	$ 1,702,262	$ 22,278,780
Total Urban Services	**$ 32,616,151**	**$ 2,143,948**	**$ 30,472,203**
Total	**$ 38,293,751**	**$ 3,228,410**	**$ 35,065,341**

8.4 Step 6.4: Service Level Cap

The service level cap is calculated based on the historical service levels. It limits the amount of funding recoverable from the development charges for some services regardless of the net amounts after deductions and adjustments. The lower of the recoverable amounts net of deductions and adjustments or the service level cap was used to determine the development charges. Amounts that exceeded the service level cap were deemed to be post period capacity which can be carried forward to the next study for consideration at that time.

Table 8-5: Application of Service Level Caps

Service	Gross Capital Needs	Net Capital Needs	Service Level Cap	Post Period Capital	Total DC Eligible Costs for Recovery
Municipal Wide Services					
Administration - Studies	$ 65,000	$ 57,663		$ -	$ 57,663
Parks Services	$ 1,840,000	$ 148,837	$ 1,544,300	$ -	$ 148,837
Recreation Services	$ 5,050,621	$ 731,911	$ 5,830,469	$ -	$ 731,911
Fire Protection Services	$ 639,202	$ 418,778	$ 4,709,933	$ -	$ 418,778
Roads and Related	$ 8,702,656	$ 3,235,949	$ 132,088,372	$ -	$ 3,235,949
Total Municipal Wide Services		**$ 4,593,138**	**$ 144,173,074**	**$ -**	**$ 4,593,138**
Urban Services					
Water Servcies	$ 12,300,098	$ 8,193,423	$ -	$ -	$ 8,193,423
Wastewater Services	$ 29,270,596	$ 22,278,780	$ -	$ -	$ 22,278,780
Total Urban Services	**$ 41,570,695**	**$ 30,472,203**	**$ 55,945**	**$ -**	**$ 30,472,203**
Total Adjustments		**$ 35,065,341**	**$ 144,229,019**	**$ -**	**$ 35,065,341**

Table 8-5 summarizes the service level caps, recoverable amounts through the development charges and any post period capacity to be carried forward to the next study. The net capital needs were below the caps for each service and were the final amounts used to calculate the development charges as described in Section 9. The service level caps do not apply to studies, water and wastewater. The net recoverable amount after deductions and adjustments and application of the service level caps is approximately $4.59 million for municipal wide services and approximately $8.19 million for water and $22.28 for wastewater. The detailed calculations for each service are presented in Appendices D1 to D7.

8.5 Council Approval of Capital Investments

O.Reg.82/98 Section 3 requires that municipal councils demonstrate their intention to meet the increase in need for capital expenditures related to growth. Otherwise such capital costs cannot be included in the calculations. Therefore it is recommended that Council approve the capital forecasts noted in Section 8.1 and provided in Appendix D to confirm its intention to meet the growth requirements.

9 Step 7: Calculation of Development Charges

This section presents the calculation of the residential and non-residential development charges based on the net recoverable growth related capital costs determined in the previous sections of this report. The calculation details are shown in Appendices E1 to E8.

9.1 Step 7.1: Allocation of Costs to Residential & Non-Residential Growth

Many of the services provided by the Township benefit both the residential and non-residential sectors. The costs to be recovered for these services were allocated to the residential and non-residential sectors on the basis of each sector's proportionate share of total net residential and employment population growth. Some services such as parks and recreation services are geared to the residential sector. However the non-residential sector would still have access to these services so the costs were allocated 95% to residential and 5% non-residential.

Table 9-1 shows the allocations for each service. The residential share of the municipal wide costs to be recovered (not including water and wastewater) is approximately $3.67 million and the non-residential share approximately $0.92 million. The residential and non-residential shares of the water costs are approximately $6.35 million and $1.84 million respectively. The residential and non-residential shares of the wastewater costs are approximately $17.27 million and $5.01 million respectively.

Table 9-1: Allocation of Costs to Residential & Non-Residential

Service	Net Capital Needs to be Recovered	Residential Share	Non-Residential Share	Basis for Allocation
Municipal Wide Services				
Administration - Studies	$ 57,663	$ 42,395	$ 15,268	% of Population and Employment Growth
Parks Services	$ 148,837	$ 141,395	$ 7,442	95% residential - 5% non residential
Recreation Services	$ 731,911	$ 695,316	$ 36,596	95% residential - 5% non residential
Fire Protection Services	$ 418,778	$ 320,013	$ 98,765	% of Population and Employment Growth
Roads and Related	$ 3,235,949	$ 2,472,783	$ 763,166	% of Population and Employment Growth
Total Municipal Wide Services	**$ 4,593,138**	**$ 3,671,902**	**$ 921,236**	
Urban Services				
Water Servcies	$ 8,193,423	$ 6,349,681	$ 1,843,741	% of Population and Employment Growth
Wastewater Services	$ 22,278,780	$ 17,265,453	$ 5,013,327	% of Population and Employment Growth
Total Urban Services	**$ 30,472,203**	**$ 23,615,135**	**$ 6,857,068**	
Total Adjustments	**$ 35,065,341**	**$ 27,287,037**	**$ 7,778,304**	

9.2 Step 7.2: Unadjusted Development Charge Rates

Development charge rates were calculated on a per capita (population) basis for the residential sector by dividing the costs allocated to residential by the total residential population to be accommodated in new dwelling units over the 10-year period 2018 to 2027. Similarly the non-residential rates were calculated by dividing the non-residential cost allocations by the growth in gross floor area over the 10-year period to arrive at a cost per ft^2. These resulted in the preliminary unadjusted residential and non-residential rates prior to undertaking the cash flow analyses. These rates were subsequently adjusted as described in Section 9.3.

Table 9-2 shows the unadjusted residential and non-residential rates by service. Assumptions used in the calculation of gross floor area related to industrial, commercial and institutional employment are consistent with the assumptions used in the County's development charge study.

Table 9-2: Unadjusted Residential & Non-Residential Rates

Service	Residential			Non-Residential			
	Cost	Growth in Population	Rate (Cost/Capita)	Cost	Growth in Floor Area (Square Foot)	Rate	(Cost/ft^2)
Municipal Wide Services							
Administration - Studies	$ 42,395	2,244	$ 18.90	$ 15,268	626,600	$	0.02
Parks Services	$ 141,395	2,244	$ 63.02	$ 7,442	626,600	$	0.01
Recreation Services	$ 695,316	2,244	$ 309.91	$ 36,596	626,600	$	0.06
Fire Protection Services	$ 320,013	5,382	$ 59.46	$ 98,765	1,319,600	$	0.07
Roads and Related	$ 2,472,783	5,382	$ 459.46	$ 763,166	1,319,600	$	0.58
Total Municipal Wide Services	**$ 3,671,902**		**$ 910.75**	**$ 921,236**		**$**	**0.75**
Urban Services							
Water Servcies	$ 6,349,681	5,046	$ 1,258.39	$ 1,843,741	1,085,656	$	1.70
Wastewater Services	$ 17,265,453	5,046	$ 3,421.69	$ 5,013,327	1,085,656	$	4.62
Total Urban Services	**$ 23,615,135**		**$ 4,680.08**	**$ 6,857,068**		**$**	**6.32**
Total Adjustments	**$ 27,287,037**		**$ 5,590.83**	**$ 7,778,304**		**$**	**7.06**

9.3 Step 7.3: Cash Flow Analyses

Cash flow analyses were undertaken over the 10-year period 2018 to 2027 for services with a 10-year study period. A 24-year cash flow period was used for the other services. These analyses considered the transfers in and out of the respective reserve fund for each service and their timing. Cash outflows were according to the timing of projected capital expenditures. Cash inflows were calculated by multiplying the projected annual residential population growth by the unadjusted rate per capita and adding the product of the non-residential growth in floor area and the unadjusted rate per square foot. The rates were increased by inflation assumed at 2% per year. The objective of undertaking the cash flow analyses was to ensure that the rates calculated were sufficient to result in a zero net cash flow at the end of the forecast period. The rates were adjusted to achieve this objective. Appendices E1 to E7 provides a cash flow table for each service.

The adjusted rates are summarized in Table 9-3. The total residential rate for municipal wide services was calculated to be $926.32 per capita and the non-residential rate $0.76 per ft^2.

The rates for water were determined to be $1,300.01 per capita and $1.75 per ft^2 for residential and non-residential respectively. The rates for wastewater were determined to be $3,503.65 per capita and $4.71 per ft^2 for residential and non-residential respectively.

Table 9-3: Adjusted Residential & Non-Residential Rates (After Cash Flow Analyses)

Service	Residential Rate (Cost/Capita)	Non-Residential Rate (Cost/ft^2)
Municipal Wide Services		
Administration - Studies	$ 19.06	$ 0.02
Parks Services	$ 61.43	$ 0.01
Recreation Services	$ 312.05	$ 0.06
Fire Protection Services	$ 60.60	$ 0.08
Roads and Related	$ 473.18	$ 0.59
Total Municipal Wide Services	**$ 926.32**	**$ 0.76**
Urban Services		
Water Servcies	$ 1,300.01	$ 1.75
Wastewater Services	$ 3,503.65	$ 4.71
Total Urban Services	**$ 4,803.67**	**$ 6.45**
Total Adjustments	**$ 5,729.99**	**$ 7.22**

9.4 Step 7.4: Proposed Development Charges

The non-residential development charges are the adjusted rates per square foot calculated as described in Section 9.3. The residential development charges by type of dwelling unit were calculated using the adjusted rate per capita and the respective household size estimates noted in Table 9-4 for each type of dwelling unit. The household sizes are based on the Statistics Canada 2016 Census data and the County's Development Charges Study. These calculations were undertaken for each service and type of dwelling and are consistent with the requirements of O.Reg. 82/98 Section (2).

Table 9-4: Occupancy by Type of Dwelling Unit

Type of Dwelling Unit	Occupancy - Persons per Unit (PPU)
Single Detached & Semi- Detached	3.19
Apartments – 2 or More Bedrooms	2.07
Apartments – Bachelor & 1 Bedroom	1.51
Other Multiples	2.52

The proposed residential development charges by unit type are listed in Table 9-5 for each service and are based on the policies and rules noted in Section 4.2. The development charge for a single or semi-detached dwelling was calculated to be $2,955 for the municipal wide services and $15,324 for water and wastewater. These are rounded to the nearest dollar. The rate for the Other Multiples (Specific) is based on the policy noted in Section 4.2.

Table 9-5: Proposed Residential Development Charges

Service	RESIDENTIAL			
	Single/Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments-Bachelor and 1 bedroom	Other Multiples
Municipal Wide Services				
Administration - Studies	$ 61	$ 39	$ 29	$ 48
Parks Services	$ 196	$ 127	$ 93	$ 155
Recreation Services	$ 995	$ 646	$ 471	$ 786
Fire Protection Services	$ 193	$ 125	$ 92	$ 153
Roads and Related	$ 1,509	$ 979	$ 715	$ 715
Total Municipal Wide Services	**$ 2,955**	**$ 1,917**	**$ 1,399**	**$ 1,856**
Urban Services				
Wastewater Services	$ 11,177	$ 7,253	$ 5,291	$ 8,829
Water Services	$ 4,147	$ 2,691	$ 1,963	$ 3,276
Total Urban Services	**$ 15,324**	**$ 9,944**	**$ 7,254**	**$ 12,105**
GRAND TOTAL RURAL AREA	$ 2,955	$ 1,917	$ 1,399	$ 1,856
GRAND TOTAL URBAN AREA	**$ 18,279**	**$ 11,861**	**$ 8,652**	**$ 13,962**

The non-residential rates by type of development are noted in Table 9-6. These are based on the policies and rules noted in Section 4.2.

Table 9-6: Proposed Non-Residential Development Charges

Service	NON-RESIDENTIAL			
	Commercial/ Institutional (per ft^2 of Gross Floor Area)	Industrial		
		Industrial (per ft^2 of Gross Floor Area)	Warehouse (per ft^2 of Gross Floor Area)	Wind Turbine
Municipal Wide Services				
Administration - Studies	$ 0.02	$ 0.01	$ 0.01	$ 61
Parks Services	$ 0.01	$ 0.01	$ 0.00	
Recreation Services	$ 0.06	$ 0.03	$ 0.01	
Fire Protection Services	$ 0.08	$ 0.04	$ 0.02	$ 193
Roads and Related	$ 0.59	$ 0.30	$ 0.15	$ 1,509
Total Municipal Wide Services	**$ 0.76**	**$ 0.38**	**$ 0.19**	**$ 1,764**
Urban Services				
Wastewater Services	$ 4.71	$ 2.35	$ 1.18	
Water Services	$ 1.75	$ 0.87	$ 0.44	
Total Urban Services	**$ 6.45**	**$ 3.23**	**$ 1.61**	**$ -**
GRAND TOTAL RURAL AREA	$ 0.76	$ 0.38	$ 0.19	$ 1,764
GRAND TOTAL URBAN AREA	**$ 7.22**	**$ 3.61**	**$ 1.80**	**$ 1,764**

All charges will be subject to annual indexing in accordance with O.Reg.82/98 Section 7. This is noted in the By-Law.

10 Step 8: Comparison of Development Charges

10.1 Comparison with Existing Development Charges

Table 10-1 compares the proposed residential development charges with the existing charges. The charge for Single-detached and Semi-detached dwellings is lower than the existing charge by approximately $1,273 for municipal wide services. There are also similar declines for the other dwelling types. The urban services charge is approximately $4,208 higher for Single-Detached & Semi-Detached and ranges from approximately $2,400 to $2,900 higher for other dwelling types.

Table 10-1: Proposed vs. Existing Residential Development Charges

Service	RESIDENTIAL				
	Single/Semi Detached Dwelling	Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments-Bachelor and 1 bedroom	Other Multiples
EXISTING CHARGES					
Total Municipal Wide Services	$ 4,228	$ 2,693	$ 2,724	$ 1,843	$ 3,505
Total Urban Services	$ 11,116	$ 11,116	$ 7,162	$ 4,880	$ 9,213
GRAND TOTAL RURAL AREA	$ 4,228	$ 2,693	$ 2,724	$ 1,843	$ 3,505
GRAND TOTAL URBAN AREA	$ 15,344	$ 13,809	$ 9,886	$ 6,723	$ 12,718
CALCULATED CHARGES					
Total Municipal Wide Services	$ 2,955	$ 2,659	$ 1,917	$ 1,399	$ 1,856
Total Urban Services	$ 15,324	$ 13,791	$ 9,944	$ 7,254	$ 12,105
GRAND TOTAL RURAL AREA	$ 2,955	$ 2,659	$ 1,917	$ 1,399	$ 1,856
GRAND TOTAL URBAN AREA	$ 18,279	$ 16,451	$ 11,861	$ 8,652	$ 13,962
DIFFERENCE					
Total Municipal Wide Services	$ (1,273)	$ (34)	$ (807)	$ (444)	$ (1,649)
Total Urban Services	$ 4,208	$ 2,675	$ 2,782	$ 2,374	$ 2,892
GRAND TOTAL RURAL AREA	$ (1,273)	$ (34)	$ (807)	$ (444)	$ (1,649)
GRAND TOTAL URBAN AREA	$ 2,935	$ 2,642	$ 1,975	$ 1,929	$ 1,244

Table 10-2 compares the proposed non-residential development charges with the existing charges. The charges for Commercial/ Institutional, Industrial & Warehouse within the urban area are higher compared to the existing charges. The charges outside the urban area are lower. The wind turbine charge is also lower by approximately $957.

Table 10-2: Proposed vs. Existing Non-Residential Development Charges

Service	NON-RESIDENTIAL						
	Commercial/ Institutional		Industrial				
			Urban Service Area		Outside Urban Service Area		
	Urban Service Area (per ft2 of Gross Floor Area)	Outside Urban Service Area (per ft2 of Gross Floor Area)	Industrial (per ft^2 of Gross Floor Area)	Warehouse (per ft^2 of Gross Floor Area)	Industrial (per ft^2 of Gross Floor Area)	Warehouse (per ft^2 of Gross Floor Area)	Wind Turbine
EXISTING CHARGES							
Total Municipal Wide Services	$ -	$ 1.43	$ -	$ -	$ 0.72	$ 0.36	$ 2,721
Total Urban Services	$ 5.22	$ -	$ 2.62	$ 1.31	$ -	$ -	$ -
GRAND TOTAL RURAL AREA	$ -	$ 1.43	$ -	$ -	$ 0.72	$ 0	$ 2,721
GRAND TOTAL URBAN AREA	$ 5.22	$ -	$ 2.62	$ 1.31	$ -	$ -	$ 2,721
CALCULATED CHARGES							
Total Municipal Wide Services	$ 0.76	$ 0.76	$ 0.38	$ 0.19	$ 0.38	$ 0.19	$ 1,764
Total Urban Services	$ 6.45		$ 3.23	$ 1.61			
GRAND TOTAL RURAL AREA		$ 0.76			$ 0.38	$ 0.19	$ 1,764
GRAND TOTAL URBAN AREA		$ -	$ 3.61	$ 1.80			$ 1,764
DIFFERENCE							
Total Municipal Wide Services	$ 0.76	$ (0.67)	$ 0.38	$ 0.19	$ (0.34)	$ (0.17)	$ (957)
Total Urban Services	$ 1.23		$ 0.61	$ 0.30			$ -
GRAND TOTAL RURAL AREA		$ (0.67)			$ (0.34)	$ (0.17)	$ (957)
GRAND TOTAL URBAN AREA		$ -	$ 0.99	$ 0.49			$ (957)

11 Step 9: Long-Term Capital and Operating Costs Implications

This section presents the long-term cost implications of the investments to accommodate future growth. These assessments considered the implications to future operating and capital costs as well as the costs related to future asset renewal. The detailed projections are provided in Appendix F.

11.1 Long-Term Operating Costs

The long-term operating cost impacts were based on historical operating costs and asset values noted in the Township's FIR reporting and the projected increase in growth. Table 11-1 summarizes the increase in operating costs due to the addition of the new net growth related assets in each service area. The total 10-year increase in operating costs is estimated to be approximately $9.78 million. Approximately $8.17 million relates to the rate funded services and $1.61 million to tax supported services.

Table 11-1: 10-Year Operating Cost Implications

Cummulative Net Operating Impacts Service	Total
Administration - Studies	$ -
Parks Services	$ 146,384
Recreation Services	$ 471,998
Fire Protection Services	$ 525,771
Roads and Related	$ 465,881
Water Servcies	$ 1,392,715
Wastewater Services	$ 6,774,886
Total Cummulative Net Operating Impacts	**$ 9,777,634**

11.2 Long-term Capital Costs

The long-term operating cost impacts were determined to be the portions of growth related costs not funded by development charges due to deductions. These amounts include the 10% statutory deductions and the "benefit to existing" amounts shown in Appendix D and would be funded through either taxes or the water and wastewater rates as the case may be. Table 11-2 summarizes the increase in capital costs (not funded through development charges) due to the addition of the new growth related assets in each service area. The total 10-year increase in capital costs for the tax supported services is estimated to be approximately $7.98 million. The increase for the rate supported services (water and wastewater) is approximately $7.61 million

Table 11-2: 10-year Capital Cost Implications

Cummulative Net Capital Cost Impacts Service	Total
Administration - Studies	$ 6,500
Parks Services	$ 1,584,940
Recreation Services	$ 4,102,413
Fire Protection Services	$ -
Roads and Related	$ 2,283,425
Water Servcies	$ 3,651,260
Wastewater Services	$ 3,961,975
Total Capital Cost Impacts	**$ 15,590,514**

11.3 Asset Management Plan

The DCA Section 10(2) requires that an asset management plan be included in the Development Charges Background Study to capture the costs required to sustain the new growth related assets over the long-term. This plan reflects the annual investments required to renew and replace the assets as they age. The capital cost estimates were annualized over the estimated life expectancies based on future cost in projected the year of replacement. The estimated life expectancies used for the purpose of this study were based on the Estimated Useful Life Chart contained in the Township's Tangible Capital Asset Reporting Policy. The total 10-year asset management requirements estimated to be $11.20 million. Approximately $5.0 million relate to tax supported assets and $6.17 million to rate supported assets.

Table 11-3: 10-Year Asset Management Cost Implications

Cummulative Net Lifecycle Impact Service	Total
Administratvie Services- Studies	$ -
Parks Services	$ 577,007
Recreation Services	$ 762,307
Fire Protection Services	$ 108,913
Roads and Related	$ 3,580,262
Water Servcies	$ 2,262,417
Wastewater Services	$ 3,904,741
Total Cummulative Net Operating Impacts	**$ 11,195,647**

12 Step 10: Background Study & By-Law

This background study report was prepared to provide the detail required in accordance with the DCA Section (10) and O.Reg.82/98 Section (8). The by-law is included in the study as Appendix G. The by-law identifies the services included, rules that apply to the development charges and schedule of applicable residential and non-residential development charges. The draft study and by-law were revised based on the stakeholder consultation described in Section 13 prior to being finalized for approval by Council.

13 Step 11: Stakeholder Consultation

The DCA Section 10(4) requires that the Development Charges Study and the By-Law be made available to the public for review at least 60 days in advance of the by-law taking effect. This step in the process provides the opportunity for interested parties to make representations on the draft Development Charges Study and proposed by-law prior to finalization and implementation. The Draft Background Study and By-Law (Version 1) were placed on the Township's website on April 17, 2018.

The legislation prescribes that Council conduct a public meeting with at least 20 days' notice of the meeting. In accordance with O. Reg. 82/98, Section 9 (1) notice may be by publication in a local newspaper, which in the Clerk's opinion, has with sufficient general circulation across the Township or by personal service, mail or fax to every land owner. The notice was placed on the Township's website on May 23, 2018, and in the local paper of general circulation on May 24th 2018 indicating that the Public Meeting will be held on June 14, 2018.

A meeting with developers to solicit input was held on May 24, 2018. A report summarizing the comments and input received at the stakeholder meeting is included as Appendix H. All comments received were considered and reflected in the policies and rules described in Section 4.2.

14 Step 12: By-Law Adoption & Implementation

Following the statutory public meeting the final background study and by-law will be presented to Council for approval to take effect upon expiry of the existing development charges by-law. In accordance with the DCA Section 13, written notice of the passing of the DC by-law must be given no later than 20 days after the day the by-law is passed (i.e. as of the day of newspaper publication or the mailing of the notice). The O.reg.82/98 Section 10(4) lists the items that must be covered in the notice.

A pamphlet must also be prepared in accordance with O.Reg.82/98 Section 14 within 60 days of the passing of the by-law and include the following:

- a description of the general purpose of the DCs;
- the "rules" for determining if a charge is payable in a particular case and for determining the amount of the charge;
- the services to which the DCs relate; and
- a general description of the general purpose of the Treasurer's statement and where it may be obtained by the public.

15 Recommendations

The following recommendations are presented for consideration by the Township.

1. The 2018 Development Charges Background Study and accompanying Development Charges By-law be approved by Council and become effective on June 17, 2018.
2. That following approval of the by-law, the required notices are issued to the public and stakeholders and a pamphlet is prepared, in accordance with O.Reg.82/98 Section and O.Reg. 82/98 Section 14 respectively.
3. That the growth related capital projects forecast identified in this Development Charges Background Study be approved by Council as a statement of its intention to meet the increased need for service due to growth, as required under O.Reg.82/98 Section 3.
4. That any excess capacity created as a result of undertaking the growth related capital projects identified in this background study would be paid for by development charges and therefore deemed to be “committed” in accordance with the requirements of O.Reg.82/98 Section (5).

