

AGENDA
Township of North Dundas
636 St. Lawrence Street Winchester ON
Tuesday, December 15, 2020 7:00 PM
(Mandatory Masks are Required)

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- 1. Call Meeting to Order by Resolution**
- 2. Adoption of Agenda**
 - a) Additions, Deletions or Amendments
All matters listed under Consent Agenda, are considered to be routine and will be enacted by one motion. Should a Council member wish an alternative action from the proposed recommendation, the Council member shall request that this matter be moved to the appropriate section at this time.
- 3. Disclosure of Pecuniary Interest and General Nature Thereof**
- 4. Adoption of Minutes**
- 5. Delegations**
- 6. Closed Session**
- 7. Open Session**
- 8. Action Requests**
 - a) **Finance**
 - b) **Economic Development and Communications**
 - c) **Public Works**
 - i. [Road Needs Study - 2020](#) 4 - 91
[Eric St. Pierre - D.M. Wills Associates Limited.](#)
 - ii. [Water Capacity EA Study & Update](#) 92 - 117
 - iii. [Water Capacity and Demand Analysis](#) 118 - 123
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11.	Key Information	
a)	Public Works - 2021 Draft Budget	
12.	Consent Agenda	
13.	Boards and Committees	
14.	Motions and Notices of Motions	
15.	Petitions	

16. Council Comments and Concerns

17. Unfinished Business

18. Ratification By-law

a) [By-law No. 2020-65](#)

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19. Adjournment by Resolution



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Road Needs Study - 2020

RECOMMENDATION:

THAT the Council of the Township of North Dundas receive the Draft Road Needs Study - 2020 prepared by D. M. Wills, as a guide for staff to develop a 10-year Road Improvements Plan for annual budgets and to explore opportunities for funding.

BACKGROUND:

Township of North Dundas maintains approximately 407 kms of urban and rural roads. The road network includes surfaces ranging from gravel to hot mix asphalt (paved), as follows:

- 137km of gravel roads
- 167km of surface treated roads
- 104km of paved roads

Township of North Dundas hired D. W. Wills to undertake a review of Township's existing road network and assess its physical conditions and to develop a prioritized list of the road network needs. Refer to attached draft Road Needs Study – 2020 for additional details.

Condition Rating of Roads:

Two primary indicators of the relative health of a road are the structural adequacy rating (Inventory Manual for Municipal Roads) and the PCI (Pavement Condition Index for hard-top only). The current average structural adequacy rating for the Township's road network is 13.5/20. The current average PCI for the Township's paved road network is 69.9 (out of 100).

Based on the assessment, approximately 13% (52 km) of the road network has a Structural "NOW" need, 14% (56 km) has a Structural "1-5" year need, and 13% (53 km) of the road network has a structural "6-10" year need.

It should be noted that a structural "NOW" need does not mean work must be undertaken on the road network immediately (although this may be so in some cases). A structural "NOW" need means that a significant portion of the road is

showing distress of the road bed and requires significant intervention i.e. reconstruction or major rehabilitation.

10-Year Capital & Preventive Maintenance Plan:

According to the Road Needs Study, the 10-year road improvement plan is estimated at \$3M per year, which includes approximately \$1.3M per year for resurfacing needs and \$1.7M per year for capital needs. In addition, upgrading of surface treatment roads to paved roads to accommodate growth and higher traffic volumes will cost approximately \$1.3M per year over 20-year period.

Draft Road Needs Study – 2020, Appendix B, has identified a list of Capital Improvements for Township Roads. The list is used to develop a 2021 Road Improvement Plan (as part of 2021 budget) for review and approval by the Council.

The draft 2021 budget incorporates recommendations from the Roads Need Study based on “NOW” needs with an estimated cost of \$3,440,000. Refer to attached 2021 Road Improvement Plan.

Draft Road Needs Study – 2020, Appendix B, has also identified a list of Capital Resurfacing Projects for Township Roads. On the top of this list are gravel roads, requiring additional gravel lift of 75mm. Draft 2021 budget has identified \$100k for gravel maintenance, which will be used towards the following:

1. McIntosh Road (Pemberton Road to 2.5m west of Pemberton Road)
2. Moore Road (Timmins Road to CR3)
3. Other gravel road maintenance i.e., for pot holes repairs.

In addition, the study highly recommended development of an annual preventive management plan and budget with estimates as follows:

1. Crack sealing (18 km/year) - \$72,000 (to prevent weakening of pavement)
2. Slurry Seal / Microsurfacing – (18km/year) - \$396,900

The 2021 budget allocate approximately \$13,000 for crack sealing. Consideration will be provided in 2022 budget for slurry seal and microsurfacing options.

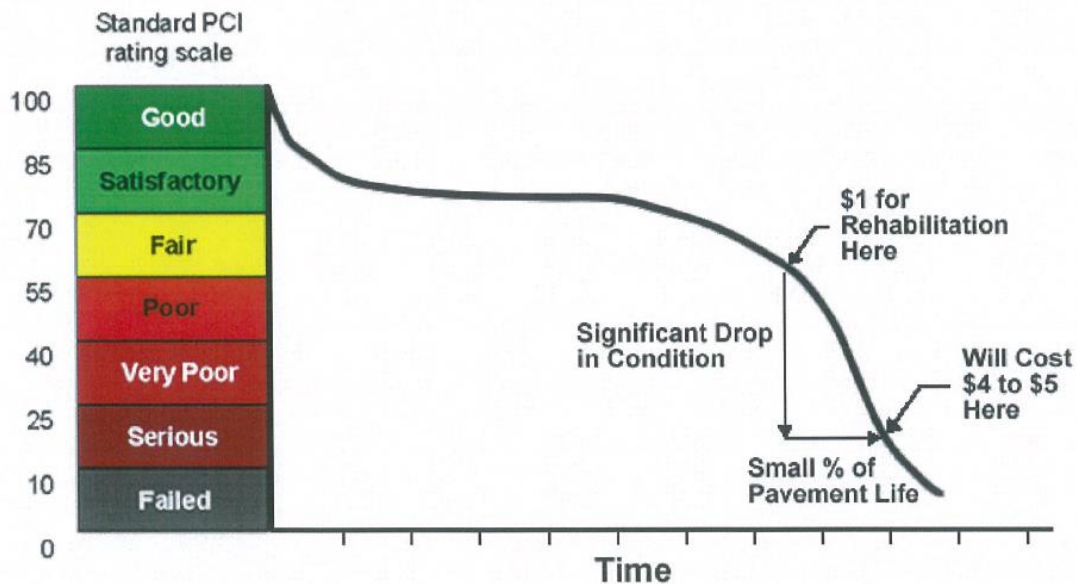
The study has identified implementation of dedicated capital plan for the following road maintenance activities:

Ditching (40 km/year) – \$278,000 (to improve drainage)
 Brushing (40 km/year) - \$110,700 (to reduce shading of the roadbed)
 Shouldering (to prevent cracking at the edge of pavements)

Total Preventative Maintenance Cost Per Year - \$388,700

The 2021 budget also identifies the need to hire a minimum of 3 (three) additional staff that will be utilized towards ditching, brushing and pot hole repairs. This will reduce the future costs of the road maintenance from proposed \$388,700, as reflected in 2021 budget.

A preventive maintenance plan is a cost-effective way to maintain roads before significant drop in conditions, as shown in following typical life-cycle of the asset graph:



Road Improvement Type:

The Road Needs Study has identified various types of road rehabilitation techniques. The following summarizes preservation management approach to two main categories associated with the Township roads.

Table 6 - Preservation Management Approach – Surface Treated Roads

Activity	Age (Years)	Ride Condition Rating	Estimated Service Life Extension (Years)
Slurry Seal	3	8	4
Single Surface Treatment	6	7	3
Double Surface Treatment	10	6	5
Pulverize and Double Surface Treatment	14	<4	8

Table 6 - Preservation Management Approach – Rural Asphalt Roads

Activity	Age (Years)	Ride Condition Rating	Estimated Service Life Extension (Years)
Crack seal	2-6	9	2
Slurry Seal / Microsurface	4-8	8	4-6
Overlay	12-15	6-7	10
Pulverize and Pave	20-25	< 5	20
Reconstruct	30	< 4	30

Please note that estimated service life extension for pulverize and pave option is 20 years versus 5 years for service life extension from double surface treatment option i.e. four times increase from double surface treatment.

Surface Treatment - Rural/Semi Urban - Double with Granular Base [ST2A]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Surface Treatment - Double	7.0			m2		7000	\$5.00	\$ 35	
Granular A	7.0	150	2.2	t		2310	\$10.00	\$ 23	
								ST2A	58
(per Kilometre)									

Pulverize and Pave One Lift [PP1] Rural/Semi-Urban									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	3	50	2.45	t		367.5	\$90.00	\$ 33	
Granular A - Shoulders	1.5	50	2.2	t		165	\$10.00	\$ 2	
Granular A - Base	4.5	150	2.2	t		1485	\$10.00	\$ 15	
Pulverize SST	4.5			m2		4500	\$4.00	\$ 18.00	
Minor Items @ 25%								\$ 17	
								PP1	84
(per Lane Kilometre)									

In above table, the single lift overlay option will be around \$168/km (84x2) three times increase from double surface treatment costs. Hence paving is preferred over surface treatment based on surface life extension. The paved roads are easy to maintain in terms of pot holes repairs as they allow for better bonding with cold and hot patching.

Hence, for the year 2021, staff have identified paving treatment for road improvements of the Township roads.

The draft Road Needs Study has identified the following:

1. Annual spending of approximately \$1.3M for resurfacing program
2. Annual spending of approximately \$1.7M for reconstruction/capital
3. Annual spending of approximately \$0.47M for preventative maintenance
4. Annual spending of approximately \$0.38M for preventative maintenance

It is anticipated that the going forward the annual road improvement plan will be approximately twice that of past budgets. In addition to regular road costs, the growth is having a significant impact on Township roads with the steady increase in traffic.

Following are financing options for annual road improvement plans:

Special Capital Levy:

Further review is required to potentially introduce a reserve for road improvements, funded through a special 1% capital levy directed solely towards projects related to road improvements.

Upper Level of Funding Support:

Township continues to dedicate gas tax reserves and OCIF funds from the province towards road improvement plans. There are additional opportunities to explore options for additional funding and support from SDG Counties for Township roads, including consideration of uploading roads that serve through traffic through the Township.

Development Charges:

The costs of upgrades of roads from gravel to surface treated or from surface treated to paved, are eligible for development charges due to the upgrade in the surface, to accommodate the increase in traffic due to growth. The Township's development charge study is due for renewal in 2021/2022. The study will assess costs associated to upgrading the Township roads to accommodate growth.

OPTIONS AND DISCUSSION:

1. **Receive the Draft Road Needs Study – 2020** – recommended.
2. **Do not accept the Draft Road Needs Study** – not recommended.

FINANCIAL ANALYSIS:

Financial impacts and associated funding options for road improvement plans will be identified as part of annual budgets.

OTHERS CONSULTED:

D. M. Wills
 CAO
 Patrol Foreman

ATTACHMENTS:

Draft Road Needs Study

PREPARED BY:



Khurram Tunio, M. Eng., P. Eng.
Director of Public Works

REVIEWED & APPROVED BY:



Angela Rutley, BBA
CAO



2021 Road Improvements Plan

Legend

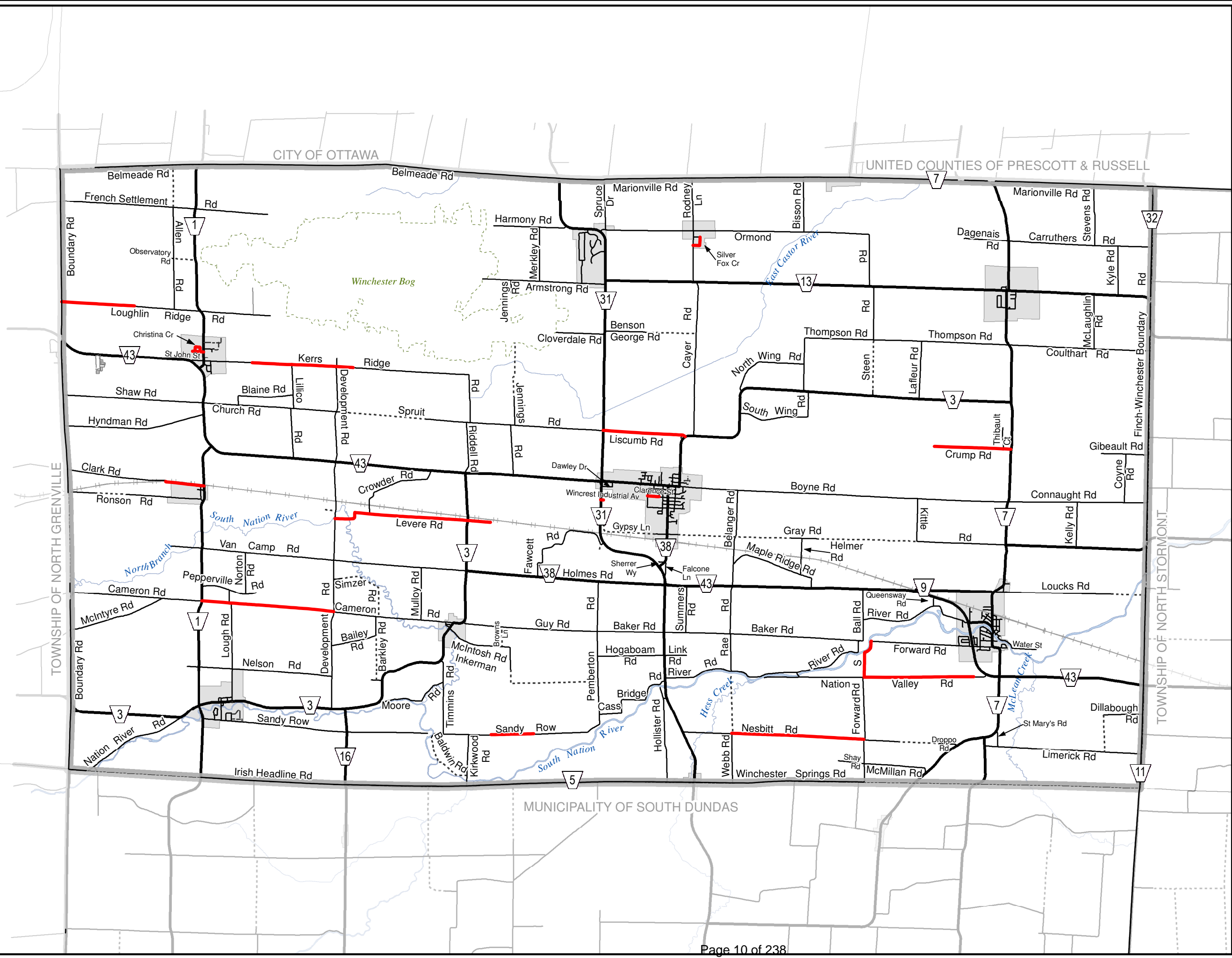
- Road Improvement Project
- Highway
- County Road
- Township Road
- Private/Other Road
- Unmaintained Road
- Under Construction
- Railroad
- Settlement Area
- Township Boundary



1:100,000



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Road Needs Study Report - 2020
The Township of North Dundas
D.M. Wills Project No. 20-4740



D.M. Wills Associates Limited
Partners in Engineering, Planning and
Environmental Services
Peterborough

November 2020
Prepared for the Township of
North Dundas

Executive Summary

The Township of North Dundas (Township) retained the services of D.M. Wills Associates (Wills) to undertake a review of the Township's existing road network, and assess its physical condition as well as confirm various road attributes. Data collected during the field review was used to develop a prioritized listing of the road network needs, the results of which are documented in this report.

The Township's road infrastructure system spans a total of 407 km primarily within a rural setting, with small areas of urban and semi-urban development. The road network includes surfaces ranging from gravel to hot mix paved (asphalt). The Township has approximately 137 km of gravel roads, 167 km of surface treated roads (low class bituminous (LCB)), and 104 km of hot mix asphalt paved roads (high class bituminous (HCB)).

Two (2) primary indicators of the relative health of a road are the structural adequacy rating (Inventory Manual) and the PCI (hard-top roads only for this study). The current average structural adequacy rating for the Township's road network is 13.5/20. The current average PCI for the Township's hard-top road network is 69.9 (out of 100).

13% (~52 km) of the road network has a Structural "NOW" need, 14% (~56 km) has a Structural "1-5" year need, and 13% (~53 km) of the road network has a Structural "6-10" year need.

It should be noted that a structural "NOW" need does not explicitly mean that work must be undertaken on the road immediately (although this may be so in some cases). A structural "NOW" need means that a significant portion of the road is showing distress of the road bed and requires significant intervention i.e. reconstruction or major rehabilitation to renew its service life. A structural "1-5" year need is expected to become a "NOW" need in the next five years, and a "6-10" year need is expected to become a "NOW" need in the next 10 years.

Note that many "6-10" year reconstruction needs may be deferred by timely resurfacing, extending their service lives. As highlighted above, the Township has a notable portion of their roads (13%) with a "6-10" Year Structural Need.

LCB to HCB Conversion Program

The Township's recent experience with surface treated roads has been unsatisfactory, with service lives of 3-4 years before major work is required. Normally, surface treatment can be expected to last at least 7 years. As such, the Township has requested that the conversion of all surface treated roads to hot mix pavement be considered in this report.

The Township currently maintains 167 km of surface treated roads. Although road reconstruction may vary section by section, this report considers a typical conversion

strategy of placing 150mm of Granular A before paving 1 lift (50mm). **The total LCB to HCB Conversion Program is estimated at \$24.4 Million.**

Resurfacing and Preservation Management

In addition to addressing currently deficient roads (i.e. capital reconstruction), a dedicated preservation management approach is required, **and perhaps even more important**, to “keep the good roads good”; the fundamental principle being that it costs much less to maintain a good road than it does to let it fail and then reconstruct it, from a life cycle cost perspective. Ultimately, the goal of preservation management is to extend the useful life of a road and road network, maximizing the municipality’s investment over the road life-cycle.

Road resurfacing is an effective way of extending the overall life of the pavement structure and therefore a road resurfacing program is highly recommended. Roads with a structural adequacy of 12/20 or greater are included as candidates for potential resurfacing. Preliminary recommendations and prioritization for road resurfacing are based on condition rating and traffic demands on each road section, as per the Inventory Manual. A road with higher traffic volumes and fair structural adequacy is given priority over a road with moderate traffic and good structural adequacy score, in an attempt to intervene and extend the life of the road before it deteriorates to a level that can no longer be resurfaced (i.e. more expensive reconstruction is required). Specific resurfacing treatment recommendations must be assessed through further field investigation and detail design effort, prior to selecting and implementing the resurfacing strategy.

Based on typical degradation rates for gravel roads, surface treatment, and hot mix, a resurfacing program and related budget is recommended as follows:

Hot Mix Paved Roads:

- 104 km of paved roads (HCB).
- Degradation rate 0.25 / year (rating drops from 10 to 5, over a 15-year period).
- Annual resurfacing 6.9 km / year.
- **Annual budget \$941,200:** (6.9 km / year x \$210,000 / In **RO1** x 2 lanes).

Gravel roads require regular maintenance. Maintenance includes regular grading and reapplication of new gravel. Typically, gravel roads should be resurfaced on a 3 - 5 year cycle.

Gravel Roads:

- 137 km of earth / gravel roads.
- 75 mm gravel every 3-5 years.
- Annual gravelling of 27.3 km.
- Granular A (\$12,000 / km).
- **Annual budget \$327,600** (27.3 km / year x \$14,000 **G**) **.

** Cost based on supply and application of gravel by external forces.

The total resurfacing program, (hot mix and gravel) is estimated at \$1,279,800 per year for the next 10 years. This budget will need to be increased in the future as it currently does not include surface treated roads (as they are being converted to HCB). In the long term (10 – 15 years), these new HCB roads will need to be need to be resurfaced as well, and the future resurfacing program is estimated at \$2,811,600.

Preservation techniques seal the surface as to prevent water infiltration into the granular base. Route and Seal is used on HCB pavements to seal individual cracks. Slurry Seal / Microsurfacing is used to seal large areas, although wide / active cracks will reflect through the treatment. As these treatments are best done early in a road's life cycle, the roads in the LCB to HCB Conversion Program are included. An annual preservation management budget has been estimated as follows:

Cracksealing

- 107 km of paved roads (HCB).
- 167 km of surface treated roads to be converted to HCB.
- Assume that cracksealing will be applied, on average, once per resurfacing cycle.
- Annual cracksealing of 18.0 km / year.
- **Annual budget \$72,000** (18.0 km x \$4,000 / km **Cracksealing**).

Slurry Seal / Microsurfacing

- 107 km of paved roads (HCB).
- 167 km of surface treated roads to be converted to HCB.
- Assume that slurry seal / microsurfacing will be applied, on average, once per resurfacing cycle.
- 18.0 km of road to preserve per year.
- **Annual budget \$396,900** (18.0 km x \$22,050 / km **Slurry Sealing / Microsurfacing**).

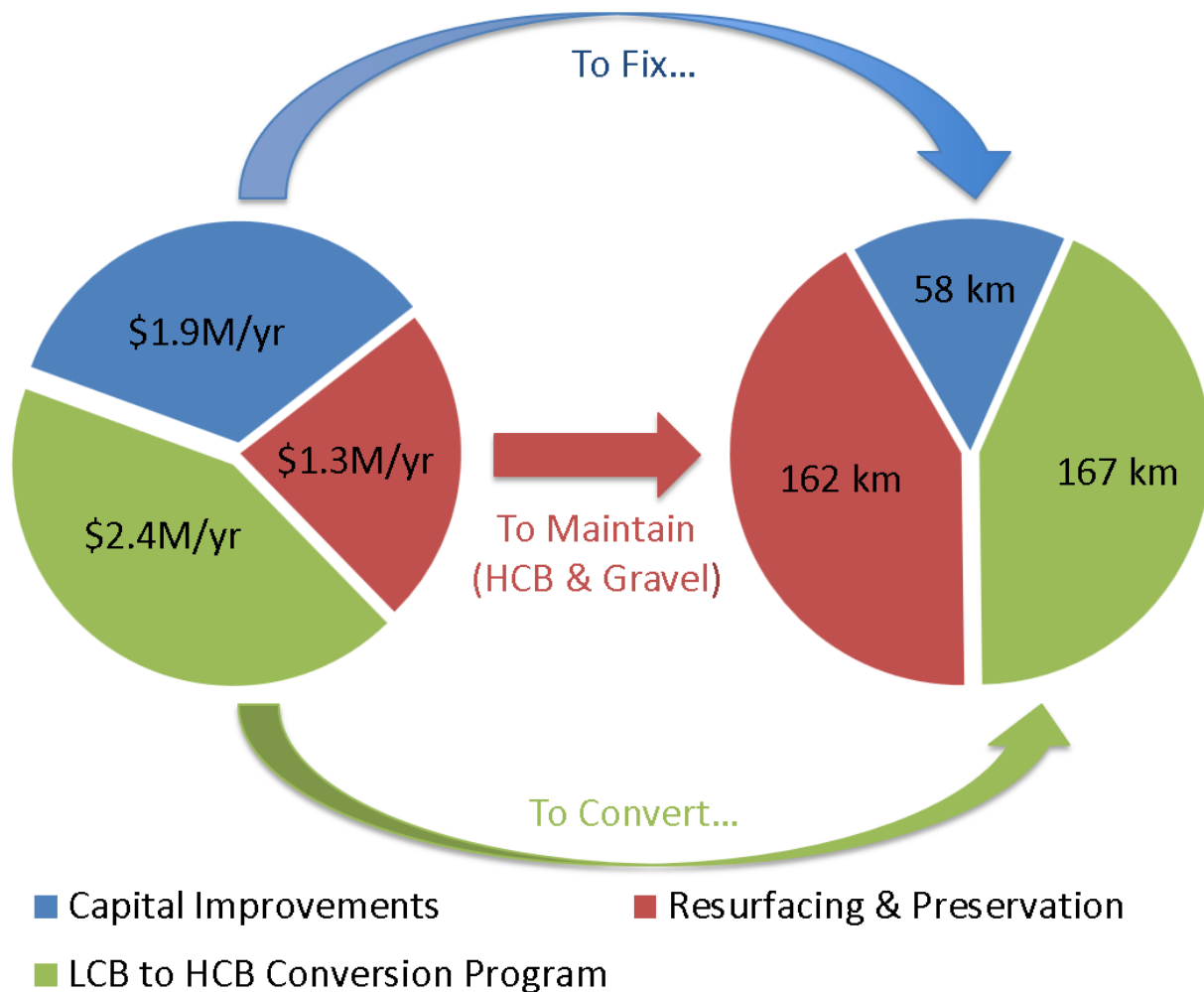
Further to the recommendations above with respect to resurfacing, it is also recommended that regular maintenance in the form of roadside ditch cleanout and clearing be undertaken as a critical component to preservation management in order to extend the useful service life of the existing roads.

Capital Improvements

Preliminary recommendations and prioritization for planned capital improvements i.e. reconstruction, have been developed based on the condition rating and traffic demands on each road section, as per the Inventory Manual. Those roads identified as having a "NOW", 1 – 5, or 6 - 10 year need have been included in the capital improvement plan for reconstruction.

Excluding surface treated roads, which are already included in the LCB to HCB Conversion Program, 58.4 km of roads were identified as having structural needs in the "NOW", 1 – 5 or 6-10 year periods. The estimated cost to improve these roads is approximately \$ 18.6 M.

A fully funded 10-year plan following the recommendations in this report includes \$1.3M/year for resurfacing needs, \$16.7 M (\$1.7 M/year) for the capital needs, and \$26.1 M for LCB to HCB Conversion Program over the next ten years. Funding recommendations can be visualized in the graphic below.



Given that 60% of the Township's Road network has no structural need identified, Wills recommends that priority should be given to resurfacing and preservation over capital needs should funding fall short of ideal levels.

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- Appendix A – Unit Price Form
- Appendix B – Road Needs Summary Table – by Program
- Appendix C – Road Needs Summary Table – by Structural Adequacy

1.0 Purpose, Background and Study Method

1.1 Purpose

The purpose of the 2020 Road Needs Study Report is to update the current road inventory and road condition assessments within the Township of North Dundas (Township). Using this information, a prioritized listing of the road network needs is developed. The information derived from the study and documented in this report will provide assistance to the Township for developing and executing a planned road maintenance and improvement program.

The Township retained the services of D.M. Wills Associates (Wills) to undertake a review of the existing road network, and assess its physical condition as well as confirm various attributes. Data collected as a result of the field review is used to develop a prioritized listing of the road network needs, the results of which are documented in this report.

1.2 Background

The Township of North Dundas is located within The United Counties of Stormont, Dundas and Glengarry and located directly south of Ottawa. The communities of Winchester and Chesterville serve as the Township's largest and main population centres. Outside of these two communities, the Township is largely rural with several semi-urban developments.

In 2013, an Asset Management Plan was undertaken by the Township to inventory and document the Township's existing road assets. This current study (2020) utilizes and builds from the road asset information documented in the 2013 Asset Management Plan. Additionally, the road inventory was also built using a GIS shapefile of the road network that was provided by the Township & County.

1.3 Study Objectives

Based on discussion with Township staff, the following study objectives were identified:

- Provide a current inventory and value of the Township's roads, assess road conditions and needs, and develop a priority listing for construction needs and improvements.
- Provide a prioritized list of capital projects for the Township to invest in.

To ensure compliance with the latest Ministry of Transportation (MTO) guidelines, the inventories were completed in accordance with the most current edition of the Inventory Manual for Municipal Roads.

1.4 Study Methodology

The procedure utilized to complete the study was in accordance with the Ministry of Transportation's Inventory Manual for Municipal Roads (February 1991).

Additionally, field reviews for the purpose of Pavement Condition Index (PCI) were undertaken in accordance with:

- MTO Manual for Condition Rating of Flexible Pavements, SP-024.
- MTO Manual for Condition Rating of Surface-Treated Roads, SP-021.
- MTO Manual for Condition Rating of Gravel Roads, SP-025.

There are two (2) key observations when using PCI methods: the Ride Condition Rating (RCR), and the Distress Manifestation Index (DMI). RCR is a subjective measurement of how smooth a travelled surface is, rated from 0 to 10, with 10 representing excellent, new surfaces, and 0 representing an extremely rough, impassible road. DMI aggregates various forms of visible pavement distress into a rating from 0 to 10, with 10 representing a new surface and 0 representing a destroyed surface.

RCR and DMI are rated strictly independently. A rough road may have relatively few visible distresses while a fairly smooth road may display many distresses. In general, rough roads display associated visible distresses.

The combined approach facilitates comparing all the Township's roads, as the Inventory Manual prescribes the same rating system regardless of surface type, while also providing detailed descriptions of the types of distress encountered on surfaces as per the PCI ratings. This approach is compliant with O. Reg. 588/17. Wills undertook the field study in September/October of 2020.

During the field study, a visual assessment of the following road characteristics was documented to assess the current adequacy of the road:

- Platform Width (overall width of road).
- Surface Width (width of pavement surface).
- Shoulder Width.
- Surface Type (gravel, low class bituminous, or high class bituminous).
- Drainage Type (open ditches vs. storm sewers etc.).
- Surface Condition (assigned based on Ride Condition Rating for this Study).
- Maintenance Demand.
- Roadside Environment.
- Capacity.
- Alignment.

1.4.1 Critical Deficiencies

Critical deficiencies represent road characteristics that result in increased maintenance costs or lead to an inadequate level of service. Road sections may be assessed as critically deficient if any one (1) of the following characteristics fall below the minimum tolerable standards defined in the MTO Inventory Manual:

- Surface type - Insufficient surface type for traffic volumes.
- Surface width - Insufficient width of the road surface excluding the shoulders.
- Capacity - Inability of the road to accommodate traffic volumes at peak periods.
- Structural Adequacy - Inability of the road base to support vehicular traffic.
- Drainage - Increased frequency of flooding or excessive maintenance effort required to prevent flooding.

Critically deficient roads have generally reached the end of their service life and /or require major work to improve e.g. widening or new surface type. As such, reconstruction is generally required.

Surface Type

The following parameters were used to assess the adequacy of the road surface type. Road sections with traffic volumes (AADT) equal to or in excess of the Maximum Tolerable Trigger values for Earth and Gravel in **Table 1**, were noted as critically deficient triggering a “NOW” surface type need as per the Inventory Manual Method.

Table 1 - Surface Type by Annual Average Daily Traffic (AADT)

Surface Type	AADT			
	Inventory Manual		MTO Pavement Design and Rehabilitation Manual ¹	Maximum Tolerable Trigger Value
	Tolerable Range	Design Standard		
Earth (E)	<50	-	-	50
Gravel (G)	<400	0-199	0 - 199	400
Low Class Bituminous (LCB) / Surface Treatment	-	200-399	200 - 1500	1500
High Class Bituminous (HCB) / Hot Mix	-	400+	>1500	-

¹ Ministry of Transportation. Pavement Design and Rehabilitation Manual, Second Edition, 2013, Table 3.3.3 Structural Design Guidelines for Flexible Pavement – Secondary Highways

Table 1 provides further guidance with respect to surface type from both the Inventory Manual as well as the MTO Pavement Design and Rehabilitation Manual.

As detailed in **Table 1**, Gravel surfaces are generally considered acceptable for AADT of less than 200 vehicles but may be tolerable up to 400 AADT. Transitioning to Surface Treatment should be considered above 200 AADT. Gravel road maintenance costs (resurfacing, grading, dust suppression, etc.) versus surface treatment costs are key considerations.

Low Class Bituminous (LCB) i.e. Surface Treatment may be acceptable for traffic volumes between 200 and 1500 AADT. A transition to a Hot Mix or High Class Bituminous surface from Surface Treatment must be considered on a case by case basis. The following factors require consideration:

- Surface Treatment Maintenance Costs.
- Commercial Vehicle Loading.
- Roadside Environment (Urban, Semi-urban, vs. Rural).
- On-street Parking.
- Adjacent Drainage Infrastructure i.e. curb and gutter, catch basins etc.
- Asphalt Availability / Cost.
- Surface / Platform Width.
- Traffic Volume Growth.
- Sub-base Quality.
- Roadbed Frost Susceptibility.
- Future Resurfacing / Rehabilitation Costs.

Vehicle loading is one of the key considerations for pavement design and ultimately the decision between Hot Mix and Surface Treatment. Roads with high levels of commercial traffic require a more substantial pavement structure. The values noted in Table 1, for the "MTO Method" are generally reflective of a highway with 10% commercial vehicles. Roads with AADT in excess of 400 vehicles with a good sub-base and commercial vehicles up to 10% may still perform very well with a Surface Treatment. Existing/past performance of a Surface Treatment can be an excellent indicator when considering the upgrade to Hot Mix.

Surface Width

Surface widths that fall below minimum tolerable standards, as detailed in the MTO Inventory Manual are noted as critically deficient triggering a "NOW" need. The minimum tolerable surface widths for rural roads are included in **Table 2**:

Table 2 – Rural Road Surface Width by Annual Average Daily Traffic (AADT)

AADT	1-49	40-199	200-399	400-999	1000-1999	2000-2999	3000-3999	4000+
Road Width (m)	5.0	5.5	5.5	6.0	6.0	6.0	6.5	6.5

Capacity

An in-depth traffic capacity analysis was not completed as part of the scope of this Road Needs Study. Decisions with respect to expansion of roads should be made within the context of a Transportation Master Plan or Official Plan for the City.

However, from a general perspective, a two-lane road can typically provide adequate service up to an AADT of approximately 12,000 vehicles. The functionality of a road from a capacity standpoint is of course dependent upon other factors in combination with volume. Adjacent land uses, number of access points i.e. entrances and side roads etc. also have a significant impact on how the road functions.

A rural road with limited entrances and side roads will have a much greater capacity to flow traffic versus an urban street with many entrances and side road intersections. The AADT of 12,000 can be used as a 'rule of thumb' to trigger further analysis on the road capacity and operation. For the purposes of this study, a detailed capacity analysis was not undertaken as part of the scope of work. All roads were assigned to be adequate from a capacity perspective noting that no road section had an AADT greater than 10,000 vehicles.

Structural Adequacy

In cases where road base or structure is showing distress over more than 20% of the length of the road section, a score between 1 and 7 (out of 20) is assessed and the road section is assigned a "NOW" need and considered Critically Deficient per the Inventory Manual. The structural adequacy rating is often the best indicator of the overall road section's health.

It should be noted that a structural "NOW" need does not explicitly mean that work must be undertaken on the road immediately (although this may be so in some cases). A structural "NOW" need means that a significant portion of the road is showing distress of the road bed and requires significant intervention i.e. reconstruction or major rehabilitation to renew its service life. A structural "1-5" year need is expected to become a "NOW" need in the next five (5) years, and a "6-10" year need is expected to become a "NOW" need in the next ten (10) years.

Drainage

A road section is assessed as a "NOW" need for drainage generally when a road becomes impassible due to water one or more times a year. This information is not readily accessible from inspection. Characteristics such as ditching, water ponding on or around the road, and evidence of past washouts were used to assess road drainage. As such, a road was given a "NOW" need for drainage if there were evident drainage problems that would likely lead to an impassable road during a heavy rain or a rapid snow melt.

2.0 The Road System

2.1 Inventory and Classification

All roads in the municipal road system were inventoried according to the methods outlined in the Inventory Manual for Municipal Roads.

The inventory procedure requires that each road in the system be studied as a separate unit. Initially, the road system was divided into sections so that each conformed, as close as possible, to the following requirements:

- Uniform traffic volume.
- Uniform terrain.
- Uniform physical conditions.
- Uniform adjacent land.

Depending on location with respect to the built up areas, roads were classified in a manner generally descriptive of the type of construction as follows:

- Urban - Roads with curb and gutter and storm sewer drainage.
- Semi-Urban - Roads in built up areas (development exceeds 50% of the frontage) without curb and gutter or curb and gutter on one (1) side only.
- Rural - Roads with development on less than 50% of the frontage.

Rural roads were further evaluated based on estimated traffic volumes; such as 0 to 50 vehicles per day, 51 to 200, and 201 to 400 etc. For the purpose of this study, traffic volumes were adopted or estimated from traffic counts in the 2013 Asset Management Plan (**Note: Updated traffic counts will be included in final version of this report**).

Table 3 summarizes the total road length in kilometres by surface type and road environment as of November 2020.

The existing road system consists of 407 km of roadway, 137 km of gravel roads, 167 km of surface treated roads (LCB) and 104 km of HCB (asphalt paved) roads; with all calculations being approximate and rounded to the nearest kilometre.

Table 3 - Road System Inventory

Township of North Dundas		
Road System in Kilometres		
(As of November 2020)		
A.	Surface Type	Totals*
	Earth	0
	Gravel (loose Top Gravel)	137
	Surface Treatment (LCB & ICB)	167
	Hot Mix Asphalt (HCB)	104
	Total A	407 km
B.	Roadside Environment	
(i)	Rural	
	Earth	0
	Gravel (loose Top Gravel)	136
	Surface Treatment (LCB & ICB)	166
	Hot Mix Asphalt (HCB)	67
	Total Rural	369 km
(ii)	Semi-Urban	
	Gravel (loose Top Gravel)	<1
	Surface Treatment (LCB)	<1
	Hot Mix Asphalt (HCB)	30
	Total Semi-Urban	31 km
(iii)	Urban	
	Gravel (loose Top Gravel)	0
	Surface Treatment (LCB)	0
	Hot Mix Asphalt (HCB)	7
	Total Urban	7 km
	Total B	407km

*Estimated to the nearest centreline kilometre.

3.0 Road Needs

The primary purpose of the study is to develop a list of all roads within the Township ranked according to priority with respect to road needs.

The method of evaluating road needs in terms of type, cost and timing of improvements is identified in the Inventory Manual for Municipal Roads.

It is important to note that budgetary restrictions will often influence the level of upgrades to the road system and therefore it is imperative to maximize the improvements based on availability of funds and needs priority.

3.1 Critical Deficiencies

The inventory of the road system revealed that certain road sections are now deficient or will become deficient during the study period.

As noted previously, critical deficiencies include road characteristics which result in increased maintenance costs and which inevitably lead to an inadequate level of service. A road section is critically deficient if any one of the following characteristics fall below the minimum tolerable standards defined in the Inventory Manual.

- Surface type - Incorrect surface type to suit traffic volumes on the roadway.
- Surface width - Insufficient width of the road surface excluding the shoulders.
- Capacity - Inability of the road to accommodate traffic volumes at peak periods.
- Structural Adequacy - Inability of the road base to support vehicular traffic.
- Drainage - Increased frequency of flooding or excessive maintenance effort required to prevent flooding.

Of the 407 km of roads inventoried, a total of 150 km were found to be critically deficient in one (1) or more areas. Of the 150 km, approximately 24 km represents roads with AADT of less than 50 vehicles. **It's worth noting that 107 km of the 150 km of NOW needs fall under a surface width need. The criteria for a surface width need is dependent on traffic volume and as we are currently undergoing updated traffic counts, this will change in the final version of the report.** Regardless of condition, roads with AADT of fifty (50) or less are typically assigned as "Adequate" (as per the Ministry protocol) for the purpose of the system adequacy calculation.

The overall system adequacy for the Township's road network, which is based upon the total road kilometres less the identified critically deficient ("NOW" needs) roads, is as follows:

$$\text{2020 System Adequacy} = \frac{407 - (150 - 24)}{407} \times 100\% = 69\%$$

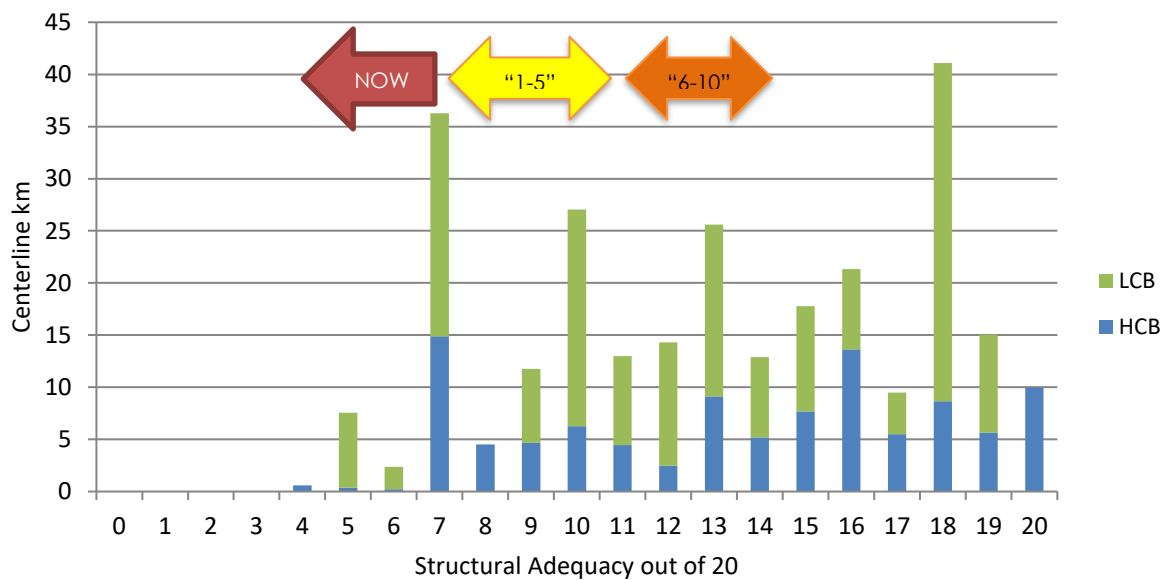
The average surface condition rating of all roads is 7.3/10 while the average structural adequacy rating is 13.5/20. This suggests that the typical road has a fair to good riding quality, but just at the point where significant rehabilitation or reconstruction is required.

As per O. Reg. 588/17, the average unpaved road was in fair condition and the average PCI for hard top surfaces in the Township is 69.9.

A review of the structural adequacy distribution of the Township's hard top roads identifies a group of roads, 115 km, that are in very good condition (structural adequacy of 15 and over), and with regular resurfacing and preservative maintenance, should not require reconstruction in the next ten (10) years. Another cohort of roads, approximately 53 km, are in average condition (Structural Adequacy from 12 to 14). Some of these roads may continue to perform well, but without timely resurfacing and preventative maintenance, many of them are expected to become NOW or 1 – 5 year needs. The remaining 103 km of hard top road network is well distributed over the very poor to poor range (structural adequacy from 4 to 11). Most of these roads will require reconstruction over the next five (5) years to fully repair them.

It is therefore recommended that, while the Township endeavors to repair these poor roads as part of its 10-year capital plan, every reasonable effort is made, through preservation management, to prevent the current cohort of fair to very good roads (115 km) from becoming capital reconstruction needs themselves.

Structural Adequacy Distribution (Hard Top Surfaces)



3.2 Priority Ratings of Roads

A mathematical empirical formula was used to calculate the priority rating for each road section. The priority rating is a weighted calculation which takes into account the existing traffic volume and overall condition rating of the road.

This priority analysis is an impartial procedure to place the deficiencies in order of relative need. **A higher Priority Rating number indicates a relatively greater need for improvement.**

The formula takes into account the current traffic volume (AADT), whether it is from actual road counts or estimated road counts and the Condition Rating (CR) of the road at the time of this Road Needs Study Report. The formula is as follows:

$$\text{Priority Rating} = 0.2 \times (100 - \text{CR}) \times (\text{AADT} + 40)^{0.25}$$

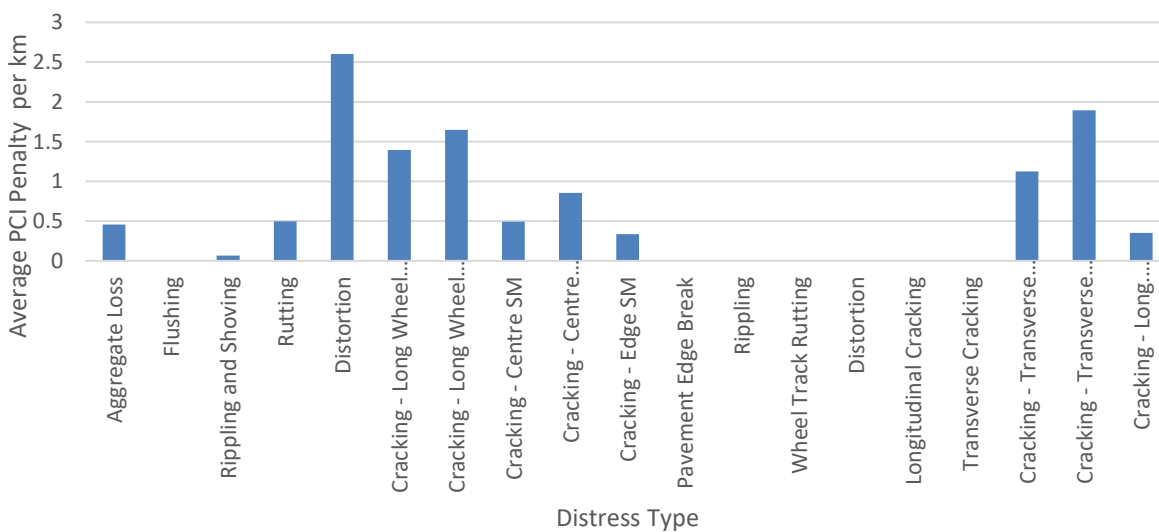
In utilizing the above equation Wills identified a priority listing for review with Township staff. It is important to emphasize that the priority rating calculation considers only CR and traffic volumes.

When developing the recommended capital expenditure plan consideration may be given to the remaining useful service life of a road / roadbed with a view to coordinating major reconstruction efforts at / near the end of the road's life. Furthermore, while a priority rating will give a general idea of which roads should be improved before others, it does not prescribe an exact order for road improvements nor does it determine the timing of preservation and rehabilitation work. For example, it may be wise to defer the full reconstruction of a high priority road ("let the bad roads fail") in favour of resurfacing work on a medium priority road ("keep the good roads good").

3.3 Dominant Distress Types

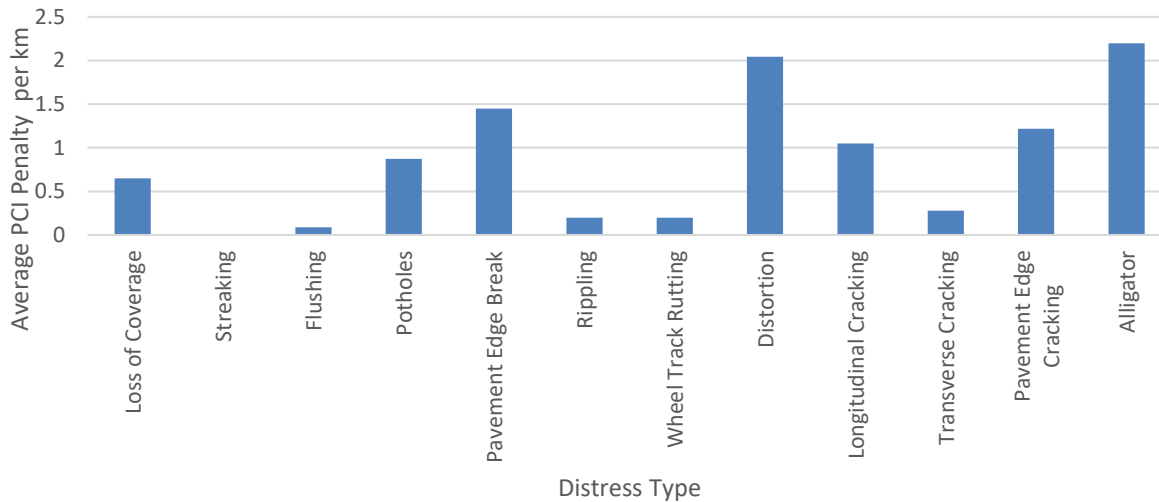
As detailed in Figure 1, distortion had the highest effect on PCI rating on the Township's HCB network. Transverse and wheel track cracking were also substantial, with rutting and aggregate loss also responsible for significant penalties to the Township's PCI ratings. Flushing, and rippling and shoving were not observed during inspections.

Figure 1 – HCB Distress Type Prevalence



As detailed in **Figure 2** the principal distress type in the Township's LCB roads was also distortion. Other distress types were moderately significant except for flushing, rippling and transverse cracking which had a minor average impact on average PCI ratings for LCB Roads.

Figure 2 – Surface Treated Distress Type Prevalence



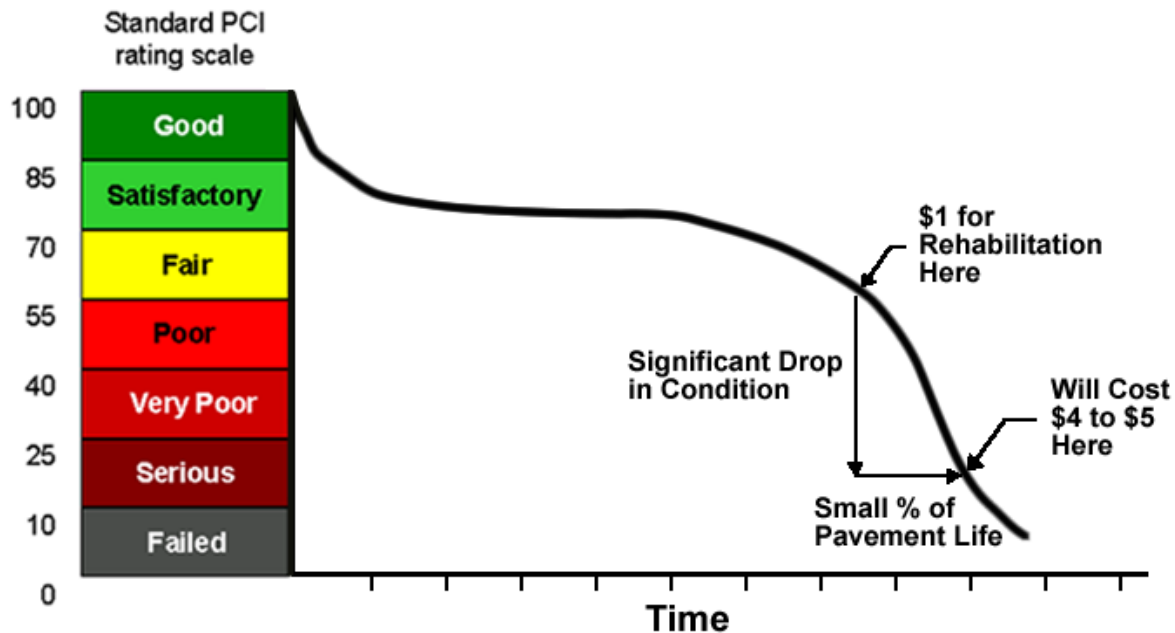
4.0 Roads Best Management Practices

The key to managing a pavement / road network is the timing of maintenance and rehabilitation activities. This idea evolves from the fact that a pavement's structural integrity does not fall constantly with time. A pavement generally provides a constant, acceptable condition for the first part of its service life and then begins to deteriorate very rapidly. In many cases, maintenance and rehabilitation measures are not taken until structural failure or noticeable changes in ride quality become apparent. This is the "fix it once it is already broken" approach.

The unfortunate consequence of this decision is that maintenance and rehabilitation becomes exponentially more expensive over the life of the pavement and is often overlooked until the pavement condition reaches a severe state of distress. There is opportunity for substantial cost savings when intervention is made *before* the pavement becomes severely compromised; i.e. "fix it before it breaks". **Figure 3** the underlying principle in support of a preservation management approach to pavement infrastructure. The principle also has application to each of the classes of roads maintained by the Township. Significant cost savings will result from proactive intervention rather than simply waiting as long as possible before performing maintenance.

Examples of approach to roads management with their associated cost implications over the lifecycle of a road are set out below in **Section 4.1** and are provided as an illustration of the benefit of a "preservation management approach".

Figure 3 - Typical Service Life of an Asphalt Pavement



4.1 Example Life Cycle Cost Analysis

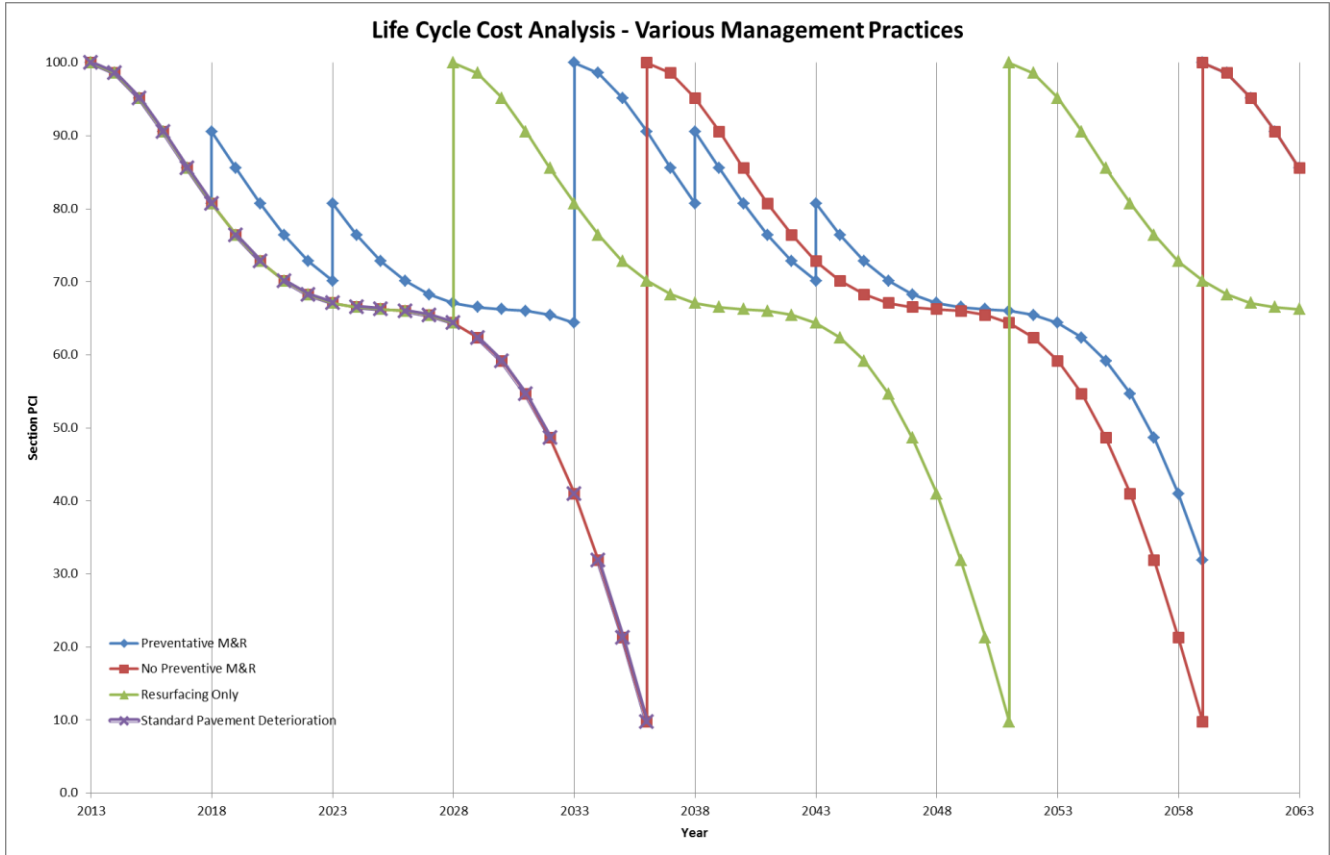
The following life cycle costs analysis compares three (3) different municipalities Municipality 1, Municipality 2 and Municipality 3; each with three (3) distinct approaches to pavement management. For this analysis we will assume each of the three (3) municipalities has 7000 m² of pavement, i.e. 1 km of asphalt paved road that is 7 m wide. In each scenario, the road is assumed to have been constructed in 2013 and will operate under normal traffic loading.

