



Corporation of the Township of Mattice-Val Cote

**Municipal Asset
Management Plan**

December 31st, 2013



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The development of an asset management plan has been identified as a pre-requisite for the receipt of funding from the Province of Ontario (the 'Province') under the Municipal Infrastructure Investment Initiative ('MIII') and as such, represents an important first step in obtaining financing for necessary infrastructure investments. That said, planning for capital reinvestment is essential with or without the incentive provided under MIII, particularly given that a number of municipalities are now approaching end-of-useful-life for significant components of their infrastructure.

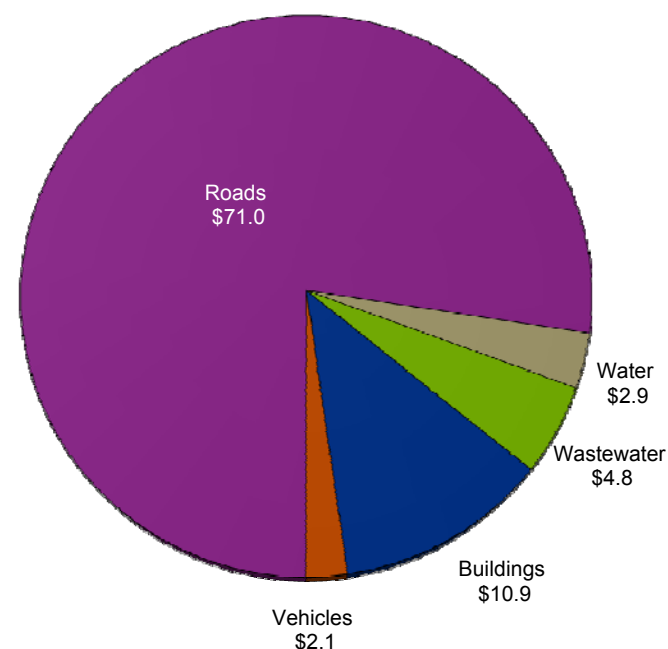
Current state of infrastructure

Infrastructure represents a major investment on the part of the Township of Mattice-Val Cote (the 'Municipality'), with the estimated replacement cost of its assets – roads, buildings, vehicles, equipment and pipes – amounting to more than \$91 million, or \$134,000 per resident. In addition to the cost of replacing its assets, the Municipality is also required to repair and rehabilitate its infrastructure over its entire useful life, with the cost of these life cycle activities for linear infrastructure (roads and pipes) amounting to \$174 million, or \$495,000 per household.

While the amounts of the Municipality's replacement and life cycle costs are significant, the real pressure from the perspective of its infrastructure comes from its current condition. Condition analysis conducted as part of the asset management planning process indicates that most of the Municipality's assets are in good condition. Over time, however, the Municipality will need to invest in order to address the ongoing deterioration and aging of its infrastructure, with the expected total requirement over the next ten years to be in the order of \$17.1 million.

Details of the Municipality's infrastructure condition assessment and identified capital investment requirements over the next ten years are provided on the following page.

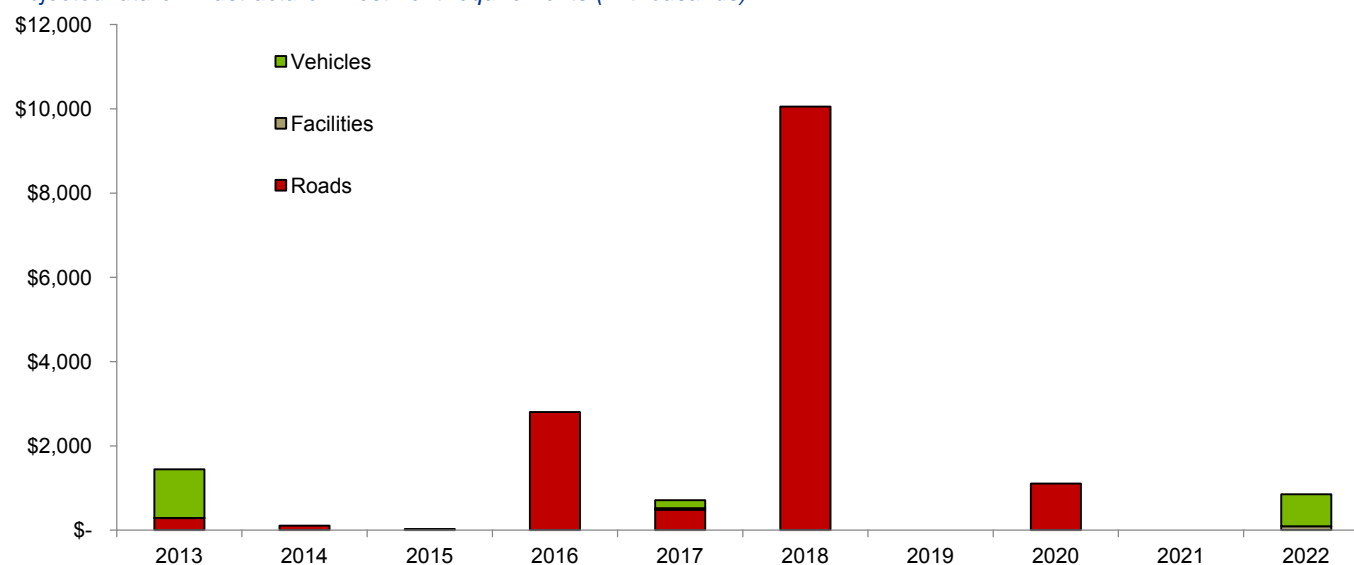
Replacement value by type of asset (in millions)



Condition assessment results by infrastructure component

Infrastructure	Condition Assessment		
	Good	Fair	Poor
Roads	98%	2%	—
Water mains	100%	—	—
Wastewater mains	100%	—	—
Storm sewers	71%	10%	9%
Bridges and culverts	22%	28%	50%
Buildings	98%	2%	—
Vehicles	100%	—	—

Projected future infrastructure investment requirements (in thousands)



Asset management strategies

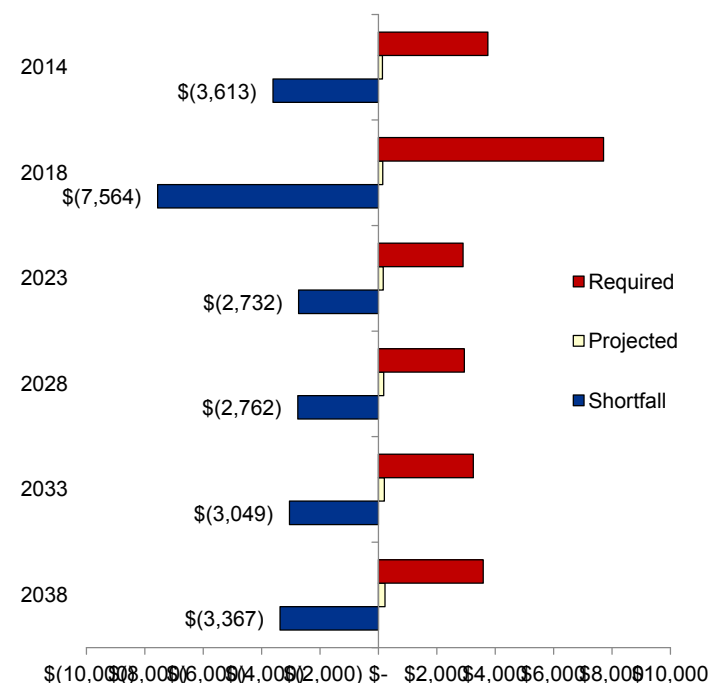
As required under MIII, this report identifies the required asset management strategies for the Municipality based on the types of infrastructure maintained as well as its current condition. As noted earlier, the Municipality would be required to spend an average of \$1.6 million per year over the next ten years in order to address the current issues identified with its infrastructure. While this would allow the Municipality to meet its immediate infrastructure investment needs, it does not allow for ongoing maintenance, rehabilitation and replacement of its infrastructure, the cost of which amounts to an additional \$2.2 million, bringing the Municipality's total infrastructure financing requirement to \$3.8 million per year. In comparison, the Municipality generated a total of \$3.6 million in revenue during 2012, which supported \$1.1 million in capital expenditures (with corresponding grants of \$753,000 for local funding on only \$139,000). Clearly, it is unable to address the full spectre of its infrastructure needs, resulting in ongoing annual infrastructure deficits.

In light of the significant gap between its infrastructure financing requirement and its capacity to raise revenues for capital purposes, the Municipality will be required to prioritize its investments. For the purposes of the asset management plan, three different categories have been identified:

- **Priority 1** – consists of infrastructure investments required within the next five years, investments that qualify for grants and immediate investment needs stemming from new legislation or regulation, public health or safety concerns or other issues
- **Priority 2** – includes infrastructure investments required within six to ten years and other lower priority infrastructure
- **Priority 3** – representing the lowest class of investment priority, this category includes infrastructure with no investment requirement identified within the next ten years, discontinued infrastructure and other lower priority infrastructure

For linear infrastructure, the primary driver of future capital investments will be road improvements.

Calculated annual infrastructure funding shortfalls (in thousands)



Financing strategy

While the Municipality is unable to unilaterally address its infrastructure-related financial requirement, it recognizes the need to begin to address the challenge. As part of its financing strategy, the Municipality is proposing the following measures intended to increase funding for capital requirements:

- Permanently protecting the current level of capital expenditures so as to provide a consistent stream of funding into the future;
- Introducing a five year capital levy that would see the total levy increase by 2%, with the new revenue allocated to capital purposes (i.e. not for operations). The capital levy would add approximately \$30,000 per year to existing capital funding (\$140,000 in total over the next five years), representing a 65% increase in capital spending.
- Exploring the use of debt as a means of funding infrastructure requirements, including the adoption of a program whereby a fixed percentage of capital expenditures are financed through debt; and
- Continuing to pursue grant programs provided by senior levels of government.

The issue of affordability

When considering the Municipality's ability to fund its capital requirements and its entitlement for grants, there needs to be a recognition of the limited ability of the Municipality to finance its capital needs due to issues surrounding affordability. In addition to the affordability considerations developed by the Province under the revised OMPF model, it is also important to remember that:

- The Municipality's population has decreased at a significantly faster rate than other communities and the Province as a whole. While the Province's total population increased by 19.5% between 1996 and 2011, the Municipality's population fell by 26.6% over the same period. The consequence of this trend is clear – fewer people in the community translates into fewer people able to fund municipal operations.
- The Municipality's residents have a higher degree of reliance on pension income (i.e. fixed income) as opposed to other communities. Overall, 18% of total reported personal income in the Municipality is derived from pensions, as opposed to the Provincial average of 14%. Additionally, the proportions of employment and pension income earned by the Municipality's residents has changed significantly over the last decade, with employment income falling from 67% of reported personal income to 57%, while pension income has increased from 13% to 18%. The consequences of this trend are also clear – those residents that remain within the Municipality are increasingly limited in their ability to afford ongoing taxation increases given the higher reliance on fixed income sources.

About this plan

The Municipality's asset management plan has been developed based on the guidance provided by the Province in *Building Together – Guide for Municipal Asset Management Plans*, which has been tailored to reflect the small size of the Municipality and the nature of its operations and infrastructure. Preparation of the plan involved Municipal staff as well as external financial and engineering advisors paid for through the MIII.

In completing the asset management plan for the Municipality:

- Accepted industry best practices were used for the development of the plan components, including the condition assessments, identification of life cycle requirements and estimated costs;
- The asset management plan was reviewed by Municipal council prior to adoption;
- The asset management plan was compared to the requirements under MIII to ensure compliance; and
- Expressions of interest submitted to date have been based on the priorities identified in the asset management plan.

We would like to acknowledge the cooperation of Municipal staff in the preparation of this report.



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**Asset Management Planning
for the Township of Mattice-Val Cote**

Chapter I Introduction



Asset management planning defined

Asset management planning is the process of making the best possible decisions regarding the acquisition, operating, maintaining, renewing, replacing and disposing of infrastructure assets. The objective of an asset management plan is to maximize benefits, manage risk and provide satisfactory levels of service to the public in a sustainable manner. In order to be effective, an asset management plan needs to be based on a thorough understanding of the characteristics and condition of infrastructure assets, as well as the service levels expected from them. Recognizing that funding for infrastructure acquisition and maintenance is often limited, a key element of an asset management plan is the setting of strategic priorities to optimize decision-making as to when and how to proceed with investments. The ultimate success or failure of an asset management plan is dependent on the associated financing strategy, which will identify and secure the funds necessary for asset management activities and allow the Municipality to move from planning to execution.

The purpose of the asset management

The asset management plan outlines the Municipality's planned approach for the acquisition and maintenance of its infrastructure, which in turn allows the Municipality to meet its stated mission and mandate by supporting the delivery of services to its residents. In achieving this objective, the asset management plan:

- Provides elected officials, Municipal staff, funding agencies, community stakeholders and residents with an indication of the Municipality's investment in infrastructure and its current condition;
- Outlines the total financial requirement associated with the management of this infrastructure investment, based on recommended asset management practices that encompass the total life cycle of the assets;
- Prioritizes the Municipality's infrastructure needs, recognizing that the scope of the financial requirement is beyond the capabilities of the Municipality and that some form of prioritization is required; and
- Presents a financial strategy that outlines how the Municipality intends to meet its infrastructure requirements.

It is important to recognize that the asset management plan is just that – a plan. The asset management plan (which has been prepared for the purposes of meeting the requirements of the Municipal Infrastructure Investment Initiative) does not represent a formal, multi-year budget for the Municipality. The approval of operating and capital budgets is undertaken as part of the Municipality's overall annual budget process. Accordingly, the financial performance and priorities outlined in the asset management plan are subject to change based on future decisions of Council with respect to operating and capital costs, taxation levels and changes to regulatory requirements or the condition of the Municipality's infrastructure.

The asset management plan encompasses the following components of the Municipality's infrastructure:

Transportation Infrastructure	Water and Wastewater Infrastructure	Other Infrastructure
<ul style="list-style-type: none"> • Roads • Bridges and culverts • Streetlights • Storm sewers 	<ul style="list-style-type: none"> • Treatment facilities • Water distribution system • Wastewater collection system 	<ul style="list-style-type: none"> • Vehicles • Facilities

For the purposes of developing the asset management plan, a 25-year planning horizon was considered, although the analysis includes a discussion of required activities over the entire life cycle of the Municipality's infrastructure. It is expected that the Municipality will update its asset management plan every four years (to coincide with Council elections) or earlier in the event of a major change in circumstances, which could include:

- New funding programs for infrastructure
- Unforeseen failure of a significant infrastructure component
- Regulatory changes that have a significant impact on infrastructure requirements
- Changes to the Municipality's economic or demographic profile (positive or negative), which would impact on the nature and service level of its infrastructure

The development of the Municipality's asset management plan involved the following major worksteps.