Appendix A

POLICY ITEMS TO BE CONSIDERED BY COUNCIL

APPENDIX A: Policy Items Considered by Council

Policy Issue Added/Amended/Excluded	
Reduction on Purpose-Building Rental Housing	Develop provisions to be included in the DC by-law that will allow for the reduction/rebate of (25%) of development charges payable on "purpose-built rental housing" units. Definition of "Purpose-Built Rental Housing" - a residential use building or structure that consists four (4) or more dwelling units that will remain as rental housing for a period of at least 20 years from the issuance of a building permit.
Elimination of the Residential Category of Semi-Detached Unit	Elimination of the residential category for Semi-Detached Dwellings. Semi-detached residential dwellings are currently charged 90% of the single detached dwelling charge
Elimination of the Urban Area Boundary Maps	Elimination of maps of the urban service areas for Arthur and Mount Forest. Urban Area development charges for Water and Wastewater will not be imposed if those services are not available at time of building permit issuance. A water and wastewater connection charge will be required to be imposed when properties are connected.
Elimination of Urban Area Exemption of Municipal Wide Services	Municipal-wide charges will now be imposed on all land within the municipal boundary. Municipal-wide charges are not imposed for certain non-residential uses within the urban service area
Reduced Charge for Development in the Central Intensification Corridor	Provide 25% reduction to development within the Central Intensification Corridor for both Arthur and Mount Forest (maps of Central Intensification Corridors included in proposed by-law)
Reduced Charge for Development in the Build Boundary	Provide 10% reduction to development within the Built Boundary for both Arthur and Mount Forest (maps of Built Boundary included in proposed by-law)
Removal of Consideration for a Residential Category of "Other Multiples (Specific)	Provisions were developed for the inclusion in the DC By-law that would allow for "Other Multiple" residential units that meet certain conditions to attract the same development charge imposed on "Apartments – Bachelor and 1 Bedroom". Definition of "Other Multiples (Specific)" - a Multiple Dwelling that meets the definition of Purpose Build Rental Housing, where each residential unit contains one or less bedrooms, where the residential development has a common/shared parking area, where the residential units cannot be subdivided, and where the units consists of slab on grade construction. **At the June 4th Council meeting direction was given to remove the provision related to "Other Multiples (Specific)"**

Appendix B

GROWTH PROJECTIONS

APPENDIX B: GROWTH PROJECTIONS

Type of Dwelling	Persons per Unit (PPU)
Single-Detached & Semi-detached	3.19
Apartments - 2 or More Bedrooms	2.07
Apartments - Bachelor & 1Bedroom	1.51
Other Multiples	2.52
Total	

1. 2017 Wellington County DC Study, Table 6-2

Projected Number of Households & Annual Increase (10 Years)

	10-Year Development Charges Study Period (2018-2027)									
Growth Item	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Single Detached & Semis	3,646	3,704	3,761	3,818	3,876	3,933	3,991	4,048	4,106	4,155
Increase	57	57	57	57	58	58	58	58	58	49
% Increase	1.6%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	1.4%	1.4%	1.2%
Multiples	283	290	298	305	316	328	339	351	362	375
Increase	7	7	7	7	11	11	11	11	11	13
% Increase	2.7%	2.6%	2.5%	2.5%	3.7%	3.6%	3.5%	3.4%	3.3%	3.5%
Apartments	687	699	710	721	729	737	744	752	760	782
Increase	11	11	11	11	8	8	8	8	8	22
% Increase	1.7%	1.6%	1.6%	1.6%	1.1%	1.1%	1.1%	1.0%	1.0%	2.9%
Other	170	170	170	170	170	170	170	170	170	170
Increase	-	-	-	-	-	-	-	-	-	-
% Increase	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Households	4,787	4,862	4,938	5,014	5,091	5,168	5,244	5,321	5,398	5,481

1. Wellington North Community Growth Plan 2018 for total households from 2016 to 2041

2. 2017 Wellington County DC Study, Schedule 2-g for breakdown of households from 2016-2041

3. 2006 to 2015 from 2013 Wellington North DC Study, Table 3-2

Projected Number of Households & Annual Increase (Beyond 10 Years to Build Out)

	Build Out (2028-2041)													
Growth Item	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
Single Detached & Semis	4,204	4,252	4,301	4,350	4,422	4,494	4,567	4,639	4,701	4,747	4,784	4,820	4,856	4,893
Increase	49	49	49	49	72	72	72	72	62	46	36	36	36	36
% Increase	1.2%	1.2%	1.1%	1.1%	1.7%	1.6%	1.6%	1.6%	1.3%	1.0%	0.8%	0.8%	0.8%	0.7%
Multiples	387	400	412	425	440	456	471	487	502	510	518	525	533	541
Increase	13	13	13	13	15	15	15	15	15	8	8	8	8	8
% Increase	3.4%	3.3%	3.2%	3.1%	3.6%	3.5%	3.4%	3.3%	3.2%	1.6%	1.5%	1.5%	1.5%	1.5%
Apartments	804	826	848	870	885	901	916	932	947	955	963	970	978	986
Increase	22	22	22	22	15	15	15	15	15	8	8	8	8	8
% Increase	2.8%	2.7%	2.7%	2.6%	1.8%	1.7%	1.7%	1.7%	1.7%	0.8%	0.8%	0.8%	0.8%	0.8%
Other	170	170	170	170	170	170	170	170	170	170	170	170	170	170
Increase	-	-	-	-	-	-	-	-	-	-	-	-	-	-
% Increase	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Households	5,565	5,648	5,732	5,815	5,918	6,021	6,124	6,227	6,320	6,382	6,434	6,486	6,538	6,590

1. Wellington North Community Growth Plan 2018 for total households from 2016 to 2041

2. 2017 Wellington County DC Study, Schedule 2-g for breakdown of households from 2016-2041

3. 2006 to 2015 from 2013 Wellington North DC Study, Table 3-2

Households Summary

Growth Item	2018-2027	2027-2041	Total	% of Total
Single Detached & Semis	566	738	1,304	69%
Multiples	99	166	266	14%
Apartments	106	204	310	16%
Other	-	-	-	0%
Total Households	771	1,108	1,879	100%

APPENDIX B: GROWTH PROJECTIONS

Historical Population (Last 10 years)

	10-Year Historical									
Growth Item	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Census Population (Excluding undercount)[1]	11,296	**11,356**	11,417	11,477	11,564	11,652	11,739	11,827	11,914	12,120
	60	60	60	60	87	87	87	87	87	206
% Increase	0.5%	0.5%	0.5%	0.5%	0.8%	0.8%	0.8%	0.7%	0.7%	1.7%
Census Population (Including undercount)[2]	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688
	64	64	64	64	108	108	108	108	108	198
% Increase	0.5%	0.5%	0.5%	0.5%	0.9%	0.9%	0.9%	0.9%	0.9%	1.6%
Population Growth (EXCLUDING Undercount)									**2008 to 2017 Growth**	**885**
Population Growth (INCLUDING Undercount)									**2008 to 2017 Growth**	**994**

1.County of Wellington Development Charge Study, Feb 24th 2017 (Population excluding undercount) for 2006,2011,2016,2021,2026,2031,2036 &2041 with interpolation in other years

2. Wellington North Community Growth Plan 2018 (Population including undercount) for 2016, 2036 & 2041 and County of Wellington Development Charge Study, Feb 24th 2017 for 2006 to 2015 and 2021,2026 &2031.In these years 4.1% added for undercount

Projected Population & Annual Growth (10 Years)

	10-Year Development Charges Study Period									
`	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Census Population (Excluding undercount)[1]	12,326	12,533	12,739	12,945	13,159	13,373	13,586	13,800	14,014	14,211
	206	206	206	206	214	214	214	214	214	197
% Increase	1.7%	1.7%	1.6%	1.6%	1.7%	1.6%	1.6%	1.6%	1.5%	1.4%
Census Population (Including undercount)[2]	12,886	13,084	13,282	13,480	13,702	13,924	14,146	14,368	14,590	14,794
	198	198	198	198	222	222	222	222	222	204
% Increase	1.6%	1.5%	1.5%	1.5%	1.6%	1.6%	1.6%	1.6%	1.5%	1.4%
Population Growth (EXCLUDING Undercount)									**2018 to 2027 Growth**	**2,091**
Population Growth (INCLUDING Undercount)									**2018 to 2027 Growth**	**2,106**

Projected Population Growth & Annual Growth (Beyond 10 Years to Build Out)

	Projections to Build Out													
Growth Item	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
Census Population (Excluding undercount)[1]	14,408	14,605	14,802	14,999	15,282	15,564	15,847	16,129	16,412	16,527	16,643	16,758	16,873	16,988
	197	197	197	197	283	283	283	283	283	115	115	115	115	115
% Increase	1.4%	1.4%	1.3%	1.3%	1.9%	1.8%	1.8%	1.8%	1.8%	0.7%	0.7%	0.7%	0.7%	0.7%
Census Population (Including undercount)[2]	14,998	15,202	15,406	15,610	15,905	16,200	16,495	16,790	17,085	17,205	17,325	17,445	17,565	17,685
	204	204	204	204	295	295	295	295	295	120	120	120	120	120
% Increase	1.4%	1.4%	1.3%	1.3%	1.9%	1.9%	1.8%	1.8%	1.8%	0.7%	0.7%	0.7%	0.7%	0.7%
Population Growth (EXCLUDING Undercount)													**2028 to 2041 Grow**	**2,777**
Population Growth (INCLUDING Undercount)													**2028 to 2041 Grow**	**2,891**

APPENDIX B: GROWTH PROJECTIONS

Projected Employment Population & Floor Space Growth (Next 10 Years)

	10-Year Development Charges Study Period									
Growth Item	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Employment Population[1]	7,295	7,408	7,520	7,633	7,745	7,858	7,970	8,083	8,195	8,308
Increase	113	113	113	113	113	113	113	113	113	113
% Increase	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	1.4%	1.4%	1.4%	1.4%
Total Employment Population Growth for Period								**2018 to 2027 Growth**		**1,125**
Annual Employment Population Growth by Sector Excluding NFPOW										
Industrial Employment Land	21	21	21	21	21	26	26	26	26	26
Commercial Population Related	46	46	46	46	46	57	57	57	57	57
Institutional	0.4	0.4	0.4	0.4	0.4	12	12	12	12	12
Annual Employment Pop Growth	67	67	67	67	67	94	94	94	94	94
Employment Population Growth for Period								**2018 to 2027 Growth**		**808**
[2]Annual Gross Floor Area (GFA) Growth by Sector (ft^2)										
Industrial Employment Land	29,400	29,400	29,400	29,400	29,400	36,120	36,120	36,120	36,120	36,120
Commercial Population Related	23,000	23,000	23,000	23,000	23,000	28,400	28,400	28,400	28,400	28,400
Institutional	280	280	280	280	280	8,120	8,120	8,120	8,120	8,120
Total Annual GFA Growth (sf)	52,680	52,680	52,680	52,680	52,680	72,640	72,640	72,640	72,640	72,640
GFA Growth (sf) for Period								**2018 to 2027 Growth**		**626,600**
[3]Gross Floor Area (GFA) Per Employee (ft^2/employee)										
Industrial Employment Land	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Commercial Population Related	500	500	500	500	500	500	500	500	500	500
Institutional	700	700	700	700	700	700	700	700	700	700

1. Employment Population between 2016 and 2041 interpolated from Wellington North Community Growth Plan, Table 1. Employment Population prior to 2016 from Wellington North 2013 DC Study Schedule 10-b

2. GFA Projections interpolated/extrapolated as the case may be from information in Wellington County DC Study, Table 9-b.

3. GFA Per Employee from 2016 Wellington County DC Study, Table 9-b.

Projected Employment Population & Floor Space (Beyond 10 Years to Build Out)

	Projections to Build Out													
Growth Item	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
Employment Population[1]	8,420	8,533	8,645	8,758	8,870	8,983	9,095	9,208	9,320	9,344	9,368	9,392	9,416	9,440
Increase	113	113	113	113	113	113	113	113	113	24	24	24	24	24
% Increase	1.4%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.2%	1.2%	0.3%	0.3%	0.3%	0.3%	0.3%
Total Employment Population Growth for Period												**2028 to 2041 Grow**		**1,133**
Annual Employment Population Growth by Sector Excluding NFPOW														
Industrial Employment Land	39	39	39	39	39	22	22	22	22	22	(6)	(6)	(6)	(6)
Commercial Population Related	44	44	44	44	44	41	41	41	41	41	21	21	21	21
Institutional	4	4	4	4	4	17	17	17	17	17	(9)	(9)	(9)	(9)
Annual Employment Pop Growth	87	87	87	87	87	79	79	79	79	79	6	6	6	6
Employment Population Growth for Period												**2028 to 2041 Grow**		**853**
[2]Annual Gross Floor Area (GFA) Growth by Sector (ft^2)														
Industrial Employment Land	55,160	55,160	55,160	55,160	55,160	30,520	30,520	30,520	30,520	30,520	(8,750)	(8,750)	(8,750)	(8,750)
Commercial Population Related	21,900	21,900	21,900	21,900	21,900	20,300	20,300	20,300	20,300	20,300	10,250	10,250	10,250	10,250
Institutional	2,800	2,800	2,800	2,800	2,800	11,620	11,620	11,620	11,620	11,620	(6,125)	(6,125)	(6,125)	(6,125)
Total Annual GFA Growth (sf)	79,860	79,860	79,860	79,860	79,860	62,440	62,440	62,440	62,440	62,440	(4,625)	(4,625)	(4,625)	(4,625)
GFA Growth (sf) for Period												**2028 to 2041 Grow**		**########**
[3]Gross Floor Area (GFA) Per Employee (ft^2/employee)														
Industrial Employment Land	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
Commercial Population Related	500	500	500	500	500	500	500	500	500	500	500	500	500	500
Institutional	700	700	700	700	700	700	700	700	700	700	700	700	700	700

Appendix C

HISTORICAL SERVICE LEVEL CALCULATIONS

Appendix C-1
Table 1
Township of Wellington North
Calculation of Service Standards
Parks (Parkland Development)

Unit Measure: $/acre
Inventory (No. Acres) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value of Land
Mount Forest Parkland:											
Birmingham Street Park	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	$ 59,510
Fairgrounds	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	$ 52,223
lions Club Park	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	$ 59,510
Cork Street Park	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	$ 52,223
Angus Smith Park	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	$ 59,510
Murphy Park	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	$ 59,510
Conn Park	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	$ 59,510
Arthur Parkland:											
Community Park and Marvin	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	$ 59,510
Howe Trail	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	$ 59,510
Arthur Lions Park	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	$ 59,510
Arthur Optimist Park	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	$ 52,223
Total	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	
Total Value($)	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	**$ 2,635,684**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Value Per Capita ($)	$ 224.16	$ 222.95	$ 221.75	$ 220.56	$ 218.58	$ 216.64	$ 214.74	$ 212.86	$ 211.02	$ 207.73	**$ 217.10**

Service Level Cap	
Forecast Population Growth (2018 to 2027)	2,106
Average Service Level ($ per Capita)	$ 217.10
Service Level Cap	**$ 457,212**

Appendix C-1
Table 2
Township of Wellington North
Calculation of Service Standards
Parkland (Vehicles and Equipment)

Unit Measure: $/units
Inventory (No. of Vehicles and Equipment) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($)
Ice Cleaner - Mount Forest Arenas	1	1	1	1	1	1	1	1	1	1	$ 95,000
Ice Cleaner - Arthur Arena	1	1	1	1	1	1	1	1	1	1	$ 95,000
Pick-Up Truck	2	2	2	2	2	2	2	2	2	2	$ 75,000
lawn mower and attachements								1	1	1	$ 30,000
tractor w/mower and bucket										1	$ 36,000
tractor shared with works dept.	1	1	1	1	1	1	1	1	1	1	$ 33,600
Total Units	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**6**	**6**	**7**	
Total Value $	**$ 373,600**	**$ 373,600**	**$ 373,600**	**$ 373,600**	**$ 373,600**	**$ 373,600**	**$ 373,600**	**$ 403,600**	**$ 403,600**	**$ 439,600**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Value Per Capita	$ 31.77	$ 31.60	$ 31.43	$ 31.26	$ 30.98	$ 30.71	$ 30.44	$ 32.60	$ 32.31	$ 34.65	$ 31.78

10 Year Funding Envelope Calculation

Service Level Cap	
Forecast Population Growth (2018 to 2027)	2,106
Average Service Level ($ per Capita)	$ 31.78
Service Level Cap	**$ 66,920**

Appendix C-1
Table 3
Township of Wellington North
Calculation of Service Standards
Parkland (Amenities)

Unit Measure: $/unit
Inventory (No. Units) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Replacement
Cork Street Restrooms+A10:A37	1	1	1	1	1	1	1	1	1	1	$ 30,000
Cork Street Pavilion	1	1	1	1	1	1	1	1	1	1	$ 35,000
Cork Street Concession Booth	1	1	1	1	1	1	1	1	1	1	$ 3,000
Cork Street Soccer Fields (lit)	1	1	1	1	1	1	1	1	1	1	$ 150,000
Cork Street Soccer Fields (unlit)	1	1	1	1	1	1	1	1	1	1	$ 90,000
Cork Street Ball Park (lit)	1	1	1	1	1	1	1	1	1	1	$ 250,000
Cork Street Skateboard Park	1	1	1	1	1	1	1	1	1	1	$ 85,000
Cork Street Skateboard Bowl	1	1	1	1	1	1	1	1	1	1	$ 45,000
Cork Street Playground Equipment	1	1	1	1	1	1	1	1	1	1	$ 25,000
Pool Playground Equipment	1	1	1	1	1	1	1	1	1	1	$ 45,000
Murphy Park Washrooms	1	1	1	1	1	1	1	1	1	1	$ 40,000
Picnic Shelter (Murphy Park)	1	1	1	1	1	1	1	1	1	1	$ 25,000
Murphy Park Playground Equipment	1	1	1	1	1	1	1	1	1	1	$ 60,000
Lions Park Playground Equipment	1	1	1	1	1	1	1	1	1	1	$ 40,000
Bleachers	27	27	27	27	27	27	27	27	27	27	$ 45,000
Picnic Tables	41	41	41	41	50	55	60	60	60	65	$ 19,500
Conn Playground Equipment	1	1	1	1	1	1	1	1	1	1	$ 15,000
Conn Pavilion	1	1	1	1	1	1	1	1	1	1	$ 35,000
Conn Picnic Shelter	-	1	1	1	1	1	1	1	1	1	$ 20,000
Arthur Park Running Track	1	1	1	1	1	1	1	1	1	1	$ 85,000
Arthur Park Lit Ball Diamond	2	2	2	2	2	2	2	2	2	2	$ 500,000
Arthur Lions Park	-	-	-	-	1	1	1	1	1	1	$ 25,000
Arthur Optimist Park Pavilion	1	1	1	1	1	1	1	1	1	1	$ 95,000
Birmingham Lions Park Playground Equipment	1	1	1	1	1	1	1	1	1	1	$ 45,000
Bill Moody Lions Playground Equipment	-	-	-	-	1					1	$ 60,000
Splash pad										1	$ 180,000
Mount Forest King St Ag Park											
Ball Diamonds	2	2	2	2	2	2	2	2	2	2	$ 500,000
Running Track	1	1	1	1	1	1	1	1	1	1	$ 115,000
Soccer Pitches (Junior Fields)	2	2	2	2	2	2	2	2	2	2	$ 40,000
Ball Booth & Washroom	1	1	1	1	1	1	1	1	1	1	$ 115,000
Lions Pavillion Mount Forest	-	-	-	-	1	1	1	1	1	1	$ 35,000
Total	**95**	**96**	**96**	**96**	**108**	**112**	**117**	**117**	**117**	**124**	
Total Value $	**$ 5,522,500**	**$ 5,542,500**	**$ 5,542,500**	**$ 5,542,500**	**$ 5,838,000**	**$ 5,875,500**	**$ 5,973,000**	**$ 5,973,000**	**$ 5,973,000**	**$ 6,310,500**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Value Per Capita	$ 469.68	$ 468.83	$ 466.30	$ 463.81	$ 484.16	$ 482.94	$ 486.64	$ 482.39	$ 478.22	$ 497.36	**$ 478.03**

Service Level Cap	10-Year
Forecast Population Growth (2018 to 2027)	2,106
Average Service Level ($ per Capita)	$ 478.03
Service Level Cap	**$ 1,006,740**

Appendix C-1
Table 4
Township of Wellington North
Calculation of Service Standards
Parkland (Paths and Trails)

Unit Measure: $/km
Inventory (No. Km) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($/Km)
Earth Trails - Mount Forest	3	3	3	3	3	3	3	3	3	3	$ 7,508
Trails - Arthur	1	1	1	1	1	1	1	1	1	1	$ 7,508
Arther Walking Trails	-	-	-	-	3	3	3	3	3	3	$ 27,602
Total	**4**	**4**	**4**	**4**	**7**	**7**	**7**	**7**	**7**	**7**	
Total Value $	**$ 28,529**	**$ 28,529**	**$ 28,529**	**$ 28,529**	**$ 111,336**	**$ 111,336**	**$ 111,336**	**$ 111,336**	**$ 111,336**	**$ 111,336**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Value Per Capita	$ 2.43	$ 2.41	$ 2.40	$ 2.39	$ 9.23	$ 9.15	$ 9.07	$ 8.99	$ 8.91	$ 8.77	**$ 6.38**

Service Level Cap	10-Year Forecast
Forecast Population Growth (2018 to 2027)	2,106
Average Service Level ($ per Capita)	$ 6.38
Service Level Cap	**$ 13,429**

Appendix C-2
Table 1
Township of Wellington North
Calculation of Service Standards
Recreation (Facilities)

Unit Measure: $/sq ft)
Inventory (No. sq ft) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Bld'g Value ($/ft2)	2018 Replacement Value
Mount Forest Commmunity Centre & Arena	33,500	-	-	-	-						$ 281	$ 9,419,882
Arthur Village Community Centre Arena	46,232	46,232	46,232	46,232	46,232	46,232	46,232	46,232	46,232	46,232	$ 281	$ 13,000,000
Arthur Seniors Hall	4,896	4,896	4,896	4,896	4,896	4,896	4,896	4,896	4,896	4,896	$ 92	$ 450,000
West Luther Hall (Damascus)	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	$ 188	$ 450,000
Arthur Pool & Changehouse	6,542	6,542	6,542	6,542	6,542	6,542	6,542	6,542	6,542	6,542	$ 115	$ 750,000
Mount Forest Sports Complex	-	70,409	70,409	70,409	70,409	70,409	70,409	70,409	70,409	70,409	$ 270	$ 19,000,000
Mount Forest outdoor pool and changehouse	7,192	7,192	7,192	7,192	7,192	7,192	7,192	7,192	7,192	7,192	$ 132	$ 950,000
Total	**100,762**	**137,671**	**137,671**	**137,671**	**137,671**	**137,671**	**137,671**	**137,671**	**137,671**	**137,671**		
Total Value $	**$ 25,019,882**	**$ 34,600,000**	**$ 34,600,000**	**$ 34,600,000**	**$ 34,600,000**	**$ 34,600,000**	**$ 34,600,000**	**$ 34,600,000**	**$ 34,600,000**	**$ 34,600,000**		

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Value per Capita	$ 2,127.90	$ 2,926.75	$ 2,910.99	$ 2,895.40	$ 2,869.46	$ 2,843.99	$ 2,818.97	$ 2,794.38	$ 2,770.22	$ 2,726.99	$ 2,768.50

Service Level Cap	10 Year
Forecast Population Growth (2018 to 2027)	2,106
Average Service Level ($ per Capita)	$ 2,768.50
Service Level Cap	**$ 5,830,469**

Appendix C-3
Table 1
Township of Wellington North
Calculation of Service Standards
Fire (Facilities)

Unit Measure: $/sq ft)
Inventory (No. sq ft) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Bld'g Value ($/sq ft)	2018 Replacement Value
Mount Forest	6,180	6,180	6,180	6,180	6,180	6,180	6,180	6,180	6,180	6,180	$ 400	$ 2,472,000
Arthur Village	10,880	10,880	10,880	10,880	10,880	10,880	10,880	10,880	10,880	10,880	$ 400	$ 4,352,000
Total	**17,060**	**17,060**	**17,060**	**17,060**	**17,060**	**17,060**	**17,060**	**17,060**	**17,060**	**17,060**		
Total Value $	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**	**$ 6,824,000**		

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Total Historic Population & Employment	18,187	18,304	18,420	18,536	18,741	18,946	19,150	19,355	19,560	19,871	
Per Capita & Employment Service Level ($/Capita& Employment)	$ 375.20	$ 372.82	$ 370.47	$ 368.15	$ 364.13	$ 360.19	$ 356.34	$ 352.57	$ 348.88	$ 343.42	**$ 361.22**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita)	$ 361.22
Service Level Cap	**$ 2,404,979**

Appendix C-3
Table 2
Township of Wellington North
Calculation of Service Standards
Fire (Vehicles)

Unit Measure: $/vehicles

Inventory (No. of Vehicles) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($/vehicles)
Mount Forest:											
Pumper	2	2	2	2	2	2	1	1	1	1	$ 750,000
Pumper/Rescue (SQUAD)	1	1	1	1	1	1	1	1	1	1	$ 800,000
Tanker	1	1	1	1	1	1	1	1	1	1	$ 400,000
Rescue	1	1	1	1	1	1	1	1	1	1	$ 100,000
Arthur:											
Pumper	2	2	2	2	2	2	1	1	1	1	$ 750,000
Pumper/Rescue(SQUAD)	1	1	1	1	1	1	1	1	1	1	$ 800,000
Tanker	1	1	1	1	1	1	1	1	1	1	$ 400,000
Rescue	1	1	1	1	1	1	1	1	-	-	$ 500,000
Total	**10**	**10**	**10**	**10**	**10**	**10**	**8**	**8**	**7**	**7**	
Total Value $	**$ 6,000,000**	**$ 6,000,000**	**$ 6,000,000**	**$ 6,000,000**	**$ 6,000,000**	**$ 6,000,000**	**$ 4,500,000**	**$ 4,500,000**	**$ 4,000,000**	**$ 4,000,000**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Total Historic Population & Employment*	18,187.40	18,303.60	18,419.80	18,536.00	18,740.80	18,945.60	19,150.40	19,355.20	19,560.00	19,870.50	
Per Capita & Employment Service Level ($/Capita& Employment)	$ 329.90	$ 327.80	$ 325.74	$ 323.69	$ 320.16	$ 316.70	$ 234.98	$ 232.50	$ 204.50	$ 201.30	**$ 281.73**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita)	$ 281.73
Service Level Cap	**$ 1,875,737**

Appendix C-3
Table 3
Township of Wellington North
Calculation of Service Standards
Fire (Equipment)

Unit Measure: $/units
Inventory (No. of Equipment) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($/unit)
Firefigher Equipment/Gear	43	43	43	43	43	43	43	100	100	100	$ 3,000
S.C.B.A's	34	34	34	34	34	34	34	40	40	40	$ 7,000
Portable Pumps	15	15	15	15	15	15	15	6	6	6	$ 8,000
AirBags	6	6	6	6	6	6	6	3	3	3	$ 4,000
Air Bottles	60	60	60	60	60	60	60	90	90	90	$ 1,600
Portable Generators	9	9	9	9	9	9	9	6	6	6	$ 2,000
Jaws of Life	5	5	5	5	5	5	5	5	5	5	$ 100,000
Thermal Imaging Camera	1	1	1	1	1	1	2	3	3	3	$ 8,000
Air Fill Station	1	1	1	1	1	1	1	1	1	1	$ 30,000
Total	**174**	**174**	**174**	**174**	**174**	**174**	**175**	**254**	**254**	**254**	
Total Value $	**$ 1,163,000**	**$ 1,163,000**	**$ 1,163,000**	**$ 1,163,000**	**$ 1,163,000**	**$ 1,163,000**	**$ 1,171,000**	**$ 1,350,000**	**$ 1,350,000**	**$ 1,350,000**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Total Historic Population & Employment*	18,187	18,304	18,420	18,536	18,741	18,946	19,150	19,355	19,560	19,871	
Per Capita & Employment Service Level ($/Capita& Employment)	$ 63.95	$ 63.54	$ 63.14	$ 62.74	$ 62.06	$ 61.39	$ 61.15	$ 69.75	$ 69.02	$ 67.94	**$ 64.47**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita)	$ 64.47
Service Level Cap	**$ 429,217**

Appendix C-4
Table 1
Township of Wellington North
Calculation of Service Standards
Roads and Related (Facilities)

Unit Measure: $/sq ft)
Inventory (No. sq ft) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Bld'g Value ($/ft2)	2018 Replacement Value
Mount Forest Garage	3,710	3,710	3,710	3,710	3,710	3,710	3,710	3,710	3,710	3,710	$ 112	$ 413,710
Mount Forest and/Salf Shed	3,355	3,355	3,355	3,355	3,355	3,355	3,355	3,355	3,355	3,355	$ 67	$ 225,956
Mount Forest Attached Lein-To	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	$ 13	$ 14,574
Arthur Township Garage	5,976	5,976	5,976	5,976	5,976	5,976	5,976	5,976	5,976	5,976	$ 114	$ 679,593
Arthur Township Sand/Salt Shet	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	3,584	$ 67	$ 241,379
Arther Township Salt Shed	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008	$ 67	$ 67,888
Arthur Village Garage	4,608	4,608	4,608	4,608	4,608	4,608	4,608	4,608	4,608	4,608	$ 96	$ 442,622
Arther Village Storage Shed	960	960	960	960	960	960	960	960	960	960	$ 36	$ 34,977
West Luther Garage	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	$ 118	$ 738,354
West Luther Sand/Salt Shed	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	4,200	$ 67	$ 282,866
Total	**34,751**	**34,751**	**34,751**	**34,751**	**34,751**	**34,751**	**34,751**	**34,751**	**34,751**	**34,751**		
Total Value $	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**	**$ 3,141,917**		

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Total Historic Population & Employment	18,187	18,304	18,420	18,536	18,741	18,946	19,150	19,355	19,560	19,871	
Value Per (Capita & Employment)	$ 267.22	$ 265.77	$ 264.34	$ 262.92	$ 260.57	$ 258.25	$ 255.98	$ 253.75	$ 251.55	$ 247.63	**$ 258.80**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita/Employment)	$ 258.80
Service Level Cap	**$ 1,723,076**

Appendix C-4
Table 2
Township of Wellington North
Calculation of Service Standards
Roads and Related (Vehicles and Equipment)