The Life Cycle Cost Analysis (LCCA) assumes no user costs. The LCCA uses a discount rate of 2.5% / year.

The LCCA shows the three (3) different municipalities and tracks their pavement management decisions and related condition over the specified time period. Municipality 1 represents decisions made based on strategic preventive maintenance and rehabilitation (M&R), Municipality 2 represents decisions based on no preventive M&R and Municipality 3 represents decisions based on resurfacing only.

Figure 4 illustrates a time- pavement condition plot for each municipality

Figure 4 - Time-Condition Plot for 3 Municipalities



The costs associated with the corresponding maintenance and rehabilitation decisions are outlined in the following three (3) charts:

Preventive M&R									
Year	Age	Treatment	Δ PCI	PCI _q	Quantity	Unit	Unit Cost	Total Cost	Present Worth
		-- Annual Ditching/Clearing --							
2018	5	Localized Preventive - Rout and Seal	81-90	Satisfactory-Good	1000	m	\$1.50	\$1,500.00	\$1,325.78
2023	10	Global Preventive - Slurry Seal	70-81	Satisfactory-Good	7000	m ²	\$6.50	\$45,500.00	\$35,544.53
2033	20	Surface Course	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m ²	\$12.00	\$84,000.00	
		50mm Surface Course			892.5	t	\$135.00	\$120,487.50	
							\$204,487.50	\$124,792.78	
2038	25	Localized Preventive - Rout and Seal	81-88	Satisfactory-Good	4500	m	\$1.50	\$6,750.00	\$3,640.89
2043	30	Global Preventive - Slurry Seal	68-78	Satisfactory-Good	7000	m ²	\$6.50	\$45,500.00	\$21,691.79
2048	35	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	5%	m ²	\$30.00	\$10,500.00	\$4,424.40
2053	40	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	10%	m ²	\$30.00	\$21,000.00	\$7,821.04
2058	45	Full Reconstruction	32-100	Serious-Good					
		Remove Asphalt Full Depth			7000	m ²	\$15.00	\$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	\$35.00	\$14,700.00	
		40mm Base Course			686	t	\$125.00	\$85,750.00	
		50mm Surface Course			892.5	t	\$135.00	\$120,487.50	
							\$325,937.50	\$107,290.28	
2063	5	Localized Preventive - Rout and Seal	81-90	Satisfactory-Good	1000	m	\$1.50	\$1,500.00	\$436.41
			Final PCI in 2063:	90	Good			Net:	\$306,967.90
								Residual Value:	\$85,346.08
								Total Cost:	\$221,621.82

The policy of Municipality 1 is to strategically intervene with preventative maintenance measures over the course of the pavement's service life. Two (2) significant maintenance measures are performed on the pavement at various times and ultimately extend the service life of the pavement, prorating the total cost of the pavement over a longer period of time. Eventually, a full reconstruction is required and this cycle repeats. The total life cycle costs are substantially less when compared to Municipality 2 and 3, at a total of \$221,622 over 50 years.

No Preventive M&R									
Year	Age	Treatment	Δ PCI	PCI _q	Quantity	Unit	Unit Cost	Total Cost	Present Worth
2023	10	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	5%	m ²	\$30.00	\$10,500.00	\$8,202.58
2028	15	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	10%	m ²	\$30.00	\$21,000.00	\$14,499.78
2030	17	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	20%	m ²	\$30.00	\$42,000.00	\$27,602.19
2036	23	Full Reconstruction	10-100	Poor-Good					
		Remove Asphalt Full Depth			7000	m ²	\$15.00	\$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	\$35.00	\$14,700.00	
		40mm Base Course			686	t	\$125.00	\$85,750.00	
		50mm Surface Course			892.5	t	\$135.00	\$120,487.50	
							\$325,937.50	\$184,707.88	
2043	7	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	5%	m ²	\$30.00	\$10,500.00	\$5,005.80
2048	12	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	10%	m ²	\$30.00	\$21,000.00	\$8,848.79
2053	17	Safety/Stopgap Maintenance - AC Patching/Leveling	N/A	N/A	20%	m ²	\$30.00	\$42,000.00	\$15,642.09
2059	23	Full Reconstruction	10-100	Poor-Good					
		Remove Asphalt Full Depth			7000	m ²	\$15.00	\$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	\$35.00	\$14,700.00	
		40mm Base Course			686	t	\$125.00	\$85,750.00	
		50mm Surface Course			892.5	t	\$135.00	\$120,487.50	
							\$325,937.50	\$104,673.45	
Final PCI in 2063:			86	Good				Net:	\$369,182.56
								Residual Value:	\$81,552.92
								Total Cost:	\$287,629.64

The policy of Municipality 2 is to simply construct the pavement and wait until serious deficiencies begin to appear before acting. This approach unfortunately remains common still today. Over the last period of the pavement's life, maintenance is required to ensure safety and operation until the pavement becomes completely destroyed. Once the pavement has failed, a complete reconstruction is carried out restoring the pavement to new condition. This cycle repeats again until a second reconstruction is required. The total costs are substantial and total \$287,630 over 50 years.

The policy of Municipality 3 is periodic resurfacing. The pavement is constructed and time passes until early signs of serious distress are observed. This occurs after the time when preventive maintenance is neither appropriate nor possible, but before the pavement becomes completely destroyed. Resurfacing is performed and restores the pavement to almost new condition. The pavement then deteriorates for the remainder of its life, requiring significant maintenance in the last years before it becomes completely destroyed. A full reconstruction is then carried out and the cycle continues. The total costs are in between that of Municipality 1 and 2 at \$260,038 over 50 years.

Resurfacing Only									
Year	Age	Treatment	Δ PCI	PCI _q	Quantity	Unit	Unit Cost	Total Cost	Present Worth
2028	15	Surface Course	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m ²	\$12.00	\$84,000.00	
		50mm Surface Course			892.5	t	\$135.00	\$120,487.50	
							\$204,487.50	\$141,191.58	
2051	23	Full Reconstruction	10-100	Serious-Good					
		Remove Asphalt Full Depth			7000	m ²	\$15.00	\$105,000.00	
		Add and Compact Corrective Aggregate/Correct Crossfall (25mm avg.)			420	t	\$35.00	\$14,700.00	
		40mm Base Course			686	t	\$125.00	\$85,750.00	
		50mm Surface Course			892.5	t	\$135.00	\$120,487.50	
							\$325,937.50	\$127,534.43	
2067	15	Surface Course	64-100	Poor-Good					
		Mill and Dispose of Surface Course			7000	m ²	\$12.00	\$84,000.00	
		50mm Surface Course			892.5	t	\$135.00	\$120,487.50	
							\$204,487.50	\$53,898.67	
Final PCI in 2063:			66	Good				Net:	\$322,624.67
								Residual Value:	\$62,587.12
								Total Cost:	\$260,037.55

It may be easy to see upfront cost savings by understanding that as long as any costs associated with maintaining the pavement are deferred as long as possible, money will be saved. The reality is that extending a pavements service life prorates the total cost of the pavement over a longer period of time and ultimately becomes more economical in the long run. If preventive maintenance measures are strategically planned and carried out then the service life of the pavement can be maximized and substantial reconstruction costs can be deferred for longer periods of time. In a time when economy and efficiency are becoming more and more important, this type of proactive management is essential in the management of infrastructure.

Preservation Management Approach

4.1.1 Gravel Roads

The Township currently maintains approximately 137 km of gravel road. The proposed preservation management approach for this class of road is outlined in the following **Table 4** and **Table 5**.

Table 4 - Preservation Management Approach- Gravel Surface

Action	Frequency
Regrade surfaces to maintain smooth / safe driving surface and proper crossfall.	As needed, generally 2-3 times per year for higher volume gravel, or more frequently as necessary; 1-2 for lower volume.
Add calcium to tighten surface, retain aggregate and reduce dust.	Each spring on all roads of higher volume and as needed during summer months.
Ditching and brushing of right-of-ways to improve roadbed drainage and safety.	Complete road network every 10 years.

Table 5 - Capital Activities – Gravel Roads

Action	Frequency
Add layer (75 mm) of granular material to road surface.	Every 3-5 years for gravel roads.
Base and sub-base improvements.	As needed or as dictated by traffic volumes.
Reconstruct / convert to hard top.	As dictated by traffic volumes.

4.1.2 Asphalt Roads

Asphalt surfaces are the smoothest and most durable hard top surface used by the Township however; they are also the most expensive. The Township currently maintains 104 km of asphalt surface roads. Asphalt provides a constant, acceptable condition for the initial portion of its service life but then begins to deteriorate rapidly as it ages. Surface defects such as cracking and raveling are the first signs of the deterioration. If left untreated, the pavement will rapidly deteriorate to the point where reconstruction is the only option. A preservation management strategy can mitigate this by applying renewal treatments earlier in the pavements life before the conditions begin to deteriorate too far. **Table 6** below summarizes preservation management activities to be considered for asphalt roads:

Table 6 - Preservation Management Approach – Rural Asphalt Roads

Activity	Age (Years)	Ride Condition Rating	Estimated Service Life Extension (Years)
Crack seal	2-6	9	2
Slurry Seal / Microsurface	4-8	8	4-6
Overlay	12-15	6-7	10
Pulverize and Pave	20-25	< 5	20
Reconstruct	30	< 4	30

Note: Slurry seal can be used on lower volume paved roads (less than 1000 vehicles per day). For roads with volumes in excess of 1000 AADT, microsurfacing should be considered.

In addition to the above noted preservation approach, the following best management practices may be employed to extend the service life and reduce life cycle costs of asphalt roads:

1. Review the condition of other infrastructure, particularly underground infrastructure prior to implementing any major renewal or rehabilitation of the pavement. Any repairs or capital upgrades to other infrastructure should be coordinated. This should reduce utility cuts in newer asphalt.
2. Repair potholes in the surface in a timely fashion to prevent saturation and weakening of road base.
3. Undertake regular shouldering program of rural paved roads to promote proper drainage. Poorly maintained shoulders allow surface water to pond and saturate the road base, which weakens the base and leads to cracking at the edge of pavements.
4. Undertake a ditching program to ensure there is adequate drainage for road base on rural roads. This will reduce the likelihood of structural distresses caused by softening of the road base due to poor drainage.
5. Specify the appropriate type of performance graded asphalt cement for the location.
6. Undertake a clearing program to reduce shading of the roadbed and remove roots / vegetation from the road base.

4.2 Application of Preservation Management Approach

The preservation management activities detailed in each of the tables above are not necessarily intended or required to be completed on each and every road. Road deterioration rates and the type of deterioration will dictate when action should be taken and what kind of treatment is most appropriate. The intention of the above is to outline the series of techniques to be considered in an effort to realize and extend the useful service life of the road asset for the lowest overall lifecycle cost while maintaining the highest overall condition. As detailed in the life cycle costs analysis presented above, the preservation management approach to roads is proven to yield the lowest overall life-cycle costs.

Each of the preservation management activities for gravel, surface treatment and asphalt roads identified above (including route and seal, slurry seal, resurfacing etc.), shall be considered as part of the regular Road Needs Study Report every five (5) years. Recommendations on the specific treatments required shall be documented and prioritized in this Report.

5.0 Road Needs Study Rehabilitation Strategies

5.1 Types of Improvements

All roads were examined to appraise the extent and type of improvement necessary.

“Order of Magnitude” construction costs were developed for each of the below options on a per kilometre basis. An estimated cost for isolated frost heave repairs was also considered.

The below alternative rehabilitation strategies are considered preliminary in nature and are intended to assist in providing an order of magnitude cost estimate to rehabilitate the road. Further field investigations and engineering design is required to confirm and develop the rehabilitation strategies for each road.

5.1.1 Asphalt

High Class Bituminous roads (HCB) or hot mix asphalt roads have rehabilitation alternatives ranging from a simple overlay to complete reconstruction. The following is a listing of standard road rehabilitation techniques that were considered for HCB or hot mix asphalt roads.

RO1	Resurfacing, Single-Lift Overlay.
RO2	Resurfacing, Double-Lift Overlay.
RMP1	Resurfacing, Mill and Pave 1-Lift.
RMP2	Resurfacing, Mill and Pave 2-Lifts.
PP1	Pulverize and Pave 1-Lift.
PP2	Pulverize and Pave 2-Lifts.
Recon 1R	Excavate and Reconstruct Road and Pave 1-Lift – Rural.
Recon 1S	Excavate and Reconstruct Road and Pave 1-Lift – Semi-Urban.
Recon 2S	Excavate and Reconstruct Road and Pave 2-Lifts – Semi-Urban.
Recon 2U	Excavate and Reconstruct Urban Road and Pave 2-Lifts – Urban.
SS	Slurry Seal (Preventative Maintenance).
MS	Microsurfacing (Preventative Maintenance).
RS	Route and Seal (Preventative Maintenance).

5.1.2 Gravel

Gravel roads can likewise be upgraded with the reapplication of Gravel (G) or surface treatments (ST2).

5.2 Benchmark Construction Costs

The Unit Price Form found in **Appendix A** is based on historical information provided by the Township. The unit prices were used to prepare an array of benchmark construction costs. The design standards in **Table 7** were utilized for development of the benchmark cost estimates for reconstruction. It should be noted that these are suggested standards and therefore should not necessarily be used as standards for detail design of roadway improvements.

Table 7 - Design Standards for Construction Cost Estimates

Functional Classification	Surface Width (m)	Shoulder Width (m)	Granular A Depth (mm)	Granular B Depth (mm)	Hot Mix Depth (mm)*
Rural R200 (50 to 199 vpd)	6.0	1.5	150	450	-
Rural R300 (200 to 399 vpd)	6.0	1.5	150	450	16*
Rural R400 (400 to 999 vpd)	6.5	1.5	150	450	50
Semi - Urban Local Residential	6.0	1.5	150	450	50
Semi - Urban Local Industrial	6.5	1.5	150	450	50
Urban Local Residential	8.5	-	150	600	100
Urban Local Industrial	9.0	-	150	600	100

Note - Prime and Double Surface Treatment is based on 16 mm of Hot Mix.

6.0 Improvement Plan

A Road Needs Summary Table, including the Capital Improvement, LCB to HCB Conversion Program, and Resurfacing is included in Appendix B. AADT is based on traffic counts of the previous Road Needs Study (to be updated following traffic counts). All costs are in 2020 dollars.

6.1 LCB to HCB Conversion Program

The Township's recent experience with surface treated roads has been unsatisfactory, with service lives of 3-4 years before major work is required. Normally, surface treatment can be expected to last at least 7 years. As such, the Township has requested that the conversion of all surface treated roads to hot mix pavement be considered in this report.

The Township currently maintains 167 km of surface treated roads. Although road reconstruction may vary section by section, this report considers a typical conversion

strategy of placing 150mm of Granular A before paving 1 lift (50mm). The total LCB to HCB Conversion Program is estimated at \$24.4 Million.

6.2 Capital Improvements

Preliminary recommendations and prioritization for planned capital improvements i.e. reconstruction, have been developed based on the condition rating and traffic demands on each road section, as per the Inventory Manual. Those roads identified as having a "NOW", 1 – 5, or 6 - 10 year need have been included in the capital improvement plan for reconstruction.

Excluding surface treated roads, which are already included in the LCB to HCB Conversion Program, 58.4 km of roads were identified as having structural needs in the "NOW", 1 – 5 or 6-10 year periods. The estimated cost to improve these roads is approximately \$ 18.6 M.

6.3 Annual Resurfacing Program

Hot Mix Paved Roads:

- 104 km of paved roads (HCB).
- Degradation rate 0.25 / year (rating drops from 10 to 5, over a 15-year period).
- Annual resurfacing 6.9 km / year.
- **Annual budget \$952,200:** (6.9 km / year x \$210,000 / ln **RO1** x 2 lanes).

Gravel roads require regular maintenance. Maintenance includes regular grading and reapplication of new gravel. Typically, gravel roads should be resurfaced on a 3 - 5 year cycle.

Gravel Roads:

- 137 km of earth / gravel roads.
- 75 mm gravel every 3-5 years.
- Annual gravelling of 27.3 km.
- Granular A (\$12,000 / km).
- **Annual budget \$327,600** (27.3 km / year x \$14,000 **G**) **.

** Cost based on supply and application of gravel by external forces.

The total resurfacing program, (hot mix and gravel) is estimated at \$1,279,800 per year for the next 10 years. This budget will need to be increased in the future as it currently does not include surface treated roads (as they are being converted to HCB). In the long term (10 – 15 years), these new HCB roads will need to be need to be resurfaced as well, and the future resurfacing program is estimated at \$2,811,600.

6.4 Preservation Management

Cracksealing

- 107 km of paved roads (HCB).
- 167 km of surface treated roads to be converted to HCB.
- Assume that cracksealing will be applied, on average, once per resurfacing cycle.
- Annual cracksealing of 18.0 km / year.
- **Annual budget \$72,000** (18.0 km x \$4,000 / km **Cracksealing**).

Slurry Seal / Microsurfacing

- 107 km of paved roads (HCB).
- 167 km of surface treated roads to be converted to HCB.
- Assume that slurry seal / microsurfacing will be applied, on average, once per resurfacing cycle.
- 18.0 km of road to preserve per year.
- **Annual budget \$396,900** (18.0 km x \$22,050 / km **Slurry Sealing / Microsurfacing**).

6.5 Road Maintenance

Preventative road and roadside maintenance is critical to prolonging the useful service life of a road and maximizing the capital investment. A continuous road and roadside maintenance program is recommended to reduce the road degradation rates. Ditch cleanout and clearing of vegetation from the right-of-way should be carried out on a regular basis. This can either be accomplished through dedicated internal Township forces or sub-contracting to private contractors. Consideration may be given to a dedicated capital program of ditch cleanout and clearing, to ensure resources are dedicated to these important activities.

Ditching Program:

- 369 km of rural roads.
- 27 km of Semi-Urban Roads with open ditch drainage.
- Ideally perform ditch cleanout on the entire network every 10 years.
- 39.7 km of road to ditch per year.
- **Annual budget \$277,900** (40 km x \$7,000 / km **ditching, both sides**).

Brushing Program:

- 369 km of rural roads.
- Brushing from the shoulder to the ROW on the entire network every 10 years.
- 36.9 km of road to brush per year.
- **Annual budget \$110,700** (36.9 km x \$3,000 / km **brushing, both sides**)

7.0 Replacement Cost

In conjunction with this Road Needs Study Report, a replacement cost for the road asset was calculated based strictly on roadbed materials i.e. sub-base, base and

surface. Road design standards noted in **Table 7** were used to estimate the existing depth of road bed materials for the purpose of the replacement cost calculation.

The total replacement cost for the Township's road infrastructure is approximately \$96.3 M.

Note this cost represents the theoretical road bed materials costs only and does not include items such as removal of the existing road bed, installation of signs, pavement markings, lighting, drainage infrastructure, property etc.

8.0 Summary

D.M. Wills Associates (Wills) undertook a review of the Township of North Dundas's (Township) existing road network to assess its physical condition and confirm various road attributes. Data collected as a result of the field review was used to develop a prioritized listing of the road network needs based primarily on condition and traffic volumes.

Wills undertook the field study in September/October of 2020. A visual assessment of each road within the Township was undertaken to assess the current condition of the road.

Two (2) primary indicators of the relative health of a road are the structural adequacy rating (Inventory Manual) and the PCI (hard-top roads only for this study). The current average structural adequacy rating for the Township's road network is 13.5/20. The current average PCI for the Township's hard-top road network is 69.9 (out of 100).

13% (~52 km) of the road network has a Structural "NOW" need, 14% (~56 km) has a Structural "1-5" year need, and 13% (~53 km) of the road network has a Structural "6-10" year need.

LCB to HCB Conversion Program

The Township's recent experience with surface treated roads has been unsatisfactory, with service lives of 3-4 years before major work is required. Normally, surface treatment can be expected to last at least 7 years. As such, the Township has requested that the conversion of all surface treated roads to hot mix pavement be considered in this report.

The Township currently maintains 167 km of surface treated roads. Although road reconstruction may vary section by section, this report considers a typical conversion strategy of placing 150mm of Granular A before paving 1 lift (75mm). **The total LCB to HCB Conversion Program is estimated at \$24.4 Million.**

Preservation Management

In addition to addressing currently deficient roads (i.e. capital reconstruction), a dedicated preservation management approach is required, **and perhaps even more importantly**, to "keep the good roads good"; the fundamental principle being that it costs much less to maintain a good road than it does to let it fail and then reconstruct it,

from a life cycle cost perspective. Ultimately, the goal of preservation management is to extend the useful life of a road and road network, maximizing the municipality's investment over the road life-cycle.

Road resurfacing is an effective way of extending the overall life of the pavement structure and therefore a road resurfacing program is highly recommended. Roads with a structural adequacy of 12/20 or greater are included as candidates for potential resurfacing. Preliminary recommendations and prioritization for road resurfacing are based on condition rating and traffic demands on each road section, as per the Inventory Manual. A road with higher traffic volumes and fair structural adequacy is given priority over a road with moderate traffic and good structural adequacy score, in an attempt to intervene and extend the life of the road before it deteriorates to a level that can no longer be resurfaced (i.e. more expensive reconstruction is required). Specific resurfacing treatment recommendations must be assessed through further field investigation and detail design effort, prior to selecting and implementing the resurfacing strategy.

Based on typical degradation rates for gravel roads, surface treatment, and hot mix, a total resurfacing program, (hot mix and gravel) is estimated at \$1,279,800 per year.

Further to the recommendations above with respect to resurfacing, it is also recommended that regular maintenance in the form of roadside ditch cleanout and clearing be undertaken as a critical component to preservation management in order to extend the useful service life of the existing roads.

Capital Improvements

Preliminary recommendations and prioritization for planned capital improvements i.e. reconstruction, have been developed based on the condition rating and traffic demands on each road section, as per the Inventory Manual. Those roads identified as having a "NOW", 1 – 5, or 6 - 10 year need have been included in the capital improvement plan for reconstruction.

Excluding surface treated roads, which are already included in the LCB to HCB Conversion Program, 58.4 km of roads were identified as having structural needs in the "NOW", 1 – 5 or 6-10 year periods. The estimated cost to improve these roads is approximately \$ 18.6 M.

A fully funded 10-year plan following the recommendations in this report includes \$1.3M/year for resurfacing needs, \$18.6 M (\$1.9 M/year) for the capital needs, and \$24.4 M for LCB to HCB Conversion Program over the next ten years.

An additional length of approximately 107 km of road is identified as having inadequate surface widths. **The warrant for a surface width need is dependent on traffic volume and as we are currently undergoing updated traffic counts, this length will change in the final version of the report.** Generally, provided no operational or safety

concerns are identified, roads with surface width deficiencies are typically addressed / considered at the next full reconstruction cycle. All roads currently meet the minimum tolerable standard for surface type, based on the Inventory Manual methodology. Additional guidance regarding road surface types is discussed within the document.

The time of inspection plays a significant role in assessing a road's condition. Certain deficiencies, particularly for gravel roads, are only obvious during the "spring break-up" period. By midsummer, any evidence to suggest these deficiencies may have disappeared due to regular grading and grooming activities and general drying of the roadbed. The field work for this study was carried out in September/October 2020, missing out on any "spring break-up" that may occur earlier in the year.

We trust the above and attached information will be of benefit to the Township and appreciate the opportunity to assist the Township in developing its road improvement plan.

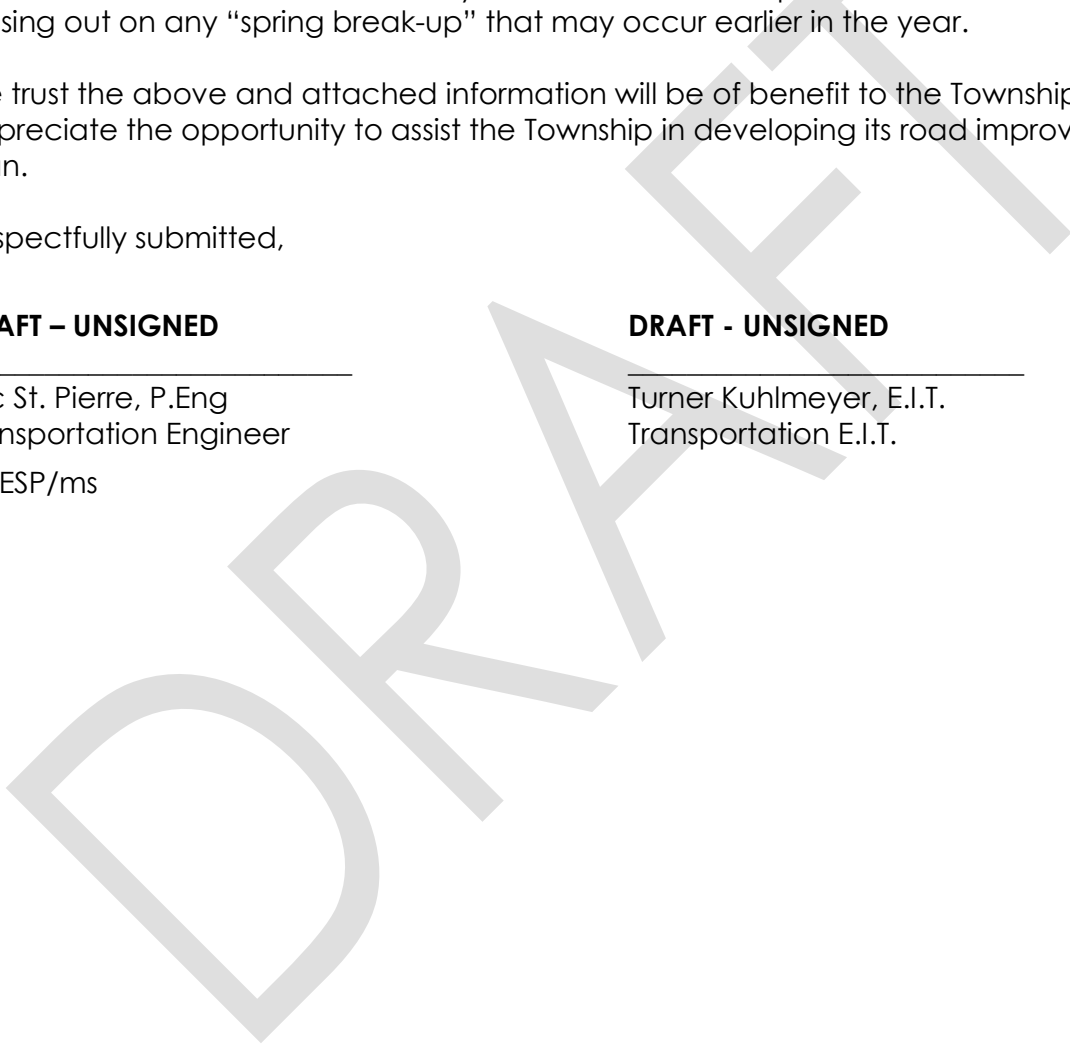
Respectfully submitted,

DRAFT – UNSIGNED

Eric St. Pierre, P.Eng
Transportation Engineer
TK/ESP/ms

DRAFT - UNSIGNED

Turner Kuhlmeier, E.I.T.
Transportation E.I.T.



Statement of Limitations

This report has been prepared by D.M. Wills Associates on behalf of the Township of North Dundas. The conclusions and recommendations in this report are based on available background documentation and discussions with applicable Township staff at the time of preparation.

The report is intended to document the 2020 Roads Needs Study Report findings and assist the Township in developing budgetary plans for investment into their road network.

Any use which a third party makes of this report, other than as a Road Needs Study Report is the responsibility of such third parties. D.M. Wills Associates Limited accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or action taken based on using this report for purposes other than as a summary of the 2020 Road Needs Study Report findings.

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Appendix A

Unit Price Form

ROAD IMPROVEMENT COSTS
Township of North Dundas

Unit Costs	Units	Unit Cost
Granular A	t	\$10.00
Granular B	t	\$17.00
Hot Mix	t	\$90.00
Earth Excavation	m3	\$12.00
Asphalt Removal	m2	\$6.00
Asphalt Removal - Partial Depth	m2	\$3.00
Removal of Concrete Curb & Gutter	m	\$25.00
Concrete Curb & Gutter	m	\$100.00
In-Place Full Depth Reclamation	m2	\$4.00
Surface Treatment - Single	m2	\$3.00
Surface Treatment - Double	m2	\$5.00
Granular A Conversion	2.2	t/m3
Granular B Conversion	2	t/m3
Hot Mix Conversion	2.45	t/m3

Gravel (75mm)									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Quantity	Unit Cost	Cost/km (x 1000)		
Granular A	7.0	75	2.2	t	1155	\$10.00	\$ 12		
							G	12	(per Kilometre)

Frost Heave Treatment									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Quantity	Unit Cost	Cost/50m Digout (x 1000)		
Earth Excavation	8.0	800		m3	320	\$12.00	\$ 4		
Granular A	7.0	150	2.2	t	115.5	\$10.00	\$ 1		
Granular B	8.0	650	2	t	520	\$17.00	\$ 9		
							FT	14	(per Kilometre)

Surface Treatment - Rural/Semi Urban - Single [ST1]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Quantity	Unit Cost	Cost/km (x 1000)		
Surface Treatment - Single (Overlay)	7.0			m2	7000	\$3.00	\$ 21		
							ST1	21	(per Kilometre)

Surface Treatment - Rural/Semi Urban - Double [ST2]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Quantity	Unit Cost	Cost/km (x 1000)		
Surface Treatment - Double (Overlay)	7.0			m2	7000	\$5.00	\$ 35		
							ST2	35	(per Kilometre)

Surface Treatment - Rural/Semi Urban - Double with Removal of Existing [ST2R]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Surface Treatment - Double	7.0			m2		7000	\$5.00	\$ 35	
Removal Asphalt Pavement	7.0	16		m2		7000	\$6.00	\$ 42	
							ST2R	77	(per Kilometre)

Surface Treatment - Rural/Semi Urban - Double with Granular Base [ST2A]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Surface Treatment - Double	7.0			m2		7000	\$5.00	\$ 35	
Granular A	7.0	150	2.2	t		2310	\$10.00	\$ 23	
							ST2A	58	(per Kilometre)

Surface Treatment - Rural/Semi Urban - Double with Pulverization and Granular Base [ST2PA]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Surface Treatment - Double	7.0			m2		7000	\$5.00	\$ 35	
Granular A	7.0	150	2.2	t		2310	\$10.00	\$ 23	
Pulverizing	7.0			m2		7000.0	\$4.00	\$ 28	
Minor Items @ 25%								\$ 7	
							ST2PA	93	(per Kilometre)

Surface Treatment - Rural/Semi Urban - Widening and Double with Pulverization and Granular Base [ST2PAW]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Surface Treatment - Double	7.0			m2		7000	\$5.00	\$ 35	
Granular A	7.0	150	2.2	t		2310	\$10.00	\$ 23	
Pulverizing	7.0			m2		7000.0	\$4.00	\$ 28	
Earth Excavation	2	450		m3		900	\$12.00	\$ 11	
Granular B	1	450	2	t		900	\$17.00	\$ 15	
Minor Items @ 25%								\$ 14	
							ST2PAW	126	(per Kilometre)

Resurfacing - Rural/Semi Urban Single Lift Overlay [RO1]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction **	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	3	50	2.45	t	74	441	\$90.00	\$ 40	
Granular A	1.5	50	2.2	t		165	\$10.00	\$ 2	
Minor Items @ 15%								\$ 6	
							RO1	48	(per Lane Kilometre)

Resurfacing - Rural/Semi Urban - Double Lift Overlay [RO2]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction **	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	3	90	2.45	t	66	728	\$90.00	\$ 65	
Granular A	1.5	90	2.2	t		297	\$10.00	\$ 3	
Minor Items @ 15%								\$ 10	
							RO2	79	(per Lane Kilometre)

Resurfacing - Urban - Single Lift Mill and Pave [RMP1]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	4.25	50	2.45	t		521	\$90.00	\$ 47	
Remove Curb and Gutter				m		200	\$25.00	\$ 5.00	
Curb and Gutter - 20%				m		200	\$100.00	\$ 20.00	
Milling	4.25			m2		4250	\$3.00	\$ 12.75	
Minor Items @ 25%								\$ 21	
							RMP1	106	(per Lane Kilometre)

Resurfacing - Urban - Double Lift Mill and Pave [RMP2]									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	4.25	90	2.45	t		937	\$90.00	\$ 84	
Remove Curb and Gutter				m		200	\$25.00	\$ 5.00	
Curb and Gutter - 20%				m		200	\$100.00	\$ 20.00	
Milling	4.25			m2		4250	\$3.00	\$ 12.75	
Minor Items @ 25%								\$ 31	
							RMP2	153	(per Lane Kilometre)

Pulverize and Pave One Lift [PP1] Rural/Semi-Urban									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	3	50	2.45	t		367.5	\$90.00	\$ 33	
Granular A - Shoulders	1.5	50	2.2	t		165	\$10.00	\$ 2	
Granular A - Base	4.5	150	2.2	t		1485	\$10.00	\$ 15	
Pulverize SST	4.5			m2		4500	\$4.00	\$ 18.00	
Minor Items @ 25%								\$ 17	
							PP1	84	(per Lane Kilometre)

Pulverize and Pave Two Lifts [PP2] Rural/Semi-Urban									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	3	90	2.45	t		661.5	\$90.00	\$ 60	
Granular A	1.5	90	2.2	t		297	\$10.00	\$ 3	
Pulverize	3			m2		3000	\$4.00	\$ 12	
Minor Items @ 25%								\$ 19	
							PP2	93	(per Lane Kilometre)

Semi-Urban: Resurfacing and Widening - Residential (Single Lift Widening)									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction **	Quantity	Unit Cost	Cost/km (x 1000)	
Earth Excavation	2	600		m3		1200	\$12.00	\$ 14	
Granular A	5	150	2.2	t		1650	\$10.00	\$ 17	
Granular B	5	450	2	t		4500	\$17.00	\$ 77	
Hot Mix	8	50	2.45	t	196	1176	\$90.00	\$ 106	
Milling	4			m2		4000	\$3.00	\$ 12	
Minor Items @ 25%								\$ 56	
							RW1	282	(widening one side)

Commercial and Industrial (Double Lift Widening)									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Earth Excavation	2	600		m3		1200	\$12.00	\$ 14	
Granular A	5	150	2.2	t		1650	\$10.00	\$ 17	
Granular B	5	450	2	t		4500	\$17.00	\$ 77	
Hot Mix	8	90	2.45	t	353	2117	\$90.00	\$ 191	
Milling	4			m2		4000	\$3.00	\$ 12	
Minor Items @ 25%								\$ 77	
							RW2	387	(widening one side)

Gravel Road Widening									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Earth Excavation	2	600		m3		1200	\$12.00	\$ 14	
Granular A	1	150	2.2	t		330	\$10.00	\$ 3	
Granular B	1	450	2	t		900	\$17.00	\$ 15	
Minor Items @ 25%								\$ 8	
							GW	41	(widening one side)

Rural: Full Excavation and Reconstruction - Gravel (6 m surface width)									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Earth Excavation	5	600		m3		3000	\$12.00	\$ 36	
Granular A	3	150	2.2	t		990	\$10.00	\$ 10	
Granular B	5	450	2	t		4500	\$17.00	\$ 77	
Minor Items @ 25%								\$ 31	
							Recon G	153	(per Lane Kilometre)

Rural: Full Excavation and Reconstruction - 1 Lift									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Asphalt Removal - Full Depth	3			m2		3000	\$6.00	\$ 18	
Earth Excavation	5	600		m3		3000	\$12.00	\$ 36	
Granular A	4	150	2.2	t		1320	\$10.00	\$ 13	
Granular B	5	450	2	t		4500	\$17.00	\$ 77	
Hot Mix	3	50	2.45	t		368	\$90.00	\$ 33	
Minor Items @ 25%								\$ 44	
							Recon 1R	221	(per Lane Kilometre)

Semi-Urban: Full Excavation and Reconstruction - 1 Lift									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Asphalt Removal - Full Depth	3			m2		3000	\$6.00	\$ 18	
Earth Excavation	5	600		m3		3000	\$12.00	\$ 36	
Granular A	4	150	2.2	t		1320	\$10.00	\$ 13	
Granular B	5	450	2	t		4500	\$17.00	\$ 77	
Hot Mix	3	50	2.45	t		368	\$90.00	\$ 33	
Minor Items @ 25%								\$ 44	
							Recon 1S	221	(per Lane Kilometre)

Semi-Urban: Full Excavation and Reconstruction - 2 Lift									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Asphalt Removal - Full Depth	3			m2		3000	\$6.00	\$ 18	
Earth Excavation	5	600		m3		3000	\$12.00	\$ 36	
Granular A	4	150	2.2	t		1320	\$10.00	\$ 13	
Granular B	5	450	2	t		4500	\$17.00	\$ 77	
Hot Mix	3	90	2.45	t		662	\$90.00	\$ 60	
Minor Items @ 25%								\$ 51	
							Recon 2S	254	(per Lane Kilometre)

Urban: Full Excavation and Reconstruction - 2 Lift									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Asphalt Removal - Full Depth	4.25			m2		4250	\$6.00	\$ 26	
Earth Excavation	5.5	750		m3		4125	\$12.00	\$ 50	
Granular A	4.5	150	2.2	t		1485	\$10.00	\$ 15	
Granular B	5.5	600	2	t		6600	\$17.00	\$ 112	
Hot Mix	4.25	90	2.45	t		937	\$90.00	\$ 84	
Remove Curb and Gutter				m		1000	\$25.00	\$ 25.00	
Curb and Gutter				m		1000	\$100.00	\$ 100.00	
Minor Items @ 25%								\$ 72	
							Recon 2U	483	(per Lane Kilometre)

Rout and Seal									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Rout and Seal				m		1000	\$4.00	\$ 4	
							RS	4	(per Lane Kilometre)

Slurry Seal									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Slurry Seal	7			m2		7000	\$3.15	\$ 22	
							SS	22	(per Lane Kilometre)

Microsurfacing									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Microsurfacing	7			m2		7000	\$6.00	\$ 42	
							MS	42	(per Lane Kilometre)

Semi-Urban: Upgrade to Urban - 2 Lift									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Asphalt Removal - Full Depth	4.25			m2		4250	\$6.00	\$ 26	
Earth Excavation	5.5	600		m3		3300	\$12.00	\$ 40	
Granular A	4.5	150	2.2	t		1485	\$10.00	\$ 15	
Granular B	5.5	450	2	t		4950	\$17.00	\$ 84	
Hot Mix	4.25	90	2.45	t		937	\$90.00	\$ 84	
Curb and Gutter				m		1000	\$100.00	\$ 100.00	
Minor Items @ 25%								\$ 62	
							Recon 2U	411	(per Lane Kilometre)

Rural: Full Excavation and Reconstruction with 700mm grade raise - Gravel (6 m surface width)									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Earth Excavation	5	450		m3		2250	\$12.00	\$ 27	
Granular A	4	150	2.2	t		1320	\$10.00	\$ 13	
Granular B	6	1000	2	t		12000	\$17.00	\$ 204	
Minor Items @ 25%								\$ 61	
							Recon G	305	(per Lane Kilometre)

Convert LCB to HCB (Pulverize SST and Pave One Lift [PP1] Rural/Semi-Urban)									
Item	Width - m	Depth - mm	Conversion Factor	Unit	Crossfall Correction	Quantity	Unit Cost	Cost/km (x 1000)	
Hot Mix	3	50	2.45	t		367.5	\$90.00	\$ 33	
Granular A - Shoulders	1.5	50	2.2	t		165	\$10.00	\$ 2	
Granular A - Base	4.5	150	2.2	t		1485	\$10.00	\$ 15	
Remove SST	4.5			m2		4500	\$2.00	\$ 9.00	
Minor Items @ 25%								\$ 15	
							PP1	73	(per Lane Kilometre)

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Appendix B

Road Needs Summary Table – by Program

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
LCB to HCB Conversion Program								
RS339	Nesbitt Road - Section 307, From: Webb Rd To: Forward Rd	3.7	333	Convert LCB to HCB	\$542	4	5	46
RB198	Anne Street - Section 194, From: County Rd #38 To: Sesame St.	0.18	222	Convert LCB to HCB	\$26	6	9	52
RB057	Forward Road S - Section 85, From: 1.1km North of Nation Valley Rd To: Nation Valley Rd	1.1	333	Convert LCB to HCB	\$161	4	5	58
RB134	River Road - Section 76, From: Queen St. West To: 1.0km West of Queen St.	1	333	Convert LCB to HCB	\$146	6	9	60
RB053b	River Road - Section 77b, From: 1.0km West of Queen Street To: Nation Valley Rd	2.8	333	Convert LCB to HCB	\$410	6	9	60
RB271	McMillan Street - Section 264, From: County Rd #7 To: King St.	0.12	166	Convert LCB to HCB	\$18	6	11	57
RB136	Nation Valley Road - Section 82, From: River Rd To: 1.0km East of River Rd	1	333	Convert LCB to HCB	\$146	5	7	63
RB015	Marionville Road - Section 035, From: Spruce Dr To: County Rd #31	1.2	222	Convert LCB to HCB	\$176	4	5	60
RB075A	Allen Road - Section 112, French Settlement Road to Loughlin Road	2.8	111	Convert LCB to HCB	\$410	6	10	55
RB039B	Marionville Road - Section 34B, From: 1.8km West of Rodney Lane To: Spruce Drive	0.63	222	Convert LCB to HCB	\$92	5	6	62
RB299	Maple Street - Section 178, From: Lough Road To: Scott Street	0.4	111	Convert LCB to HCB	\$59	7	13	57
RB137	Nation Valley Road - Section 83, From: 1.0km East of River Rd To: Forward Road	4.5	333	Convert LCB to HCB	\$659	5	7	66
RB106	Cameron Road - Section 158, From: County Rd #1 To: Development Rd	3.7	222	Convert LCB to HCB	\$542	5	7	63
RB110	Fawcett Road - Section 164, From: County Road 38 To: West of County Road #31 (Start of Gravel)	2	49	Convert LCB to HCB	\$293	5	7	54
RB301	Belmeade Road - Section 110, From: County Road #1 To: Dead End	1.7	277	Convert LCB to HCB	\$249	6	7	67
RB090	Levere Road - Section 136, From: Development Road To: County Rd #3	3.8	111	Convert LCB to HCB	\$556	5	7	60

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB081a	Kerrs Ridge Road Section 125A, From: Lilico Rd to: Development Rd	1.2	111	Convert LCB to HCB	\$176	4	5	61
RB135	River Road - Section 78, From: Nation Valley Rd To: County Rd #31	3.8	333	Convert LCB to HCB	\$556	6	10	69
RB158	Bisson Road - Section 33, From: Marionville Rd To: Ormond Rd	1.5	111	Convert LCB to HCB	\$220	5	6	64
RB039	Marionville Road - Section 34, From: Bisson Road To: Rodney Lane	3.09	222	Convert LCB to HCB	\$452	7	13	69
RB014A	Gray Road - Section 064, From: 0.3km W of Helmer Road To: 0.7km E of Helmer Road	1	111	Convert LCB to HCB	\$146	6	11	65
RB019A	Crump Road - Section 058A, From: Laneway (1.6 km West) To: Dead End	2	111	Convert LCB to HCB	\$293	5	7	66
RS351	Van Camp Road - Section 319, From: Development Rd To: County Rd #3	3.7	333	Convert LCB to HCB	\$542	6	11	73
RB069A	Guy Road - Section 105, From: County Road #3 To: Pemberton Road	3.7	111	Convert LCB to HCB	\$542	6	11	66
RB058	Forward Road S - Section 86, From: Nation Valley Road To: Nesbitt Rd	1.7	333	Convert LCB to HCB	\$249	7	12	74
RB039A	Marionville Road - Section 34A, From: Rodney Lane To: 1.8 km West of Rodney Lane	1.8	222	Convert LCB to HCB	\$264	7	13	72
RB196	Nation River Road - Section 188, From: County Road #3 To: Boundary Road	3.6	111	Convert LCB to HCB	\$527	6	10	68
RB104	Boundary (Mtn Twp) Road - Section 156, From: Cameron Road To: Dead End	0.24	166	Convert LCB to HCB	\$35	9	18	71
RB073A	Belmeade Road - Section 110, From: County Road #31 To: County Road #1	10.1	277	Convert LCB to HCB	\$1,479	7	12	74
RB096	Clark Road - Section 148, From: Railroad Crossing To: Boundary Rd	2.7	111	Convert LCB to HCB	\$395	5	9	69
RB011	Spruce Drive - Section 007, From: Marionville Rd To: Ormond Rd	1.3	277	Convert LCB to HCB	\$190	7	13	75
RB029A	Kittle Road - Section 057, From: County Road #7 To: Boyne Road	3.7	111	Convert LCB to HCB	\$542	6	10	70
RB099	Shaw Road - Section 152A, From: Boundary Rd To: County Rd #43	3.9	111	Convert LCB to HCB	\$571	6	10	70

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB140	Development Road - Section 134, From: Kerrs Ridge Rd To: County Rd #43	2.7	49	Convert LCB to HCB	\$395	6	7	66
RB005	St. Mary's Road - Section 096	0.4	49	Convert LCB to HCB	\$59	5	9	68
RB006A	Loucks Road - Section 061	3	83	Convert LCB to HCB	\$439	6	10	71
RB145	Cayer Road - Section 003, From: County Rd #3 To: Castor River	1.8	222	Convert LCB to HCB	\$264	7	13	76
RB129	Cayer Road - Section 004, From: Castor River To: County Rd #13	2.5	222	Convert LCB to HCB	\$366	7	13	76
RB017	Liscumb Road - Section 002, From: County Rd # 43 To: County Rd #3	2.3	222	Convert LCB to HCB	\$337	7	13	77
RB100A	Hyndman Road - Section 152B, From: County Road #43 To: West Boundary	3.9	111	Convert LCB to HCB	\$571	8	15	74
RB105A	McIntyre Road - Section 157, From: Boundary Road To: Cameron Road	2.8	111	Convert LCB to HCB	\$410	7	13	76
RB021	Carruthers Road - Section 019, From County Rd #32 To: County Rd #7	4	111	Convert LCB to HCB	\$586	7	14	77
RB088A	Church Road - Section 132, From: County Road #43 To: Development Road	3.7	111	Convert LCB to HCB	\$542	7	14	77
RB133	Boundary (Win-Fin Twp) Road - Section 53, From: 1.6km North of Gibeault Road To: County Road #13	1.9	388	Convert LCB to HCB	\$278	9	18	83
RB300	Scott Street - Section 179, From: County Road 3 To: Maple Street	0.5	49	Convert LCB to HCB	\$73	7	13	75
RB080	Loughlin Ridge Road - Section 118, From: County Rd # 1 To: East End	1.9	222	Convert LCB to HCB	\$278	8	16	81
RB050	Boundary (Mtn Twp) Road - Section 71, From: French Settlement Road. To: Loughlin Ridge.	0.9	166	Convert LCB to HCB	\$132	8	15	81
RB046A	Boundary (Win-Fin Twp) Road - Section 51, From: County Road #9 To: Gibeault Road	2.4	388	Convert LCB to HCB	\$351	9	18	85
RB047	Boundary (Win-Fin Twp) Road - Section 52, From: Gibeault Rd To: 1.6km North of Gibeault Rd	1.6	388	Convert LCB to HCB	\$234	9	18	85

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB098A	West Boundary Road - Section 150, From: Clarke Road To: N. Flesher Crescent	3.3	111	Convert LCB to HCB	\$483	8	15	81
RB077A	French Settlement Road - Section 114, From: County Rd #1 To: East End	2	111	Convert LCB to HCB	\$293	8	15	81
RB138	Nesbitt Road - Section 90, From: County Rd #31 To: Webb Rd	1.4	333	Convert LCB to HCB	\$205	9	18	85
RB097B	Ronson Road - Section 145, From: Boundary Rd To: Dead End	0.7	49	Convert LCB to HCB	\$103	9	18	79
RB143	Irish Headline Road - Section 190, From: County Rd #1 To: County Rd #16	4	222	Convert LCB to HCB	\$586	9	17	84
RB130	Rodney Lane - Section 005, From: County Rd #13 To: Ormond Rd	1.4	111	Convert LCB to HCB	\$205	8	16	82
RB142	Van Camp Road - Section 141, From: Development Rd To: County Rd #1	3.7	333	Convert LCB to HCB	\$542	9	18	86
RB012	Belanger Road - Section 066, From: County Rd #43 To: Maple Ridge Rd	0.6	333	Convert LCB to HCB	\$88	9	19	87
RB016	Belanger Road - Section 067, From: Maple Ridge Rd To: Boyne Rd	2.7	333	Convert LCB to HCB	\$395	9	19	87
RB107	Cameron Road - Section 159, From: Development Rd To: 0.2km West of Margaret St.	2.9	222	Convert LCB to HCB	\$425	9	18	86
RB103	Cameron Road - Section 155, From: County Road #1 To: Boundary Road	3.7	222	Convert LCB to HCB	\$542	9	18	86
RB008	Limerick Road - Section 097	4.4	83	Convert LCB to HCB	\$644	9	16	84
RB079	Boundary (Mtn Twp) Road - Section 116, From: Belmeade Rd To: French Settlement Road	3.7	166	Convert LCB to HCB	\$542	9	18	86
RB031A	McMillan Road - Section 094, From: Forward Road To: County Road #7	1.8	166	Convert LCB to HCB	\$264	10	19	86
RB122	Wallace Road - Section 189, From: Boundary with South Dundas	0.1	111	Convert LCB to HCB	\$15	9	18	85
RB095	Ronson Road - Section 145, From: Simms St To: Dead End	2.1	111	Convert LCB to HCB	\$308	9	18	86

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB007	Connaught Road - Section 049	4	83	<i>Convert LCB to HCB</i>	\$586	9	18	86
RB131	Coulthart Road - Section 15, From: County Rd #7 To: 3.0km East of County Rd #7	3	83	<i>Convert LCB to HCB</i>	\$439	9	18	86
RB038	Coulthart Road - Section 16, From: 3.0km East of County Rd #7 To: Boundary Rd	1	83	<i>Convert LCB to HCB</i>	\$146	9	18	86
RB022	Marionville Road - Section 030, From: County Rd #32 To: Stevens Rd	1.5	222	<i>Convert LCB to HCB</i>	\$220	10	19	89
RB023	Marionville Road - Section 031, From: Stevens Rd To: County Rd #7	2.8	222	<i>Convert LCB to HCB</i>	\$410	10	19	89
NOW Needs								
RB083	Spruit Road - Section 127, From: Development Road To: 2.6km East of Development Road	2.6	111	<i>Recon G - Full Reconstruction 6m Gravel Road</i>	\$398	5	6	46
RS337	Industrial Ave - Section 305, From: County Rd #31 To: Dead End	0.06	111	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$27	4	5	46
RB074	Allen Road - Section 111, From: Belmeade Road To: French Settlement Road (Unmaintained)	1.1	49	<i>Recon G - Full Reconstruction 6m Gravel Road</i>	\$168	3	4	39
RB294	Droppo Road - Section 95 A, From: 0.3km East of Forward Road To: 0.5km West of County Road #7	1.7	49	<i>Recon G - Full Reconstruction 6m Gravel Road</i>	\$260	3	4	40
RB257	Industrial Drive - Section 250, From: County Rd #37 To: Railroad Crossing	0.4	111	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$177	5	7	50
RB258	Brannen Drive - Section 251, From: Industrial Dr. To: 75m East of Industrial Dr.	0.08	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$35	5	7	47
RB175	Christina Crescent - Section 122, From: St. John's St. To: St. John St.	0.3	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$133	5	4	47
RB062	Nesbitt Road - Section 92, From: Forward Road To: Dead End	0.3	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$133	4	5	47
RB174	St. John's - Section 121, From: County Rd #1 To: Dead End	0.3	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$133	5	4	47
RB256	Harper Street - Section 249, From: Railroad Crossing To: Cul de Sac	0.21	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$93	5	7	48

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB250	John Street - Section 243, From: County Rd #7 To: Francis St.	0.15	49	Recon 1S - Full Reconstruction + 1 Lift	\$66	5	6	48
RB251	John Street - Section 244, From: Francis St. To: Dead End	0.08	49	Recon 1S - Full Reconstruction + 1 Lift	\$35	5	6	48
RB153	McConnell Court - Section 25, From: Hume St. To: Cul de Sac	0.1	49	Recon 1S - Full Reconstruction + 1 Lift	\$44	6	7	49
RB202	Beach Street - Section 198, From: County Rd #3 To: Victoria St.	0.14	49	Recon 1S - Full Reconstruction + 1 Lift	\$62	5	7	51
RB172	Loughlin Ridge Road - Section 118, From: Boundary Rd To: County Rd # 1	3.9	388	Recon 1R - Full Reconstruction + 1 Lift	\$1,724	6	7	67
RB178	Development Road - Section 135, From: County Rd #43 To: County Rd #3	6.85	388	Recon 1R - Full Reconstruction + 1 Lift	\$3,027	6	7	68
RB159	Forest Hill Road - Section 40, From: County Rd #31 To: Dead End	0.6	49	Recon 1S - Full Reconstruction + 1 Lift	\$265	6	7	53
RB160	Old Carriage Lane - Section 41, From: Forest Hill Rd. To: County Rd #31	1	49	Recon 1S - Full Reconstruction + 1 Lift	\$442	6	7	53
RB166	Falcone Lane - Section 68, From: County Road #43 To: Cul de Sac	0.4	111	Recon 1R - Full Reconstruction + 1 Lift	\$177	5	7	63
RB197	Sandy Row Road - Section 193, From: 2.9km West of County Rd #16 To: County Rd #16	1.2	111	Recon 1R - Full Reconstruction + 1 Lift	\$530	5	7	67
1 - 5 Year Needs								
RB247	York Street - Section 240, From: County rod #38 To: Hospital Entrance	0.14	388	PP1 - Pulverize and Pave 1 Lift	\$24	6	9	51
RS325	Albert Street - Section 293, From: Main St. To: Victoria St.	0.21	222	PP1 - Pulverize and Pave 1 Lift	\$35	5	8	53
RB221	Centre Street - Section 214 , From: North St. To: Dufferin St.	0.11	166	PP1 - Pulverize and Pave 1 Lift	\$19	6	9	51
RB213	Fred Street - Section 207, From: County Rd #38 To: Community Centre	0.45	166	PP1 - Pulverize and Pave 1 Lift	\$76	6	9	53
RB207	Clarence Street - Section 203A, From: County Rd #38 To: Albert St.	0.2	111	PP1 - Pulverize and Pave 1 Lift	\$34	5	8	52
RB181	Clark Road - Section 146, From: County Rd #1 To: 0.9km West of County Rd#1	0.9	166	PP1 - Pulverize and Pave 1 Lift	\$152	6	11	57