Workstep	Report Section
1. Information concerning the Municipality's tangible capital assets was reviewed and summarized to provide a preliminary inventory of assets, acquisition year, remaining useful life and historical cost.	Pages 15 to 20 Appendices A to F
2. A condition assessment of the Municipality's infrastructure was developed based on a review of previously commissioned assessments, the age and estimated remaining useful life of the infrastructure and engineering inspections of certain components.	Pages 21 and 22 Appendices A to F
3. Asset management strategies for each component of the Municipality's infrastructure were developed to provide an indication as to the recommended course of action for infrastructure procurement, maintenance and replacement/rehabilitation over the estimated useful life of the infrastructure component. As part of the development of the asset management strategies, cost estimates were prepared for the recommended activities.	Pages 28 to 38 Appendices G and H
4. Based on the asset management strategies (which provide an indication as to the cost of the recommended activities) and the condition assessment (which provides an indication as to the timing of the recommended activities), an unencumbered financial projection was developed that outlined the overall cost of recommended asset management strategies assuming that the Municipality was to undertake all of the recommended activities when required (i.e. assuming sufficient funds were available for all required infrastructure maintenance and replacement). Consistent with the provisions of MIII, no grants were considered in the preparation of the unencumbered financial projection.	Pages 37 and 38 Pages 42 to 44 Appendix J Appendix K
5. Recognizing that the overall financial requirement associated with the recommended asset management strategies is unaffordable for the Municipality, the required asset management activities were prioritized based on the potential risk of failure (determined by the condition assessment), the potential impact on residents and other stakeholders and other considerations.	Pages 39 and 40 Appendix I
6. A second set of financial projections was developed based on the resources available to the Municipality to support its asset management activities, including funding from taxation and user fees. Consistent with the provisions of MIII, no grants were considered in the preparation of the financial projections.	Pages 42 to 44 Appendix L

The development of the asset management plan involved input from the following parties:

- Council and staff of the Municipality
- KPMG LLP, financial advisors to the Municipality
- exp Services Inc., engineering advisors to the Municipality

The asset management plan outlined in this report represents a forecast of the Municipality's infrastructure-related activities under a series of assumptions that are documented within the plan. The asset management plan does not represent a formal, multi-year budget for infrastructure acquisition and maintenance activities but rather a long-term strategy intended to guide future decisions of the Municipality and its elected officials and staff, recognizing that the approval of operating and capital budgets is undertaken as part of the Municipality's overall annual budgeting process.

In order to evaluate and improve the asset management plan, the Municipality plans to undertake the following actions:

Action Item	Frequency
1. Updating of infrastructure priorities based on: <ul style="list-style-type: none"> Ongoing condition assessments (e.g. bi-annual bridge inspections) Visual inspection by municipal personnel Identified failures or unanticipated deterioration of infrastructure components Analysis of performance indicators 	Annually
2. Adjustment of asset management plan for changes in financial resources, including new or discontinued grant programs, changes to capital component of municipal levy, etc.	Every four years
3. Comparison of actual service level indicators to planned service level indicators and identification of significant variances (positive or negative)	Annually
4. Updating of infrastructure data maintained in Municipal Data Works	Annually upon completion of the Municipality's financial statement audit



Introduction Restrictions



This report is based on information and documentation that was made available to KPMG at the date of this report. KPMG has not audited nor otherwise attempted to independently verify the information provided unless otherwise indicated. Should additional information be provided to KPMG after the issuance of this report, KPMG reserves the right (but will be under no obligation) to review this information and adjust its comments accordingly.

Pursuant to the terms of our engagement, it is understood and agreed that all decisions in connection with the implementation of advice and recommendations as provided by KPMG during the course of this engagement shall be the responsibility of, and made by, the Township of Mattice-Val Cote. KPMG has not and will not perform management functions or make management decisions for the Township of Mattice-Val Cote.

This report includes or makes reference to future oriented financial information. Readers are cautioned that since these financial projections are based on assumptions regarding future events, actual results will vary from the information presented even if the hypotheses occur, and the variations may be material.

Comments in this report are not intended, nor should they be interpreted to be, legal advice or opinion.

KPMG has no present or contemplated interest in the Township of Mattice-Val Cote nor are we an insider or associate of the Township of Mattice-Val Cote or its management team. Our fees for this engagement are not contingent upon our findings or any other event. Accordingly, we believe we are independent of the Township of Mattice-Val Cote and are acting objectively.



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**Asset Management Planning
for the Township of Mattice-Val Cote**

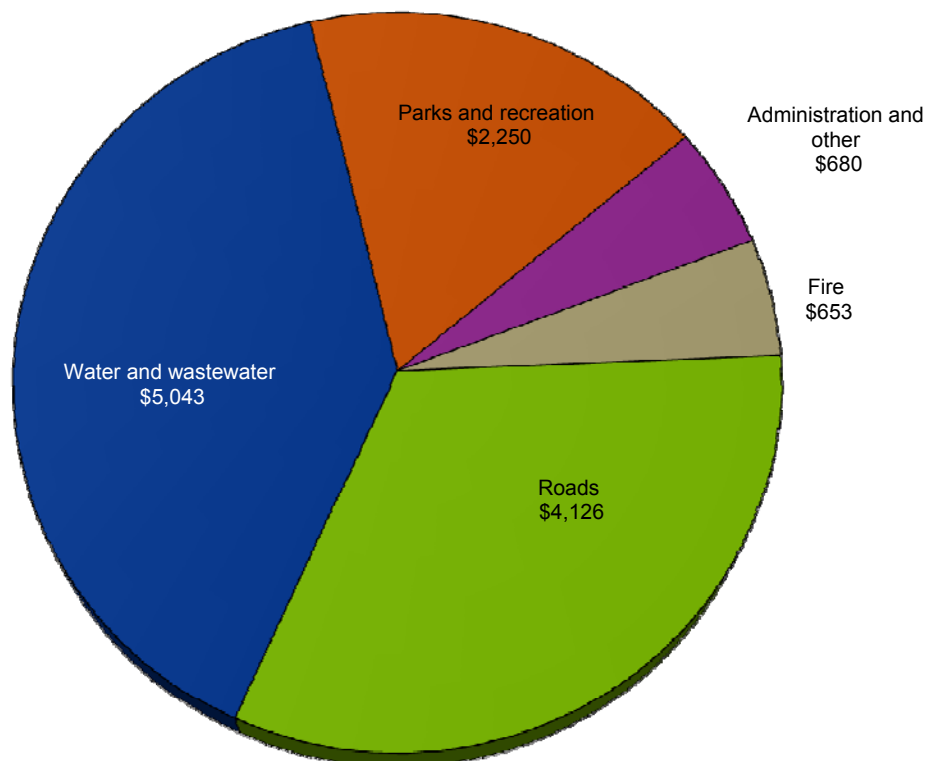
Chapter II State of Local Infrastructure



At December 31, 2012, the Municipality reported a total investment of \$12.7 million in tangible capital assets ('TCA') at historical cost. This equates to an average investment of \$15,000 per household, or \$19,000 per resident.

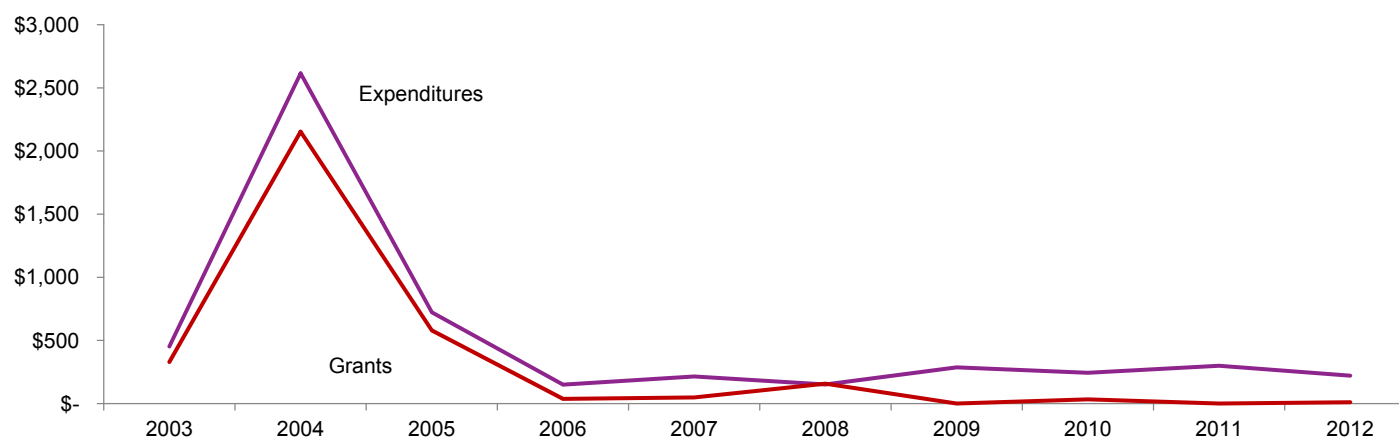
With a historical cost of \$5.0 million, the Municipality's water and wastewater system represents the largest capital asset, accounting for 40% of the overall historical cost of the Municipality's infrastructure. Roads (\$4.1 million) and parks and recreation infrastructure (\$2.2 million) represent the next largest components of the Municipality's tangible capital assets.

Tangible capital assets by use (historical cost, in thousands)



Over the last 10 years, the Municipality's investment in its infrastructure has totaled \$5.4 million, with Federal and Provincial capital grants amounting to approximately \$3.3 million over the same period. As noted below, the Municipality's investment in infrastructure has traditionally been closely tied to grant revenues.

Capital expenditures and grants (in thousands)



Since 2003, transportation infrastructure has represented the largest area of investment for the Municipality, amounting to \$2.1 million or 44% of total capital spending. Parks and recreation infrastructure represents the next largest category, amounting to \$1.2 million.

Capital expenditures by program

(in thousands of dollars)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Transportation	123	–	22	–	1	20	25	1	–	179	371
Environmental services	180	2,583	626	78	176	33	17	–	–	22	3,715
Parks and recreation	96	25	34	16	6	72	203	66	222	10	750
Fire	16	6	37	37	4	12	39	143	19	10	323
Administration and other	37	–	4	19	28	13	3	34	58	–	196
Total	452	2,614	723	150	215	150	287	244	299	221	5,355

In order to fund its capital investments, the Municipality has relied on a combination of grants, contributions from reserves and reserve funds and taxation and user fee revenues, with grants funding 61% of capital expenditures. Over the last ten years, the Municipality has not issued any long-term debt.

Capital expenditures and funding

(in thousands of dollars)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Total	452	2,614	723	150	215	150	287	244	299	221	5,355
Grants received	218	30	169	150	4	22	829	406	102	753	3,348
Local financing requirement	123	461	144	113	167	-8	287	211	299	210	2,007
Long-term debt issued	–	–	–	–	–	–	–	–	–	–	–
Taxation, user fee and reserve funding	123	461	144	113	167	-8	287	211	299	210	2,007

As at December 31, 2012, the Municipality had no outstanding long-term debt.

For asset management purposes, the historical cost of the Municipality's infrastructure is arguably of limited value in that it reflects the cost at the date that the infrastructure investment was incurred, as opposed to what it would cost the Municipality to replace the infrastructure at the present time. While the use of replacement value is a more meaningful measure of the financial requirement associated with the Municipality's infrastructure (and is a required component for asset management plans under MIII), it is also of limited value in that it only considers the replacement cost at the end of the infrastructure's useful life and does not contemplate:

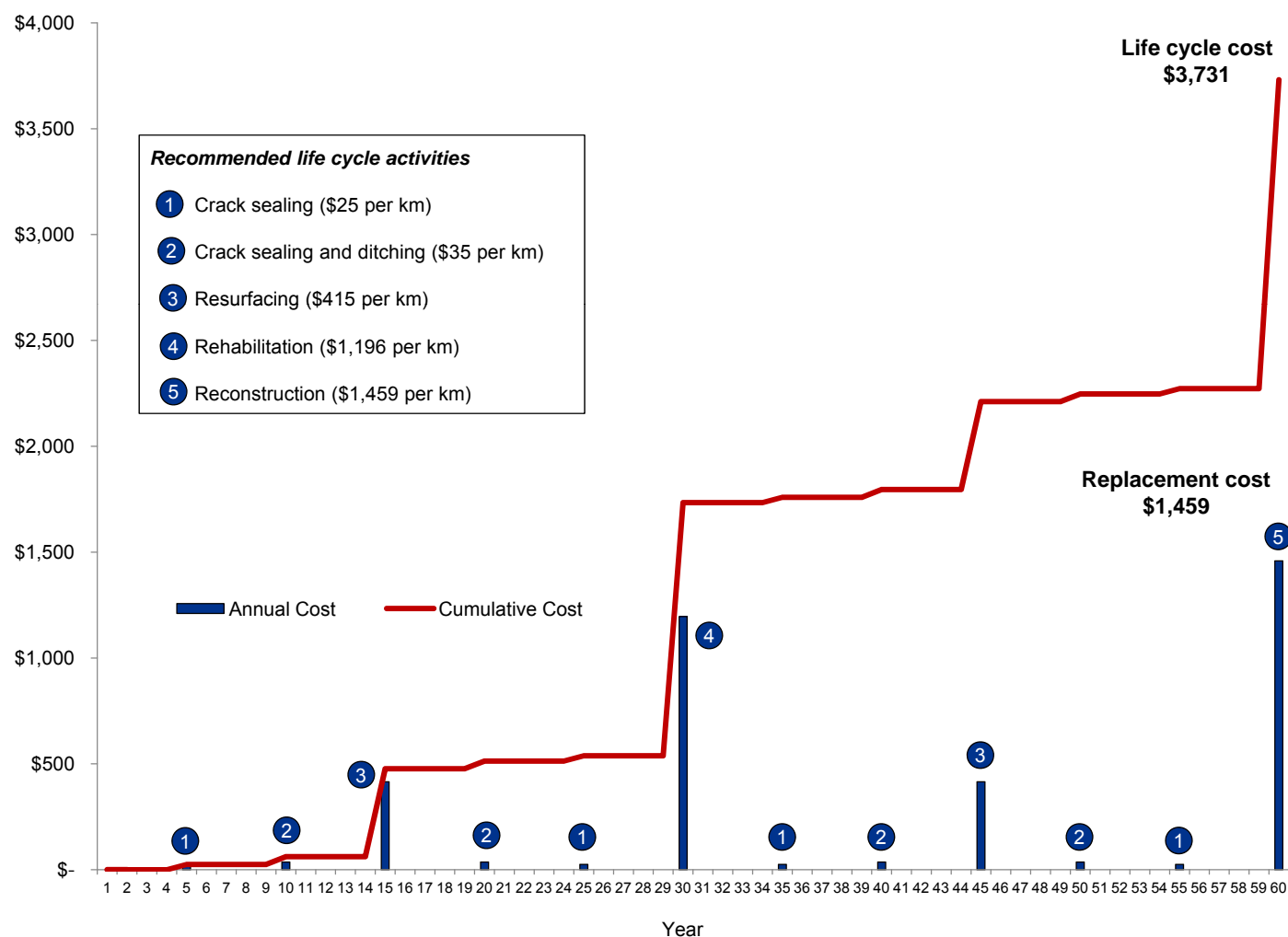
- The fact that certain components of the Municipality's infrastructure, such as roads, will not be fully replaced at the end of useful life but rather will be reconstructed; and
- Asset management activities that are required (by best practice) to be incurred prior to the end of the useful life of the Municipality's infrastructure.