Unit Measure: $/units
Inventory (No. of Vehicles and Equipment) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($/vehicle)
Single Axle Flatbed Dump Truck	1	1	1	1	1	1	1	1	1	1	$ 100,000
Single Axle Dump Truck incl. Sander	1	1	1	1	1	-	-	-	-	-	$ 201,053
Single Axle Dump Truck incl Sander & Plow Equip.	1	1	1	2	1	2	2	2	2	2	$ 220,000
Single Axle 3 Ton Dump Truck incle Sander & plow Eq	1	1	1	1	1	-	-	-	-	-	$ 245,658
Tanden Axle Truck Incl Winter Equip	6	6	6	6	6	7	7	7	7	7	$ 260,000
Gravel Hopper Trailer	1	1	1	1	-	-	-	-	-	-	$ 59,510
Gravel Pony Dump Trailer	2	2	3	3	3	3	3	3	3	3	$ 85,000
Float Trailer	1	1	1	1	1	1	1	1	1	-	$ 37,097
Grader incl. Winter Equip	4	4	4	4	4	4	4	4	4	4	$ 450,000
Grader with Brusher	1	1	1	1	1	1	1	1	1	1	$ 300,000
3 YD Rubber Tire Loaders	2	2	2	2	2	2	2	2	2	2	$ 250,000
Backhoes	2	2	2	2	2	2	2	2	2	2	$ 130,000
Small Tactor	1	1	1	1	1	1	1	1	1	1	$ 50,000
Farm Tractor	1	1	1	1	1	1	1	1	1	1	$ 180,000
140HP Articulate Tractor	1	1	1	1	1	1	1	1	1	1	$ 180,000
Self Propelled Lawnmover & attachments-blower,sw	1	1	1	1	1	1	1	1	1	1	$ 50,000
Trackless with attachments	1	1	1	1	1	1	1	1	1	2	$ 170,000
3 Wheel Street Sweeper	1	1	1	1	1	1	1	1	1	1	$ 200,000
Roadside Mower	1	1	1	1	1	1	1	1	1	1	$ 15,000
Sidewalk Grinder	1	1	1	1	1	1	1	1	1	1	$ 5,000
Trailer	1	1	1	1	1	1	1	1	1	1	$ 7,500
Sidewalk Sander	2	2	2	2	2	2	2	2	2	3	$ 5,000
2 Wheel Drive Pick-Up Truck	1	1	1	1	3	3	3	3	2	1	$ 35,000
2 Wheel Drive Van	1	1	1	-	-	-	-	-	-	-	$ 44,715
4x4 Pick-Up Truck	1	1	1	1	2	2	2	2	4	5	$ 40,000
Truck Mounted Street Sweeper						1	1	1	1	1	$ 275,000
Total	**37**	**37**	**38**	**38**	**39**	**40**	**40**	**40**	**41**	**42**	
Total Value $	**$ 6,440,533**	**$ 6,440,533**	**$ 6,525,533**	**$ 6,700,818**	**$ 6,531,308**	**$ 6,839,597**	**$ 6,839,597**	**$ 6,839,597**	**$ 6,884,597**	**$ 7,027,500**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Total Historic Population & Employment	18,187	18,304	18,420	18,536	18,741	18,946	19,150	19,355	19,560	19,871	
Value Per (Capita & Employment)	$ 354.12	$ 351.87	$ 354.27	$ 361.50	$ 348.51	$ 361.01	$ 357.15	$ 353.37	$ 351.97	$ 353.66	**$ 354.74**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita/Employment)	$ 354.74
Service Level Cap	**$ 2,361,889**

Appendix C-4
Table 3
Township of Wellington North
Calculation of Service Standards
Roads and Related (Bridges and Culverts)

Unit Measure: $/unit)
Inventory (No. Units) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($/unit)
Bridges	43	43	43	43	43	43	43	43	42	42	$ 260,673
Culverts	57	57	57	57	57	57	57	57	58	58	$ 111,623
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	
Total Value $	**$ 17,571,446**	**$17,571,446**	**$17,571,446**	**$17,571,446**	**$17,571,446**	**$17,571,446**	**$17,571,446**	**$17,571,446**	**$17,422,395**	**$17,422,395**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Total Historic Population & Employment	18,187	18,304	18,420	18,536	18,741	18,946	19,150	19,355	19,560	19,871	
Value Per (Capita & Employment)	$ 966.13	$ 960.00	$ 953.94	$ 947.96	$ 937.60	$ 927.47	$ 917.55	$ 907.84	$ 890.72	$ 876.80	**$ 928.60**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita/Employment)	$ 928.60
Service Level Cap	**$ 6,182,629**

Appendix C-4
Table 4
Township of Wellington North
Calculation of Service Standards
Roads and Related (Sidewalks and Streetlights)

Unit Measure: $/km & unit)
Inventory (No. Km & Units) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($/km and units)
Sidewalks & Streetlights											
Arther Sdiewalks	13	13	13	13	13	13	13	13	13	13	$ 126,528
Mount Forest Sidewalks	20	20	20	20	20	20	20	20	20	20	$ 126,528
Arther Streetlights	284	284	284	284	284	284	284	284	284	284	$ 3,754
Mount Forest Streetlights	631	631	631	631	631	631	631	631	631	631	$ 3,754
Others (Hamlets)	47	47	47	47	47	47	47	47	47	47	$ 3,754
Total	**995**	**995**	**995**	**995**	**995**	**995**	**995**	**995**	**995**	**995**	
Total Value $	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	**$ 7,786,640**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Square Footage per Population & Employment											
Total Historic Population & Employment	18,187	18,304	18,420	18,536	18,741	18,946	19,150	19,355	19,560	19,871	
Value Per (Capita & Employment)	$ 428.13	$ 425.42	$ 422.73	$ 420.08	$ 415.49	$ 411.00	$ 406.60	$ 402.30	$ 398.09	$ 391.87	**$ 412.17**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita/Employment)	$ 412.17
Service Level Cap	**$ 2,744,242**

Appendix C-4
Table 5
Township of Wellington North
Calculation of Service Standards
Roads and Related (Roads)

Unit Measure: $/km
Inventory (No. Km) & Value

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 Value ($/km)
Earth	22	22	22	22	22	22	22	22	22	22	$ 321,288
Gravel	195	195	195	195	195	195	195	195	192	192	$ 739,734
Surface Treatment	13	13	13	13	13	13	13	13	13	13	$ 1,012,442
Asphal	123	123	123	123	123	123	123	123	126	126	$ 1,406,599
Total	**353**	**353**	**353**	**353**	**353**	**353**	**353**	**353**	**353**	**353**	
Total Value $	**$ 337,489,900**	**$ 337,489,900**	**$ 337,489,900**	**$ 337,489,900**	**$ 337,489,900**	**$ 337,489,900**	**$ 337,489,900**	**$ 337,489,900**	**$ 339,490,494**	**$ 339,490,494**	

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Population	11,758	11,822	11,886	11,950	12,058	12,166	12,274	12,382	12,490	12,688	
Employment	6,429	6,482	6,534	6,586	6,683	6,780	6,876	6,973	7,070	7,183	
Total Historic Population & Employment*	18,187	18,304	18,420	18,536	18,741	18,946	19,150	19,355	19,560	19,871	
Value Per (Capita & Employment)	$ 18,556.25	$ 18,438.44	$ 18,322.13	$ 18,207.27	$ 18,008.30	$ 17,813.63	$ 17,623.13	$ 17,436.65	$ 17,356.36	$ 17,085.15	**$ 17,884.73**

Service Level Cap	
Forecast Population Growth (2018 to 2041)	4,997
Employment Forecast (2018 to 2041)	1,661
Total Forecast Population and Employment Growth	6,658
Average Service Level ($ per Capita/Employment)	$ 17,884.73
Service Level Cap	**$ 119,076,536**

Appendix D

NET GROWTH RELATED CAPITAL COSTS TO BE RECOVERED FROM DEVELOPMENT CHARGES

Appendix D-1
Table 1
Township of Wellington North
Administrative Services - Studies
Capital Costs Included in Development Charges Calculation

Increased Service Needs due to Anticipated Development 2018-2027	Year Required	Gross Project Cost	Grants, Subsidies & Development Contributions Attributable to New Development	Net Municipal Capital Costs	Less: Benefit to Existing Development		Total Development Recoverable Costs	Less: Other (e.g. 10% Statutory Deduction)		Total Development Recoverable Costs Net of Stat. Deduction	Less: Adjustments	Total Development Recoverable Costs Net of Adjustments	Post Period Capacity	Total Development Adjustment Due to Service Level Cap	DC Eligible Costs	
					$	%		$	%						Residential Share	Non-Res. Share
															74%	26%
Development Charges Study	2018	$ 30,000	$ -	$ 30,000	$ -	0%	$ 30,000	$ 3,000	10%	$ 27,000		$ 27,000		$ 27,000	$ 19,851	$ 7,149
Development Charges Study	2023	$ 35,000	$ -	$ 35,000	$ -	0%	$ 35,000	$ 3,500	10%	$ 31,500		$ 31,500		$ 31,500	$ 23,160	$ 8,340
Post Period Capacity Carry Forward												$ -		$ -	$ -	$ -
Reserve Balance											$ 837	$ (837)		$ (837)	$ (615)	$ (222)
Debt												$ -		$ -	$ -	$ -
Reserve Deficit												$ -		$ -	$ -	$ -
Credits												$ -		$ -	$ -	$ -
Total Estimated Capital Costs		**$ 65,000**	**$ -**	**$ 65,000**	**$ -**		**$ 65,000**	**$ 6,500**		**$ 58,500**	**$ 837**	**$ 57,663**		**$ 57,663**	**$ 42,395**	**$ 15,268**

Appendix D-2
Table 1
Township of Wellington North
Parks Services
Capital Costs Included in Development Charges Calculations

Increased Service Needs due to Anticipated Development 2018-2027	Year Required	Gross Project Cost	Less:	Net Municipal Capital Costs	Less:		Total Development Recoverable Costs	Less:		Less					DC Eligible Costs	
			Grants, Subsidies & Development Contributions Attributable to New Development		Benefit to Existing Development			Other (e.g. 10% Statutory Deduction)		Total Development Recoverable Costs Net of Stat Deductions	Adjustments	Total Development Cost Recoverable Net of Adjustments	Post Period Capacity	Total Development Cost Adjustment Due to Service Level Cap	Residential Share	Non-Res. Share
					$	%		$	%						95%	5%
Arthur																
Arthur Storage Facility	2018	$ 35,000		$ 35,000	$ 30,100	86%	$ 4,900	$ 490	10%	$ 4,410		$ 4,410	$ -	$ 4,410	$ 4,190	$ 221
Arthur Practice Ball Diamond	2019	$ 30,000		$ 30,000	$ -	0%	$ 30,000	$ 3,000	10%	$ 27,000		$ 27,000	$ -	$ 27,000	$ 25,650	$ 1,350
Arthur Skateboard & BMX Park	2020	$ 200,000		$ 200,000	$ 172,000	86%	$ 28,000	$ 2,800	10%	$ 25,200		$ 25,200	$ -	$ 25,200	$ 23,940	$ 1,260
New Arthur Ball Diamond with Lights	2022	$ 250,000		$ 250,000	$ 215,000	86%	$ 35,000	$ 3,500	10%	$ 31,500		$ 31,500	$ -	$ 31,500	$ 29,925	$ 1,575
Arthur Soccer Pitch w/lights	2024	$ 250,000		$ 250,000	$ 215,000	86%	$ 35,000	$ 3,500	10%	$ 31,500		$ 31,500	$ -	$ 31,500	$ 29,925	$ 1,575
Dog Park in Arthur	2025	$ 50,000		$ 50,000	$ 43,000	86%	$ 7,000	$ 700	10%	$ 6,300		$ 6,300	$ -	$ 6,300	$ 5,985	$ 315
Playground in Arthur	2026	$ 100,000		$ 100,000	$ 86,000	86%	$ 14,000	$ 1,400	10%	$ 12,600		$ 12,600	$ -	$ 12,600	$ 11,970	$ 630
Mount Forest																
MF Splash Pad	2018	$ 180,000		$ 180,000	$ 154,800	86%	$ 25,200	$ 2,520	10%	$ 22,680		$ 22,680	$ -	$ 22,680	$ 21,546	$ 1,134
MF Tractor	2019	$ 40,000		$ 40,000	$ 34,400	86%	$ 5,600	$ 560	10%	$ 5,040		$ 5,040	$ -	$ 5,040	$ 4,788	$ 252
Parks Vehicle	2022	$ 40,000		$ 40,000	$ 34,400	86%	$ 5,600	$ 560	10%	$ 5,040		$ 5,040	$ -	$ 5,040	$ 4,788	$ 252
Dog Park in MF	2023	$ 50,000		$ 50,000	$ 43,000	86%	$ 7,000	$ 700	10%	$ 6,300		$ 6,300	$ -	$ 6,300	$ 5,985	$ 315
Ball Diamond in MF	2027	$ 300,000		$ 300,000	$ 258,000	86%	$ 42,000	$ 4,200	10%	$ 37,800		$ 37,800	$ -	$ 37,800	$ 35,910	$ 1,890
Trail Development/Expansion	2019-2027	$ 315,000		$ 315,000	$ 270,900	86%	$ 44,100	$ 4,410	10%	$ 39,690		$ 39,690	$ -	$ 39,690	$ 37,706	$ 1,985
Post Period Capacity Carry Forward												$ -	$ -	$ -	$ -	$ -
Reserve Balance											$ 106,223	$ (106,223)	$ -	$ (106,223)	$ (100,912)	$ (5,311)
Debt												$ -	$ -	$ -	$ -	$ -
Reserve Deficit												$ -	$ -	$ -	$ -	$ -
Credits												$ -	$ -	$ -	$ -	$ -
Total Estimated Capital Costs		**$ 1,840,000**	**$ -**	**$ 1,840,000**	**$ 1,556,600**		**$ 283,400**	**$ 28,340**		**$ 255,060**	**$ 106,223**	**$ 148,837**	**$ -**	**$ 148,837**	**$ 141,395**	**$ 7,442**

Appendix D-3
Table 1
Township of Wellington North
Recreation Services
Capital Costs Included in the Development Charge Calculation

Increased Service Needs Attributable to Anticipated Development 2018-2027	Year Required	Gross Project Cost	Grants, Subsidies & Development Contributions Attributable to New Development	Net Municipal Capital Costs	Less: Benefit to Existing Development		Total Development Recoverable Costs	Less: Other (e.g. 10% Statutory Deduction)		Potential DC Total Development Recoverable Costs Net of Stat. Deduction	Adjustments	Total Development Recoverable Costs Net of Adjustments	Post Period Capacity	Total Development Adjustment Due to Service Level Cap	DC Eligible Costs Residential Share	DC Eligible Costs Non-Res. Share
					$	%		$	%						95%	5%
Mount Forest Sports Complex Replacement and Expansion (Debenture Principal)	2018-2019	$ 2,031,000		$ 2,031,000	$ 1,659,327	82%	$ 371,673	$ 37,167	10%	$ 334,506		$ 334,506	$ -	$ 334,506	$ 317,780	$ 16,725
Mount Forest Sports Complex Replacement and Expansion (Debenture Interest - Discounted)	2018-2019	$ 119,621		$ 119,621	$ 97,730	82%	$ 21,891	$ 2,189	10%	$ 19,701		$ 19,701	$ -	$ 19,701	$ 18,716	$ 985
Mount Forest Pool Replacement	2020	$ 2,800,000		$ 2,800,000	$ 2,240,000	80%	$ 560,000	$ 56,000	10%	$ 504,000		$ 504,000	$ -	$ 504,000	$ 478,800	$ 25,200
Arthur Community Centre Dressing Room Additions	2022	$ 100,000		$ 100,000	$ -	0%	$ 100,000	$ 10,000	10%	$ 90,000		$ 90,000	$ -	$ 90,000	$ 85,500	$ 4,500
Post Period Capacity Carry Forward												$ -	$ -	$ -	$ -	$ -
Reserve Balance											$ 216,296	$ (216,296)	$ -	$ (216,296)	$ (205,481)	$ (10,815)
Debt												$ -	$ -	$ -	$ -	$ -
Reserve Deficit												$ -	$ -	$ -	$ -	$ -
Credits												$ -	$ -	$ -	$ -	$ -
Total Estimated Capital Costs		**$ 5,050,621**	**$ -**	**$ 5,050,621**	**$ 3,997,057**		**$ 1,053,564**	**$ 105,356**		**$ 948,207**	**$ 216,296**	**$ 731,911**	**$ -**	**$ 731,911**	**$ 695,316**	**$ 36,596**

Appendix D-4
Table 1
Township of Wellington North
Fire Protection Services
Capital Costs Included in the Development Charge Calculation

Increased Service Needs Attributable to Anticipated Development 2018-2027	Year Required	Gross Project Cost	Grants, Subsidies & Development Contributions Attributable to New Development	Net Municipal Capital Costs	Less:		Total Development Recoverable Costs	Less:		Total Development Recoverable Net of Stat. Deductions	Adjustments	Total Development Recoverable Costs Net of Adjustments	Post Period Capacity	Total Development Costs Adjustment Due to Service Level Cap	DC Eligible Costs	
					Benefit to Existing Development			Other (e.g. 10% Statutory Deduction)							Residential Share	Non-Res. Share
					$	%		$	%						76%	24%
Additional Fire Gear for Firefighters (6)	2020	$ 19,240		$ 19,240	$ -	0%	$ 19,240	$ -	0%	$ 19,240		$ 19,240	$ -	$ 19,240	$ 14,703	$ 4,538
Expansion to Mount Forest Fire Hall	2023	$ 619,962	$ 78,000	$ 541,962	$ -	0%	$ 541,962	$ -	0%	$ 541,962		$ 541,962	$ -	$ 541,962	$ 414,146	$ 127,816
Post Period Capacity Carry Forward												$ -	$ -	$ -	$ -	$ -
Reserve Balance											$ 142,425	$ (142,425)	$ -	$ (142,425)	$ (108,835)	$ (33,589)
Debt												$ -	$ -	$ -	$ -	$ -
Reserve Deficit												$ -	$ -	$ -	$ -	$ -
Credits												$0	$ -	$ -	$ -	$ -
Total Estimated Capital Costs		**$ 639,202**	**$ 78,000**	**$ 561,202**	**$ -**		$561,202	$ -		$561,202	$142,425	$418,778	$ -	$418,778	$320,013	$98,765

Appendix D-5
Table 1
Township of Wellington North
Roads and Related Services
Capital Costs Included in the Development Charge Calculation

Increased Service Needs Attributable to Anticipated Development 2018-2027	Year Required	Gross Project Costs	Less: Grants, Subsidies & Development Contributions Attributable to New Development	Net Municipal Capital Costs	Less: Benefit to Existing Development $	Less: Benefit to Existing Development %	Total Development Recoverable Costs	Less: Other (e.g. 10% Statutory Deduction) $	Less: Other (e.g. 10% Statutory Deduction) %	Total Development Recoverable Costs Net of Stat Deductions	Less: Adjustments	Total Development Recoverable Costs Net of Adjustments	Post Period Capacity	Total Development Recoverable Costs Adjustment Due to Service Level Cap	DC Eligible Costs Residential Share 76%	DC Eligible Costs Non-Res. Share 24%
Roads																
Arthur																
Charles St. E. / Leonard St (Between George & Eliza	2018	$ 420,000	$ 131,849	$ 288,151	$ 207,469	72%	$ 80,682	$ -		$ 80,682		$ 80,682	$ -	$ 80,682	$ 61,654	$ 19,028
Wells St Construction (Domville St to Eliza St)	2022	$ 2,048,012		$ 2,048,012	$ 613,549	30%	$ 1,434,464	$ -		$ 1,434,464		$ 1,434,464	$ -	$ 1,434,464	$ 1,096,160	$ 338,304
Macauley St. Construction (Wells St. To Eliza St)	2027	$ 678,752		$ 678,752	$ 203,625	30%	$ 475,126	$ -		$ 475,126		$ 475,126	$ -	$ 475,126	$ 363,072	$ 112,054
Mount Forest																
Durham St. East (Brad Wilson Severences)	2018	$ 840,000	$ 488,000	$ 352,000	$ -	0%	$ 352,000	$ -		$ 352,000		$ 352,000	$ -	$ 352,000	$ 268,984	$ 83,016
Wellington St. East (P&M Reeves Severences)	2018	$ 166,000	$ 106,000	$ 60,000	$ -	0%	$ 60,000	$ -		$ 60,000		$ 60,000	$ -	$ 60,000	$ 45,850	$ 14,150
King St. West (Mount Forest Elgin between King and	2018	$ 677,752	$ 677,752	$ -	$ -	72%	$ -	$ -		$ -		$ -	$ -	$ -	$ -	$ -
Queen St - Hwy. 89 Connecting Link (Queen St. - Sligo Rd. to	2018	$ 1,290,000	$ 1,161,000	$ 129,000	$ 92,880	72%	$ 36,120	$ -		$ 36,120		$ 36,120	$ -	$ 36,120	$ 27,601	$ 8,519
Cork Street Reconstruction (Waterloo St. to Princess St.)	2020	$ 237,830		$ 237,830	$ 118,915	50%	$ 118,915	$ -		$ 118,915		$ 118,915	$ -	$ 118,915	$ 90,870	$ 28,045
Reconstruction of Bentley Street at Hwy # 6	2020	$ 801,675		$ 801,675	$ 400,838	50%	$ 400,838	$ -		$ 400,838		$ 400,838	$ -	$ 400,838	$ 306,304	$ 94,534
Durham St (London Road Westerly)	2022	$ 274,707		$ 274,707	$ 137,354	50%	$ 137,354	$ -		$ 137,354		$ 137,354	$ -	$ 137,354	$ 104,960	$ 32,393
London Road (London Rd to Wellington)	2024	$ 777,090		$ 777,090	$ 388,545	50%	$ 388,545	$ -		$ 388,545		$ 388,545	$ -	$ 388,545	$ 296,911	$ 91,634
Coral Lea Drive Construction	2025	$ 290,741		$ 290,741	$ 87,222	30%	$ 203,519	$ -		$ 203,519		$ 203,519	$ -	$ 203,519	$ 155,521	$ 47,998
Internal Road – Industrial Park – (Coral Lea Dr. to Industrial Dr.)	2025	$ 110,097		$ 110,097	$ 33,029	30%	$ 77,068	$ -		$ 77,068		$ 77,068	$ -	$ 77,068	$ 58,892	$ 18,176
Develop Master Storm Drainage Management Plan	2018	$ 65,000		$ 65,000	$ -	0%	$ 65,000	$ -		$ 65,000		$ 65,000	$ -	$ 65,000	$ 49,670	$ 15,330
Roads Need Study (Update)	2023	$ 25,000		$ 25,000	$ -	0%	$ 25,000	$ -		$ 25,000		$ 25,000	$ -	$ 25,000	$ 19,104	$ 5,896
Post Period Capacity Carry Forward												$ -	$ -	$ -	$ -	$ -
Reserve Balance											$ 618,681	$ (618,681)	$ -	$ (618,681)	$ (472,771)	$ (145,910)
Debt												$ -	$ -	$ -	$ -	$ -
Reserve Deficit												$ -	$ -	$ -	$ -	$ -
Credits												$ -	$ -	$ -	$ -	$ -
Total Estimated Capital Costs		**$ 8,702,656**	**$ 2,564,601**	**$ 6,138,055**	**$ 2,283,425**		**$ 3,854,630**	**$ -**		**$ 3,854,630**	**$ 618,681**	**$ 3,235,949**	**$ -**	**$ 3,235,949**	**$ 2,472,783**	**$ 763,166**

Appendix D-6
Table 1
Township of Wellington North
Water Services
Capital Costs Included in the Development Charge Calculation

Increased Service Needs Attributable to Anticipated Development 2018-2041	Year Required	Gross Project Costs	Less: Grants, Subsidies & Development Contributions Attributable to New Development	Net Capital Costs	Less: Benefit to Existing Development		Total Development Recoverable Costs	Less: Other (e.g. 10% Statutory Deduction)		Net Costs Benefiting New Development	Adjustments	Total Development Recoverable Costs Net of Adjustments	Post Period Capacity	Total Development Recoverable Costs Adjustment Due to Service Level Cap	DC Eligible Costs	
					$	%		$	%						Residential Share 77%	Non-Res. Share 23%
Arthur																
System Upgrades (Arthur)																
Charles St. E. / Leonard St (Between George & Eliza)	2018	$ 180,000		$ 180,000	$ 113,400	63%	$ 66,600	$ -		$ 66,600		$ 66,600	$ -	$ 66,600	$ 51,613	$ 14,987
Charles St. (Francis St. to Isabella St.)	2018	$ 327,990		$ 327,990	$ 206,634	63%	$ 121,356	$ -		$ 121,356		$ 121,356	$ -	$ 121,356	$ 94,048	$ 27,308
Edward St (Frederick St. to Charles St.)	2022	$ 191,139		$ 191,139	$ 120,418	63%	$ 70,721	$ -		$ 70,721		$ 70,721	$ -	$ 70,721	$ 54,807	$ 15,914
Georgina St. (Frederick St, to Charles St.)	2022	$ 223,938		$ 223,938	$ 141,081	63%	$ 82,857	$ -		$ 82,857		$ 82,857	$ -	$ 82,857	$ 64,212	$ 18,645
Isabella St. (Frederick St. to Eliza St.)	2022	$ 488,592		$ 488,592	$ 307,813	63%	$ 180,779	$ -		$ 180,779		$ 180,779	$ -	$ 180,779	$ 140,099	$ 40,680
Isabella St. (Tucker St. to Frederick St.)	2022	$ 1,490,001		$ 1,490,001	$ 938,701	63%	$ 551,300	$ -		$ 551,300		$ 551,300	$ -	$ 551,300	$ 427,243	$ 124,057
Walton St. (Clarke St. to Tucker St.)	2022	$ 145,899		$ 145,899	$ 91,916	63%	$ 53,983	$ -		$ 53,983		$ 53,983	$ -	$ 53,983	$ 41,835	$ 12,148
System Extentions (Arthur)																
Wells St (Domville St to Eliza St)	2022	$ 722,576		$ 722,576	$ 72,258	10%	$ 650,319	$ -		$ 650,319		$ 650,319	$ -	$ 650,319	$ 503,979	$ 146,339
Eliza St (Macauley St. to Tucker St)	2022	$ 190,008		$ 190,008	$ -	0%	$ 190,008	$ -		$ 190,008		$ 190,008	$ -	$ 190,008	$ 147,251	$ 42,757
Draper St. (Eliza to Anderson St.)	2022	$ 131,196		$ 131,196	$ -	0%	$ 131,196	$ -		$ 131,196		$ 131,196	$ -	$ 131,196	$ 101,673	$ 29,523
Anderson St. (Draper St. to Farrell Lane)	2022	$ 373,230		$ 373,230	$ -	0%	$ 373,230	$ -		$ 373,230		$ 373,230	$ -	$ 373,230	$ 289,243	$ 83,987
Water Tower - Arthur	2025	$ 1,850,266		$ 1,850,266	$ 555,080	30%	$ 1,295,186	$ -		$ 1,295,186		$ 1,295,186	$ -	$ 1,295,186	$ 1,003,734	$ 291,452
Macauley St (Wells St. To Eliza St)	2027	$ 545,139		$ 545,139	$ 163,542	30%	$ 381,597	$ -		$ 381,597		$ 381,597	$ -	$ 381,597	$ 295,728	$ 85,870
Mount Forest																
System Upgrades (Mount Forest)																
King St. West (Mount Forest Elgin between King and Wellington	2018	$ 430,514	$ 13,729	$ 416,785	$ 262,575	63%	$ 154,210	$ -		$ 154,210		$ 154,210	$ -	$ 154,210	$ 119,509	$ 34,702
Cork St. Reconstruction (Waterloo St. to Princess St.)	2020	$ 126,665		$ 126,665	$ 25,333	20%	$ 101,332	$ -		$ 101,332		$ 101,332	$ -	$ 101,332	$ 78,529	$ 22,802
System Extentions (Mount Forest)																
Murphy Lands (Bristol St/Bentley St.)	2020	$ 283,259		$ 283,259	$ 28,326	10%	$ 254,933	$ -		$ 254,933		$ 254,933	$ -	$ 254,933	$ 197,566	$ 57,367
Birmingham St. Construction (London Rd. to Westerly)	2021	$ 138,957		$ 138,957	$ 69,479	50%	$ 69,479	$ -		$ 69,479		$ 69,479	$ -	$ 69,479	$ 53,844	$ 15,635
Trunk Watermain, Exisiting System to new Elevated Tank	2021	$ 599,120		$ 599,120	$ -	0%	$ 599,120	$ -		$ 599,120		$ 599,120	$ -	$ 599,120	$ 464,302	$ 134,818
Mount Forest Water Tower	2021	$ 2,165,000		$ 2,165,000	$ -	0%	$ 2,165,000	$ -		$ 2,165,000		$ 2,165,000	$ -	$ 2,165,000	$ 1,677,817	$ 487,183
Durham St (London Road Westerly)	2022	$ 38,480		$ 38,480	$ 19,240	50%	$ 19,240	$ -		$ 19,240		$ 19,240	$ -	$ 19,240	$ 14,911	$ 4,330
Sligo Road (Church St to London Rd)	2023	$ 283,259		$ 283,259	$ 141,629	50%	$ 141,629	$ -		$ 141,629		$ 141,629	$ -	$ 141,629	$ 109,759	$ 31,870
London Road (Sligo Rd E to Birmingham St E)	2024	$ 336,704		$ 336,704	$ 168,352	50%	$ 168,352	$ -		$ 168,352		$ 168,352	$ -	$ 168,352	$ 130,468	$ 37,884
Coral Lea Drive (Main St. Westerly)	2025	$ 523,761		$ 523,761	$ 157,128	30%	$ 366,633	$ -		$ 366,633		$ 366,633	$ -	$ 366,633	$ 284,130	$ 82,502
Internal Road – Industrial Park – (Coral Lea Dr. to Industrial Dr.)	2025	$ 59,858		$ 59,858	$ 17,958	30%	$ 41,901	$ -		$ 41,901		$ 41,901	$ -	$ 41,901	$ 32,472	$ 9,429
New Street (East of HWY #6)	2026	$ 342,048		$ 342,048	$ -	0%	$ 342,048	$ -		$ 342,048		$ 342,048	$ -	$ 342,048	$ 265,078	$ 76,970
Update Master Servicing Plan Arther and Mount Forest W-WW	2018	$ 32,500		$ 32,500	$ -	0%	$ 32,500	$ -		$ 32,500		$ 32,500	$ -	$ 32,500	$ 25,187	$ 7,313
Water Vehicle	2020	$ 40,000		$ 40,000	$ 25,200	63%	$ 14,800	$ -		$ 14,800		$ 14,800	$ -	$ 14,800	$ 11,470	$ 3,330
Water Vehicle	2022	$ 40,000		$ 40,000	$ 25,200	63%	$ 14,800	$ -		$ 14,800		$ 14,800	$ -	$ 14,800	$ 11,470	$ 3,330
Post Period Capacity Carry Forward												$ -	$ -	$ -	$ -	$ -
Reserve Balance											$ 441,686	$ (441,686)	$ -	$ (441,686)	$ (342,295)	$ (99,391)
Debt												$ -	$ -	$ -	$ -	$ -
Reserve Deficit												$ -	$ -	$ -	$ -	$ -
Credits												$ -	$ -	$ -	$ -	$ -
Total Estimated Capital Costs		**$ 12,300,098**	**$ 13,729**	**$ 12,286,369**	**$ 3,651,260**		**$ 8,635,109**	**$ -**	**$ -**	**$ 8,635,109**	**$ 441,686**	**$ 8,193,423**	**$ -**	**$ 8,193,423**	**$ 6,349,681**	**$ 1,843,741**