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB177	Kerrs Ridge Road - Section 124, From: County Rd #43 To: 0.3km East of County Rd #1	0.7	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$118	6	8	54
RB265	Thompson Road - Section 258, From: Faubert Ave. To: Cul de Sac	0.33	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$56	6	8	54
RB235	Church Street - Section 228, From: Cass St. To: 61m West of Cass St.	0.06	166	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$10	6	11	58
RB248	Howard Street - Section 241, From: County Rd #7 To: Dead End	0.23	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$39	6	10	55
RB194	Nationview Drive - Section 186, From: Sandy Row Rd To: Francis Rd	0.3	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$51	6	10	55
RB163	Bridle Path - Section 44, From: Old Carriage Lane To: Dead End	0.2	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$34	6	10	56
RB170	Winchester Springs Road - Section 88, From: Gary Rd To: County Rd #31	2.9	388	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$1,282	6	9	66
RB210	York Court - Section 205, From: Albert Street To: Cul de Sac	0.18	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$30	6	9	50
RB171	Boundary (Mtn Twp) Road - Section 117, From: Loughlin Ridge Rd To: County Rd #43	1.1	388	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$486	6	10	67
RB185	Margaret Street - Section 162A, From: Cameron Street To: Sullivan Street	0.1	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$17	6	10	52
RB186	Sarah Street - Section 162B, From: Sullivan Street To: County Road #3	0.1	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$17	6	10	52
RB226	Whitney Street - Section 219, From: County Rd #3 To: Dead End	0.11	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$19	6	10	52
RB147	Ormond Road - Section 008, From: County Rd 31 To: Rodney Rd	2.6	333	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$1,149	5	8	67
RB200	Quart Court - Section 196, From: Sesame St. To: Cul de Sac	0.09	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$15	6	10	53
RB220	North Street - Section 213B, From: 70m East of Centre St.	0.05	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$8	6	10	54
RB010	Maple Ridge Road - Section 065	2.7	333	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$456	6	11	68
RB240	Clarence Street - Section 233, From: County Rd #38 To: Louise St.	0.13	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$22	6	10	55
RB144	Dawley Drive - Section 001, From: County Rd #3 To: County Rd #43	0.5	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$84	6	10	55

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB195	Francis Street - Section 187, From: Nationview Rd To: Nationview Rd	0.3	49	PP1 - Pulverize and Pave 1 Lift	\$51	6	10	57
RB001	Loucks Road - Section 062	0.3	111	Recon 1R - Full Reconstruction + 1 Lift	\$133	6	8	62
RB192	Drew Drive - Section 184, From: Sandy Row Rd. To: Georgian St.	0.3	49	PP1 - Pulverize and Pave 1 Lift	\$51	6	11	58
RB193	Georgian Street - Section 185, From: Drew Drive. To: South Nation Way	0.15	49	PP1 - Pulverize and Pave 1 Lift	\$25	6	11	58
RB225	Alexander Street - Section 218, From: County Rd #3/Main To: Dead End	0.23	166	Recon 1R - Full Reconstruction + 1 Lift	\$102	6	10	68
RS327	Baker Road - Section 295, From: Pemberton Road To: County Road #31	1.8	166	Recon 1R - Full Reconstruction + 1 Lift	\$795	6	10	71
RB167	Queensway Road - Section 74, From: County Road #43 To: River Road	0.3	111	Recon 1R - Full Reconstruction + 1 Lift	\$133	6	10	69
RB277	Casselman Street - Section 271, From: Water St. To: Ralph St.	0.09	166	Recon 2U - Full Reconstruction + 2 Lifts	\$87	6	8	80
RB288	College Street - Section 283, From: Church St. To: Mill St.	0.54	166	Recon 2U - Full Reconstruction + 2 Lifts	\$522	6	9	80
RB224	Gladstone Street - Section 217, From: County Rd #3 To: Dead End	0.35	111	Recon 2U - Full Reconstruction + 2 Lifts	\$338	6	9	79
RS324	Albert Street - Section 292, From: Clarence St To: Sesame St.	0.37	222	Recon 2U - Full Reconstruction + 2 Lifts	\$357	6	10	82
RB203	Victoria Street - Section 199, From: Albert St. To: Cul de Sac	0.34	111	Recon 2U - Full Reconstruction + 2 Lifts	\$328	6	10	81
RB281	Emma Street - Section 275, From: Dead End To: Albert St.	0.08	49	Recon 2U - Full Reconstruction + 2 Lifts	\$77	6	8	80
RB284	Queen Street East - Section 278, From: King St. To: County Rd #7	0.12	111	PP1 - Pulverize and Pave 1 Lift	\$20	6	11	83
RB274	Water Street - Section 267, From: County Rd #7 To: 220m SE of County Rd #7	0.22	49	PP1 - Pulverize and Pave 1 Lift	\$37	6	11	83
6 - 10 Year Needs								
RB246A	May Street - Section 239, From: County Rd #38 To: Hospital Entrance	0.14	333	RMP1 - Mill & Pave, 1 Lift	\$30	7	13	59
RB253	Francis Street - Section 246, From: Joseph St. To: County Rd #37	0.13	166	PP1 - Pulverize and Pave 1 Lift	\$22	6	12	55

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB188	Church Street - Section 180, From: County Rd #3 To: Maple St.	0.1	166	RMP1 - Mill & Pave, 1 Lift	\$21	7	13	58
RB286	College Street - Section 281, From: South St. West To: May St.	0.18	166	RMP1 - Mill & Pave, 1 Lift	\$38	7	13	58
RB287	College Street - Section 282, From: Mary St. To: Church St.	0.35	166	RMP1 - Mill & Pave, 1 Lift	\$74	7	13	58
RB264	Faubert Avenue - Section 257, From: South St. To: Thompson Rd	0.37	166	PP1 - Pulverize and Pave 1 Lift	\$63	6	12	59
RB151	Thomas Dr - Section 23, From: Alyssa Cr. To: Moffat St/Cty Rd 7.	0.25	111	PP1 - Pulverize and Pave 1 Lift	\$42	6	12	56
RB245	Fred Street - Section 238, From: County Rd #38 To: Dead End	0.34	166	RMP1 - Mill & Pave, 1 Lift	\$72	7	14	60
RB152	Alyssa Cr. Section 24, From: County Road #7 to Thomas Drive around Alyssa Cr. To Thomas Drive	0.75	111	PP1 - Pulverize and Pave 1 Lift	\$127	6	12	58
RB209	York Street - Section 204, From: St. Lawrence St. To: Albert Street	0.18	111	RMP1 - Mill & Pave, 1 Lift	\$38	7	13	58
RB255	Joseph Street - Section 248, From: Francis St. To: Harper St.	0.12	166	RMP1 - Mill & Pave, 1 Lift	\$25	7	13	62
RB243	Louise Street - Section 236, From: York St. To: Dead End	0.36	166	RMP1 - Mill & Pave, 1 Lift	\$76	7	14	62
RB269	Mary Street - Section 262, From: County Rd #7 To: College St.	0.32	111	RMP1 - Mill & Pave, 1 Lift	\$68	7	13	59
RB239	Victoria Street - Section 232, From: Louise St. To: County Rd #38	0.14	111	RMP1 - Mill & Pave, 1 Lift	\$30	7	13	59
RB252	Francis Street - Section 245, From: John St. To: Joseph St.	0.07	49	PP1 - Pulverize and Pave 1 Lift	\$12	6	12	55
RB211	May Street - Section 206A, From: County Rd #38 To: Albert St.	0.2	49	RMP1 - Mill & Pave, 1 Lift	\$42	6	13	56
RB155	Steinburg Court - Section 27, From: Ralph St. To: Cul de Sac	0.2	49	PP1 - Pulverize and Pave 1 Lift	\$34	7	12	57
RS352	Wintonia Dr. - Section 320, From: St Lawrence St. To: James St.	0.25	111	RMP1 - Mill & Pave, 1 Lift	\$53	7	13	63
RB238	Victoria Street - Section 231, From: 205m East of Church St. To: Louise St.	0.21	49	PP1 - Pulverize and Pave 1 Lift	\$35	7	12	58
RB228	Annable Road - Section 221, From: Dufferin St. To: Howatd St.	0.2	49	RMP1 - Mill & Pave, 1 Lift	\$42	7	14	59

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB125	North Street - Section 213A, From: Centre Street To: 70m East of Centre Street	0.07	49	RMP1 - Mill & Pave, 1 Lift	\$15	7	13	59
RB199	Sesame Street - Section 195, From: Albert St. To: Dead End	0.3	49	RMP1 - Mill & Pave, 1 Lift	\$63	7	14	59
RB241	Clarence Street - Section 234, From: Louise St. To: 100m West of Cass Dr.	0.27	49	RMP1 - Mill & Pave, 1 Lift	\$57	7	13	61
RB003	Frood Corners Road - Section 060	0.15	49	RMP1 - Mill & Pave, 1 Lift	\$32	7	14	61
RB244	Henderson Crescent - Section 237, From: Louise St. To: Louise St.	0.31	49	RMP1 - Mill & Pave, 1 Lift	\$66	7	14	61
RB206	MacDonald Crescent - Section 202, From: Clarence St. To: Cul de Sac	0.13	49	RMP1 - Mill & Pave, 1 Lift	\$27	7	14	61
RB173	Maurice Street - Section 120, From: County Rd #1 To: Cul de Sac	0.3	49	RMP1 - Mill & Pave, 1 Lift	\$63	7	13	61
RB156	Mill Street - Section 28, From: County Rd #13 To: County Rd #13	0.25	49	RMP1 - Mill & Pave, 1 Lift	\$53	8	14	61
RB215	Queen Street East - Section 209, From: County Rd #3 To: Dead End	0.18	49	RMP1 - Mill & Pave, 1 Lift	\$38	8	14	62
RB132	Cloverdale Road - Section 45, From: County Road #31 To: Dead End	1.3	166	RMP1 - Mill & Pave, 1 Lift	\$275	7	14	70
RB187	Lough Road - Section 177, From: Section #176 South To: County Rd #3	0.4	166	RMP1 - Mill & Pave, 1 Lift	\$85	7	13	75
RB182	Clark Road - Section 147, From: 0.9km West of County Rd #1 To: Railroad Crossing	0.6	166	RMP1 - Mill & Pave, 1 Lift	\$127	7	14	77
RB084	Spruit Road - Section 128, From: 2.6km East of Development Road To: County Road #31	5	111	RMP1 - Mill & Pave, 1 Lift	\$1,058	7	13	76
RB189	Bank Street - Section 181, From: Maple St. To: County Rd #3	0.1	49	RMP1 - Mill & Pave, 1 Lift	\$21	7	13	73
RB019	Crump Road - Section 058, From: County Road #7 To: Thibault Ct	0.2	111	RMP1 - Mill & Pave, 1 Lift	\$42	7	14	77
RB222	Centre Street - Section 215, From: Dufferin St. To: Queen St.	0.09	166	RMP1 - Mill & Pave, 1 Lift	\$19	7	13	85
RB254	Joseph Street - Section 247, From: County Rd #7 To: Francis St.	0.21	166	RMP1 - Mill & Pave, 1 Lift	\$44	7	13	86
RB282	Emma Street - Section 276, From: Albert St. To: County Rd #7	0.19	166	RMP1 - Mill & Pave, 1 Lift	\$40	7	13	87
RB267	Riverside Drive - Section 260, From: South St. East To: South St. East	0.28	49	PP1 - Pulverize and Pave 1 Lift	\$47	6	12	84

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB266	South Street East - Section 259, From: County Rd #7 To: Dead End	0.23	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$39	6	12	84
RB204	Victoria Street - Section 200, From: Albert St. To: County Rd #38	0.2	111	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$42	7	13	86
RB212	May Street - Section 206B, From: Albert St. To: Dead End	0.3	49	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$63	7	13	85
RB291	Victoria Street - Section 287, From: County Rd #7 To: College St.	0.34	111	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$72	7	14	87
RB164	Boyne Road - Section 47, From: Ottawa St. To: Town Limits	0.3	388	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$63	8	14	90
RB283	Queen Street East - Section 277, From: Albert St. To: King St.	0.07	111	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$15	7	14	88
RB127	Gillard's Lane - Section 279, From: County Road #7 To: Dead End	0.03	49	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$6	7	14	88
RB276	Casselman Street - Section 270, From: Water St. To: Dead End	0.02	49	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$4	7	14	88
RB278	Ralph Street - Section 272, From: King St. To: Albert St.	0.11	49	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$23	7	14	88
No Identified Need (Preservation & Regular Resurfacing Strategies)								
RB297	McIntosh Road - Section 167, From: Pemberton Road To: 2.5km West of Pemberton Road	2.7	111	<i>G - Gravel (75mm)</i>	\$31	5	8	51
RB114	Moore Road - Section 169, From: Timmins Road To: County Road #3	2	111	<i>G - Gravel (75mm)</i>	\$23	7	14	51
RB066	Baldwin Road - Section 102A, From: Sandy Row Road To: 0.1km South of Sandy Row Road	0.1	111	<i>G - Gravel (75mm)</i>	\$1	6	12	54
RB295	Baldwin Road - Section 102B, From: 0.1km South of Sandy Row Road To: Kirkwood Road	1.8	111	<i>G - Gravel (75mm)</i>	\$21	6	12	54
RB108	Sullivan Street - Section 161, From: County Rd #3 To: Margaret St.	0.2	111	<i>G - Gravel (75mm)</i>	\$2	6	12	54
RB076	Observatory Road - Section 113, From: County Road #1 To: Allen Road (unmaintained)	0.6	49	<i>G - Gravel (75mm)</i>	\$7	6	8	50
RB070	Cass Bridge Road - Section 106, From: Pemberton Road To: County Road #31	2.6	111	<i>G - Gravel (75mm)</i>	\$30	8	16	57
RB296	Jennings Road - Section 109, From: 0.7km North of Spruit Road To: 0.3km South of Armstrong Road	4.15	49	<i>G - Gravel (75mm)</i>	\$48	5	10	51

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RS328	Christine Lane - Section 296, From: Fred St. To: Church St.	0.75	333	<i>Preventative Maintenance</i>	-	9	17	66
RB298	Barkley Road - Section 170A, From: Bailey Road To: 0.2km West of County Road #3	1.3	49	<i>G - Gravel (75mm)</i>	\$15	6	10	52
RB111	Gypsy Lane - Section 165, From: County Road #31 To: County Road #38	2.1	49	<i>G - Gravel (75mm)</i>	\$24	6	10	52
RB067	Kirkwood Road - Section 103, From: County Road #5 To: Sandy Row Road	1.5	111	<i>G - Gravel (75mm)</i>	\$17	6	12	58
RB032	Webb Road - Section 091B, From: Nesbitt Road To: Dead End	1.1	111	<i>G - Gravel (75mm)</i>	\$13	7	14	59
RB045	Boundary (Win-Fin Twp) Road - Section 50, From: County Road #9 To: Dead End	0.9	111	<i>G - Gravel (75mm)</i>	\$10	7	14	59
RS345	Steen Road - Section 313, From: Thompson Road To: County Road #3	1.5	49	<i>G - Gravel (75mm)</i>	\$17	6	12	54
RB236	Church Street - Section 229, From: 61m West of Cass St. To: Christie Ln	0.41	166	<i>Preventative Maintenance</i>	-	8	16	63
RB020	Kyle Road - Section 018, From: County Road #13 To: Carruthers Road	1.3	111	<i>G - Gravel (75mm)</i>	\$15	7	14	60
RB093	Levere Road - Section 139, From: Development Road To: Dead End	0.1	49	<i>G - Gravel (75mm)</i>	\$1	6	12	55
RB092	Crowder Road - Section 138, From: County Road #43 To: Levere Road	2.5	111	<i>G - Gravel (75mm)</i>	\$29	8	16	61
RB063	Lafleur Road - Section 99, From: County Road #3 To: Thompson Road	1.6	111	<i>G - Gravel (75mm)</i>	\$18	7	14	61
RB243A	Louise Street - Section 236A, From: Victoria St. To: York St. (220M)	0.21	166	<i>Preventative Maintenance</i>	-	8	16	64
RB116	Bailey Road - Section 171, From: Cameron Road To: Development Road	1.8	111	<i>G - Gravel (75mm)</i>	\$21	7	14	62
RB115	Barkley Road - Section 170B, From: County Road #3 To: 0.2km West of County Road #3	0.2	111	<i>G - Gravel (75mm)</i>	\$2	7	14	62
RB112	Brown's Road - Section 166, From: Guy Road To: McIntosh Road	0.5	111	<i>G - Gravel (75mm)</i>	\$6	7	14	62

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB026	Gibeault Road - Section 054, From: Boundary Road To: Dead End	1.3	111	G - Gravel (75mm)	\$15	7	14	62
RB217	Gordon Street - Section 211, From: Centre St. To: Parmalat Entrance	0.04	111	RO1 - Hot Mix Overlay, 1 Lift	\$4	8	15	62
RB180	Van Allen Street - Section 144, From: County Rd #1 To: Dead End	0.2	111	RO1 - Hot Mix Overlay, 1 Lift	\$19	8	15	62
RS346	Tabitha Crescent - Section 314, From: Lori Ln. To: Lori Ln.	0.48	111	RO1 - Hot Mix Overlay, 1 Lift	\$46	8	15	62
RS326	Albert Street - Section 294, From: Victoria St. To: Clarence St.	0.11	222	Preventative Maintenance	-	9	18	67
RB028	Coyne Road - Section 055, From: Gibeault Road To: Connaught Road	1.3	111	G - Gravel (75mm)	\$15	7	14	62
RB027	McLaughlin Road - Section 017, From: Coulthart Road To: County Road #13	1.5	111	G - Gravel (75mm)	\$17	7	14	63
RB052	Ball Road - Section 73, From: River Road To: County Road #43	0.8	111	G - Gravel (75mm)	\$9	7	14	63
RB036	North Wing Road - Section 13, From: County Road #3 To: Thompson Road	2.3	111	G - Gravel (75mm)	\$27	8	16	63
RB064	Pemberton Road - Section 100, From: County Road #38 To: Sandy Row Road	4	111	G - Gravel (75mm)	\$46	7	14	63
RB054	Summers Road - Section 79, From: Baker Road To: County Road 43	1.3	111	G - Gravel (75mm)	\$15	8	16	63
RB061	Webb Road - Section 091A, From: Nesbitt Road To: Winchester Springs Road	1.4	111	G - Gravel (75mm)	\$16	8	16	63
RB179A	Simms Street - Section 143, From: County Rd #1 To: Clarke Rd	0.4	111	Preventative Maintenance	-	8	16	63
RB237	Victoria Street - Section 230, From: Church St. To: 205m East of Church St.	0.21	111	RO1 - Hot Mix Overlay, 1 Lift	\$20	8	15	63
RS336	Fred Street - Section 304, From: County Rd #38 To: Dead End	0.45	166	Preventative Maintenance	-	9	17	66
RB002	Kelly Road - Section 056, From: Connaught Rd To: County Rd #9	1.2	111	G - Gravel (75mm)	\$14	8	16	64

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB113	McIntosh Road - Section 168, From: County Road #3 To: 2.5km West of Pemberton Road	2.5	111	G - Gravel (75mm)	\$29	8	16	64
RB035	South Wing Road - Section 12, From: County Road #3 To: County Road #3	2.6	111	G - Gravel (75mm)	\$30	8	16	64
RB094	Van Camp Road - Section 142, From: County Road #1 To: Dead End	0.9	111	G - Gravel (75mm)	\$10	8	16	64
RB013	Helmer Road - Section 063, From: Maple Ridge Road To: gray Road	1	49	G - Gravel (75mm)	\$12	7	14	59
RB056	Nation Valley Road - Section 81, From: Bridge Westerly To: Dead End	1	49	G - Gravel (75mm)	\$12	7	14	59
RB089	Development Road - Section 133, From: Kerr's Ridge Rd To: Dead End	0.2	49	G - Gravel (75mm)	\$2	7	14	60
RB087	Blaine Road - Section 131, From: Lilloco Road To: Church Road	1.8	111	G - Gravel (75mm)	\$21	8	16	65
RB109	Mulloy Road - Section 163, From: Cameron Road To: Van Camp Road	1.4	111	G - Gravel (75mm)	\$16	8	16	65
RB191	Bridge Street - Section 183, From: County Rd #3 To: Sandy Row Rd	0.5	111	RO1 - Hot Mix Overlay, 1 Lift	\$48	8	15	65
RB227	Howard Street - Section 220, From: County Rd #3 To: Dufferin St.	0.23	111	Preventative Maintenance	-	8	16	65
RB104A	Boundary (Mtn Twp) Road - Section 156A, From: Nation River Rd To: Cameron Road	4.9	111	G - Gravel (75mm)	\$57	8	16	65
RS347	Thibault Ct - Section 315, From: Crump Road #7 To: Dead End	0.6	111	RO1 - Hot Mix Overlay, 1 Lift	\$57	8	15	65
RB051	Baker Road - Section 72, From: County Road #31 To: River Road	5.5	111	G - Gravel (75mm)	\$64	8	16	66
RB085	Lilloco Road - Section 129, From: County Road #43 To: Church Road	1.4	111	G - Gravel (75mm)	\$16	8	16	66
RB086	Lilloco Road - Section 130, From: Church Road To: Kerr's Ridge Road	1.2	111	G - Gravel (75mm)	\$14	8	16	66
RB120	Lough Road - Section 175, From: Peppermill Rd To: Cameron Rd	0.3	111	G - Gravel (75mm)	\$3	8	16	66
RB231	Bailey Avenue - Section 224, From: Holmes St. To: County Rd #3	0.39	111	Preventative Maintenance	-	8	16	66

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB168	Queen Street West - Section 75, From: River Rd To: County Rd #43	0.4	111	<i>Preventative Maintenance</i>	-	8	16	66
RB071	Jennings Road - Section 107, From: County Road #43 To: Spruit Road	1.4	111	<i>G - Gravel (75mm)</i>	\$16	8	16	67
RB072	Jennings Road - Section 108, From: Spruit Road To: 0.7km North of Spruit Road	0.7	111	<i>G - Gravel (75mm)</i>	\$8	8	16	67
RB121	Lough Road - Section 176, From: Cameron Road To: 0.4km North of County Road #3	2.4	111	<i>G - Gravel (75mm)</i>	\$28	8	16	67
RB118	Nelson Road - Section 173, From: Development Road To: County Road #1	3.7	111	<i>G - Gravel (75mm)</i>	\$43	8	16	67
RB102	Pepperville Road - Section 154, From: County Road #1 To: Dead End	1.8	111	<i>G - Gravel (75mm)</i>	\$21	8	16	67
RB034	Steen Road - Section 10B, From: County Road #13 To: Thompson Road	1.5	111	<i>G - Gravel (75mm)</i>	\$17	8	16	67
RS306	Erin Street - Section 290, From: Lori Ln. To: Elizabeth Dr.	0.26	111	<i>Preventative Maintenance</i>	-	9	18	67
RB263	Martin Street - Section 256, From: Streeterpete Rd. To: South St.	0.08	111	<i>Preventative Maintenance</i>	-	9	17	67
RB260	Michael Street - Section 253, From: South St. West To: Streeterpete Rd	0.08	111	<i>Preventative Maintenance</i>	-	9	17	67
RB261	Streeterpete -Section 254, From: Michael St. To: Pauline St.	0.35	111	<i>Preventative Maintenance</i>	-	9	17	67
RS349	Travis Trail - Section 317, From: Kerr's Ridge To: Shellian Ln	0.12	111	<i>Preventative Maintenance</i>	-	8	16	67
RS350	Travis Trail - Section 318, From: Shellian Ln To: Coleman Cr	0.16	111	<i>Preventative Maintenance</i>	-	8	16	67
RS348	Travis Trail - Section 316, From: Coleman Cr To: South End	0.07	111	<i>Preventative Maintenance</i>	-	8	16	67
RS330	Coleman Cr - Section 298, From: Shellian Ln To: Travis Tr	0.26	111	<i>Preventative Maintenance</i>	-	8	16	67
RS341	Shellian Ln - Section 309, From: County Road 1 To: Coleman Cr	0.1	111	<i>Preventative Maintenance</i>	-	8	16	67
RS340	Shellian Ln - Section 308, From: Coleman Cr 1 To: Travis Tr	0.1	111	<i>Preventative Maintenance</i>	-	8	16	67

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RS333	Elizabeth Drive - Section 301, From: Erin Ave. To: Forward Rd.	0.26	111	<i>Preventative Maintenance</i>	-	9	18	67
RB048	Link Road - Section 69, From: County Road #31 To: Dead End	0.6	49	<i>G - Gravel (75mm)</i>	\$7	8	16	63
RB208	Clarence Street - Section 203B, From: Albert St. To: Dead End	0.22	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$21	8	15	63
RB025	Stevens Road - Section 029, From: Carruthers Road To: Marionville Road	1.7	111	<i>G - Gravel (75mm)</i>	\$20	7	14	68
RB126	Water Street - Section 269, From Dam To: Dead End	1.3	111	<i>G - Gravel (75mm)</i>	\$15	8	16	68
RB229	Dufferin Street - Section 222, From: Dead End To: Cul de Sac	0.32	111	<i>Preventative Maintenance</i>	-	9	18	68
RS334	Fawcett Road - Section 302, From: County Road #31 To: West of County Road #31 (Start of Gravel)	1	111	<i>G - Gravel (75mm)</i>	\$12	8	16	68
RB091	Levere Road - Section 137, From: County Road #3 To: Dead End	0.7	49	<i>G - Gravel (75mm)</i>	\$8	7	14	64
RB230	Holmes Street - Section 223, From: Dead End East To: Dead End West	0.14	49	<i>Preventative Maintenance</i>	-	8	16	64
RB234	Church Street - Section 227, From: County Rd #38 To: Cass St.	0.25	166	<i>Preventative Maintenance</i>	-	9	18	71
RB161	Lafortune Drive - Section 42, From: Old Carriage Lane To: Dead End	0.5	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$48	8	15	65
RB162	Lori Elizabeth Street - Section 43, From: La Fortune Drive To: Dead End	0.3	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$29	8	15	65
RB214	Wickers Way - Section 208, From: Fred St. To: May St.	0.13	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$12	8	15	65
RB101	Norton Road - Section 153, From: Van Camp Road To: Pepperville Road	1.2	111	<i>G - Gravel (75mm)</i>	\$14	8	16	70
RB065	Sandy Row Road - Section 101, From: Pemberton Road To: Closed Bridge	4.7	111	<i>G - Gravel (75mm)</i>	\$54	7	14	70
RS342	Silver Fox Court - Section 310, From: Rodney Ln To: Cul-De-Sac	0.2	49	<i>Preventative Maintenance</i>	-	8	16	66
RS343	Silver Fox Court - Section 311, From: Rodney Ln To: North End	0.4	49	<i>G - Gravel (75mm)</i>	\$5	8	16	66

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB037	Thompson Road - Section 14, From: County Road #3 To: County Road #7	7.2	111	G - Gravel (75mm)	\$83	8	16	71
RB042	Jennings Road - Section 38, From: Armstrong Road To: Dead End	0.3	111	Preventative Maintenance	-	9	18	71
RS331	Country Lane - Section 299, From: Armstrong Rd To: Lafortunate Dr	0.63	111	Preventative Maintenance	-	9	18	71
RB119	Nelson Road - Section 174, From: County Road #1 To: Dead End	0.2	49	G - Gravel (75mm)	\$2	8	16	67
RB117	Simzer Road - Section 172, From: Development Road To: Dead End	0.1	49	G - Gravel (75mm)	\$1	8	16	67
RB176	Kelso Street - Section 123, From: County Rd #1 To: Dead End	0.1	49	Preventative Maintenance	-	9	18	67
RB262	Pauline Street - Section 255, From: Streeterpete Rd. To: 45m South of Streeterpete Rd.	0.05	49	Preventative Maintenance	-	9	17	67
RS338	Lori Lane - Section 306, From: Forward Rd. To: Erin Ave.	0.27	49	Preventative Maintenance	-	9	18	67
RB049	Hogoboam Road - Section 70, From: County Road #31 To: Pemberton Road	1.8	111	G - Gravel (75mm)	\$21	8	16	72
RB268	William Street - Section 261, From: County Road #7 To: Dead End	0.19	49	Preventative Maintenance	-	9	18	68
RB270	Armstrong Place - Section 263, From: Mary St. To: Cul de Sac	0.11	49	Preventative Maintenance	-	9	18	69
RB154	Merkley Place - Section 26, From: Ralph St. To: Cul de Sac	0.1	49	Preventative Maintenance	-	9	17	69
RB233	Louise Street - Section 226, From: Church St. To: County Rd #3	0.11	166	Preventative Maintenance	-	10	19	75
RB218	Dufferin Street - Section 212A, From: Centre St. To: Parmalat Entrance	0.04	111	Preventative Maintenance	-	10	19	73
RB216	Queen Street East - Section 210, From: County Rd #3 To: Centre St.	0.19	111	Preventative Maintenance	-	10	19	73
RB242	Cass Crescent - Section 235, From: Clarence St. To: Victoria St.	0.2	49	Preventative Maintenance	-	9	18	70
RB068	Timmins Road - Section 104, From: Sandy Row Road To: County Road #3	2.1	111	G - Gravel (75mm)	\$24	8	16	74

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RS344	South Nation Way - Section 312, From: Georgian Street To: Drew Drive	0.25	111	<i>Preventative Maintenance</i>	-	10	19	74
RB165	Boyne Road - Section 48, From: Town Limits To: County Rd #7	9	388	<i>Preventative Maintenance</i>	-	7	16	80
RB060	Hollister Road - Section 89, From: County Road #5 To: County Road #31	2.8	111	<i>G - Gravel (75mm)</i>	\$32	8	16	74
RB275	Water Street - Section 268, From: 220m SE of County Rd #7 To: Dam	0.09	49	<i>Preventative Maintenance</i>	-	9	18	71
RB059	Winchester Springs Road - Section 87, From: Forward Rd To: Gary Rd	2	111	<i>G - Gravel (75mm)</i>	\$23	7	14	75
RB149	Ralph Street - Section 21, From: County Rd #13 To: Hume St.	0.5	111	<i>Preventative Maintenance</i>	-	10	20	75
RB004	Byers Road- Section 059	0.1	49	<i>Preventative Maintenance</i>	-	10	19	72
RB139	Droppo Road - Section 95B, From: county Road #7 To: 0.5km West of County Road #7	0.5	333	<i>Preventative Maintenance</i>	-	10	19	81
RB081b	Kerrs Ridge Road - Section 125B, From: Development Rd #1 To: Riddell Rd	3.6	111	<i>G - Gravel (75mm)</i>	\$42	8	16	76
RB123	Sandy Row - Section 191, From: County Road #16 To: Dead End	2.2	49	<i>G - Gravel (75mm)</i>	\$25	8	15	73
RB082	Riddell Road - Section 126, From: Kerrs Ridge Road To: County Road #43	2.9	111	<i>G - Gravel (75mm)</i>	\$33	7	14	77
RB055	Rae Road - Section 80, From: County Road #43 To: River Road	2.4	49	<i>G - Gravel (75mm)</i>	\$28	8	16	74
RB053	River Road - Section 77a, From: River Road at Ball Road To: 2.7 km from Ball Road	1.7	111	<i>G - Gravel (75mm)</i>	\$20	8	16	77
RB124	Sandy Row - Section 192, From: County Road #16 To: 1.2km East of County Road #1	2.9	111	<i>G - Gravel (75mm)</i>	\$33	8	15	77
RB044	Benson George Road - Section 46, From: County Road #31 To: Dead End	1.3	49	<i>G - Gravel (75mm)</i>	\$15	8	16	74
RB190	Mill Street - Section 182, From: County Rd #3 To: Bridge St.	0.15	49	<i>Preventative Maintenance</i>	-	10	20	74

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RS332	Drew Drive - Section 300, From: Georgian St To: Sandy Row	0.65	49	<i>Preventative Maintenance</i>	-	10	19	74
RS329	Clarence Street - Section 297, From: 150m West of Cass Dr. To: Christine Ln.	0.16	49	<i>Preventative Maintenance</i>	-	10	20	74
RB041A	Merkley Road - Section 37, From: Harmony Road To: Armstrong Road	1.5	111	<i>Preventative Maintenance</i>	-	9	18	79
RB078	French Settlement Road - Section 115, From: County Rd #1 To: Boundary Rd	3.8	166	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$361	8	15	81
RS335	Forward Road - Section 303, From: Winchester Springs Rd To: Nesbitt Rd	1.35	111	<i>G - Gravel (75mm)</i>	\$16	8	16	80
RB184	Cameron Road - Section 160, From: 0.2km West of Margaret St. To: County Rd #3	0.4	388	<i>Preventative Maintenance</i>	-	9	18	86
RB018	Ormond Road - Section 10A, From: Bisson Rd To: County Rd #13	3.3	111	<i>G - Gravel (75mm)</i>	\$38	8	16	82
RS305	Sherrer Way - Section 289, From: County Road #38 to Dead End.	0.2	49	<i>Preventative Maintenance</i>	-	8	16	82
RB157	Marionville Road - Section 32, From: Gregoire Road To: Bisson Road	1.3	333	<i>Preventative Maintenance</i>	-	10	19	88
RB146A	Rodney Lane - Section 006, From: Ormond Rd To: Marionville Road	1.4	111	<i>Preventative Maintenance</i>	-	9	18	86
RB043A	Armstrong Road - Section 39, From: Dead End To: County Road #31	3.4	49	<i>Preventative Maintenance</i>	-	9	17	85
RB169	Forward Road - Section 84, From: County Rd #43 To: 2.8km West of County Rd # 43	2.8	388	<i>Preventative Maintenance</i>	-	10	20	90
RB148	Ormond Road - Section 009, From: Rodney Rd To: Bisson Rd	3.2	333	<i>Preventative Maintenance</i>	-	10	20	90
RB040A	Harmony Road - Section 36, From: County Road #31 To: Dead End	2	49	<i>Preventative Maintenance</i>	-	9	18	86
RB223	Centre Street - Section 216, From: Queen St. To: County Rd #3	0.13	166	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$12	8	15	89
RB024	Dagenais Road - Section 020, From: County Road #7 To: Dead End	1.2	166	<i>Preventative Maintenance</i>	-	10	19	89
RB259	South Street - Section 252, From: County Rd #43 To: Main St.	0.56	388	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$53	8	15	91

Road Needs Summary Table – by Program

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB009	Dillabough Road - Section 098	1.1	111	<i>Preventative Maintenance</i>	-	10	19	89
RB279	Albert Street - Section 273, From: Ralph St. To: Queen St. East	0.15	333	<i>Preventative Maintenance</i>	-	8	16	92
RB280	Albert Street - Section 274, From: Queen St. East To: Emma St.	0.18	333	<i>Preventative Maintenance</i>	-	8	16	92
RB232	Christie Lane - Section 225, From: County Rd #3 To: Church St.	0.11	333	<i>Preventative Maintenance</i>	-	8	16	92
RB150	Hume Street - Section 22, From: Ralph St. To: County Rd #13	0.25	111	<i>Preventative Maintenance</i>	-	10	20	90
RS323	Kerrs Ridge Road - Section 291, From: 0.3 km East of County Rd #1 To: Lilico Rd	2.1	111	<i>Preventative Maintenance</i>	-	10	20	90
RB030	Shay Road - Section 093, From: Forward Road To: Dead End	0.8	49	<i>Preventative Maintenance</i>	-	10	20	90
RB285	Church Street - Section 280, From: County Rd #7 To: College St.	0.34	166	<i>Preventative Maintenance</i>	-	8	16	92
RB292	George Street - Section 288, From: Victoria St. To: Mill St.	0.08	49	<i>Preventative Maintenance</i>	-	8	16	91
RB289	Mill Street - Section 284, From: College St. To: George St.	0.23	49	<i>Preventative Maintenance</i>	-	8	16	91
RB290	Mill Street - Section 285, From: George St. To: Victoria St.	0.16	49	<i>Preventative Maintenance</i>	-	8	16	91
RB272	King Street - Section 265, From: McMillan St. To: Queen St.	0.27	388	<i>Preventative Maintenance</i>	-	9	18	96
RB249	Hummel Street - Section 242, From: County Rd #7 To: Dead End	0.24	111	<i>Preventative Maintenance</i>	-	9	17	95
RB205	Caleb Street - Section 201, From: County Rd #38 To: Albert St.	0.2	111	<i>Preventative Maintenance</i>	-	10	19	98

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Appendix C

Road Needs Summary Table – by Structural Adequacy

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
NOW Needs								
RS339	Nesbitt Road - Section 307, From: Webb Rd To: Forward Rd	3.7	333	Convert LCB to HCB	\$542	4	5	46
RB083	Spruit Road - Section 127, From: Development Road To: 2.6km East of Development Road	2.6	111	Recon G - Full Reconstruction 6m Gravel Road	\$398	5	6	46
RS337	Industrial Ave - Section 305, From: County Rd #31 To: Dead End	0.06	111	Recon 1S - Full Reconstruction + 1 Lift	\$27	4	5	46
RB074	Allen Road - Section 111, From: Belmeade Road To: French Settlement Road (Unmaintained)	1.1	49	Recon G - Full Reconstruction 6m Gravel Road	\$168	3	4	39
RB057	Forward Road S - Section 85, From: 1.1km North of Nation Valley Rd To: Nation Valley Rd	1.1	333	Convert LCB to HCB	\$161	4	5	58
RB294	Droppo Road - Section 95 A, From: 0.3km East of Forward Road To: 0.5km West of County Road #7	1.7	49	Recon G - Full Reconstruction 6m Gravel Road	\$260	3	4	40
RB257	Industrial Drive - Section 250, From: County Rd #37 To: Railroad Crossing	0.4	111	Recon 1S - Full Reconstruction + 1 Lift	\$177	5	7	50
RB258	Brannen Drive - Section 251, From: Industrial Dr. To: 75m East of Industrial Dr.	0.08	49	Recon 1S - Full Reconstruction + 1 Lift	\$35	5	7	47
RB175	Christina Crescent - Section 122, From: St. John's St. To: St. John St.	0.3	49	Recon 1S - Full Reconstruction + 1 Lift	\$133	5	4	47
RB062	Nesbitt Road - Section 92, From: Forward Road To: Dead End	0.3	49	Recon 1S - Full Reconstruction + 1 Lift	\$133	4	5	47
RB174	St. John's - Section 121, From: County Rd #1 To: Dead End	0.3	49	Recon 1S - Full Reconstruction + 1 Lift	\$133	5	4	47
RB136	Nation Valley Road - Section 82, From: River Rd To: 1.0km East of River Rd	1	333	Convert LCB to HCB	\$146	5	7	63
RB015	Marionville Road - Section 035, From: Spruce Dr To: County Rd #31	1.2	222	Convert LCB to HCB	\$176	4	5	60
RB256	Harper Street - Section 249, From: Railroad Crossing To: Cul de Sac	0.21	49	Recon 1S - Full Reconstruction + 1 Lift	\$93	5	7	48
RB250	John Street - Section 243, From: County Rd #7 To: Francis St.	0.15	49	Recon 1S - Full Reconstruction + 1 Lift	\$66	5	6	48
RB251	John Street - Section 244, From: Francis St. To: Dead End	0.08	49	Recon 1S - Full Reconstruction + 1 Lift	\$35	5	6	48

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB153	McConnell Court - Section 25, From: Hume St. To: Cul de Sac	0.1	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$44	6	7	49
RB039B	Marionville Road - Section 34B, From: 1.8km West of Rodney Lane To: Spruce Drive	0.63	222	<i>Convert LCB to HCB</i>	\$92	5	6	62
RB202	Beach Street - Section 198, From: County Rd #3 To: Victoria St.	0.14	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$62	5	7	51
RB172	Loughlin Ridge Road - Section 118, From: Boundary Rd To: County Rd # 1	3.9	388	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$1,724	6	7	67
RB137	Nation Valley Road - Section 83, From: 1.0km East of River Rd To: Forward Road	4.5	333	<i>Convert LCB to HCB</i>	\$659	5	7	66
RB106	Cameron Road - Section 158, From: County Rd #1 To: Development Rd	3.7	222	<i>Convert LCB to HCB</i>	\$542	5	7	63
RB178	Development Road - Section 135, From: County Rd #43 To: County Rd #3	6.85	388	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$3,027	6	7	68
RB159	Forest Hill Road - Section 40, From: County Rd #31 To: Dead End	0.6	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$265	6	7	53
RB160	Old Carriage Lane - Section 41, From: Forest Hill Rd. To: County Rd #31	1	49	<i>Recon 1S - Full Reconstruction + 1 Lift</i>	\$442	6	7	53
RB110	Fawcett Road - Section 164, From: County Road 38 To: West of County Road #31 (Start of Gravel)	2	49	<i>Convert LCB to HCB</i>	\$293	5	7	54
RB301	Belmeade Road - Section 110, From: County Road #1 To: Dead End	1.7	277	<i>Convert LCB to HCB</i>	\$249	6	7	67
RB090	Levere Road - Section 136, From: Development Road To: County Rd #3	3.8	111	<i>Convert LCB to HCB</i>	\$556	5	7	60
RB081a	Kerrs Ridge Road Section 125A, From: Lilico Rd to: Development Rd	1.2	111	<i>Convert LCB to HCB</i>	\$176	4	5	61
RB166	Falcone Lane - Section 68, From: County Road #43 To: Cul de Sac	0.4	111	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$177	5	7	63
RB158	Bisson Road - Section 33, From: Marionville Rd To: Ormond Rd	1.5	111	<i>Convert LCB to HCB</i>	\$220	5	6	64
RB019A	Crump Road - Section 058A, From: Laneway (1.6 km West) To: Dead End	2	111	<i>Convert LCB to HCB</i>	\$293	5	7	66

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB197	Sandy Row Road - Section 193, From: 2.9km West of County Rd #16 To: County Rd #16	1.2	111	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$530	5	7	67
RB140	Development Road - Section 134, From: Kerrs Ridge Rd To: County Rd #43	2.7	49	<i>Convert LCB to HCB</i>	\$395	6	7	66
1 - 5 Year Needs								
RB247	York Street - Section 240, From: County rod #38 To: Hospital Entrance	0.14	388	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$24	6	9	51
RB198	Anne Street - Section 194, From: County Rd #38 To: Sesame St.	0.18	222	<i>Convert LCB to HCB</i>	\$26	6	9	52
RS325	Albert Street - Section 293, From: Main St. To: Victoria St.	0.21	222	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$35	5	8	53
RB221	Centre Street - Section 214 , From: North St. To: Dufferin St.	0.11	166	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$19	6	9	51
RB213	Fred Street - Section 207, From: County Rd #38 To: Community Centre	0.45	166	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$76	6	9	53
RB134	River Road - Section 76, From: Queen St. West To: 1.0km West of Queen St.	1	333	<i>Convert LCB to HCB</i>	\$146	6	9	60
RB053b	River Road - Section 77b, From: 1.0km West of Queen Street To: Nation Valley Rd	2.8	333	<i>Convert LCB to HCB</i>	\$410	6	9	60
RB207	Clarence Street - Section 203A, From: County Rd #38 To: Albert St.	0.2	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$34	5	8	52
RB181	Clark Road - Section 146, From: County Rd #1 To: 0.9km West of County Rd#1	0.9	166	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$152	6	11	57
RB271	McMillan Street - Section 264, From: County Rd #7 To: King St.	0.12	166	<i>Convert LCB to HCB</i>	\$18	6	11	57
RB177	Kerrs Ridge Road - Section 124, From: County Rd #43 To: 0.3km East of County Rd #1	0.7	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$118	6	8	54
RB265	Thompson Road - Section 258, From: Faubert Ave. To: Cul de Sac	0.33	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$56	6	8	54
RB235	Church Street - Section 228, From: Cass St. To: 61m West of Cass St.	0.06	166	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$10	6	11	58
RB248	Howard Street - Section 241, From: County Rd #7 To: Dead End	0.23	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$39	6	10	55

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB194	Nationview Drive - Section 186, From: Sandy Row Rd To: Francis Rd	0.3	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$51	6	10	55
RB075A	Allen Road - Section 112, French Settlement Road to Loughlin Road	2.8	111	<i>Convert LCB to HCB</i>	\$410	6	10	55
RB163	Bridle Path - Section 44, From: Old Carriage Lane To: Dead End	0.2	111	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$34	6	10	56
RB170	Winchester Springs Road - Section 88, From: Gary Rd To: County Rd #31	2.9	388	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$1,282	6	9	66
RB210	York Court - Section 205, From: Albert Street To: Cul de Sac	0.18	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$30	6	9	50
RB171	Boundary (Mtn Twp) Road - Section 117, From: Loughlin Ridge Rd To: County Rd #43	1.1	388	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$486	6	10	67
RB185	Margaret Street - Section 162A, From: Cameron Street To: Sullivan Street	0.1	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$17	6	10	52
RB186	Sarah Street - Section 162B, From: Sullivan Street To: County Road #3	0.1	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$17	6	10	52
RB226	Whitney Street - Section 219, From: County Rd #3 To: Dead End	0.11	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$19	6	10	52
RB147	Ormond Road - Section 008, From: County Rd 31 To: Rodney Rd	2.6	333	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$1,149	5	8	67
RB200	Quart Court - Section 196, From: Sesame St. To: Cul de Sac	0.09	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$15	6	10	53
RB220	North Street - Section 213B, From: 70m East of Centre St.	0.05	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$8	6	10	54
RB010	Maple Ridge Road - Section 065	2.7	333	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$456	6	11	68
RB240	Clarence Street - Section 233, From: County Rd #38 To: Louise St.	0.13	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$22	6	10	55
RB144	Dawley Drive - Section 001, From: County Rd #3 To: County Rd #43	0.5	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$84	6	10	55
RB135	River Road - Section 78, From: Nation Valley Rd To: County Rd #31	3.8	333	<i>Convert LCB to HCB</i>	\$556	6	10	69
RB195	Francis Street - Section 187, From: Nationview Rd To: Nationview Rd	0.3	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$51	6	10	57

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB001	Loucks Road - Section 062	0.3	111	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$133	6	8	62
RB192	Drew Drive - Section 184, From: Sandy Row Rd. To: Georgian St.	0.3	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$51	6	11	58
RB193	Georgian Street - Section 185, From: Drew Drive. To: South Nation Way	0.15	49	<i>PP1 - Pulverize and Pave 1 Lift</i>	\$25	6	11	58
RB014A	Gray Road - Section 064, From: 0.3km W of Helmer Road To: 0.7km E of Helmer Road	1	111	<i>Convert LCB to HCB</i>	\$146	6	11	65
RB225	Alexander Street - Section 218, From: County Rd #3/Main To: Dead End	0.23	166	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$102	6	10	68
RS351	Van Camp Road - Section 319, From: Development Rd To: County Rd #3	3.7	333	<i>Convert LCB to HCB</i>	\$542	6	11	73
RB069A	Guy Road - Section 105, From: County Road #3 To: Pemberton Road	3.7	111	<i>Convert LCB to HCB</i>	\$542	6	11	66
RB196	Nation River Road - Section 188, From: County Road #3 To: Boundary Road	3.6	111	<i>Convert LCB to HCB</i>	\$527	6	10	68
RS327	Baker Road - Section 295, From: Pemberton Road To: County Road #31	1.8	166	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$795	6	10	71
RB167	Queensway Road - Section 74, From: County Road #43 To: River Road	0.3	111	<i>Recon 1R - Full Reconstruction + 1 Lift</i>	\$133	6	10	69
RB096	Clark Road - Section 148, From: Railroad Crossing To: Boundary Rd	2.7	111	<i>Convert LCB to HCB</i>	\$395	5	9	69
RB029A	Kittle Road - Section 057, From: County Road #7 To: Boyne Road	3.7	111	<i>Convert LCB to HCB</i>	\$542	6	10	70
RB099	Shaw Road - Section 152A, From: Boundary Rd To: County Rd #43	3.9	111	<i>Convert LCB to HCB</i>	\$571	6	10	70
RB005	St. Mary's Road - Section 096	0.4	49	<i>Convert LCB to HCB</i>	\$59	5	9	68
RB006A	Loucks Road - Section 061	3	83	<i>Convert LCB to HCB</i>	\$439	6	10	71
RB277	Casselman Street - Section 271, From: Water St. To: Ralph St.	0.09	166	<i>Recon 2U - Full Reconstruction + 2 Lifts</i>	\$87	6	8	80
RB288	College Street - Section 283, From: Church St. To: Mill St.	0.54	166	<i>Recon 2U - Full Reconstruction + 2 Lifts</i>	\$522	6	9	80

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB224	Gladstone Street - Section 217, From: County Rd #3 To: Dead End	0.35	111	Recon 2U - Full Reconstruction + 2 Lifts	\$338	6	9	79
RS324	Albert Street - Section 292, From: Clarence St To: Sesame St.	0.37	222	Recon 2U - Full Reconstruction + 2 Lifts	\$357	6	10	82
RB203	Victoria Street - Section 199, From: Albert St. To: Cul de Sac	0.34	111	Recon 2U - Full Reconstruction + 2 Lifts	\$328	6	10	81
RB281	Emma Street - Section 275, From: Dead End To: Albert St.	0.08	49	Recon 2U - Full Reconstruction + 2 Lifts	\$77	6	8	80
RB284	Queen Street East - Section 278, From: King St. To: County Rd #7	0.12	111	PP1 - Pulverize and Pave 1 Lift	\$20	6	11	83
RB274	Water Street - Section 267, From: County Rd #7 To: 220m SE of County Rd #7	0.22	49	PP1 - Pulverize and Pave 1 Lift	\$37	6	11	83
6 - 10 Year Needs								
RB246A	May Street - Section 239, From: County Rd #38 To: Hospital Entrance	0.14	333	RMP1 - Mill & Pave, 1 Lift	\$30	7	13	59
RB253	Francis Street - Section 246, From: Joseph St. To: County Rd #37	0.13	166	PP1 - Pulverize and Pave 1 Lift	\$22	6	12	55
RB188	Church Street - Section 180, From: County Rd #3 To: Maple St.	0.1	166	RMP1 - Mill & Pave, 1 Lift	\$21	7	13	58
RB286	College Street - Section 281, From: South St. West To: May St.	0.18	166	RMP1 - Mill & Pave, 1 Lift	\$38	7	13	58
RB287	College Street - Section 282, From: Mary St. To: Church St.	0.35	166	RMP1 - Mill & Pave, 1 Lift	\$74	7	13	58
RB264	Faubert Avenue - Section 257, From: South St. To: Thompson Rd	0.37	166	PP1 - Pulverize and Pave 1 Lift	\$63	6	12	59
RB151	Thomas Dr - Section 23, From: Alyssa Cr. To: Moffat St/Cty Rd 7.	0.25	111	PP1 - Pulverize and Pave 1 Lift	\$42	6	12	56
RB245	Fred Street - Section 238, From: County Rd #38 To: Dead End	0.34	166	RMP1 - Mill & Pave, 1 Lift	\$72	7	14	60
RB299	Maple Street - Section 178, From: Lough Road To: Scott Street	0.4	111	Convert LCB to HCB	\$59	7	13	57
RB152	Alyssa Cr. Section 24, From: County Road #7 to Thomas Drive around Alyssa Cr. To Thomas Drive	0.75	111	PP1 - Pulverize and Pave 1 Lift	\$127	6	12	58
RB209	York Street - Section 204, From: St. Lawrence St. To: Albert Street	0.18	111	RMP1 - Mill & Pave, 1 Lift	\$38	7	13	58

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB255	Joseph Street - Section 248, From: Francis St. To: Harper St.	0.12	166	RMP1 - Mill & Pave, 1 Lift	\$25	7	13	62
RB243	Louise Street - Section 236, From: York St. To: Dead End	0.36	166	RMP1 - Mill & Pave, 1 Lift	\$76	7	14	62
RB269	Mary Street - Section 262, From: County Rd #7 To: College St.	0.32	111	RMP1 - Mill & Pave, 1 Lift	\$68	7	13	59
RB239	Victoria Street - Section 232, From: Louise St. To: County Rd #38	0.14	111	RMP1 - Mill & Pave, 1 Lift	\$30	7	13	59
RB252	Francis Street - Section 245, From: John St. To: Joseph St.	0.07	49	PP1 - Pulverize and Pave 1 Lift	\$12	6	12	55
RB211	May Street - Section 206A, From: County Rd #38 To: Albert St.	0.2	49	RMP1 - Mill & Pave, 1 Lift	\$42	6	13	56
RB155	Steinburg Court - Section 27, From: Ralph St. To: Cul de Sac	0.2	49	PP1 - Pulverize and Pave 1 Lift	\$34	7	12	57
RS352	Wintonia Dr. - Section 320, From: St Lawrence St. To: James St.	0.25	111	RMP1 - Mill & Pave, 1 Lift	\$53	7	13	63
RB238	Victoria Street - Section 231, From: 205m East of Church St. To: Louise St.	0.21	49	PP1 - Pulverize and Pave 1 Lift	\$35	7	12	58
RB228	Annable Road - Section 221, From: Dufferin St. To: Howatd St.	0.2	49	RMP1 - Mill & Pave, 1 Lift	\$42	7	14	59
RB125	North Street - Section 213A, From: Centre Street To: 70m East of Centre Street	0.07	49	RMP1 - Mill & Pave, 1 Lift	\$15	7	13	59
RB199	Sesame Street - Section 195, From: Albert St. To: Dead End	0.3	49	RMP1 - Mill & Pave, 1 Lift	\$63	7	14	59
RB039	Marionville Road - Section 34, From: Bisson Road To: Rodney Lane	3.09	222	Convert LCB to HCB	\$452	7	13	69
RB241	Clarence Street - Section 234, From: Louise St. To: 100m West of Cass Dr.	0.27	49	RMP1 - Mill & Pave, 1 Lift	\$57	7	13	61
RB003	Frood Corners Road - Section 060	0.15	49	RMP1 - Mill & Pave, 1 Lift	\$32	7	14	61
RB244	Henderson Crescent - Section 237, From: Louise St. To: Louise St.	0.31	49	RMP1 - Mill & Pave, 1 Lift	\$66	7	14	61
RB206	MacDonald Crescent - Section 202, From: Clarence St. To: Cul de Sac	0.13	49	RMP1 - Mill & Pave, 1 Lift	\$27	7	14	61
RB173	Maurice Street - Section 120, From: County Rd #1 To: Cul de Sac	0.3	49	RMP1 - Mill & Pave, 1 Lift	\$63	7	13	61

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB156	Mill Street - Section 28, From: County Rd #13 To: County Rd #13	0.25	49	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$53	8	14	61
RB215	Queen Street East - Section 209, From: County Rd #3 To: Dead End	0.18	49	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$38	8	14	62
RB058	Forward Road S - Section 86, From: Nation Valley Road To: Nesbitt Rd	1.7	333	<i>Convert LCB to HCB</i>	\$249	7	12	74
RB132	Cloverdale Road - Section 45, From: County Road #31 To: Dead End	1.3	166	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$275	7	14	70
RB039A	Marionville Road - Section 34A, From: Rodney Lane To: 1.8 km West of Rodney Lane	1.8	222	<i>Convert LCB to HCB</i>	\$264	7	13	72
RB073A	Belmeade Road - Section 110, From: County Road #31 To: County Road #1	10.1	277	<i>Convert LCB to HCB</i>	\$1,479	7	12	74
RB011	Spruce Drive - Section 007, From: Marionville Rd To: Ormond Rd	1.3	277	<i>Convert LCB to HCB</i>	\$190	7	13	75
RB145	Cayer Road - Section 003, From: County Rd #3 To: Castor River	1.8	222	<i>Convert LCB to HCB</i>	\$264	7	13	76
RB129	Cayer Road - Section 004, From: Castor River To: County Rd #13	2.5	222	<i>Convert LCB to HCB</i>	\$366	7	13	76
RB187	Lough Road - Section 177, From: Section #176 South To: County Rd #3	0.4	166	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$85	7	13	75
RB017	Liscumb Road - Section 002, From: County Rd # 43 To: County Rd #3	2.3	222	<i>Convert LCB to HCB</i>	\$337	7	13	77
RB182	Clark Road - Section 147, From: 0.9km West of County Rd #1 To: Railroad Crossing	0.6	166	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$127	7	14	77
RB084	Spruit Road - Section 128, From: 2.6km East of Development Road To: County Road #31	5	111	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$1,058	7	13	76
RB105A	McIntyre Road - Section 157, From: Boundary Road To: Cameron Road	2.8	111	<i>Convert LCB to HCB</i>	\$410	7	13	76
RB189	Bank Street - Section 181, From: Maple St. To: County Rd #3	0.1	49	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$21	7	13	73
RB019	Crump Road - Section 058, From: County Road #7 To: Thibault Ct	0.2	111	<i>RMP1 - Mill & Pave, 1 Lift</i>	\$42	7	14	77
RB021	Carruthers Road - Section 019, From: County Rd #32 To: County Rd #7	4	111	<i>Convert LCB to HCB</i>	\$586	7	14	77