Accordingly, for the purposes of the Municipality's asset management plan, we have provided the following for each component of the Municipality's infrastructure:

- **Historical cost**, based on the Municipality's TCA data as reported in its 2012 financial information return
- **Replacement cost**, based on cost estimates prepared by the Municipality's engineering advisors. For the purposes of the asset management plan, replacement cost is defined as follows:
 - Roads – road reconstruction costs at the end of useful life, including necessary curbs, sidewalks, drainage (as appropriate based on the type of road)
 - Bridges and culverts – estimated reconstruction cost
 - Water and wastewater pipes – replacement costs at the end of useful life, including hydrants, valves, road reinstatement and service to the property line
 - Vehicles – estimated purchase price
 - Buildings – estimated reconstruction cost
- **Life cycle costs**, based on cost estimates prepared by the Municipality's engineering advisors. Life cycle costs encompass the cost of all recommended maintenance activities associated with a component of the Municipality's infrastructure prior to the end of useful life. The nature of life cycle costs will vary depending on the type of infrastructure in question, with certain assets requiring little life cycle activities prior to the end of useful life while others require regularly scheduled maintenance activities. For the purpose of the Municipality's asset management plan, life cycle costs have been provided for linear infrastructure (roads, water and wastewater mains).

We have included on the following page a depiction of the life cycle requirements associated with one type of road, including the difference between replacement cost and life cycle cost.

Life cycle costing profile – paved rural collector road (7.0m lane) (in thousands)



Additional information concerning the Municipality's infrastructure can be found in the following appendices:

- **Appendix A** – Infrastructure profile – roads
- **Appendix B** – Infrastructure profile – water
- **Appendix C** – Infrastructure profile – wastewater
- **Appendix D** – Infrastructure profile – buildings and facilities
- **Appendix E** – Infrastructure profile – vehicles
- **Appendix F** – Life cycle profiles for linear infrastructure, including recommended activities and costs
- **Appendix G** – Costing estimates for life cycle activities for linear infrastructure

The current replacement value of the Municipality's infrastructure (expressed in 2013 funds) is estimated to be in the order of \$91.7 million, more than 75% of which (\$71.0 million) relates to the municipal road network. Overall, the replacement value of the Municipality's infrastructure amounts to approximately \$134,000 per resident or \$260,000 per household, or 7 times the historical cost of infrastructure.

The total life cycle cost associated with the Municipality's linear infrastructure (roads, water and wastewater mains) is almost \$175 million, with roads representing the largest category of life cycle costs (\$164 million). On average, the Municipality's life cycle costs for its linear infrastructure is \$255,000 per resident or \$495,000 per household.

Historical, replacement and life cycle costs by component

	Quantity	Useful Life	Replacement Cost	Life Cycle Cost
Roads	78,205 m	60 to 75 years	\$71,035,067	\$164,089,442
Water distribution network	4,250 m	80 years	\$2,896,230	\$3,917,711
Wastewater collection network	4,556 M	80 years	\$4,802,303	\$6,730,044
Total linear infrastructure			\$78,733,600	\$174,737,197
Buildings and facilities	21	20 to 75 years	\$10,866,267	
Vehicles and equipment	18	9 to 20 years	\$2,105,000	
Total in-scope infrastructure			\$91,704,867	

In order to assess the condition of the Municipality's infrastructure, which in turn determines the timing for asset management activities, different approaches were adopted depending on the type of infrastructure:

- **Roads** – condition assessments for roads (paved, surface treated and gravel) were determined based on a *Condition Rating* that ranked the Municipality's road network on a scale of 0.00 to 10.00 based on factors such as structural cracking, non-structural cracking, rutting and roughness.
- **Water and wastewater mains** – given the inability to directly observe underground infrastructure, condition assessments for water and wastewater mains were determined based on the estimated remaining useful life.
- **Bridges and large culverts** – condition assessments were based on the *Bridge Condition Index* as determined by the most recent bridge inspections conducted in accordance with the Ontario Structure Inspection Manual.
- **Facilities** – condition assessments for buildings were based on a *Facility Condition Index* that considered the level of required repairs to the various facility components (structure, mechanical, electrical and roof) as a percentage of its total replacement cost, based on a physical inspection of the Municipality's buildings and the estimated remaining useful life.
- **Vehicles** – condition assessments for the Municipality's fleet were determined based on the estimated remaining useful life of the individual vehicles.

In order to determine the allocation of the Municipality's infrastructure by condition category (good, fair, poor), the following benchmarks were utilized.

Condition assessment benchmarks

Infrastructure components	Basis of Assessment	Good	Fair	Poor
Roads	Condition rating	Greater than 6.00	4.00 to 6.00	Less than 4.00
Water and wastewater mains	Remaining useful life	Greater than 50%	10% to 50%	Less than 10%
Bridges and large culverts	Bridge condition index	Greater than 70	60 to 70	Less than 60
Facilities	Facility condition index	Less than 5%	5% to 10%	More than 10%
Vehicles	Remaining useful life	Greater than 50%	10% to 50%	Less than 10%

Details of the condition assessments for individual infrastructure components can be found in the infrastructure profiles in **Appendices A to F**.

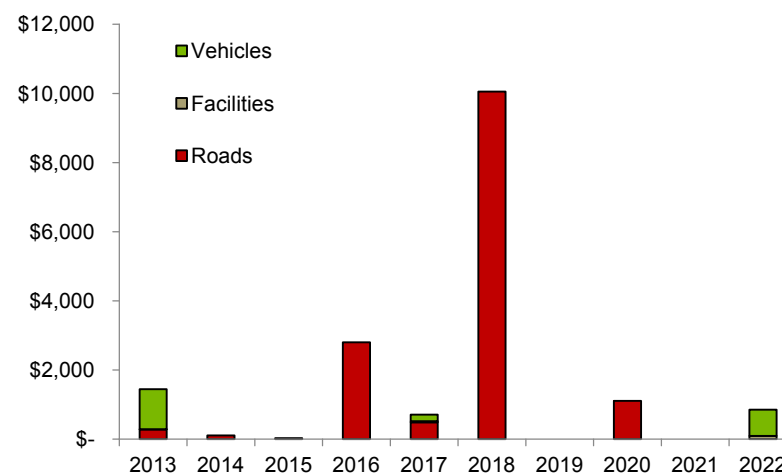
The results of the condition assessment indicate that the majority of the Municipality's infrastructure is rated as good, with only the Municipality's fleet having a majority rating of fair and poor.

Condition assessment results by infrastructure component

Infrastructure	Condition Assessment		
	Good	Fair	Poor
Roads	98%	2%	—
Water mains	100%	—	—
Wastewater mains	100%	—	—
Buildings	71%	10%	9%
Vehicles	22%	28%	50%

With the exception of fleet, there are no pressing infrastructure priorities to be addressed by the Municipality, which reflects the overall good condition of its infrastructure. Over the next ten years, however, the Municipality is expected to require a total of \$17.1 million in infrastructure investments, the majority of which (\$14.9 million) relates to its road network. The requirement for future investments in the roads reflects both the ongoing deterioration and sheer size of the network.

Projected future infrastructure investment requirements (in thousands)



On a go-forward basis, the following policies will govern the updating and verification of the condition assessment:

- Condition assessments for bridges will be conducted every two years in accordance with Provincial regulations, with the asset management plan updated accordingly
- Condition assessments for wastewater mains will be assessed every five years through the use of camera inspections
- Condition assessments for facilities will be assessed through an engineering/architectural inspection of the facilities every five years
- Condition assessments for other assets will be based on the percentage of remaining useful life in the absence of a third-party assessment of the assets. On an annual basis, the Town will review the useful lives and condition assessment criteria (good, fair, poor based on percentage of remaining life) and will adjust the asset management plan accordingly



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for the Township of Mattice-Val Cote**

Chapter III Desired Levels of Service



The Municipality's asset management strategy is intended to maintain its infrastructure at a certain capacity and in doing so, allow it to meet its overall objectives with respect to service levels for its residents. Highlighted below are the key performance measures and service level targets for the major components of the Municipality's infrastructure, as well as an assessment of its current performance and the anticipated date for achieving the service level target.

Infrastructure Component	Performance Measure	Targeted Performance	Current Performance	Achievement Date
Roads	Compliance with Ontario Regulation 239/02 – Minimum Maintenance Standards for Municipal Highways	Full compliance	Full compliance	2014
Water	Days under boil water advisory	None		2014
	Response time for notices submitted in accordance with subsection 18(1) of SDWA	5 days		2014
	Number of water main breaks per 100 km	5.0		2017
Wastewater	Wastewater backups per 100 km	20.0		2017
	Percentage of wastewater flows bypassed	5.0%		2017
Vehicles	Operability	90%		2014
Facilities	Availability (percentage of planned operating hours)	99%		2014
	Compliance with Accessibility for Ontarians with Disability Act and Integrated Accessibility Standards	Full compliance	In progress	As per legislation

It is anticipated that the Municipality will monitor and report on its performance annually.

It is also important to recognize that in certain instances, a deviation from the Municipality's targeted service level may be the result of uncontrollable and unforeseen factors and any evaluation of the Municipality's performance should differentiate between controllable and uncontrollable events. For example, the availability of facilities (as a percentage of planned operating hours) could be impacted by weather conditions or power disruptions that may result in the closure of facilities but which are not caused by the Municipality or otherwise controllable. Absent some form of compensating strategy (such as standby power generators), these events may cause the Municipality to deviate from its targeted service levels.

From time to time, new legislation or regulations will be enacted that change minimum performance requirements for municipal infrastructure and by extension the performance measures outlined in the Municipality's asset management plan. At the present time, three major items of legislation and regulation have been identified as having the potential to impact on the Municipality's desired service levels and asset management plan:

- The *Accessibility for Ontarians with Disability Act* and the accompanying *Integration Accessibility Standards* may require the Municipality to alter components of its infrastructure to ensure accessibility for individuals with disabilities. The timeframe for compliance with the Act depends on both the nature of the requirement and the size of the municipality, with smaller communities generally provided with an extended period for compliance as compared to the Province or larger municipalities.
- The Province of Ontario has recently enacted revisions to *Ontario Regulation 239/02 – Minimum Maintenance Standards for Municipal Highways*. While the majority of these changes deal with winter maintenance activities (which are not included in the scope of the asset management plan), revisions have been made to inspection requirements for certain components of a municipal road network, which will impact on the Municipality's asset management activities in the future.
- It is anticipated that the Province of Ontario will introduce new legislation relating to wastewater treatment activities that are expected to increase the minimum performance standards, which may in turn require the Municipality to amend its existing performance measurement targets and/or introduce new targets.

On an annual basis, the Municipality will evaluate the impact of enacted legislation or regulation on its desired levels of service and will adjust its performance measures accordingly.



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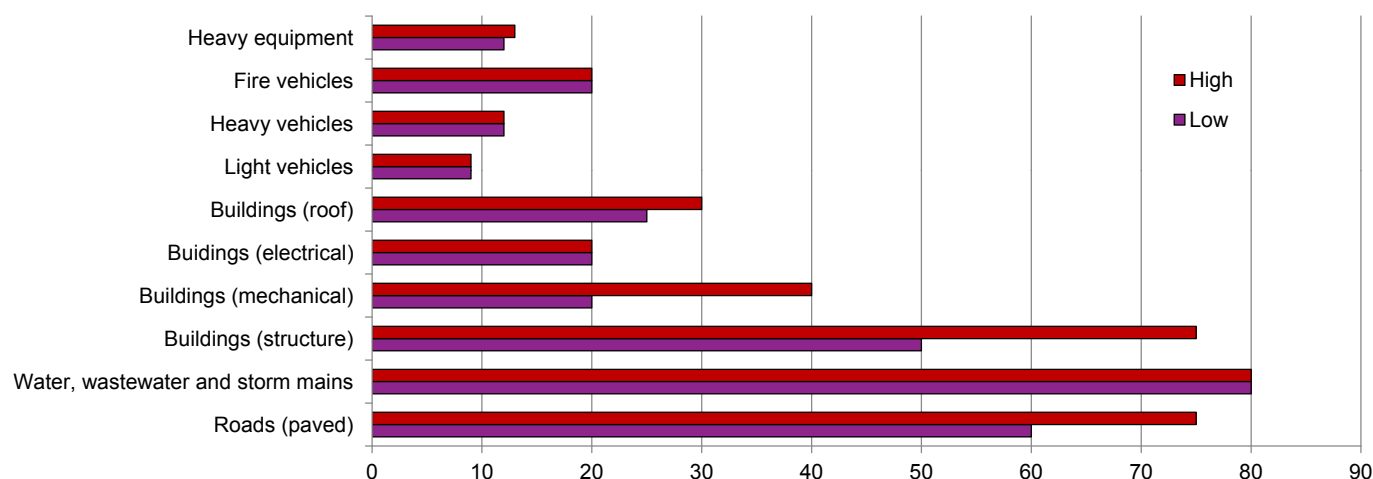
Chapter IV Asset Management Strategy



For each significant component of the Municipality's infrastructure, asset management strategies have been developed that outline:

1. The expected life cycle period for each asset, which defines the period that the Municipality will be required to maintain its infrastructure and secure the necessary financing for maintenance and replacement activities. As noted below, there is considerable variability in the estimated life cycle periods of the Municipality's infrastructure.

Life cycles for municipal infrastructure (in years)



2. The extent to which asset management activities can be integrated with other assets, most commonly the integration of above ground and below ground infrastructure (roads, water, wastewater and storm sewer). The integration of different infrastructure components is a critical element of the Municipality's asset management plan given the staggering of the end of useful life for major assets.
3. Criteria and strategies for the replacement and rehabilitation of the assets.
4. Consequences of not undertaking the necessary asset management activities, particularly the impact on useful lives and overall costs.
5. The determination of priorities when considering integrated assets (e.g. roads and pipes).

Asset management strategies for each component are presented on the following pages.