Appendix D-7
Table 1
Township of Wellington North
Wastewater Services
Capital Costs Included in the Development Charges Calculation

Increased Service Needs Attributable to Anticipated Development 2018-2041	Year Required	Gross Project Costs	Less: Grants, Subsidies & Development Contributions Attributable to New Development	Net Capital Costs	Less: Benefit to Existing Development $	Less: Benefit to Existing Development %	Total Development Recoverable Costs	Less: Other (e.g. 10% Statutory Deduction) $	Less: Other (e.g. 10% Statutory Deduction) %	Net Costs Benefiting New Development	Adjustments	Total Development Recoverable Costs Net of Adjustments	Post Period Capacity	Total Development Recoverable Costs Adjustment Due to Service Level	DC Eligible Costs Residential Share 77%	DC Eligible Costs Non-Res. Share 23%
Arthur																
Sytem Upgrades (Arthur)																
Charles St. E. / Leonard St (Between George & Eliza)	2018	$ 330,000		$ 330,000	$ 207,900	63%	$ 122,100	$ -		$ 122,100		$ 122,100	$ -	$ 122,100	$ 94,624	$ 27,476
Sytem Expansions (Arthur)																
Anderson St. (Gordon St. to Farrell Lane)	2022	$ 359,658		$ 359,658	$ -	0%	$ 359,658	$ -		$ 359,658		$ 359,658	$ -	$ 359,658	$ 278,725	$ 80,933
Domville St. (Wells St. to Preston St.)	2022	$ 229,593		$ 229,593	$ -	0%	$ 229,593	$ -		$ 229,593		$ 229,593	$ -	$ 229,593	$ 177,928	$ 51,665
Wells St. (CPR to Macauley St.)	2022	$ 776,997		$ 776,997	$ 77,700	10%	$ 699,297	$ -		$ 699,297		$ 699,297	$ -	$ 699,297	$ 541,937	$ 157,361
Macauley St. (Wells St. to Tucker St.)	2027	$ 305,370		$ 305,370	$ 30,537	10%	$ 274,833	$ -		$ 274,833		$ 274,833	$ -	$ 274,833	$ 212,988	$ 61,845
Arthur Wastewater Treatment Plant Upgrades Phase 1	2019	$ 7,818,000		$ 7,818,000	$ 1,172,700	15%	$ 6,645,300	$ -		$ 6,645,300		$ 6,645,300	$ -	$ 6,645,300	$ 5,149,928	$ 1,495,372
Arthur Wastewater Treatment Plant Upgrades Phase 2	2031	$ 8,759,000		$ 8,759,000	$ 1,313,850	15%	$ 7,445,150	$ -		$ 7,445,150		$ 7,445,150	$ -	$ 7,445,150	$ 5,769,790	$ 1,675,360
Mount Forest																
Durham Street Sewage Pumping Station, Mount Forest	2018-2020	$ 549,360		$ 549,360	$ 274,680	50%	$ 274,680	$ -		$ 274,680		$ 274,680	$ -	$ 274,680	$ 212,870	$ 61,810
Durham Street Sewage Pumping Station, Mount Forest	2018-2020	$ 56,867		$ 56,867	$ 28,434	50%	$ 28,434	$ -		$ 28,434		$ 28,434	$ -	$ 28,434	$ 22,035	$ 6,398
Cork Street Sewage Pumping Station and Cork Street	2018-2020	$ 366,240		$ 366,240	$ 292,992	80%	$ 73,248	$ -		$ 73,248		$ 73,248	$ -	$ 73,248	$ 56,765	$ 16,483
Cork Street Sewage Pumping Station and Cork Street reconstruction, Mount Forest (Debenture Interest - Discounted)	2018-2020	$ 37,912		$ 37,912	$ 30,330	80%	$ 7,582	$ -		$ 7,582		$ 7,582	$ -	$ 7,582	$ 5,876	$ 1,706
Mount Forest New WPCP, Forcemain and Conversion of Old Plant - (Debenture Principal)	2018-2024	$ 1,455,109		$ 1,455,109	$ 291,022	20%	$ 1,164,087	$ -		$ 1,164,087		$ 1,164,087	$ -	$ 1,164,087	$ 902,136	$ 261,951
Mount Forest New WPCP, Forcemain and Conversion of Old Plant - (Debenture Interest)	2018-2024	$ 325,447		$ 325,447	$ 65,089	20%	$ 260,358	$ -		$ 260,358		$ 260,358	$ -	$ 260,358	$ 201,770	$ 58,587
Sytem Upgrades (Mount Forest)																
King St. West (Mount Forest Elgin between King and	2018	$ 536,846	$ 13,729	$ 523,117	$ 329,564	63%	$ 193,553	$ -		$ 193,553		$ 193,553	$ -	$ 193,553	$ 149,999	$ 43,555
Cork St. Reconstruction (Waterloo St. to Princess St.)	2020	$ 36,343		$ 36,343	$ 22,896	63%	$ 13,447	$ -		$ 13,447		$ 13,447	$ -	$ 13,447	$ 10,421	$ 3,026
Sytem Expansions (Mount Forest)																
Murphy Lands Bristol St./Bentley St. S.P.S.	2020	$ 593,988		$ 593,988	$ 59,399	10%	$ 534,589	$ -		$ 534,589		$ 534,589	$ -	$ 534,589	$ 414,292	$ 120,297
Bentley St.	2020	$ 707,612		$ 707,612	$ -	0%	$ 707,612	$ -		$ 707,612		$ 707,612	$ -	$ 707,612	$ 548,380	$ 159,232
Bristol St.	2020	$ 683,027		$ 683,027	$ -	0%	$ 683,027	$ -		$ 683,027		$ 683,027	$ -	$ 683,027	$ 529,328	$ 153,700
Trunk Gravity Sewer Forcemain S.P.S Queen Street West	2023	$ 493,832		$ 493,832	$ 49,383	10%	$ 444,449	$ -		$ 444,449		$ 444,449	$ -	$ 444,449	$ 344,436	$ 100,013
Coral Lea Drive SPS and Forcemain	2025	$ 1,540,285		$ 1,540,285	$ 154,028	10%	$ 1,386,256	$ -		$ 1,386,256		$ 1,386,256	$ -	$ 1,386,256	$ 1,074,311	$ 311,945
Internal Road – Industrial Park – (Coral Lea Dr. to	2025	$ 684,096		$ 684,096	$ 205,229	30%	$ 478,867	$ -		$ 478,867		$ 478,867	$ -	$ 478,867	$ 371,109	$ 107,758
New Street, East of Hwy #6)	2026	$ 920,323		$ 920,323	$ -	0%	$ 920,323	$ -		$ 920,323		$ 920,323	$ -	$ 920,323	$ 713,225	$ 207,097
Sligo Road (Church St to London Rd)	2023	$ 499,176		$ 499,176	$ 99,835	20%	$ 399,341	$ -		$ 399,341		$ 399,341	$ -	$ 399,341	$ 309,479	$ 89,863
London Road (Sligo Rd E to Birmingham St E)	2024	$ 739,679		$ 739,679	$ 369,839	50%	$ 369,839	$ -		$ 369,839		$ 369,839	$ -	$ 369,839	$ 286,616	$ 83,224
Birmingham St. Reconstruction (London Rd. to Westerly)	2021	$ 400,838		$ 400,838	$ 200,419	50%	$ 200,419	$ -		$ 200,419		$ 200,419	$ -	$ 200,419	$ 155,319	$ 45,100
				$ -	$ -		$ -	$ -		$ -		$ -	$ -	$ -	$ -	$ -
Update Master Servicing Plan Arther and Mount Forest W-WW	2018	$ 65,000		$ 65,000	$ -	0%	$ 65,000	$ -		$ 65,000		$ 65,000	$ -	$ 65,000	$ 50,373	$ 14,627
Post Period Capacity Carry Forward												$ -	$ -	$ -	$ -	$ -
Reserve Balance											$ 1,702,262	$ (1,702,262)	$ -	$ (1,702,262)	$ (1,319,207)	$ (383,055)
Debt												$ -	$ -	$ -	$ -	$ -
Reserve Deficit												$ -	$ -	$ -	$ -	$ -
Credits												$ -	$ -	$ -	$ -	$ -
Total Estimated Capital Costs		**$ 29,270,596**	**$ 13,729**	**$ 29,256,867**	**$ 5,275,825**		**$ 23,981,042**	**$ -**		**$ 23,981,042**	**$ 1,702,262**	**$ 22,278,780**	**$ -**	**$ 22,278,780**	**$ 17,265,453**	**$ 5,013,327**

Appendix E

CASH FLOW ANALYSIS & ADJUSTED CHARGES

Appendix E-1
Table 1
Township of Wellington North
Administrative Services - Studies
Cash Analysis and Adjusted Charges

RESIDENTIAL CASH FLOW

Adminstrative Services-Studies	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Opening Cash Balance	$ 615	$ (15,101)	$ (11,074)	$ (6,858)	$ (2,447)	$ 2,165	$ (18,839)	$ (14,447)	$ (9,848)	$ (5,035)
Residential Population Growth in New Units	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**
Receipts										
Residential Development Charge Receipts (Inflated)	$ 4,275	$ 4,361	$ 4,448	$ 4,537	$ 4,628	$ 4,720	$ 4,815	$ 4,911	$ 5,009	$ 5,109
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 19,851	$ -	$ -	$ -	$ -	$ 23,160	$ -	$ -	$ -	$ -
Inflated	$ 19,851	$ -	$ -	$ -	$ -	$ 25,570	$ -	$ -	$ -	$ -
Interest	$ (140)	$ (334)	$ (232)	$ (126)	$ (15)	$ (154)	$ (423)	$ (312)	$ (196)	$ (75)
Closing Cash Balance	$ (15,101)	$ (11,074)	$ (6,858)	$ (2,447)	$ 2,165	$ (18,839)	$ (14,447)	$ (9,848)	$ (5,035)	$ -

2018 Adjusted Residential Charge Per Capita	**$ 19.06**

Appendix E-1
Table 2
Township of Wellington North
Administrative Services - Studies
Cash Analysis and Adjusted Charges

NON-RESIDENTIAL CASH FLOW

Adminstrative Services-Studies	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Opening Cash Balance	$ 222	$ (5,438)	$ (3,988)	$ (2,470)	$ (881)	$ 780	$ (6,784)	$ (5,203)	$ (3,546)	$ (1,813)
Non-Residential Growth in Square Feet	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**
Receipts										
Non-Residential Development Charge Receipts (Inflated)	$ 1,540	$ 1,570	$ 1,602	$ 1,634	$ 1,667	$ 1,700	$ 1,734	$ 1,769	$ 1,804	$ 1,840
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 7,149	$ -	$ -	$ -	$ -	$ 8,340	$ -	$ -	$ -	$ -
Inflated	$ 7,149	$ -	$ -	$ -	$ -	$ 9,209	$ -	$ -	$ -	$ -
Interest	$ (51)	$ (120)	$ (84)	$ (45)	$ (5)	$ (56)	$ (152)	$ (112)	$ (71)	$ (27)
Closing Cash Balance	$ (5,438)	$ (3,988)	$ (2,470)	$ (881)	$ 780	$ (6,784)	$ (5,203)	$ (3,546)	$ (1,813)	$ -

2018 Adjusted Non-Residential Charge Per Square Metre	**$ 0.02**

Appendix E-2
Table 1
Township of Wellington North
Parks Services
Cash Analysis and Adjusted Charges

RESIDENTIAL CASH FLOW

Parks Services	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Opening Cash Balance	$ 100,912	$ 91,350	$ 76,462	$ 67,687	$ 84,138	$ 63,345	$ 31,563	$ 13,977	$ 23,358	$ 26,072
Residential Population Growth in New Units	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**
Receipts										
Residential Development Charge Receipts (Inflated)	$ 13,770	$ 14,045	$ 14,326	$ 14,613	$ 14,905	$ 15,203	$ 15,507	$ 15,817	$ 16,134	$ 16,456
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 25,736	$ 30,438	$ 23,940	$ -	$ 34,713	$ 43,691	$ 29,925	$ 5,985	$ 11,970	$ 35,910
Inflated	$ 25,736	$ 31,047	$ 24,907	$ -	$ 37,574	$ 48,238	$ 33,700	$ 6,875	$ 14,025	$ 42,916
Interest	$ 2,403	$ 2,114	$ 1,806	$ 1,838	$ 1,877	$ 1,253	$ 607	$ 439	$ 605	$ 387
Closing Cash Balance	$ 91,350	$ 76,462	$ 67,687	$ 84,138	$ 63,345	$ 31,563	$ 13,977	$ 23,358	$ 26,072	$ -

2018 Adjusted Residential Charge Per Capita	**$ 61.43**

Appendix E-2
Table 2
Township of Wellington North
Parks Services
Cash Analysis and Adjusted Charges

NON-RESIDENTIAL CASH FLOW

Parks Services	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Opening Cash Balance	$ 5,311	$ 4,808	$ 4,024	$ 3,562	$ 4,428	$ 3,334	$ 1,661	$ 735	$ 1,229	$ 1,372
Non-Residential Growth in Square Feet	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**
Receipts										
Non-Residential Development Charge Receipts (Inflated)	$ 725	$ 739	$ 754	$ 769	$ 784	$ 800	$ 816	$ 832	$ 849	$ 866
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 1,355	$ 1,602	$ 1,260	$ -	$ 1,827	$ 2,300	$ 1,575	$ 315	$ 630	$ 1,890
Inflated	$ 1,355	$ 1,634	$ 1,311	$ -	$ 1,978	$ 2,539	$ 1,774	$ 362	$ 738	$ 2,259
Interest	$ 126	$ 111	$ 95	$ 97	$ 99	$ 66	$ 32	$ 23	$ 32	$ 20
Closing Cash Balance	$ 4,808	$ 4,024	$ 3,562	$ 4,428	$ 3,334	$ 1,661	$ 735	$ 1,229	$ 1,372	$ -

2018 Adjusted Non-Residential Charge Per Square Metre	**$ 0.01**

Appendix E-3
Table 1
Township of Wellington North
Recreation Services
Cash Analysis and Adjusted Charges

RESIDENTIAL CASH FLOW

Recreation Services	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Opening Cash Balance	$ 205,481	$ 281,264	$ 13,695	$ (415,588)	$ (351,007)	$ (376,787)	$ (308,208)	$ (236,354)	$ (161,113)	$ (82,368)
Residential Population Growth in New Units	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**
Receipts										
Residential Development Charge Receipts (Inflated)	$ 69,946	$ 71,345	$ 72,772	$ 74,228	$ 75,712	$ 77,226	$ 78,771	$ 80,346	$ 81,953	$ 83,592
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ -	$ 336,497	$ 478,800	$ -	$ 85,500	$ -	$ -	$ -	$ -	$ -
Inflated	$ -	$ 343,227	$ 498,144	$ -	$ 92,548	$ -	$ -	$ -	$ -	$ -
Interest	$ 5,836	$ 4,313	$ (3,911)	$ (9,647)	$ (8,944)	$ (8,647)	$ (6,917)	$ (5,105)	$ (3,208)	$ (1,223)
Closing Cash Balance	$ 281,264	$ 13,695	$ (415,588)	$ (351,007)	$ (376,787)	$ (308,208)	$ (236,354)	$ (161,113)	$ (82,368)	$ 1

2018 Adjusted Residential Charge Per Capita	**$ 312.05**

Appendix E-3
Table 2
Township of Wellington North
Recreation Services
Cash Analysis and Adjusted Charges

NON-RESIDENTIAL CASH FLOW

Recreation Services	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Opening Cash Balance	$ 10,815	$ 14,803	$ 721	$ (21,873)	$ (18,475)	$ (19,831)	$ (16,222)	$ (12,441)	$ (8,481)	$ (4,336)
Non-Residential Growth in Square Feet	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**
Receipts										
Non-Residential Development Charge Receipts (Inflated)	$ 3,681	$ 3,755	$ 3,830	$ 3,907	$ 3,985	$ 4,064	$ 4,146	$ 4,229	$ 4,313	$ 4,399
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ -	$ 17,710	$ 25,200	$ -	$ 4,500	$ -	$ -	$ -	$ -	$ -
Inflated	$ -	$ 18,065	$ 26,218	$ -	$ 4,871	$ -	$ -	$ -	$ -	$ -
Interest	$ 307	$ 227	$ (206)	$ (508)	$ (471)	$ (455)	$ (364)	$ (269)	$ (169)	$ (64)
Closing Cash Balance	$ 14,803	$ 721	$ (21,873)	$ (18,475)	$ (19,831)	$ (16,222)	$ (12,441)	$ (8,481)	$ (4,336)	$ (1)

2018 Adjusted Non-Residential Charge Per Square Metre	**$ 0.06**

Appendix E-4
Table 1
Township of Wellington North
Fire Protection Services
Cash Analysis and Adjusted Charges

RESIDENTIAL CASH FLOW

Fire Protection Services	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Opening Cash Balance	$ 108,835	$ 125,277	$ 142,404	$ 144,789	$ 162,969	$ 181,895	$ (260,232)	$ (251,287)	$ (241,808)	$ (231,778)
Residential Population Growth in New Units	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**
Receipts										
Residential Development Charge Receipts (Inflated)	$ 13,585	$ 13,856	$ 14,133	$ 14,416	$ 14,704	$ 14,998	$ 15,298	$ 15,604	$ 15,917	$ 16,235
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ -	$ -	$ 14,702	$ -	$ -	$ 414,146	$ -	$ -	$ -	$ -
Inflated	$ -	$ -	$ 15,296	$ -	$ -	$ 457,250	$ -	$ -	$ -	$ -
Interest	$ 2,857	$ 3,270	$ 3,548	$ 3,764	$ 4,221	$ 125	$ (6,353)	$ (6,126)	$ (5,886)	$ (5,632)
Closing Cash Balance	$ 125,277	$ 142,404	$ 144,789	$ 162,969	$ 181,895	$ (260,232)	$ (251,287)	$ (241,808)	$ (231,778)	$ (221,175)

2018 Adjusted Residential Charge Per Capita	**$ 60.60**

RESIDENTIAL CASH FLOW (Continued)

2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
$ (221,175)	$ (209,991)	$ (198,194)	$ (185,761)	$ (172,669)	$ (158,895)	$ (144,415)	$ (129,204)	$ (113,236)	$ (96,485)	$ (78,924)	$ (60,524)	$ (41,257)	$ (21,092)
224	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**
$ 16,547	$ 16,878	$ 17,216	$ 17,560	$ 17,912	$ 18,270	$ 18,635	$ 19,008	$ 19,388	$ 19,776	$ 20,171	$ 20,575	$ 20,986	$ 21,406
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ (5,364)	$ (5,081)	$ (4,783)	$ (4,468)	$ (4,138)	$ (3,790)	$ (3,424)	$ (3,040)	$ (2,637)	$ (2,214)	$ (1,771)	$ (1,307)	$ (822)	$ (313)
$ (209,991)	$ (198,194)	$ (185,761)	$ (172,669)	$ (158,895)	$ (144,415)	$ (129,204)	$ (113,236)	$ (96,485)	$ (78,924)	$ (60,524)	$ (41,257)	$ (21,092)	$ 1

Appendix E-4
Table 2
Township of Wellington North
Fire Protection Services
Cash Analysis and Adjusted Charges

NON-RESIDENTIAL CASH FLOW

Fire Protection Services	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Opening Cash Balance	$ 33,590	$ 39,236	$ 45,121	$ 46,482	$ 52,746	$ 59,268	$ (76,474)	$ (72,972)	$ (69,274)	$ (65,373)
Non-Residential Growth in Square Feet	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**
Receipts										
Non-Residential Development Charge Receipts (Inflated)	$ 4,760	$ 4,855	$ 4,952	$ 5,051	$ 5,152	$ 5,255	$ 5,360	$ 5,467	$ 5,577	$ 5,688
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ -	$ -	$ 4,538	$ -	$ -	$ 127,816	$ -	$ -	$ -	$ -
Inflated	$ -	$ -	$ 4,721	$ -	$ -	$ 141,120	$ -	$ -	$ -	$ -
Interest	$ 887	$ 1,029	$ 1,130	$ 1,213	$ 1,370	$ 123	$ (1,858)	$ (1,770)	$ (1,676)	$ (1,577)
Closing Cash Balance	$ 39,236	$ 45,121	$ 46,482	$ 52,746	$ 59,268	$ (76,474)	$ (72,972)	$ (69,274)	$ (65,373)	$ (61,262)

2018 Adjusted Non-Residential Charge Per Square Metre	**$ 0.08**

NON-RESIDENTIAL CASH FLOW (Continued)

2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
$ (61,262)	$ (58,164)	$ (54,896)	$ (51,452)	$ (47,826)	$ (44,011)	$ (40,000)	$ (35,787)	$ (31,364)	$ (26,724)	$ (21,860)	$ (16,763)	$ (11,426)	$ (5,841)
49,500	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**
$ 4,583	$ 4,675	$ 4,769	$ 4,864	$ 4,961	$ 5,060	$ 5,162	$ 5,265	$ 5,370	$ 5,478	$ 5,587	$ 5,699	$ 5,813	$ 5,929
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ (1,486)	$ (1,407)	$ (1,325)	$ (1,238)	$ (1,146)	$ (1,050)	$ (948)	$ (842)	$ (730)	$ (613)	$ (491)	$ (362)	$ (228)	$ (87)
$ (58,164)	$ (54,896)	$ (51,452)	$ (47,826)	$ (44,011)	$ (40,000)	$ (35,787)	$ (31,364)	$ (26,724)	$ (21,860)	$ (16,763)	$ (11,426)	$ (5,841)	$ 1

Appendix E-5
Table 1
Township of Wellington North
Roads and Related
Cash Analysis and Adjusted Charges

RESIDENTIAL CASH FLOW

Roads and Related	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Opening Cash Balance	$ 472,771	$ 133,419	$ 246,022	$ (53,727)	$ 58,612	$ (1,137,099)	$ (1,068,555)	$ (1,312,341)	$ (1,470,852)	$ (1,382,109)
Residential Population Growth in New Units	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**
Receipts										
Residential Development Charge Receipts (Inflated)	$ 106,065	$ 108,186	$ 110,350	$ 112,557	$ 114,808	$ 117,104	$ 119,446	$ 121,835	$ 124,272	$ 126,757
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 453,760	$ -	$ 397,174	$ -	$ 1,201,120	$ 19,104	$ 296,911	$ 214,413	$ -	$ 363,072
Inflated	$ 453,760	$ -	$ 413,220	$ -	$ 1,300,131	$ 21,092	$ 334,370	$ 246,293	$ -	$ 433,905
Interest	$ 8,342	$ 4,417	$ 3,122	$ (218)	$ (10,388)	$ (27,467)	$ (28,863)	$ (34,053)	$ (35,529)	$ (37,624)
Closing Cash Balance	$ 133,419	$ 246,022	$ (53,727)	$ 58,612	$ (1,137,099)	$ (1,068,555)	$ (1,312,341)	$ (1,470,852)	$ (1,382,109)	$ (1,726,881)

2018 Adjusted Residential Charge Per Capita	**$ 473.18**

RESIDENTIAL CASH FLOW (Continued)

2028	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
$ (1,726,881)	$ (1,639,563)	$ (1,547,452)	$ (1,450,376)	$ (1,348,158)	$ (1,240,615)	$ (1,127,559)	$ (1,008,795)	$ (884,123)	$ (753,336)	$ (616,222)	$ (472,561)	$ (322,127)	$ (164,687)
224	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**	**224**
$ 129,198	$ 131,782	$ 134,418	$ 137,106	$ 139,848	$ 142,645	$ 145,498	$ 148,408	$ 151,376	$ 154,404	$ 157,492	$ 160,642	$ 163,854	$ 167,131
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ (41,880)	$ (39,671)	$ (37,342)	$ (34,888)	$ (32,305)	$ (29,589)	$ (26,734)	$ (23,736)	$ (20,589)	$ (17,289)	$ (13,831)	$ (10,208)	$ (6,415)	$ (2,446)
$ (1,639,563)	$ (1,547,452)	$ (1,450,376)	$ (1,348,158)	$ (1,240,615)	$ (1,127,559)	$ (1,008,795)	$ (884,123)	$ (753,336)	$ (616,222)	$ (472,561)	$ (322,127)	$ (164,687)	$ (1)

Appendix E-5
Table 2
Township of Wellington North
Roads and Related
Cash Analysis and Adjusted Charges