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB088A	Church Road - Section 132, From: County Road #43 To: Development Road	3.7	111	Convert LCB to HCB	\$542	7	14	77
RB300	Scott Street - Section 179, From: County Road 3 To: Maple Street	0.5	49	Convert LCB to HCB	\$73	7	13	75
RB222	Centre Street - Section 215, From: Dufferin St. To: Queen St.	0.09	166	RMP1 - Mill & Pave, 1 Lift	\$19	7	13	85
RB254	Joseph Street - Section 247, From: County Rd #7 To: Francis St.	0.21	166	RMP1 - Mill & Pave, 1 Lift	\$44	7	13	86
RB282	Emma Street - Section 276, From: Albert St. To: County Rd #7	0.19	166	RMP1 - Mill & Pave, 1 Lift	\$40	7	13	87
RB267	Riverside Drive - Section 260, From: South St. East To: South St. East	0.28	49	PP1 - Pulverize and Pave 1 Lift	\$47	6	12	84
RB266	South Street East - Section 259, From: County Rd #7 To: Dead End	0.23	49	PP1 - Pulverize and Pave 1 Lift	\$39	6	12	84
RB204	Victoria Street - Section 200, From: Albert St. To: County Rd #38	0.2	111	RMP1 - Mill & Pave, 1 Lift	\$42	7	13	86
RB212	May Street - Section 206B, From: Albert St. To: Dead End	0.3	49	RMP1 - Mill & Pave, 1 Lift	\$63	7	13	85
RB291	Victoria Street - Section 287, From: County Rd #7 To: College St.	0.34	111	RMP1 - Mill & Pave, 1 Lift	\$72	7	14	87
RB164	Boyne Road - Section 47, From: Ottawa St. To: Town Limits	0.3	388	RMP1 - Mill & Pave, 1 Lift	\$63	8	14	90
RB283	Queen Street East - Section 277, From: Albert St. To: King St.	0.07	111	RMP1 - Mill & Pave, 1 Lift	\$15	7	14	88
RB127	Gillard's Lane - Section 279, From: County Road #7 To: Dead End	0.03	49	RMP1 - Mill & Pave, 1 Lift	\$6	7	14	88
RB276	Casselman Street - Section 270, From: Water St. To: Dead End	0.02	49	RMP1 - Mill & Pave, 1 Lift	\$4	7	14	88
RB278	Ralph Street - Section 272, From: King St. To: Albert St.	0.11	49	RMP1 - Mill & Pave, 1 Lift	\$23	7	14	88
No Identified Need (Preservation & Regular Resurfacing Strategies / or LCB-to-HCB conversion)								
RB297	McIntosh Road - Section 167, From: Pemberton Road To: 2.5km West of Pemberton Road	2.7	111	G - Gravel (75mm)	\$31	5	8	51
RB114	Moore Road - Section 169, From: Timmins Road To: County Road #3	2	111	G - Gravel (75mm)	\$23	7	14	51

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB066	Baldwin Road - Section 102A, From: Sandy Row Road To: 0.1km South of Sandy Row Road	0.1	111	G - Gravel (75mm)	\$1	6	12	54
RB295	Baldwin Road - Section 102B, From: 0.1km South of Sandy Row Road To: Kirkwood Road	1.8	111	G - Gravel (75mm)	\$21	6	12	54
RB108	Sullivan Street - Section 161, From: County Rd #3 To: Margaret St.	0.2	111	G - Gravel (75mm)	\$2	6	12	54
RB076	Observatory Road - Section 113, From: County Road #1 To: Allen Road (unmaintained)	0.6	49	G - Gravel (75mm)	\$7	6	8	50
RB070	Cass Bridge Road - Section 106, From: Pemberton Road To: County Road #31	2.6	111	G - Gravel (75mm)	\$30	8	16	57
RB296	Jennings Road - Section 109, From: 0.7km North of Spruit Road To: 0.3km South of Armstrong Road	4.15	49	G - Gravel (75mm)	\$48	5	10	51
RS328	Christine Lane - Section 296, From: Fred St. To: Church St.	0.75	333	Preventative Maintenance	-	9	17	66
RB298	Barkley Road - Section 170A, From: Bailey Road To: 0.2km West of County Road #3	1.3	49	G - Gravel (75mm)	\$15	6	10	52
RB111	Gypsy Lane - Section 165, From: County Road #31 To: County Road #38	2.1	49	G - Gravel (75mm)	\$24	6	10	52
RB067	Kirkwood Road - Section 103, From: County Road #5 To: Sandy Row Road	1.5	111	G - Gravel (75mm)	\$17	6	12	58
RB032	Webb Road - Section 091B, From: Nesbitt Road To: Dead End	1.1	111	G - Gravel (75mm)	\$13	7	14	59
RB045	Boundary (Win-Fin Twp) Road - Section 50, From: County Road #9 To: Dead End	0.9	111	G - Gravel (75mm)	\$10	7	14	59
RS345	Steen Road - Section 313, From: Thompson Road To: County Road #3	1.5	49	G - Gravel (75mm)	\$17	6	12	54
RB236	Church Street - Section 229, From: 61m West of Cass St. To: Christie Ln	0.41	166	Preventative Maintenance	-	8	16	63
RB020	Kyle Road - Section 018, From: County Road #13 To: Carruthers Road	1.3	111	G - Gravel (75mm)	\$15	7	14	60
RB093	Levere Road - Section 139, From: Development Road To: Dead End	0.1	49	G - Gravel (75mm)	\$1	6	12	55

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB092	Crowder Road - Section 138, From: County Road #43 To: Levere Road	2.5	111	G - Gravel (75mm)	\$29	8	16	61
RB063	Lafleur Road - Section 99, From: County Road #3 To: Thompson Road	1.6	111	G - Gravel (75mm)	\$18	7	14	61
RB243A	Louise Street - Section 236A, From: Victoria St. To: York St. (220M)	0.21	166	Preventative Maintenance	-	8	16	64
RB116	Bailey Road - Section 171, From: Cameron Road To: Development Road	1.8	111	G - Gravel (75mm)	\$21	7	14	62
RB115	Barkley Road - Section 170B, From: County Road #3 To: 0.2km West of County Road #3	0.2	111	G - Gravel (75mm)	\$2	7	14	62
RB112	Brown's Road - Section 166, From: Guy Road To: McIntosh Road	0.5	111	G - Gravel (75mm)	\$6	7	14	62
RB026	Gibeault Road - Section 054, From: Boundary Road To: Dead End	1.3	111	G - Gravel (75mm)	\$15	7	14	62
RB217	Gordon Street - Section 211, From: Centre St. To: Parmalat Entrance	0.04	111	RO1 - Hot Mix Overlay, 1 Lift	\$4	8	15	62
RB180	Van Allen Street - Section 144, From: County Rd #1 To: Dead End	0.2	111	RO1 - Hot Mix Overlay, 1 Lift	\$19	8	15	62
RS346	Tabitha Crescent - Section 314, From: Lori Ln. To: Lori Ln.	0.48	111	RO1 - Hot Mix Overlay, 1 Lift	\$46	8	15	62
RS326	Albert Street - Section 294, From: Victoria St. To: Clarence St.	0.11	222	Preventative Maintenance	-	9	18	67
RB028	Coyne Road - Section 055, From: Gibeault Road To: Connaught Road	1.3	111	G - Gravel (75mm)	\$15	7	14	62
RB027	McLaughlin Road - Section 017, From: Coulthart Road To: County Road #13	1.5	111	G - Gravel (75mm)	\$17	7	14	63
RB052	Ball Road - Section 73, From: River Road To: County Road #43	0.8	111	G - Gravel (75mm)	\$9	7	14	63
RB036	North Wing Road - Section 13, From: County Road #3 To: Thompson Road	2.3	111	G - Gravel (75mm)	\$27	8	16	63
RB064	Pemberton Road - Section 100, From: County Road #38 To: Sandy Row Road	4	111	G - Gravel (75mm)	\$46	7	14	63
RB054	Summers Road - Section 79, From: Baker Road To: County Road 43	1.3	111	G - Gravel (75mm)	\$15	8	16	63
RB061	Webb Road - Section 091A, From: Nesbitt Road To: Winchester Springs Road	1.4	111	G - Gravel (75mm)	\$16	8	16	63

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB179A	Simms Street - Section 143, From: County Rd #1 To: Clarke Rd	0.4	111	<i>Preventative Maintenance</i>	-	8	16	63
RB237	Victoria Street - Section 230, From: Church St. To: 205m East of Church St.	0.21	111	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$20	8	15	63
RS336	Fred Street - Section 304, From: County Rd #38 To: Dead End	0.45	166	<i>Preventative Maintenance</i>	-	9	17	66
RB002	Kelly Road - Section 056, From: Connaught Rd To: County Rd #9	1.2	111	<i>G - Gravel (75mm)</i>	\$14	8	16	64
RB113	McIntosh Road - Section 168, From: County Road #3 To: 2.5km West of Pemberton Road	2.5	111	<i>G - Gravel (75mm)</i>	\$29	8	16	64
RB035	South Wing Road - Section 12, From: County Road #3 To: County Road #3	2.6	111	<i>G - Gravel (75mm)</i>	\$30	8	16	64
RB094	Van Camp Road - Section 142, From: County Road #1 To: Dead End	0.9	111	<i>G - Gravel (75mm)</i>	\$10	8	16	64
RB013	Helmer Road - Section 063, From: Maple Ridge Road To: gray Road	1	49	<i>G - Gravel (75mm)</i>	\$12	7	14	59
RB056	Nation Valley Road - Section 81, From: Bridge Westerly To: Dead End	1	49	<i>G - Gravel (75mm)</i>	\$12	7	14	59
RB089	Development Road - Section 133, From: Kerr's Ridge Rd To: Dead End	0.2	49	<i>G - Gravel (75mm)</i>	\$2	7	14	60
RB087	Blaine Road - Section 131, From: Lillico Road To: Church Road	1.8	111	<i>G - Gravel (75mm)</i>	\$21	8	16	65
RB109	Mulloy Road - Section 163, From: Cameron Road To: Van Camp Road	1.4	111	<i>G - Gravel (75mm)</i>	\$16	8	16	65
RB191	Bridge Street - Section 183, From: County Rd #3 To: Sandy Row Rd	0.5	111	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$48	8	15	65
RB227	Howard Street - Section 220, From: County Rd #3 To: Dufferin St.	0.23	111	<i>Preventative Maintenance</i>	-	8	16	65
RB104A	Boundary (Mtn Twp) Road - Section 156A, From: Nation River Rd To: Cameron Road	4.9	111	<i>G - Gravel (75mm)</i>	\$57	8	16	65
RS347	Thibault Ct - Section 315, From: Crump Road #7 To: Dead End	0.6	111	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$57	8	15	65
RB051	Baker Road - Section 72, From: County Road #31 To: River Road	5.5	111	<i>G - Gravel (75mm)</i>	\$64	8	16	66

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB085	Lillico Road - Section 129, From: County Road #43 To: Church Road	1.4	111	G - Gravel (75mm)	\$16	8	16	66
RB086	Lillico Road - Section 130, From: Church Road To: Kerr's Ridge Road	1.2	111	G - Gravel (75mm)	\$14	8	16	66
RB120	Lough Road - Section 175, From: Peppermill Rd To: Cameron Rd	0.3	111	G - Gravel (75mm)	\$3	8	16	66
RB231	Bailey Avenue - Section 224, From: Holmes St. To: County Rd #3	0.39	111	Preventative Maintenance	-	8	16	66
RB168	Queen Street West - Section 75, From: River Rd To: County Rd #43	0.4	111	Preventative Maintenance	-	8	16	66
RB071	Jennings Road - Section 107, From: County Road #43 To: Spruit Road	1.4	111	G - Gravel (75mm)	\$16	8	16	67
RB072	Jennings Road - Section 108, From: Spruit Road To: 0.7km North of Spruit Road	0.7	111	G - Gravel (75mm)	\$8	8	16	67
RB121	Lough Road - Section 176, From: Cameron Road To: 0.4km North of County Road #3	2.4	111	G - Gravel (75mm)	\$28	8	16	67
RB118	Nelson Road - Section 173, From: Development Road To: County Road #1	3.7	111	G - Gravel (75mm)	\$43	8	16	67
RB102	Pepperville Road - Section 154, From: County Road #1 To: Dead End	1.8	111	G - Gravel (75mm)	\$21	8	16	67
RB034	Steen Road - Section 10B, From: County Road #13 To: Thompson Road	1.5	111	G - Gravel (75mm)	\$17	8	16	67
RS306	Erin Street - Section 290, From: Lori Ln. To: Elizabeth Dr.	0.26	111	Preventative Maintenance	-	9	18	67
RB263	Martin Street - Section 256, From: Streeterpete Rd. To: South St.	0.08	111	Preventative Maintenance	-	9	17	67
RB260	Michael Street - Section 253, From: South St. West To: Streeterpete Rd	0.08	111	Preventative Maintenance	-	9	17	67
RB261	Streeterpete -Section 254, From: Michael St. To: Pauline St.	0.35	111	Preventative Maintenance	-	9	17	67
RS349	Travis Trail - Section 317, From: Kerr's Ridge To: Shellian Ln	0.12	111	Preventative Maintenance	-	8	16	67
RS350	Travis Trail - Section 318, From: Shellian Ln To: Coleman Cr	0.16	111	Preventative Maintenance	-	8	16	67

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RS348	Travis Trail - Section 316, From: Coleman Cr To: South End	0.07	111	<i>Preventative Maintenance</i>	-	8	16	67
RS330	Coleman Cr - Section 298, From: Shellian Ln To: Travis Tr	0.26	111	<i>Preventative Maintenance</i>	-	8	16	67
RS341	Shellian Ln - Section 309, From: County Road 1 To: Coleman Cr	0.1	111	<i>Preventative Maintenance</i>	-	8	16	67
RS340	Shellian Ln - Section 308, From: Coleman Cr 1 To: Travis Tr	0.1	111	<i>Preventative Maintenance</i>	-	8	16	67
RS333	Elizabeth Drive - Section 301, From: Erin Ave. To: Forward Rd.	0.26	111	<i>Preventative Maintenance</i>	-	9	18	67
RB048	Link Road - Section 69, From: County Road #31 To: Dead End	0.6	49	<i>G - Gravel (75mm)</i>	\$7	8	16	63
RB208	Clarence Street - Section 203B, From: Albert St. To: Dead End	0.22	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$21	8	15	63
RB025	Stevens Road - Section 029, From: Carruthers Road To: Marionville Road	1.7	111	<i>G - Gravel (75mm)</i>	\$20	7	14	68
RB126	Water Street - Section 269, From Dam To: Dead End	1.3	111	<i>G - Gravel (75mm)</i>	\$15	8	16	68
RB229	Dufferin Street - Section 222, From: Dead End To: Cul de Sac	0.32	111	<i>Preventative Maintenance</i>	-	9	18	68
RS334	Fawcett Road - Section 302, From: County Road #31 To: West of County Road #31 (Start of Gravel)	1	111	<i>G - Gravel (75mm)</i>	\$12	8	16	68
RB091	Levere Road - Section 137, From: County Road #3 To: Dead End	0.7	49	<i>G - Gravel (75mm)</i>	\$8	7	14	64
RB230	Holmes Street - Section 223, From: Dead End East To: Dead End West	0.14	49	<i>Preventative Maintenance</i>	-	8	16	64
RB104	Boundary (Mtn Twp) Road - Section 156, From: Cameron Road To: Dead End	0.24	166	<i>Convert LCB to HCB</i>	\$35	9	18	71
RB234	Church Street - Section 227, From: County Rd #38 To: Cass St.	0.25	166	<i>Preventative Maintenance</i>	-	9	18	71
RB161	Lafortune Drive - Section 42, From: Old Carriage Lane To: Dead End	0.5	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$48	8	15	65
RB162	Lori Elizabeth Street - Section 43, From: La Fortune Drive To: Dead End	0.3	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$29	8	15	65

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB214	Wickers Way - Section 208, From: Fred St. To: May St.	0.13	49	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$12	8	15	65
RB101	Norton Road - Section 153, From: Van Camp Road To: Pepperville Road	1.2	111	<i>G - Gravel (75mm)</i>	\$14	8	16	70
RB065	Sandy Row Road - Section 101, From: Pemberton Road To: Closed Bridge	4.7	111	<i>G - Gravel (75mm)</i>	\$54	7	14	70
RS342	Silver Fox Court - Section 310, From: Rodney Ln To: Cul-De-Sac	0.2	49	<i>Preventative Maintenance</i>	-	8	16	66
RS343	Silver Fox Court - Section 311, From: Rodney Ln To: North End	0.4	49	<i>G - Gravel (75mm)</i>	\$5	8	16	66
RB037	Thompson Road - Section 14, From: County Road #3 To: County Road #7	7.2	111	<i>G - Gravel (75mm)</i>	\$83	8	16	71
RB042	Jennings Road - Section 38, From: Armstrong Road To: Dead End	0.3	111	<i>Preventative Maintenance</i>	-	9	18	71
RS331	Country Lane - Section 299, From: Armstrong Rd To: Lafortunate Dr	0.63	111	<i>Preventative Maintenance</i>	-	9	18	71
RB119	Nelson Road - Section 174, From: County Road #1 To: Dead End	0.2	49	<i>G - Gravel (75mm)</i>	\$2	8	16	67
RB117	Simzer Road - Section 172, From: Development Road To: Dead End	0.1	49	<i>G - Gravel (75mm)</i>	\$1	8	16	67
RB176	Kelso Street - Section 123, From: County Rd #1 To: Dead End	0.1	49	<i>Preventative Maintenance</i>	-	9	18	67
RB262	Pauline Street - Section 255, From: Streeterpete Rd. To: 45m South of Streeterpete Rd.	0.05	49	<i>Preventative Maintenance</i>	-	9	17	67
RS338	Lori Lane - Section 306, From: Forward Rd. To: Erin Ave.	0.27	49	<i>Preventative Maintenance</i>	-	9	18	67
RB049	Hogoboam Road - Section 70, From: County Road #31 To: Pemberton Road	1.8	111	<i>G - Gravel (75mm)</i>	\$21	8	16	72
RB268	William Street - Section 261, From: County Road #7 To: Dead End	0.19	49	<i>Preventative Maintenance</i>	-	9	18	68
RB270	Armstrong Place - Section 263, From: Mary St. To: Cul de Sac	0.11	49	<i>Preventative Maintenance</i>	-	9	18	69
RB154	Merkley Place - Section 26, From: Ralph St. To: Cul de Sac	0.1	49	<i>Preventative Maintenance</i>	-	9	17	69

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB233	Louise Street - Section 226, From: Church St. To: County Rd #3	0.11	166	<i>Preventative Maintenance</i>	-	10	19	75
RB218	Dufferin Street - Section 212A, From: Centre St. To: Parmalat Entrance	0.04	111	<i>Preventative Maintenance</i>	-	10	19	73
RB216	Queen Street East - Section 210, From: County Rd #3 To: Centre St.	0.19	111	<i>Preventative Maintenance</i>	-	10	19	73
RB242	Cass Crescent - Section 235, From: Clarence St. To: Victoria St.	0.2	49	<i>Preventative Maintenance</i>	-	9	18	70
RB068	Timmins Road - Section 104, From: Sandy Row Road To: County Road #3	2.1	111	<i>G - Gravel (75mm)</i>	\$24	8	16	74
RB100A	Hyndman Road - Section 152B, From: County Road #43 To: West Boundary	3.9	111	<i>Convert LCB to HCB</i>	\$571	8	15	74
RS344	South Nation Way - Section 312, From: Georgian Street To: Drew Drive	0.25	111	<i>Preventative Maintenance</i>	-	10	19	74
RB165	Boyne Road - Section 48, From: Town Limits To: County Rd #7	9	388	<i>Preventative Maintenance</i>	-	7	16	80
RB060	Hollister Road - Section 89, From: County Road #5 To: County Road #31	2.8	111	<i>G - Gravel (75mm)</i>	\$32	8	16	74
RB275	Water Street - Section 268, From: 220m SE of County Rd #7 To: Dam	0.09	49	<i>Preventative Maintenance</i>	-	9	18	71
RB059	Winchester Springs Road - Section 87, From: Forward Rd To: Gary Rd	2	111	<i>G - Gravel (75mm)</i>	\$23	7	14	75
RB149	Ralph Street - Section 21, From: County Rd #13 To: Hume St.	0.5	111	<i>Preventative Maintenance</i>	-	10	20	75
RB004	Byers Road- Section 059	0.1	49	<i>Preventative Maintenance</i>	-	10	19	72
RB139	Droppo Road - Section 95B, From: county Road #7 To: 0.5km West of County Road #7	0.5	333	<i>Preventative Maintenance</i>	-	10	19	81
RB081b	Kerrs Ridge Road - Section 125B, From: Development Rd #1 To: Riddell Rd	3.6	111	<i>G - Gravel (75mm)</i>	\$42	8	16	76
RB123	Sandy Row - Section 191, From: County Road #16 To: Dead End	2.2	49	<i>G - Gravel (75mm)</i>	\$25	8	15	73
RB082	Riddell Road - Section 126, From: Kerrs Ridge Road To: County Road #43	2.9	111	<i>G - Gravel (75mm)</i>	\$33	7	14	77

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB055	Rae Road - Section 80, From: County Road #43 To: River Road	2.4	49	<i>G - Gravel (75mm)</i>	\$28	8	16	74
RB053	River Road - Section 77a, From: River Road at Ball Road To: 2.7 km from Ball Road	1.7	111	<i>G - Gravel (75mm)</i>	\$20	8	16	77
RB124	Sandy Row - Section 192, From: County Road #16 To: 1.2km East of County Road #1	2.9	111	<i>G - Gravel (75mm)</i>	\$33	8	15	77
RB044	Benson George Road - Section 46, From: County Road #31 To: Dead End	1.3	49	<i>G - Gravel (75mm)</i>	\$15	8	16	74
RB190	Mill Street - Section 182, From: County Rd #3 To: Bridge St.	0.15	49	<i>Preventative Maintenance</i>	-	10	20	74
RS332	Drew Drive - Section 300, From: Georgian St To: Sandy Row	0.65	49	<i>Preventative Maintenance</i>	-	10	19	74
RS329	Clarence Street - Section 297, From: 150m West of Cass Dr. To: Christine Ln.	0.16	49	<i>Preventative Maintenance</i>	-	10	20	74
RB133	Boundary (Win-Fin Twp) Road - Section 53, From: 1.6km North of Gibeault Road To: County Road #13	1.9	388	<i>Convert LCB to HCB</i>	\$278	9	18	83
RB080	Loughlin Ridge Road - Section 118, From: County Rd # 1 To: East End	1.9	222	<i>Convert LCB to HCB</i>	\$278	8	16	81
RB041A	Merkley Road - Section 37, From: Harmony Road To: Armstrong Road	1.5	111	<i>Preventative Maintenance</i>	-	9	18	79
RB078	French Settlement Road - Section 115, From: County Rd #1 To: Boundary Rd	3.8	166	<i>RO1 - Hot Mix Overlay, 1 Lift</i>	\$361	8	15	81
RB050	Boundary (Mtn Twp) Road - Section 71, From: French Settlement Road. To: Loughlin Ridge.	0.9	166	<i>Convert LCB to HCB</i>	\$132	8	15	81
RS335	Forward Road - Section 303, From: Winchester Springs Rd To: Nesbitt Rd	1.35	111	<i>G - Gravel (75mm)</i>	\$16	8	16	80
RB046A	Boundary (Win-Fin Twp) Road - Section 51, From: County Road #9 To: Gibeault Road	2.4	388	<i>Convert LCB to HCB</i>	\$351	9	18	85
RB047	Boundary (Win-Fin Twp) Road - Section 52, From: Gibeault Rd To: 1.6km North of Gibeault Rd	1.6	388	<i>Convert LCB to HCB</i>	\$234	9	18	85

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB098A	West Boundary Road - Section 150, From: Clarke Road To: N. Flesher Crescent	3.3	111	Convert LCB to HCB	\$483	8	15	81
RB077A	French Settlement Road - Section 114, From: County Rd #1 To: East End	2	111	Convert LCB to HCB	\$293	8	15	81
RB138	Nesbitt Road - Section 90, From: County Rd #31 To: Webb Rd	1.4	333	Convert LCB to HCB	\$205	9	18	85
RB097B	Ronson Road - Section 145, From: Boundary Rd To: Dead End	0.7	49	Convert LCB to HCB	\$103	9	18	79
RB143	Irish Headline Road - Section 190, From: County Rd #1 To: County Rd #16	4	222	Convert LCB to HCB	\$586	9	17	84
RB184	Cameron Road - Section 160, From: 0.2km West of Margaret St. To: County Rd #3	0.4	388	Preventative Maintenance	-	9	18	86
RB018	Ormond Road - Section 10A, From: Bisson Rd To: County Rd #13	3.3	111	G - Gravel (75mm)	\$38	8	16	82
RB130	Rodney Lane - Section 005, From: County Rd #13 To: Ormond Rd	1.4	111	Convert LCB to HCB	\$205	8	16	82
RB142	Van Camp Road - Section 141, From: Development Rd To: County Rd #1	3.7	333	Convert LCB to HCB	\$542	9	18	86
RB012	Belanger Road - Section 066, From: County Rd #43 To: Maple Ridge Rd	0.6	333	Convert LCB to HCB	\$88	9	19	87
RB016	Belanger Road - Section 067, From: Maple Ridge Rd To: Boyne Rd	2.7	333	Convert LCB to HCB	\$395	9	19	87
RB107	Cameron Road - Section 159, From: Development Rd To: 0.2km West of Margaret St.	2.9	222	Convert LCB to HCB	\$425	9	18	86
RB103	Cameron Road - Section 155, From: County Road #1 To: Boundary Road	3.7	222	Convert LCB to HCB	\$542	9	18	86
RS305	Sherrer Way - Section 289, From: County Road #38 to Dead End.	0.2	49	Preventative Maintenance	-	8	16	82
RB008	Limerick Road - Section 097	4.4	83	Convert LCB to HCB	\$644	9	16	84
RB079	Boundary (Mtn Twp) Road - Section 116, From: Belmeade Rd To: French Settlement Road	3.7	166	Convert LCB to HCB	\$542	9	18	86

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB031A	McMillan Road - Section 094, From: Forward Road To: County Road #7	1.8	166	Convert LCB to HCB	\$264	10	19	86
RB157	Marionville Road - Section 32, From: Gregoire Road To: Bisson Road	1.3	333	Preventative Maintenance	-	10	19	88
RB122	Wallace Road - Section 189, From: Boundary with South Dundas	0.1	111	Convert LCB to HCB	\$15	9	18	85
RB146A	Rodney Lane - Section 006, From: Ormond Rd To: Marionville Road	1.4	111	Preventative Maintenance	-	9	18	86
RB095	Ronson Road - Section 145, From: Simms St To: Dead End	2.1	111	Convert LCB to HCB	\$308	9	18	86
RB007	Connaught Road - Section 049	4	83	Convert LCB to HCB	\$586	9	18	86
RB131	Coulthart Road - Section 15, From: County Rd #7 To: 3.0km East of County Rd #7	3	83	Convert LCB to HCB	\$439	9	18	86
RB038	Coulthart Road - Section 16, From: 3.0km East of County Rd #7 To: Boundary Rd	1	83	Convert LCB to HCB	\$146	9	18	86
RB043A	Armstrong Road - Section 39, From: Dead End To: County Road #31	3.4	49	Preventative Maintenance	-	9	17	85
RB169	Forward Road - Section 84, From: County Rd #43 To: 2.8km West of County Rd # 43	2.8	388	Preventative Maintenance	-	10	20	90
RB022	Marionville Road - Section 030, From: County Rd #32 To: Stevens Rd	1.5	222	Convert LCB to HCB	\$220	10	19	89
RB023	Marionville Road - Section 031, From: Stevens Rd To: County Rd #7	2.8	222	Convert LCB to HCB	\$410	10	19	89
RB148	Ormond Road - Section 009, From: Rodney Rd To: Bisson Rd	3.2	333	Preventative Maintenance	-	10	20	90
RB040A	Harmony Road - Section 36, From: County Road #31 To: Dead End	2	49	Preventative Maintenance	-	9	18	86
RB223	Centre Street - Section 216, From: Queen St. To: County Rd #3	0.13	166	RO1 - Hot Mix Overlay, 1 Lift	\$12	8	15	89
RB024	Dagenais Road - Section 020, From: County Road #7 To: Dead End	1.2	166	Preventative Maintenance	-	10	19	89
RB259	South Street - Section 252, From: County Rd #43 To: Main St.	0.56	388	RO1 - Hot Mix Overlay, 1 Lift	\$53	8	15	91

Road Needs Summary Table – by Structural Adequacy

Sect. No.	Road Name	Length (km)	AADT	Preliminary Improvement Type Recommendation	Cost (x1000)	Surface Condition	Structural Adequacy	Condition Rating
RB009	Dillabough Road - Section 098	1.1	111	<i>Preventative Maintenance</i>	-	10	19	89
RB279	Albert Street - Section 273, From: Ralph St. To: Queen St. East	0.15	333	<i>Preventative Maintenance</i>	-	8	16	92
RB280	Albert Street - Section 274, From: Queen St. East To: Emma St.	0.18	333	<i>Preventative Maintenance</i>	-	8	16	92
RB232	Christie Lane - Section 225, From: County Rd #3 To: Church St.	0.11	333	<i>Preventative Maintenance</i>	-	8	16	92
RB150	Hume Street - Section 22, From: Ralph St. To: County Rd #13	0.25	111	<i>Preventative Maintenance</i>	-	10	20	90
RS323	Kerrs Ridge Road - Section 291, From: 0.3 km East of County Rd #1 To: Lilico Rd	2.1	111	<i>Preventative Maintenance</i>	-	10	20	90
RB030	Shay Road - Section 093, From: Forward Road To: Dead End	0.8	49	<i>Preventative Maintenance</i>	-	10	20	90
RB285	Church Street - Section 280, From: County Rd #7 To: College St.	0.34	166	<i>Preventative Maintenance</i>	-	8	16	92
RB292	George Street - Section 288, From: Victoria St. To: Mill St.	0.08	49	<i>Preventative Maintenance</i>	-	8	16	91
RB289	Mill Street - Section 284, From: College St. To: George St.	0.23	49	<i>Preventative Maintenance</i>	-	8	16	91
RB290	Mill Street - Section 285, From: George St. To: Victoria St.	0.16	49	<i>Preventative Maintenance</i>	-	8	16	91
RB272	King Street - Section 265, From: McMillan St. To: Queen St.	0.27	388	<i>Preventative Maintenance</i>	-	9	18	96
RB249	Hummel Street - Section 242, From: County Rd #7 To: Dead End	0.24	111	<i>Preventative Maintenance</i>	-	9	17	95
RB205	Caleb Street - Section 201, From: County Rd #38 To: Albert St.	0.2	111	<i>Preventative Maintenance</i>	-	10	19	98



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Water Capacity EA Study & Update

RECOMMENDATION:

THAT the Council of the Township of North Dundas receives the Water Capacity EA Study and Update report and direct staff to initiate negotiations with potential property owners for the purchase of land for a pumping test of one well and continue discussions with the Municipality of South Dundas for the supply of surface water.

BACKGROUND:**Water Supply Capacity Expansion:**

Township of North Dundas has retained J. L. Richards & Associates to undertake a Schedule “C” Municipal Class Environmental Assessment (Class EA) for the Township water capacity expansion to address and evaluate potable water supply needs for the 20-year planning horizon. The draft Phase 1 report is attached. The following Problem / Opportunity Statement is developed for proceeding to Phase 2 of the Class EA Study:

“The Township of North Dundas is serviced by a communal potable water supply system that generally consists of eight active groundwater wells, five pump houses with chlorine disinfection, two storage reservoirs, two elevated storage tanks and distribution system. While the system has been operating in accordance with all applicable legislation and is generally achieving all required water quality standards, it is anticipated that the Township will not be able to meet potable water supply requirements as recommended by the Ministry of the Environment, Conservation and Parks within the next 20 year timeframe if projected growth and associated water demand is realized. The Township is therefore in need of a solution that will address water supply constraints and improve the redundancy and reliability in delivering treated water to the community over the next 20 years.”

Next steps:

J. L. Richard will review the following list of potential alternatives to be assessed during Phase 2:

1. Do nothing
2. Expanding the groundwater supply system – additional 2 new wells
3. Connecting to other water system – South Dundas
4. A new surface water treatment plant
5. Combination of alternative 2 and 3.

The environmental assessment study will review the alternatives in detail and present the evaluation of alternative solutions and the preliminary preferred solution at the public information meeting tentatively scheduled for 2021.

Alternative 2:

For alternative 2, two maps are prepared to assess for potential well location. This will require direction from Council to proceed with the negotiations with potential property owners within the new well limits as shown in attached maps.

Alternative 2 Next Steps:

- a. Contact property owners within the potential well areas as identified in figure 1 and 2, as needed.
- b. Explore potential sale of land to the Township for exploration of one well.

It is anticipated that cost of drilling one new production well, pump house, land purchase and watermain extension will be approximately \$3M to \$4M. Land purchase will need to be assessed based on availability and interest to sell.

Alternative 3:

For alternative 3, staff have contacted the Township of South Dundas to discuss available capacity and the cost of water rate per cubic meter to the Township of North Dundas.

A potential solution for water capacity increase for the Township of North Dundas will likely be combination of alternative 2 (one well) and alternative 3 (extension of watermain from South Dundas).

Alternative 3 Next Steps:

- a. Discuss and potentially prepare a memorandum of understanding with the Township of South Dundas with regard to capacity, cost of purchase of water, extension of watermain and other requirements.

It is anticipated that the cost of a watermain extension from the boundary of South Dundas to Winchester will be approximately \$5M-\$6M. The cost of extension of the watermain from Morrisburg to South Dundas northern boundary will be approximately \$10M.

The preliminary preferred solution and the feedback from the public information meeting will be presented to the Council.

OPTIONS AND DISCUSSION:

1. **Approve the recommendation** - recommended.
2. **Do not approve the recommendations** - not recommended.

FINANCIAL ANALYSIS:

2021 Budget carries additional funding to initiate the detailed design of the preferred option, subject to completion of the environmental assessment study.

OTHERS CONSULTED:

J. L. Richards & Associates
Staff

ATTACHMENTS:

Draft Phase 1 report

PREPARED BY:



Khurram Tunio, M. Eng., P. Eng.
Director of Public Works

REVIEWED & APPROVED BY:



Angela Rutley, BBA
CAO



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SEPTEMBER 15, 2020

Prepared for:

TOWNSHIP OF NORTH DUNDAS

636 St. Lawrence Street
PO Box 489
Winchester, ON
K0C 2K0

Prepared by:

J.L. RICHARDS & ASSOCIATES LIMITED

864 Lady Ellen Place
Ottawa, ON
K1Z 5M2

In association with:

GOLDER ASSOCIATES LTD.

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Ottawa, ON
K2H 5B7

JLR 28855-000

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APPENDIX 'D'	North Dundas Drinking Water Supply System Capacity Expansion Class EA – Technical Memorandum No. 1 Population Growth and Development Projections
APPENDIX 'E'	Baseline Hydrogeological Conditions (Golder, March, 11, 2020)

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1.0 INTRODUCTION

1.1 Background

The Township of North Dundas' Drinking Water Supply System (DWSS) supplies treated water to residents of the Village of Winchester and the Village of Chesterville, in addition to industrial, commercial and institutional users (notably Lactalis® Canada in Winchester). Villages of Winchester and Chesterville are located approximately 50 km south of downtown Ottawa with populations of 2,394 and 1,677 (based on the 2016 Census), respectively. With their proximity to Ottawa, the populations of both Villages are projected to increase due to future developments. Refer to Figure 1 for a Location Plan of the Township of North Dundas.

Currently, the DWSS is comprised of eight active groundwater wells, five pump houses with chlorine disinfection, two storage reservoirs, two elevated storage tanks and approximately 41.5 km of distribution system piping. The DWSS is owned by the Township of North Dundas (the Township) and is currently operated by Ontario Clean Water Agency (OCWA).

In August 16, 2019, the Township retained J.L. Richards & Associates Limited (JLR) in association with Golder Associates Ltd. (Golder) to undertake a Schedule 'C' Municipal Class Environmental Assessment (Class EA) for the Township DWSS to address long-term potable water supply needs and evaluate servicing solutions for the 20-year planning horizon. This Report fulfills the requirements of Phase 1 of the process. The project is currently proceeding as a Schedule 'C' undertaking; however, the project schedule will be reviewed at the completion of Phase 2 to determine whether the project should be modified to a Schedule 'B' Class EA.

The objectives of this Phase 1 Report are to:

- Provide an overview of the Class EA process;
- Identify conditions and constraints associated with the existing communal potable water system;
- Define a problem and/or opportunity statement for the project;
- Identify future system requirements for the 20-year planning period and include provision for build-out conditions (i.e., design basis); and
- Notify agencies, the public, and other stakeholders of this project.

1.2 Class Environmental Assessment Process

The *Ontario Environmental Assessment Act* (EA Act), enacted in 1976, formally recognizes the Class EA process and outlines requirements for environmental assessment approval. The Municipal Class EA applies to municipal infrastructure projects, including roads, water, and wastewater projects. To ensure that environmental impacts and effects are considered for each project as per the EA Act, proponents are required to generally follow the planning process set out in the Municipal Class EA Guidelines, prepared by the Municipal Engineers Association (MEA) (2015) (www.municipalclassea.ca). The Class EA process includes the following stages:

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Phase 1: Problem or opportunity identification.

Phase 2: Identification and evaluation of alternative solutions to determine a preferred solution to the problem or opportunity. This Phase also compiles an environmental 'inventory', identifies impacts, and outlines mitigation measures.

Phase 3: Identification and evaluation of design concepts for the preferred solution. A detailed evaluation of the environmental effects and mitigation measures will be addressed during this project Phase.

Phase 4: Complete and place Environmental Study Report (ESR) on public record. The ESR documents Phases 1 through 3 and summarizes the consultation undertaken throughout the planning process.

Phase 5: Implementation and monitoring.

Class EA graphic.

Since projects may vary in their environmental impact, they are classified in terms of the following schedules:

- Schedule 'A' projects usually have minimal environmental effects and generally include normal or emergency operational and maintenance activities. These projects are pre-approved under the Class EA planning process.
- Schedule 'A+' projects are pre-approved similar to Schedule 'A', however, the public is to be advised prior to project implementation.
- Schedule 'B' projects have potential for some adverse environmental impacts and, therefore, the proponent is required to proceed through a screening process, including consultation with affected parties. Generally, these projects include improvements and minor expansions to existing facilities. Projects within this category are subject to Phases 1, 2 and 5.
- Schedule 'C' projects have potential for greater environmental impacts and are subject to all five Class EA Phases. Generally, these projects include the construction of new facilities and major expansions to existing facilities.

Based on the following excerpt from the MEA Guidelines, this project has been undertaken as a Schedule 'C' Class EA, and thus Phases 1 through 4 of the Class EA process will be completed. Once the Class EA is complete, the Township will be able to proceed with Phase 5.

Excerpt from MEA guidelines for a Schedule 'C' undertaking:

"1. Construct new water system including a new well and water distribution system".

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1.3 Project Team

The following Technical Steering Committee was involved in carrying out this Class EA:

Proponent: Township of North Dundas

636 St. Lawrence Street
PO Box 489
Winchester, ON K0C 2K0
Telephone: 613-774-2105

Project Manager and Operating Authority: Ontario Clean Water Agency

5 Industrial Drive
Chesterville, ON K0C 1H0
Telephone: 613-448-3098

Prime Consulting Engineer: J.L. Richards & Associates Limited

864 Lady Ellen Place
Ottawa, ON K1Z 5M2
Telephone: 613-728-3571

Sub-Consulting Engineer: Golder Associates Ltd.

1931 Robertson Road
Ottawa, ON K2H 5B7
Telephone: 613-592-9600

2.0 PHASE 1 METHODOLOGY

2.1 Project Initiation Meeting

A project initiation meeting was held on September 6, 2019 with the Township to confirm roles and responsibilities and to establish a basis for this Class EA. Refer to Appendix 'A' for Meeting Minutes.

2.2 Compilation of Documentation

Available documentation related to the Township's DWSS was compiled and provided by the Township and OCWA to JLR. The information was used to establish the existing conditions of the system (refer to Appendix 'C' for the list of available documents).

2.3 Review of Existing Studies and Analysis of Data

Available reports and correspondence were reviewed to determine the history and existing conditions of the Study Area. Digital base maps of the collection, pumping and treatment systems were developed using available drawings, which illustrate key infrastructure and planning information.

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Historical water meter records and operations data for the Township DWSS between 2015 and 2019 were summarized and analyzed. Historical pumping rates from each groundwater well were reviewed and compared to the applicable Drinking Water Works Permits (DWWP) along with operator consultation to understand potential water system constraints.

2.4 Consultation Planning and Contact with Stakeholder

A Consultation Plan was developed and reviewed with the Township and OCWA, taking into consideration mandatory requirements and objectives of effective consultation with the public and other potential stakeholders, as outlined in the MEA Guidelines (refer to Appendix 'B' for a copy of the Consultation Plan). The Consultation Plan identifies potential stakeholders, defines the level of consultation, establishes appropriate means of contact, and provides a schedule highlighting the general timing of contact. As a minimum, consultation includes project notification to the public and potential stakeholders, and two Public Information Centres.

A Project Initiation Notice was posted on the Township's website (www.northdundas.ca) on September 27, 2019 and project initiation letters were distributed directly to potential stakeholders, with a request to provide comments if applicable. Refer to Appendix 'B' for a copy of the Project Initiation Notice and letter, responses received to date and an updated stakeholder distribution list.

A stakeholder consultation meeting was held with Lactalis® on December 19, 2019 (refer to Appendix 'B' for meeting minutes and follow-up OCWA email) to understand and project long-term water supply requirements as the single largest water user serviced by the water distribution system.

2.5 Problem and Opportunity Identification

A Problem/Opportunity Statement was developed based on the existing conditions, constraints and opportunities identified during Phase 1 and is included in Section 4.0 of this Phase 1 Report.

2.6 Phase 1 Report

This Phase 1 Report is the culmination of the first phase of the Class EA process. The Phase 1 Report will be used as a background document for Phase 2 and can be made available to stakeholders upon request.

3.0 EXISTING CONDITIONS

3.1 Existing Communal Potable Water Infrastructure

The Township of North Dundas DWSS supplies treated water to the two communities of Winchester and Chesterville, including the Lactalis® plant (large volume ICI consumer). This water system is comprised of eight active wells, five pump houses with chlorine disinfection, two storage reservoirs (Chesterville underground reservoir and Winchester at-grade reservoir), two elevated tanks (Chesterville elevated storage tank and Winchester elevated storage tank) and approximately 41.5 km of distribution system piping. The DWSS operates in accordance with

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various Permits to Take Water (PTTW) as identified in Table 1, Municipal Drinking Water License No. 180-101, Issue No. 3, dated March 22, 2016 and Drinking Water Works Permit No. 180-201, Issue No. 4, dated July 31, 2018. It is noted that the Township has applied to renew the PTTW for Winchester wells No. 5 and No. 7.

The eight active wells are located at five separate locations within Winchester and Chesterville. Refer to Figure 2 for an overview of the study area and identification of key infrastructure. The age of the wells range between 16 to 61 years; Winchester Well #1 is the oldest well and was drilled in 1958, whereas Chesterville Well #6 is the most recent well that was drilled in 2003.

From available DWWP documentation, the total combined rated capacity of the wells within the DWSS is 102.75 L/s and the DWSS has a firm capacity of 72.5 L/s with the largest well pump out of service. However, based on operational information provided by the Township and OCWA, with the exception of Winchester Wells #7a, #7b and #7c, the wells are currently unable to operate at their rated capacity for a continuous period of time. The operating limits have been established through years of operation and proven yield. In contrast, the initial well capacity ratings were developed shortly after the wells were originally drilled. Therefore, the operational limits for the wells are lower than their rated capacities as summarized in the following table (refer to Appendix E for complete well summary).

Table 1: Well Rated and Operational Capacity Comparison

Location	Rated Capacity (L/s)	Operating Limit (L/s)	Current Rate (L/s)
Winchester Well #1	9.5	5.0 – 6.0	4.5
Winchester Well #5	6.4	3.5 – 5.0	3.85
Winchester Well #6	11.4	5.5 – 9.0	6.5
Winchester Wells #7a, b, and c	22.5	22.5	17.2
Chesterville Well #5	22.7	15.0 – 17.0	16.5
Chesterville Well #6	30.3	20 – 23.0	11 (was 18)
Total	102.8	71.5 – 82.5	59.5

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The Township has indicated that in addition to the lower operating capacities, there are other issues that have been experienced in past years with the current system, such as periods of drought which limited well water recharge in the area. The Township has also identified difficulty in producing sufficient water when either the supply from Winchester Wells #7a, #7b and #7c or the Chesterville Well #6 is interrupted and/or out of commission for an extended period of time. Furthermore, the Township has indicated that there has been a history of breaks in the transmission main that supplies water from Winchester Wells #7a, #7b and #7c that are attributed to hydraulic pressure transients that develop upon pump shutdown. OCWA indicated Well #7a is regularly exercised as a back-up well, but not typically run to mitigate potential transient concerns as the motor remains equipped with a direct-on-line (DOL or across-the-line) starter. OCWA advised that only one well operates at a time (i.e., not in parallel as originally designed) and Wells #7b and 7c have been equipped to with VFD to gradually slow down the well pumps upon shutdown to mitigate pressure transients. It is understood that Chesterville Well #6 is prone to fouling overtime. The impact of these constraints on the systems ability to adequately produce and deliver water to consumers are being reviewed as part of this Class EA.

Refer to Table 2 below for a brief summary of some of the key characteristics of the Township's existing potable water system infrastructure.

Table 2: Township Potable Water System Infrastructure

Parameter	Value
Municipal Drinking Water License (180-101) ⁽¹⁾	102.75 L/s (72.5 L/s with largest well pump out of service)
Winchester Well #1 Permit to Take Water (4175-9C3GPW) Well Pump ⁽²⁾ Depth / Diameter ⁽²⁾ Capacity ⁽¹⁾ / Operating Limit ⁽³⁾ / Current Rate ⁽⁴⁾	9.5 L/s Submersible pump rated at 8.7 L/s 57.9 m / N/A 9.5 L/s / 5.0 - 6.0 L/s / 4.5 L/s
Winchester Well #5 Permit to Take Water (2181-83S8E) ⁽⁶⁾ Well Pump ⁽²⁾ Depth / Diameter ⁽²⁾ Capacity ⁽¹⁾ / Operating Limit ⁽³⁾ / Current Rate ⁽⁴⁾	6.4 L/s Submersible pump rated at 7.6 L/s 28 m / N/A 6.4 L/s / 3.5 – 5.0 L/s / 3.85 L/s
Winchester Well #6 Permit to Take Water (0088-9C3JG4) Well Pump ⁽²⁾ Depth / Diameter ⁽²⁾ Capacity ⁽¹⁾ / Operating Limit ⁽³⁾ / Current Rate ⁽⁴⁾	11.4 L/s Submersible pump rated at 8.3 L/s 15.9 m / N/A 11.4 L/s / 5.5 – 9.0 L/s / 6.5 L/s
Winchester Well #7a, 7b, 7c Permit to Take Water (0816-838SXR) ⁽⁶⁾ Well Pump ⁽²⁾ Depth ⁽²⁾ / Diameter ⁽⁵⁾ Capacity of Two Pumps Combined ⁽¹⁾ / Operating Limit ⁽³⁾ / Current Rate ⁽⁴⁾	22.5 L/s Each equipped with a submersible pump rated at 11.4 L/s 24.5 m / 300 mm 22.5 L/s / 22.5 L/s / 17.2 L/s
Chesterville Well #5 Permit to Take Water (3380-AC3QF9) Well Pump ⁽²⁾	22.7 L/s Submersible turbine pump rated at 23 L/s

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Parameter	Value
Capacity ⁽¹⁾ / Operating Limit ⁽³⁾ / Current Rate ⁽⁴⁾	12.2 m / 250 mm 22.7 L/s / 15.0 – 17.0 L/s / 16.5 L/s
Chesterville Well #6	
Permit to Take Water (3380-AC3QF9)	30.3 L/s
Well Pump ⁽²⁾	Submersible turbine pump rated at 30.3 L/s
Depth / Diameter ⁽²⁾	12.2 m / 305 mm
Capacity ⁽¹⁾ / Operating Limit ⁽³⁾ / Current Rate ⁽⁴⁾	30.3 L/s / 20 – 23.0 L/s / 11 (was at 18) L/s
(1) Municipal Drinking Water Licence - Schedule C - Table 1: Rated Capacity (March 22, 2016) (2) Drinking Water Works Permit - Schedule A (July 31, 2018) (3) Township of North Dundas TOR for Consulting Engineering Services - Table 1: Well Capacity Summary (4) Township of North Dundas TOR for Consulting Engineering Services - Appendix D: North Dundas Drinking Water Systems - Supply Wells (5) Winchester Water Supply System Upgrade Class Environmental Assessment Project File Report (August 2009) - Appendix B: Golder Associates and Sauriol Environmental Inc., Environmental Study Report Phase I and II Hydrogeological Components (January 2005) - Figure H-1 (6) Township has applied to renew the PTTW for Winchester Wells No. 5 and No. 7	

3.2 Current Water Demands

The Township's historical potable water demands from all eight wells between 2015 and 2019 were obtained from operating data provided by OCWA. Over the past five years, the Township is operating at average and maximum day production rates of 27.9 L/s (2,411 m³/d) and 54.9 L/s (4,746 m³/d), respectively as shown in Table 3 below.

Table 3: Township Historic Potable Water Demands (2015 to 2019)

Year	Average Day Demand ⁽¹⁾	Maximum Day Demand ⁽¹⁾	Peaking Factor
2015	25.2 L/s (2,177 m ³ /d)	40.5 L/s (3,498 m ³ /d)	1.61
2016	25.6 L/s (2,211 m ³ /d)	54.9 L/s (4,746 m ³ /d)	2.15
2017	27.9 L/s (2,409 m ³ /d)	53.2 L/s (4,599 m ³ /d)	1.91
2018	30.6 L/s (2,642 m ³ /d)	48.8 L/s (4,214 m ³ /d)	1.60
2019	30.2 L/s (2,613 m ³ /d)	51.7 L/s (4,465 m ³ /d)	1.71
Average	27.9 L/s (2,411 m³/d)		
Maximum		54.9 L/s (4,746 m³/d)	
(1) Well production data for each well was provided by the Township/OCWA.			

The largest water consumer in the community is the dairy processing plant, Lactalis®. This plant currently utilizes approximately half of the total treated water produced in the Township. In the last few years, the daily average consumption at the plant has changed significantly, rising from 861 m³/d (2015) to a high of 1,378 m³/d (2018). The plant's daily average consumption from 2015 to 2019 was approximately 1,121 m³/d, while maximum day consumption was estimated at 1.5 times the average consumption or 2,067 m³/d, as shown in Table 4 below.

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The Township has been in discussions with Lactalis® regarding their water usage and how the plant's water demand may change in future years. Lactalis® has indicated that their water demand is projected to remain stable for the foreseeable future and that their future daily average water demand will remain consistent with current demand at approximately 1,200 m³/d +/- 200 m³/d. For planning purposes of this Class EA water consumption of 1,400 m³/d and 2,100 m³/d will be assessed for average and maximum demand, respectively. Also, these values closely match Lactalis® 2018 historical water consumption. During the Phase 1 review meeting, OCWA advised that Lactalis' recently commissioned sewage treatment system may increase their average water demand by approximately 15 m³/day. OCWA also reviewed Lactalis' 2020 average water demand from January to June which ranged from 999 m³/day to 1380 m³/day, remaining consistent with the Class EA's water demand projections.

Table 4: Lactalis® Water Consumption (2015 to 2019)

Year	Daily Average Consumption ⁽¹⁾	Maximum Day Demand ⁽²⁾
2015	10.0 L/s (861 m ³ /d)	15.0 L/s (1,292 m ³ /d)
2016	10.9 L/s (939 m ³ /d)	16.3 L/s (1,409 m ³ /d)
2017	13.5 L/s (1,170 m ³ /d)	20.3 L/s (1,755 m ³ /d)
2018	16.0 L/s (1,378 m ³ /d)	23.9 L/s (2,067 m ³ /d)
2019	14.6 L/s (1,258 m ³ /d)	21.8 L/s (1,887 m ³ /d)
Average	13.0 L/s (1,121 m³/d)	19.5 L/s (1,682 m³/d)
Maximum	16.0 L/s (1,378 m³/d)	23.9 L/s (2,067 m³/d)
Class EA ⁽³⁾	16.2 L/s (1,400 m³/d)	24.3 L/s (2,100 m³/d)
(1) Lactalis® water consumption was provided by the Township. (2) Maximum day demand estimated at 1.5 times average consumption. (3) Projected Lactalis® water demand based stakeholder consultation and OCWA email correspondence.		

Based on data for the past five years, the Township is operating at an approximate average and maximum day production rates of 14.9 L/s (1,289 m³/d) and 38.6 L/s (3,337 m³/d), respectively, excluding Lactalis® water usage. This is equivalent to an average daily per capita consumption of 316 L/c/d based on the 2016 population of 4,071 people. This per capita consumption is typical for communities of similar size and comparable to the MECP Design Guidelines for Drinking Water Systems (2008) that identifies typical values between 270 to 450 L/c/d. Refer to Table 5 below which summarizes historical potable water demands for the Township's potable water system, excluding Lactalis® water usage.

Table 5: Township Water Consumption Excluding Lactalis® (2015 to 2019)

Year	Daily Average Consumption ⁽¹⁾	Maximum Day Demand ⁽²⁾	Peaking Factor
2015	15.2 L/s (1,316 m ³ /d)	25.5 L/s (2,206 m ³ /d)	1.67
2016	14.7 L/s (1,272 m ³ /d)	38.6 L/s (3,337 m ³ /d)	2.62
2017	14.3 L/s (1,239 m ³ /d)	32.9 L/s (2,844 m ³ /d)	2.30

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2018	14.6 L/s (1,264 m ³ /d)	24.8 L/s (2,147 m ³ /d)	1.70
2019	15.7 L/s (1,356 m ³ /d)	29.8 L/s (2,578 m ³ /d)	1.90
Average (2015-2019)	14.9 L/s (1,289 m³/d)		
Class EA	14.9 L/s (1,289 m³/d)	38.6 L/s (3,337 m³/d)	2.59
(1) Daily average consumption illustrates the difference between values shown in Table 3 and Table 4.			

Based on the foregoing table, the Class EA will use 14.9 Ls (1,289 m³/d) and 38.6 L/s (3,337 m³/d) for current average and maximum day water demands based on the historical data.

3.3 Water Quality

As outlined in Golder's Technical Memorandum dated March 11, 2020 (refer to Appendix 'E'), the Township's 2018 annual report (OCWA, 2019) indicate good water quality, with occasional raw water detections of non-pathogenic bacteria. Current water treatment was sufficient to reduce these detections below the Ontario Drinking Water Quality Standards. Organic and inorganic parameters also met the standards based on the testing completed by OCWA in accordance with Ontario Regulation 170/03.