Anticipated asset life cycle	The life cycle of newly constructed pavement systems are dependent on several factors including the pavement design, material and construction quality, traffic volume, traffic loading, and environmental conditions. The service life can be approximated by the category of road: 60 years for pavement with curb, 60 years for pavement with open ditch, and 10 years for surface treatments.
Integration opportunities	Various other elements may be considered as integrated with paved roads. These include buried assets in the corridor: water sewers, storm sewers, hydro, telephone, natural gas, and cable. Other possible affected elements include traffic signals, street lighting, and sidewalks.
Rehabilitation and replacement criteria	To assess paved roads the Pavement Condition Index (PCI) is used. PCI is a numerical index between 0 and 10 and is based on a visual survey conducted, where 10 represents a new pavement in excellent condition and 0 an impassible pavement. If the PCI ranks at 5, resurfacing should be considered, if PCI ranges from 3 to 5, rehabilitation should be considered. In the case that the PCI falls below 3, reconstruction is a more effective option.
Rehabilitation and replacement strategies	Several different rehabilitation strategies can be implemented. The selection of the strategy is dependent on the following criteria: PCI index, road classification (arterial, collector, local), urban or rural, ditched or curbed, benefit/cost ratio. These strategies include: <ul style="list-style-type: none"> • Total reconstruction of pavement with 80mm to 120mm of hot mix asphalt (HMA) • Mill and resurface pavement with 50mm to 75mm of HMA • Strip and resurface pavement with 50mm to 75mm of HMA • Pulverize with underlying granular and surface with 50mm to 75mm of HMA • Mill and resurface patches of pavement with 50mm of HMA • Routing and crack sealing pavements
Life cycle consequences	Failure to fund timely pavement rehabilitation will result in a reduction in the pavement PCI. Pavement PCI's below 5 result in exponential increases in pavement rehabilitation costs. It also increases significantly road maintenance costs. Pavements identified by a PCI below 3 typically reflect decreases in level of service and increasing associated degrees of risk and liability.
Integrated asset priorities	The schedule of pavement rehabilitation is often planned in conjunction with underground utility rehabilitation works. Most commonly it is the rehabilitation of pavement systems that prompts the replacement of underground sewer and water services in the infrastructure is also in deteriorating condition and approaching its useful service life. The incorporation of other infrastructure rehabilitation may be done alongside Engineering & Public Works Department internally or with natural gas, hydro, and telephone utilities externally.

<i>Anticipated asset life cycle</i>	The life cycle of newly placed gravel road systems are dependent on several factors including the material and construction quality, design, traffic volume, traffic loading, and environmental conditions. The service life can be approximated by the category of road: 60 years for earth with open ditch and 75 years for gravel with open ditch. Sufficient maintenance provided during the service life will help preserve conditions using such strategies as machine grading, ditching and brushing, and granular top up.
<i>Integration opportunities</i>	Various other elements may be considered as integrated with gravel roads. These include buried assets in the utility corridor: water sewers, storm sewers, hydro, telephone, natural gas, and cable.
<i>Rehabilitation and replacement criteria</i>	To assess gravel roads the Gravel Condition Index (GCI) is used. GCI is a numerical index between 0 and 100 and is based on a visual survey conducted, where 100 represents a newly constructed road in excellent condition and 0 an impassible roadway. If the GCI ranges from 3 to 5, rehabilitation should be considered. In the case that the GCI falls below 3, reconstruction is a more effective option.
<i>Rehabilitation and replacement strategies</i>	Several different rehabilitation strategies can be implemented. The selection of the strategy is dependent on the following criteria: GCI index, road classification (collector, local), urban or rural, benefit/cost ratio. In a rehabilitation scenario, the top 50 to 100 mm of gravel type "A" would be replaced. In the case of total reconstruction the work would include the replacement of the granular road base and the granular surface.
<i>Life cycle consequences</i>	The effects of gravel road rehabilitation that is insufficiently funded are reflected in the GCI index which as a result will typically fall below 6. The poor quality of the roadway will be reflected in rising reconstruction and maintenance costs. Roads which are identified by a GCI of 3 or lower typically show signs of a poor level of service increasing the associated degrees of risk and liability.
<i>Integrated asset priorities</i>	The schedule of road rehabilitation is often planned in conjunction with underground utility rehabilitation works. Most commonly it is the rehabilitation of gravel roads that prompts the replacement of underground utilities and sewer and water services if those services are deteriorating and approaching their useful service life.

<i>Anticipated asset life cycle</i>	The life cycle ranges from 30 to 100 years. Examining individual elements, the expected service life of a water plant or pump station varies from 30 to 50 years. Valve replacement typically occurs every 30 to 50 years. Similarly, the hydrant life cycle is predicted as 40 years and chambers as 50 years. For watermains the life cycle can be approximated between 50 and 100 years and 75 years for water storage. These values hold true under the assumption that the elements are properly maintained throughout their service lives.
<i>Integration opportunities</i>	The replacement of these components may either be implemented as part of other construction work or may be conducted as a standalone project. The replacement may be incorporated into resurfacing and road reconstruction work which could include the integration of other utilities (wastewater, telephone, hydro, cable, natural gas, etc). In the case that full road replacement is not intended, standalone replacement of watermains can be carried out using trench cut and repair.
<i>Rehabilitation and replacement criteria</i>	Several criteria used to evaluate and prioritize the watermain replacement schedules include: age, break history of the pipe, material type, size, surrounding soil conditions, pressure related issues, and hydrant spacing. In addition to these criteria other factors, such as the intent of future road rehabilitation, will modify the priority of the replacement schedule accordingly. Available historical data, which includes but is not limited to pipe failures and pipe break history, is used to aid in the replacement criteria. When a continued increase in maintenance costs reaches an uneconomical value, the replacement of the pipe is justified.
<i>Rehabilitation and replacement strategies</i>	The rehabilitation strategy is dependent on the current state of the pipe. It is difficult to assess the state of deterioration in buried services, as such, high pressure cleaning and videotaping of watermains may be instituted. Several different rehabilitation approaches can be taken and include full replacement, cleaning and relining, and potential pipe bursting. Cathodic protection, when used in conjunction with these strategies, prolongs the service life. The strategy is chosen based primarily on the available data including the age, size, material type, break history, and hydraulic requirements.
<i>Life cycle consequences</i>	The repercussions of unexpected failure will be disastrous. Due to unaccounted circumstances and unpredictable events, it is possible that some pipe materials with an expect service life of 100 years will require replacement earlier than expected, after only 30 years. In contrast, pipe materials with an expected life of 100 years may have the service life extended by an additional 50 years, with timely maintenance and rehabilitation.
<i>Integrated asset priorities</i>	Replacement of deteriorating watermains is carried out based on the associated level of risk. The sequence in which rehabilitation or replacement is carried out is reliant on the priority of the watermain and the impact of disruption to service. High priority watermains include those where fire protection, water quality, and service disruption will results in water loss and collateral damage. Typically the integration of road rehabilitation with watermain replacement will increase the priority of the project. The project may also incorporate utilities such as wastewater, hydro, telephone, cable and gas.

<i>Anticipated asset life cycle</i>	The life cycle ranges from 15 to 100 years. Wastewater plants and sewage pump stations vary from 30 to 50 years. Examining individual elements, the expected service life of wastewater plant equipment, pumps, blowers, and SCADA systems ranges from 15 to 50 years. A manhole life cycle is predicted to be between 30 to 75 years and wastewater trunks between 50 to 100 years. These values hold true under the assumption that the elements are properly maintained throughout their service lives.
<i>Integration opportunities</i>	The replacement of these components may either be implemented as part of other construction work or may be conducted as a standalone project. The replacement may be incorporated into resurfacing and road reconstruction work which could include the integration of other utilities (wastewater, telephone, hydro, cable, natural gas, etc). In the case that full road replacement is not intended, standalone replacement of sanitary trunk can be carried out using trench cut and repair.
<i>Rehabilitation and replacement criteria</i>	The assessment of the replacement schedule is determined primarily through conducting a CCTV inspection. The results of the inspection will be evaluated to estimate the degree of deterioration of the infrastructure. Included in the assessment are other criteria such as the material type, visible local collapses, upsizing requirements, and synchronization with roads rehabilitation programs.
<i>Rehabilitation and replacement strategies</i>	The rehabilitation strategy is dependent on the assessed condition rating of the infrastructure. The optimal rehabilitation method is determined by assigning and examining the condition rating of the pipe. Most commonly the selected strategy is replacement of collapsing and deteriorated pipe. For localized damage, other practices may be instituted which include: spot repair, joint sealing, and Cured in Place Pipe (CIPP).
<i>Life cycle consequences</i>	The process of degradation in sanitary sewers is similar to that of storm sewers. The repercussions of failure in sanitary sewers are considerably more substantial. Structural deterioration may lead to infiltration of ground water into the system which results in an increased volume of sewage directed to waste water treatment plants. These plants may not be designed to meet the growing demand result in increase in waste water flow. Infiltration of ground water can also result in the deposition of sediment and debris, significantly reducing the flow capacity for waste water. Continued maintenance and rehabilitation is essential for the performance and reliability of any type of buried infrastructure.
<i>Integrated asset priorities</i>	Replacement of deteriorating sanitary sewers is carried out based on the assessed condition. In the event that replacement is selected as the rehabilitation strategy, the project may expand to include other assets such as sidewalks, road trench cuts, or full pavement. Other utilities may also become included in the scope of work: hydro, telephone, cable, and natural gas. Typically the integration of road rehabilitation will increase the priority of the project.

Anticipated asset life cycle	A manhole life cycle is predicted to be between 30 to 75 years and stormwater trunks to be 50 to 100 years. These values hold true under the assumption that the elements are properly maintained throughout their service lives. A longterm maintenance plan is also necessary for SWM ponds and treatment structures as part of ongoing operational finances, in order to extend the structure replacement to between 30 to 75 years.
Integration opportunities	The replacement may be incorporated into resurfacing and road reconstruction work which could include the integration of other utilities (wastewater, telephone, hydro, cable, natural gas, etc). In the case that full road replacement is not intended, standalone replacement of sanitary trunk can be carried out using trench cut and repair.
Rehabilitation and replacement criteria	The development of the replacement schedule is determined primarily through conducting a CCTV inspection. The results of the inspection will be evaluated to estimate the degree of deterioration of the infrastructure. Included in the assessment are other criteria such as the material type, visible local collapses, upsizing requirements, and synchronization with roads rehabilitation programs. This investigation should be carried out every 20 years, rotating through the storm sewer systems, or when required, to examine system problems/failures. Additional stresses have been imposed on storm sewer systems with climate change and the increasing frequency and intensity of storms. Storm sewer systems are also strained and forced to expand with new land development.
Rehabilitation and replacement strategies	The rehabilitation strategy is dependent on the assessed condition rating of the infrastructure. The optimal rehabilitation method is determined upon assigning and examining the condition rating of the pipe. Most commonly the selected strategy is replacement of collapsing and deteriorated pipe.
Life cycle consequences	The process of degradation in storm sewers is similar to that of sanitary sewers however the repercussions of failure in storm sewers are considerably less substantial. Structural deterioration may lead to infiltration of ground water resulting in the deposition of sediment and debris, significantly reducing the flow of water. Continued maintenance and rehabilitation is essential for the durability of any type of buried infrastructure.
Integrated asset priorities	Replacement of deteriorating storm sewers is carried out based on the assessed condition. In the event that replacement is selected as the rehabilitation strategy, the project may expand to include other assets such as sidewalks, curb/gutter, road trench cuts, or full pavement. Other utilities may also become included in the scope of work: hydro, telephone, cable, and natural gas. Typically the integration of road rehabilitation will increase the priority of the project.

<i>Anticipated asset life cycle</i>	The life cycle of bridges and culverts is considerably variable and dependent on construction methodology and materials, traffic loading, traffic volume, and environmental exposure conditions (temperatures, chloride concentrations, etc). Bridges and concrete culverts constructed after 2000 have an expected life cycle of 75 years, whereas those constructed pre 2000 have an expected life of 50 years. The approximated service life of steel corrugated culverts is 40 years.
<i>Integration opportunities</i>	Typically it is not integrated with the other work other than potential road widening or resurfacing projects.
<i>Rehabilitation and replacement criteria</i>	The ranking of bridge and culvert work is based on several select criteria: safety, level of service, traffic volume and loading, and preservation of infrastructure. To assess the condition of the structures bi-annual visual inspections are conducted and if deemed necessary detailed bridge condition surveys are completed to better evaluate present conditions. In the inspections, bridge components are assessed individually recording the severity and degree of deterioration and the overall condition. Each bridge is assigned a Bridge Condition Index value between 100 and 0 where a value of 100 indicates excellent conditions and a value of 0 indicates poor deteriorating conditions.
<i>Rehabilitation and replacement strategies</i>	The specification of the bridge or culvert rehabilitation strategy is reliant on the structure's age, data and observations acquired through inspections and condition surveys, and the estimated remaining service life. The following strategies should be implemented at the specified age: at 15 years the asphalt deck should be resurfaced and at 30 years the concrete deck should be patched, waterproofed and the joints replaced; at 50 years replace entire concrete deck.
<i>Life cycle consequences</i>	The reduction of bridge and culvert service life endangers user safety and results in a decrease of level of service.
<i>Integrated asset priorities</i>	Typically it is not integrated with the other work other than potential road widening or resurfacing projects.

<i>Anticipated asset life cycle.</i>	The Life Cycle ranges from 15 to 50 years. Examining individual elements, the expected service life of the roof system varies from 25 to 30 years. Hot boiler or carpeting replacement typically occurs every 15 years. Similarly, the building superstructure life cycle is predicted as 50 or more years. These values hold true under the assumption that the elements are properly maintained throughout their service lives.
<i>Integration opportunities</i>	Assets are appraised separately. The projects however are assembled by asset to make use of the “economics of scale” principle. Special attention is given to ensure that the disruption of asset operations is minimized over its service life.
<i>Rehabilitation and replacement criteria</i>	To assess facilities the Facility Condition Index (FCI) is used. FCI is a ratio of total deferred maintenance, costs/ current replacement value of the facility. The index can be used to assess either individual assets or grouped assets. The FCI is currently accepted throughout North America.
<i>Rehabilitation and replacement strategies</i>	The replacement schedule will be dictated by the actual asset conditions at the time, the stage in its life cycle, and the FCI asset condition summaries. Replacement may also be undertaken to meet any changes in safety, industry or technological specifications and standards. The facility must also be maintained to meet the requirements of the Accessibility for Ontarians with Disabilities Act (AODA) and upgrade ingress/egress points as necessary. Critical components which should be given special attention with annual inspections include facility roof and HVAC systems. Any scheduled improvements should take into consideration the institution of economical energy efficient systems and equipment.
<i>Life cycle consequences</i>	Degradation of the building and its components are noticed, as well as increases in operational costs due to inefficiencies, health and safety concerns, and depreciation of Administration assets.
<i>Integrated asset priorities</i>	The schedule of replacement is dependent on the facility’s stage in its life cycle, the actual condition at the time, and the convenience of performing the replacement without disturbing the operations.