NON-RESIDENTIAL CASH FLOW

Roads and Related	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Opening Cash Balance	$ 145,910	$ 45,648	$ 85,074	$ (2,555)	$ 37,212	$ (326,497)	$ (299,794)	$ (369,247)	$ (412,137)	$ (378,463)
Non-Residential Growth in Square Feet	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**	**62,660**
Receipts										
Non-Residential Development Charge Receipts (Inflated)	$ 37,162	$ 37,905	$ 38,663	$ 39,437	$ 40,225	$ 41,030	$ 41,850	$ 42,688	$ 43,541	$ 44,412
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 140,042	$ -	$ 122,579	$ -	$ 370,697	$ 5,896	$ 91,634	$ 66,173	$ -	$ 112,054
Inflated	$ 140,042	$ -	$ 127,531	$ -	$ 401,255	$ 6,510	$ 103,195	$ 76,012	$ -	$ 133,915
Interest	$ 2,619	$ 1,520	$ 1,238	$ 330	$ (2,680)	$ (7,817)	$ (8,108)	$ (9,564)	$ (9,868)	$ (10,357)
Closing Cash Balance	$ 45,648	$ 85,074	$ (2,555)	$ 37,212	$ (326,497)	$ (299,794)	$ (369,247)	$ (412,137)	$ (378,463)	$ (478,323)

2018 Adjusted Non-Residential Charge Per Square Metre	**$ 0.59**

NON-RESIDENTIAL CASH FLOW (Continued)

2028	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
$ (478,323)	$ (454,137)	$ (428,623)	$ (401,734)	$ (373,421)	$ (343,633)	$ (312,318)	$ (279,422)	$ (244,889)	$ (208,663)	$ (170,684)	$ (130,892)	$ (89,224)	$ (45,615)
49,500	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**	**49,500**
$ 35,786	$ 36,502	$ 37,232	$ 37,977	$ 38,736	$ 39,511	$ 40,301	$ 41,107	$ 41,929	$ 42,768	$ 43,623	$ 44,496	$ 45,386	$ 46,293
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ (11,600)	$ (10,988)	$ (10,343)	$ (9,664)	$ (8,948)	$ (8,196)	$ (7,405)	$ (6,574)	$ (5,703)	$ (4,789)	$ (3,831)	$ (2,827)	$ (1,777)	$ (677)
$ (454,137)	$ (428,623)	$ (401,734)	$ (373,421)	$ (343,633)	$ (312,318)	$ (279,422)	$ (244,889)	$ (208,663)	$ (170,684)	$ (130,892)	$ (89,224)	$ (45,615)	$ 1

Appendix E-6
Table 1
Township of Wellington North
Water Services
Cash Analysis and Adjusted Charges

RESIDENTIAL CASH FLOW

Water Services	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Opening Cash Balance	$ 342,295	$ 337,302	$ 626,981	$ 627,354	$ (1,418,029)	$ (3,119,298)	$ (3,015,244)	$ (2,928,503)	$ (4,216,804)	$ (4,312,847)
Residential Population Growth in New Units	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**
Receipts										
Residential Development Charge Receipts (Inflated)	$ 273,003	$ 278,463	$ 284,032	$ 289,712	$ 295,507	$ 301,417	$ 307,445	$ 313,594	$ 319,866	$ 326,263
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 286,419	$ -	$ 287,565	$ 2,195,963	$ 1,796,724	$ 109,759	$ 130,468	$ 1,320,337	$ 265,078	$ 295,727
Inflated	$ 286,419	$ -	$ 299,182	$ 2,330,373	$ 1,944,832	$ 121,182	$ 146,928	$ 1,516,652	$ 310,581	$ 353,422
Interest										
Interest on Changes in Balance	$ (134)	$ 2,785	$ (152)	$ (20,407)	$ (16,493)	$ 1,802	$ 1,605	$ (12,031)	$ 93	$ (272)
Interest on Opening Balance	$ 8,557	$ 8,433	$ 15,675	$ 15,684	$ (35,451)	$ (77,982)	$ (75,381)	$ (73,213)	$ (105,420)	$ (107,821)
Interest	$ 8,423	$ 11,217	$ 15,523	$ (4,723)	$ (51,944)	$ (76,180)	$ (73,776)	$ (85,243)	$ (105,327)	$ (108,093)
Closing Cash Balance	$ 337,302	$ 626,981	$ 627,354	$ (1,418,029)	$ (3,119,298)	$ (3,015,244)	$ (2,928,503)	$ (4,216,804)	$ (4,312,847)	$ (4,448,098)

2018 Adjusted Residential Charge Per Capita	**$ 1,300.01**

RESIDENTIAL CASH FLOW (Continued)

2028	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
$ (4,448,098)	$ (4,223,184)	$ (3,985,925)	$ (3,735,878)	$ (3,472,585)	$ (3,195,576)	$ (2,904,366)	$ (2,598,453)	$ (2,277,322)	$ (1,940,441)	$ (1,587,262)	$ (1,217,219)	$ (829,731)	$ (424,197)
210	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**
$ 332,789	$ 339,444	$ 346,233	$ 353,158	$ 360,221	$ 367,425	$ 374,774	$ 382,269	$ 389,915	$ 397,713	$ 405,667	$ 413,781	$ 422,056	$ 430,498
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 3,328	$ 3,394	$ 3,462	$ 3,532	$ 3,602	$ 3,674	$ 3,748	$ 3,823	$ 3,899	$ 3,977	$ 4,057	$ 4,138	$ 4,221	$ 4,305
$ (111,202)	$ (105,580)	$ (99,648)	$ (93,397)	$ (86,815)	$ (79,889)	$ (72,609)	$ (64,961)	$ (56,933)	$ (48,511)	$ (39,682)	$ (30,430)	$ (20,743)	$ (10,605)
$ (107,875)	$ (102,185)	$ (96,186)	$ (89,865)	$ (83,212)	$ (76,215)	$ (68,861)	$ (61,139)	$ (53,034)	$ (44,534)	$ (35,625)	$ (26,293)	$ (16,523)	$ (6,300)
$ (4,223,184)	$ (3,985,925)	$ (3,735,878)	$ (3,472,585)	$ (3,195,576)	$ (2,904,366)	$ (2,598,453)	$ (2,277,322)	$ (1,940,441)	$ (1,587,262)	$ (1,217,219)	$ (829,731)	$ (424,197)	$ 1

Appendix E-6
Table 2
Township of Wellington North
Water Services
Cash Analysis and Adjusted Charges

NON-RESIDENTIAL CASH FLOW

Water Services	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Opening Cash Balance	$ 99,391	$ 108,807	$ 204,276	$ 216,245	$ (365,285)	$ (846,355)	$ (802,659)	$ (763,414)	$ (1,122,840)	$ (1,135,457)
Non-Residential Growth in Square Feet	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**
Receipts										
Non-Residential Development Charge Receipts (Inflated)	$ 90,029	$ 91,830	$ 93,667	$ 95,540	$ 97,451	$ 99,400	$ 101,388	$ 103,416	$ 105,484	$ 107,594
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 83,167	$ -	$ 83,499	$ 637,636	$ 521,710	$ 31,870	$ 37,884	$ 383,383	$ 76,970	$ 85,870
Inflated	$ 83,167	$ -	$ 86,873	$ 676,665	$ 564,716	$ 35,187	$ 42,663	$ 440,387	$ 90,183	$ 102,622
Interest										
Interest on Changes in Balance	$ 69	$ 918	$ 68	$ (5,811)	$ (4,673)	$ 642	$ 587	$ (3,370)	$ 153	$ 50
Interest on Opening Balance	$ 2,485	$ 2,720	$ 5,107	$ 5,406	$ (9,132)	$ (21,159)	$ (20,066)	$ (19,085)	$ (28,071)	$ (28,386)
Interest	$ 2,553	$ 3,638	$ 5,175	$ (405)	$ (13,805)	$ (20,517)	$ (19,479)	$ (22,455)	$ (27,918)	$ (28,337)
Closing Cash Balance	$ 108,807	$ 204,276	$ 216,245	$ (365,285)	$ (846,355)	$ (802,659)	$ (763,414)	$ (1,122,840)	$ (1,135,457)	$ (1,158,822)

2018 Adjusted Non-Residential Charge Per Square Metre	**$**	**1.75**

NON-RESIDENTIAL CASH FLOW (Continued)

2028	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
$ (1,158,822)	$ (1,100,227)	$ (1,038,416)	$ (973,273)	$ (904,680)	$ (832,514)	$ (756,648)	$ (676,951)	$ (593,290)	$ (505,526)	$ (413,516)	$ (317,112)	$ (216,163)	$ (110,513)
40,725	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**
$ 86,698	$ 88,432	$ 90,201	$ 92,005	$ 93,845	$ 95,722	$ 97,636	$ 99,589	$ 101,581	$ 103,612	$ 105,685	$ 107,798	$ 109,954	$ 112,153
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 867	$ 884	$ 902	$ 920	$ 938	$ 957	$ 976	$ 996	$ 1,016	$ 1,036	$ 1,057	$ 1,078	$ 1,100	$ 1,122
$ (28,971)	$ (27,506)	$ (25,960)	$ (24,332)	$ (22,617)	$ (20,813)	$ (18,916)	$ (16,924)	$ (14,832)	$ (12,638)	$ (10,338)	$ (7,928)	$ (5,404)	$ (2,763)
$ (28,104)	$ (26,621)	$ (25,058)	$ (23,412)	$ (21,679)	$ (19,856)	$ (17,940)	$ (15,928)	$ (13,816)	$ (11,602)	$ (9,281)	$ (6,850)	$ (4,305)	$ (1,641)
$ (1,100,227)	$ (1,038,416)	$ (973,273)	$ (904,680)	$ (832,514)	$ (756,648)	$ (676,951)	$ (593,290)	$ (505,526)	$ (413,516)	$ (317,112)	$ (216,163)	$ (110,513)	$ (1)

Appendix E-7
Table 1
Township of Wellington North
Wastewater Services
Cash Analysis and Adjusted Charges

RESIDENTIAL CASH FLOW

Wastewater Services	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
								0		
Opening Cash Balance	$ 1,319,207	$ 1,797,367	$ (3,011,700)	$ (3,892,595)	$ (4,550,963)	$ (4,952,070)	$ (4,984,596)	$ (4,598,335)	$ (5,536,614)	$ (5,648,354)
Residential Population Growth in New Units	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**
Receipts										
Residential Development Charge Receipts (Inflated)	$ 735,767	$ 750,482	$ 765,492	$ 780,802	$ 796,418	$ 812,346	$ 828,593	$ 845,165	$ 862,068	$ 879,310
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 294,995	$ 5,447,474	$ 1,502,421	$ 1,259,226	$ 998,590	$ 653,914	$ 286,615	$ 1,445,421	$ 713,225	$ 212,988
Inflated	$ 294,995	$ 5,556,424	$ 1,563,119	$ 1,336,300	$ 1,080,906	$ 721,974	$ 322,775	$ 1,660,334	$ 835,657	$ 254,541
Interest										
Interest on Changes in Balance	$ 4,408	$ (48,059)	$ (7,976)	$ (5,555)	$ (2,845)	$ 904	$ 5,058	$ (8,152)	$ 264	$ 6,248
Interest on Opening Balance	$ 32,980	$ 44,934	$ (75,292)	$ (97,315)	$ (113,774)	$ (123,802)	$ (124,615)	$ (114,958)	$ (138,415)	$ (141,209)
Interest	$ 37,388	$ (3,125)	$ (83,269)	$ (102,870)	$ (116,619)	$ (122,898)	$ (119,557)	$ (123,110)	$ (138,151)	$ (134,961)
Closing Cash Balance	$ 1,797,367	$ (3,011,700)	$ (3,892,595)	$ (4,550,963)	$ (4,952,070)	$ (4,984,596)	$ (4,598,335)	$ (5,536,614)	$ (5,648,354)	$ (5,158,546)

2018 Adjusted Residential Charge Per Capita	**$ 3,503.65**

RESIDENTIAL CASH FLOW (Continued)

2028	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
$ (5,158,546)	$ (4,381,645)	$ (3,567,204)	$ (2,713,922)	$ (9,358,936)	$ (8,612,372)	$ (7,827,533)	$ (7,003,070)	$ (6,137,593)	$ (5,229,668)	$ (4,277,817)	$ (3,280,518)	$ (2,236,202)	$ (1,143,251)
210	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**	**210**
$ 896,896	$ 914,834	$ 933,131	$ 951,793	$ 970,829	$ 990,246	$ 1,010,051	$ 1,030,252	$ 1,050,857	$ 1,071,874	$ 1,093,311	$ 1,115,177	$ 1,137,481	$ 1,160,231
$ -	$ -	$ -	$ 5,769,790	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ 7,463,839	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 8,969	$ 9,148	$ 9,331	$ (65,120)	$ 9,708	$ 9,902	$ 10,101	$ 10,303	$ 10,509	$ 10,719	$ 10,933	$ 11,152	$ 11,375	$ 11,602
$ (128,964)	$ (109,541)	$ (89,180)	$ (67,848)	$ (233,973)	$ (215,309)	$ (195,688)	$ (175,077)	$ (153,440)	$ (130,742)	$ (106,945)	$ (82,013)	$ (55,905)	$ (28,581)
$ (119,995)	$ (100,393)	$ (79,849)	$ (132,969)	$ (224,265)	$ (205,407)	$ (185,588)	$ (164,774)	$ (142,931)	$ (120,023)	$ (96,012)	$ (70,861)	$ (44,530)	$ (16,979)
$ (4,381,645)	$ (3,567,204)	$ (2,713,922)	$ (9,358,936)	$ (8,612,372)	$ (7,827,533)	$ (7,003,070)	$ (6,137,593)	$ (5,229,668)	$ (4,277,817)	$ (3,280,518)	$ (2,236,202)	$ (1,143,251)	$ 1

Appendix E-7
Table 2
Township of Wellington North
Wastewater Services
Cash Analysis and Adjusted Charges

NON-RESIDENTIAL CASH FLOW

Wastewater Services	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Opening Cash Balance	$ 383,055	$ 551,182	$ (814,612)	$ (1,038,430)	$ (1,196,225)	$ (1,277,864)	$ (1,250,974)	$ (1,100,927)	$ (1,333,876)	$ (1,325,166)
Non-Residential Growth in Square Feet	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**	**51,551**
Receipts										
Non-Residential Development Charge Receipts (Inflated)	$ 242,638	$ 247,491	$ 252,440	$ 257,489	$ 262,639	$ 267,892	$ 273,250	$ 278,715	$ 284,289	$ 289,975
Disbursements										
2018-2027 Development Charge Disbursements										
Uninflated	$ 85,657	$ 1,581,770	$ 436,254	$ 365,638	$ 289,958	$ 189,876	$ 83,224	$ 419,703	$ 207,098	$ 61,845
Inflated	$ 85,657	$ 1,613,405	$ 453,879	$ 388,018	$ 313,860	$ 209,638	$ 93,723	$ 482,107	$ 242,648	$ 73,910
Interest										
Interest on Changes in Balance	$ 1,570	$ (13,659)	$ (2,014)	$ (1,305)	$ (512)	$ 583	$ 1,795	$ (2,034)	$ 416	$ 2,161
Interest on Opening Balance	$ 9,576	$ 13,780	$ (20,365)	$ (25,961)	$ (29,906)	$ (31,947)	$ (31,274)	$ (27,523)	$ (33,347)	$ (33,129)
Interest	$ 11,146	$ 120	$ (22,380)	$ (27,266)	$ (30,418)	$ (31,364)	$ (29,479)	$ (29,557)	$ (32,931)	$ (30,969)
Closing Cash Balance	$ 551,182	$ (814,612)	$ (1,038,430)	$ (1,196,225)	$ (1,277,864)	$ (1,250,974)	$ (1,100,927)	$ (1,333,876)	$ (1,325,166)	$ (1,140,070)
2018 Adjusted Non-Residential Charge Per Square Metre	**$ 4.71**	$ -								

NON-RESIDENTIAL CASH FLOW (Continued)

2028	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**
$ (1,140,070)	$ (932,575)	$ (715,173)	$ (487,521)	$ (2,438,197)	$ (2,243,702)	$ (2,039,235)	$ (1,824,445)	$ (1,598,970)	$ (1,362,437)	$ (1,114,460)	$ (854,643)	$ (582,577)	$ (297,841)
40,725	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**	**40,725**
$ 233,660	$ 238,333	$ 243,100	$ 247,962	$ 252,921	$ 257,979	$ 263,139	$ 268,402	$ 273,770	$ 279,245	$ 284,830	$ 290,527	$ 296,337	$ 302,264
$ -	$ -	$ -	$ 1,675,360	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ 2,167,256	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 2,337	$ 2,383	$ 2,431	$ (19,193)	$ 2,529	$ 2,580	$ 2,631	$ 2,684	$ 2,738	$ 2,792	$ 2,848	$ 2,905	$ 2,963	$ 3,023
$ (28,502)	$ (23,314)	$ (17,879)	$ (12,188)	$ (60,955)	$ (56,093)	$ (50,981)	$ (45,611)	$ (39,974)	$ (34,061)	$ (27,862)	$ (21,366)	$ (14,564)	$ (7,446)
$ (26,165)	$ (20,931)	$ (15,448)	$ (31,381)	$ (58,426)	$ (53,513)	$ (48,349)	$ (42,927)	$ (37,237)	$ (31,268)	$ (25,013)	$ (18,461)	$ (11,601)	$ (4,423)
$ (932,575)	$ (715,173)	$ (487,521)	$ (2,438,197)	$ (2,243,702)	$ (2,039,235)	$ (1,824,445)	$ (1,598,970)	$ (1,362,437)	$ (1,114,460)	$ (854,643)	$ (582,577)	$ (297,841)	$ -

Appendix F

OPERATING, CAPITAL & ASSET MANAGEMENT COST IMPLICATIONS

Appendix F
Table 1
Township of Wellington North
Long-Term Operating Cost Impacts

Cummulative Net Operating Impacts Service	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
Administration - Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Parks Services	$ 2,797	$ 6,104	$ 8,706	$ 8,706	$ 12,478	$ 17,226	$ 20,478	$ 21,128	$ 22,429	$ 26,332	$ 146,384
Recreation Services	$ -	$ -	$ 52,031	$ 52,031	$ 61,323	$ 61,323	$ 61,323	$ 61,323	$ 61,323	$ 61,323	$ 471,998
Fire Protection Services	$ -	$ -	$ 3,109	$ 3,109	$ 3,109	$ 103,289	$ 103,289	$ 103,289	$ 103,289	$ 103,289	$ 525,771
Roads and Related	$ 12,283	$ 12,283	$ 23,034	$ 23,034	$ 55,546	$ 56,063	$ 64,100	$ 69,904	$ 69,904	$ 79,732	$ 465,881
Water Servcies	$ 10,867	$ 10,867	$ 21,629	$ 103,812	$ 171,054	$ 175,162	$ 180,044	$ 229,458	$ 239,378	$ 250,446	$ 1,392,715
Wastewater Services	$ 25,366	$ 468,195	$ 597,385	$ 610,740	$ 696,607	$ 752,835	$ 777,480	$ 901,769	$ 963,097	$ 981,411	$ 6,774,886
Total Cummulative Net Operating Impacts	**$ 51,312**	**$ 497,449**	**$ 705,893**	**$ 801,432**	**$ 1,000,116**	**$ 1,165,897**	**$ 1,206,714**	**$ 1,386,870**	**$ 1,459,419**	**$ 1,502,531**	**$ 9,777,634**

Appendix F
Table 2
Township of Wellington North
Long-Term Capital Cost Implications

Cummulative Net Capital Cost Impacts Service	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
Administration - Studies	$ 3,000					$ 3,500					$ 6,500
Parks Services	$ 187,910	$ 37,960	$ 174,800		$ 253,460	$ 319,010	$ 218,500	$ 43,700	$ 87,400	$ 262,200	$ 1,584,940
Recreation Services		$ 1,796,413	$ 2,296,000		$ 10,000						$ 4,102,413
Fire Protection Services											$ -
Roads and Related	$ 300,349		$ 519,753		$ 750,902		$ 388,545	$ 120,251		$ 203,625	$ 2,283,425
Water Servcies	$ 582,608		$ 78,859	$ 69,479	$ 1,716,626	$ 141,629	$ 168,352	$ 730,166		$ 163,542	$ 3,651,260
Wastewater Services	$ 537,464	$ 1,799,135	$ 82,295	$ 556,530	$ 77,700	$ 149,218	$ 369,839	$ 359,257		$ 30,537	$ 3,961,975
Total Capital Cost Impacts	**$ 1,611,331**	**$ 3,633,508**	**$ 3,151,706**	**$ 626,008**	**$ 2,808,688**	**$ 613,358**	**$ 1,145,236**	**$ 1,253,374**	**$ 87,400**	**$ 659,904**	**$ 15,590,514**

Appendix F
Table 3
Township of Wellington North
Asset Management Plan - Annual Lifecycle Cost Implications

Cummulative Lefecycle Impacts Service	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
Administrative Services- Studies	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Park Services	$ 11,012	$ 18,884	$ 29,542	$ 29,542	$ 50,092	$ 70,734	$ 85,154	$ 88,096	$ 87,793	$ 106,157	**$ 577,007**
Recreation Services	$ -	$ -	$ 92,705	$ 92,705	$ 96,149	$ 96,149	$ 96,149	$ 96,149	$ 96,149	$ 96,149	**$ 762,307**
Fire Protection Services	$ -	$ -	$ -	$ -	$ -	$ 21,783	$ 21,783	$ 21,783	$ 21,783	$ 21,783	**$ 108,913**
Roads and Related	$ 178,041	$ 178,041	$ 244,182	$ 244,182	$ 397,942	$ 397,942	$ 451,462	$ 479,621	$ 479,621	$ 529,229	**$ 3,580,262**
Water Services	$ 26,999	$ 26,999	$ 45,698	$ 141,345	$ 272,439	$ 281,436	$ 292,344	$ 379,266	$ 390,795	$ 405,098	**$ 2,262,417**
Sewer Services	$ 24,937	$ 278,707	$ 339,195	$ 351,432	$ 393,976	$ 425,516	$ 449,480	$ 522,986	$ 554,006	$ 564,505	**$ 3,904,741**
Total	**$ 240,990**	**$ 502,631**	**$ 751,322**	**$ 859,206**	**$ 1,210,598**	**$ 1,293,559**	**$ 1,396,372**	**$ 1,587,900**	**$ 1,630,147**	**$ 1,722,921**	**$ 11,195,647**

Appendix G

DEVELOPMENT CHARGES BY-LAW

THE CORPORATION OF THE TOWNSHIP OF WELLINGTON NORTH

BY-LAW NUMBER XX-18

A BY-LAW FOR THE IMPOSITION OF DEVELOPMENT CHARGES

WHEREAS the Township of Wellington North will experience growth through development and re-development;

AND WHEREAS development and re-development requires the provision of physical and social services by the Township of Wellington North;

AND WHEREAS Council desires to ensure that the capital cost of meeting growth-related demands for, or burden on, municipal services does not place an excessive financial burden on the Township of Wellington North or its existing taxpayers while at the same time ensuring new taxpayers contribute no more than the net capital cost attributable to providing the current level of municipal services;

AND WHEREAS the *Development Charges Act, 1997* (the "Act") provides that the Council of a municipality may by by-law impose development charges against land to pay for increased capital costs required because of increased needs for services;

AND WHEREAS a development charge background study has been completed in accordance with the Act;

AND WHEREAS the Council of The Corporation of the Township of Wellington North has given notice of and held a public meeting on Thursday the 14th of June, 2018 in accordance with the Act and the regulations thereto;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWNSHIP OF WELLINGTON NORTH ENACTS AS FOLLOWS:

1. INTERPRETATION

1.1 In this By-law the following items shall have the corresponding meanings:

"Act" means the *Development Charges Act, 1997,* as amended, or any successor thereof;

"Accessory" when used to describe a building or structure, means a use, building or structure which is incidental, subordinate, and exclusively devoted to the main use, building, or structure located on the same lot;

“Agricultural Use” means use or intended use for a bona fide farming operation;

“Apartment Unit” means any residential unit within a building containing more than four dwelling units where the units are connected by an interior corridor;

“Bedroom” means a habitable room which can be used as sleeping quarters, but does not include a bathroom, living room, dining room or kitchen;

“Board of Education” has the same meaning as set out in the *Education Act*, R.S.O. 1990, Chap. E.2, as amended, or any successor thereof;

“Bona Fide Farming Operation” means the proposed development will qualify as a farm business, and shall include new farming operations and farm operations associated with the Mennonite community;

“Building Code Act” means the *Building Code Act*, S.O. 1992, as amended, or any successor thereof;

“Capital Cost” means costs incurred or proposed to be incurred by the municipality or a local board thereof directly or by others on behalf of and as authorized by the municipality or local board,

(a) to acquire land or an interest in land, including a leasehold interest,
(b) to improve land,
(c) to acquire, lease, construct or improve buildings and structures,
(d) to acquire, construct or improve facilities including,
    (i) furniture and equipment other than computer equipment, and
    (ii) material acquired for circulation, reference or information purposes by a library board as defined in the *Public Libraries Act*, R.S.O. 1990, Chap. P.44, as amended, or any successor thereof; and
    (iii) rolling stock with an estimated useful life of seven years or more, and
(e) to undertake studies in connection with any matter under the Act and any of the matters in clauses (a) to (d) above, including the development charge background study required for the provision of services designated in this By-law within or outside the municipality, including interest on borrowing for those expenditures under clauses (a) to (e) above that are growth-related;

“Commercial” means any use of land, structures or buildings for the purposes of buying or selling commodities and services, but does not include industrial or agricultural uses, but does include hotels, motels, motor inns and boarding, lodging and rooming houses;

“Council” means the Council of the municipality;

"Development" means the construction, erection or placing of one or more buildings or structures on land or the making of an addition or alteration to a building or structure that the effect of increasing the size of usability thereof, and includes redevelopment;

"Development Charge" means a charge imposed with respect to this By-law;

"Dwelling Unit" means any part of a building or structure used, designed or intended to be used as a domestic establishment in which one or more persons may sleep and are provided with culinary and sanitary facilities for their exclusive use;

"Existing Industrial Building" means a building or buildings existing on a site as of June 17, 2013, or the first building or buildings constructed on a vacant site pursuant to site plan approval, under Section 41 of the Planning Act, subsequent June 17, 2013, that is used for or in conjunction with:

a) the production, compounding, processing, packaging, crating, bottling, packing or assembly of raw or semi-processed goods or materials in not less than seventy five percent of the total gross floor area of the building or buildings on a site ("manufacturing") or warehousing related to the manufacturing use carried on in the building or buildings;
b) research or development activities in connection with manufacturing in not less than seventy five percent of the total gross floor area of the building or building on the site;
c) retail sales by a manufacturer, if retail sales are at the site where manufacturing is carried out; such retail sales are restricted to goods manufactured at the site, and the building or part of a building where such retail sales are carried out does not constitute greater than twenty five percent of the total gross floor area of the building or buildings on the site; or
d) office or administration purposes if they are:
    i. carried out as an accessory use to the manufacturing or warehousing, and
    ii. in or attached to the building or structure used for such manufacturing or warehousing.

"Existing" means the number, use and size that existed as of June 17, 2013, or the date of the first building or buildings constructed on a vacant site pursuant to site plan approval, under Section 41 of the Planning Act, subsequent June 17, 2013.