3.4 Land Use and Planning

According to the United Counties of Stormont, Dundas and Glengarry Official Plan (2018), the project Study Area consists mainly of commercial, residential, industrial and institutional zoning. The Official Plan projects a population growth of 1,522 people and an increase of 875 housing units to the year 2036 for the Township of North Dundas.

Based on discussions with the Township, and Council consultation and approval on March 3, 2020, the following population growth scenarios are to be considered for this Class EA (refer to Appendix 'D' for a copy of Technical Memorandum No. 1 Population Growth and Development Projection for further details).

Low Growth:

- Winchester: Projected annual growth rate of 1.5% from 2016 to 2019. Projected population growth from 2019 to 2039 based on the future potential development within Winchester provided by the Township (including Phase 1 of the Welling's of Winchester development). This represents a total population growth of 1,236 and additional commercial area of 25.65 ha to 2039.
- Chesterville: Projected at an annual growth rate of 3.5% from 2016 to 2019 and at an annual growth rate of 1.5% from 2019 to 2039. This represents a total growth of 732 people to 2039.

High Growth:

- Winchester: Projected annual growth rate of 1.5% from 2016 to 2019. Projected population growth from 2019 to 2039 based on the future potential development within Winchester

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provided by the Township (including Phase 2 to Phase 5 of the Welling's of Winchester development). This represents a total population growth of 1,808 people and additional commercial area of 25.65 ha to 2039.

- Chesterville: Projected at an annual growth rate of 3.5% from 2016 to 2019 and an annual growth rate of 3.5% from 2019 to 2039. This represents a total population growth of 1,350 people to 2039.

3.5 Population and Future Water Demand Projections

Based on census information for Winchester and Chesterville, the serviced population in the Study Area (Villages of Winchester and Chesterville) in 2016 was 4,071 people. This population was used as a baseline to determine the current population for 2019. In order to establish future water demands, population projections and future commercial development areas, per the low and high growth scenarios identified in Section 3.3 - Land Use and Planning, as well as the anticipated future demand for Lactalis®, were used. For the purpose of this study, future water demands are being assessed using design values recommended by MECP design guidelines. Average day demand for future residential population was estimated using a per capita consumption of 350 L/c/d. The existing maximum day peak factor was not applied to future demand because the MECP design guidelines recommend that as serviced populations increase maximum day peak factors decrease. A maximum day peaking factor of 2 was used for residential growth, whereas a maximum day peaking factor of 1.5 was used for the future commercial developments and Lactalis®.

Table 6 provides a summary of the projected service population, average day, and maximum day, for the Study Area for the low and high growth scenarios in 2039. These water demands will be used as the design basis for this Class EA.

Table 6: Existing and Projected Future Water Demands (2016 - 2039)

Parameters	Existing (Class EA)	Projected Growth & Demand from Existing		2039	
		Low Growth	High Growth	Low Growth	High Growth
Service Population	4,355 ⁽¹⁾	1,684	2,874	6,039 ⁽¹⁾	7,229 ⁽¹⁾
Average Day Demand (m ³ /d)	1,289 ⁽²⁾	589 ⁽³⁾	1,006 ⁽³⁾	1,878 ⁽⁴⁾	2,295 ⁽⁴⁾
Maximum Day Demand (m ³ /d)	3,337 ⁽²⁾	1,178 ⁽⁵⁾	2,012 ⁽⁵⁾	4,515 ⁽⁴⁾	5,349 ⁽⁴⁾
Lactalis® Average Day Demand (m ³ /d)	1,400 ⁽⁶⁾			1,400 ⁽⁶⁾	1,400 ⁽⁶⁾
Lactalis® Max Day Demand (m ³ /d)	2,100 ⁽⁷⁾			2,100 ⁽⁷⁾	2,100 ⁽⁷⁾
Winchester Future Potential Commercial Development Average Day Demand (m ³ /d)				752 ⁽⁸⁾	752 ⁽⁸⁾

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Winchester Future Potential Commercial Development Max Day Demand (m ³ /d)				1,128 ⁽⁸⁾	1,128 ⁽⁸⁾
Total Average Day Demand (m³/d)	2,689			4,030	4,447
Total Maximum Day Demand (m³/d)	5,437			7,736	8,570
<p>(1) Estimated growth based on Township consultation (refer to growth memo in Appendix 'D') and by applying 350 L/cap/day on future development.</p> <p>(2) Refer to Table 5.</p> <p>(3) Projected average day demand calculated at 350 L/cap/day in accordance with MECP Design Guidelines.</p> <p>(4) Average day demand, max day demand and peak hour demand for 2039 was calculated based on Class EA demand plus projected demand.</p> <p>(5) Estimated by applying average day peaking factors of 2 and 3 for maximum day and peak hour, respectively (MECP Guidelines 2008).</p> <p>(6) Based on review of water usage data provided by the Township, December 11, 2019 stakeholder meeting and follow-up OCWA email of 2019 demands (Refer to Appendix 'B')</p> <p>(7) Estimated by applying an industrial development peaking factors of 1.5 for maximum day (Ottawa Design Guidelines – Water Distribution July 2010).</p> <p>(8) Estimated by applying 28 m³/ha day, and a commercial development peaking factor of 1.5 for maximum day (Ottawa Design Guidelines – Water Distribution July 2010).</p>					

In summary, the 20 year design basis for the projected maximum day demands are 7,736 m³/d and 8,570 m³/d for the low growth and high growth scenarios, respectively. It is noted that the current operational limit of the existing wells is 59.5 L/s (5,140 m³/d), which includes the largest well out of service (currently Well #7b or c, refer to Table 2).

Any water supply system with elevated water storage must be capable of meeting the maximum day demand of the system, but the current MECP Design Guidelines are not specific on the level of redundancy or firm capacity of a groundwater source system. As a minimum, it is reasonable to expect that a groundwater supply system meet the average day demand with the largest well out of service.

While a more recent and stricter guideline published by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 2012 Edition, (the Province of Ontario is a member), recommends that: “the total developed groundwater source capacity, unless otherwise specified by the reviewing authority, shall equal or exceed the design maximum day demand with the largest producing well out of service”. This Class EA plan to target this stricter recommendation to help address long-term reliability and redundancy. 3.5 Existing and Future Servicing System Constraints

Water supply capacity was reviewed to assess the communal potable water system’s ability to accommodate existing and future water demand scenarios. The following general servicing issues are noted:

- Based on the 2039 projected maximum day demand for both low growth and high growth scenarios, there is a future deficit of 2,595 m³/d and 3,429 m³/d, respectively, compared to the current operational limit of the existing wells of 59.5 L/s (5,141 m³/d) with the largest well out of service.

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The following constraints have been identified for the Study Area based on existing conditions:

- As previously discussed, with the exception of Well #7a, 7b and 7c, wells are unable to operate at their rated capacity for a continuous period of time.
- Ductile iron transmission main is prone to breaks for Well #7a, 7b and 7c that is attributed to pressure transients during well pump shutdown.
- Winchester Wells #1 and #5 can maintain higher flows than the operational capacity, but not for longer than 10 hours.

Initial construction for Winchester Well #6 recommended a reduced flow during August and September. However, aquifer is sensitive to use and rainfall/spring melt.

- Steady state was not reached during 30-day pump test for Chesterville Well #5. Stable capacity for Chesterville Wells is considered ~75% listed capacity.
- Chesterville Well #6 is prone to well screen fouling.
- Given the age of the Wells, the reliability of all wells for long-term operation is unknown. Therefore, it would be difficult for the Township's Wells to provide sufficient water when either Well #7a, 7b, and 7c or the Chesterville Well #6 are out of commission for an extended period of time.
- The Township has experienced periods of drought that limited well water recharge in the area. Present climate change projections for Ontario presents the North Dundas area to receive more precipitation during the winter and spring, and less during the summer and fall months. This projection will lead to an increased chance of experiencing extended periods with reduced recharge of the aquifer.
- There is no standby power on site in the event of a power outage for Well #7a, 7b and 7c.

3.6 Other Considerations

3.6.1 Geotechnical and Hydrogeological

A baseline hydrogeological and geotechnical desktop review was undertaken which reviewed the subsurface soil conditions, wells assessments, water quality, wellhead protection areas, existing and historic potential sources of contaminations and impacts to local wells. Refer to Appendix 'E' for the Geotechnical Technical Memorandum (Golder, March 11, 2020).

3.6.2 Cultural and Archaeological Environments

The Official Plan from The United Counties of South Stormont, Dundas and Glengarry (adopted July 2018) does not identify any specific areas of cultural importance within the Study Area. During Phase 2, the screening checklist for evaluating Archaeological Potential and Criteria for Evaluate Build Heritage Recourses and Cultural Heritage Landscapes, developed by the Ministry of Tourism, Culture and Sport will be completed for preferred alternative servicing solutions.

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3.6.3 Natural Environment

Natural environment features are legacy components of the community landscape and represent important environmental areas to consider as part of the Class EA. According to studies previously undertaken in this area, the Wisconsinian Glaciation retreated from the area around 15,000 years ago, and the region was covered by the Champlain Sea up to approximately 9,000 years ago. The area is part of the Winchester Clay Plain which is indicated to have higher land capability classes for agriculture than many of the other plains within the South Nation Conservation area (Cataraqui Archaeological Research Foundation, 1997). Due to the high percentage of prime agricultural lands and forest clearing during the late 1800s and early 1900s, the Township of North Dundas does not contain a high percentage of forest cover. According to a report entitled Forest Cover and Trends Analysis (2014) prepared by the South Nation Conservation, the Township has approximately 13.3% forest area remaining (SNC, 2014).

Generally, the lands within the Township and study area are used for agricultural purposes with natural environment areas consisting of Provincially Significant Wetlands, limited woodlots, an Area of Natural and Scientific Interest (Wetland) and Well Head Protection Area (WHPA) associated with the existing communal drinking water system. The natural environmental constraints in the Study Area are illustrated in Figure 3.

4.0 PROBLEM / OPPORTUNITY STATEMENT

The following Problem / Opportunity Statement will be used as the basis for proceeding to Phase 2 of this Class EA:

The Township of North Dundas is serviced by a communal potable water supply system that generally consists of eight active groundwater wells, five pump houses with chlorine disinfection, two storage reservoirs, two elevated storage tanks and distribution system. While the system has been operating in accordance with all applicable legislation and is generally achieving all required water quality standards, it is anticipated that the Township will not be able to meet potable water supply requirements as recommended by the Ministry of the Environment, Conservation and Parks within the next 20 years timeframe if projected growth and associated water demand is realized. The Township is therefore in need of a solution that will address water supply constraints and improve the redundancy and reliability in delivering treated water to the community over the next 20 years.

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5.0 PHASE 2 - IDENTIFICATION OF ALTERNATIVE SOLUTIONS

Phase 2 of this Class EA will include the following tasks:

- Confirm sufficient hydraulic capacity required for the treatment facility for 2039;
- Identify and evaluate alternative communal potable water system solutions;
- Identify land use or property requirements, if any;
- Conduct a Public Information Centre to present the findings of Phase 2; and
- Select a preferred solution and confirm project schedule (i.e., Schedule 'C' process).

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6.0 REFERENCES

MCEA, 2015. Municipal Class Environmental Assessment. Municipal Engineers Associations. October 2000, as amended in 2007, 2011 and 2015.

Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 2012 Edition. Recommended Standards for Water Works

MECP, 2002. Safe Drinking Water Act, 2002. Ministry of the Environment. Ontario Regulation 169/03 Ontario Drinking Water Quality Standards.

MECP, 2008. Design Guidelines for Drinking-Water Systems. Ministry of the Environment. 2008.

This report has been prepared for the exclusive use of the Township of North Dundas, for the stated purpose, for the named facility. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of the Township of North Dundas and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited.

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Appendix A

Project Initiation Meeting
Minutes

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Appendix B

Public Consultation
Documentation

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Appendix C

List of Compiled Background
Documentation

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Appendix D

North Dundas Drinking Water
Supply System Capacity
Expansion Class EA –
Technical Memorandum No. 1

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Appendix E

Geotechnical Technical
Memorandum (Golder,
March 11, 2020)



ACTION REQUEST – Public Works

To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Water Capacity and Demand Analysis

RECOMMENDATION:

THAT the Council of the Township of North Dundas receive the potential water allocation information as identified in Table 3 Water Allocation to Potential Developments of this report.

BACKGROUND:

Water Infrastructure:

Township of North Dundas' Drinking Water Supply System (DWSS) supplies treated water to residents of the Village of Winchester and Village of Chesterville, in addition to industrial, commercial and institutional users. Currently, the DWSS is comprised of eight active groundwater wells, five pump houses with Chlorine disinfection, two storage reservoirs, two elevated storage tanks and approximately 41.5 km of distribution system piping.

Existing Water Capacity:

Township's eight active wells are located at five separate locations within Winchester and Chesterville with the total combined rated capacity of 102.75 L/S. However, through years of operations and proven yield, the total combined current rated capacity is 59.5 L/S, refer to table 1 for details:

Table 1:

EXISTING CAPACITY		2019 Current Rate (L/S)	2020 L/S	2021	2022	2023
Winchester	well 1	4.5	3.6	3.6	3.6	3.6
Winchester	well 5	3.85	3.85	3.85	3.85	3.85
Winchester	well 6	6.5	6.5	6.5	6.5	6.5
Winchester	well 7b, c	17.2	17	17	17	17
Winchester	well 7a				4	4
Chesterville	well 5	16.5	16.5	16.5	16.5	16.5
Chesterville	well 6	11	18.5	18.5	20	20
capacity	L/S	59.55	65.95	65.95	71.45	71.45
capacity	M3/Day	5145.12	5698.08	5698.08	6173.28	6173.28
capacity	L/Day	5145120	5698080	5698080	6173280	6173280

In addition to lowering operating capacities, there are other issues that have been experienced in past years with the current system, such as periods of drought which limited well water recharge in the area. OCWA is currently working on operational improvements to increase capacity in Chesterville Well # 6 and history of frequent watermain breaks in the transmission line that supplies water from Winchester Wells #7a, 7b and 7c that are attributed to corrosion leaks triggering hydraulic pressure transients that develop upon pump shutdown.

Existing Water Demand:

The Township's historical potable water demands from all eight wells between 2015 and 2019 were average at Maximum Day Demand of 54.9 L/S (4,746 m³/day) and Average Day Demand of 27.9 L/S (2,411 m³/day). Refer to table 2 for additional details

Table 2:

Year	Average Day Demand	Maximum Day Demand
2015	25.2 L/S (2,177 m ³ /day)	40.5 L/S (3,498 m ³ /day)
2016	25.6 L/S (2,211 m ³ /day)	54.9 L/S (4,746 m ³ /day)
2017	27.9 L/S (2,409 m ³ /day)	53.2 L/S (4,599 m ³ /day)
2018	30.6 L/S (2,642 m ³ /day)	48.8 L/S (4,214 m ³ /day)
2019	30.2 L/S (2,613 m ³ /day)	51.7 L/S (4,465 m ³ /day)
2020 (September)	34 L/S (2,942 m ³ /day)	45.1 L/S (3,901 m ³ /day)

Capacity and Demand Analysis:

Based on review of J. L. Richards' studies and in discussion with the planning department, a list of existing and future developments is compiled in Table 3. Based on cursory review, these potential developments can be accommodated based on available water capacity over the next three years. A detailed hydraulic model will be required for each development to confirm fire flows and pressure requirements. Requests for capacity allocation will be received from proponents for review by staff and recommendation to Council.

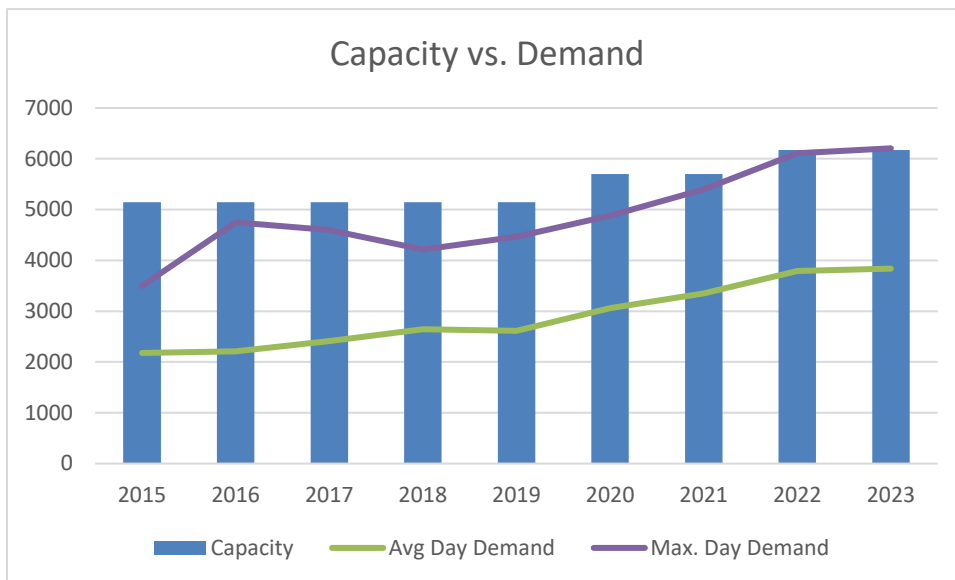
Table 3: Consideration of Water Allocation to Potential Developments:

	Existing Demands	No. of Potential Units	Average Day Demand L/S	Maximum Day Demand L/S	Average Day Demand m3/day	Maximum Day Demand m3/day
1	Winchester		26.91	42.19	2325	3645
2	Chesterville		5.15	9.57	445	827
3	Lactalis projected demand	(2019 avg. – Class EA)	3	4	259.2	345.6
4	Wellings of Winchester#11A (Seniors)	69	0.45	0.89	38.64	77.28
5	Winfields Subdivision#14	9	0.11	0.22	9.45	18.9
6	Guy Racine Subdivision#20	11	0.13	0.27	11.55	23.1
7	Winchester Meadows subdivision#22A	22	0.27	0.53	23.1	46.2
8	Winchester Meadows subdivision#22B(*for 10)	26	0.32	0.63	27.3	54.6
9	Winchester Meadows complex 21a*	36	0.44	0.88	37.8	75.6
10	Davidson	2	0.02	0.05	2.1	4.2
11	Woods Development*	78	0.95	1.90	81.9	163.8
12	High Density Apartments*	21	0.26	0.51	22.05	44.1
13	Esper Lane – Townhomes*	40	0.49	0.97	42	84
14	Winchester Infill	2	0.02	0.05	2.1	4.2
15	Chesterville Infill	4	0.05	0.10	4.2	8.4
16	Daycare	77g/min	3.33	5.00	288	432
17	FSI Welding	1	0.01	0.02	1.05	2.1
18	Maverick	1	0.32	0.49	28	42
19	Commercial – hectare*	5.09	1.65	2.47	142.52	213.78
20	Additional growth*	29	0.54	1.09	46.9	93.8
	2023 Total	350	44.42	71.82	3837.86	6205.66

(*) No approved site plan. These are also shown in attached map.

The table 3 provides a potential guide for water allocation approvals. The table also contains some infill and commercial development.

Based on available capacity in existing water system, approximately 350 new residential units can be serviced over the next three years. This is made possible by having limited water allocation for potential commercial usage in the near future. At this time, the commercial / industrial activity is low and it is anticipated that with the increase in residential demand, the commercial / industrial activity will pick up over the next 5 to 10 years. Hence, there is urgent need to expand water capacity / source within the next 3 years to accommodate additional residential and commercial growth. The system has been operating at peak operating thresholds from time to time due to Lactalis and other reasons. It is not ideal to operate the water system to its capacity, as shown in historical and future capacity vs. demand graph.



Staff recommend that table 3 for water allocation be reviewed every six months and reported back to the Council for reconsideration. The individual request for allocation for each development / application will be brought forward to the Council for approval as per the Allocation By-law 2020-23.

Following communication will be carried out as part of implementation of capital charge By-Law:

1. December 15, 2020 Council meeting.
2. Letters will be mailed out to owners of development properties and interested developers to let them know the process and inviting them to formally apply for allocations.

OPTIONS AND DISCUSSION:

1. Receive the potential water allocation information as per table 3 - recommended.
2. Do not receive the potential water allocation information - not recommended.

FINANCIAL ANALYSIS:

There are no financial implications at this time.

OTHERS CONSULTED:

J. L. Richards
OCWA
Planning
CAO

ATTACHMENTS:

Map of potential water allocations

PREPARED BY:

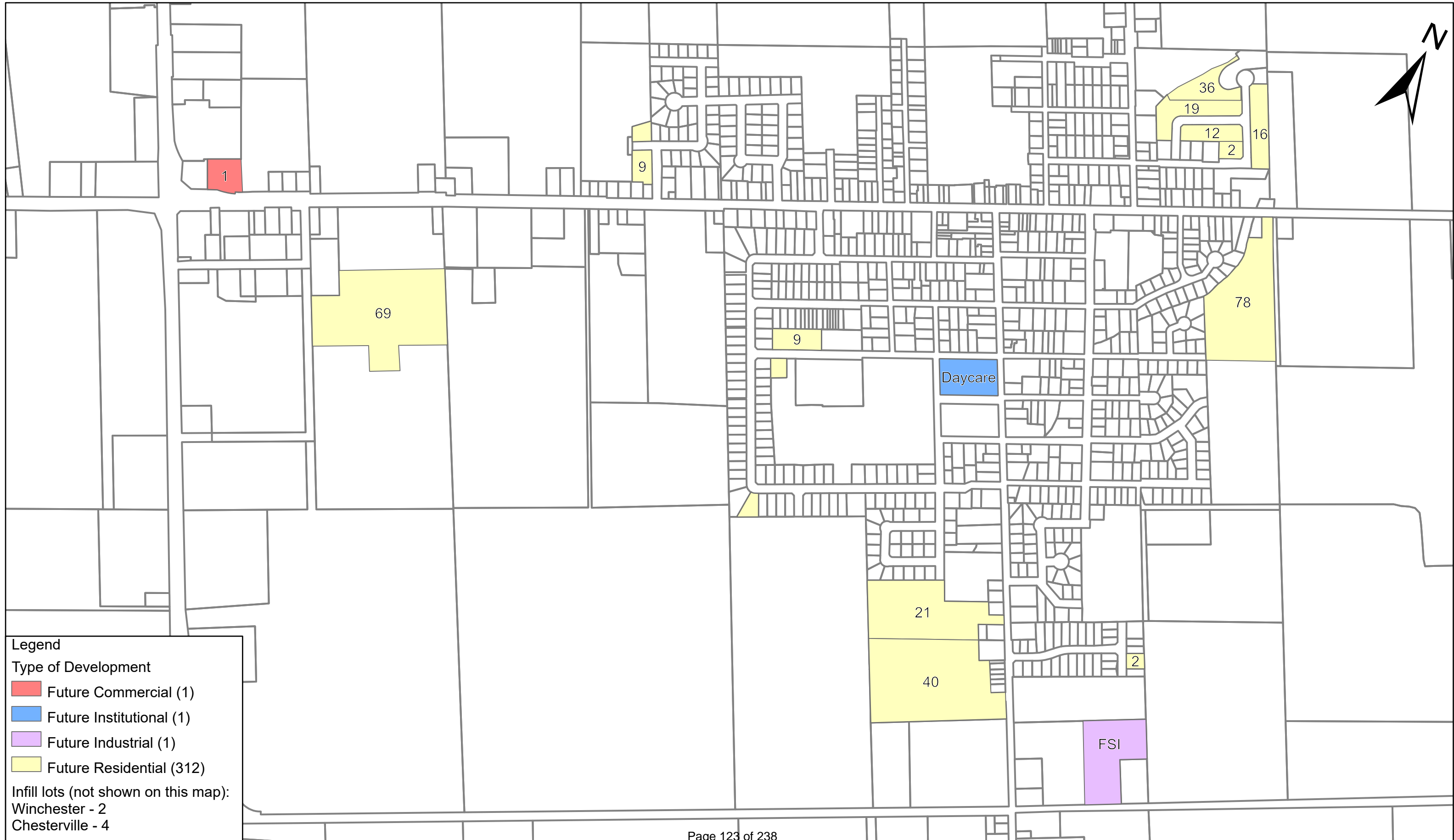


**Khurram Tunio, M. Eng., P. Eng.
Director of Public Works**

REVIEWED & APPROVED BY:



**Angela Rutley, BBA
CAO**





ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Truck and Coach Technician Salary Grade

RECOMMENDATION:

THAT the Council of the Township of North Dundas approve that the Truck and Coach Technician position’s salary be increased from Grade 3 to Grade 4.

BACKGROUND:

Township of North Dundas Public Works Department currently have Shop Foreman/Head Mechanics (Grade 7) and Truck / Coach Technician (Grade 3) positions to maintain and repair fleet for all departments with over 100 pieces of equipment. Most of the repairs are performed in-house resulting in significant savings when compared to out-sourcing of repairs work.

The current Truck and Coach Technician is currently on parental leave and has decided not to return when previously anticipated on December 21st. The staff have expressed concerns with regard to the salary rate / grade and have requested re-evaluation of the position’s salary grade.

According to Township of North Dundas By-Law 2016-33, Schedule A, 2020 Salary Range, the Truck and Coach Technician position is Grade 3 with top job rate of \$27.22 per hour. A survey was performed recently of surrounding municipalities and is summarized as follows:

TOWNSHIP	TOP JOB RATE
Township of South Stormont	\$27.12
Township of South Glengarry	\$28.03
Township of South Dundas	\$31.49 (one mechanic and outsourcing)
SDG Counties	\$27.98
Average	\$28.65

Based on above table, Township’s Truck and Coach Technician position in Grade 3 is currently at the lower side, when compared to other municipalities in the SDG Counties. However, Township’s Grade 4 top rate of \$29.26 per hour, will be slightly

higher than the average position's rate in surrounding municipalities. In order to retain experienced and competent mechanics, it is recommended to move the salary grid of Truck and Coach Technician to Grade 4 level.

The position was re-evaluated and the recommendations were forwarded to the Job Evaluation Committee. The committee met on December 7, 2020 to review the position and concur with moving this position to Grade 4.

The position will be advertised with a Grade 4 salary range should Council approve the recommendation.

OPTIONS AND DISCUSSION:

1. **Approve increasing the Truck and Coach Technician position to Grade 4 - recommended.**
2. **Do not approve the recommendation - not recommended.**

FINANCIAL ANALYSIS:

The salary impact will be considered as part of 2021 Budget.

OTHERS CONSULTED:

Job Evaluation Committee
Shop Foreman/Head Mechanics

ATTACHMENTS:

PREPARED BY:



**Khurram Tunio, M. Eng., P. Eng.
Director of Public Works**

REVIEWED & APPROVED BY:



**Angela Rutley, BBA
CAO**



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Hiring of Snow Plow Operators - Afternoon Shift

RECOMMENDATION:

THAT the Council of the Township of North Dundas receives the recommendation of the Director of Public Works to hire the following (5) five seasonal snow plow operators / labourer for the 2020/2021 winter season: Richard Ventrella, Calvin Markell, Shane Lecuyer, Joseph Grozelle and Colin Giberson as per their letters of offer.

BACKGROUND:

The contract positions were advertised and interviews were conducted for these seasonal snow plow operators / labourer positions. Five successful candidates have been offered the contracts with minimum 40 hours per week, for snow clearing operation as part of afternoon shift.

OPTIONS AND DISCUSSION:

- 1. Receive the list of the hiring of the individuals - recommended.**
- 2. Request that a position be awarded to another candidate - not recommended.**

FINANCIAL ANALYSIS:

The costs associated with these positions will be absorbed as part of 2021 budgets.

OTHERS CONSULTED:

CAO
Patrol Foreman

ATTACHMENTS - NIL

PREPARED BY:

Khurram Tunio, M. Eng., P. Eng.
Director of Public Works

REVIEWED & APPROVED BY:

Angela Rutley, BBA
CAO



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Storm Internet Services Agreement

RECOMMENDATION:

That the Council of the Township of North Dundas authorize and execute a 3-year license agreement dated this 15th day of December, 2020 with 4141903 Canada Incorporated, operating as Storm Internet Services, for the rental of antennas and equipment on the Winchester water tower.

BACKGROUND:

This agreement is for 11 distribution antennas (increased from 5) and equipment on the Winchester water tower. The service agreement is for three years commencing on January 1, 2021 and terminating on December 31, 2023.

OPTIONS AND DISCUSSION:

1. **Authorize and execute the agreement** - Recommended
2. **Do not authorize the agreement** – Not Recommended

FINANCIAL ANALYSIS:

Staff will include the revenue in the 2021 budget. The new antennas result in approximately \$10,000 of additional revenue for a total of \$18,744 + HST.

OTHERS CONSULTED:

Gayle Moore, Storm Internet Services
Khurram Tunio

ATTACHMENTS:

A copy of the Agreement is in the Council Office for review.

PREPARED BY: Mary Lynn Plummer

RECOMMENDED BY:



**Khurram Tunio, M. Eng., P. Eng.
Director of Public Works**

REVIEWED & APPROVED BY:



**Angela Rutley, BBA
CAO**



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Service Line Warranties Agreement

RECOMMENDATION:

That the Council of the Township of North Dundas authorize and execute a 3-year agreement dated the 15th day of December, 2020 with Service Line Warranties of Canada, Inc. (“SLWC”), to provide warranty for sewer and water line laterals between the mainlines and the connection on residential private property.

BACKGROUND:

At the meeting of November 3rd, 2020, Elise Dostal of Service Line Warranties presented, via videoconference, her presentation to Council on services being offered to residents of Township of North Dundas. Council requested review of sample letters that will be sent out to residents before signing an agreement.

The presentation explained about how residential property owners are responsible for the maintenance of the buried water and sewer lines that run from the public (main) connection to the exterior of their home. When these lines break, leak or clog, the homeowner is often surprised to learn that this is not a municipal responsibility and that their insurance will not cover the repairs. Elise Dostal stated, as an LAS preferred partner, Service Line Warranties of Canada will provide this low-cost warranty offering to the Township of North Dundas with a standard rate structure and coverage levels for all residents. The low rates and enhanced coverage levels are possible through LAS” influence and the buying power of the Ontario municipal sector.

Elise Dostal has provided samples of information which will be sent to our residents, and has provided the formal agreement for Council consideration.

OPTIONS AND DISCUSSION:

1. **Authorize and execute the agreement** – Recommended
2. **Do not authorize the agreement** – Not Recommended

OTHERS CONSULTED:

Elise Dostal

ATTACHMENTS:

Service Line Warranties Agreement
Samples of information to be sent out to residents

PREPARED BY: Mary Lynn Plummer

RECOMMENDED BY:



Khurram Tunio, M. Eng., P. Eng.
Director of Public Works

REVIEWED & APPROVED BY:



Angela Rutley, BBA
CAO

MARKETING AGREEMENT BETWEEN TOWNSHIP OF NORTH DUNDAS, ONTARIO &
SERVICE LINE WARRANTIES OF CANADA, INC.

This MARKETING LICENSE AGREEMENT ("Agreement") entered into this 15th day of December, 2020 ("Effective Date"), by and between Township of North Dundas, Ontario, a municipal corporation in the Province of Ontario ("Township"), and Service Line Warranties of Canada, Inc. ("SLWC"), a corporation organized under the laws of British Columbia, herein collectively referred to singularly as "Party and collectively as the "Parties".

RECITALS

WHEREAS, SLWC has entered into a Master Contract with Local Authority Services, a not-for-profit corporation under the laws of Canada and an affiliate of the Association of Municipalities of Ontario, to provide services to participating Ontario municipalities; and

WHEREAS, pursuant to Municipal policy, sewer and water line laterals between the mainlines and the connection on residential private property are to be maintained by the individual residential property owner ("Residential Property Owner"); and

WHEREAS, Township desires to offer Residential Property Owners the opportunity, but not the obligation, to purchase service lateral warranties and other warranty products or services ("Warranty Products"); and

WHEREAS, SLWC has agreed to provide the Warranty Products to Residential Property Owners subject to the terms and conditions contained herein;

NOW, THEREFORE, in consideration of the foregoing recitals, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and with the intent to be legally bound hereby, the Parties agree as follows:

AGREEMENT

1. Township hereby grants to SLWC the right to offer the Warranty Products to Residential Property Owners within the Township's boundaries subject to the terms and conditions herein. Township agrees to provide SLWC with the applicable postal codes encompassing its municipal boundaries. SLWC agrees to purchase a mailing list from a qualified third-party provider covering those postal codes.

2. Township hereby grants to SLWC a non-exclusive license ("License") to use Township's name and logo on letterhead, advertising and marketing materials to be sent to Residential Property Owners from time to time, all at SLWC's sole cost and expense and subject to Township's prior review and approval, which will not be unreasonably conditioned, delayed, or withheld.

3. a) The term of this Agreement ("Term") shall be three (3) years from the Effective Date. The Agreement will automatically renew for additional one (1) year terms ("Renewal Term") unless one of the Parties gives the other written notice at least ninety (90) days prior to end of the Term or a Renewal Term that the Party does not intend to renew this Agreement.

b) The Township may terminate this Agreement thirty (30) days after giving written notice to SLWC that SLWC is in material breach of this Agreement if said breach is not cured during said thirty (30) period. During the Term, SLWC shall conduct marketing campaigns at the times and prices indicated on Exhibit "A" attached hereto.

4. As consideration for such License, SLWC will pay to Township five percent (5%) of revenue for Warranty Products collected from Residential Property Owners ("License Fee") during the year. The first payment shall be due by January 30th of the year after the first year Term. Succeeding License Fee payments shall be made on an annual basis throughout the Term and any Renewal Term, due and payable on January 30th of the succeeding year. SLWC shall include with the License Fee payment to Township a statement signed by an SLWC corporate officer certifying the amount of revenue from Warranty Products. Township will have the right, at its sole expense, to conduct an annual audit, upon reasonable notice and during normal business hours, of SLWC's books and records pertaining to revenue generated by this Agreement while this Agreement is in effect and for one (1) year after any termination of this Agreement.

5. SLWC hereby agrees to protect, indemnify, and hold the Township, its elected officials, officers, employees and agents (collectively or individually, "Indemnitee"), harmless from and against any and all claims, damages, losses, expenses, suits, actions, decrees, judgments, awards, attorneys' fees and court costs (individually or collectively, "Claim"), which an Indemnitee may suffer or which may be sought against or are recovered or obtainable from an Indemnitee, as a result of, or by reason of, or arising out of or in consequence of any act or omission, negligent or otherwise, of the SLWC or its officers, employees, contractors, subcontractors, agents or anyone who is directly or indirectly employed by, or is acting in concert with, SLWC or its officers, its employees, contractors, subcontractors, or agents in the performance of this Agreement; provided that the applicable Indemnitee notifies SLWC of any such Claim within a time that does not prejudice the ability of SLWC to defend against such Claim. Any Indemnitee hereunder may participate in its, his, or her own defense, but will be responsible for all costs incurred in connection with such participation in such defense.

6. Any notice required to be given hereunder shall be deemed to have been given when notice is (i) received by the Party to whom it is directed by mail or delivery service (ii) telephonically faxed to the telephone number below provided that confirmation of transmission is received thereof, or (iii) by e-mail to the applicable address noted below. The notice shall be sent as follows:

To: Township:
ATTN: Angela Rutley
Township of North Dundas
PO Box 489
Winchester, ON K0C 2K0
Phone: (613) 774-2105
Email: arutley@northdundas.com

To: SLWC:
ATTN: Elise Dostal
Service Line Warranties of Canada, Inc.
4000 Town Center Boulevard, Suite 400
Canonsburg, PA 15317
Phone: (416) 400-2022
E-mail: edostal@slwofc.ca

7. No Third Party Beneficiary. Nothing expressed or implied in this Agreement is intended, or should be construed, to confer upon or give any person or entity not a party to this Agreement any third party beneficiary rights, interests, or remedies under or by reason of any term, provision, condition, undertaking, warranty, representation, or agreement contained in this Agreement.

8. Modifications or Amendments/Entire Agreement. All of the representations and obligations of the Parties are contained herein, and no modification, waiver or amendment of this Agreement or of any of its conditions or provisions shall be binding upon a party unless in writing signed by that Party or a duly authorized agent of that Party empowered by a written authority signed by that party. The waiver by any Party of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach of that provision by the same party, or of any other provision or condition of the Agreement. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable for whatever reason, the remaining provisions not so declared shall, nevertheless, continue in full force and effect, without being impaired in any manner whatsoever.

9. Authority. Each Party, or responsible representative thereof, has read this Agreement and understands the contents thereof. The person(s) executing this Agreement on behalf of each Party is empowered to do so and thereby bind the respective Party.

10. This Agreement and the License granted herein may not be assigned by SLWC without the previous written consent of the Township, such consent not to be unreasonably withheld.

11. This Agreement may be executed in counterparts, all such counterparts will constitute the same contract and the signature of any Party to any counterpart will be deemed a signature to, and may be appended to, any other counterpart. Executed copies hereof may be delivered by facsimile or e-mail and upon receipt will be deemed originals and binding upon the Parties hereto, regardless of whether originals are delivered thereafter.

12. Any litigation related to this Agreement shall be brought and prosecuted exclusively in courts of the Province of Ontario. The governing law shall be the laws of Ontario and the laws of Canada applicable therein.

13. The above Recitals are incorporated by this reference and expressly made part of this Agreement.

IN WITNESS WHEREOF, The Parties hereto have executed this Agreement on the day and year first written above.

Township of North Dundas

By: _____

Service Line Warranties of Canada, Inc.

By: _____

Michael Backus

Chief Sales Officer

Exhibit A
Service Line Warranty Program
Township of North Dundas, ON
Term Sheet
October 15, 2020

I. Initial Term. Three Years

II. License Fee – 5% of revenue for Warranty Products collected from Residential Property Owners, paid annually, for:

- a. Township logo on letterhead, advertising and marketing materials
- b. Signature by Township official

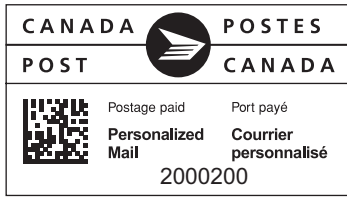
III. Products

- a. External water service line warranty (\$5.00 per month)
- b. External sewer/septic line warranty (\$7.25 per month)
- c. In-home plumbing warranty (\$6.50 per month)

IV. Scope of Coverage

- a. External water service line warranty:
 - i. Homeowner responsibility: From the property line to the external wall of the home.
 - ii. Covers thawing of frozen external water lines.
 - iii. Covers well service lines if applicable.
- b. External sewer/septic line warranty:
 - i. Homeowner responsibility: From the exit point of the home to the property line.
 - ii. Covers septic lines if applicable.
- c. In-home plumbing warranty:
 - i. Water supply pipes and drainage pipes within the interior of the home.

V. Marketing Campaigns. SLWC shall have the right to conduct up to three campaigns per year, comprised of up to six mailings and such other channels as may be mutually agreed.



Service Line Warranties Agreement



The Township of North Dundas

Service Line Warranties Agreement *Ontario*

Dear Township of North Dundas Homeowner;

The Township of North Dundas has partnered with Service Line Warranties of Canada (SLWC), a provider of home emergency repair solutions to homeowners, to offer Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage to North Dundas homeowners.

Many homeowners are not aware that they are responsible for certain repairs; for example, many don't know that they are responsible to pay for repairs to water service and sewer/septic lines on their private property. Many homeowners are not prepared to handle the high costs of unexpected water service or sewer/septic line breakdowns.

Optional plans from SLWC can help protect you from the potentially expensive repair costs of water and sewer/septic lines inside and outside your home.

The enclosed information is provided to help you decide whether a plan from SLWC is right for you.

Please visit www.slwofc.ca for frequently asked questions and links to additional information. You can also call SLWC toll-free at 1-844-616-8444 for more information, to sign up for coverage, or to opt out of any future SLWC mailing. The Township of North Dundas has not provided SLWC with your contact information. All contact information is obtained through a third-party mailing list service and not through Township records.

The Township of North Dundas



Information for North Dundas Homeowners

<<MR. SAMPLE A SAMPLE_XX>>
<<MAIL_ADDRESS1_XXXXXXX>>
<<MAIL_ADDRESS2_XXXXXXX>>
<<MAIL_CITY_XX, ST ZIP>>

Service Line Warranties Agreement

Please reply by:
<<Month X, XXXX>>



Dear <<Mr. Sample>>,

Many homeowners are not aware that repairs to the exterior water service or sewer/septic lines that run between your home and the utility service connection are the responsibility of the homeowner.

Water service and sewer/septic lines are subjected to changing soil conditions, ground shifting and corrosion—which may cause a breakdown without warning, leaving you responsible for the cost of repair or replacement. Replacement of these lines can be expensive—costing you thousands of dollars in unforeseen expenses.

The Township of North Dundas has partnered with Service Line Warranties of Canada (SLWC) to help eligible homeowners be prepared and have the best possible service in the case of such an emergency. So you're invited to enroll in Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage from SLWC. Accept this *optional* coverage and you'll receive as many service calls as you need up to \$X,XXX per call for covered water service or well line repairs, and as many service calls as you need up to \$X,XXX per call for covered sewer/septic line repairs and no deductible. You will also have access to a 24/7, 365-day-a-year emergency repair service hotline. Once you have made your service call, SLWC will take care of your covered repair, dispatching a qualified plumber to your home and paying the bill directly. Peace of mind starting for as little as \$X.XX per month. Your emergency is dealt with and your water service or sewer/septic line is back to normal.

In the event of an emergency, these plans can save you a significant amount of money and the time of finding a plumber, which can be difficult in the best of times. Having these plans also helps eliminate worry, as you can be sure of a professional job completed by local, licensed and insured plumbers. These are the only service line protection programs for homeowners fully supported by the Township of North Dundas.

Please take the time to read the information on the back of this letter. If you would like to sign up for a plan, simply complete and return the enclosed form or call toll-free 1-844-616-8444. We certainly hope that you never have an exterior water service or sewer/septic line emergency, but if you should ever have a problem, you'll be glad you're covered. These programs are managed by SLWC, and no public funds were used for the mailing of this letter. The Township of North Dundas has not provided SLWC with your contact information. All contact information is obtained through a third-party mailing list service and not through Township records.

For fastest processing, please visit www.slwofc.ca.

Sincerely,

The Township of North Dundas

Service Line Warranties of Canada ("SLWC"), with corporate offices located at 4000 Town Center Boulevard, Suite 400, Canonsburg, PA 15317, is an *independent company separate from your local utility or community* and now offers this optional service plan as an authorized representative of Northcoast Solutions of Canada, ULC, 2200 HSBC Building, 885 West Georgia Street, Vancouver, British Columbia V6C 3E8. Your choice of whether to participate in this service plan will not affect any service you have with your local utility or community.

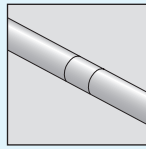
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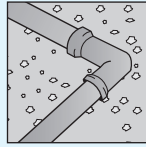
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What would you do in an exterior line emergency?

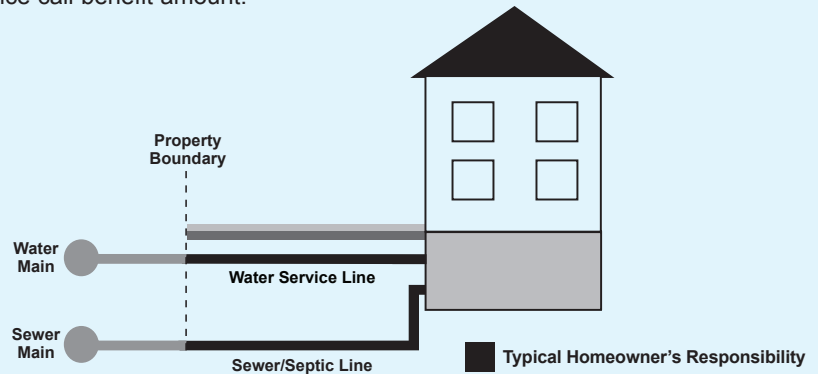
The illustration shows where things may go wrong with your exterior lines and how much a licensed and insured plumber would typically charge customers who don't have coverage. How would you cope if it happened to you? With coverage, it's not something to worry about; you'll have no bill to pay for covered repairs up to the service call benefit amount.



Replace water service line (26–100 ft.)
\$2,661
Plan Members: No Charge†



Replace sewer/septic line (26–75 ft.)
\$5,054
Plan Members: No Charge†



†Average repair costs within the networks of SLWC and its parent company across North America as of June 2020. No charge for covered repairs up to the service call benefit amount.

The water and sewer/septic lines beyond the property boundary may be an additional responsibility of the homeowner and are included in this coverage. Septic tanks and leaching fields are not covered.

Take A Look At The Benefits You'll Receive	Exterior Water Service Line Coverage	Exterior Sewer/Septic Line Coverage
1. Covered Repairs – Guaranteed for one full year.	✓	✓
2. 24-Hour Emergency Repair Service Hotline – Open 24 hours a day, 365 days a year.	✓	✓
3. SLWC's Promise to You – Simply call SLWC toll-free at 1-844-616-8444 any time, and your coverage can be canceled at your request.	✓	✓

Visit www.slwofc.ca to protect your exterior lines
Or call toll-free 1-844-616-8444 | Available: MON-FRI 8AM-5PM EST

Important Questions & Answers

What am I responsible for?

Nisit officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae.

Does my homeowners insurance cover this?

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Does this coverage include well lines?

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Who is eligible for coverage?

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What should I know about this coverage?

What's covered: Nisit officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestisist officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam.

Not covered: Nisit officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestisist officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam nonsequo.

When can I make a service call?

Nisit officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam nonsequo volecus ea que omnis estius raest rem quidus, quia aut ea suntist. Henis eatios aliquatur.

What is the cancellation policy?

Nisit officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam nonsequo volecus ea que omnis estius raest rem quidus, quia aut ea suntist. Henis eatios aliquatur. Agnis voloria nienihil invende.

What is the term of my service agreement?

Nisit officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam nonsequo volecus ea que omnis estius raest rem quidus, quia aut ea suntist. Henis eatios aliquatur. Agnis voloria nienihil invende.

What is E-Z Pay/Direct Pay?

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What quality of repair can I expect?

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Who is SLWC?

Nisit officii sintotatius et aturest emolore, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam nonsequo volecus ea que omnis estius raest rem quidus, quia aut ea suntist. dellaccus voles eosltam.



Please Reply by <<Month X, XXXX>>

<<MR. SAMPLE A SAMPLE_XX>>
 <<MAIL_ADDRESS1_XXXXXXXX>>
 <<MAIL_ADDRESS2_XXXXXXXX>>
 <<MAIL_CITY_XX, ST ZIP>>


Service Line Warranties Agreement

Dear <<Mr. Sample>>,

Many homeowners are not aware that repairs to the exterior water service or sewer/septic lines that run between your home and the utility service connection are the responsibility of the homeowner.

Water service and sewer/septic lines are subjected to changing soil conditions, ground shifting and corrosion—which may cause a breakdown without warning, leaving you responsible for the cost of repair or replacement. Replacement of these lines can be expensive—costing you thousands of dollars in unforeseen expenses.

The Township of North Dundas has partnered with Service Line Warranties of Canada (SLWC) to help eligible homeowners be prepared and have the best possible service in the case of such an emergency. So you're invited to enroll in Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage from SLWC. Accept this *optional* coverage and you'll receive as many service calls as you need up to \$X,XXX per call for covered water service or well line repairs, and as many service calls as you need up to \$X,XXX per call for covered sewer/septic line repairs and no deductible. You will also have access to a 24/7, 365-day-a-year emergency repair service hotline. Once you have made your service call, SLWC will take care of your covered repair, dispatching a qualified plumber to your home and paying the bill directly. Peace of mind starting for as little as \$X.XX per month. Your emergency is dealt with and your water service or sewer/septic line is back to normal.

In the event of an emergency, these plans can save you a significant amount of money and the time of finding a plumber, which can be difficult in the best of times. Having these plans also helps eliminate worry, as you can be sure of a professional job completed by local, licensed and insured plumbers. These are the only service line protection programs for homeowners fully supported by the Township of North Dundas.

Please take the time to read the information on the back of this letter. If you would like to sign up for a plan, simply complete and return the enclosed form or call toll-free 1-844-616-8444. We certainly hope that you never have an exterior water service or sewer/septic line emergency, but if you should ever have a problem, you'll be glad you're covered. These programs are managed by SLWC, and no public funds were used for the mailing of this letter. The Township of North Dundas has not provided SLWC with your contact information. All contact information is obtained through a third-party mailing list service and not through Township records.

For fastest processing, please visit www.slwofc.ca.

Sincerely,

The Township of North Dundas

Service Line Warranties of Canada ("SLWC"), with corporate offices located at 4000 Town Center Boulevard, Suite 400, Canonsburg, PA 15317, is an *independent company separate from your local utility or community* and now offers this optional service plan as an authorized representative of Northcoast Solutions of Canada, ULC, 2200 HSBC Building, 885 West Georgia Street, Vancouver, British Columbia V6C 3E8. Your choice of whether to participate in this service plan will not affect any service you have with your local utility or community.

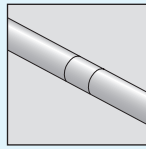
Mailcode

RX RX4262_Choice_Blue_Pack

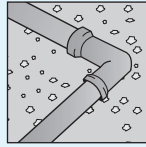
RX

What would you do in an exterior line emergency?

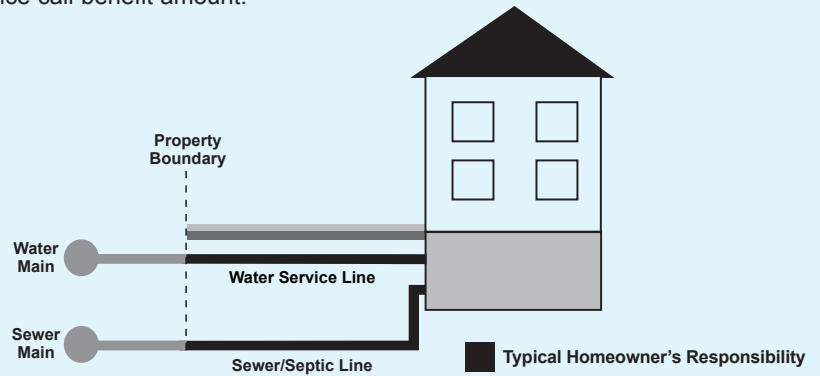
The illustration shows where things may go wrong with your exterior lines and how much a licensed and insured plumber would typically charge customers who don't have coverage. How would you cope if it happened to you? With coverage, it's not something to worry about; you'll have no bill to pay for covered repairs up to the service call benefit amount.



Replace water service line (26–100 ft.)
\$2,661
Plan Members: No Charge[†]



Replace sewer/septic line (26–75 ft.)
\$5,054
Plan Members: No Charge[†]



[†]Average repair costs within the networks of SLWC and its parent company across North America as of June 2020. No charge for covered repairs up to the service call benefit amount.

The water and sewer/septic lines beyond the property boundary may be an additional responsibility of the homeowner and are included in this coverage. Septic tanks and leaching fields are not covered.

Take A Look At The Benefits You'll Receive	Exterior Water Service Line Coverage	Exterior Sewer/Septic Line Coverage
1. Covered Repairs – Guaranteed for one full year.	✓	✓
2. 24-Hour Emergency Repair Service Hotline – Open 24 hours a day, 365 days a year.	✓	✓
3. SLWC's Promise to You – Simply call SLWC toll-free at 1-844-616-8444 any time, and your coverage can be canceled at your request.	✓	✓

Visit www.slwofc.ca to protect your exterior lines
Or call toll-free 1-844-616-8444 | Available: MON-FRI 8AM-5PM EST

Important Questions & Answers

What am I responsible for?

Nisit officii sintotatius et aturest emolare, ipitas dem et is exero con pa net, aspel exceptae.

Does my homeowners insurance cover this?

Nisit officii sintotatius et aturest emolare, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam nonsequo volecus ea que omnis estius raest rem quidus, quia aut ea suntist. Henis eatios aliquatur. Agnis voloria nienihil invende.

Does this coverage include well lines?

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Who is eligible for coverage?

Nisit officii sintotatius et aturest emolare, ipitas dem et is exero con pa net, aspel exceptae laturestis re dellaccus voles eosltam etur quam nonsequo volecus ea que omnis estius raest rem quidus, quia aut ea suntist. Henis eatios aliquatur. Agnis voloria nienihil invende nitates doluptam, que mi, voluptat et aspiducilic temod ut que et ant. Cerspientus solleniam, omnihit as dolo maximi, a ipsamet res sunt odi conse cori as Explignate cupattem hilla eum con re quam faccumq.

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Acceptance Form

Please confirm your name and address below and make any changes if necessary.

<<Mr. Sample A Sample_xx>>
<<Serv_Address1_xxxxxxx>>
<<Serv_Address2_xxxxxxx>>
<<Serv_City_xx, ST Zip>>"



By providing my e-mail address, I request that I be notified when my current and future service agreements and any related documents are available at www.slwofc.ca, and I acknowledge that I can access these documents. I can change my preferences or request paper copies online or by calling SLWC.

Service Line Warranties Agreement

E-mail Address _____

Phone #

1. Choose Your Protection Plan(s)

BEST VALUE

Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage <<Mailcode-xxxx>> <<Mailcode-xxxx>>	FIRST-YEAR SAVINGS OF 10% OFF when you select both plans		
	MONTHLY	QUARTERLY	ANNUALLY
	<input type="checkbox"/> \$XX.XX \$XX.XX	<input type="checkbox"/> \$XX.XX \$XX.XX	<input type="checkbox"/> \$XXX.XX \$XXX.XX
Exterior Water Service Line Coverage <<Mailcode-xxxx>>	MONTHLY	QUARTERLY	ANNUALLY
	<input type="checkbox"/> \$X.XX	<input type="checkbox"/> \$XX.XX	<input type="checkbox"/> \$XX.XX
Exterior Sewer/Septic Line Coverage <<Mailcode-xxxx>>	MONTHLY	QUARTERLY	ANNUALLY
	<input type="checkbox"/> \$X.XX	<input type="checkbox"/> \$XX.XX	<input type="checkbox"/> \$XXX.XX

2. Choose Your Payment Method

E-Z Pay (see back of letter)

I have enclosed a check, payable to SLWC, for my first payment for the plan(s) selected and understand that all future payments will be debited from this account.

Credit/Debit Card

I authorize SLWC to charge my first and all future payments for the plan(s) selected to my credit/debit card.

VISA

MASTERCARD

Card Number

Exp. Date

One-Time Check or Money Order

I have enclosed my check or money order, payable to SLWC, for my one-year payment for the plan(s) selected.

Yes, please sign me up for the protection plan(s) from SLWC I have selected. If I have chosen E-Z Pay or credit/debit card, I authorize SLWC to charge my account at the frequency specified and my financial institution to debit these payments from the account provided. I understand that, regardless of the payment frequency I select, my optional coverage is based on an annual policy and, unless I cancel will be *automatically renewed annually* on the same payment terms selected at the then-current renewal price (currently \$XX.XX per month if I select both plans). I understand that I may revoke my authorization at any time without additional cost to me, by calling 1-844-616-8444, subject to providing notice of 10 days. To obtain a sample cancellation form, or for more information on your right to cancel a Pre-Authorized Debit Agreement (PAD), contact your financial institution or visit www.cdnpay.ca. I understand that this is a personal PAD Agreement, and I have certain recourse rights if any debit does not comply with this agreement. For example, you have the right to receive reimbursement for any debit that is not authorized or is not consistent with this PAD Agreement. To obtain more information on your recourse rights, contact your financial institution or visit www.cdnpay.ca. This service contract is provided by Northcoast Solutions of Canada, ULC and is managed by SLWC. I confirm that I am the homeowner and have read the information in this package and meet the eligibility requirements for this service contract. I acknowledge that SLWC may share certain information with Northcoast Solutions of Canada, ULC to facilitate my program. When the form is complete, return in the enclosed postage-paid envelope to: SLWC, PO BOX 328, Canonsburg, PA 15317-9918, or call 1-844-616-8444. Prices include applicable HST. Additional local tax may apply.