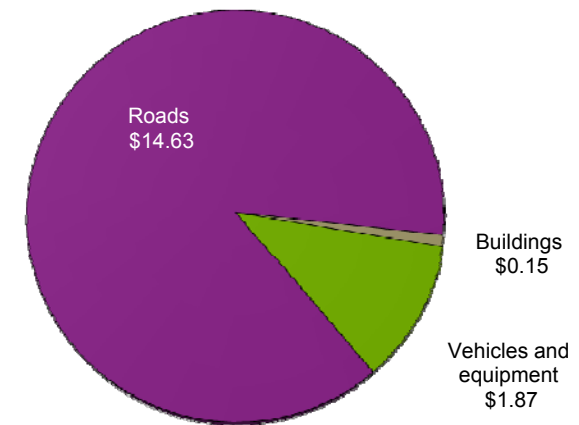
<i>Anticipated asset life cycle.</i>	Service life is dependent on the type or vehicle/equipment and service area. The expected life cycle of cars and pickup trucks is 8-10 years, 10 years for duty trucks, 12 years for ice resurfaces, 10-15 years for front loaders, backhoes and tractors, 20 years for graders, and 20-25 years for fire vehicles.
<i>Integration opportunities</i>	Integrated with operation adjustments, modifications in service levels, meeting environmental regulations, technological upgrades and financial plans.
<i>Rehabilitation and replacement criteria</i>	Replacement of fleet will be dictated by the results of lifecycle cost analysis considering the following variables: repairs, insurance, fuel, depreciation, and downtime costs.
<i>Rehabilitation and replacement strategies</i>	In the case that vehicular repairs exceed 40% of replacement costs, replacement is the optimal strategy. Other strategies include leasing opportunities, refurbishing, seasonal rentals, or tendering services to a third party.
<i>Life cycle consequences</i>	Vehicles that are not maintained, or as vehicles reach the end of the service lives the efficiency of vehicles decrease, seeing an increase in cost per km. In the event of service interruption, work force costs are increased due to extended work schedules and overall loss of production.
<i>Integrated asset priorities</i>	Not applicable.

For asset management planning purposes, the financial requirement associated with the Municipality's infrastructure requirements can be divided into two categories:

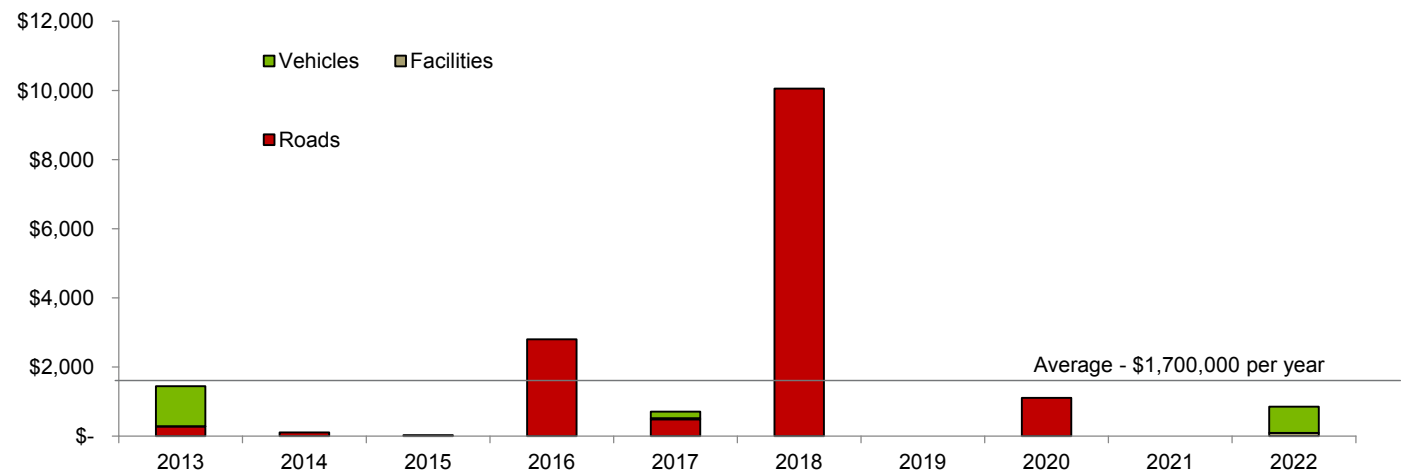
- Immediate infrastructure investment needs.** Based on the results of the condition assessment, an indication as to the types of asset management activities required over the next ten years, and their associated costs, has been developed. Overall, it is estimated that the Municipality would need to invest \$17.1 million in its infrastructure, the majority of which (\$14.9 or 87%) relates to its road network.

On average, the Municipality's immediate infrastructure investment needs amount to approximately \$1.7 million per year, recognizing that major capital investments (excluding fleet) are not required until 2016.

Immediate infrastructure needs (in millions)



Projected future infrastructure investment requirements by year (in thousands)



- **Sustainable life cycle requirements.** In addition to its immediate needs, the Municipality will also be required to fund the cost associated with all of its life cycle activities over the useful life of its infrastructure. As the Municipality has traditionally relied on grants to fund a major portion of its infrastructure, its historical levels of capital investment have fluctuated significantly. However, if the Municipality chose to fund its life cycle requirements evenly over the life of its assets, it would establish a regular and sustainable stream of funding for ongoing capital asset management that would be equal to either:
 - The total life cycle cost of the asset divided by its useful life. This approach is appropriate for linear assets that have significant life cycle requirements throughout their useful life.
 - The total replacement cost of the asset divided by its useful life, which is appropriate for assets with fewer life cycle requirements and where straight replacement of the asset is the more likely scenario.

Based on this approach, we have calculated the average annual contribution required to ensure a sustainable stream of funding for the Municipality's assets to be in the order of \$3.2 million.

Estimated sustainable life cycle requirement

Asset Component	Basis of Determination	Total Costs Over Useful Life	Estimated Useful Life	Annual Requirement
Roads	Life cycle	\$164,089,442	60 years	\$1,873,347
Water distribution network	Life cycle	\$3,917,711	75 years	\$53,744
Wastewater collection network	Life cycle	\$6,730,044	80 years	\$82,961
Buildings and facilities	Replacement	\$10,866,267	50 years	\$97,908
Vehicles and equipment	Replacement	\$2,105,000	20 years	\$122,500
Total		\$187,708,464		\$3,193,761

The overall infrastructure financing requirement for the Municipality, assuming that all life cycle activities are undertaken at the recommended intervals and that the Municipality funds overall life cycle and replacement costs evenly over the assets lives, is calculated to be in the order of \$3.8 million, as follows:

- Immediate infrastructure investment needs \$1.7 million
- Sustainable life cycle requirements \$3.2 million

In comparison, the Municipality spent \$217,000 in capital expenditures during 2012 (excluding capital funding through grant funding). Given the magnitude of the estimated infrastructure financing requirement, it is evident that ***the Municipality is unable to fully meet its ongoing infrastructure requirements without significant levels of support from senior levels of government*** on an ongoing (i.e. annual) basis. As such, the Municipality will be required to prioritize its capital investments and the application of its available funds.

For asset management purposes, the investment requirements associated with the Municipality's infrastructure are divided into three main categories, as follows:

Category	Description
Priority 1	<ul style="list-style-type: none"> • Assets with an investment requirement within the next five years, based on condition or useful life • Co-located assets that may not require investment within the next five years but should be replaced as part of the integrated project. For example, sewer and water pipes underneath a road may not be at the end of their useful life but could be replaced as part of a road reconstruction project if they are approaching the end of their useful life before the next road reconstruction. • Assets that may qualify for specific grants, even if an immediate investment requirement has not been identified within the next five years • Infrastructure investments required as a result of changing legislation, public health or safety concerns or strategic purposes (e.g. economic development)
Priority 2	<ul style="list-style-type: none"> • Assets with an investment requirement within the next six to ten years • Assets that would otherwise be classed as Priority 1 but are considered to have reduced importance due to low utilization by the community (e.g. roads with low traffic volumes), compensating strategies in the event of failure (e.g. detours, reduced speed limits or load limits or limited impacts on public health or safety in the event of a failure)
Priority 3	<ul style="list-style-type: none"> • Assets with no investment requirements identified within the next ten years • Assets to be discontinued or abandoned • Assets that would otherwise be classified as Priority 1 or 2 but are considered to have reduced importance

As part of its ongoing asset management activities, the Municipality will review its prioritization criteria and asset rankings and, if considered necessary, make appropriate revisions.



cutting through complexity



**Asset Management Planning
for the Township of Mattice-Val Cote**

Chapter V Financing Strategy



The development of the Municipality's financing strategy for its asset management plan reflects the guidance outlined by the Province of Ontario in *Building Together – Guide for Municipal Asset Management Plans*. Specifically, the development of the financing strategy (and in particular the extent of the Municipality's financing shortfall) is based on the following parameters:

- Presents annual revenues and expenditures for the planning period (25 years), as well as comparative information;
- Does not consider grants from senior governments to be a confirmed source of revenue unless an agreement has been executed. Accordingly, only Federal Gas Tax and the Municipality's allocation for capacity funding under the Municipal Infrastructure Investment Initiative have been included in the projections; and
- Identifies the potential funding shortfall and how it will be managed.

In developing the financial strategy, three alternative scenarios were considered:

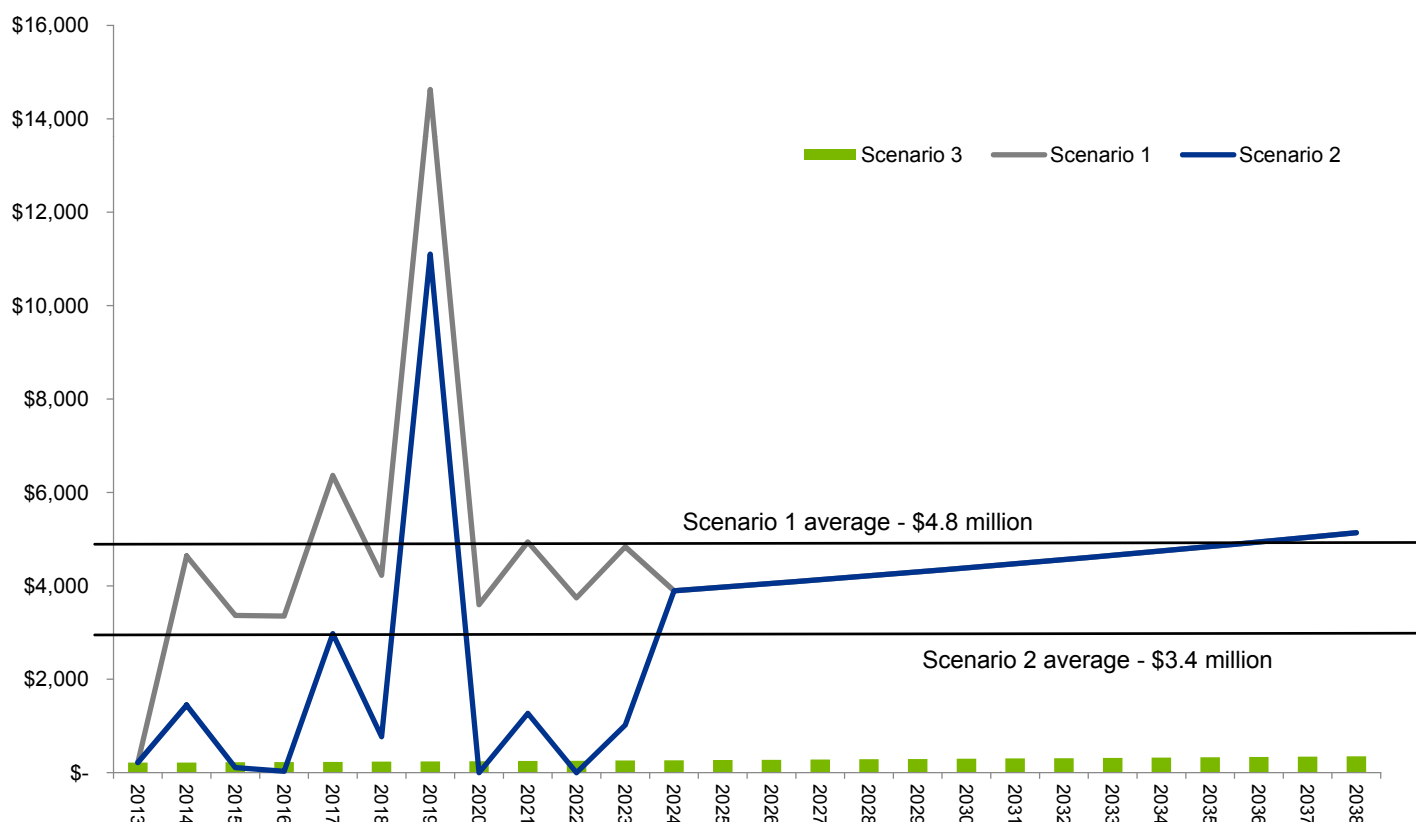
- **Scenario 1** – Representing the base case scenario, this scenario reflects the assumption that all identified asset management requirements (immediate and long-term contributions) will be incurred by the Municipality. This represents the worst case scenario as it involves the highest level of capital financing requirement and ultimately is not practical due to the increase in municipal revenues necessary to support the required level of capital investment.
- **Scenario 2** – Under this scenario, the Municipality's capital expenditures are projected to be as follows:
 - During the first 10 years of the planning period, the Municipality will make capital investments based on the identified priority infrastructure investment requirements (i.e. \$1.7 million per year).
 - During the remainder of the planning period, the Municipality will make capital investments equal to the amount of the sustainable life cycle contribution requirements (i.e. \$3.2 million per year).
- **Scenario 3** – Under this scenario, it is assumed that the Municipality will continue to make capital investments based on the amount of capital expenditures in 2012 that were not funded through grants (i.e. \$217,000 per year).