"Gross Floor Area" means:

(a) in the case of a residential building or structure, the total area of all floors above grade of a dwelling unit measured between the outside surfaces of

exterior walls or between the outside surfaces of exterior walls and the centre line of party walls dividing the dwelling unit from any other dwelling unit or other portion of a building; and

(b) in the case of a non-residential building or structure, or in the case of a mixed-use building or structure in respect of the non-residential portion thereof, the total area of all building floors above or below grade measured between the outside surfaces of the exterior walls, or between the outside surfaces of exterior walls and the centre line of party walls dividing a non-residential use and a residential use, except for:

(i) a room or enclosed area within the building or structure above or below that is used exclusively for the accommodation of heating, cooling, ventilating, electrical, mechanical or telecommunications equipment that service the building;
(ii) loading facilities above or below grade; and
(iii) a part of the building or structure below grade that is used for the parking of motor vehicles or for storage or other accessory use;

"Industrial" means lands, buildings or structures used or designed or intended for use for manufacturing, processing, fabricating or assembly of raw goods, and includes office uses and the sale of commodities to the general public where such uses are accessory to an industrial use, but does not include warehousing or bulk storage of goods;

“Institutional” means land, buildings, structures or any part thereof used by any organization, group or association for promotion of charitable, educational or benevolent objectives and not for profit or gain;

“Local Board” means a school board, public utility, commission, transportation commission, public library board, board of park management, local board of health, board of commissioners of police, planning board, or any other board, commission, committee, body or local authority established or exercising any power or authority under any general or special Act with respect to any of the affairs or purposes, including school purposes, of the Township of Wellington North or any part or parts thereof;

“Local Services” means those services, facilities or things which are under the jurisdiction of the municipality and are related to a plan of subdivision or within the area to which the plan relates in respect of the lands under Sections 41, 51 or 53 of the *Planning Act*, R.S.O. 1990, Chap. P.13, as amended, or any successor thereof;

"Mini-storage Facility" means a building containing separate, individual self-storage units divided from floor to ceiling by a wall with an independent entrance from the exterior or public corridor of the building; designed to be rented or leased

on a short-term basis to the general public for private storage of personal goods, materials and equipment;

“Multiple Dwellings” means all dwellings other than single-detached, semi-detached and apartment unit dwellings;

“Municipality” means the Corporation of the Township of Wellington North;

“Non-residential Use” means a building or structure, of any kind whatsoever, used, designed, or intended to be used for other than a residential use;

“Official Plan” means the Official Plan adopted for the Township, as amended and approved;

“Owner” means the owner of land or a person who has made application for an approval for the development of land upon which a development charge is imposed’

“Place of Worship” means that part of a building or structure that is exempt from taxation as a place of worship under the Assessment Act, R.S.O. 1990, Chap. A.31, as amended, or any successor thereof;

“Purpose-Built Rental Housing” means a residential use building or structure that consists of four (4) or more dwelling units that will remain as rental housing for a period of at least 20 years from the date of issuance of a building permit.

“Rate” means the interest rate established weekly by the Bank of Canada based on Treasury Bills having a term of 91 days;

“Regulation” means any regulation made pursuant to the Act;

“Residential Dwelling” means a building, occupied or capable of being occupied as a home, residence or sleeping place by one or more persons, containing one or more Dwelling Units but not including motels, hotels, tents, truck campers, tourist trailers, mobile camper trailers or boarding, lodging or rooming houses;

“Residential Use” means the use of a building or structure or portion thereof for one or more Dwelling Units. This also includes a Dwelling Unit on land that is used for an Agricultural Use;

“Row Dwelling” means a building containing three or more attached dwelling units in a single row, each of which dwelling units has an independent entrance from the outside and is vertically separated from any abutting dwelling unit;

“Semi-detached Dwelling” means a building divided vertically into two dwelling units each of which has a separate entrance and access to grade;

"Service" means a service designed in Schedule "A" to this By-law, and "services" shall have a corresponding meaning;

"Single Detached Dwelling Unit" means a residential building consisting of one dwelling unit and not attached to another structure;

"Township" means the area within the geographic limits of the Township of Wellington North;

"Transport Establishment" means the use of land, buildings, structures or parts thereof, where commercially licensed transport trucks, tractor trailers and buses are rented, leased, loaded or unloaded, serviced or repaired, kept for hire, stored or parked for dispatching as common carriers or where goods are temporarily stored for further shipment;

"Warehouse" means a building or part thereof used for packaging, storage and distribution of goods, wares, merchandise, foodstuff, substances or articles and may include off-season storage but does not include a mini-storage establishment, transport establishment or the sale of commodities to the general public through a warehouse club;

"Wind Turbine" means a part of a wind energy system used for commercial purposes that converts energy into electricity, and consists of one or more wind turbines on a lot with a total name plate capacity of 100 kW or more, a tower and associated control or conversion electronics. A wind turbine and energy system may be connected to the electricity grid in circuits at a substation to provide electricity off-site for sale to an electrical utility or other intermediaries; and

"Zoning By-Law" means the Zoning By-Law of the Township of Wellington North, or any successor thereof passed pursuant to Section 34 of the Planning Act, S.O. 1990.

2. DESIGNATION OF SERVICES

2.1 The categories of services for which development charges are imposed under this By-law are as follows:

(a) Water, if water service is available
(b) Wastewater, if wastewater service is available
(c) Roads and Related;
(d) Fire Protection Services;
(e) Parks;
(f) Recreation; and
(g) Administration;

2.2 The components of the services designated in section 2.1 are described in Schedule A.

3. APPLICATION OF BY-LAW RULES

3.1 Development charges shall be payable in the amounts set out in this By-law where:

(a) the lands are located in the area described in section 3.2; and

(b) the development of the lands requires any of the approvals set out in subsection 3.4(a).

Area to Which By-law Applies

3.2 Subject to section 3.3, this By-law applies to all lands in the Township of Wellington North whether or not the land or use thereof is exempt from taxation under s. 13 or the Assessment Act.

3.3. Notwithstanding clause 3.2 above, this by-law shall not apply to lands that are owned by and used for the purposes of:
(a) the municipality or a local board thereof;
(b) a board of education;
(c) the Corporation of the County of Wellington or a local board thereof; and
(d) North Wellington Healthcare Corporation.

Approvals for Development

3.4 (a) Development charges shall be imposed on all lands, buildings or structures that are developed for residential or non-residential uses if the development requires:

(i) the passing of a zoning by-law or of an amendment to a zoning by-law under section 34 of the *Planning Act*;
(ii) the approval of a minor variance under section 45 of the *Planning Act*;
(iii) a conveyance of land to which a by-law passed under subsection 50(7) of the *Planning Act* applies;
(iv) the approval of a plan of subdivision under section 51 of the *Planning Act*;
(v) a consent under section 53 of the *Planning Act*;
(vi) the approval of a description under section 50 of the *Condominium Act*, R.S.O. 1990, Chap. C.26, as amended, or any successor thereof; or
(vii) the issuing of a permit under the *Building Code Act* in relation to a building or structure.

(b) No more than one development charge for each service designated in subsection 2.1 shall be imposed upon any lands, buildings or structures to which this By-law applies even though two or more of the actions described in subsection 3.4(a) are required before the lands, buildings or structures can be developed.

(c) Despite subsection 3.4(b), if two or more of the actions described in subsection 3.4(a) occur at different times, additional development charges shall be imposed if the subsequent action has the effect of increasing the need for services.

Exemptions

3.5 Notwithstanding the provisions of this By-law, development charges shall not be imposed with respect to:

(a) an enlargement to an existing dwelling unit;
(b) one or two additional dwelling units in an existing single detached dwelling; or
(c) one additional dwelling unit in any other existing residential building;

3.6 Notwithstanding section 3.5(b), development charges shall be imposed if the total gross floor area of the additional one or two units exceeds the gross floor area of the existing dwelling unit.

3.7 Notwithstanding section 3.5, development charges shall be imposed if the additional unit has a gross floor area greater than:

i. in the case of a semi-detached or row dwelling, the gross floor area of the existing dwelling unit; and
ii. in the case of any other residential building, the gross floor area of the smallest dwelling unit contained in the residential building.

3.8 Exemption for Industrial Expansion:

3.8.1 Notwithstanding any other provision of this by-law, if a development includes the enlargement of the gross floor area of an existing industrial building.

1. made pursuant to the Act. there shall be an exemption from the payment of development charges for one or more enlargements of an existing industrial building on its site, whether attached or separate from the existing industrial building, up to a maximum of fifty per cent of the gross floor area before the first enlargement for which an exemption from the payment of development charges was granted pursuant to the Development Charges Act or this subsection. Development charges shall be imposed in accordance with Schedule "B" with respect to the amount of floor area of an

enlargement that results in the gross floor area of the industrial building being increased by greater than fifty per cent of the gross floor area of the existing industrial building; or

2. if the gross floor area is enlarged by more than 50 percent, development charges are payable on the amount by which the enlargement exceeds 50 percent of the gross floor area before the enlargement.

3.9 Other Exemptions:

Notwithstanding the provision of this by-law, development charges shall not be imposed with respect to:

a) Bona fide farm uses used for farming purposes and includes ancillary agricultural uses such as non-residential accessory buildings or structures, storage buildings or structures and driving sheds, but does not include buildings or structures used for residential purposes;
b) A place of worship;
c) A hospital under the *Public Hospitals Act*; and
d) Buildings and structures ancillary to a residential use.

Amount of Charges

3.10 Residential

The development charges set out in Schedule B shall be imposed on residential uses of lands, buildings or structures, including a dwelling unit accessory to a non-residential use and, in the case of a mixed use building or structure, on the residential uses in the mixed use building or structure, according to the type of residential unit, and calculated with respect to each of the services according to the type of residential use.

3.11 Non-Residential

The development charges described in Schedule B to this by-law shall be imposed on non-residential uses of lands, buildings or structures, and, in the case of a mixed use building or structure, on the non-residential uses in the mixed use building or structure, and calculated with respect to each of the services according to the total floor area of the non-residential use.

3.12 Built Boundary

Development charges described in Schedule B to this by-law shall be reduced by 10% on all development occurring on lands within the Built Boundary as highlighted in Schedule C-1 and Schedule C-2.

3.13 Central Intensification Corridor

Development charges described in Schedule B to this by-law shall be reduced by 25% on all development occurring on lands within the Central Intensification Corridor as highlighted in Schedule D-1 and Schedule D-2.

3.14 Purpose-Built Rental Housing

Development that meets the definition of Purpose-Built Rental Housing may be eligible for an additional 25% reduction in development charges as described in Schedule B to this by-law.

3.14 Reduction of Development Charges for Redevelopment

Despite any other provisions of this By-law, where, as a result of the redevelopment of land, a building or structure existing on the same land within 5 years prior to the date of payment of development charges in regard to such redevelopment was, or is to be demolished, in whole or in part, or converted from one principal use to another principal use on the same land, in order to facilitate the redevelopment, the development charges otherwise payable with respect to such redevelopment shall be reduced by the following amounts:

(a) in the case of a residential building or structure, or in the case of a mixed-use building or structure, the residential uses in the mixed-use building or structure, an amount calculated by multiplying the applicable development charge under subsection 3.10 by the number, according to type, of dwelling units that have been or will be demolished or converted to another principal use; and

(b) in the case of a non-residential building or structure or, in the case of mixed-use building or structure, the non-residential uses in the mixed-use building or structure, an amount calculated by multiplying the applicable development charges under subsection 3.11, by the gross floor area that has been or will be demolished or converted to another principal use;

provided that such amounts shall not exceed, in total, the amount of the development charges otherwise payable with respect to the redevelopment.

Time of Payment of Development Charges

3.15 Development charges imposed under this by-law are calculated, payable, and collected upon issuance of a building permit for the development.

3.16 Despite section 3.15, Council from time to time, and at any time, may enter into agreements providing for all or any part of a development charge to be paid before or after it would otherwise be payable, in accordance with section 27 of the Act.

4. PAYMENT BY SERVICES

4.1 Despite the payment required under subsections 3.11 and 3.12, Council may, by agreement, give a credit towards a development charge in exchange for work that relates to a service to which a development charge relates under this By-law.

5. INDEXING

5.1 Development charges imposed pursuant to this By-law may be adjusted annually, without amendment to this By-law, commencing on January 1, 2019 and annually thereafter, in accordance with the Statistics Canada Quarterly, *Construction Price Statistics*, catalogue number 62-007

6. SCHEDULES

6.1 The following schedules shall form part of this By-law:

Schedule A	-	Components of Services Designated in section 2.1
Schedule B	-	Residential and Non-Residential Development Charges Effective June 17, 2018 – June 16, 2023
Schedule C-1	-	Map of Built Boundary – Arthur
Schedule C-2	-	Map of Built Boundary – Mount Forest
Schedule D-1	-	Map of Central Intensification Corridor – Arthur
Schedule D-2	-	Map of Central Intensification Corridor – Mount Forest

7. CONFLICTS

7.1 Where the Township and an owner or former owner have entered into an agreement with respect to land within the area to which this By-law applies, and a conflict exists between the provisions of this By-law and such agreement, the provisions of the agreement shall prevail to the extent that there is a conflict.

7.2 Notwithstanding section 7.1, where a development which is the subject of an agreement to which section 7.1 applies, is subsequently the subject of one or more of the actions described in subsection 3.4(a), an additional development charge in respect of the development permitted by the action shall be calculated, payable

and collected in accordance with the provisions of this By-law if the development has the effect of increasing the need for services, unless such agreement provides otherwise.

8. SEVERABILITY

8.1 If, for any reason, any provision of this By-law is held to be invalid, it is hereby declared to be the intention of Council that all the remainder of this By-law shall continue in full force and effect until repealed, re-enacted, amended or modified.

9. DATE BY-LAW IN FORCE

9.1 This By-law shall come into effect at 12:01 AM on June 17, 2018.

10. DATE BY-LAW EXPIRES

10.1 This By-law will expire five years from the date of passage unless it is repealed by Council at an earlier date.

11. EXISTING BY-LAW REPEALED

11.1 By-law Number 51-13 and any amending by-laws are hereby repealed as of the date and time of this By-law coming into effect.

READ A FIRST, SECOND AND THIRD TIME AND FINALLY PASSED THIS 14TH DAY OF JUNE, 2018.

ANDY LENNOX
MAYOR

KAREN WALLACE
CLERK

SCHEDULE "A" TO BY-LAW NUMBER XX-18

COMPONENTS OF SERVICES DESIGNATED IN SUBSECTION 2.1

100% Eligible Services

Water
- Treatment, Storage and Distribution

Wastewater
- Treatment and Collection

Roads and Related
- Roads, Bridges, Culverts, Sidewalks and Streetlights
- Vehicles and Equipment
- Facilities
- Stormwater Study (Drainage)

Fire Protection
- Fire Facilities
- Fire Vehicles
- Fire Equipment

90% Eligible Services

Administration
- Growth Related Studies

Recreation
- Recreation Facilities

Parks
- Parkland Development,
- Amenities
- Trails
- Vehicles and Equipment

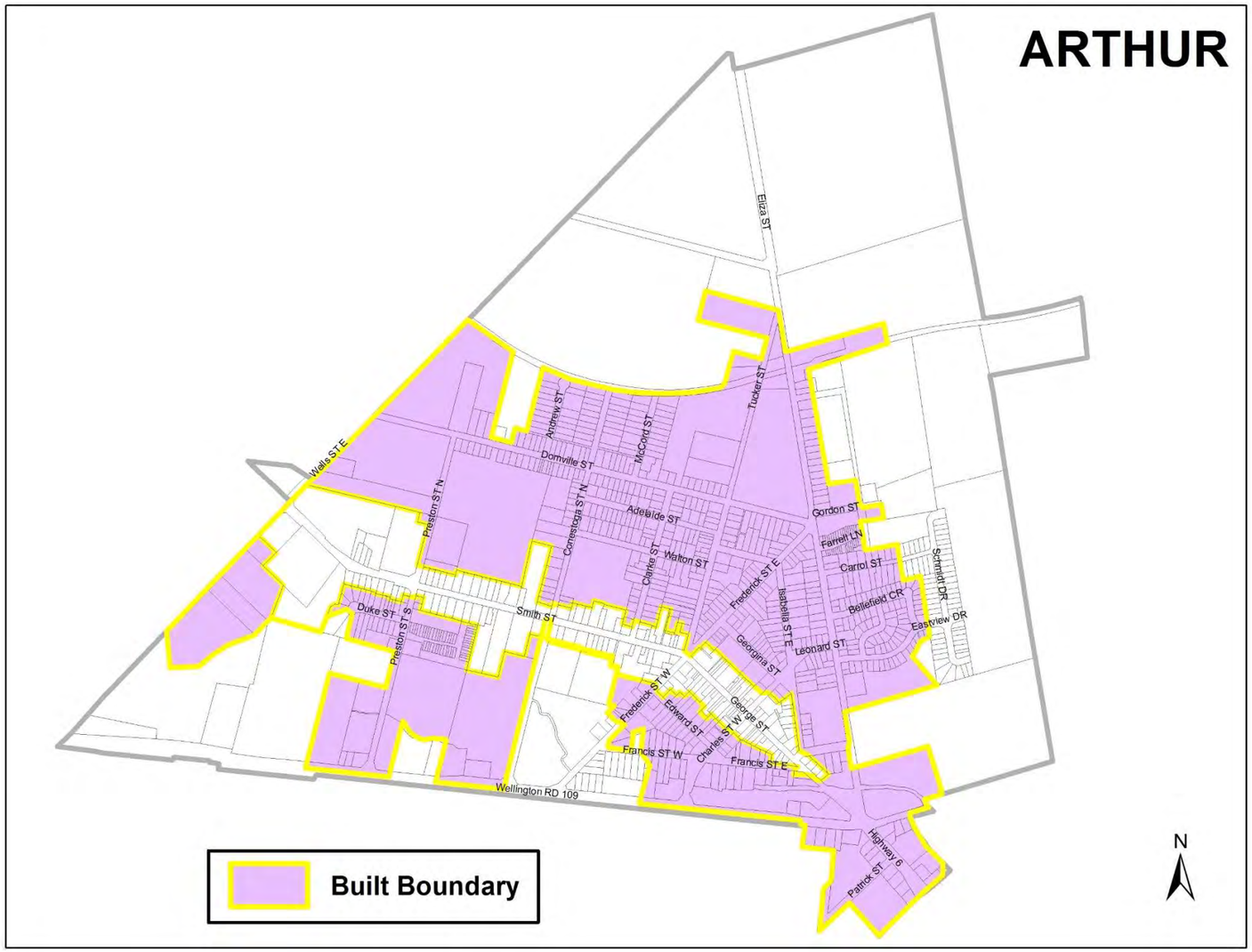
Schedule B

Service	RESIDENTIAL			
	Single/Semi-Detached Dwelling	Apartments - 2 Bedrooms +	Apartments-Bachelor and 1 bedroom	Other Multiples
Municipal Wide Services				
Administration - Studies	$ 61	$ 39	$ 29	$ 48
Parks Services	$ 196	$ 127	$ 93	$ 155
Recreation Services	$ 995	$ 646	$ 471	$ 786
Fire Protection Services	$ 193	$ 125	$ 92	$ 153
Roads and Related	$ 1,509	$ 979	$ 715	$ 715
Total Municipal Wide Services	**$ 2,955**	**$ 1,917**	**$ 1,399**	**$ 1,856**
Urban Services				
Wastewater Services	$ 11,177	$ 7,253	$ 5,291	$ 8,829
Water Services	$ 4,147	$ 2,691	$ 1,963	$ 3,276
Total Urban Services	**$ 15,324**	**$ 9,944**	**$ 7,254**	**$ 12,105**
GRAND TOTAL RURAL AREA	$ 2,955	$ 1,917	$ 1,399	$ 1,856
GRAND TOTAL URBAN AREA	**$ 18,279**	**$ 11,861**	**$ 8,652**	**$ 13,962**

Service	NON-RESIDENTIAL			
	Commercial/ Institutional (per ft^2 of Gross Floor Area)	Industrial		
		Industrial (per ft^2 of Gross Floor Area)	Warehouse (per ft^2 of Gross Floor Area)	Wind Turbine
Municipal Wide Services				
Administration - Studies	$ 0.02	$ 0.01	$ 0.01	$ 61
Parks Services	$ 0.01	$ 0.01	$ 0.00	
Recreation Services	$ 0.06	$ 0.03	$ 0.01	
Fire Protection Services	$ 0.08	$ 0.04	$ 0.02	$ 193
Roads and Related	$ 0.59	$ 0.30	$ 0.15	$ 1,509
Total Municipal Wide Services	**$ 0.76**	**$ 0.38**	**$ 0.19**	**$ 1,764**
Urban Services				
Wastewater Services	$ 4.71	$ 2.35	$ 1.18	
Water Services	$ 1.75	$ 0.87	$ 0.44	
Total Urban Services	**$ 6.45**	**$ 3.23**	**$ 1.61**	**$ -**
GRAND TOTAL RURAL AREA	$ 0.76	$ 0.38	$ 0.19	$ 1,764
GRAND TOTAL URBAN AREA	**$ 7.22**	**$ 3.61**	**$ 1.80**	**$ 1,764**