Signature (required)



ACTION REQUEST – Planning Building and Enforcement	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Use of Gypsy Lane - Road Allowance Agreement

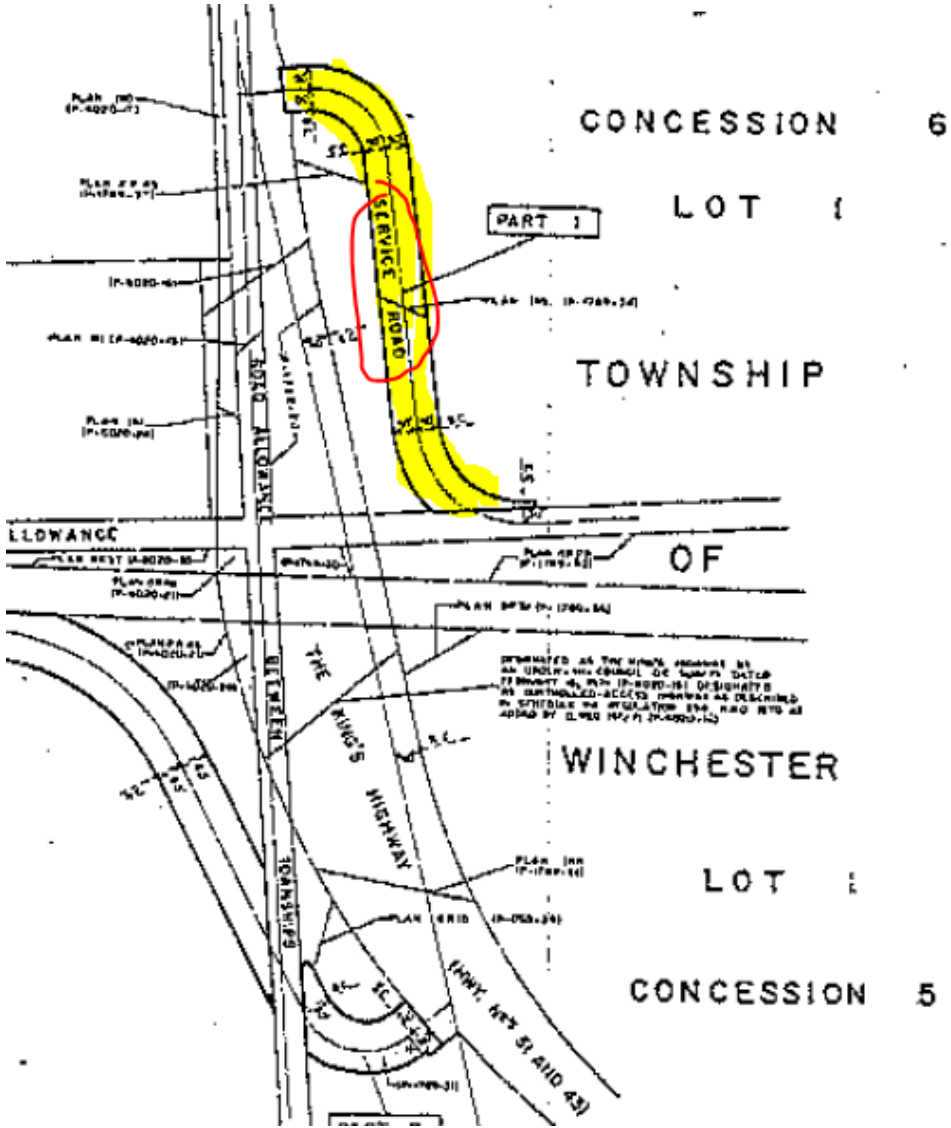
RECOMMENDATION:
THAT Council hereby approves, in principle, the use of a portion of the west end of Gypsy Lane as a private access to PIN 66102-0445 (Roll# 0511-016-005-91200, pending further research and the entering into of an Unmaintained Road Allowance Use Agreement with the Township of North Dundas.

BACKGROUND:
 Currently, PIN# 66102-0445 does not have year-round open public road access from Gypsy Lane. The Official Plan has this portion of Gypsy Lane shown as an unopen road allowance (see image below – orange dotted line).



On November 17, 2020, the United Counties’ Engineer offered limited traffic access from County Road #31, subject to several conditions. The preferred access would be from Gypsy Lane.

The portion of Gypsy Lane parallel to County Road #31 is shown as a "Service Road" under the Ministry of Transportation February 24, 1976 registered transfer plan (O.I.C. OC-3556/75).



Council is being asked if they would consider, in principle, the option to enter into an Unmaintained Road Allowance Use Agreement to permit the use of a portion of Gypsy Lane for private access. The intent would be that this section would be available for use by the owner of PIN# 66102-0445 at their own risk. The agreement would specify that they would be responsible for maintenance during the winter months. Council can also request improvements to the road at the developer's cost, if desired.

OPTIONS AND DISCUSSION:

- 1. **Adopt the resolution as presented** – recommended. The owner of PIN# 66102-0445 could enter into an agreement with the Township to access their property from Gypsy Lane.
- 2. **Do nothing** – not recommended.
- 3. **Refuse the request** – not recommended. The owner of PIN# 66102-0445 could apply to the United Counties for access from County Road #31.

FINANCIAL ANALYSIS:

Costs associated with drafting an agreement would be borne by the applicant.

OTHERS CONSULTED:

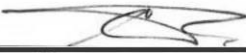
- Chief Administrative Officer
- County Engineer
- Township Solicitor
- Proponent’s Solicitor
- Director of Public Works

ATTACHMENTS:


n/a

PREPARED BY:

REVIEWED & APPROVED BY:



Calvin Pol, BES, MCIP, RPP
Director of Planning, Building & Enforcement



Angela Rutley, BBA
CAO



ACTION REQUEST – Planning Building and Enforcement	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	MTO - ARIS Agreement

RECOMMENDATION:

THAT the Council of the Township of North Dundas authorize the Mayor and CAO to apply to enter into an Authorized Requester Information Services (ARIS) Agreement with the Ministry of Transportation Ontario (MTO) to permit access to ARIS with respect to administering the AMPS By-law.

BACKGROUND:

With the passage of AMPS By-law No. 2019-43, it becomes necessary to have a second ARIS account specifically for the AMPS By-law. This will allow for recovery of a vehicle's registered owner information necessary for the administration of AMPS, including penalty collection and registering non-paying offenders into plate denial with MTO.

OPTIONS AND DISCUSSION:

1. **Adopt the resolution as presented** – recommended.
2. **Do nothing** – not recommended. This agreement is required in order to obtain contact information for offenders in relation to the administration of the AMPS By-law.

FINANCIAL ANALYSIS:

The cost of obtaining the information is minimal (\$7-\$10 per contact searched) and is recovered from the non-paying party through administration costs added to the original Penalty Notice amount.

OTHERS CONSULTED:

N/A

PREPARED BY:

**Calvin Pol, BES, MCIP, RPP
Director of Planning, Building &
Enforcement**

REVIEWED & APPROVED BY:

**Angela Rutley, BBA
CAO**



ACTION REQUEST – CAO	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	COVID-19 Pandemic Staff Accommodation Policy

RECOMMENDATION:

THAT Council approve policy #88-2020 a COVID-19 Staff Accommodation Policy effective January 2, 2021.

BACKGROUND:

The workplace landscape is continually and rapidly changing as a result of COVID-19. We continue to follow the recommendations of the Chief Medical Officer of Health for the Eastern Ontario Health Unit and the Province. As a result of their directives and recommendations and in an effort to prevent the spread of COVID-19, employees may be absent from work for various reasons including but not limited to confirmed COVID-19, self-isolation due to exposure to a potential or confirmed case, experiencing symptoms, waiting for test results or caring for an individual with COVID-19.

Full-time Township employees have access to 5 paid sick days and 2 paid personal days. The Township also has a short-term disability plan that employees may access if they are diagnosed with COVID-19. The plan will pay 66.7% of weekly earnings, up to a maximum of \$800, for up to 17 weeks. The plan will not cover absence due to quarantine, self-isolation, caring for a family member or awaiting test results.

Depending on job responsibilities, some staff are able to work remotely and can continue to perform their job while self-isolating, but this is not possible for all positions or in all cases. As a result, on October 6, 2020, Council approved policy#85-2020 which provided up to 5 additional days of pay for COVID related absence. To date, the Township has been fortunate and there has been very limited use of these days.

These days are intended to cover any COVID related absence. Individual circumstances are unique and recommendations for self-isolation continually adapt based on the presence of the virus in the community at a given point in time. It is anticipated that the availability of extra days, will also help keep employees with symptoms from coming to the workplace and potentially infecting co-workers.

These days are only available until the end of 2020, are not eligible for carryover into 2021 or payout at the end of the year. The policy states that it will be reviewed before the end of the year.

The presence of COVID-19 in the community and the risk of exposure has increased since the current policy was passed in October. The first vaccines have just arrived in Canada, but widespread vaccination isn't predicted until well into 2021. For this reason, I am recommending that we approve the attached policy that will provide 5 COVID days available from January 2 until the end of June. The policy will be reviewed before it expires to determine whether an extension of the effective term is required. A recommendation will be made to Council for consideration at that time.

OPTIONS AND DISCUSSION:

1. **Approve the policy** - recommended. This will provide additional time off to employees that are absent from work due to COVID-19.
2. **Do not approve the policy** - not recommended. Employees who must be absent from work due to COVID-19, but do not have a confirmed case, may experience significant time off without pay.
3. **Change the number of COVID days or the effective term of the policy.**

FINANCIAL ANALYSIS:

The Township tracks the cost of the existing leave and is claiming it against the provincial funding that was provided to the Township for COVID-19 related expenses. There will be no impact on taxes. This process will continue if the new policy is approved.

ATTACHMENTS:

Policy #88-2020.

PREPARED BY:



**Angela Rutley, BBA
CAO**

POLICY MANUAL	Policy #88-2020
Township of North Dundas	Effective Dates: January 2 – June 30, 2021
Subject: Covid-19 Pandemic Staff Accommodation Policy	

PURPOSE

This Policy/Procedure is without prejudice or precedent and reflects current knowledge and available information. This Policy shall be in force and effect from the date of passage until June 30th, 2021. A review shall occur prior to the end of the effective term to determine if additional accommodation needs to be made for any further portion of 2021. Such determination shall be made by Council.

This policy outlines additional entitlements for staff of the Township to accommodate instances where absences are required from work due to Covid-19.

SCOPE

This Policy applies to all **regular full-time staff** of the Township who have not been offered arrangements to work remotely. It is intended to supplement, not replace, the Township's policy related to sick leave.

PROCEDURE

For the effective term of the policy, eligible Township staff shall be provided a maximum of five (5) paid days of Covid-19 related leave from the workplace. This leave shall cover **all instances** where the employee is unable to attend at the workplace, whether voluntarily or involuntarily. Without limiting the generality of the foregoing, Covid-19 related absences from work shall include:

- Experiencing illness/symptoms of Covid-19 themselves;
- Exposure/possible exposure to an individual having or suspected of having Covid-19;
- Caring for/cohabitating with any individual having/suspected of having Covid-19; whether a family member or not;
- Required self-isolation;
- Any other circumstance determined by the Township in its sole discretion.

When the employee has exhausted their five (5) days of Covid-19 related leave, regular sick leave entitlements and processes shall apply.

The eligibility for this leave ends on the day that the employee's or potential exposure's negative Covid-19 test result is reported by the testing agency.

Staff absent from work due to any Covid-related matter **may** be offered arrangements to work remotely, if their job can be performed remotely and the arrangement is approved by the Department Head and the Chief Administrative Officer. If remote work is offered and refused, the employee is not entitled to paid leave under this policy, but may use other applicable entitlements.

Any staff member who leaves Canada **for any reason whatsoever** is **required to quarantine** in accordance with current Government of Canada guidelines. Such employees are not eligible to use sick leave or the five (5) additional Covid-19 days outlined in this Policy however may use other available entitlements such vacation/banked time, or an unpaid leave of absence. The article above is also applicable in this circumstance.

Unused entitlements under this Policy are not eligible for pay-out at the end of the year or carry over into the next year.

For absences covered under this Policy, employees are required to report the absence in the usual fashion. Notwithstanding, the Township maintains the right to require any employee to submit a medical certificate where Covid-19 leave is claimed.

Any matters disputed under this Policy shall be referred to the Chief Administrative Officer, whose determination in the matter shall be final.



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	By-Law No.14-2011 County Rd #3 Schedule "A" Amendment

RECOMMENDATION:

THAT the Council of the Township of North Dundas authorize and direct that Schedule "A" of By-Law 14-2011 be amended to include 2021 rates as attached, this 15th day of December, 2020.

BACKGROUND:

New buildings that connect to the municipal sanitary sewer system on County Road #3, (west of Main St.) are charged the sewer capital rate. The capital rate from Schedule "A" of this By-law is increased annually by the CPI factor to arrive at the new capital rate for the next year. The 2020 amounts have been increased by .6% as per the current CPI for 2020, to arrive at the 2020 rates.

The Council of The Township of North Dundas authorized the construction of a sanitary sewer main on County Road #3 (west of Main St.) in 2009. The total construction cost of the sewer main extension \$869,092.97, including \$109,533.70 for laterals was to be recovered from benefitting property owners. The capital rate is due and payable when the property is connected to the sanitary sewer system and is collected at the time of connection permit issuance, in addition to the regular permit fees.

In addition to the above capital charge, owners are responsible for the cost to install laterals from the mains to their building.

ATTACHMENTS:

By-Law 14-2011 and Schedule "A"
 Statistics Canada CPI Schedule

PREPARED BY: Mary Lynn Plummer

RECOMMENDED BY:



**Khurram Tunio, M. Eng., P. Eng.
Director of Public Works**

REVIEWED & APPROVED BY:



**Angela Rutley, BBA
CAO**

**THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS
BY-LAW 14-2011**

A by-law of The Corporation of the Township of North Dundas setting the sewer capital rate for sewer connections on County Road #3 (West of Main St.).

WHEREAS the Council of The Township of North Dundas authorized the construction of a sanitary sewermain on County Road #3 from the Village limit, westerly to the intersection of County Road #3 and County Road #31;

AND WHEREAS The *Municipal Act, 2001*. S. O. 2001, c. 25, Section 391 authorizes a municipality to pass by-laws imposing fees or charges on any class of persons for capital costs related to sewage or water services or activities including on persons not receiving an immediate benefit;

AND WHEREAS the total construction cost of the sewermain extension \$869,092.97, including \$109,533.70 for laterals, shall be recovered from benefitting property owners;

AND WHEREAS the Council of the Township of North Dundas passed By-law 36-2006 setting the sewer capital rate for sewer connections on County Rd #3, but that by-law was only in effect until December 31, 2010;

NOW THEREFORE, the Council of The Corporation of the Township of North Dundas,

HEREBY ENACTS as follows;

1. SEWER CAPITAL RATE CHARGE

Connections to the sanitary sewermain on County Road #3, (west of Main St.) shall be charged the following sewer capital rate:

- (a) Existing Buildings:** (i) \$4,514.98 per *sewer unit* and,
(ii) \$4,978.80 where a lateral has been installed by the municipality to the property line.

The sewer capital rate shall be due and payable when the property is connected to the sanitary sewer and shall be collected at the time of sewer permit issuance in addition to the regular application permit fees.

- (i) Owners who connect to the sanitary sewer have the option of paying the sewer capital rate by annual payments over a 15 year period by entry

on the collector's roll, to be collected in the same way as municipal taxes are collected.

(ii) The interest rate utilized for the 15 year payment plan shall be equivalent to the Chartered Bank Prime Lending Rate at the time the payment plan agreement is signed.

(b) New Buildings:

The sewer capital rate shall be set out in Schedule A and shall be payable in full at the time of the Building Permit Application.

2. WATER METER REQUIRED:

All properties connecting to the sanitary sewer will be required to install a water meter on their water supply. A 5/8 water meter will be supplied at no charge to the customer. For customers requiring a larger meter, the meter will be purchased by the Township and the cost of the meter billed to the property owner.

The meter shall be installed by a representative of the Township or a contractor approved by the Township. The cost of installation will be the responsibility of the homeowner.

3. SEWER UNIT DETERMINATION:

(a) *Sewer units* will be calculated based on estimated sanitary sewage flow as determined on Tables 8.2.1.3.A and 8.2.1.3.B of the Ontario Building Code (OBC) 2006. (attached as schedule B)

(b) A *sewer unit* shall mean 1600L/day sanitary sewage flow (3 bedroom residential *dwelling unit*).

(c) A *dwelling unit* means a suite operated as a housekeeping unit, used or intended to be used as a domicile by 1 or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

(d) The number of *sewer units* for a *dwelling unit* or non-residential building will be determined as follows:

Estimated sanitary sewage flow on Tables 8.2.1.3.A or 8.2.1.3.B of the OBC 2006
1600L/day

(e) Notwithstanding subsections 3(a) and (d), the minimum number of *sewer units* per dwelling unit or non-residential building shall be one (1).

(f) *FIRST YEAR, NON-RESIDENTIAL, SEWER CAPITAL RATE ADJUSTMENT:* One year after connection is made to the sanitary sewer, the municipality may determine the actual amount of metered water that was used over the year and recalculate the number of *sewer units* and the sewer capital rate based on this flow. A refund for overpayment or a bill for additional amounts outstanding will be issued to the property owner.

4. REQUIREMENT TO CONNECT:

All new buildings that can be serviced by the existing municipal sanitary sewer must connect to the municipal sanitary sewer system. Existing buildings may make *repairs* or *alterations* to their existing septic system but cannot *replace* the leaching bed of their existing sewage system. At such time as an existing building requires a new leaching bed, it must connect to the municipal sanitary sewer system and pay the fee as set out in section 1 a) of this by-law.

5. If any provision or requirement of this by-law, or the application thereof to any person or land shall, to any extent, be held to be invalid or unenforceable by any court of competent jurisdiction, the remainder of the by-law, or the application of it to all persons other than those in respect of whom it is held to be invalid or unenforceable, shall not be affected thereby, and each provision and requirement of this by-law shall be separately valid and enforceable.

READ A FIRST AND SECOND AND THIRD TIME AND PASSED THIS ____ DAY OF FEBRUARY 2011.

MAYOR

CLERK

Schedule "A" of By-law 14-2011**Sewer Capital Rate for New Buildings**

New buildings that connect to the municipal sanitary sewer system on County Road #3, (west of Main St.) shall be charged the following sewer capital rate:

Effective Date	Cost per <i>sewer unit</i>	Cost for a lateral, if installed*
September 11- December 31, 2006	\$4,514.98	\$4,978.80
January 1 - December 31, 2007	\$4,709.12	\$5,192.89
January 1 - December 31, 2008	\$4,909.26	\$5,413.59
January 1 - December 31, 2009	\$5,100.72	\$5,624.72
January 1 - December 31, 2010	\$5,304.75	\$5,849.71
January 1 - December 31, 2011	\$5,516.94	\$6,083.70
January 1- December 31, 2012	\$5,674.17	\$6,257.09
January 1 - December 31, 2013	\$5,844.39	\$6,444.80
January 1 - December 31, 2014	\$6,019.72	\$6,638.14
January 1 - December 31, 2015	\$6,188.27	\$6,824.00
January 1 - December 31, 2016	\$6,243.96	\$6,885.41
January 1- December 31, 2017	\$6,375.08	\$7,030.00
January 1- December 31, 2018	\$6,457.96	\$7,121.39
January 1- December 31, 2019	\$6,619.41	\$7,299.43
January 1- December 31, 2020	\$6,731.93	\$7,423.52
January 1- December 31, 2021	\$6,772.32	\$7,468.06

*The cost for a lateral is only payable if a lateral was installed by the municipality to the property line.

2006 rates passed on Sept. 11, 2006, By-law 25-06.
 2007 rates passed on January 15, 2007, By-law 36-06
 2008 rates passed on June 24, 2008, Resolution #09-June/24
 2009 rates passed on July 7, 2009, Resolution #21-July/7
 2010 rates passed on October 12, 2010, Resolution #28-Oct 12
 2011 rates passed on February 1, 2011, By-law 14-2011
 2012 rates passed on March 26, 2012, Resolution #18
 2013 rates passed on January 15, 2013, Resolution # 15

2014 rates passed on December 10, 2013 Resolution #16
2015 rates passed on December 10, 2014 Resolution #20
2016 rates passed on December 8, 2015 Resolution #25
2017 rates passed on December 13, 2016 Resolution #11
2018 rates passed on December 12, 2017 Resolution #17
2019 rates passed on December 11, 2018 Resolution #08
2020 rates passed on December 10, 2019 Resolution #17
2021 rates passed on December 15, 2020 Resolution #

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Products and product groups ^{3, 4}	Ontario (map)				
	September 2019	August 2020	September 2020	August 2020 to September 2020	September 2019 to September 2020
	2002=100			Percentage change	
All-items	137.5	138.6	138.3	-0.2	0.6
Food ⁵	151.9	155.9	154.6	-0.8	1.8
Food purchased from stores	149.7	154.2	152.1	-1.4	1.6
Meat	169.3	171.6	170.0	-0.9	0.4
Dairy products and eggs	139.5	147.7	144.2	-2.4	3.4
Bakery and cereal products (excluding baby food)	160.0	163.9	161.2	-1.6	0.8
Fresh fruit	127.6	135.4	130.1	-3.9	2.0
Fresh vegetables	150.2	167.5	162.7	-2.9	8.3
Food purchased from restaurants ⁵	157.3	160.1	160.6	0.3	2.1
Shelter ⁶	147.3	150.2	150.5	0.2	2.2
Rented accommodation	125.2	127.5	127.7	0.2	2.0
Owned accommodation	153.1	157.0	157.5	0.3	2.9
Homeowners' replacement cost	184.4	190.2	191.5	0.7	3.9
Homeowners' home and mortgage insurance ⁷	270.9	285.4	286.9	0.5	5.9
Homeowners' maintenance and repairs	141.1	141.6	143.6	1.4	1.8



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	By-Law 15-2011 Dawley Drive Schedule "A" Amendment

RECOMMENDATION:

THAT the Council of the Township of North Dundas authorize and direct that Schedule "A" of By-Law 15-2011 be amended to include 2021 rates as attached this 15th day of December, 2020.

BACKGROUND:

Connections to the water and sanitary sewer mains on Dawley Drive shall be charged the capital rate as set out in Schedule "A" attached, including the appropriate cost from Schedule "A" of By-Law 14-2011. The capital rate from Schedule "A" of this By-law is increased annually by the CPI factor to arrive at the new capital rate for the next year. The 2020 amounts have been increased by .6% as per the current CPI for 2020 to arrive at the 2021 charges.

The Township of North Dundas installed water and sewer mains on Dawley Drive in 2010. The total estimated construction cost of the water and sewer mains was \$325,000.00 and it was to be recovered from benefitting property owners as they connect to the system.

By-Law 14-2011 that sets the sewer capital rate for sewer connections on County Rd. #3 also applies to the properties on Dawley Drive. The capital rate is payable when the property is connected to the mains and is collected at the time of connection permit issuance in addition to the regular permit fees. In addition to the above capital charge, owners are responsible for the cost to install laterals from the mains to their buildings.

ATTACHMENTS:

By-Law 15-2011 Schedule "A"
 Statistics Canada CPI Schedule

PREPARED BY: Mary Lynn Plummer

RECOMMENDED BY:



**Khurram Tunio, M. Eng., P. Eng.
Director of Public Works**

REVIEWED & APPROVED BY:



**Angela Rutley, BBA
CAO**

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Products and product groups ^{3, 4}	Ontario (map)				
	September 2019	August 2020	September 2020	August 2020 to September 2020	September 2019 to September 2020
	2002=100			Percentage change	
All-items	137.5	138.6	138.3	-0.2	0.6
Food ⁵	151.9	155.9	154.6	-0.8	1.8
Food purchased from stores	149.7	154.2	152.1	-1.4	1.6
Meat	169.3	171.6	170.0	-0.9	0.4
Dairy products and eggs	139.5	147.7	144.2	-2.4	3.4
Bakery and cereal products (excluding baby food)	160.0	163.9	161.2	-1.6	0.8
Fresh fruit	127.6	135.4	130.1	-3.9	2.0
Fresh vegetables	150.2	167.5	162.7	-2.9	8.3
Food purchased from restaurants ⁵	157.3	160.1	160.6	0.3	2.1
Shelter ⁶	147.3	150.2	150.5	0.2	2.2
Rented accommodation	125.2	127.5	127.7	0.2	2.0
Owned accommodation	153.1	157.0	157.5	0.3	2.9
Homeowners' replacement cost	184.4	190.2	191.5	0.7	3.9
Homeowners' home and mortgage insurance ⁷	270.9	285.4	286.9	0.5	5.9
Homeowners' maintenance and repairs	141.1	141.6	143.6	1.4	1.8

**THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS
BY-LAW 15-2011**

A by-law of The Corporation of the Township of North Dundas setting the capital rate for water and sewer connections on Dawley Drive.

WHEREAS the Council of The Township of North Dundas authorized the construction of water and sanitary sewer mains on Dawley Drive in Winchester;

AND WHEREAS The *Municipal Act, 2001*, c.25 S.11 provides that a municipality may pass by-laws respecting matters within the sphere of public utilities;

AND WHEREAS The *Municipal Act, 2001*, S. O. 2001, c. 25, Section 391 authorizes a municipality to pass by-laws imposing fees or charges on any class of persons for services or activities provided or done by or on behalf of it and further that capital costs related to sewage or water services or activities including on persons not receiving an immediate benefit from the services or activities but who will receive a benefit at some later point in time;

AND WHEREAS The *Municipal Act, 2001*, c.25, s. 398 states that the Treasurer of a local municipality may add fees and charges imposed by the municipality to the tax roll for the property in the local municipality and collect them in the same manner as municipal taxes and, in the case of fees and charges for the supply of a public utility, the property to which the public utility was supplied and, in all other cases, any property for which all of the owners are responsible for paying the fees and charges;

AND WHEREAS at the time of the passage of this By-law, the total estimated construction cost of the water and sewer mains \$325,000, shall be recovered from benefitting property owners;

AND WHEREAS Township of North Dundas By-Law 14-2011 that sets the sewer capital rate for sewer connections on County Rd. #3 applies to the properties on Dawley Drive;

NOW THEREFORE, the Council of The Corporation of the Township of North Dundas,

HEREBY ENACTS as follows;

1. WATER AND SEWER CAPITAL RATE CHARGE

Connections to the water and sanitary sewer mains on Dawley Drive shall be charged the capital rate as set out in Schedule "A" attached, including the appropriate cost from Schedule "A" of By-Law 14-2011. The capital rate from Schedule "A" of this By-law will be increased annually by the CPI factor to arrive at the new capital rate for the next year.

Example: For the year 2011 the amount for an **existing building** will be \$13,112.48 per *sewer unit* comprised of \$8,597.50 + \$4,514.98 as per By-Law 14-2011.

For the year 2011, the amount for a **new building** will be \$14,114.44 comprised of \$8,597.50 + \$5,516.94 as per By-Law 14-2011.

The capital rate shall be due and payable when the property is connected to the mains and shall be collected at the time of connection permit issuance in addition to the regular permit fees.

In addition to the above capital charge, owners are responsible for the cost to install laterals from the mains to their building.

(i) Owners who connect to the water and sanitary sewer have the option of paying the capital rate by annual payments over a 15 year period by entry on the collector's roll, to be collected in the same way as municipal taxes are collected.

(ii) The interest rate utilized for the 15 year payment plan shall be equivalent to the Chartered Bank Prime Lending Rate at the time the payment plan agreement is signed.

2. WATER METER REQUIRED:

All properties connecting to the water and sewer systems will be required to install a water meter. A 5/8 water meter will be supplied at no charge to the customer. For customers requiring a larger meter, the meter will be purchased by the Township and the cost of the meter billed to the property owner. The meter shall be installed by a representative of the Township or a contractor approved by the Township. The cost of installation will be the responsibility of the property owner.

3. SEWER UNIT DETERMINATION:

(a) *Sewer units* will be calculated based on estimated sanitary sewage flow as determined on Tables 8.2.1.3.A and 8.2.1.3.B of the Ontario Building Code (OBC) 2006. (attached as schedule B)

(b) A *sewer unit* shall mean 1600L/day sanitary sewage flow (3 bedroom residential *dwelling unit*).

(c) A *dwelling unit* means a suite operated as a housekeeping unit, used or intended to be used as a domicile by 1 or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

(d) The number of *sewer units* for a *dwelling unit* or non-residential building will be determined as follows:

Estimated sanitary sewage flow on Tables 8.2.1.3.A or 8.2.1.3.B of the OBC 2006
1600L/day

(e) Notwithstanding subsections 3(a) and (d), the minimum number of *sewer units* per dwelling unit or non-residential building shall be one (1).

(f) *FIRST YEAR, NON-RESIDENTIAL, CAPITAL RATE ADJUSTMENT*: One year after connection is made to the water and sanitary sewer systems, the municipality may determine the actual amount of metered water that was used over the year and recalculate the number of *sewer units* and the capital rate based on this flow. A refund for overpayment or a bill for additional amounts outstanding will be issued to the property owner.

4. REQUIREMENT TO CONNECT:

All new buildings (ie. buildings constructed after this by-law) that can be serviced by the existing municipal water and sanitary sewer must connect to the municipal systems.

Buildings that exist as of the passing of this by-law may make *repairs* or *alterations* to their existing septic system but cannot *replace* the leaching bed of their existing septic system. At such time as an existing building requires a new leaching bed, it must connect to the municipal sanitary sewer system and pay the fee as set out in section 1) of this by-law.

Buildings that exist as of the passing of this by-law may make repairs to their existing wells but cannot drill a new well.

When connecting to municipal services, buildings must be connected to **both** water and sewer systems. Connection to only one service will not be permitted.

Notwithstanding the above, all existing buildings on Dawley Drive must connect to municipal water and sewer services by December 31, 2035.

- 5.** If any provision or requirement of this by-law, or the application thereof to any person or land shall, to any extent, be held to be invalid or unenforceable by any court of competent jurisdiction, the remainder of the by-law, or the application of

it to all persons other than those in respect of whom it is held to be invalid or unenforceable, shall not be affected thereby, and each provision and requirement of this by-law shall be separately valid and enforceable.

READ A FIRST, SECOND AND THIRD TIME AND PASSED ON THIS ____ DAY OF FEBRUARY 2011.

_____ ,

MAYOR

CLERK

Schedule "A" of By-law 15-2011**Capital Rate**

Buildings that connect to the municipal systems on Dawley Drive shall be charged the following capital rate:

Effective Date	Cost per <i>sewer unit</i>	Additional Cost per <i>sewer unit</i> as per By-Law 14-2011	
		Existing building	New Building
January 1 -December 31, 2011	\$8,597.50	\$4,514.98	\$5,516.94
January 1 - December 31, 2012	\$8,812.44	\$4,514.98	\$5,674.17
January 1 - December 31, 2013	\$9,076.81	\$4,514.98	\$5,844.39
January 1- December 31, 2014	\$9,349.11	\$4,514.98	\$6,019.72
January 1- December 31, 2015	\$9,610.88	\$4,514.98	\$6,188.27
January 1 -December 31, 2016	\$9,697.37	\$4,514.98	\$6,243.96
January 1 - December 31, 2017	\$9,901.01	\$4,514.98	\$6,375.08
January 1 – December 31, 2018	\$10,029.72	\$4,514.98	\$6,457.96
January 1 – December 31, 2019	\$10,280.47	\$4,514.98	\$6,619.41
January 1 – December 31, 2020	\$10,455.23	\$4,514.98	\$6,731.93
January 1 – December 31, 2021	\$10,517.96	\$4,514.98	\$6,772.32

2011 rates passed on February 1, 2011, By-law 15-2011.

2012 rates passed on March 26, 2012, Resolution #

2013 rates passed on January 15, 2013, Resolution #16

2014 rates passed on December 10, 2013 Resolution #17

2015 rates passed on December 10, 2014 Resolution #21

2016 rates passed on December 8, 2015 Resolution #26

2017 rates passed on December 13, 2016 Resolution #12

2018 rates passed on December 12, 2017 Resolution #18

2019 rates passed on December 11, 2018 Resolution #09

2020 rates passed on December 10, 2019 Resolution #18

2021 rates passed on December 15, 2020 Resolution #



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Amendment to By-law No. 2020-23

RECOMMENDATION:

THAT the Council of the Township of North Dundas authorizes the following amendments to Allocation By-law No. 2020-23: to increase the Capacity Allocation Processing fee from \$300.00 to \$500.00, include an Infill and Basement Capacity Allocation Processing Fee of \$200.00 and add Schedule “A” – Residential Water and Sewer Allocation.

BACKGROUND:

Section 6.4 of By-Law No.2020-23 has been amended as follows:

Fee for Review of Application - Each *Capacity Allocation* application shall be accompanied by a processing fee of Five Hundred Dollars (\$500.00). Non-successful applications shall be refunded \$100.00. For infill and basement Capacity Allocation application, the processing fees shall be Two Hundred Dollars (\$200.00). The application fee shall be in addition to all other municipal development processing and permit fees.

Section 5.2 & Section 5.3 (see below) has been added.

- 5.2 The determination of what constitutes a type of dwelling unit and allocation shall be in accordance with Schedule “Ä”, attached hereto, and forming part of this by-law.
- 5.3 The number of commercial sewer units will be determined as follows:
Estimated sanitary sewage flow on Table 8.2.1.3.B of the Ontario Building Code (OBC).

OTHERS CONSULTED:

Angela Rutley
Jacob Forget
Calvin Pol

ATTACHMENTS:

By-Law 2020-23

PREPARED BY:



**Khurram Tunio, M. Eng., P. Eng.
Director of Public Works**

REVIEWED & APPROVED BY:



**Angela Rutley, BBA
CAO**

**THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS
BY-LAW No. 2020-23**

Being a By-law to Establish a Growth Management and Development Allocation Process for the Water Distribution and Sewage Treatment Systems of The Corporation of the Township of North Dundas.

WHEREAS section 11 of the *Municipal Act, 2001*, S.O. 2001, c.25 (hereinafter referred to as the “*Act*”) authorizes The Corporation of The Township of North Dundas (hereinafter the “*Township*”) to pass by-laws respecting the production, treatment, storage and distribution of water throughout the *Township*;

AND WHEREAS section 11 of the *Act* authorizes the *Township* to pass by-laws respecting the collection and treatment of sanitary sewage throughout the *Township*;

AND WHEREAS the *Township* desires to establish a Growth Management Development Allocation System in the *Township* to direct the allocation of *Water Capacity* and *Sanitary Sewer Capacity* in accordance with the purpose and intent of the Official Plan of the United Counties of Stormont, Dundas and Glengarry.

AND WHEREAS the availability of *Water Capacity* and *Sanitary Sewer Capacity* may vary from year to year, it is in the best interests of the residents of the *Township* that *Water Capacity* and *Sanitary Sewer Capacity* be allocated in a manner which is consistent with the *Township*'s development priorities as set out herein;

AND WHEREAS the *Township* deems it appropriate that the issuance of all building permits in the Villages of Chesterville and Winchester shall be subject to the provisions of this By-law;

NOW THEREFORE the *Council* of The Corporation of the Township of North Dundas enacts as follows:

1.0 SHORT TITLE

1.1 That this By-law shall be known as the “Water and Sanitary Sewer Capacity Allocation By-law”.

2.0 DEFINITIONS

2.1 For the purposes of this By-law, the following definitions shall apply:

Act means the *Municipal Act, 2001*, S.O. 2001, c.25.

Annual Development Allocation shall mean the total number of units of *Water Capacity* and the total number of units of *Sanitary Sewer Capacity* which may be allocated for development.

Applicant means the *Owner* of *Land* or the authorized agent of the *Owner*.

Capacity Allocation means the granting of *Water Capacity*, *Sanitary Sewer Capacity* or both.

Capacity Allocation Date means the date which is sixty (60) days after any Application Date or such other date to which the *Capacity Allocation Date* may be extended in accordance with this By-law.

Council means the Municipal Council of The Corporation of the Township of North Dundas;

Development Application means an application for the development of *Land* or building(s) which shall include but not be limited to:

- a) an application for a connection to the *Water Distribution System* or *Sewage Treatment System* for an existing building or structure;
- b) the approval of a condominium under Section 50 of the Condominium Act or draft approval of a plan of subdivision under Section 50 of the Planning Act;
- c) any change in use that requires an occupancy permit under Section 34(6) of the Planning Act and which increases the demand for *Water Capacity* and/or *Sanitary Sewer Capacity*;
- d) approval of a Site Plan Agreement under Section 41(7) of the Planning Act which increases the demand for *Water Capacity* and/or *Sanitary Sewer Capacity*; or
- e) any other development of a property which requires connection to the *Water Distribution System* or the *Sewage Treatment System* or an increase in the demand for *Water Capacity* or *Sanitary Sewer Capacity* which has not already been provided for in this By-law;

Land shall mean any existing lot of record and any new lot of record created by Transfer/Deed of Land, Plan of Subdivision or Condominium Plan;

Owner or Owners means the person(s) who is/are the registered Owner(s) of *Land*;

Project means a development Project which requires *Water Capacity*, *Sanitary Sewer Capacity* or both;

Sanitary Sewer Capacity means a unit of capacity within the *Sewage Treatment System* as defined in Schedule A of the By-law;

Sewage Treatment System means the sanitary sewage collection and treatment system of the *Township*;

Township shall mean the Corporation of The Township of North Dundas;

Water Capacity means a unit of capacity within the *Water Distribution System* as defined in Schedule A of the By-law;

Water Distribution System means the water distribution system of the *Township*;

3.0 BACKGROUND STATEMENTS

- 3.1 It is the intent of this By-law that the *Township* attain a sustained steady rate of development and associated population growth in the *Township* within the available capacity of the water and sanitary sewer systems.
- 3.2 The water and sanitary sewer infrastructure are approaching maximum capacity and as such a development allocation system must be maintained.
- 3.3 All future development in the *Township* shall be required to satisfy the requirements of this by-law to ensure proper use of the available *Water Capacity* and *Sanitary Sewer Capacity* as determined from time to time.
- 3.4 There is an existing and growing competition for capacity between residential and non-residential development in the urban area.

- 3.5 The *Township* shall encourage development that can provide the necessary infrastructure and services to accommodate new residential development and attract new non-residential development. The *Township* shall make use of available infrastructure and minimize the need for public funds to assist with new development whenever possible.
- 3.6 There is a need for affordable housing in the urban area for those employed in the community and for groups such as the elderly persons.

4.0 WATER DISTRIBUTION SYSTEM AND SEWAGE TREATMENT SYSTEM CAPACITY

- 4.1 The *Township* shall, at least annually, determine the available units of *Water Capacity* and *Sanitary Sewer Capacity*. The available *Water Capacity* and *Sanitary Sewer Capacity* shall represent the *Annual Development Allocation*.
- 4.2 After the effective date of this By-law, no application for a building permit which requires *Water Capacity* or *Sanitary Sewer Capacity* shall be accepted by the *Township* until such *Applicant* receives a *Capacity Allocation* in accordance with the provisions of this By-law.
- 4.3 After the effective date of this By-law, no approval or draft approval (as applicable) for a *Development Application* which requires *Water Capacity* or *Sanitary Sewer Capacity* shall be granted by the *Township* until such *Applicant* receives a *Capacity Allocation* in accordance with the provisions of this By-law.

5.0 DETERMINATION OF THE DEVELOPMENT ALLOCATION

- 5.1 On or before January 31 of each year, *Council* shall approve the *Annual Development Allocation*.
- 5.1.1 The Public Works Department shall present a report to *Council* which provides the appropriate *Annual Development Allocation* to be available for development.
- 5.1.2 Staff shall not, in any year, recommend the allocation of *Water Capacity* or *Sanitary Sewer Capacity* which exceeds the available capacity set out in the *Annual Development Allocation*.
- 5.2 The determination of what constitutes a type of dwelling unit and allocation shall be in accordance with Schedule "A" attached hereto and forming part of this by-law.
- 5.3 The number of commercial sewer units will be determined as follows:
Estimated sanitary sewage flow on Table 8.2.1.3.B of the Ontario Building Code (OBC).

6.0 APPLICATION PROCEDURES

- 6.1 Where the development of land or building(s) is being proposed as defined in the *Development Application*, it shall obtain approval in accordance with this by-law prior to the issuance of the building permit.
- 6.2 Application for *Capacity Allocation* - The application for *Capacity Allocation* shall be completed by using the designated form available from the *Township*.
- 6.3 Determination of Completeness or Request for Additional Information - The Public Works Department shall review for completeness all applications for

Capacity Allocation. Within ten (10) days after the Application Date, the Public Works Department shall advise the *Applicant* if the application is deemed complete or incomplete. Should the application be deemed incomplete, the Public Works Department shall indicate on the notice what additional information is required to properly evaluate the application. Failure to submit the requested additional information within thirty (30) days from the date the notice is mailed shall disqualify the application.

- 6.3.1 If any question arises as to the nature of any *Ownership* interest for any property, the *Applicant* shall provide all requested information to determine the nature of such *Ownership* interest.
- 6.4 Changes in *Capacity Allocation* Application - Once submitted, an *Applicant* may not alter its application to request an increased number of *Capacity Allocations* but may reduce the number of *Capacity Allocations* being sought.
- 6.5 Fee for Review of Application - Each *Capacity Allocation* application shall be accompanied by a processing fee of Five Hundred Dollars (\$500.00). Non-successful applications shall be refunded \$100.00. For infill and basement *Capacity Allocation* application, the processing fees shall be Two Hundred Dollars (\$200.00). Applications for *Capacity Allocation* for not more than one (1) unit of either *Water Capacity* or *Sanitary Sewer Capacity*, or both, shall be Two Hundred Dollars. The application fee shall be in addition to all other municipal development processing and permit fees.
- 6.6 *Capacity Allocations* Recommendations and Decision
- 6.6.1 Within sixty (60) days of receipt of the completed Application, the Public Works Department shall provide notification of approval or denial of the application by *Council*.
- 6.6.2 Where additional time is needed to fully evaluate the applications, the date described in 6.5.1 above may be extended for up to thirty (30) days.
- 6.6.3 Staff shall determine the available *Capacity Allocations* and make a recommendation to *Council*. Allocation decisions in this regard shall be final.
- 6.7 Withdrawal of Application - An *Applicant* may elect to withdraw an application for *Capacity Allocation* at any time prior to *Council*'s decision on the *Capacity Allocation* and 50% of the application fee paid by the *Applicant* shall be refunded. Where an application is withdrawn after the *Capacity Allocation* has been made, the application fee shall not be refunded.
- 6.8 Allocation to *Land* and *Project*- As of the date of adoption of this By-law, a *Capacity Allocation* can only be allocated to the *Land* and the *Project* which is the subject of the application and not to an *Applicant* or to another *Project* on the same *Land*. A *Capacity Allocation* is not allocated to the *Owner* of *Land* and as such is not transferable.

EVALUATION OF APPLICATIONS FOR CAPACITY ALLOCATIONS

- 6.9 When evaluating the *Projects* which should receive *Capacity Allocation*, the Planning and Public Works Department and *Council* shall evaluate the applications for *Capacity Allocation* taking into consideration the following factors which are set out in no particular order:

- 6.9.1 priorities as set out in the Official Plan of the United Counties of Stormont, Dundas and Glengarry;
- 6.9.2 the availability of existing infrastructure;
- 6.9.3 the availability of services (schools, churches, emergency services etc...);
- 6.9.4 the availability of existing commercial development;
- 6.9.5 *Projects* which do not require any financial contribution from the *Township*;
- 6.9.6 the reduction of the *Township's* financial obligations in *Projects*;
- 6.9.7 the *Township's* economic priorities; and
- 6.9.8 any other factor which is deemed relevant by *Council*.
- 6.9.9 affordable housing as defined by Provincial Policy Statement
- 6.9.10 significant new employment opportunities other than construction or “spin off” jobs;

7.0 EXPIRATION OF CAPACITY ALLOCATION

- 7.1 All *Capacity Allocations* granted pursuant to this By-law shall expire two (2) years after the date it is awarded unless:
 - 7.1.1 a building permit has been applied for in relation to such *Capacity Allocation*; or
 - 7.1.2 an agreement has been entered into with respect to the particular *Development Application* and construction of services (if applicable) has commenced.

The expiration of the *Capacity Allocation* shall apply to all *Water Capacity* and/or *Sanitary Sewer Capacity* allocated to a *Project*.

- 7.2 Where a building permit has been applied for, the *Capacity Allocation* shall expire in conjunction with the expiration of the building permit.
- 7.3 *Council* may, in its sole discretion, grant a temporary exemption to the provisions of sections 8.1 and 8.2 of this By-law where a *Development Application* has been appealed to the Local Planning Appeal Tribunal “LPAT” or to a court of competent jurisdiction. In such event, the *Capacity Allocations* in question shall expire six (6) months after such appeals have been finally disposed of.
- 7.4 *Council* may, in its sole discretion, grant a temporary exemption to the provisions of sections 8.1 and 8.2 of this By-law where *Council* deems appropriately by resolution.
- 7.5 Requests for a temporary exemption shall be subject to a Two Hundred Dollar (\$200.00) fee.

8.0 TIMING FOR USE OF THE ALLOCATION

- 8.1 No *Owner* shall receive additional *Water Capacity* and *Sanitary Sewer Capacity* until such time as building permits have been issued for 80% of the previous allocations to the *Land* or *Project*. At that time the *Owner* shall

be entitled to request additional units of water and wastewater subject to this policy.

- 8.2 *Council* may, in its sole discretion, grant a temporary exemption to the provisions of sections 9.1 of this By-law based on past performance of the developer.

9.0 PRIOR ALLOCATIONS OF WATER CAPACITY AND SANITARY SEWER CAPACITY

- 9.1 All allocations of *Water Capacity* and/or *Sanitary Sewer Capacity* granted by the *Township* prior to the effective date of this By-law shall expire two (2) years after the effective date of this By-law unless:

- 9.1.1 a building permit has been applied for in relation to such *Capacity Allocation*; or
- 9.1.2 an agreement has been entered into with respect to the particular *Development Application* and construction of services (if applicable) has commenced.

The expiration of the allocation shall apply to all *Water Capacity* and/or *Sanitary Sewer Capacity* allocated to a particular *Project*.

- 9.2 Where a building permit has been applied for, the allocation shall expire in conjunction with the expiration of the building permit.
- 9.3 *Council* may, in its sole discretion, may grant a temporary exemption to the provisions of sections 10.1 of this By-law.
- 9.4 No person shall exceed the allocated capacity that was granted.
- 9.5 In the event that the allocations to the *Land* or *Project* is being altered due to a change in the type of building, an application with accompanied fees shall be submitted to the Department of Public Works for review prior to the issuance of the building permit. The Director of Public Works may redistribute the current allocation but cannot increase the allocation to that phase without approval from Council.

10.0 REVIEW AND MONITORING

- 10.1 An annual review report shall be presented by the Director of Public Works Department at the end of each calendar year. The report will provide the number of *Capacity Allocations* (detailing residential, commercial, industrial and institutional). Residential allocation is as per Schedule A.

11.0 EXEMPTIONS

- 11.1 This By-law shall not apply to:
- 12.1.1 The construction of accessory buildings which may include but not be limited to detached garages, barns, garden sheds and similar buildings provided that there is no increase in the demand for water or sewage capacity from the amount existing at the time of the application for a building permit.
- 12.1.2 Any change in use or renovation, alteration, addition, intensification or enlargement of a building where there is no increase in the demand for water or sewage capacity from the amount existing at the time of the application for a building permit.

12.2 Redevelopment - An *Owner* or *Applicant* who has secured the necessary approvals, may demolish and replace an existing building or restore, reconstruct or replace an established structure in accordance with applicable by-laws and resolutions and not be subject to the provisions of this by-law provided that upon redevelopment of the said building, there shall be no increase in the demand for water or sewage capacity.

12.2.1 The exemptions set out in Subsection 12.1 of this By-law shall only be available for a period not exceeding three (3) years from the date of issuance of a demolition permit failing which it shall be deemed to be a new construction and a new *Capacity Allocation* shall be required in order for such redevelopment to proceed.

12.2.2 Where a redevelopment or change in use results in unused capacity from that which was used prior to the redevelopment or change in use, the unused capacity shall remain available to the *Land* for a period of three (3) years.

12.3 Any dispute as to whether a use or building is entitled to an exemption or part-exemption shall be determined by *Council* in its sole discretion.

13.0 OTHER BY-LAWS AND REGULATIONS

13.1 Nothing in the By-law shall exempt any person from complying with the requirements of any other applicable By-law, agreement or legislation.

14.0 APPLICATION

14.1 This By-law shall be applicable to all *Land* within the Urban Service Limits of Winchester and Chesterville as contained in the Official Plan of the United Counties of Stormont, Dundas and Glengarry.

15.0 EFFECTIVE DATE

15.1 This By-law shall come into force and effect on the date of its passing.

READ and passed in Open *Council*, signed and sealed this 15th day of May 2020.

Amended this 15th day of December, 2020 by Resolution No. _____.

MAYOR

CLERK

Schedule "A"

To By-law No. 2020-23

RESIDENTIAL WATER & SEWER ALLOCATION

Capital Charges	Singles Semis & Townhomes	Apartments 2 Bedrooms +	Apartment-Bachelor and 1 Bedroom Units	Other Multiples	Senior-Oriented Dwelling Unit	Special Care/Special Needs Dwelling Units
Average population per dwelling	3	2.2	1.4	2.4	1.45	0.5
Water Allocation (Average Day Demand) m3/day	1.05	0.77	0.49	0.84	0.51	0.18
Water Allocation (Maximum Day Demand) m3/day	2.1	1.54	0.98	1.68	1.02	0.36
Sewer Allocation (Day Demand) m3/day	2	1.47	0.93	1.6	0.97	0.33
Water Unit (1-unit equivalent to 2.1 m3/day)	1	0.73	0.47	0.8	0.49	0.17
Sanitary Unit (1-unit equivalent to 2 m3/day)	1	0.733	0.465	0.80	0.485	0.165



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	By-Law No. 2020-55 Water Sewer Rate By-Law

RECOMMENDATION:

That By-law No. 2020-55, being a By-law for Fixing Rates for the Supply of Water/Sewer Services be read a first and second time in Open Council this 15th day of December, 2020.

BACKGROUND:

By-law 2020-55 includes the proposed water/sewer rate increase for the Villages of Chesterville and Winchester. The rate increase is based on The Township of North Dundas' Drinking Water and Wastewater Study that was completed by Ken Sharratt of Sharratt Water Management Ltd. in July 2020. We have given notice to the public and will bring the By-law back for third and final reading at the Council meeting on January 19, 2021.

OPTIONS AND DISCUSSION:

1. **That By-Law No. 2020-55 be read a first and second time in Open Council** – recommended
2. **Keep the rates the same for 2021** - not recommended.
3. **Change the rates to a different rate** - not recommended.

FINANCIAL ANALYSIS:

Rates are from the Township of North Dundas Drinking Water and Wastewater Study that was completed by Ken Sharratt Water Management Ltd. in 2020. Staff will incorporate the rate increase into the 2021 Water/Sewer Budget.

OTHERS CONSULTED:

Ken Sharratt of Sharratt Water Management Ltd.

ATTACHMENTS:

By-law No. 2020-55

Ken Sharratt- Executive Summary Report pages 3 & 4

PREPARED BY: Mary Lynn Plummer

RECOMMENDED BY:



**Khurram Tunio, M. Eng., P. Eng.
Director of Public Works**

REVIEWED & APPROVED BY:



**Angela Rutley, BBA
CAO**

THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS

BY-LAW NO. 2020-55

**BEING A BY-LAW FOR FIXING RATES FOR THE SUPPLY OF
WATER/SEWER SERVICES**

WHEREAS Section 391 of the Ontario Municipal Act, 2001, authorizes a municipality to pass by-laws imposing fees or charges on persons for services or activities provided or done by or on behalf of it.

AND WHEREAS the *Ontario Municipal Act, 2001*, S.O.2001, c.25, s.81, authorizes a municipality to shut off the supply of a public utility if the fees or charges payable by the owners or occupants of the land for the supply of the public utility are overdue;

AND WHEREAS the *Ontario Municipal Act, 2001*, S.O.2001, c.25, s.398(2), authorizes the collection of water and sewer rates in the same manner as municipal taxes.

NOW THEREFORE Council of the Corporation of the Township of North Dundas enacts as follows:

1. The rates, as set out in Schedules "A" through "B" attached hereto and forming part of this by-law, are hereby adopted and shall be in effect Jan.1, 2021.
2. Water/Sewer billings shall be issued quarterly with the exception of commercial large users, as determined by Municipal staff.
3. Commercial large users, as determined by Municipal staff, shall be billed monthly.
4. A monthly surcharge of one and one quarter percent shall be added to the bill if not paid on or before the due date.
5. All former by-laws or resolutions contrary to and inconsistent with all or any part of this By-Law (2020-55) are hereby repealed including By-Law 2019-62.

READ A FIRST AND SECOND TIME IN OPEN COUNCIL THIS 15TH DAY OF DECEMBER 2020.

MAYOR

CLERK

READ A THIRD AND FINAL TIME IN OPEN COUNCIL, SIGNED AND SEALED THIS 19th DAY OF JANUARY 2021.

MAYOR

CLERK

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THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS

BY-LAW NO. 2020-55

Schedule "A"

Village of Winchester and Chesterville
Water/Sewer Rates**WATER SERVICE RATES**

1. Water consumption in the Village of Winchester and Chesterville shall be measured by water meters.
2. The following fixed fee per year shall be charged for each meter depending on size:

Meter Size	Fixed Annual Fee
0.60 inches	\$111.93
0.75 inches	\$111.93
1.0 inches	\$156.70
1.5 inches	\$201.47
2.0 inches	\$324.59
2.5 inches	\$783.48
3.0 inches	\$1,231.19
4.0 inches	\$1,566.97
6.0 inches	\$2,350.45

3. In addition to the fixed fee, all accounts shall be charged \$1.16 per cubic meter for water.
4. In the event of a dispute between the water remote reading and the actual water meter reading, the reading on the actual water meter shall be deemed the correct reading.
5. Where multiple unit buildings do not have individual metering, *the landlord* shall be charged the current rates for water and sewer on the metered water volume.

SEWER SERVICE RATES

- a) Sewer fees shall be invoiced on the water bills at the rate of 167% of the water rate including clauses 2 and 3 above except as noted in section b to c below.
- b) It has been established that Parmalat at 490 Gordon St. returns only 10,000 cubic meters to the sewer system per year. Based on this amount they shall be billed \$19,372.00 per year for unmetered sewage on the basis of \$1,614.33 per month in lieu of the regular charges in a) above.
- c) Properties that are only billed for sewer will be billed based on their private water use including the applicable fixed fee from section 2 above.