Financial projections for each of the scenarios are contained in the following appendices:

- **Appendix I** – Scenario 1
- **Appendix J** – Scenario 2
- **Appendix K** – Scenario 3

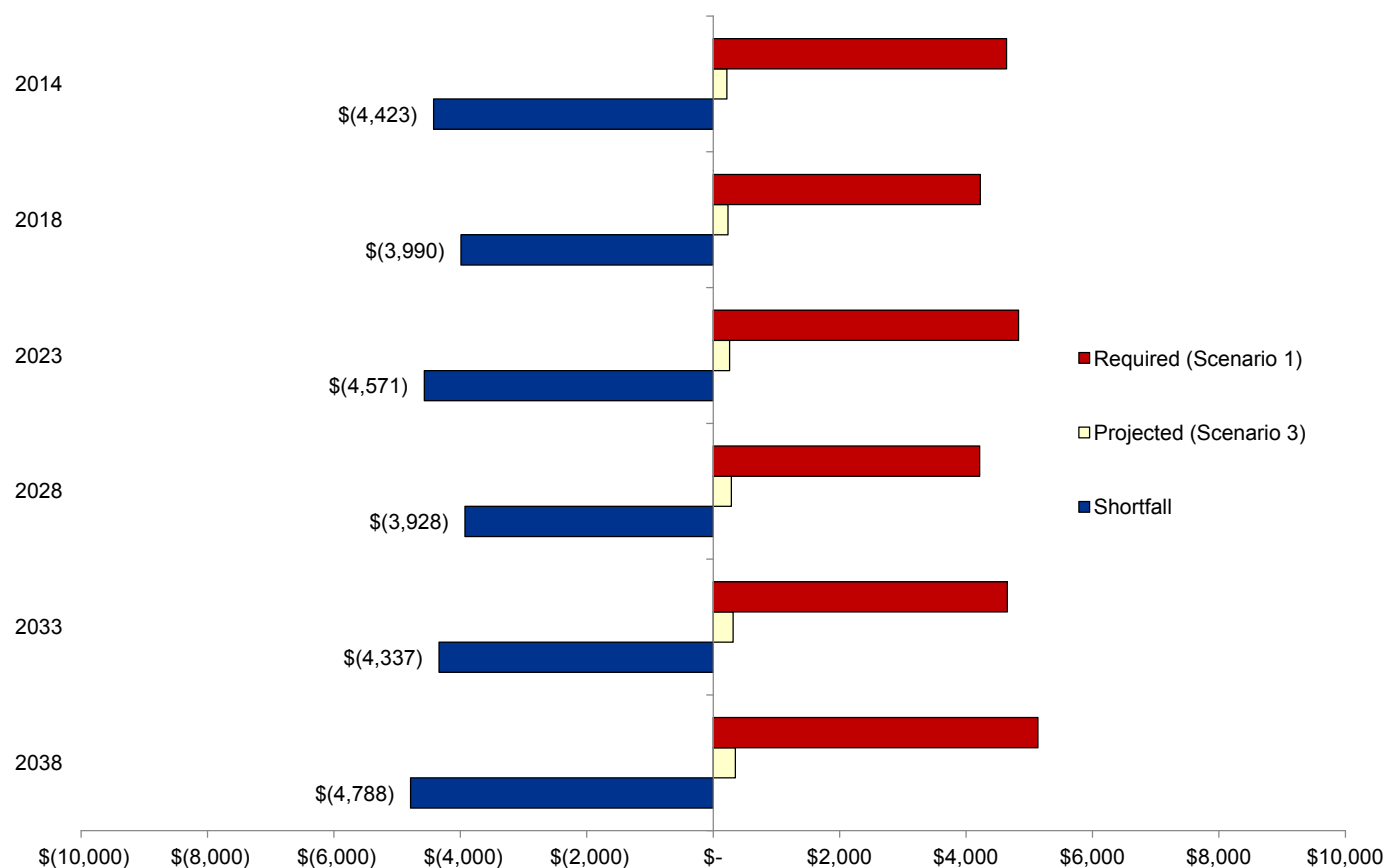
Financial projections developed in support of the asset management plan demonstrate both the magnitude and immediacy of the Municipality's identified capital requirements, with the required level of capital expenditures under Scenarios 1 and 2 significantly higher than the current level. At the same time, the average residential taxes per household is expected to increase accordingly if taxpayers are solely responsible for funding the capital requirements.

Projected capital expenditures (in thousands)



At the current level of capital expenditures, the Municipality is expected to continue its existing annual infrastructure deficit as its level of capital expenditures will be insufficient to maintain its infrastructure in its present state, let alone address immediate and short-term infrastructure requirements. As noted below, the Municipality's current annual funding shortfall is expected to be \$4 million on an ongoing basis, assuming that the Municipality addresses its immediate infrastructure requirements.

Calculated annual infrastructure funding shortfalls (in thousands)



A suggested five year capital financing policy is included as Appendix L.

In order to address the current and future shortfalls in capital funding, the Municipality has identified the following potential courses of action:

- Five year capital levy.** In order to address the immediate and short-term infrastructure requirements, the Municipality is contemplating the introduction of a five year capital levy that would see the total municipal levy increase by 2% per year in order to fund capital expenditures. The proceeds from this capital levy would either be expended during the year, used to finance debt servicing costs for infrastructure related borrowings or placed in a reserve fund until such time as the funds are required (the Municipality adopts a similar approach for Federal Gas Tax, which is sometimes 'banked' until sufficient funds are accumulated to finance capital projects). As noted below, the introduction of a five year capital levy is expected to provide an additional \$140,000 for capital purposes, representing a 65% increase in capital expenditures over the next five years.

Impact of five year, 2% capital levy on taxation and capital spending (in thousands)

Year	Municipal Levy			Capital Expenditures		
	Prior Year's Levy	Capital Levy Increase	Current Year's Levy	Prior Year's Expenditures	New Funding	Current Year's Expenditures
2014	\$1,345	\$27	\$1,372	\$217	\$27	\$244
2015	\$1,372	\$27	\$1,399	\$244	\$27	\$271
2016	\$1,399	\$28	\$1,427	\$271	\$28	\$299
2017	\$1,427	\$29	\$1,456	\$299	\$29	\$328
2018	\$1,456	\$29	\$1,485	\$328	\$29	\$357
Average annual increase in municipal levy			2.0%	Increase in capital expenditures		65%

The adoption and annual renewal of a capital levy is subject to the Municipality's annual budget process. In order to assist with establishing the levy, we have included a suggested capital financing policy as Appendix N.

A suggested borrowing policy is included as **Appendix M**.

2. Use of borrowing for infrastructure investments. Historically, the Municipality has relied on borrowings as a means of funding infrastructure investments, with the Municipality currently having outstanding long-term debt in respect of its water and wastewater infrastructure. On an ongoing basis, the Municipality may wish to consider the use of debt for additional infrastructure investments, conditional upon the following:

- The infrastructure investment will provide a stream of non-taxation revenues that can be used to fund some or all of the associated debt servicing costs; and/or
- The Municipality requires debt financing to fund its portion of infrastructure projects that are cost shared with senior government; and/or
- The infrastructure investment is unavoidable as a result of regulatory changes or concerns over public health and safety and cannot be funded through other means; and
- The associated debt servicing costs would not jeopardize the Municipality's financial sustainability or result in the Municipality exceeding its annual debt repayment limit.

The use of debt financing is particularly helpful in addressing immediate capital investment requirements as it allows the Municipality to spread the cost of projects over the term of the loan. For example, the amount of capital expenditures that could potentially be financed through the Municipality's proposed capital levy could amount to as much as \$2.2 million, recognizing that future capital expenditures would be limited as the financing is directed towards debt servicing, not infrastructure investments. Alternatively, the Municipality may wish to adopted a phased approach to debt financing, whereby a fixed percentage of capital expenditures would be financed through debentures during the capital levy period.

Potential debt financed through five year capital levy

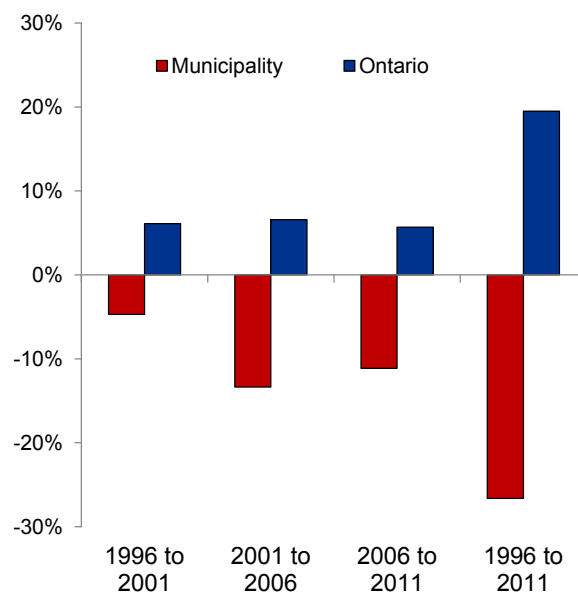
Year	Capital Levy	10 Year Loan (3.09%)	20 Year Loan (3.90%)	25 Year Loan (4.11%)
2014	\$27	\$230	\$370	\$416
2015	\$27	\$230	\$371	\$417
2016	\$28	\$238	\$384	\$432
2017	\$29	\$247	\$398	\$448
2018	\$29	\$246	\$398	\$449
Total	\$140	\$1,190	\$1,921	\$2,162

Despite the ability of the Municipality to increase the level of financing for infrastructure investments and other asset management activities, the magnitude of the financial requirement associated with its infrastructure precludes the Municipality from addressing its needs without some form of grants. In the absence of capital grants, the Municipality will be required to defer capital expenditures until such time as sufficient funding is available.

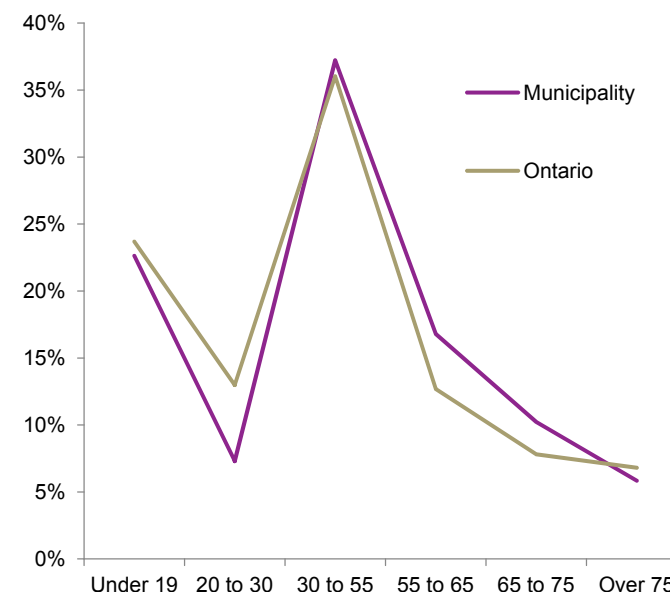
While it is expected that most, if not all, Ontario municipalities will be challenged to meet their financial requirements associated with infrastructure, the Province should give particular attention to the Municipality's limited ability to fund capital investments in comparison to other municipalities, based on the following:

- From 1996 to 2011, ***the Municipality's total population has decreased by 26.6%***, compared to a 19.5% increase in the Province's population over the same period.
- At the same time, ***the Municipality's population has aged faster than the Provincial average***, with the median age of the Municipality's residents amounting to 46.6 years compared to the Provincial median age of 42.5 years.

Population changes – 1996 to 2011

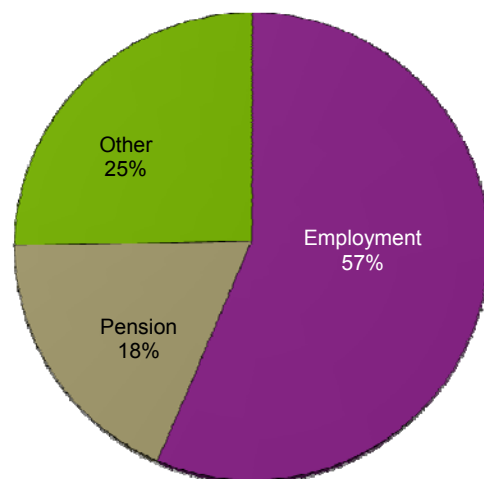


Population distribution by age group (2011)

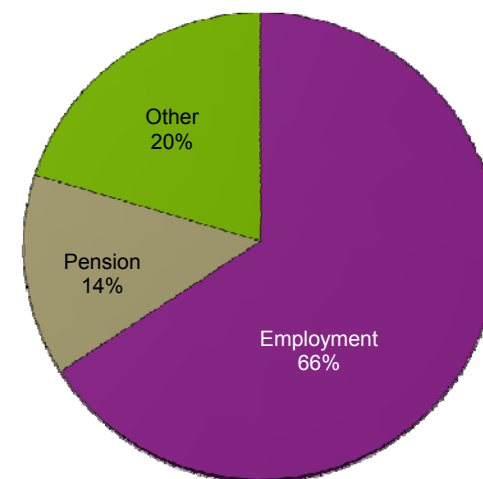


- **Residents of the Municipality are more reliant on pension incomes** than the remainder of the Province, limiting their ability to afford ongoing property tax increases. Additionally, the percentage of personal income generated from employment has decreased from 67% in 2002 to 57% in 2009, while pension incomes have risen from 13% of total incomes to 18%.

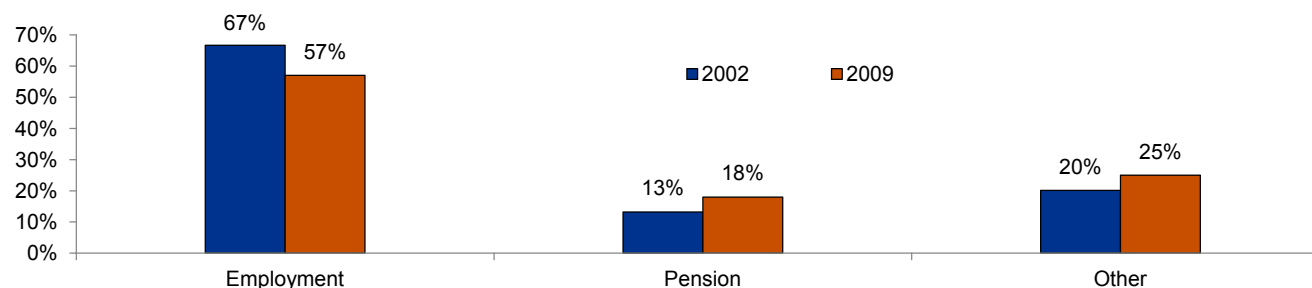
Reported personal income by source – Municipality residents (2009)



Reported personal income by source – Provincial residents (2009)



Reported personal income by source – Municipality residents (2002 vs. 2009)



In addition to the challenges posed by the changing nature of its demographics, the Municipality is facing additional financial pressures from an operational perspective, including:

- The continuing impacts of inflation, including wage settlements and higher benefit costs, which increase the Municipality's operating expenditures
- Announced reductions in government funding programs, including planned reductions in OMPF funding and decreases in Federal Gas Tax funding

In light of its affordability constraints, the Municipality recognizes and appreciates the importance of programs such as the Municipal Infrastructure Investment Initiative and the Small, Rural and Northern Municipal Infrastructure Fund. That said, the current approach to allocating funding to municipalities is extremely problematic from a planning perspective:

- Unlike Federal Gas Tax, which is provided to municipalities as a recurring stream of known funding, the current Provincial infrastructure programs are based on applications with no guarantee of funding success. Accordingly, municipalities are unable to 'bank' Provincial infrastructure funding to finance larger capital projects, use proceeds as a source of funding for borrowing costs incurred in connection with infrastructure investments, or plan beyond the current funding submissions.
- The requirement for municipalities to apply for funding through the completion of expressions of interest can be a challenge, particularly for smaller municipalities with limited resources. In a number of instances, smaller municipalities are required to divert staff from other priorities or incur costs for outside consultants in order to complete the required expressions of interest, with no certainty that they will actually obtain funding.