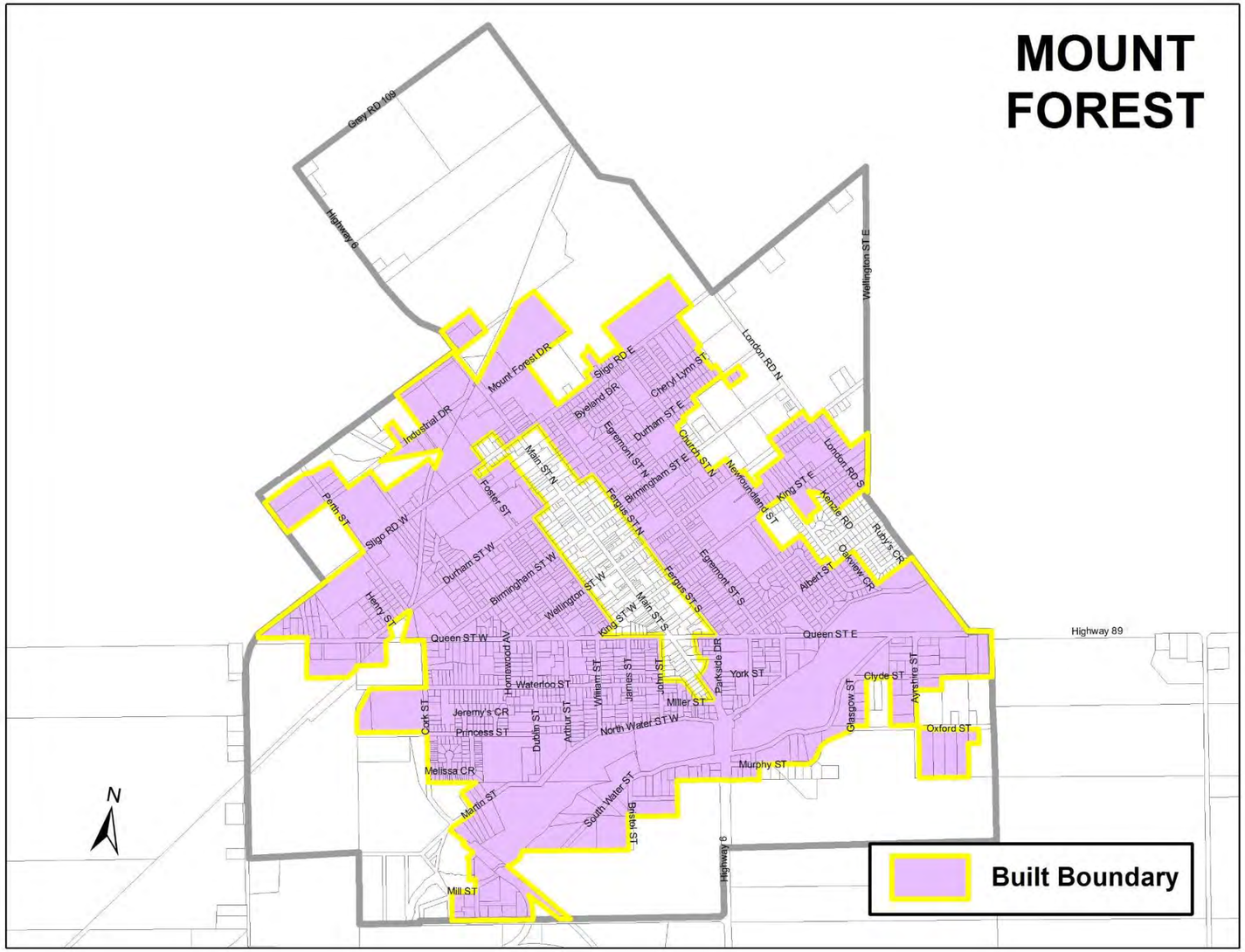
SCHEDULE "C-1" TO BY-LAW NUMBER XX-18

MAP OF BUILT BOUNDARY – ARTHUR



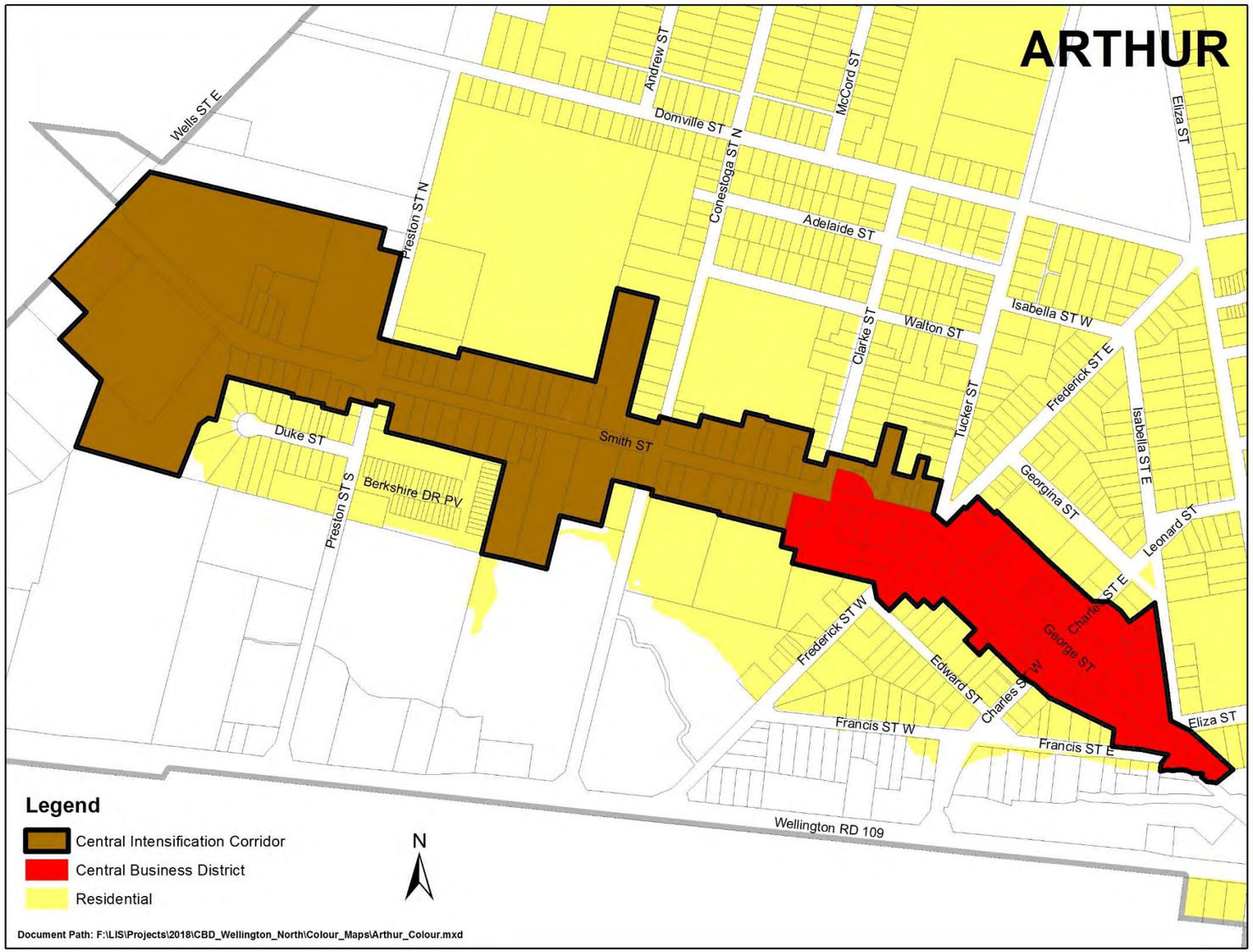
SCHEDULE "C-2" TO BY-LAW NUMBER XX-18

MAP OF BUILT BOUNDARY - MOUNT FOREST



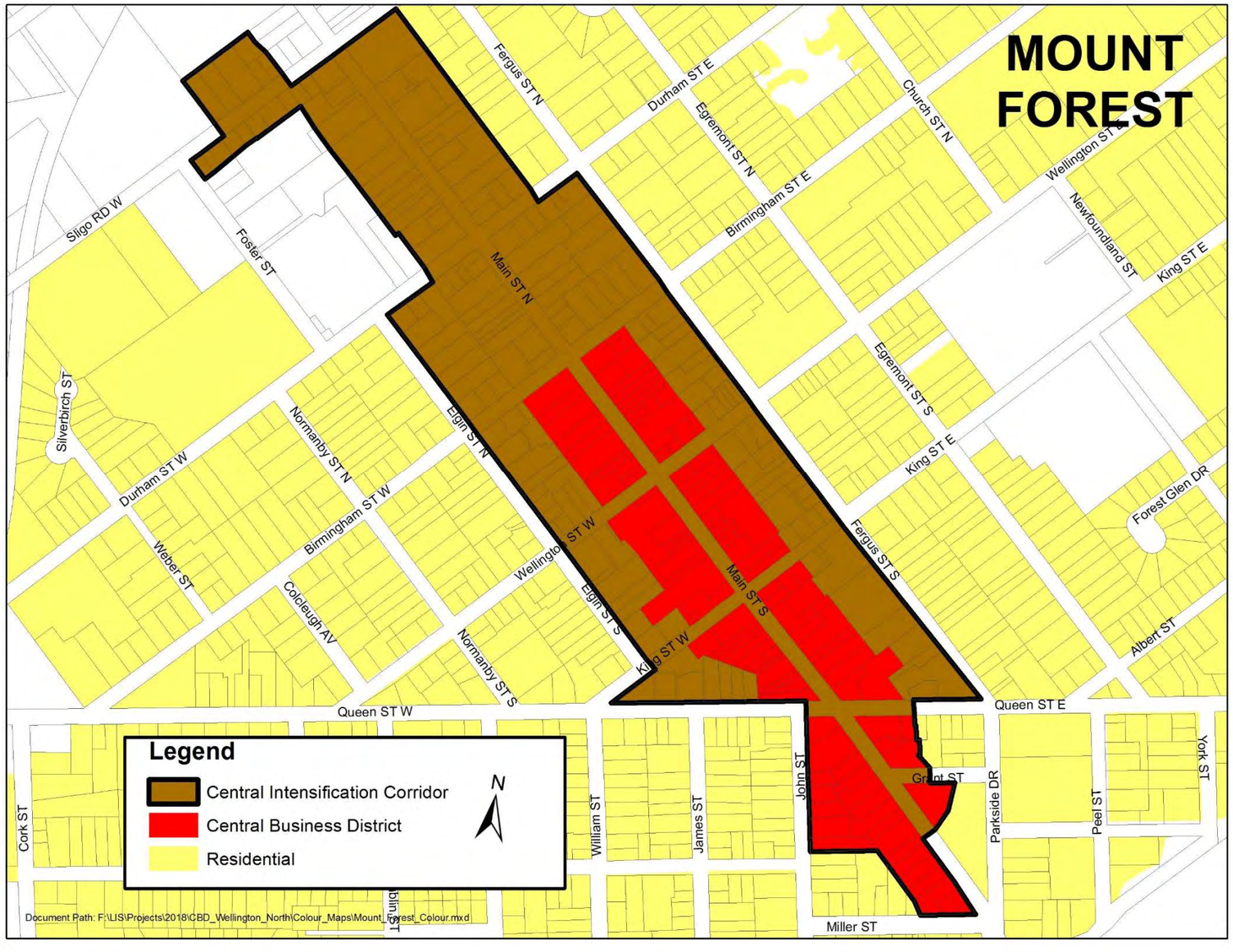
SCHEDULE "D-1" TO BY-LAW NUMBER XX-18

MAP OF CENTRAL INTENSIFICATION CORRIDOR - ARTHUR



SCHEDULE "D-2" TO BY-LAW NUMBER XX-18

MAP OF CENTRAL INTENSIFICATION CORRIDOR - MOUNT FOREST



Appendix H

REPORT ON STAKEHOLDER CONSULTATION

DFA Infrastructure International Inc.
33 Raymond St. Catharines Ontario Canada L2R 2T3
Telephone: (905) 938 -0965 Fax: (905) 937-6568

May 30, 2018

Mr. Adam McNabb
Director of Finance & Treasurer
Township of Wellington North
7490 Sideroad 7 W
Kenilworth, On
N0G 2E0

Re: Township of Wellington North 2018 Development Charges Background Study & By-Law Stakeholder Meeting Summary Report

Dear Mr Adam McNabb

We are pleased to submit the enclosed Summary Report on the Stakeholder Meeting which was held on Thursday May 24thth, 2018 to obtain input on the draft 2018 Development Charges Background Study and proposed By-law. Please do not hesitate to call if you have any questions regarding this report.

Yours truly,

DFA Infrastructure International Inc.

Derek Ali, MBA, P.Eng.
President

Enclosure

TABLE OF CONTENTS

APPENDICES

1. INTRODUCTION

This report summarizes the activities and discussions related to the stakeholder meeting held on May 24th 2018.

The primary objectives of the stakeholder meeting were to:

- Provide background information on development charges;
- To present information contained in the draft background study and proposed development charge rates; and
- To obtain public input on the proposed Township's development charges by-law.

A notice of the stakeholder meeting was e-mailed directly to the known stakeholder in the community. Members of the public were invited through these notices to attend the stakeholder meeting which was held on Thursday **May 24th, 2018** at:

Municipal Office – Council Chambers
7490 Sideroad 7 W
Kenilworth, Ontario
N0G 2E0
7:00 p.m.

A copy of the notice is included as Appendix I.

2. PRESENTATION

Representatives of DFA Infrastructure International Inc. (DFA) gave a presentation in respect to the draft Development Charges Background Study and proposed By-law. The presentation focused on the requirements of the Development Charges Act in passing a new development charges by-law, the information and assumptions used in the calculation of the proposed development charges, a comparison of the proposed development charges to other municipalities, and a discussion on proposed current and proposed development charges polices.

3. ATTENDANCE

Approximately 9 members of the pubic were in attendance at the stakeholder meeting, including representatives of the development community. Members of Council, senior staff and representatives of DFA were also in attendance. A sign-in sheet was circulated to members of the public. Upon completion of the presentation, members of the public were invited to comment on the draft development charges background study and proposed by-law. Several members of the public gave verbal submissions.

4. DISCUSSION

A fulsome discussion was held among all attendees. During this discussion a number of issues were raised by the members of the public which included:

- Clarification on the appropriateness of the Central Business Districts. Concern was raised that the area of consideration was focused along the main street and that any incentive for intensification could adversely impact downtown businesses. It was confirmed that the Central Business District areas extended well beyond the main street of Arthur and Forest Hill.
- Comments were received about the definition of "Apartments". Concern was raised about smaller "Other Multiples" residential units that are attracting the higher charge imposed on Multi-residential construction. Consideration was given incorporating an additional category of residential development that would allow small "Other Multiples" to attract the same rate as charges on small apartment units.
- Clarification on Purpose-Built Rental Housing. The intent of the reduction on Purpose-Built Rental Housing as well as the need for the creation of more affordable housing options was discussed. It was confirmed that the reduction of the charge on Purpose-Built Rental Housing would be in addition to the other reductions available to residential development occurring within the defined Built Boundary or Central Business Districts.

After the discussion it was noted that all comments received would be considered in the drafting of the final version of the background study and by-law.

5. WRITTEN SUBMISSIONS

No written submissions were received prior to the meeting. It was expected however that submissions would be forthcoming from interested parties who could not attend the meeting. These submissions would be available to members of Council prior to the Statutory Public meeting to be held on June 14th.

7490 Sideroad 7 W, PO Box 125,
Kenilworth, ON N0G 2E0
www.wellington-north.com

519.848.3620
1.866.848.3620 FAX 519.848.3228

Plan to Simply Explore.
www.simplyexplore.ca

Notice of Stakeholder Meeting – Development Charges

On May 24, 2018, the Council of the Township of Wellington North will hold a Stakeholder Meeting to present and obtain input on the draft Development Charges Background Study and proposed Development Charges By-law.

It is proposed that enactment of a Development Charges By-Law will occur on June 14, 2018 following a public meeting. Development Charges are levied against new development, and are the primary source of funding for growth-related capital expenditures. Capital services include water, wastewater, roads and related, fire protection, recreation, parks, and administration.

All interested parties are invited to attend the Stakeholder Meeting and any person who attends the meeting may make representation relating to the draft Development Charges Background Study and the proposed Development Charges By-Law. The meeting is to be held:

Thursday, May 24, 2018 at 7:00 p.m.

Municipal Office - Council Chambers

7490 Sideroad 7 W, Kenilworth, ON, N0G 2E0

Copies of the draft Development Charges Background Study and the proposed Development Charges By-Law will be available on Wednesday May, 23 2018 at the Clerk's Office at the address shown above and on the municipality's website at www.wellington-north.com .

Appendix A.3

Servicing Systems Review

Future System Loading & Demand

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers

Memorandum

DATE:	May 25, 2020
TO:	Matt Aston
FROM:	Dustin Lyttle & Ray Kirtz
RE:	Arthur Servicing Systems Review; Future System Loading & Demand
FILE:	A5514B & C

1.0 Introduction

The following is a summary of our assumptions and methodology used to establish the expected development growth and associated water demands and sanitary loading within the community of Arthur from 2020 to 2045. This information is in support of the Arthur Water & Sanitary System Review & Update (Systems Review) currently being undertaken by the Township.

2.0 Growth Management Plan

2.1 General

The Growth Management Plan (GMP), dated February 26, 2018, prepared by GSP provides information on the expected growth within Arthur from 2016 to 2041. The GMP provided the expected growth which correlates to Table 2.1 indicated below. The 2016 population (2,725) is higher than the existing serviced population of Arthur (2,410) as indicated in the 2020 Reserve Capacity Calculations (RCC). This discrepancy is likely caused by a difference in total population versus serviced population, therefore it is anticipated that all future population will be connected to both the water and sanitary systems.

Table 2.1
Arthur Growth
(as per The Growth Management Plan)

Year	Population (Capita)	Households (ERUs)	Capita per ERU	Growth (Capita / Year)
2016	2,725	1,005	2.7	
2036	4,115	1,525	2.7	69.5
2041	4,460	1,665	2.7	69.0

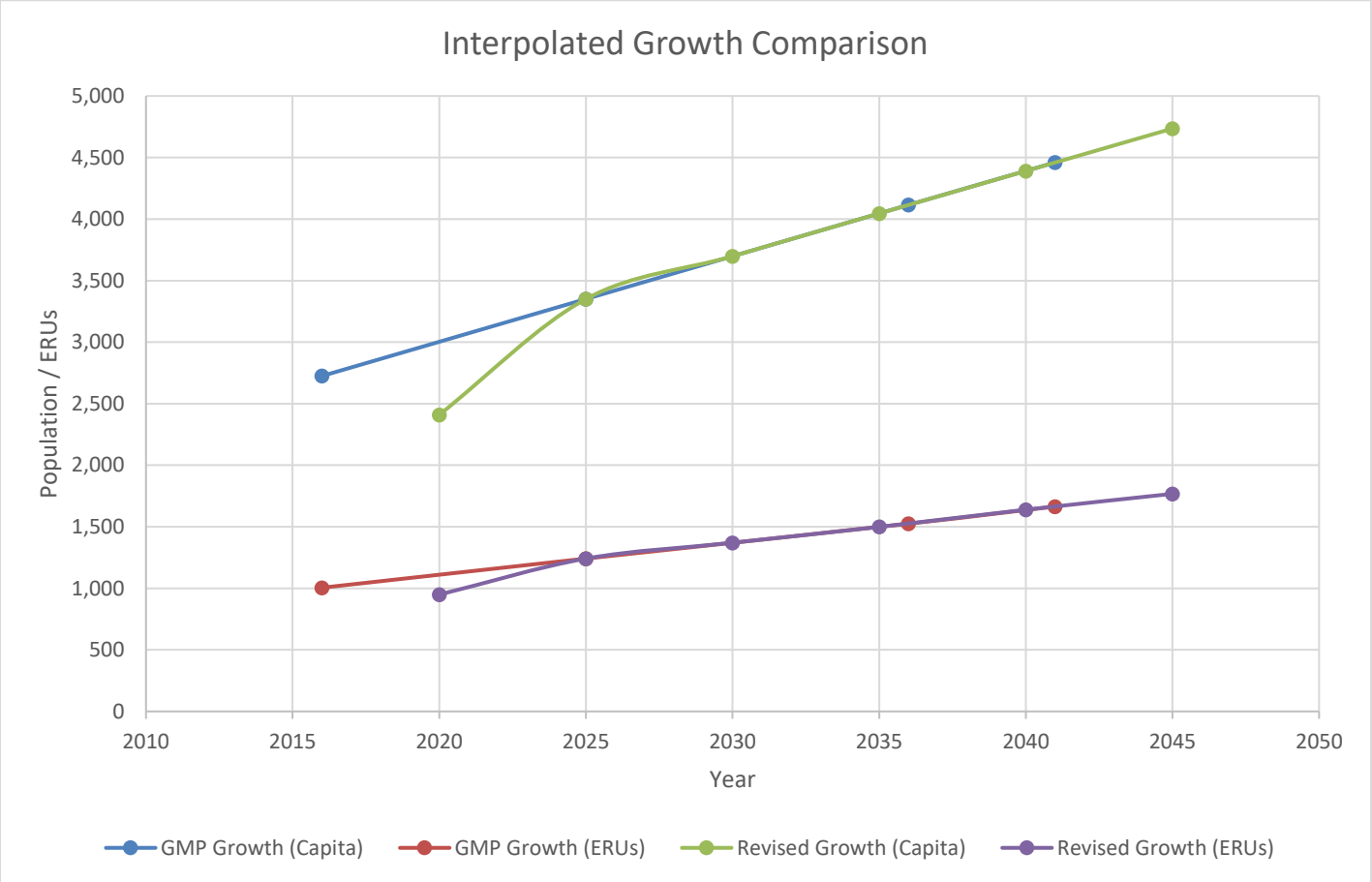
2.2 Interpolated Growth

The Systems Review is based on 2020 to 2045 study period, as such the expected growth has been updated and interpolated accordingly. Assuming that the 2025 population noted in the GMP is achieved, growth as indicated in Table 2.2 and Figure 1.1 is applicable.

Table 2.2
Arthur Growth
(Interpolated)

Year	Population (Capita)	Households (ERUs)	Capita per ERU	Growth (Capita / Year)
2020	2,410	970	2.5	
2025	3,351	1,242	2.7	69.5
2030	3,698	1,370	2.7	69.5
2035	4,046	1,499	2.7	69.5
2040	4,391	1,639	2.7	69.0
2045	4,736	1,768	2.7	69.0

Figure 2.2



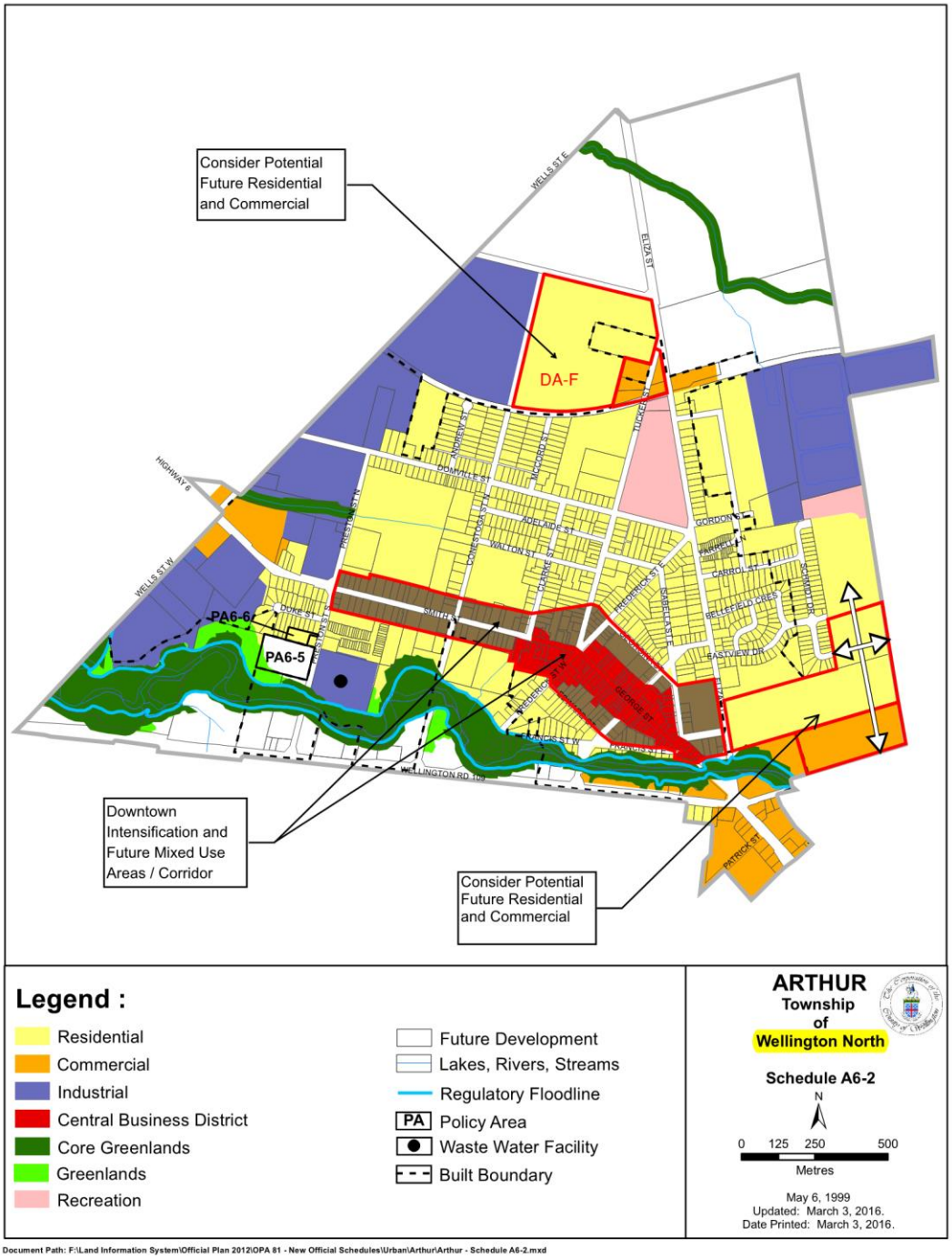
2.3 Intensification

The intensification targets as required by the county are still applicable however, given that the growth targets were developed in 2016, and this study is being completed in 2020, the intensification targets have been revised as shown below.

- 30% by 2026
- 40% by 2035

This results in an additional 231 units added to Arthur. This intensification will be applied to the “Downtown Intensification Area” as indicated on Figure 2.3

Figure 2.3



3.0 Infrastructure Loading

3.1 Sanitary Equivalent Flows

As indicated in the 2020 Sanitary Reserve Capacity Calculations (RCC), the average day per capita flow is 581m^3/day. It should be noted that this flow includes the non-residential flows in the system, so in fact the per person flow for residential development will be lower, by how much will depend on the amount of non-residential development on the current system. In order to better estimate the future development flows, it is recommended that the loading for residential and non-residential be assessed separately.

For the residential developments, a standard MOE recommended future flow rate of 350L/day/person will be assessed. Although this value may seem low compared to the RCC, it does not include any flows from outside the development itself. Also, it is our experience that new developments are not subject to the same level of inflow and infiltration (I/I) given the current inspection/testing requirements. With these two factors considered the future flow per person is expected to be substantially reduced.

For any significant future Industrial/Commercial/Institutional (ICI) developments, their sanitary loading will be based on the MOE Sewage Design Guidelines Section 5.5.2.2 loading of 28m^3/ha/day, which equates to 26.4 ERU(Sanitary) per ICI Ha. These developments will need to be allocated Reserve Capacity separately from the residential developments. It should be noted that this assumed loading is a fairly heavy loading and may need to be reconsidered if the type of development is known beforehand and is a light loading (i.e. warehousing) to avoid over allocating Reserve Capacity.

Refer to Table 3.1 for the future expected sanitary loading based on the growth indicated in Table 1.1.

Table 3.1
Future Sanitary Loading

Year	Population (Capita)	Households (ERUs)	Loading (m^3/day/capita)	Loading (m^3/day/Unit)	Total Loading (m^3/day)
2020	2,410	970	0.350	0.944	844
2025	3,351	1,242			1173
2030	3,698	1,370			1294
2035	4,046	1,499			1416
2040	4,391	1,639			1537
2045	4,736	1,768			1657

3.2 Equivalent Water Demand

A cursory review of the historical water usage rates within the Community of Arthur indicate that the maximum day demand (MDD) is well above the typically expected rate at 652L/day/person. As noted with the sanitary flows, this per person value includes the ICI flows which inflates the value. In communities of similar size and configuration, the MDD is typically 300 – 400 L/day/person. In addition, it is our expectation that a metering program will be implemented in the future, which will significantly reduce the current MDD per person. Given these factors, an average per person flow rate of 400L/day/person will be applied for future demand calculations. This number is based on MOE recommended values. As with the sanitary calculation, the water system will require that any ICI users that are expected to be heavy users will need to be allocated Reserve Capacity in terms of ERUs. Based on the MOE Design Guidelines Section 3.4.3 demand of 28m^3/ha/day which equates to 25.9 ERU(Water) per ICI Ha. The expected future ICI lands will be looked at on an individual Development Area basis, reflective of expected developable lands.

Refer to Table 3.2 for the future expected water demand based on the growth indicated in Table 1.1.

Table 3.2 Future Water Demand					
Year	**Population (Capita)**	**Households (ERUs)**	**Demand (m^3/day/capita)**	**Demand (m^3/day/Unit)**	**Total Demand (m^3/day)**
2020	2,410	970	0.400	1.079	964
2025	3,351	1,242			1340
2030	3,698	1,370			1479
2035	4,046	1,499			1618
2040	4,391	1,639			1756
2045	4,736	1,768			1894

4.0 Conclusion

The above total equivalent populations can be used for determining the expected demands of vertical infrastructure (i.e. Waste Water Treatment Plants, Wells and Water Towers) however the expected demand/loading on horizontal infrastructure (i.e. watermains and sanitary sewers) and the associated capacities will need to consider the expected demand/loading as a result of complete build out of development areas surrounding Arthur as shown in Figure 2.3.

As such, additional information regarding the developability of the development areas and the expected type of development is required. A comparison of the equivalent population as specified by the GMP and the total build out of the development areas surrounding Arthur will be completed. If these numbers are not equal, the larger equivalent population value will then set the basis of our review.

Please review the above and provide comments and questions as required. A virtual meeting can be arranged to discuss.