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THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS

BY-LAW NO. 2020-55

Schedule "B"

Miscellaneous Charges

i)	Water and/or Sewer Connection Application	\$550.00
ii)	Miscellaneous sale of water to individuals or companies not connected to the water system	\$5.00 per cubic meter
iii)	Account Setup Charge	\$9.00+HST
iv)	Manual Water Read Charge	\$25.00+HST
v)	Data Logger Download Charge	\$25.00+HST
vi)	Collection Charge (24 hour shut off notice)	\$6.75+HST
vii)	Disconnection Charge	\$40.00+HST
viii)	Reconnection Charge	\$40.00+HST
ix)	NSF Charge	\$25.00
x)	Water/Sewer Customer Deposit	\$200.00

1. EXECUTIVE SUMMARY

The Township retained the services of Sharratt Water Management Ltd (SWML) to prepare rates for the Township's water and wastewater systems and to prepare a financial plan for the Township's water system that meets the requirements of Ontario Regulation 453/07. The financial plan is needed to renew the Townships drinking water system operators' license. The preparation of a financial plan has been prepared as a three-step process:

1. SWML has identified the future capital and major maintenance needs necessary to renew the assets in the water system to 2118, as well as their timing and costs. The asset renewal for the wastewater system was also projected to 2118.
2. Sharratt Water Management Ltd. has taken the capital renewal needs and the projected operating costs, inflated them to future cost, and developed full cost rates for the water wastewater system. The rates that are proposed and the process used to develop them are set out in this report. Wastewater rates were also developed using the same methodology as for water.
3. Water Financial Plan – This is based on the water portion of components 1 and 2 above, as well as the Township's listing of tangible capital assets. SWML will project the amortization of these assets forward to 2026. The water financial plan is set out in a separate report.

The communities of Winchester and Chesterville are 12 km apart, located in the Township of North Dundas, 60 km southeast of Ottawa. The Township operates water and wastewater systems in Winchester and in Chesterville. Water in both communities is provided by wells, and the two communities are connected with a water main. Wastewater treatment in both is provided by separate lagoon systems. The Township has common water and wastewater rates for users in both communities.

1.1 Water Rates

A water rate is proposed that would be applicable to all users commencing January 1, 2021. This is set out in table 1.1:

Table 1.1 Proposed North Dundas Water System Rates 2021-2025 Inflated and Constant \$

Fixed Charge by Meter Size			2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Inches	5/8X3/4	MM	17	\$107.76	110.34	111.93	115.97	120.68	125.57	130.67	135.98	141.52	147.28	153.29
	3/4		19	\$107.76	110.34	111.93	115.97	120.68	125.57	130.67	135.98	141.52	147.28	153.29
	1		25	\$150.84	154.47	156.70	162.36	168.95	175.80	182.94	190.38	198.13	206.20	214.60
	1.5		37.5	\$193.92	198.60	201.47	208.75	217.22	226.03	235.21	244.77	254.73	265.11	275.92
	2		50	\$312.36	319.97	324.59	336.32	349.96	364.16	378.95	394.36	410.40	427.12	444.53
	2.5		62.5	\$753.96	772.35	783.48	811.82	844.73	879.00	914.71	951.89	990.63	1,030.98	1,073.01
	3		75	\$1,184.76	1,213.69	1,231.19	1,275.71	1,327.43	1,381.29	1,437.40	1,495.83	1,556.71	1,620.11	1,686.16
	4		100	\$1,507.80	1,544.70	1,566.97	1,623.63	1,689.45	1,758.01	1,829.41	1,903.79	1,981.26	2,061.96	2,146.03
	6		150	\$2,262.96	2,317.04	2,350.45	2,435.45	2,534.18	2,637.01	2,744.12	2,855.68	2,971.89	3,092.94	3,219.04
Cost per Cubic Metre - Inflated \$				1.10	1.12	1.16	1.20	1.24	1.28	1.33	1.37	1.44	1.51	1.58
Cost per M3 2019\$				1.10	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.18	1.21	1.23

The above rates represent an increase of 3.5% per year from 2021 to 2026. The rate is projected to finance future capital projects from 2021 to 2029, and beyond. It also covers projected operating cost increases and it will enhance the capital reserves. Some of the water bills that are associated with this rate are set out below in table 1.2:



Table 1.2 Annual Water Bills with the Current/Proposed Water Rates 2021-2025 Inflated \$

Hypothetical User	2019	2020	2021	2022	2023	2024	2025
Single Person with 70 M3/Year	\$185	\$189	\$193	\$200	\$207	\$215	\$223
Couple with 125 M3 per Year	\$245	\$250	\$257	\$265	\$275	\$286	\$296
Family 300 M3 per Year	\$438	\$446	\$459	\$475	\$492	\$510	\$528
Coffee Shop (Busy) 1000 m3/Yr	\$1,251	\$1,273	\$1,313	\$1,358	\$1,406	\$1,456	\$1,509
Large Industrial User 500,000m3/Yr	551,185	560,709	579,884	610,859	644,306	679,417	716,272

Water bills increase at about 3% per year including inflation of 2.5-3%. A low volume user of 70 m3 per year will pay \$189 in 2020 and \$223 in 2025. A family using 300 cubic metres per year will pay \$446 in 2020 and \$528 in 2025. A large coffee shop using 1000 cubic metres per year will pay \$1,273 in 2020 and \$1,509 in 2025. The large industrial user will pay \$560,709 in 2020, accounting for 50% of all water user fees, and \$716,272 in 2025.

1.2 Wastewater Rates

Wastewater charges are commonly collected by placing a surcharge on water use by those connected to the wastewater system. This approach makes sense, as the wastewater a user directs to the wastewater treatment system is generally related to the amount of water bought by that user. Winchester has utilized this approach in the past, and it is proposed that the Township utilize this approach in the future.

Table 1.3 Proposed Wastewater Surcharge on Water Bills 2020-2025 Per Cent

	2019	2020	2021	2022	2023	2024	2025
Wastewater Surcharge	161%	165%	167%	167%	167%	167%	168%

The surcharge is calculated by determining the amount of water returned to the system. The large industrial user in Winchester has its own wastewater treatment facility and returns only 10,000 cubic metres to the Township wastewater system. The calculation is set out in table 7.5 in this report. The projection of future capital renewal has meant that future rate increases are needed, if reserves are to be maintained, and debt is to be avoided.

Table 1.4 Wastewater Bills with the Proposed Wastewater Surcharge 2020-25 Infl. \$

Hypothetical User	2019	2020	2021	2022	2023	2024	2025
Single Person with 70 M3/Year	\$297	\$311	\$321	\$333	\$346	\$360	\$375
Couple with 125 M3 per Year	\$395	\$413	\$427	\$442	\$460	\$478	\$497
Family 300 M3 per Year	\$705	\$736	\$764	\$791	\$822	\$853	\$886
Coffee Shop (Busy) 1000 m3/Yr	\$2,014	\$2,102	\$2,187	\$2,263	\$2,349	\$2,438	\$2,530
Large Industrial User 10,000 m3/Yr	\$22,565	\$23,567	\$24,479	\$25,332	\$26,309	\$27,321	\$28,372



ACTION REQUEST – Public Works	
To:	Mayor and Members of Council
Date of Meeting:	December 15, 2020
Subject:	Capital Charges By-law No. 2020-59

RECOMMENDATION:

THAT By-law No. 2020-59, being a By-law to set Capital Charges for Water and Sanitary Sewer Connections, be read a first time in Open Council, this 15th day December, 2020.

BACKGROUND:

Township of North Dundas' population connected to municipal water and sewer is anticipated to increase from 4,355 (2019) to 8,399 (20+ years). The technical memorandum for the water and wastewater servicing upgrades has identified the need for infrastructure improvements to accommodate growth to the year 2040 within the villages of Winchester and Chesterville.

In order to accommodate infrastructure improvements, capital charges for water and sanitary sewer connections for future applications will need to be increased. Technical Memorandum for Water and Wastewater Servicing has identified approximately \$35M for additional infrastructures, as per attached final Servicing Study. This does not include approximately \$10M for Water Capacity expansion either through wells or connection with an adjacent municipality.

The infrastructure improvements will require amendment to By-law No. 60-2014 - Water Sewer Capital Charge By-law to finance some of the costs for servicing needs for growth. For the year 2021, the following capital charge options were considered:

Option 1: (0-5 years)

Technical memorandum on Water and Wastewater Servicing Study has identified an additional 275 units over the next 5-years. The Study has identified approximately \$13.6M for water and wastewater servicing needs, to accommodate growth during this period. The following provides cost breakdown for infrastructure improvements:

CONCEPTUAL LEVEL UPGRADES		Class 'D' Opinion of Probable Cost (OPC)
Type	Description	
UPGRADES 0 to 5 Years		
Sewage Pumping Station Upgrades	Option 2A – Same Main St. SPS upgrade as Option 1, but forcemain outlet extended along Main St., east of Gladstone St.	\$4.1M
	Options 2A and 2B – Bailey Ave. SPS building and equipment replacement at end of service life	\$750,000
Sewage Treatment System	Specialized treatment upgrades to overcome existing operational constraints of the wastewater treatment systems to achieve rated capacity	\$7M
	Total Sewer	\$11.85M
Watermain Upgrades	New 300 mm diameter watermain loop approximately 1030 m (excluding 750 m through new development property) of 300 mm diameter watermain connection between Main St. West and Fred St.	\$750,000
Watermain Storage and Pumping Station Upgrades	Chesterville Reservoir - 450 m ³ water storage expansion and pumping station upgrade	\$1M
	Total Water	\$1.75M

With anticipated benefiting development of 275 units over the next three years, this translates into approximately \$51,900 minimum capital charge for an average single detached residential unit based on 1.05 water allocation unit (average day demand).

Option 2: (0-3 years)

Currently the Township has the available potable water capacity / allocation to accommodate growth for approximately 350 residential units for the next 3 years. However, sewer improvements along Main Street as well as increase in reservoir capacity in Chesterville are required for approximately \$5.1M, mostly to accommodate growth during this period. Following provides cost breakdown for infrastructure improvements:

CONCEPTUAL LEVEL UPGRADES		Class 'D' Opinion of Probable Cost (OPC)
Type	Description	
UPGRADES 0 to 3 Years		
Sewage Pumping Station Upgrades	Option 2A – Same Main St. SPS upgrade as Option 1, but forcemain outlet extended along Main St., east of Gladstone St.	\$4.1M
Sewage Treatment System	Specialized treatment upgrades to overcome existing operational constraints of the wastewater treatment systems to achieve rated capacity	\$7M
	Total Sewer	\$4.1M
Watermain Storage and Pumping Station Upgrades	Chesterville Reservoir - 450 m ³ water storage expansion and pumping station upgrade	\$1M
	Total Water	\$1.0M

The Township is currently receiving higher than anticipated requests / inquiries for development. There is potential that approximately 350 residential units may come online over the next three years. Hence, it is recommended to increase the capital charge based on short-term scenario to allow for gradual increase. This will allow time to analyze growth and refine water capacity options to develop capital charges beyond a three-year period. Thus, with anticipated benefiting development of 350 residential units over the next three years, the capital charge for water and sewer improvements translates into approximately \$15,300 for an average single detached residential unit. This is based on 1.05 water allocation unit (average day demand).

Option 3: (0-20 years)

Technical memorandum on Water and Wastewater Servicing Study has identified a total of 896 units over the next 20 years. The Study has identified approximately \$35M for water and wastewater servicing needs, to accommodate growth during this period. The following provides cost breakdown for infrastructure improvements:

CONCEPTUAL LEVEL UPGRADES		Class 'D' Opinion of Probable Cost (OPC)
Type	Description	
UPGRADES 0 to 5 Years		
Sewage Pumping Station Upgrades	Option 2A – Same Main St. SPS upgrade as Option 1, but forcemain outlet extended along Main St., east of Gladstone St.	\$4.1M
	Options 2A and 2B – Bailey Ave. SPS building and equipment replacement at end of service life	\$750,000
Sewage Treatment System	Specialized treatment upgrades to overcome existing operational constraints of the wastewater treatment systems to achieve rated capacity	\$7M
	Total Sewer	\$11.85M
Watermain Upgrades	New 300 mm diameter watermain loop approximately 1030 m (excluding 750 m through new development property) of 300 mm diameter watermain connection between Main St. West and Fred St.	\$750,000
Watermain Storage and Pumping Station Upgrades	Chesterville Reservoir - 450 m ³ water storage expansion and pumping station upgrade	\$1M
	Total Water	\$1.75M
UPGRADES 5 to 10 Years		
	Options 1, 2A and 3A – Main St. W, Bailey Ave. SPS outlet sewers: Upgrade 155 m section of sanitary sewer with 300 mm diameter sewer	\$200,000
	Total Sewer	\$200,000

Watermain Upgrades	St. Lawrence St. 300 mm diameter watermain upgrade between the Winchester Reservoir and Pumping Station and Gordon Street (current extent of 300 mm diameter watermain from the Winchester elevated tank). Accompanies Winchester water storage and pumping station upgrades.	\$1.5M
Water Storage and Pumping Station	Water storage expansion of 1,400 m ³ and booster pump upgrade at the Winchester Reservoir and Pumping Station.	\$2M
	Total Water	\$3.5M
UPGRADES 10 to 20 Years		
Sanitary Sewer Capacity Upgrades	Options 1 to 3 – Main St. W. upstream of Main St. SPS: Upgrade 200 m section of sanitary sewer with 300 mm diameter sewer	\$250,000
	Options 1 to 3 – Easement: Upgrade 51 m section of sanitary sewer with 300 mm diameter sewer. To be confirmed in future based on field survey and actual future wastewater flows	\$75,000
Sewage Pumping Station Upgrades	Options 1 to 3 – Ottawa St. SPS, increase capacity (current ECA capacity 90 L/s) to accommodate the build-out demand scenario (127 L/s from 90 L/s). It is assumed equipment upgrades can be accommodated in the existing building footprint and forcemain.	\$750,000
Sewage Treatment System	Increase lagoon treatment capacity by adding end of pipe treatment such as a Moving Bed Bioreactor (MBBR) and/or increase existing lagoon depth to increase storage volume. Timing and remaining treatment capacity to be periodically reviewed in the future based on receiving wastewater flow as growth occurs. * Portion of work maybe required within 3-5 years	\$15M
	Total Sewer	\$16.075M
UPGRADES BUILD-OUT		
Watermain Upgrades	Main St W. upgrade watermain to 300 mm diameter from Wellings of Winchester to St. Lawrence St. Establishes a trunk watermain loop through Winchester to improve fire flow availability.	\$1.5M
	Fred St. upgrade watermain to 300 mm diameter from Fred St. Easement connection to St. Lawrence St. Establishes a trunk watermain loop through Winchester to improve fire flow availability.	\$500,000
TOTAL OVERALL CONCEPTUAL-LEVEL OPC		\$35M

The above table does not include approximately \$10M for Water Capacity expansion, which is currently under Environmental Assessment stage. Hence for analysis purposes, total servicing cost is assumed to be approximately \$45M.

With anticipated benefiting development of 896 units over the next three years, this translates into approximately \$52,700 capital charge for an average single detached residential unit based on 1.05 water allocation unit (average day demand). However, it is anticipated that additional units can be accommodated with infrastructure improvements mentioned above, hence the capital cost per dwelling can be lowered. However, at this time, it may be premature to develop total number of units, until Environmental Assessment for water capacity expansion is concluded which will provide a clear picture on total available water allocation / units for future needs.

Consultation:

Following communication will be carried out as part of implementation of capital charge By-law:

1. December 15, 2020 and January 19, 2021 Council meetings, first and second reading of the By-law.
2. Letters will be mailed out to owners of development properties and interested developers.

OPTIONS AND DISCUSSION:

1. **Approve Option 2 with new water and sewer capital charges.** Recommended. Although the option does not account for full cost of servicing to accommodate future growth, it demonstrates Township willingness to subsidize some immediate growth and transfer additional costs to future growth when it materializes and existing customers.

FINANCIAL ANALYSIS:

There are no financial implications at this time.

ATTACHMENTS:

By-Law No. 2020-59
Servicing Study
Preferred Option

PREPARED BY:



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Director of Public Works

REVIEWED & APPROVED BY:



Angela Rutley, BBA
CAO

THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS

BY-LAW No. 2020-59

Being a by-law to set capital charges for water and sanitary sewer connections in the Township of North Dundas

WHEREAS the *Municipal Act*, S.O. 2001, c. 25, Section 11 provides that a municipality may pass by-laws respecting matters within the sphere of public utilities;

AND WHEREAS the *Municipal Act*, S.O. 2001, c. 25, Section 391 authorizes a municipality to pass by-laws imposing fees or charges on any class of persons for services or activities provided or done by or on behalf of it, and that fees or charges for capital costs related to services or activities may be imposed on persons not receiving an immediate benefit from the services or activities but who will receive a benefit at some later point in time;

AND WHEREAS the *Municipal Act*, S.O. 2001, c. 25, Section 398 authorizes the collection of water and sewer fees and charges in the same manner as municipal taxes;

AND WHEREAS the Council of the Corporation of the Township of North Dundas has approved recommendations in the Drinking Water and Wastewater System Rate Report and Drinking Water Financial Plan prepared by Sharratt Water Management Ltd for the Township's Water and Wastewater Systems that are consistent with the requirements of the *Sustainable Water and Sewage Systems Act, 2002*;

AND WHEREAS the recommendations included setting capital charges for water and sanitary sewer connections in the villages of Winchester and Chesterville to facilitate lifecycle planning, support sustainability and economic development, and provide a fair, affordable and equitable service to the users of the system;

NOW THEREFORE the Council of the Township of North Dundas enacts as follows:

1.0 Short Title

1.1 That this By-law shall be known as the "Capital Charges for Water and Sanitary Sewer Connections By-law".

2.0 Definitions

For the purposes of this By-law, the following definitions shall apply:

2.1 *Apartment* means a dwelling or residential building containing three or more dwelling units, all having a common entrance from the outside or a common hall or halls, and shall include *Back to Back and Stacked Townhouse* (2+ bedrooms), but shall not include a townhouse or row dwellings.

2.2 *Back-to-Back and Stacked Townhouse* means a building containing a minimum of six and no more than sixteen dwelling units that is divided vertically or horizontally, where each unit is divided by a common wall, including a common rear wall without a rear yard setback and whereby each unit has an independent entrance from the outside accessed through the front yard or exterior side yard;

2.3 *Bedroom* means a habitable room larger than seven square metres, including a den, study, or other similar area, but does not include a living room, dining room, bathroom or kitchen.

- 2.4** *Duplex* shall mean a building that is divided horizontally into two (2) dwelling units, each of which has an independent entrance either directly or through a common vestibule.
- 2.5** *Dwelling Unit* means one or more habitable rooms in which sanitary conveniences are provided for the exclusive use of the occupants and in which at least one but not more than one kitchen is provided, and with an independent entrance either directly from the outside of the building or through a common corridor or vestibule inside the building.
- 2.6** *Existing Residential Building* means a residential building which can be occupied and used for residential use, and has been in existence for a minimum of two years.
- 2.7** *Mixed Use* means land, building or structures used or designed or intended for a combination of non-residential uses and residential uses;
- 2.8** *Multiple Dwelling* means a residential building containing 3 or more separate dwelling units other than a town house. This definition may include a senior citizens apartment.
- 2.9** *Non-Residential Uses* means uses of land, buildings or structures for purposes other than a dwelling unit and shall include commercial, institutional, industrial uses, and other such uses and excluding agricultural uses.
- 2.10** *Residential Use* means land or buildings or structures of any kind whatsoever used, designed or intended to be used as living accommodations for one or more individuals;
- 2.11** *Row Dwelling / Townhouse* means a building or structure consisting of a series of three (3) or more dwelling units, but not more than eight (8) units in a continuous row divided vertically into separate dwelling units by a common wall above grade.
- 2.12** *Secondary Dwelling Unit* means a dwelling unit that is subsidiary to and located in the same building as an associated principal dwelling unit; and its creation does not result in the creation of a semi-detached dwelling, row dwelling or a multiple dwelling.
- 2.13** *Semi-detached* means a residential building that is divided vertically into two (2) dwelling units.
- 2.14** *Single Detached Dwelling* means a residential building consisting of only one dwelling unit.

- 2.15** *Special Care/Special Needs Dwelling* means a building where the occupants have the right to use in common, halls, stairs, yards, common rooms, and accessory buildings; which shall not have exclusive sanitary and/or culinary facilities, that is designed to accommodate persons with specific needs, including independent permanent living arrangements, and where support services such as meal preparation, grocery shopping, laundry, housekeeping, nursing, respite care and attendant services are provided at various levels. Special care/special needs dwellings include, but is not limited to retirement homes and lodges, nursing homes, charitable dwellings, accessory dwellings and group homes.
- 3.0** No new development shall be permitted to be serviced on private services (well and/or septic system) where piped municipal services are readily available, or where they could be reasonably extended, as determined by Council;
- 4.0** Prior to connection to the municipal water and/or sewer systems, the applicant shall first obtain a connection permit from the Township at the rate set out in the rate by-law;
- 5.0** Prior to connecting to the existing water and sanitary sewer mains in the Township, the applicant shall pay the capital charges as determined in Section 7.
- 6.0** With respect to any building which is already connected to either the Water Distribution System or the Sanitary Sewage Collection System, or both, and requires a Building or Change of Use Permit under the Building Code, a Water Capital Charge and/or Sanitary Sewage Capital Charge shall be payable and shall be determined as follows:
- 6.1** The Municipality shall determine the new charge payable in accordance with Section 7.
- 6.2** The Owner of land shall receive, where applicable, one of the following credits against the amount determined under 4.1:
- 6.2.1** The amount which applied to the use for the building in question which was in effect as of the date of passage of this By-Law; or,
- 6.2.2** For any land which has previously paid a Water Capital Charge or a Sanitary Sewage Capital Charge under this By-Law, the amount previously paid when such land was last assessed a Water Capital Charge or a Sanitary Sewage Capital Charge.
- 6.2.3** Where a building has been razed or demolished within the last year, the above credits apply as if the building still existed.

6.2.4 Where the credit under 4.2 exceeds the amount of the Water Capital Charge or Sanitary Sewage Capital Charge being imposed, the amount of such charge shall be zero but there shall not be any repayment to an Owner.

7.0 Water/Sewer Unit Determination:

- 7.1** *Water and Sewer units* will be allocated according on By-law No. 2020-23.
- 7.2** A *water unit* shall mean 1050 L/day average day flow or 2100 L/day maximum day flow (single detached residential dwelling unit).
- 7.3** A *sewer unit* shall mean 2000L/day sanitary sewage flow (single detached residential *dwelling unit*).
- 7.4** A *dwelling unit* means a suite operated as a single housekeeping unit, used or intended to be used as a domicile by 1 or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.
- 7.5** The number of commercial *sewer units* will be determined as follows:
Estimated sanitary sewage flow on Table 8.2.1.3.B of the Ontario Building Code (OBC) 2006
- 7.6** Notwithstanding subsections 7.1 and 7.5, the minimum number of *sewer units* shall be one (1).

8.0 First Year, Non-Residential, Capital Rate Adjustment:

Notwithstanding Section 5, for a period of one year after the start of water usage, the municipality may determine the actual amount of metered water that was used over the year and recalculate the number of *water and sewer units* and the capital charge based on this flow. A refund for overpayment or a bill for additional amounts outstanding will be issued to the property owner.

- 9.0** If any provision or requirement of this by-law, or the application thereof to any person or land shall, to any extent, be held to be invalid or unenforceable by any court of competent jurisdiction, the remainder of the by-law, or the application of it to all persons, other than those in respect of whom it is held to be invalid or unenforceable shall not be affected thereby, and each provision and requirement of this by-law shall be separately valid and enforceable.
- 10.0** If any amount charged under this by-law remains unpaid 30 days after it has been invoiced, the outstanding amount will be added to the tax roll for the property to which it applies and collected in the same manner as municipal taxes.

11.0 All former by-laws or resolutions contrary to and inconsistent with all or any part of this By-Law (2020-59) are hereby repealed including By-Law 60-2014.

READ a first time in Open Council, this 15th day of December, 2020.

MAYOR

CLERK

Schedule "A"
To By-law No. 2020-59

FEES AND CHARGES

- Capital Charge for Connections

Effective Date	Capital Charges	Singles Semis & Townhomes	Apartments 2 Bedrooms +	Apartment-Bachelor and 1 Bedroom Units	Other Multiples	Senior-Oriented Dwelling Unit	Special Care/Special Needs Dwelling Units
Jan. 1, 2021 - December 31, 2021	Water Services	\$3,000	\$2,200	\$1,400	\$2,400	\$1,450	\$500
Jan. 1, 2021 - December 31, 2021	Sewer Services	\$12,300	\$9,020	\$5,740	\$9,840	\$5,945	\$2,050

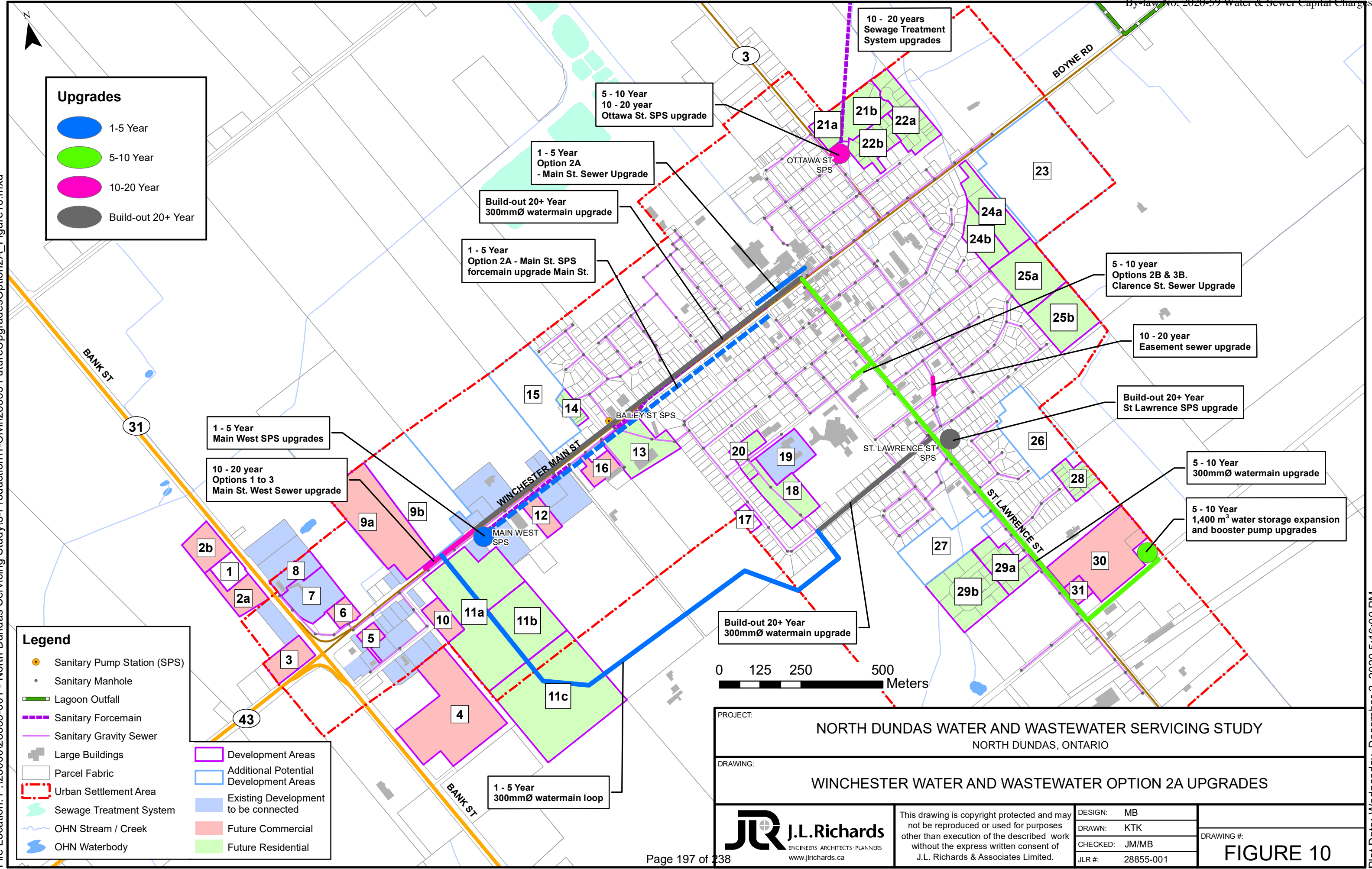
File Location: P:\28000\28855-001 - North Dundas Servicing Study\3-Production\1-Civil\28855 FutureUpgradesOption2A_Figure10.mxd

Upgrades

- 1-5 Year
- 5-10 Year
- 10-20 Year
- Build-out 20+ Year

Legend

- Sanitary Pump Station (SPS)
- Sanitary Manhole
- Lagoon Outfall
- Sanitary Forcemain
- Sanitary Gravity Sewer
- Large Buildings
- Parcel Fabric
- Urban Settlement Area
- Sewage Treatment System
- OHN Stream / Creek
- OHN Waterbody
- Development Areas
- Additional Potential Development Areas
- Existing Development to be connected
- Future Commercial
- Future Residential



PROJECT: NORTH DUNDAS WATER AND WASTEWATER SERVICING STUDY
NORTH DUNDAS, ONTARIO

DRAWING: WINCHESTER WATER AND WASTEWATER OPTION 2A UPGRADES

J.R. J.L. Richards
ENGINEERS · ARCHITECTS · PLANNERS
www.jrichards.ca

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DESIGN:	MB
DRAWN:	KTK
CHECKED:	JM/MB
JLR #:	28855-001

DRAWING #:
FIGURE 10

Plot Date: Wednesday, December 2, 2020 5:16:00 PM

TECHNICAL MEMORANDUM



**J.L. Richards
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To: Khurram Turino, M.Eng., P.Eng.
Director of Public Works
Township of North Dundas

Date: December 4, 2020

JLR No.: 28855-001

From: Annie Williams, P.Eng.
Mark Buchanan, P.Eng.

CC: Angela Rutley, Township of North Dundas
Mary-Lynn Plummer, Township of North
Dundas

Re: **Township of North Dundas
Water and Wastewater Servicing Study**

BACKGROUND

J.L. Richards & Associates Limited (JLR) carried out a Water and Wastewater Servicing Study for the Township of North Dundas (Township) to assess the ability of existing infrastructure to support future growth and development. The findings of this servicing study indicate that municipal infrastructure works, including but not limited to the items listed below, are required to fully service the anticipated future development throughout the Township:

- Watermains and appurtenances to connect to existing and proposed future developments;
- Forcemains and sanitary sewers to connect to existing and proposed future developments;
- Watermain capacity upgrades to accommodate increased demand;
- Sanitary sewer capacity upgrades to accommodate increased demand;
- Upgrades to existing pumping station(s);
- New sewage pumping stations; and
- Additional water tank storage.

The purpose of this memorandum is to assess the impact of projected future development on the existing water and wastewater infrastructure in the Township, identify conceptual-level upgrade requirements to accommodate this growth, and prepare an opinion of probable cost (OPC) of the conceptual-level upgrades. Generally, the methodology associated with this study comprises the following:

- Consult with the Township to confirm the expected development areas for near term, mid term, long term and build-out scenarios;
- Estimate future water and sanitary system flows based on projected future development identified by the Township;
- Update existing water and sanitary system models based on the projected future flows;
- Identify conceptual-level upgrades required for major infrastructure (i.e., trunk sewers, pumping stations, lagoon) for the future scenarios; and
- Prepare a conceptual-level (Level 'D') OPC for all major infrastructure upgrades.

It is important to note that the results of this study are *highly* dependent on the extent and rate of growth that the Township is projecting and also on the assumptions used in determining future water and wastewater flows associated with this growth. In some cases, both the growth rate combined with the assumptions made regarding the type of growth and application of standard guidelines may be perceived as conservative estimates of the timing for implementation of the resulting infrastructure – which may in fact be the case. However, with the lack of any other information related to growth rate, extent and type, the application of

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JLR No.: 28855-001

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standard guidelines was deemed appropriate for the purposes of this assignment. If the Township can provide additional site specific information, it is possible that the timing for implementation of the required infrastructure upgrades and expansions to support the future growth could be extended further out.

PROJECTED FUTURE DEVELOPMENT

Based on Census data, the population of the Township was reported as 2,394 for Winchester and 1,677 for Chesterville in 2016, giving a total population of 4,071 in 2016. The existing 2019 population was calculated based on a 1.5% average annual growth rate for Winchester and a 3.5% average annual growth rate for Chesterville. The future growth projections in Winchester were established with the Township based on the number of anticipated units for future residential areas and the land area in hectares for the future commercial areas. The projected population increase associated with future residential development was calculated based on a residential population density of 2.5 persons/unit. Note the Wellings of Winchester development had a more specific population projection as explained in the next section. For the build-out scenario, the number of projected residential units is currently unknown, so a population density of 35 persons/ha was assigned based on parcel area that is comparable to Winchester's existing density. The future growth projections in Chesterville were estimated using the 3.5% average annual growth rate based on the 2016 population (equal to approximately 59 additional people per year) up to the long term scenario, and the build-out scenario was assumed to remain unchanged from the long term scenario.

Refer to the "North Dundas Drinking Water Supply System Capacity Expansion Class EA Technical Memorandum No. 1 – Population Growth and Development Projections (Rev. 1)" (JLR, February 14, 2020) in Attachment 1 that provides a detailed summary of the future development areas and their corresponding populations. Figures No. 1 to 4 depict the future development area locations over the near, mid, long term and build-out planning horizon.

Future commercial development was not included in the population projections, but their anticipated water demands were accounted for in the assessment as presented in the next section. It is important to note that guidelines for commercial water consumption values, when limited information is available, are generally more conservative to account for unknown types of development and the large variation in use; therefore, there may be opportunities to refine the projected flows with further details as part of a Master Plan. This could potentially have a significant impact on the timing for capital works projects. It was also assumed that the population of all existing developments would remain constant under future scenarios. Based on these assumptions, the projected populations for each scenario were estimated and are summarized in Table 1 below.

Table 1: Population Projections

Scenario	Winchester		Chesterville	Total	
	Number of Added Units	Population Increase From Previous Scenario	Population Increase From Previous Scenario	Population	Population Increase From Existing (2019)
Existing (2019)	n/a	n/a	n/a	4,355	n/a
Near Term (1-5 year)	273	509	294	5,158	803
Mid Term (5-10 year)	220	450	293	5,901	1,546
Long Term (10-20 year)	403	750	587	7,238	2,883
Build-Out (20+ year)	(20.56 ha)	1,161	0	8,399	4,044

WATER DISTRIBUTION SYSTEM – FLOW PROJECTIONS**EXISTING CONDITIONS**

JLR developed a new hydraulic water model for the Township (Winchester and Chesterville) in support of the Water Supply Expansion Municipal Class EA. Refer to the memorandum “Township of North Dundas – Hydraulic Water Model” (JLR, August 28, 2020).

From the above-noted memorandum, the modelled water demands for existing conditions were based on monthly average day demand data provided by the Township over the past five (5) years (2015 – 2019). The demands were distributed throughout the Township based on parcel count. Peaking factors from the Ministry of the Environment, Conservation and Parks (MECP) Design Guidelines for Drinking Water Systems (2008), herein referred to as the MECP Design Guidelines, were used to estimate the total maximum day and peak hour demand. Two (2) high water users were accounted for in Winchester: Lactalis (formerly Parmalat) and the Winchester District Memorial Hospital. The peak hour demand for Lactalis is unchanged from the maximum day demand as this value is understood to remain consistent and represents the upper limit of water demand from the Lactalis site. Table 2 summarizes the existing water demands in the model.

Table 2: Existing (2019) Water Demand Summary

Water User	Water Demand Scenario		
	Average Day (L/s)	Maximum Day (L/s)	Peak Hour (L/s)
Lactalis (formerly Parmalat)	14.68	22.02	22.02
Winchester District Memorial Hospital	0.70	1.05	1.90
Township of North Dundas (Winchester & Chesterville, including high water users)	27.90	55.80	66.08

FUTURE CONDITIONS

The design parameters used to calculate the future water demands are summarized in Table 3. All design parameters are in accordance with the MECP Design Guidelines or other assumptions are made where necessary. The MECP does not specify peaking factors for commercial areas, hence the City of Ottawa Design Guidelines for Water Distribution (July 2010) were used.

Table 3: Future Water Demand Design Parameters

Future Water Flow Projection – Design Parameters		
Parameter	Residential	Commercial
Population Density (per unit)*	2.5 person/unit	n/a
Population Density (per hectare)	35 person/ha	n/a
Average Day Flow	350 L/cap/day	28,000 L/ha/day
Maximum Day Flow	2.0 x Average Day	1.5 x Average Day
Peak Hour Flow	1.5 x Maximum Day	1.8 x Maximum Day

*The Wellings of Winchester development (Phases 1-5) was assigned a population density of 1.17 person/unit for 1-bedroom units and 1.62 person/unit for 2-bedroom units.

For Chesterville, the population growth (additional number of people) was assigned the residential average day flow of 350 L/cap/day, and this additional consumption was added to the existing demands.

It is noted that some specific areas were exceptions to the aforementioned design parameters, summarized as follows:

- The Wellings of Winchester (development 11) include a total of 500 units within all five (5) phases. These units were assigned more specific population densities based on their 1-bedroom and 2-bedroom unit counts. Phases 1-2 (development 11a) are incorporated in the near term scenario, Phase 3 (development 11b) is incorporated in the mid term scenario, and Phases 4-5 (development 11c) are incorporated in the long term scenario.
- Area A (which includes several individual residential units) within the long term scenario was divided and proportionally assigned to the nearest representative model node based on unit count.
- The high water user Lactalis was assigned a future average day demand of 16.2 L/s (1,400 m³/d) and a future maximum day and peak hour demand of 24.3 L/s (2,100 m³/d). These demands remained the same for all future scenarios. The peak hour demand is unchanged from the maximum day demand as this value is understood to remain consistent and represents the upper limit of water demand from the Lactalis site.

Based on these design parameters and the existing and projected water demands under near term (1-5 year), mid term (5-10 year), long term (10-20 year) and build-out (20+ year), the following water demand projections were calculated:

Table 4: Water Demand Projections

Demand Scenario	Average Day L/s (m³/day)	Maximum Day L/s (m³/day)	Peak Hour L/s (m³/day)
Existing (2019)	27.90 (2,410.6)	55.80 (4,821.1)	66.08 (5,709.3)
Near Term (1-5 year)	34.23 (2,957.7)	66.92 (5,782.3)	82.33 (7,113.3)
Mid Term (5-10 year)	40.48 (3,497.7)	77.80 (6,722.3)	100.11 (8,649.2)
Long Term (10-20 year)	49.79 (4,301.6)	94.47 (8,162.2)	126.85 (10,960.2)
Build-out (20+ year)	54.49 (4,708.1)	102.98 (8,897.7)	140.43 (12,133.2)

It is noted that the type of units expected within various residential areas and the specific type of commercial use expected within future commercial lands can have a significant influence on the water demands projected for the future scenarios. With limited information currently available regarding the details of future developments, design guideline values for the projected flows have been used to identify various upgrades. Based on our experience, guideline values are generally considered conservative to account for unknowns when limited information is available and there may be opportunity to refine the projected demand details as part of a future assignment.

WATER DISTRIBUTION SYSTEM – WATER MODELLING

The hydraulic water model was used to assess the water distribution system under existing, near term, mid term, long term, and build-out demand conditions, and to determine if capacity upgrades to the existing watermains will be required to accommodate the anticipated growth.

EXISTING CONDITIONS

The hydraulic water model was updated to reflect the ‘existing’ conditions of the current water distribution system. It was then used to simulate the performance of the current system under existing flow conditions. The following operating conditions were assumed for these simulations:

- The existing average day scenario assumes that no pumps are operating, while the Winchester elevated storage tank level is at 113.17 m (tower start elevation provided from OCWA) and the Chesterville elevated storage tank level is at 110.77 m.
- The existing maximum day plus fire flow scenario assumes that several pumps (in Winchester: Well 1, Well 5, Well 6, Well 7B, Reservoir Duty Pump 1; and in Chesterville: Well 5, Well 6, Reservoir High Capacity Pump 3) are operating, while the Winchester elevated storage tank level is at 113.17 m and the Chesterville elevated storage tank level is at 110.77 m. In addition, the Winchester reservoir level is at 78.81 m and the Chesterville reservoir level is at 71.80 m.
- The existing peak hour scenario assumes that several pumps (in Winchester: Well 1, Well 5, Well 6, Well 7B, Reservoir Duty Pump 1; and in Chesterville: Well 5, Well 6, Reservoir Duty Pump 1) are operating, while the Winchester elevated storage tank level is at 113.17 m and the Chesterville elevated storage tank level is at 110.77 m. In addition, the Winchester reservoir level is at 78.81 m and the Chesterville reservoir level is at 71.80 m.

Note that under the average day, maximum day and peak hour scenarios, the following MECP Design Guidelines are applicable:

- The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 689 kPa (100 psi), and in occupied areas shall not exceed 552 kPa (80 psi).
- **Maximum Day:** Pressure is to be within the range of 345 kPa (50 psi) and 480 kPa (70 psi).
- **Maximum Day + Fire Flow:** Residual pressure at any point in the distribution system shall not be less than 140 kPa (20 psi).
- **Peak Hour:** Pressure is to be above 275 kPa (40 psi).

A fire flow rate of 45 L/s has been targeted for this study as a reasonable level of service to meet the minimum water supply flow rate in accordance with the Ontario Building Code for a typical two storey single family home.

A summary of the results of these simulations is provided in Table 5.

Table 5: Hydraulic Water Model Results – Existing Conditions

Demand Scenario	General Results	Notes
Average Day	Good. Pressure Range: 248(36) – 418 (61) kPa (psi)	These results are for the junctions and hydrants in the Winchester and Chesterville pressure zones only. All pumps are off in this simulation. Only two (2) hydrants experience pressures below 275 kPa and there are no customer connections in the vicinity of these hydrants.
Maximum Day + Fire Flow	Good. Fire Flow Availability: 26-314 L/s	These results are for the hydrants in the Winchester and Chesterville pressure zones only. Normal pumps are operating in this simulation, with the exception of the Chesterville reservoir where only one high capacity pump is operating. There are twenty-one (21) hydrants which are currently expected to have lower fire flow availability (less than 45 L/s). These hydrants are located along dead-end watermains or at the outer extents of the distribution system. All other nodes have expected fire flow availability in excess of 45 L/s.
Peak Hour	Good. Pressure Range: 276(40) – 548 (79) kPa (psi)	These results are for the junctions and hydrants in the Winchester and Chesterville pressure zones only. Normal pumps are operating in this simulation. All nodes experience pressures above 275 kPa.

FUTURE CONDITIONS

The future near term, mid term, long term, and build-out water demands were added to the model under average day, maximum day and peak hour conditions, in accordance with the locations and units identified in Figures No. 1 to 4. In addition to using the same operating conditions as those used in the existing conditions simulations (described above), the following assumptions were made for the future model simulations:

- A 200 mm diameter PVC watermain loop was modelled within each future residential development area. Assumed future watermains were extended from existing dead end streets or the most likely connection points. Continuous looping through several phases of large residential developments was also assumed where applicable. Future residential demands were assigned to a single representative junction node within the development parcel. Elevations for these junction nodes were based on existing topography obtained from satellite imagery.
- Future commercial demands were assigned to the nearest junction node in the model along the existing watermain network.
- A 300 mm diameter PVC watermain was modelled in all future scenarios to create a loop between Main Street West and Fred Street, through the future Wellings of Winchester residential development. This will provide expected fire flows to achieve targeted rate of 45 L/s and increase water supply redundancy on the west side of Winchester. Currently the west side of Winchester is serviced by a single 200 mm diameter watermain. A watermain break of potential future maintenance would impair water service to the west service area for the west area for the duration of the repair or maintenance. For reference the City of Ottawa requires that 50 units or more to be looped by redundant water service in the event of a potential water break or maintenance.

- A 300 mm diameter watermain upgrade was modelled on St. Lawrence Street between Gypsy Lane and Main Street West / Gordon Street in the mid term, long term, and build-out scenarios, to provide a larger diameter trunk connection between the Winchester reservoir and the elevated storage tank. An increase in the Township's storage capacity is warranted in the mid term scenario and this upgrade will allow for increased pumping capacity between the Winchester reservoir and the elevated storage tank. A new storage tank with equivalent operating levels was modelled at the Winchester Reservoir site and the existing booster pump was used for the presented simulation results, in order to maintain a consistent pump curve for comparison. When the water storage is expanded with the assumed construction of a new at-grade storage tank, the booster pump is expected to be upgraded as well. Water storage and distribution system upgrades are discussed in more detail in later sections.

Note that for the maximum day demand + fire flow simulations, the results are first presented for all scenarios without the Wellings of Winchester loop to Fred Street and without any upgrade on St. Lawrence Street, in order to establish a base line to assess watermain upgrades. The results with the assumptions listed above are presented afterwards, followed by the results for a final simulation (as later described) under build-out conditions.

The following tables summarize the model results for the Winchester and Chesterville pressure zones based on the percentage of junctions in the model within each stated pressure range or available fire flow range, in order to compare system performance across the existing and future development scenarios. Model schematics for all scenarios are included in Attachment 2.

Average Day Demand

Table 6 presents the average day simulation results for existing and future scenarios.

Table 6: Hydraulic Water Model Results - Average Day Demand

Average Day Demand						
Pressure (kPa)		Existing	Future			
From	To		Near Term	Mid Term	Long Term	Build-out
			1-5 year	5-10 year	10-20 year	20+ year
	<=275	0.5%	0.5%	0.5%	0.5%	0.5%
>275	<=350	26.5%	26.6%	27.1%	29.9%	30.3%
>350	<=480	73.0%	72.9%	72.4%	69.6%	69.3%
>480	<=550	0.0%	0.0%	0.0%	0.0%	0.0%
>550	<=700	0.0%	0.0%	0.0%	0.0%	0.0%
>700		0.0%	0.0%	0.0%	0.0%	0.0%

Under average day demand, system pressures under future conditions are expected to decrease slightly from existing conditions due to increased demands, but are mostly anticipated to remain comparable to existing conditions and above the minimum recommended pressure of 275 kPa (40 psi), in accordance with the MECP Design Guidelines. Only two (2) hydrants do not achieve 275 kPa: hydrant H-194 along the transmission main from Well #7 (topographical high point), and hydrant H-174 near Well #6. No customers are connected to the water distribution system in the vicinity of these two hydrants.

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Peak Hour Demand

Table 7 presents the peak hour simulation results for existing and future scenarios.

Table 7: Hydraulic Water Model Results – Peak Hour Demand

Peak Hour Demand						
Pressure (kPa)		Existing	Future			
From	To		Near Term	Mid Term	Long Term	Build-out
			1-5 year	5-10 year	10-20 year	20+ year
	<=275	0.0%	0.3%	0.3%	0.3%	0.5%
>275	<=350	17.5%	20.4%	19.7%	24.6%	26.5%
>350	<=480	79.4%	76.2%	80.1%	75.2%	73.0%
>480	<=550	3.2%	3.1%	0.0%	0.0%	0.0%
>550	<=700	0.0%	0.0%	0.0%	0.0%	0.0%
>700		0.0%	0.0%	0.0%	0.0%	0.0%

Under peak hour demand, overall system pressures under future conditions are expected to decrease slightly from existing conditions due to increased demands, but are mostly anticipated to remain comparable to existing conditions and above the minimum recommended pressure of 275 kPa (40 psi), in accordance with the MECP Design Guidelines. The pressure results are seen to increase slightly in the mid term scenario due to the watermain upgrade on St. Lawrence Street. Junction node J-263 (Lactalis) yields a consistent model pressure result of less than 275 kPa under future scenarios, due to the high water demand assigned to this node which is located at a dead-end 150 mm diameter water service. It is recommended that the Lactalis water service configuration and details be reviewed for any opportunities to refine the model to more accurately represent the site servicing at this facility. The two hydrants which experienced low pressures in the average day demand simulation (H-194 and H-174) are expected to experience pressures slightly above but close to 275 kPa, and no customers are connected to the water distribution system in the vicinity of these two hydrants.

Maximum Day Demand + Fire Flow

Table 8 presents the maximum day plus fire flow simulation results for existing and future scenarios, assuming that there is no 300 mm diameter watermain loop between Main Street West and Fred Street through the Wellings of Winchester, and assuming that there is no 300 mm diameter watermain upgrade on St. Lawrence Street. This table establishes a base line of available fire flows throughout the Township assuming that future growth is accommodated solely by the existing water distribution system and watermain extensions required for residential development.

Table 8: Hydraulic Water Model Results – Maximum Day Demand + Fire Flow Without Loop to Fred Street or St. Lawrence Street Upgrade

Maximum Day Demand + Fire Flow						
Available Fire Flow (L/s)		Existing	Future			
From	To		Near Term	Mid Term	Long Term	Build-out
			1-5 year	5-10 year	10-20 year	20+ year
	<=30	2.3%	2.2%	2.2%	3.0%	2.9%
>30	<=45	7.3%	6.6%	7.8%	13.2%	12.5%
>45	<=75	41.7%	40.5%	39.0%	36.2%	32.9%
>75	<=100	22.0%	23.8%	22.9%	18.7%	22.5%
>100	<=150	20.2%	18.9%	21.6%	23.0%	23.3%
>150	<=250	6.0%	7.5%	6.1%	5.5%	5.4%
>250		0.5%	0.4%	0.4%	0.4%	0.4%

It is noted that the existing water distribution system is not expected to provide adequate water storage starting in the mid term scenario as calculated in accordance with the MECF Design Guidelines, and the available fire flow is severely limited in some areas (such as the Wellings of Winchester) without the connection to Fred Street.

Table 9 presents the maximum day plus fire flow simulation results for existing and future scenarios, assuming the installation of a 300 mm diameter watermain loop between Main Street West and Fred Street through the Wellings of Winchester starting in the near term, and assuming the construction of a 300 mm diameter watermain upgrade on St. Lawrence Street to accompany the increased storage at the Winchester Reservoir (discussed in the next sections).

Table 9: Hydraulic Water Model Results – Maximum Day Demand + Fire Flow With Loop to Fred Street (Near Term +) and St. Lawrence Street Upgrade (Mid Term +)

Maximum Day Demand + Fire Flow						
Available Fire Flow (L/s)		Existing	Future			
From	To		Near Term	Mid Term	Long Term	Build-out
			1-5 year	5-10 year	10-20 year	20+ year
	<=30	2.3%	1.8%	1.7%	2.6%	2.5%
>30	<=45	7.3%	6.2%	6.1%	6.0%	5.0%
>45	<=75	41.7%	36.1%	33.8%	32.8%	29.2%
>75	<=100	22.0%	23.8%	22.5%	21.3%	22.9%
>100	<=150	20.2%	22.5%	17.3%	21.7%	25.0%
>150	<=250	6.0%	9.3%	14.7%	12.3%	12.1%
>250		0.5%	0.4%	3.9%	3.4%	3.3%

Under maximum day demand, fire flow availability under future conditions is expected to remain comparable to existing conditions. There are some hydrants which are expected to have fire flow availabilities less than 45 L/s. These hydrants are located along dead-end watermains or at the outer extents of the distribution system. In comparison to the base line results presented in Table 8, the fire flows are improved with the connection to Fred Street and the St. Lawrence Street watermain upgrade.

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Table 10 presents the maximum day plus fire flow simulation results for the build-out scenario, assuming the installation of a full 300 mm diameter watermain loop within Winchester. This includes the loop to Fred Street and the St. Lawrence Street watermain upgrade as mentioned previously, but also includes a 300 mm diameter watermain upgrade on Main Street West and the 300 mm diameter watermain upgrade on Fred Street, as discussed in the next section.

Table 10: Hydraulic Water Model Results – Maximum Day Demand + Fire Flow With Full 300 mm diameter Watermain Loop in Winchester

Maximum Day Demand + Fire Flow		
Available Fire Flow (L/s)		Future
From	To	Build-out
		20+ year
	<=30	2.1%
>30	<=45	5.4%
>45	<=75	28.3%
>75	<=100	19.6%
>100	<=150	18.8%
>150	<=250	20.8%
>250		5.0%

Table 10 shows that the full 300 mm diameter watermain loop in Winchester will improve the available fire flows. It is noted that the increased storage capacity at the Winchester Reservoir would also be accompanied by a pump upgrade, which could increase the available fire flows experienced throughout Winchester.

POTENTIAL WATERMAIN UPGRADES

The current water distribution system in Winchester includes a 200 mm diameter PVC watermain along Main Street West. Any disruption along this length of watermain would result in a significant reduction in the level of service experienced in the west end of Winchester, since this watermain is the sole feed from the elevated tank to the west end. A 300 mm diameter watermain upgrade along Main Street West from approximately 100 m east of Dawley Drive to Gordon Street would be a beneficial upgrade to the Winchester system as a whole. This work could be done in conjunction with the proposed sanitary sewer forcemain construction along Main Street West as described in the wastewater section. This upgrade would provide improved fire flow availability to all areas in the west end, such as the future Wellings of Winchester residential development. Additionally, the potential loop from Main Street West to Fred Street through the Wellings of Winchester would provide a redundant water supply to the west end.

There is an existing asbestos cement watermain along St. Lawrence Street in Winchester ranging from 150 mm in diameter to 200 mm in diameter. This watermain could be upgraded to a 300 mm diameter watermain between Gypsy Lane and Main Street West / Gordon Street, providing a larger diameter trunk connection between the Winchester reservoir and the elevated storage tank. An increase in the Township's storage capacity (accompanied with a booster pump upgrade) is warranted in the mid term scenario and this upgrade will allow for increased pumping capacity between the Winchester reservoir and the elevated storage tank.

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There is an existing 150 mm diameter asbestos cement watermain and an existing 200 mm diameter PVC watermain along Fred Street. This watermain could be upgraded to a 300 mm diameter watermain between the easement (approximately 100 m east of Christie Lane) and St. Lawrence Street, which would complete an overall 300 mm diameter trunk watermain loop throughout Winchester if combined with the aforementioned watermain upgrades.

While the foregoing model results indicate that the existing distribution system is expected to provide a comparable level of service under the assessed future development conditions, it is recommended that a Water Distribution System Master Plan be developed to evaluate and select the preferred trunk water servicing routes and options. Since additional water storage is required to address a future storage deficit, a Master Plan would be beneficial in the selection of the preferred water storage configuration and location as it relates to the distribution system. Subject to the appropriate Municipal Class Environmental Assessment (Schedule B Class EA), a future at-grade water storage reservoir and booster pump upgrade is anticipated to address the future water storage requirements while potentially increasing system redundancy and supplementing fire flow availability.

Figures 5 to 9 depicts the aforementioned potential watermain upgrades and anticipated timing.

WATER STORAGE – CAPACITY REVIEW

For water storage, both Winchester and Chesterville have an elevated storage tank and an at-grade storage reservoir. Table 11 summarizes the existing storage within the Township.

Table 11: Existing Water Storage Capacity

Storage Facility	Existing Capacity (m³)
Winchester Water Tower	2,300
Winchester Storage Reservoir	400
<i>Winchester Storage Capacity</i>	<i>2,700</i>
Chesterville Water Tower	567.5
Chesterville Storage Reservoir	407
Chesterville Storage Underground Suction Well	122
<i>Chesterville Storage Capacity</i>	<i>1,096.5</i>
Total Storage Capacity	3,796.5

According to MECP Design Guidelines, the storage volume requirements are calculated as follows:

Total Treated Water Storage Requirement = A + B + C

A = Fire Storage

B = Equalization Storage (25% of max day demand)

C = Emergency Storage (25% of [A + B])

Table 12 and Table 13 summarize the estimated water storage requirements under the existing and future scenarios based on the MECP Design Guidelines. The storage capacities were assessed for Winchester and Chesterville separately because it is understood that their storage facilities are not used interchangeably to supply both systems (i.e., the Winchester elevated tank does not provide storage to Chesterville).