As a means of maximizing the effectiveness of its capital financing programs, the Municipality requests that the Province consider the following:

- Replacing the current competitive, application based funding process with a committed stream of funding to eligible municipalities, thereby supporting long-term planning for infrastructure needs;
- Review the basis for allocating funding to communities, with increased emphasis placed on smaller communities that are challenged to meet their infrastructure needs due to limited assessment growth, higher than average population decreases and lower than average non-residential assessment, all of which pose challenges from an affordability perspective.
- Extending the eligibility requirement for funding programs to include other components of municipal infrastructure that are critical to a community's success, including vehicles, recreational and cultural assets.



cutting through complexity



**Asset Management Planning
for the Township of Mattice-Val Cote**

Chapter VI Asset Management Plan Cross Reference



In this section of the report, the Municipality's asset management plan has been cross-referenced to the requirements outlined in *Building Together – Guide for Municipal Asset Management Plans* as a means of demonstrating that the Municipality has met the Province's expectations for asset management plans submitted under the Municipal Infrastructure Investment Initiative.

Required Section	Content	Location in Asset Management Plan
Executive summary		Pages 2 to 7
Introduction	<ul style="list-style-type: none"> explains how the goals of the municipality are dependent on Infrastructure clarifies the relationship of the asset management plan to municipal planning and financial documents describes to the public the purpose of the asset management plan states which infrastructure assets are included in the plan. Best practice is to develop a plan that covers all infrastructure assets for which the municipality is responsible. At a minimum, plans should cover roads, bridges, water and wastewater systems, and social housing identifies how many years the asset management plan covers and when it will be updated. At a minimum, plans must cover 10 years and be updated regularly. Best practice is for plans to cover the entire lifecycle of assets describes how the asset management plan was developed — who was involved, what resources were used, any limitations, etc. identifies how the plan will be evaluated and improved through clearly defined actions. Best practice is for actions to be short-term (less than three years) and include a timetable for implementation 	Chapter I Pages 9 to 13
State of local infrastructure	<ul style="list-style-type: none"> asset types (e.g. urban arterial road, rural arterial road, watermain) and quantity/extent (e.g. length in kilometres for linear assets). financial accounting valuation and replacement cost valuation. asset age distribution and asset age as a proportion of expected useful life. asset condition (e.g. proportion of assets in "good," "fair" and "poor" condition). Asset condition must be assessed according to standard engineering practices. For bridge structures, condition is based on an analysis of bridge inspection reports. discusses how and when information regarding the characteristics, value, and condition of assets will be updated. 	Chapter 2 Pages 15 to 23 Appendices A to J

Required Section	Content	Location in Asset Management Plan
<i>Desired level of service</i>	<ul style="list-style-type: none"> defines levels of service through performance measures, targets and timeframes to achieve the targets if they are not already being achieved. discusses any external trends or issues that may affect expected levels of service or the municipality's ability to meet them shows current performance relative to the targets set out 	Chapter III Pages 25 and 26
<i>Asset management strategy</i>	<ul style="list-style-type: none"> non-infrastructure solutions – actions or policies that can lower costs or extend asset life (e.g., better integrated infrastructure planning and land use planning, demand management, insurance, process optimization, managed failures, etc.) maintenance activities – including regularly scheduled inspection and maintenance, or more significant repair and activities associated with unexpected events renewal/rehabilitation activities – significant repairs designed to extend the life of the asset. For example, the lining of iron watermain can defer the need for replacement replacement activities – activities that are expected to occur once an asset has reached the end of its useful life and renewal/ rehabilitation is no longer an option disposal activities – the activities associated with disposing of an asset once it has reached the end of its useful life, or is otherwise no longer needed by the municipality expansion activities (if necessary) – planned activities required to extend services to previously unserved areas - or expand services to meet growth demands discusses procurement methods includes an overview of the risks associated with the strategy and any actions that will be taken in response. 	Chapter IV Pages 28 to 40 Appendix I
<i>Financial strategy</i>	<ul style="list-style-type: none"> shows yearly expenditure forecasts broken down by: <ul style="list-style-type: none"> Non-infrastructure solutions Maintenance activities Renewal/rehabilitation activities Replacement activities Disposal activities Expansion activities (if necessary) provides actual expenditures for these categories for comparison purposes. gives a breakdown of yearly revenues by confirmed source discusses key assumptions and alternative scenarios where appropriate. identifies any funding shortfall relative to financial requirements that cannot be eliminated and discuss the impact of the shortfall and how the impact will be managed. 	Chapter V Pages 42 to 49 Appendices J to N



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**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix A Infrastructure Profile Roads



Municipality Of Mattice-Val Cote
Asset Management Plan
Road Management Plan

ROAD	Section Start	Section End	Length (km)	Surface Type	Type of Work to be Done	1 - 5 YR Road Improvement Expenditures									
						2013		2014		2015		2016		2017	
						C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$
Queen Street East	Highway 11	Queen St. E	0.05	HCB	Rehabilitation	1.30	\$63,105.35	10.00		9.67		9.34		9.01	
Chabot Crescent	East Section	West Section	0.15	HCB	Resurfacing	3.30	\$37,386.75	10.00		9.67		9.34		9.01	
Gagnon Avenue	Second St.	Third St.	0.16	GR	Resurfacing	3.30	\$28,046.24	7.50	7.25			7.00		6.75	
Melrose Avenue	Second St.	Third St.	0.16	HCB	Resurfacing	3.30	\$39,879.20	10.00		9.67		9.34		9.01	
Melrose Avenue	Third St.	Creek St.	0.18	HCB	Resurfacing	3.30	\$44,864.10	10.00		9.67		9.34		9.01	
Second Street South	Highway 11	Queen St.	0.1	HCB	Resurfacing	4.30	\$24,924.50	10.00		9.67		9.34		9.01	
Third South	Parkview Ave.	Gagnon Ave.	0.14	HCB	Resurfacing	4.30	\$34,894.30	10.00		9.67		9.34		9.01	
Third/North	Highway 11	Melrose Lane	0.05	HCB	Resurfacing	4.30	\$12,462.25	10.00		9.67		9.34		9.01	
Balmoral Avenue	Third St.	Creek St.	0.13	HCB	Resurfacing	5.30		4.97	\$32,401.85	10.00		9.67		9.34	
Queen Street	First St.	Second St.	0.16	HCB	Resurfacing	5.30		4.97	\$39,879.20	10.00		9.67		9.34	
Second Street South	Balmoral Ave.	Parkview Ave.	0.14	HCB	Resurfacing	5.30		4.97	\$34,894.30	10.00		9.67		9.34	
Gagnon Avenue	First St.	Second St.	0.16	GR	Resurfacing	5.30		5.05		4.80	\$28,046.24	7.50		7.25	
First Street South	Queen St.	Balmoral Ave.	0.12	GR	Resurfacing	5.50		5.25		5.00		4.75	\$21,034.68	7.50	
Defosses Road	Trans Canada Hwy	Brisson Rd	0.2	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$65,850.00	10.00	
Plamondon Road East	Cemetery Rd	To End	2.4	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$790,200.00	10.00	
Provencal Road	Trans Canada Hwy	To End	0.9	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$296,325.00	10.00	
Shallow Lake Road	Trans Canada Hwy	Shallow Lake Rd. Side Road	2	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$658,500.00	10.00	
Shallow Lake Side Road	Shallow Lake Rd. Side Road	Shallow Lake Rd. E	0.75	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$246,937.50	10.00	
Shallow Lake Road East	Shallow Lake Rd.	To end	0.45	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$148,162.50	10.00	
Shallow Lake Road East	Shallow Lake Rd. E	Tanguay Rd. E	0.35	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$115,237.50	10.00	
Shallow Lake Road East	Tanguay Rd. E	To End	1.4	LCB	Resurfacing	6.00		5.50		5.00		4.50	\$460,950.00	10.00	
Comeau Rd	Trans Canada Hwy	To End	0.2	LCB	Resurfacing	6.50		6.00		5.50		5.00		4.50	\$65,850.00
Avenue Mgr. Proulx	River St.	First St.	0.18	HCB	Resurfacing	6.00		5.67		5.34		5.01		4.68	\$44,864.10
Avenue Mgr. Proulx	First St.	Second St.	0.16	HCB	Resurfacing	6.00		5.67		5.34		5.01		4.68	\$39,879.20
Avenue Mgr. Proulx	Second St.	Third St.	0.16	HCB	Resurfacing	6.00		5.67		5.34		5.01		4.68	\$39,879.20
Avenue Mgr. Proulx	Third St.	Melrose St.	0.14	HCB	Resurfacing	6.00		5.67		5.34		5.01		4.68	\$34,894.30
Balmoral Avenue	Second St.	Third St.	0.16	HCB	Resurfacing	6.30		5.97		5.64		5.31		4.98	\$39,879.20
Chabot Crescent	North Section	South Section	0.09	HCB	Resurfacing	6.30		5.97		5.64		5.31		4.98	\$22,432.05
First Street South	Queen St.	Balmoral Ave.	0.14	HCB	Resurfacing	6.30		5.97		5.64		5.31		4.98	\$34,894.30
Queen Street East	Queen St. E		0.12	HCB	Resurfacing	6.30		5.97		5.64		5.31		4.98	\$29,909.40
River Street So. (M16)	Queen St.	Parkview Ave.	0.4	HCB	Resurfacing	6.30		5.97		5.64		5.31		4.98	\$99,698.00
Second Street South	Queen St.	Balmoral Ave.	0.14	HCB	Resurfacing	6.30		5.97		5.64		5.31		4.98	\$34,894.30
Third South	Balmoral Ave.	Parkview Ave.	0.14	HCB	Resurfacing	6.30		5.97		5.64		5.31		4.98	
Barker Road	Trans Canada Hwy	Unknown Rd.	10.9	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Maxime Brisson Road (Concession Rd 6/ Concession)	Trans Canada Hwy	End of Road	1.3	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Brisson Road	Comeau Rd	To End	1	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Cemetery Road	Trans Canada Hwy	Plamondon Rd.	0.75	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Chemin des Snc	Gagnon Rd	To End	0.7	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Drouin Road	Trans Canada Hwy	To End	9.1	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
First Street South	Balmoral Ave.	Parkview Ave.	0.12	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
First Street South	Parkview Ave.	Gagnon Ave.	0.12	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
First Street South	Chabot Crescent	Plamondon Rd.	0.9	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Indian Cemetery Road	Trans Canada Hwy	To End	3.9	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Plamondon Road	First St.	Cemetery Rd.	1.6	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Plamondon Road West	Indian cemetery Rd	To End	2.7	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Ressor Rd North (East/West)	Unknown Rd.	Trans Canada Hwy	1.9	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Ressor Rd North/South	End Of Road	End of Road	2.7	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Ressor Rd South	Trans Canada Hwy	Unknown Rd.	0.45	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Ressor Rd South/East	Ressor Rd South	To End	0.3	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Shallow Lake Road West	Shallow Lake Rd.	Tanguay Rd. W	0.65	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Shallow Lake Road West	Tanguay Rd. W	Faucher Rd.	2.5	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Shannon Road	Trans Canada Hwy	To end	14.4	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Tanguay Road East	Shallow Lake Rd. E	To End	0.9	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Third/North	Melrose Lane	Melrose Ave.	0.06	GR	Resurfacing	6.00		5.75		5.50		5.25		5.00	
Balmoral Avenue	River St.	First St.	0.15	HCB	Resurfacing	6.50		6.17		5.84		5.51		5.18	
Faucher Road North	Shallow Lake Rd.	Trans Canada Hwy	2.1	GR	Resurfacing	6.50		6.25		6.00		5.75		5.50	
First Street South	Gagnon Ave.	Chabot Crescent	0.11	GR	Resurfacing	6.50		6.25		6.00		5.75		5.50	
Gagnon Road	Unknown Rd.	Trans Canada Hwy	4.1	GR	Resurfacing	6.50		6.25		6.00		5.75		5.50	
First Street South	Parkview Ave.	Gagnon Ave.	0.14	HCB		8.00		7.67		7.34		7.01		6.68	
Queen Street	Third St.		0.18	HCB		8.00		7.67		7.34		7.01		6.68	
Balmoral Avenue	First St.	Second St.	0.16	HCB		8.30		7.97		7.64		7.31		6.98	

Municipality Of Mattice-Val Cote
Asset Management Plan
Road Management Plan

						1 - 5 YR Road Improvement Expenditures									
ROAD	Section Start	Section End	Length (km)	Surface Type	Type of Work to be Done	2013		2014		2015		2016		2017	
						C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$
First Street South	Balmoral Ave.	Parkview Ave.	0.14	HCB		8.30		7.97		7.64		7.31		6.98	
Missinaibi Park Rd.	Melrose St.	River St.	0.14	HCB		8.30		7.97		7.64		7.31		6.98	
Parkview Avenue	River St.	First St.	0.16	HCB		8.30		7.97		7.64		7.31		6.98	
Parkview Avenue	First St.	Second St.	0.16	HCB		8.30		7.97		7.64		7.31		6.98	
Parkview Avenue	Second St.	Third St.	0.16	HCB		8.30		7.97		7.64		7.31		6.98	
Queen Street	River St.	First St.	0.17	HCB		8.30		7.97		7.64		7.31		6.98	
Queen Street	Second St.	Third St.	0.16	HCB		8.30		7.97		7.64		7.31		6.98	
Third/North	Melrose Ave.	River St.	0.09	HCB		8.30		7.97		7.64		7.31		6.98	
Second Street South	Parkview Ave.	Gagnon Ave.	0.14	HCB		9.00		8.67		8.34		8.01		7.68	
Third South	Queen St.	Balmoral Ave.	0.14	HCB		9.00		8.67		8.34		8.01		7.68	
First Street North	Melrose St.	King St.	0.08	HCB		9.30		8.97		8.64		8.31		7.98	
First Street South	Gagnon Ave.	Chabot Crescent	0.175	HCB		9.30		8.97		8.64		8.31		7.98	
Second North	Highway 11	Melrose St.	0.14	HCB		9.30		8.97		8.64		8.31		7.98	
Second North	Melrose St.	River St.	0.1	HCB		9.30		8.97		8.64		8.31		7.98	
Second North	River Shore		0.18	GR		9.30		9.05		8.80		8.55		8.30	
Average C						6.37		6.74		6.63		6.35		6.70	