Appendix B

Future Land Use

Appendix B.1

Summary of Potential Developments

Appendix B - Summary of Available Land Use

B1 Stage 1 - Available Lands

Map ID	Development Name	Area (ha)	Sanitary ERU	Water ERU	Fire Flow* (L/s)	Pressure** (PSI)	Type
R1-1	Eastridge Subdivision	4.5	162	162	96	96	Low Density Residential
R1-2	Gordon Street Condo	0.6	36	36	72	72	High-Density Residential
R1-3	Forest View Estates (WN-50)	1.0	50	50	83	83	Low Density Residential
FD1-1	Undesignated - Not Serviced	0.5	13	13	N/.A	N/A	Future Development
C1-1	Existing Residential on 6	0.1	3	3	177	60	Highway Commercial
C1-2	Existing Residential on 109	0.1	3	3	163	75	Highway Commercial
C1-3	Vacant Land on 6	1.0	26	26	109	76	Highway Commercial
C1-4	Vacant Land on 6	0.4	11	10	171	63	Highway Commercial
C1-5	Vacant Land on 6	0.5	13	13	151	58	Highway Commercial

B2 - Stage 2 Available Lands

Map ID	Development Name	Area (ha)	Sanitary ERU	Water ERU	Fire Flow* (L/s)	Pressure** (PSI)	Type
R2-1	Burnside Subdivision	9.8	250	250	128	59	Residential & Future Development
R2-2	Cachet Subdivision	5.1	287	287	82	73	High & Low Density Residential
C2-1	Smith & Wells	0.3	8	8	118	77	Highway Commercial & Future Development
C2-2	Highway 6 (Burnside Subdivision)	5.1	135	132	117	59	Highway Commercial & Future Development

B3 - Stage 3 Available Lands

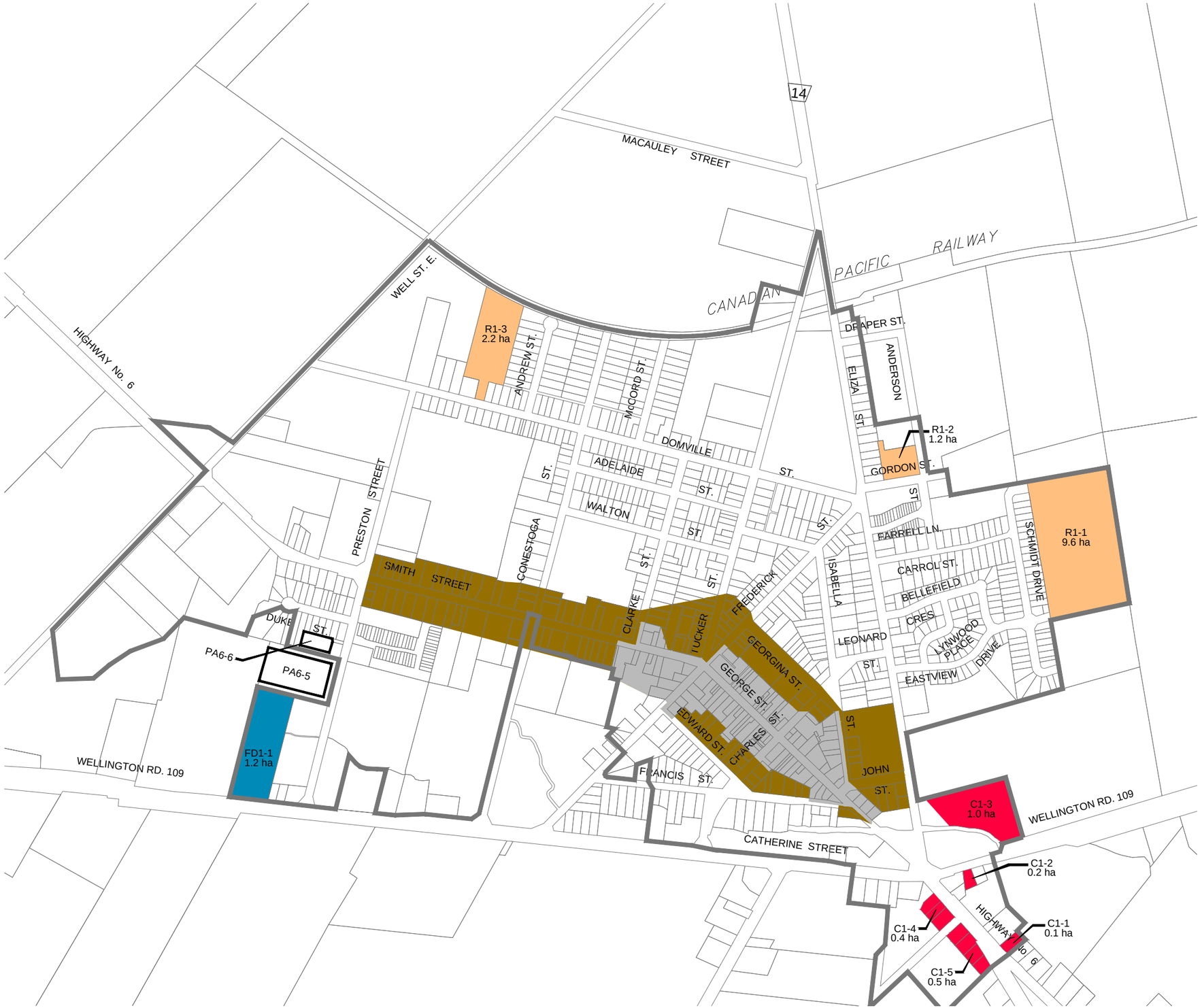
Map ID	Development Name	Area (ha)	Sanitary ERU	Water ERU	Fire Flow* (L/s)	Pressure** (PSI)	Type
R3-1	West Anderson	0.8	12	12	99	59	R1 Residential
R3-2	East Anderson	1.8	27	27	75	59	Future Development
R3-3	Vacant Residential	1.7	25	25	112	78	High Density Residential
M3-1	North Arthur Industrial Lands	29.2	771	757	124	63	Industrial

B4 - Stage 4 Available Lands

Map ID	Development Name	Area (ha)	Sanitary ERU	Water ERU	Fire Flow* (L/s)	Pressure** (PSI)	Type
FD4-1	North of Lagoons	12.1	319	313	59	52	Future Development
FD4-2	East of Eliza Street	36.6	966	948	59	47	Future Development
FD4-3	West of Eliza	16.4	433	425	73	58	Future Development
FD4-4	Preston-Conestoga (109) - Not Serviced	0.9	24	23	N/.A	N/A	Future Development
C4-1	Wells & 109 - Not Serviced	0.6	16	16	N/.A	N/A	Highway Commercial

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



LE END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI HWA COMMERCIAL
- CENTRAL USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL COMMERCIAL
- STA E OUNDAR
- PA — POLIC AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA LE LAND

FI URE .1

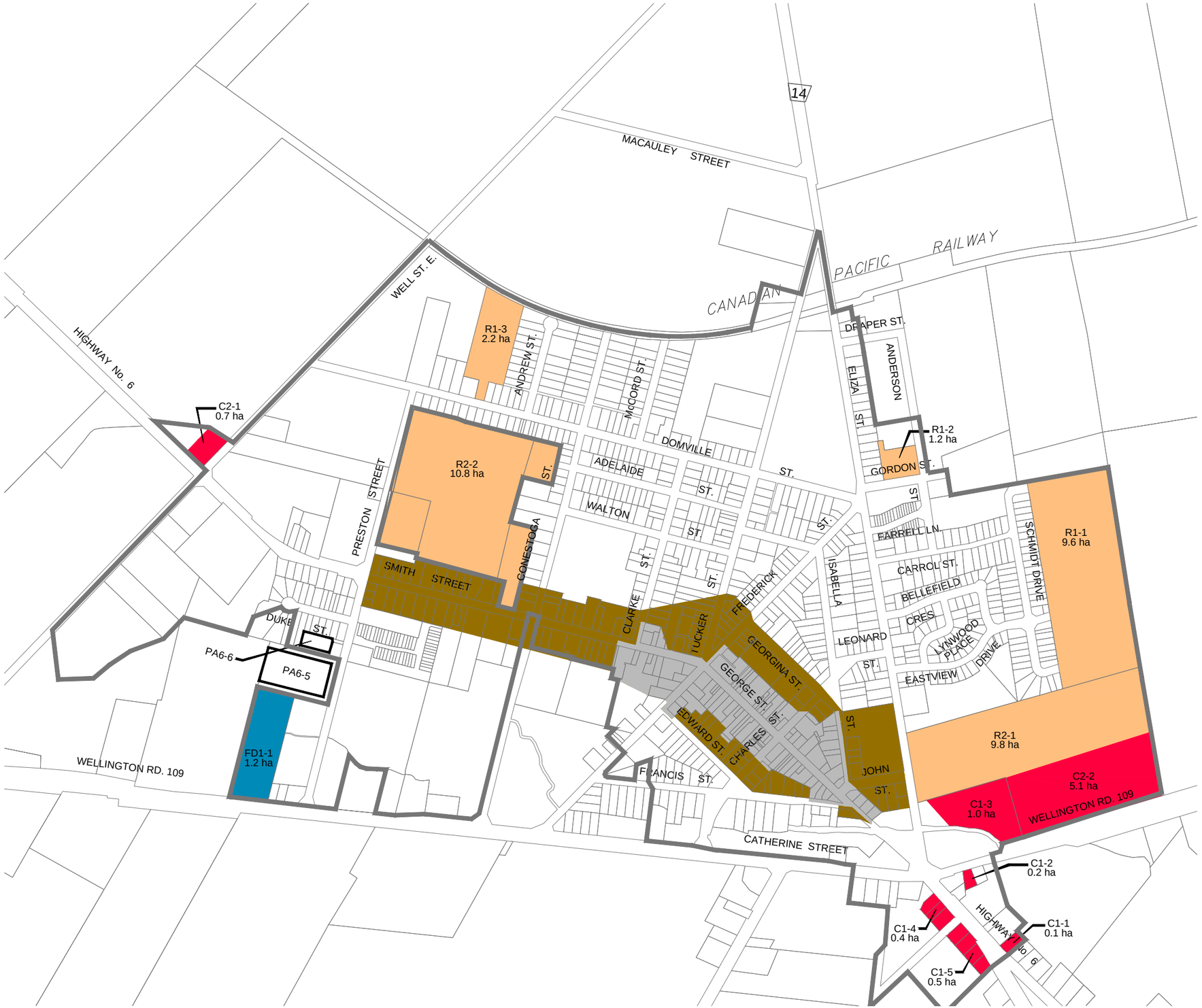
STAGE 1 EVELOPMENT SCENARIO

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



LE END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI HWA COMMERCIAL
- CENTRAL USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL COMMERCIAL
- STA E OUNDAR
- PA — POLIC AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA LE LAND

FI URE .

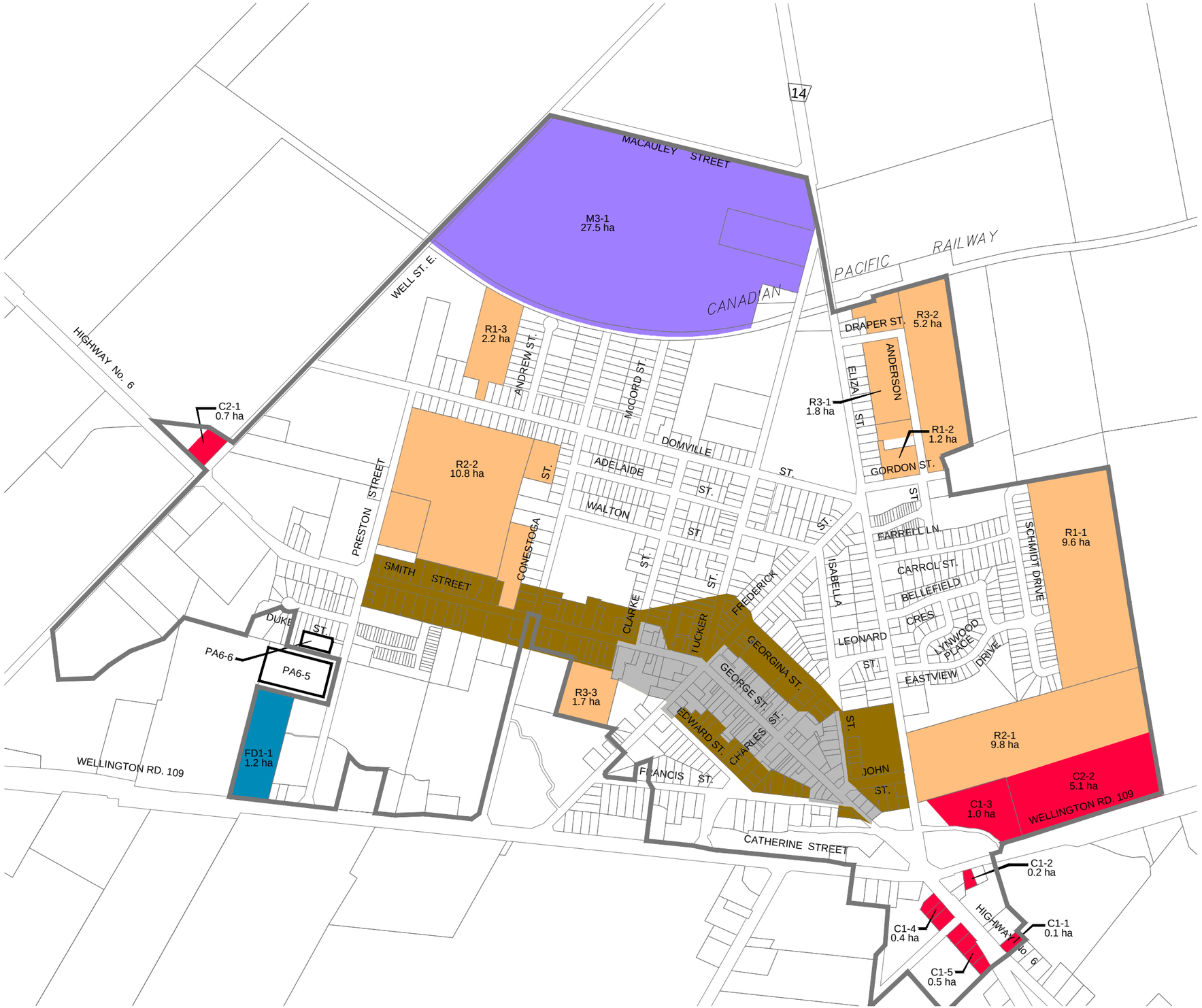
STAGE 2 EVELOPMENT SCENARIO

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN SANITARY SERVICING STU Y



LE END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI HWA COMMERCIAL
- CENTRAL USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL COMMERCIAL
- STA E OUNDAR
- PA — POLIC AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA LE LAND

FI URE .

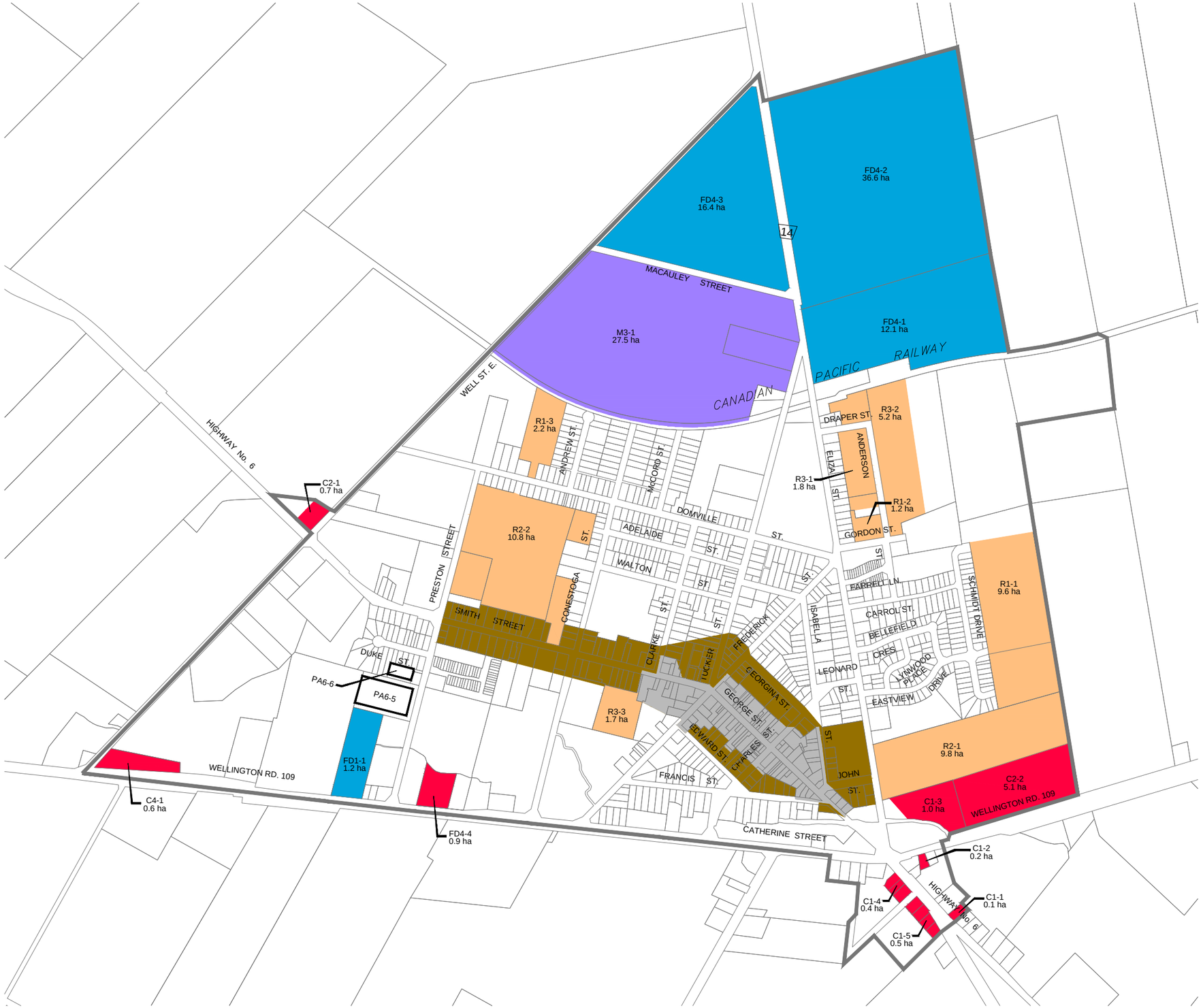
STAGE 3 EVELOPMENT SCENARIO

SCALE 1:10,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

TOWNSHIP OF WELLINGTON NORTH

ARTHUR WATER AN□ SANITARY SERVICING STU□ Y



LE□END:

- APPLICATION UNDER REVIEW
- INDUSTRIAL
- HI□HWA□ COMMERCIAL
- CENTRAL □USINESS DISTRICT
- INTENSIFICATION CORRIDOR
- FUTURE RESIDENTIAL □ COMMERCIAL
- STA□E 4 □OUNDAR□
- PA — POLIC□ AREA
- R2-1, 9.8 ha — DEVELOPMENT ID, ASSUMED DEVELOPA□LE LAND

FI□URE □.4

STAGE 4 □EVELOPMENT SCENARIO

SCALE 1:1□,500
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

Appendix C

Water System

Appendix C.1

Existing Reserve Capacity Calculations

TOWNSHIP OF WELLINGTON NORTH

ARTHUR

WATER SYSTEM

2020 RESERVE CAPACITY

	DESCRIPTION	2020
1.	Source Capacity (m^3/d)	4,216
2.	Firm Capacity (m^3/d)[1]	2,255
3.	Max Day Flow Average (m^3/d)[2]	1,572
4.	Source Reserve Capacity (m^3/d) (1) - (3)	2,644
5.	Firm Reserve Capacity (m^3/d) (2) - (3)	683
6.	Serviced Households[3]	949
8.	Persons Per Existing Residential Unit (2017 Census Data)	2.54
9.	Population Served (7) x (6)	2,410
10.	Existing Maximum Day Per Capita Flow (m^3/d) (3) ÷ (9)	0.652
11.	Adjusted New Development Maximum Day Per Capita Flow (m^3/d)[4]	0.500
12.	Source Reserve Capacity (Population) (4) ÷ (11)	5,288
13.	Firm Reserve Capacity (Population) (3) ÷ (7)	1,366
14.	Person Per New Development Residential Unit	2.7
15.	Source Additional ERU that can be served. (Units) (12) ÷ (14)	1,959
16.	Firm Additional ERU that can be served. (Units) (13) ÷ (14)	506

1. Firm Capacity is the lowest system capacity given that Well 8a and 8b cannot be pumped at the same time.

2. Max day flow is the average of the maximum day flows from 2017 (1,723m^3/d), and 2018 (1,514m^3/d) and 2019 (1,478m^3/d)

3. Serviced households as reported in the 2019 Annual Water Report.

4. As determined through monitoring systems of similar size and arrangment.

Appendix C.2

Storage Calculations

TOWNSHIP OF WELLINGTON NORTH
ARTHUR
WATER SYSTEM
FIRE STORAGE REQUIREMENTS

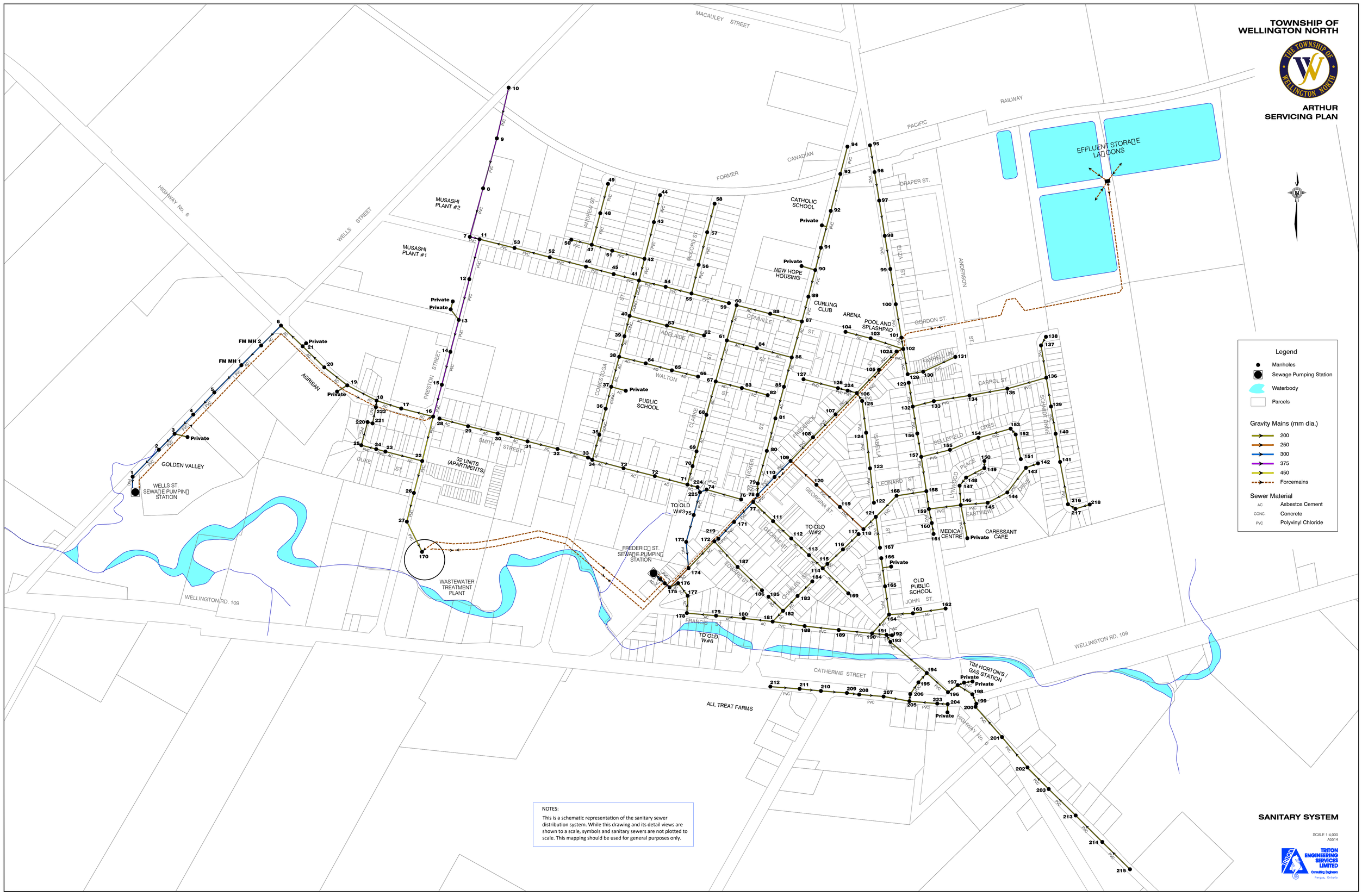
Planning Period (years)	Population	Duration (hours)	Fire Flow (L/s)	A (m3)	Max. Day Demand (m^3)	B (m3)	C (m3)	Total (m3)
2020	2,410	2	100	720	1,572	393	278	1,391
2025	3,351	2	110	792	1,675	419	303	1,514
2030	3,698	2	120	864	1,849	462	332	1,658
2035	4,046	2	120	864	2,023	506	342	1,712
2040	4,391	2	130	936	2,195	549	371	1,856
2045	4,736	2	130	936	2,368	592	382	1,910

TOWNSHIP OF WELLINGTON NORTH
ARTHUR
WATER SYSTEM
STORAGE ASSESSMENT

Planning Period	Population	Sephoid Tower (m^3)	Multi-Leg Tower (m^3)	Required Storage (m^3)	Additional Storage Required (m^3)	Additional Storage Required (Imp. Gallon)
2020	2,410	1,137	227	1,391	27	5,994
2025	3,351			1,514	150	32,889
2030	3,698			1,658	294	64,630
2035	4,046			1,712	348	76,573
2040	4,391			1,856	492	108,228
2045	4,736			1,910	546	120,086

TOWNSHIP OF WELLINGTON NORTH

ARTHUR SERVICING PLAN



Legend

- Manholes
- Sewage Pumping Station
- Waterbody
- Parcels

Gravity Mains (mm dia.)

- 200
- 250
- 300
- 375
- 450
- Forcemains

Sewer Material

- AC — Asbestos Cement
- CONC. — Concrete
- PVC — Polyvinyl Chloride

NOTES:

This is a schematic representation of the sanitary sewer distribution system. While this drawing and its detail views are shown to a scale, symbols and sanitary sewers are not plotted to scale. This mapping should be used for general purposes only.

SANITARY SYSTEM

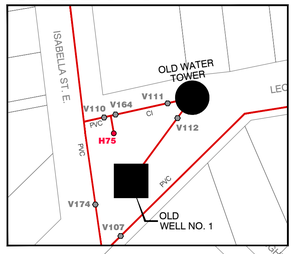
SCALE 1:4,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario

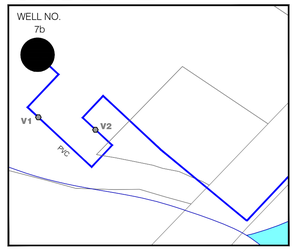
TOWNSHIP OF WELLINGTON NORTH

ARTHUR SERVICING PLAN

INSET-1

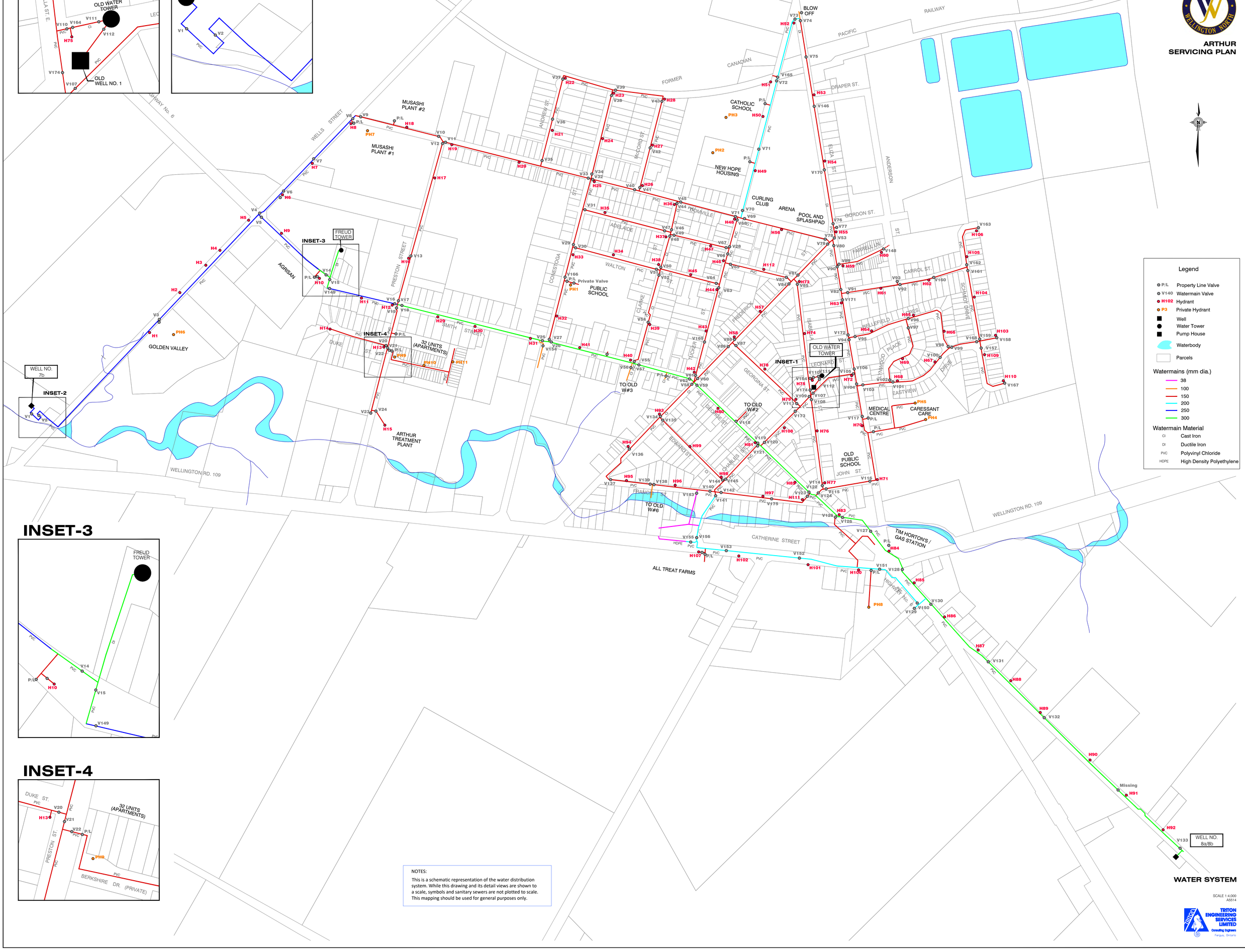


INSET-2



INSET-3

INSET-4



NOTES:

This is a schematic representation of the water distribution system. While this drawing and its detail views are shown to a scale, symbols and sanitary sewers are not plotted to scale. This mapping should be used for general purposes only.

WATER SYSTEM

SCALE 1:4,000
A5514

TRITON ENGINEERING SERVICES LIMITED
Consulting Engineers
Fergus, Ontario