The equivalent populations in Winchester were taken as the actual populations as per the growth projections for each future scenario. For the build-out population, the four (4) future residential areas were assigned with a population density of 35 persons/ha while the single future commercial area's average day water demand was converted to an equivalent population based on 350 L/cap/day. Also added was the Lactalis property by using its parcel area (6.2 ha) and converting it to an equivalent residential population assuming 35 persons/ha. The total equivalent populations as presented in the table were used to interpolate the required fire flows and durations from Table 8-1 of the MECP Design Guidelines, hence the fire storage (A) could be calculated. The equalization storage (B) was calculated based on the demands in Winchester only. From the deficit calculation which deducts the existing storage presented in Table 11 from the required storage presented in Table 12, it can be seen that additional storage capacity will be required in the mid term scenario.

Table 12: Estimated Water Storage Requirements (Winchester)

Scenario	Equivalent Pop'n	Fire (A)	Equalization (B)	Emergency (C)	Total Required Storage	Surplus/ (Deficit)
	No. ppl	m ³	m ³	m ³	m ³	m ³
Existing (2019)	2719	762	1023	446	2231	469
Near Term (1-5)	3228	817	1212	507	2536	164
Mid Term (5-10)	3678	865	1396	565	2826	(126)
Long Term (10-20)	4428	959	1653	653	3264	(564)
Build-out (20+)	5590	1425	1837	816	4078	(1378)

For this Study the preferred serving option is a second at-grade storage tank at the Winchester Reservoir site with the same operating levels as the existing at-grade tank. The existing site allocated space for future reservoir addition. A Schedule B Class EA will be required to determine the preferred water storage option and configuration. Based on preliminary calculations and assuming an equivalent tank height to the existing Winchester at-grade storage tank, a 19 m tank diameter would provide an additional storage volume of approximately 1,400 m³, which would satisfy the anticipated build-out storage requirement. Although the previously presented model results were based on the existing booster pump at the reservoir to provide a similar comparison across scenarios, it is expected that the booster pump would be upgraded in conjunction with the new storage tank. This upgrade would increase the pumping capacity from the reservoir to the elevated tank, and could improve fire flows throughout Winchester.

The equivalent populations in Chesterville were taken as the actual populations assuming a 3.5% average annual growth rate up to the long term scenario. The build-out population was assumed to be unchanged from the long term population. There are no high water users in Chesterville. The total equivalent populations as presented in the table were used to interpolate the required fire flows and durations from Table 8-1 of the MECP Design Guidelines, hence the fire storage (A) could be calculated. The equalization storage (B) was calculated based on the demands in Chesterville only. From the deficit calculation which deducts the existing

storage presented in Table 11 from the required storage presented in Table 13, it can be seen that additional storage capacity will be required in the near term scenario.

Table 13: Estimated Water Storage Requirements (Chesterville)

Scenario	Equivalent Pop'n	Fire (A)	Equalization (B)	Emergency (C)	Total Required Storage	Surplus/ (Deficit)
	No. ppl	m ³	m ³	m ³	m ³	m ³
Existing (2019)	1853	650	182	208	1040	56
Near Term (1-5)	2147	700	233	233	1167	(70)
Mid Term (5-10)	2440	732	285	254	1270	(174)
Long Term (10-20)	3027	795	388	296	1478	(382)
Build-out (20+)	3027	795	388	296	1478	(382)

The additional storage facility will be either a new water tower or an increased storage capacity at the Chesterville Reservoir and Pumping Station. A Schedule B Class EA will be required to determine and refine the preferred water storage option and configuration. Based on preliminary calculations, a 9.75 m tank diameter and a 6 m tank height would provide an additional storage volume of approximately 450 m³, which would satisfy the anticipated build-out storage requirement.

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SUMMARY OF WATER DISTRIBUTION SYSTEM REVIEW

A summary of the results from the above model simulations and water storage tank capacity reviews is provided in Table 14.

Table 14: Conceptual-Level Upgrades to Water System based on Water Distribution System Review

WATER DISTRIBUTION SYSTEM ASSESSMENT CONCLUSIONS		Projected Timeline	Municipal Class Environmental Requirements
Type	Description		
Watermain Extension Loop	300 mm diameter watermain connection between Main St. West and Fred St, through the future Wellings of Winchester development.	0 to 5 years	Schedule B – Acquire property to establish new road allowance
Watermain Upgrade	300 mm diameter watermain upgrade on St. Lawrence Street between the Winchester Reservoir and Pumping Station and Gordon Street (current extent of 300 mm diameter watermain from the Winchester elevated tank).	5 to 10 years (to accompany storage and pump upgrade)	Schedule A+ – Notify residences of upgrade in established road allowance
Watermain Network Recommendation	Upgrades to provide a 300 mm diameter trunk watermain loop in Winchester (includes Main Street West and Fred Street).	Build-out	Schedule A+ – Notify residences of upgrade in established road allowance
Water Storage & Pump Upgrades	Additional water storage and booster pump upgrade in Winchester to accommodate mid term, long term, and build-out water demand scenarios. It has been assumed that one (1) new 1,400 m ³ water storage tank will be built within the mid term.	5 to 10 years	Schedule B – Expand water storage and increase pumping capacity.
Water Storage Upgrades	Additional water storage in Chesterville to accommodate near term, mid term, long term, and build-out water demand scenarios. It has been assumed that one (1) new 450 m ³ water storage tank will be built within the near term.	0 to 5 years	Schedule B – Expand water storage and increase pumping capacity.

SANITARY SYSTEM - FLOW PROJECTIONS AND SERVICING REVIEW

The current sanitary sewer system was simulated the Township existing SewerCAD® model under existing to 5 year, 5 to 10 year, 10 to 20 year and Build-out 20+ year sewage flow demand conditions, to determine if capacity upgrades of the existing sewers and other related infrastructure are required.

SANITARY SYSTEM – FLOW PROJECTIONS

The table below summarizes the design parameters used to calculate the sanitary sewer flow demands for the projected future developments and phasing contained in Attachment 1. Design parameters are in accordance with recommendations contained in the MECP Sewer Design Guidelines and City of Ottawa Sewer Design Guidelines.

Table 15: Sanitary System Design Parameters

RESIDENTIAL:	
Average Flow	350 L/cap/day
Peaking Factor (minimum 2, maximum of 4)	$1 + \frac{14}{4 + \sqrt{\frac{Population}{1000}}}$
INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL (ICI):	
Average Flow	28,000 L/ha/day
Peaking Factor	1.4
INFILTRATION:	
Peak Extraneous Flow (Collection System)	0.28 L/ha/s
Extraneous Flow (Treatment System)	90 L/cap/day

Based on the above table, the following sanitary sewer flows were determined for each projected future development:

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Table 16: Projected Sanitary Sewer Flows

Development	Type / Magnitude of Development	Peak Residential Flow	Peak ICI Flow	Extraneous Flow	Cumulative Total Flow
		L/s	L/s	L/s	L/s
TIMING – EXISTING TO 5 YEARS:					
5 – Main St. South Side	Commercial – 0.42 ha	-	0.19	0.12	0.31
6 – Main St. North Side	Commercial – 0.20 ha	0.33	0.25	0.15	0.73
10 – Dawley Dr.	Commercial – 0.81 ha	-	0.37	0.23	0.60
11A – Wellings PH 1 - 2	Residential – 150 units	3.24	-	1.89	5.13
11A – Wellings PH 1 - 2	Commercial – 2.28 ha	1.03	-	0.64	1.67
12 – Main St. South Side	Commercial – 0.77 ha	-	0.35	0.22	0.57
13 – Main St. South Side	Residential Infill – 15 units	0.62	-	0.67	1.29
14 – Winfields Subdivision	Residential – 9 units	0.37	-	0.13	0.51
18 – New Dundas Manor	Commercial – 1.94 ha	-	0.88	0.54	1.42
20 – Guy Racine PH 3	Residential – 8 units	0.32	-	0.20	0.53
21B – Queen St.	Residential – 36 units	1.46	-	0.48	1.94
22A – Winchester Meadows	Residential – 22 units	0.89	-	0.62	1.51
24B – High Density Apt.	Residential – 21 units	0.86	-	0.38	1.24
28A & B – Wintonia Dr. / James St.	Residential – 12 units	0.49	-	0.29	0.78
SUB-TOTAL – EXISTING TO 5 YEARS		9.61	2.04	6.56	18.23
TIMING – 5 TO 10 YEARS:					
2A – HWY #31	Commercial – 1.13 ha	-	0.51	0.32	0.83
3 – HWYs #31 and 43	Commercial – 1.12 ha	-	0.51	0.31	0.82
4 – HWY #31 John Deere	Commercial – 6.17 ha	-	2.80	1.73	4.53
11B – Wellings PH 3	Residential – 86 units	1.85	-	0.81	2.66
19 – Old Dundas Manor	Commercial – 1.19 ha	-	0.71	0.44	1.15
22B – Winchester Meadows	Residential – 22 units	0.89	-	0.42	1.31
24A – Woods Development	Residential – 78 units	3.16	-	0.56	3.72
25A – Woods Development	Residential – 19 units	0.78	-	0.77	1.55
29A – St. Lawrence St.	Residential – 15 units	0.62	-	0.48	1.10
SUB-TOTAL – 5 TO 10 YEARS		7.30	4.53	5.84	17.67

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TIMING – 10 TO 20 YEARS:					
A – Existing Not Connected	Residential/Commercial – 28 units	1.13	1.44	3.28	5.85
2B – HWY #31	Commercial – 1.22 ha	-	0.55	0.34	0.89
7 – Motel Property	Residential – 14 units	0.57	-	0.52	1.09
8 – Country Kitchen	Residential – 7 units	0.29	-	0.24	0.53
9A – Main St. North Side	Commercial – 5.07 ha	-	2.30	1.42	3.72
11C – Wellings PH 4 to 5	Residential – 264 units	5.64	-	2.42	8.06
16 – Main St. South Side	Commercial – 0.74 ha	-	0.34	0.21	0.54
21A – Seniors Complex	Residential – 54 residents	0.88	-	0.24	1.12
25B – Fred St.	Residential – 36 units	1.46	-	0.69	2.15
29B – Esper Lane	Residential – 51 units	2.07	-	0.93	3.00
30 – St. Lawrence St.	Commercial – 4.56 ha	-	2.07	1.28	3.35
31 – St. Lawrence St.	Commercial – 0.41 ha	-	0.19	0.11	0.30
SUB-TOTAL – 10 TO 20 YEARS		12.04	6.89	11.68	30.60
TIMING – BUILD-OUT 20+ YEARS:					
9B – Main St. North Side	Commercial – 5.53 ha	-	2.51	1.55	4.06
15 – Winfields PH 2	Residential – 4.31 ha	2.46	-	1.21	3.67
23 – Main St. East	Residential – 9.80 ha	5.59	-	2.74	8.33
26 – Anne St.	Residential – 3.36 ha	1.91	-	0.94	2.85
27 – St. Lawrence St.	Residential – 3.09 ha	1.77	-	0.87	2.64
SUB-TOTAL – 10 TO 20 YEARS		11.73	2.51	7.31	18.91

SEWAGE PUMPING STATIONS – EXISTING SUMMARY

There are three sub-area Sewage Pumping Stations (SPS) within the Village of Winchester that pump wastewater from low lying service areas into gravity sewers located downstream at higher elevations. These gravity sewers convey the flows to either an additional sub-area pumping station or to the Ottawa Street SPS (the main SPS). Figure 1 illustrates the location of each station. The following section provides a general description of each of the sub-area pumping stations followed by a summary table listing the existing capacity at each SPS.

St. Lawrence Street Sanitary Pumping Station

The St. Lawrence Street SPS is located at 583 A St. Lawrence Street and receives wastewater from upstream gravity sewers located south of Fred Street. The C of A for the St. Lawrence Street SPS was not available; however, based on the pump curve, the PS is equipped with 3 hp pump(s) each with a best efficiency point of 19.8 L/s at 6.46 m Total Dynamic Head (TDH). The pumping rate is confirmed by the flows from a previous

OCWA draw down test (21.2 L/s). The PS is equipped with a mechanical bar screen to protect pumps from large debris. The wet well is also equipped with floats that are used to start and stop the pumps depending on the level of raw sewage within the wet well; an alarm is also triggered at a high level setpoint. Wastewater is pumped via a 150 mm diameter forcemain that outlets near the intersection of Fred Street and St. Lawrence Street to upstream gravity collection system.

Bailey Avenue Sanitary Pumping Station

The Bailey Avenue SPS is located at 586 Main Street and receives wastewater from upstream gravity sewers, including flows pumped from the Main Street West PS. According to the ECA, the Bailey Avenue SPS is equipped with two submersible pumps and has a firm pumping capacity of 31.4 L/s at a TDH of 25 m. The pumping rate is confirmed by the flows from a previous OCWA draw down test (29.2 L/s). This PS is also equipped with a mechanical bar screen to protect pumps from large debris. Floats have been installed in the wet well to control starting and stopping of the pumps depending on the level of wastewater within the wet well; an alarm is also triggered at a high level setpoint. Wastewater is pumped via a 150 mm diameter forcemain outlets near the intersection of Main Street and Louise Street to upstream gravity collection system.

Main Street West Sanitary Pumping Station

The Main Street SPS is located on the south side of Main Street, approximately 500 m east of County Road No. 31, and receives wastewater from various properties in the west service area. According to current ECA the Main Street West SPS is equipped with two submersible pumps and has a firm pumping capacity of 6 L/s at a TDH of 13 m, however, OCWA advised the duplex pump arrange includes a larger 6 L/s pump and smaller 3.5 L/s pump. OCWA advised that a January 2020 draw down test yielded an operating pump rate of 4.5 L/s. Prior to installation of the 6 L/s pump, the Township has reported that the pump impellers were recently replaced to address on-going clogging issues due to settling of debris and rags within the wet well. The wet well has a diameter of 2.44 m and the inlet is equipped with a trash basket for removal of debris. An ultrasonic transducer and backup floats are provided for pump control and alarms. Wastewater is pumped via a 100 mm diameter 350 m long forcemain to an upstream maintenance hole along Main Street where it is conveyed to the Bailey Avenue SPS for further pumping.

Ottawa Street Sanitary Pumping Station

The main sewage pumping station (Ottawa Street PS) is located at 475 Ottawa Street near the intersection of Dufferin Street and Ottawa Street. The pumping station receives raw wastewater from the entire collection system and pumps it via a 1,300 m long 350 mm diameter forcemain to the inlet structure at the sewage treatment lagoon. According to the current ECA, the pumping station is equipped with three sewage pumps rated at 90 L/s each; however, based on a previous assessment completed by Stantec Consulting Limited in 2006, the actual pump capacities may be somewhat less (72 L/s). Nevertheless, it is assumed that two pumps operated simultaneously can provide a flow of at least 90 L/s, and therefore, a firm capacity of 90 L/s is used for this Study. The station is also equipped with a standby generator located within a separate building that is reportedly able to provide sufficient power to run two pumps simultaneously. According to the ECA, the emergency standby diesel generator is rated at 50 kW; however, from the previous assessment (Stantec, 2006), the nameplate reportedly rates the equipment at 77 kW.

The PS is equipped with a manually cleaned bar screen with bars spaced at 6 cm. The wet well is equipped with ultrasonic transducer for level monitoring and control. A magnetic flowmeter is used to measure the flowrate and volume of wastewater discharged to the lagoon. A summary of the pumping system equipment as presented in the Winchester Operations Manual is provided in Table 4.1.

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Table 17: Ottawa St. Sewage Pumping Station Equipment and Capacity

Component	Size/Capacity ⁽¹⁾	
Pumps	Number:	3
	Capacity:	70 L/s
	Type:	Wemco Hydrostal Pump
	Model:	E5K-1-E2M-
	TDH:	15.5 m
	Speed:	1750 RPM
Motors	Number:	3
	Size:	25 HP
	Type:	Hawker Pump Motor – L284T6
	Electrical	575 V, 23.2 A, 60 Hz
Diesel-generator	Capacity:	50 kW (based on C of A)
Notes:		
1. Information details as reported in Winchester Operations Manual		

The foregoing description of each existing SPS is summarized in the following table.

Table 18: Summary of Existing Sewage Pumping Stations

Pumping Station	ECA No.	Pump Operation ⁽¹⁾	TDH (m) ⁽¹⁾	Rated Capacity (L/s) ⁽¹⁾	Operational (L/s)
Main St. West SPS	9743-B9ALZN (2019)	Two submersible pumps - duty/standby	13	6 ⁽²⁾	4.5 ⁽²⁾
Bailey Ave. SPS	4037-6CAMCT (2005)	Two submersible pumps - duty/standby	25	31.4	29.2
St. Lawrence St. SPS		Two submersible pumps - duty/standby	6.46	19.8	21.2
Ottawa St. SPS	5312-88TK5R (2010)	Three dry pit sewage pumps	-	90	72 (single pump)
⁽¹⁾ According to the referenced ECAs.					
⁽²⁾ Rated capacity according to current ECA; OCWA staff advised there is a larger (6 L/s) and smaller (3.5 L/s) pumps installed. January 2020 pump test estimated 4.5 L/s pumping rate.					

SANITARY SEWER SYSTEM – CAPACITY REVIEW

The Township's current SewerCAD® model previously prepared and updated by JLR (refer to Township of North Dundas – Winchester Wastewater Capacity Assessment, June 14, 2019) was used to assess the

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capacity of the sanitary sewer system under the development scenarios, incorporating the projected flows from Table 15. For this review, the following assumptions/exclusions were made:

- The existing sanitary sewer design model previously developed by JLR was updated with new development scenarios identified by the Township;
- An increase in the size of the sewer was assumed to be needed if the flow estimated by the model exceeded the theoretical full flowing capacity of the existing sewer;
- New development areas remain tributary to the nearest availability sanitary sewer; and
- Pipe sizing for sewer replacements used for the conceptual-level OPC assumed that the existing pipe slope is maintained, except for Main Street West sewer upgrades that are described in Options 3A and 3B below.

WASTEWATER COLLECTION SYSTEM – CAPACITY REVIEW

A review the wastewater collection system capacity that included gravity sewers and pumping stations was completed to compare the existing capacities to the demands estimated by the sanitary sewer model and projected sanitary sewer flows from Table 16. Based on the review, it is anticipated that certain gravity sewer sections, namely along Main Street West and all four (4) SPS will require an upgrade and/or expansion to meet the future build-out flow demands. Anticipated gravity sewer upgrades are triggered when the projected peak flow exceed the sewer's theoretical conveyance capacity. Similarly, pumping station upgrades are triggered when projected peak flows exceed the rated pumping capacity. Model results are contained in Attachment No. 3. A list of wastewater system upgrades applied in the model are summarized in the following section.

WASTEWATER SERVICING OPTIONS

Based on the anticipated growth areas and existing servicing constraints, particularly in the west end, wastewater servicing options were developed to assess future pumping station, forcemain and sewer upgrades, summarized as follows (refer to Figures 5 to 9):

Option 1 – Upgrade Existing Wastewater System

Maintains the existing configuration of the wastewater system by upgrading sewers and SPS in their current location.

Option 2A – Upgrade Main St. West SPS and extend forcemain along Main Street East of Gladstone Street

Similar to Option 1, however, the proposed capacity upgrades to the Main St. West SPS include extending the forcemain along Main Street to outlet east of Gladstone Street, the same forcemain outlet location as the Bailey Avenue SPS. Gravity sewers upgrades are required downstream of the extended Main St. Option 2A allows wastewater collected at the Main St. West SPS to bypass the existing Bailey Avenue SPS and mitigate future capacity upgrades required at this station by Option 1.

Option 2B – Upgrade Main St. West SPS and reroute forcemain to Clarence Street

Similar to Option 2A, however, the Main St. West SPS forcemain would be extended along Main Street, through the Community Centre property, the Christie Lane easement and along Clarence Street to Louise Street (refer to Figure 5). The rerouted forcemain will require upgrades to the existing Clarence St. sanitary sewers. Option 2B allows wastewater collected at the Main St. West SPS to bypass the existing Bailey Avenue SPS and mitigate future capacity upgrades required at this station by Option 1.

Option 3A – Relocated Main St. West SPS and Decommission Bailey Avenue SPS (Main Street Outlet)

The intent of this option is to simplify wastewater operations in the west end by maintaining a single SPS instead of two SPS (i.e., Main St. West and Bailey Ave. SPS). Similar to Option 2A, however, the Main St. West SPS would be relocated approximately 300 m east along Main Street west. The relocated SPS would allow gravity sewers to be extended from the east and west along Main Street to centralize pumping from a single pumping station and allow future decommissioning of the Bailey Avenue SPS. Gravity sewers would be extended the same distance to convey wastewater to the new SPS location. Also, the wet well depth would be increased to allow future gravity sewers to be extend at a deeper elevation along Main Street from Bailey Avenue SPS to this new SPS. Timing of the future gravity sewers could be coordinated to align with anticipate condition/equipment replacement at the Bailey Avenue SPS.

Option 3B – Relocated Main St. West SPS and Decommission Bailey Avenue SPS (Clearance Street Outlet)

Similar to Option 3A, however, the Main St. West SPS forcemain would follow the same route as described in Option 2B and outlet at the intersection of Clearance Street and Louise Street (refer to Figure 5).

Each potential wastewater servicing option was simulated in the existing SewerCAD® model. For each option a summary table lists expected sanitary sewer upgrade and highlights in orange the anticipated timing of upgrades:

Option 1: Maintain Existing Configuration and Upgrade Collection System

Gravity sewer upgrades are anticipated in four areas throughout the system at various times and consist of upgrading the existing pipe diameter at the current location (refer to Figures 5 to 9 for sewer upgrade locations).

Table 19: Option 1 - Gravity Sewer Upgrades

Street	Existing			Project Peak Flow (L/s)			
	Dia. (mm)	Length (m)	Theoretical Conveyance Capacity (L/s)	0-5 years	5-10 years	10-20 years	Build-out
Bailey Ave. MH 37 - 41	200	24	20	28	36	50	53
Main St. W MH 40 - 37	200	177	21 to 26	19 to 20	27 to 28	41 to 42	44 to 45
Main St. W MH 28 - 26	250	155	35 to 39	33	41 to 42	55 to 56	62
Main St. W MH 437 – 434	250	200	26 to 30	15 to 16	23	37	37 to 40
Easement b/w May St. and York St.	250	51	22	17	18	24	29

For the 10 to 20 year and build-out sewer upgrades anticipated along the Easement between May Street and York Street, additional field investigation is warranted to confirm the sewer invert elevations along with future review of the projected peak wastewater flows to confirm peak sewage flow in this sewer section. At this location the expected flow exceeds the pipes theoretical conveyance capacity, however, the hydraulic grade level (HGL or water level in the pipe), is 1 cm below the sewer obvert elevation (top of pipe). Therefore, it is

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expected the future peak flow will remain within the sewer and may not warrant a sewer upgrade. Refer to Figure 5 for sewer upgrade locations.

Pumping station upgrades are expected at all locations under build-out conditions with timing of upgrades highlighted in orange.

Table 20: Option 1 - Pumping Station Upgrades

Pumping Station	Rated Capacity (L/s)	Projected Peak Flow (L/s)				Peak Flow Capacity Surplus/(Deficit) (L/s) at Build-out
		0-5 years	5-10 years	10-20 years	Build-out	
Main Street	6	19	27	41	44	(38)
Bailey Ave.	31.4	32	41	55	62	(31)
St. Lawrence	21	11	12	18	24	(3)
Ottawa Street	90	72	87	109	127	(37)

Main St. West SPS and Baily Avenue SPS will require significant upgrades to accommodate the projected wastewater flow. It is anticipated that new, enlarged pumping stations and wet wells will be required at both locations along with upgrade forcemains. Bailey Avenue SPS upgrades will require additional investigation to assess the feasibility to double the current rated pumping capacity on the existing constrained site in close proximity to neighbouring residential development. It is recommended that St. Lawrence Street SPS upgrades be reassessed in the 10 to 20 year time frame to confirm that the projected peak flow warrant upgrades as the rated capacity is 3 L/s of the projected build-out peak flow rate. Similarly, Ottawa SPS upgrades are anticipated in the 10 to 20 year time frame and are expected to include upgrade pumping and electrical equipment to accommodate the increased peak flow, based on a capacity deficit of 37 L/s compared to the 90 L/s rated capacity.

Option 2A or 2B: Upgrade Main St. West SPS and bypass Bailey Avenue SPS

Option 2A reduces the number of gravity sewer upgrades required in Option 1 by extending the upgraded Main St. West SPS forcemain approximately 1,150 m along Main Street, east of Gladstone Street, which bypasses the Bailey Avenue SPS. The proposed outlet Maintenance Hole (MH) would be the same as the current Bailey Avenue SPS forcemain outlet. The timing of associated gravity sewer upgrades of this option are summarized as follows:

Table 21: Option 2A - Gravity Sewer Upgrades Main St. West SPS outlet to Main Street, east of Gladstone Street

Street	Existing			Project Peak Flow (L/s)			
	Dia. (mm)	Length (m)	Theoretical Conveyance Capacity (L/s)	0-5 years	5-10 years	10-20 years	Build-out
Main St. W MH 28 - 26	250	155	35 to 39	33	41 to 42	55 to 56	62
Main St. W MH 437 - 434	250	200	26 to 30	15 to 16	23	37	37 to 40
Easement b/w May St. and York St.	250	51	22	17	18	24	29

Option 2B has a comparable number of gravity sewer upgrades, but requires an approximately 1,500 m long forcemain from Main St. West SPS to the intersection of Clarence Street and Louise Street. In addition, the new forcemain alignment would travel through the existing community centre property and along the walking path easement between residential units along Christine Lane (refer to Figure 5). It is recommended that further investigation be completed to assess the viability of the proposed forcemain route, particularly spatial constraints in the easement that already contains a buried sanitary sewer.

Table 22: Option 2B - Gravity Sewer Upgrades Main Street West SPS outlet to Clarence Street and Louise Street

Street	Existing			Project Peak Flow (L/s)			
	Dia. (mm)	Length (m)	Theoretical Conveyance Capacity (L/s)	0-5 years	5-10 years	10-20 years	Build-out
Clarence St. MH 105 - 102	300	207	29 to 83	24	32	46	49
Main St. W MH 437 - 434	250	200	26 to 30	15 to 16	23	37	37 to 40
Easement b/w May St. and York St.	250	51	22	17	18	24	29

Pumping station upgrades for Options 2A and 2B are the same, with Bailey Street SPS not requiring future capacity upgrades. This is one less pumping station upgrade than outlined for Option 1. Bailey Avenue SPS's maximum rated capacity would be reduced and future end of service life equipment replacements could be designed to meet the lower capacity requirements.

Table 23: Options 2A and 2B – Pumping Station Upgrades Summary

Pumping Station	Rated Capacity (L/s)	Projected Peak Flow (L/s)				Peak Flow Capacity Surplus/(Deficit) (L/s)
		0-5 years	5-10 years	10-20 years	Build-out	
Main St.	6	19	27	41	44	(38)
Bailey Ave.	31.4	14	15	15	19	12
St. Lawrence	21	11	12	18	24	(3)
Ottawa St.	90	72	87	109	127	(37)

Options 3A or 3B: Upgrade Main Street SPS and Decommission Bailey Avenue SPS

Option 3A is similar to Option 2A, but with new deeper gravity sewers installed along Main Street West between Bailey Avenue SPS and the new upgrade Main Street SPS. Installation of the gravity sewers would centralize wastewater collection at one SPS in the west end of town and allow Bailey Avenue SPS to be decommissioned in the future. New and regraded sanitary sewers would consist of extending the existing 300 mm dia. Main Street West sewers 286 m to a new Main St. W SPS location along with regrading and deepening approximately 260 m of sewers located between Bailey Ave. SPS and the relocated Main St. West SPS (refer to Figure 5).

Timing of the Bailey Avenue SPS decommission could be coordinated with end of service life of the building and equipment. However, further geotechnical investigation is recommended to review the feasibility of Option 3A based on soil type, bedrock excavation and groundwater. It is anticipated that 260 m of the new gravity sewers would be constructed approximately 6 to 7 m below grade, which is at or near the limits of conventional open trench installation. The feasibility of excavation, engineered trench shoring requirements, bedrock removal and/or groundwater constraints should be assessed to confirm feasibility and refine opinions of probable construction costs.

Table 24: Option 3A - Gravity Sewer Upgrades Main Street West SPS outlet to Main Street, east of Gladstone Street

Street	Existing			Project Peak Flow (L/s)			
	Dia. (mm)	Length (m)	Theoretical Conveyance Capacity (L/s)	0-5 years	5-10 years	10-20 years	Build-out
Main St. W MH 28 - 26	250	155	35 to 39	33	41 to 42	55 to 56	62
Main St. W MH 437 – 434	250	200	26 to 30	15 to 16	23	37	37 to 40
Easement b/w May St. and York St.	250	51	22	17	18	24	29
New/Regraded Sewer Upgrades							
Extend Main St. W. to Relocated SPS	300	286	63	19	27	41	44
Main St. W. from Bailey Ave. to Relocated SPS	250	260	39	14	15	15	19

Options 3B gravity sewer upgrades are similar to Option 3A, however, the Main Street SPS forcemain outlet is located at the Clarence Street and Louise Street intersection, as described in Option 2B.

Table 25: Option 3B - Gravity Sewer Upgrades Main Street West SPS outlet to Clarence Street and Louise Street

Street	Existing			Project Peak Flow (L/s)			
	Dia. (mm)	Length (m)	Theoretical Conveyance Capacity (L/s)	0-5 years	5-10 years	10-20 years	Build-out
Clarence St. MH 105 - 102	300	207	29 to 83	24	32	46	49
Main St. W MH 437 – 434	250	200	26 to 30	15 to 16	23	37	37 to 40
Easement b/w May St. and York St.	250	51	22	17	18	24	29
New/Regraded Sewer Upgrades							
Extend Main St. W. to Relocated SPS	300	286	63	19	27	41	44
Main St. W. from Bailey Ave. to Relocated SPS	250	260	39	14	15	15	19

Options 3A and 3B pumping station upgrades are the same as Options 2A and 2B, however the Main Street SPS needs to be relocated and requires a deeper wet well to drain the new gravity sewers. It is proposed to relocate the SPS approximately 286 m east to mitigate the wet well depth and length of deep gravity sewers to allow Bailey Avenue SPS to be decommissioned in the future. Land acquisition for the new SPS needs to be reviewed as part of this option along with the additional geotechnical considerations summarized under Option 3A gravity sewers to confirm construction feasibility.

Table 26: Options 3A and 3B – Pumping Station Upgrades Summary

Pumping Station	Rated Capacity (L/s)	Projected Peak Flow (L/s)				Peak Flow Capacity Surplus/(Deficit) (L/s)
		0-5 years	5-10 years	10-20 years	Build-out	
Main St.	6	19	27	55	62	(56)
Bailey Ave.	31.4	14	15	N/A	N/A	N/A
St. Lawrence	21	11	12	18	24	(3)
Ottawa St.	90	72	87	109	127	(37)

SEWAGE TREATMENT SYSTEM – CAPACITY REVIEW

In early 2019, JLR, along with the Township of North Dundas (Township) and Ontario Clean Water Agency (OCWA) completed a Municipal Class Environmental Assessment (Class EA) associated with upgrades to the Winchester Sewage Treatment System (STS). The STS consists of a seasonally discharged lagoon-based

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system (lagoon), including three primary facultative treatment cells operated in parallel (Cells 1, 2 and 3), one polishing cell (Cell No. 4), and one post-aeration cell (Cell No. 5). The lagoon treatment system has a C of A rated capacity of 2,220 m³/day (C of A No. 5312-88TK5R).

At the time of the Class EA, population projections were reviewed with the Township and it was determined that the population within Winchester was anticipated to increase by approximately 948 people by 2038. Based on a population of 2,394 and an average day flow of 1,381 m³/d, the estimated per capita flow at the time of the report was approximately 577 L/cap/day inclusive of inflow and infiltration (I&I). The 20-year design average day flow (ADF) for the Winchester STS assumed that the ratio of wastewater flow from future residential and commercial developments would remain similar to the proportion of residential and commercial flows that were previously generated. **The Class EA recommended a specialized treatment study and upgrades to overcome existing operational constraints of the wastewater treatment system's rated capacity in the short term 0-5 year period.**

As part of the current servicing study, population projections were re-developed based on new information available from the Township, and the average wastewater flows for various phasing (0-5 years, 5-10 years, 20 years, and 20+ years) were determined. The following table identifies the wastewater ADF for each phase, which includes residential (350 L/cap/day), commercial (28,000 L/ha/day) and a typical I&I flow (90 L/cap/day).

Table 27: Sewage Treatment System Future Capacity Comparison

Phasing	Projected Population Increase (Persons)	Projected increase ADF (m ³ /d)	Existing ADF (m ³ /d)	Projected Wastewater ADF ¹ (m ³ /d)	Rated Capacity (m ³ /d) ²	Treatment Capacity Surplus/ (Deficit) (m ³ /d)
0-5 Years	539	347	1,381	1,728	2,220	492
5-10 Years	989	824		2,205		15
10-20 Years	1740	1,580		2,961		(741)
20+ Years	2464	1,898		3,279		(1059)

1. The projected wastewater ADF is estimated based on an assumed current average day flow of 1,381 m³/d which is an average of the annual average day wastewater flow from 2012-2016.

2. **The Winchester Sewage Treatment System Class EA (JLR, 2019) recommended a specialized treatment study to overcome existing operational constraints of the wastewater treatment system's rated capacity in the short term 0-5 year period.**

It is noted that based on the higher projected population increase for the servicing study compared to the Class EA, the above suggests that the capacity of the lagoon could be exceeded during the 10-20 Year period if the projected development and connections are realized within this timeframe. As noted elsewhere in this study, it is recommended that the Township review the actual growth and wastewater flows generated on a periodic basis and re-evaluate the need and timing for capacity increases to the STS. Generally, capacity upgrades are triggered when a treatment facility reaches approximately 80% of the current functional or production capacity. This early identification allows time to accommodate the required planning and design between the anticipated need and the implementation of the upgrades. **It is recommended that any short term lagoon upgrades necessary to overcome existing operational constraints be coordinated with expected long-term capacity upgrades to accommodate the growth projections.**

At a high level potential future options overcome existing treatment constraints and to increase lagoon treatment capacity consist of adding end of pipe treatment such as a Moving Bed Bioreactor (MBBR) or **Submerged Attached Growth Reactor (SAGR) systems** and/or increase existing the lagoon area. OCWA

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advised that deepening the lagoon to increase storage capacity likely is not a feasible option as bedrock was encountered during the original lagoon construction.

It is important to note that the results of this study are *highly* dependent on the extent and rate of growth that the Township is projecting and also on the assumptions used in determining resulting future wastewater flows associated with this growth. As the Township receives more site specific information, it is possible that the projected wastewater flows could be refined and timing for implementation of the required infrastructure upgrades/expansion to support the future growth could be extended further out.

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SUMMARY OF SANITARY SYSTEM REVIEW

A summary of the conclusions resulting from the above sanitary sewer model simulations, and SPS capacity review are provided in Table 28.

Table 28: Conceptual-Level Upgrades to Sanitary System

SANITARY SYSTEM UPGRADES		Projected Timeline	OPC Included in Study?	Municipal Class Environmental Requirements
Type	Description			
Sewage Pumping Station Upgrades	Options 1, 2A and 2B – Main St. SPS, increase capacity (current ECA capacity 6 L/s) to accommodate the build-out demand scenario (44 L/s from 6 L/s). It is assumed that a forcemain upgrade along with a new pumping station and wet well are required.	0 - 5 years	Yes	Schedule B – Increase sewage pumping station capacity that requires new building/wet well
	Option 1 – Bailey Ave. SPS, increase capacity (current ECA capacity 31 L/s) to accommodate the build-out demand scenario (62 L/s from 31 L/s). It is assumed that a forcemain upgrade along with a new pumping station and wet well are required.	0 - 5 years	Yes	Schedule B – Increase sewage pumping station capacity that requires new building/wet well
	Options 1 to 3 – Ottawa St. SPS, increase capacity (current ECA capacity 90 L/s) to accommodate the build-out demand scenario (127 L/s from 90 L/s). It is assumed equipment upgrades can be accommodated in the existing building footprint and forcemain.	10 to 20 Years	Yes	Schedule A+ – Notify residences of upgrade contained in existing building and wet well
	Options 2A and 2B – Bailey Ave. SPS building and equipment replacement at end of service life	0 - 5 years	Yes	Schedule A – Equipment replacement in existing facility
	Options 3A and 3B – New Main St. SPS rated for 62 L/s. New forcemain to either Main St. W. or Clarence St. and decommission Bailey Ave. SPS. Likely requires land acquisition for new Main St. SPS location.	0 - 5 years	Yes	Schedule B – Increase sewage pumping station capacity that requires new building/wet well
Sanitary Sewer Capacity Upgrades	Option 1 – Bailey Ave: Upgrade 24 m section of sanitary sewer with 300 mm dia. sewer	0 - 5 years	Yes	Schedule A+ – Notify residences of upgrade in established road allowance
	Option 1 – Main St. W: Upgrade 177 m section of sanitary sewer with 300 mm dia. sewer	5 to 10 Years	Yes	

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	Options 1, 2A and 3A – Main St. W, Bailey Ave. SPS outlet sewers: Upgrade 155 m section of sanitary sewer with 300 mm dia. sewer	5 to 10 Years	Yes	Schedule A+ – Notify residences of upgrade in established road allowance
	Options 1 to 3 – Main St. W. upstream of Main St. SPS: Upgrade 200 m section of sanitary sewer with 300 mm dia. sewer	10 to 20 Years	Yes	Schedule A+ – Notify residences of upgrade in established road allowance
	Options 1 to 3 – Easement: Upgrade 51 m section of sanitary sewer with 300 mm dia. Sewer. To be confirmed in future based on field survey and actual future wastewater flows	10 to 20 Years	Yes	Schedule A+ – Notify residences of upgrade in established road allowance
	Options 2B and 3B – Clarence St.: Upgrade 207 m section of sanitary sewer with 450 mm dia. sewer	5 to 10 Years	Yes	Schedule A+ – Notify residences of upgrade in established road allowance
	Options 3A and 3B – New 286 m of regraded 300 mm dia. sanitary sewers extension along Main St. W.	0 - 5 years	Yes	Schedule A+ – Notify residences of upgrade in established road allowance
	Options 3A and 3B – New 260 m of regraded deep (~7m) 250 mm dia. sanitary from Bailey Ave. SPS to relocated Main St. SPS.	10 to 20 years* Coordinate with Bailey Ave. SPS equipment replacement	Yes	Schedule A+ – Notify residences of upgrade in established road allowance
Sewage Treatment System	A specialized treatment upgrades to overcome existing operational constraints of the wastewater treatment systems to achieve the rated capacity in the short term 0-5 year period.	0 to 5 Years	Yes	Completed 2019 Schedule B
	Increase lagoon treatment capacity by adding/expanding end of pipe treatment such as a Moving Bed Bioreactor (MBBR), or Submerged Attached Growth Reactor (SAGR) systems and/or increase the existing lagoon area. Timing and remaining treatment capacity to be periodically reviewed in the future based on receiving wastewater flow as growth occurs.	10 to 20 Years	Yes	Schedule C – Increase rated capacity of wastewater treatment system

SUMMARY OF ASSUMPTIONS FOR PREPARING OPINIONS OF PROBABLE COST

An Opinion of Probable Cost (OPC) with a Class 'D' (Indicative Estimate) level of accuracy was developed for the conceptual-level upgrades required to service the projected future developments. The OPC was developed based on past experience on similar projects, professional judgment, and equipment costs provided by suppliers.

In preparing the OPC, the following assumptions were made:

- The estimated costs for various items are order-of-magnitude only and are based on the experience and current (2020) unit prices in the construction industry.
- All costs, including those for future years, are expressed in 2020 dollars and exclude HST. If these costs are to be used for long-range cash-flow projections, the implications for potential future trends of inflation and interest must be applied accordingly.
- Conceptual level of order-of-magnitude OPC may range by $\pm 30\%$. The scope of the required upgrades are to be confirmed through a Master Plan and/or Municipal Class EA, followed by preliminary and detailed design; costs will vary depending on the scope considered for implementation.
- The estimated costs do not include engineering costs.
- Estimated costs for various items were obtained from the City of Ottawa Master Spec Code List (December, 2018).
- Bedrock and groundwater levels were assumed deeper than the excavations, and therefore, no costs for rock removal, water taking and discharge have been included in the OPC.

This OPC is based on our best professional judgement and experience at the time, which may not reflect actual construction costs that are dependent on available labour, equipment, materials, market conditions or Contractor's method of pricing at the time of tendering. Where appropriate, Class Environmental Assessments should be completed to better understand the scope (cost, magnitude, timeline) of the required upgrades.

Table 29 below provides an overview of the conceptual-level upgrades considered within the OPC to service the development scenarios. Figures 5 to 9 provide an overview of the conceptual-level upgrades of the water distribution and sanitary systems as well as the location of the existing water and wastewater treatment systems.

Table 29: Opinions of Probable Cost for Conceptual-Level Upgrades

CONCEPTUAL LEVEL UPGRADES		Class 'D' Opinion of Probable Cost
Type	Description	
UPGRADES 0 to 5 Years		
Sanitary Sewer Capacity Upgrades	Option 1 – Bailey Ave: Upgrade 24 m section of sanitary sewer with 300 mm dia. sewer	\$50,000
	Options 3A and 3B – New 286 m of regraded 300 mm dia. sanitary sewers extension along Main St. W.	\$450,000
Sewage Pumping Station Upgrades	Options 1 – Main St. SPS, increase capacity (current ECA capacity 6 L/s) to accommodate the build-out demand scenario (44 L/s from 6 L/s). Upgrade anticipated to include a new forcemain, new pumping station and wet well.	\$2.5M - \$3.5M
	Option 2A – Same Main St. SPS upgrade as Option 1, but forcemain outlet extended along Main St., east of Gladstone St.	\$3.1M – \$4.1M
	Option 2B – Same Main St. SPS upgrade as Option 1, but forcemain outlet extended to intersection of Clarence St. and Louise St.	\$3.5M - \$4.5M
	Option 1 – Bailey Ave. SPS, increase capacity (current ECA capacity 31 L/s) to accommodate the build-out demand scenario (62 L/s from 31 L/s). Upgrade anticipated to include a new forcemain, new pumping station and wet well. .	\$3.75M - \$4.75M
	Options 2A and 2B – Bailey Ave. SPS building and equipment replacement at end of service life	\$750,000
	Options 3A – New Main St. SPS rated for 62 L/s. New forcemain outlet extended along Main St. east of Gladstone St. Decommission Bailey Ave. SPS. Likely requires land acquisition for new Main St. SPS location.	\$5M - \$6M
	Options 3B – New Main St. SPS rated for 62 L/s. New forcemain outlet extended to intersection of Clarence St. and Louise St. Decommission Bailey Ave. SPS. Likely requires land acquisition for new Main St. SPS location.	\$5.5M - \$6.5M

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Sewage Treatment System	Specialized treatment upgrades to overcome existing operational constraints of the wastewater treatment systems to achieve the rated capacity. Opportunity to coordinate upgrades with 10 to 20 year treatment capacity upgrades	\$7M
Watermain Upgrades	New 300 mm dia. watermain loop approximately 1,030 m (excluding 750 m through new development property) of 300 mm diameter watermain connection between Main St. West and Fred St.	\$750,000
Watermain Storage and Pumping Station Upgrades	Chesterville Reservoir - 450 m ³ water storage expansion and pumping station upgrade	\$1M
UPGRADES 5 to 10 Years		
Sanitary Sewer Capacity Upgrades	Option 1 – Main St. W: Upgrade 177 m section of sanitary sewer with 300 mm dia. sewer	\$250,000
	Options 1, 2A and 3A – Main St. W, Bailey Ave. SPS outlet sewers: Upgrade 155 m section of sanitary sewer with 300 mm dia. sewer	\$200,000
	Options 2B and 3B – Clarence St.: Upgrade 207 m section of sanitary sewer with 450 mm dia. sewer	\$275,000
Watermain Upgrades	St. Lawrence St. 300 mm dia. watermain upgrade between the Winchester Reservoir and Pumping Station and Gordon Street (current extent of 300 mm diameter watermain from the Winchester elevated tank). Accompanies Winchester water storage and pumping station upgrades.	\$1.5M
Water Storage and Pumping Station	Water storage expansion of 1,400 m ³ and booster pump upgrade at the Winchester Reservoir and Pumping Station.	\$2M
UPGRADES 10 to 20 Years		
Sanitary Sewer Capacity Upgrades	Options 1 to 3 – Main St. W. upstream of Main St. SPS: Upgrade 200 m section of sanitary sewer with 300 mm dia. sewer	\$250,000
	Options 1 to 3 – Easement: Upgrade 51 m section of sanitary sewer with 300 mm dia. Sewer. To be confirmed in future based on field survey and actual future wastewater flows	\$75,000

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	Options 3A and 3B – New 260 m of regraded deep (~7m) 250 mm dia. sanitary from Bailey Ave. SPS to relocated Main St. SPS.	\$600,000
Sewage Pumping Station Upgrades	Options 1 to 3 – Ottawa St. SPS, increase capacity (current ECA capacity 90 L/s) to accommodate the build-out demand scenario (127 L/s from 90 L/s). It is assumed equipment upgrades can be accommodated in the existing building footprint and forcemain.	\$750,000
Sewage Treatment System	Increase lagoon treatment capacity by adding end of pipe treatment such as a Moving Bed Bioreactor (MBBR) or Submerged Attached Growth Reactor (SAGR) systems and/or increase existing lagoon depth to increase storage volume. Timing and remaining treatment capacity to be periodically reviewed in the future based on receiving wastewater flow as growth occurs.	\$15M
UPGRADES BUILD-OUT		
Watermain upgrades	Main St W. upgrade watermain to 300 mm dia. from Wellings of Winchester to St. Lawrence St. Establishes a trunk watermain loop through Winchester to improve fire flow availability.	\$1.5M
	Fred St. upgrade watermain to 300 mm dia from Fred St. easement connection to St. Lawrence St. Establishes a trunk watermain loop through Winchester to improve fire flow availability.	\$500,000
TOTAL OVERALL CONCEPTUAL-LEVEL OPC		\$35M - \$38M

Based on review of the OPCs, it is expected that Option 2A would provide the most economical option to accommodate the projected build-out future development (refer to Figure 10). The following table provides an OPC summary associated with Option 2A.

Table 30: Option 2A - Opinions of Probable Cost for Conceptual-Level Upgrades

CONCEPTUAL LEVEL UPGRADES		Class 'D' Opinion of Probable Cost
Type	Description	
UPGRADES 0 to 5 Years		
Sewage Pumping Station Upgrades	Option 2A – Same Main St. SPS upgrade as Option 1, but forcemain outlet extended along Main St., east of Gladstone St.	\$3.1M – \$4.1M
	Options 2A – Bailey Ave. SPS building and equipment replacement at end of service life	\$750,000
Sewage Treatment System	Specialized treatment upgrades to overcome existing operational constraints of the wastewater treatment systems to achieve the rated capacity. Opportunity to coordinate upgrades with 10 to 20 year treatment capacity upgrades	\$7M
Watermain Upgrades	New 300 mm dia. watermain loop approximately 1030 m (excluding 750 m through new development property) of 300 mm diameter watermain connection between Main St. West and Fred St.	\$750,000
Watermain Storage and Pumping Station Upgrades	Chesterville Reservoir - 450 m ³ water storage expansion and pumping station upgrade	\$1M
UPGRADES 5 to 10 Years		
Sanitary Sewer Capacity Upgrades	Option 2A – Main St. W, Bailey Ave. SPS outlet sewers: Upgrade 155 m section of sanitary sewer with 300 mm dia. sewer	\$200,000
Watermain Upgrades	St. Lawrence St. 300 mm dia. watermain upgrade between the Winchester Reservoir and Pumping Station and Gordon Street (current extent of 300 mm diameter watermain from the Winchester elevated tank). Accompanies Winchester water storage and pumping station upgrades.	\$1.5M

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Water Storage and Pumping Station	Water storage expansion of 1,400 m ³ and booster pump upgrade at the Winchester Reservoir and Pumping Station.	\$2M
UPGRADES 10 to 20 Years		
Sanitary Sewer Capacity Upgrades	Option 2A – Main St. W. upstream of Main St. SPS: Upgrade 200 m section of sanitary sewer with 300 mm dia. sewer	\$250,000
	Option 2A – Easement: Upgrade 51 m section of sanitary sewer with 300 mm dia. Sewer. To be confirmed in future based on field survey and actual future wastewater flows	\$75,000
Sewage Pumping Station Upgrades	Option 2A – Ottawa St. SPS, increase capacity (current ECA capacity 90 L/s) to accommodate the build-out demand scenario (127 L/s from 90 L/s). It is assumed equipment upgrades can be accommodated in the existing building footprint and forcemain.	\$750,000
Sewage Treatment System	Increase lagoon treatment capacity by adding end of pipe treatment such as a Moving Bed Bioreactor (MBBR) or Submerged Attached Growth Reactor (SAGR) systems and/or increase existing lagoon depth to increase storage volume. Timing and remaining treatment capacity to be periodically reviewed in the future based on receiving wastewater flow as growth occurs.	\$15M
UPGRADES BUILD-OUT		
Watermain Upgrades	Main St W. upgrade watermain to 300 mm dia. from Wellings of Winchester to St. Lawrence St. establishes a trunk watermain loop through Winchester to improve fire flow availability.	\$1.5M
	Fred St. upgrade watermain to 300 mm dia from Fred St. easement connection to St. Lawrence St. establishes a trunk watermain loop through Winchester to improve fire flow availability.	\$500,000
TOTAL OVERALL CONCEPTUAL-LEVEL OPC		\$34.4M - \$35.4M

KEY CONSIDERATIONS FROM DESKTOP REVIEW

Based on the findings of the desktop water and wastewater servicing review, a list of recommendations and key considerations are summarized as follows:

Water Servicing

- The Lactalis water service configuration and details be reviewed for any future opportunities to refine the Township's water model to more accurately represent the site servicing at this facility.
- A Water Distribution System Master Plan be developed to evaluate and select preferred trunk water servicing routes and options. Since additional water storage is required to address a future storage deficit, a Master Plan would be beneficial in the selection of the preferred water storage configuration and location as it relates to the distribution system.

Wastewater Servicing

- The St. Lawrence Street SPS upgrades be reassessed in the 10 to 20 year time frame to confirm that the upgrades remain warranted as the projected build-out peak flow rate is within 3 L/s of the current rated capacity.
- Option 2A is expected to be the most economical option to accommodate the build-out wastewater flow from the identified future development areas.
- Under Option 1 the Bailey Avenue SPS upgrades will require additional investigation to assess the feasibility to double the current rated pumping capacity to 62 L/s on the existing constrained site and in close proximity to neighbouring residential development.
- Options 2B and 3B further investigation of the proposed forcemain route through the Christie Lane easement should be completed to assess the viability, particularly spatial constraints as the easement already contains a buried sanitary sewer.
- For the 20 year and build-out sewer upgrade anticipated along the easement between May Street and York Street additional field investigation is warranted to confirm the sewer invert elevations along with future refinement of the projected peak wastewater flows.
- Options 3A and 3B further geotechnical investigation is recommended to review the feasibility of excavation, engineered trench shoring requirements, potential bedrock removal and/or groundwater constraints and refine opinions of probable construction costs. It is anticipated that 260 m of the new gravity sewers would be constructed approximately 6 to 7 m below grade, which is at or near the limits of conventional open trench installation.
- **Short term lagoon upgrades necessary to overcome existing operational constraints be coordinated with expected long-term capacity upgrades to accommodate the growth projections.** The Township should continue to review the actual growth and wastewater flows generated on a periodic basis and re-evaluate the need and timing for capacity increases to the STS. Additional investigation is required to assess constraints of increasing lagoon depth, treatment requirements and increased discharge period in order to achieve the anticipate build-out treatment capacity.

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It is noted that the type of units expected within various residential areas and the type of commercial use expected within future commercial lands have a significant influence on the water demands and wastewater flows projected for the development scenarios. With limited information regarding the details of the intended future developments, design guideline values for the projected flows have been used to identify the various upgrades. Based on our experience, guideline values tend to be more conservative to account for unknowns when limited information is available, and therefore, there may be opportunities to refine the projected flows with further details as information becomes more available.

Furthermore, the upgrades identified through this review and their associated costs are largely attributed to future developments that are currently non-committed. Therefore, as these infrastructure upgrades are development driven, it would be expected that the majority of the costs to upgrade the infrastructure would be borne by the developers.

It is recommended that the Village undertake a more in-depth Master Plan for their water and wastewater systems to further define the projected future developments, the projected flows (both water and wastewater) and the resulting infrastructure upgrade requirements and the timing for those upgrades based on additional information. A more in-depth capacity assessment review of the STS could also be undertaken to determine the potential expandability of the STS based on projected demands and to assess constraints based on increase lagoon depth, treatment objectives and release rates. As noted, since additional water storage is required to address a future storage deficit, a Master Plan would be beneficial in the selection of the preferred water storage configuration and the specific location as it relates to the distribution system. A Master Plan would also assist in establishing additional capital costs and timing that could be used to ensure that any Development Charges By-law is appropriate to accommodate sustainable growth within the Township.

J.L. RICHARDS & ASSOCIATES LIMITED

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AW/MB:jd
Attach.

Attachment 1

GROWTH PROJECTIONS MEMORANDUM

Attachment 2

HYDRAULIC WATER MODEL SCHEMATICS

Attachment 3

HYDRAULIC SEWER MODEL SCHEMATICS

THE CORPORATION OF THE TOWNSHIP OF NORTH DUNDAS

BY-LAW No. 2020-65

Being a By-law of the Corporation of the Township of North Dundas to adopt, confirm and ratify matters dealt with by resolution.

WHEREAS the *Municipal Act, 2001*, as amended, provides that the powers of the Corporation of the Township of North Dundas, shall be exercised by By-law.

AND WHEREAS in many cases, action which is taken or authorized to be taken by the Township of North Dundas does not lend itself to the passage of an individual By-law;

NOW THEREFORE the Council of the Township of North Dundas enacts as follows:

- 1.0** That the actions of the Township of North Dundas at the Special Meeting held on December 15th, 2020 in respect of each motion, resolution and other action taken by the Township of North Dundas at its meeting are, except where the prior approval of the Local Planning Appeal Tribunal or other authority is required by law, hereby adopted, ratified and confirmed as if all such proceedings were expressly embodied in this By-law.
- 2.0** That where no individual By-law has been or is passed with respect to the taking of any action authorized in or by the above-mentioned minutes or with respect to the exercise of any powers by the Township of North Dundas in the above-mentioned minutes, then this By-law shall be deemed for all purposes to be the By-law required for approving and authorizing and taking of any action authorized therein and thereby or required for the exercise of any powers therein by the Township of North Dundas.
- 3.0** That the Mayor and Members of Council of the Township of North Dundas are hereby authorized and directed to do all things necessary to give effect to the said action of the Township of North Dundas to obtain approvals where required and except as otherwise provided, the Mayor, or in the absence of the Mayor the alternate Head of Council, and the Municipal Clerk, or in the absence of the Municipal Clerk, the Deputy Clerk, are hereby directed to execute all documents necessary on behalf of the Township of North Dundas.

READ and passed in Open Council, signed and sealed this 15th day of December, 2020.

MAYOR

CLERK