\$285,562.69 \$107,175.35 \$28,046.24 \$2,803,197.18 \$487,074.05

Municipality Of Mattice-Val Cote
Asset Management Plan
Road Management Plan

ROAD	Section Start	Section End	Length (km)	Surface Type	Type of Work to be Done	6 -10 YR Road Improvement Expenditures									
						2018		2019		2020		2021		2022	
						C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$
Queen Street East	Highway 11	Queen St. E	0.05	HCB	Rehabilitation	8.68		8.35		8.02		7.69		7.36	
Chabot Cresnet	East Section	West Section	0.15	HCB	Resurfacing	8.68		8.35		8.02		7.69		7.36	
Gagnon Avenue	Second St.	Third St.	0.16	GR	Resurfacing	6.50		6.25		6.00		5.75		5.50	
Melrose Avenue	Second St.	Third St.	0.16	HCB	Resurfacing	8.68		8.35		8.02		7.69		7.36	
Melrose Avenue	Third St.	Creek St.	0.18	HCB	Resurfacing	8.68		8.35		8.02		7.69		7.36	
Second Street South	Highway 11	Queen St.	0.1	HCB	Resurfacing	8.68		8.35		8.02		7.69		7.36	
Third South	Parkview Ave.	Gagnon Ave.	0.14	HCB	Resurfacing	8.68		8.35		8.02		7.69		7.36	
Third/North	Highway 11	Mellrose Lane	0.05	HCB	Resurfacing	8.68		8.35		8.02		7.69		7.36	
Balmoral Avenue	Third St.	Creek St.	0.13	HCB	Resurfacing	9.01		8.68		8.35		8.02		7.69	
Queen Street	First St.	Second St.	0.16	HCB	Resurfacing	9.01		8.68		8.35		8.02		7.69	
Second Street South	Balmoral Ave.	Parkview Ave.	0.14	HCB	Resurfacing	9.01		8.68		8.35		8.02		7.69	
Gagnon Avenue	First St.	Second St.	0.16	GR	Resurfacing	7.00		6.75		6.50		6.25		6.00	
First Street South	Queen St.	Balmoral Ave.	0.12	GR	Resurfacing	7.25		7.00		6.75		6.50		6.25	
Defosses Road	Trans Canada Hwy	Brisson Rd	0.2	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Plamondon Road East	Cemetery Rd	To End	2.4	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Provincial Road	Trans Canada Hwy	To End	0.9	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Shallow Lake Road	Trans Canada Hwy	Shallow Lake Rd. Side Road	2	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Shallow Lake Side Road	Shallow Lake Rd. Side Road	Shallow Lake Rd. E	0.75	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Shallow Lake Road East	Shallow Lake Rd.	To end	0.45	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Shallow Lake Road East	Shallow Lake Rd. E	Tanguay Rd. E	0.35	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Shallow Lake Road East	Tanguay Rd. E	To End	1.4	LCB	Resurfacing	9.50		9.00		8.50		8.00		7.50	
Comeau Rd	Trans Canada Hwy	To End	0.2	LCB	Resurfacing	10.00		9.50		9.00		8.50		8.00	
Avenue Mgr. Proulx	River St.	First St.	0.18	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Avenue Mgr. Proulx	First St.	Second St.	0.16	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Avenue Mgr. Proulx	Second St.	Third St.	0.16	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Avenue Mgr. Proulx	Third St.	Mellrose St.	0.14	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Balmoral Avenue	Second St.	Third St.	0.16	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Chabot Cresnet	North Section	South Section	0.09	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
First Street South	Queen St.	Balmoral Ave.	0.14	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Queen Street East	Queen St. E		0.12	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
River Street So. (M16)	Queen St.	Parkview Ave.	0.4	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Second Street South	Queen St.	Balmoral Ave.	0.14	HCB	Resurfacing	10.00		9.67		9.34		9.01		8.68	
Third South	Balmoral Ave.	Parkview Ave.	0.14	HCB	Resurfacing	4.65	\$34,894.30	10.00		9.67		9.34		9.01	
Barker Road	Trans Canada Hwy	Unknown Rd.	10.9	GR	Resurfacing	4.75	\$1,910,650.10	7.50		7.25		7.00		6.75	
Maxime Brisson Road (Concession Rd 6/ Concession)	Trans Canada Hwy	End of Road	1.3	GR	Resurfacing	4.75	\$227,875.70	7.50		7.25		7.00		6.75	
Brisson Road	Comeau Rd	To End	1	GR	Resurfacing	4.75	\$175,289.00	7.50		7.25		7.00		6.75	
Cemetery Road	Trans Canada Hwy	Plamondon Rd.	0.75	GR	Resurfacing	4.75	\$131,466.75	7.50		7.25		7.00		6.75	
Chemin des Sno	Gagnon Rd	To End	0.7	GR	Resurfacing	4.75	\$122,702.30	7.50		7.25		7.00		6.75	
Drouin Road	Trans Canada Hwy	To End	9.1	GR	Resurfacing	4.75	\$1,595,129.90	7.50		7.25		7.00		6.75	
First Street South	Balmoral Ave.	Parkview Ave.	0.12	GR	Resurfacing	4.75	\$21,034.68	7.50		7.25		7.00		6.75	
First Street South	Parkview Ave.	Gagnon Ave.	0.12	GR	Resurfacing	4.75	\$21,034.68	7.50		7.25		7.00		6.75	
First Street South	Chabot Crescent	Plamondon Rd.	0.9	GR	Resurfacing	4.75	\$157,760.10	7.50		7.25		7.00		6.75	
Indian Cemetery Road	Trans Canada Hwy	To End	3.9	GR	Resurfacing	4.75	\$683,627.10	7.50		7.25		7.00		6.75	
Plamondon Road	First St.	Cemetery Rd.	1.6	GR	Resurfacing	4.75	\$280,462.40	7.50		7.25		7.00		6.75	
Plamondon Road West	Indian cemetery Rd	To End	2.7	GR	Resurfacing	4.75	\$473,280.30	7.50		7.25		7.00		6.75	
Ressor Rd North (East/West)	Unknown Rd.	Trans Canada Hwy	1.9	GR	Resurfacing	4.75	\$333,049.10	7.50		7.25		7.00		6.75	
Ressor Rd North/South	End Of Road	To End	2.7	GR	Resurfacing	4.75	\$473,280.30	7.50		7.25		7.00		6.75	
Ressor Rd South	Trans Canada Hwy	Unknown Rd.	0.45	GR	Resurfacing	4.75	\$78,880.05	7.50		7.25		7.00		6.75	
Ressor Rd South/East	To End		0.3	GR	Resurfacing	4.75	\$52,586.70	7.50		7.25		7.00		6.75	
Shallow Lake Road West	Shallow Lake Rd.	Tanguay Rd. W	0.65	GR	Resurfacing	4.75	\$113,937.85	7.50		7.25		7.00		6.75	
Shallow Lake Road West	Tanguay Rd. W	Faucher Rd.	2.5	GR	Resurfacing	4.75	\$438,222.50	7.50		7.25		7.00		6.75	
Shannon Road	Trans Canada Hwy	To end	14.4	GR	Resurfacing	4.75	\$2,524,161.60	7.50		7.25		7.00		6.75	
Tanguay Road East	Shallow Lake Rd. E	To End	0.9	GR	Resurfacing	4.75	\$157,760.10	7.50		7.25		7.00		6.75	
Third/North	Mellrose Lane	Mellrose Ave.	0.06	GR	Resurfacing	4.75	\$10,517.34	7.50		7.25		7.00		6.75	
Balmoral Avenue	River St.	First St.	0.15	HCB	Resurfacing	4.85	\$37,386.75	10.00		9.67		9.34		9.01	
Faucher Road North	Shallow Lake Rd.	Trans Canada Hwy	2.1	GR	Resurfacing	5.25		5.00		4.75	\$368,106.90	7.50		7.25	
First Street South	Gagnon Ave.	Chabot Crescent	0.11	GR	Resurfacing	5.25		5.00		4.75	\$19,281.79	7.50		7.25	
Gagnon Road	Unknown Rd.	Trans Canada Hwy	4.1	GR	Resurfacing	5.25		5.00		4.75	\$718,684.90	7.50		7.25	
First Street South	Parkview Ave.	Gagnon Ave.	0.14	HCB		6.35		6.02		5.69		5.36		5.03	
Queen Street	Third St.		0.18	HCB		6.35		6.02		5.69		5.36		5.03	
Balmoral Avenue	First St.	Second St.	0.16	HCB		6.65		6.32		5.99		5.66		5.33	

Municipality Of Mattice-Val Cote
Asset Management Plan
Road Management Plan

ROAD	Section Start	Section End	Length (km)	Surface Type	Type of Work to be Done	6 -10 YR Road Improvement Expenditures									
						2018		2019		2020		2021		2022	
						C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$	C.R.	\$
First Street South	Balmoral Ave.	Parkview Ave.	0.14	HCB		6.65		6.32		5.99		5.66		5.33	
Missinaibi Park Rd.	Melrose St.	River St.	0.14	HCB		6.65		6.32		5.99		5.66		5.33	
Parkview Avenue	River St.	First St.	0.16	HCB		6.65		6.32		5.99		5.66		5.33	
Parkview Avenue	First St.	Second St.	0.16	HCB		6.65		6.32		5.99		5.66		5.33	
Parkview Avenue	Second St.	Third St.	0.16	HCB		6.65		6.32		5.99		5.66		5.33	
Queen Street	River St.	First St.	0.17	HCB		6.65		6.32		5.99		5.66		5.33	
Queen Street	Second St.	Third St.	0.16	HCB		6.65		6.32		5.99		5.66		5.33	
Third/North	Melrose Ave.	River St.	0.09	HCB		6.65		6.32		5.99		5.66		5.33	
Second Street South	Parkview Ave.	Gagnon Ave.	0.14	HCB		7.35		7.02		6.69		6.36		6.03	
Third South	Queen St.	Balmoral Ave.	0.14	HCB		7.35		7.02		6.69		6.36		6.03	
First Street North	Melrose St.	King St.	0.08	HCB		7.65		7.32		6.99		6.66		6.33	
First Street South	Gagnon Ave.	Chabot Crescent	0.175	HCB		7.65		7.32		6.99		6.66		6.33	
Second North	Highway 11	Melrose St.	0.14	HCB		7.65		7.32		6.99		6.66		6.33	
Second North	Melrose St.	River St.	0.1	HCB		7.65		7.32		6.99		6.66		6.33	
Second North	River Shore		0.18	GR		8.05		7.80		7.55		7.30		7.05	
Average C						7.18		7.83		7.51		7.31		6.99	

\$10,054,989.60 \$0.00 \$1,106,073.59 \$0.00 \$0.00

Municipality Of Mattice-Val Cote
Asset Management Plan
Road Management Plan

ROAD	Section Start	Section End	Length (km)	Surface Type	Road Classification	Replacement Cost per KM	Total Replacement Cost	Life Cycle Cost per KM	Life Cycle Cost
Queen Street East	Highway 11	Queen St. E	0.05	HCB	Paved rural	\$ 1,459,023	\$ 72,951	\$ 3,731,360	\$ 186,568
Chabot Cresnet	East Section	West Section	0.15	HCB	Paved rural	\$ 1,459,023	\$ 218,853	\$ 3,731,360	\$ 559,704
Gagnon Avenue	Second St.	Third St.	0.16	GR	Gravel rural	\$ 847,503	\$ 135,600	\$ 1,915,265	\$ 306,442
Melrose Avenue	Second St.	Third St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Melrose Avenue	Third St.	Creek St.	0.18	HCB	Paved rural	\$ 1,459,023	\$ 262,624	\$ 3,731,360	\$ 671,645
Second Street South	Highway 11	Queen St.	0.1	HCB	Paved rural	\$ 1,459,023	\$ 145,902	\$ 3,731,360	\$ 373,136
Third South	Parkview Ave.	Gagnon Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Third/North	Highway 11	Melrose Lane	0.05	HCB	Paved rural	\$ 1,459,023	\$ 72,951	\$ 3,731,360	\$ 186,568
Balmoral Avenue	Third St.	Creek St.	0.13	HCB	Paved rural	\$ 1,459,023	\$ 189,673	\$ 3,731,360	\$ 485,077
Queen Street	First St.	Second St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Second Street South	Balmoral Ave.	Parkview Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Gagnon Avenue	First St.	Second St.	0.16	GR	Gravel rural	\$ 847,503	\$ 135,600	\$ 1,915,265	\$ 306,442
First Street South	Queen St.	Balmoral Ave.	0.12	GR	Gravel rural	\$ 847,503	\$ 101,700	\$ 1,915,265	\$ 229,832
Defosses Road	Trans Canada Hwy	Brisson Rd	0.2	LCB	Surface treated rural	\$ 996,141	\$ 199,228	\$ 2,377,670	\$ 475,534
Plamondon Road East	Cemetary Rd	To End	2.4	LCB	Surface treated rural	\$ 996,141	\$ 2,390,738	\$ 2,377,670	\$ 5,706,408
Provencal Road	Trans Canada Hwy	To End	0.9	LCB	Surface treated rural	\$ 996,141	\$ 896,527	\$ 2,377,670	\$ 2,139,903
Shallow Lake Road	Trans Canada Hwy	Shallow Lake Rd. Side Road	2	LCB	Surface treated rural	\$ 996,141	\$ 1,992,282	\$ 2,377,670	\$ 4,755,340
Shallow Lake Side Road	Shallow Lake Rd. Side Road	Shallow Lake Rd. E	0.75	LCB	Surface treated rural	\$ 996,141	\$ 747,106	\$ 2,377,670	\$ 1,783,253
Shallow Lake Road East	Shallow Lake Rd.	To end	0.45	LCB	Surface treated rural	\$ 996,141	\$ 448,263	\$ 2,377,670	\$ 1,069,952
Shallow Lake Road East	Shallow Lake Rd. E	Tanguay Rd. E	0.35	LCB	Surface treated rural	\$ 996,141	\$ 348,649	\$ 2,377,670	\$ 832,185
Shallow Lake Road East	Tanguay Rd. E	To End	1.4	LCB	Surface treated rural	\$ 996,141	\$ 1,394,597	\$ 2,377,670	\$ 3,328,738
Comeau Rd	Trans Canada Hwy	To End	0.2	LCB	Surface treated rural	\$ 996,141	\$ 199,228	\$ 2,377,670	\$ 475,534
Avenue Mgr. Proulx	River St.	First St.	0.18	HCB	Paved rural	\$ 1,459,023	\$ 262,624	\$ 3,731,360	\$ 671,645
Avenue Mgr. Proulx	First St.	Second St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Avenue Mgr. Proulx	Second St.	Third St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Avenue Mgr. Proulx	Third St.	Melrose St.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Balmoral Avenue	Second St.	Third St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Chabot Cresnet	North Section	South Section	0.09	HCB	Paved rural	\$ 1,459,023	\$ 131,312	\$ 3,731,360	\$ 335,822
First Street South	Queen St.	Balmoral Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Queen Street East	Queen St. E		0.12	HCB	Paved rural	\$ 1,459,023	\$ 175,083	\$ 3,731,360	\$ 447,763
River Street So. (M16)	Queen St.	Parkview Ave.	0.4	HCB	Paved rural	\$ 1,459,023	\$ 583,609	\$ 3,731,360	\$ 1,492,544
Second Street South	Queen St.	Balmoral Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Third South	Balmoral Ave.	Parkview Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Barker Road	Trans Canada Hwy	Unknown Rd.	10.9	GR	Gravel rural	\$ 847,503	\$ 9,237,783	\$ 1,915,265	\$ 20,876,389
Maxime Brisson Road (Concession Rd 6/ Concession	Trans Canada Hwy	End of Road	1.3	GR	Gravel rural	\$ 847,503	\$ 1,101,754	\$ 1,915,265	\$ 2,489,845
Brisson Road	Comeau Rd	To End	1	GR	Gravel rural	\$ 847,503	\$ 847,503	\$ 1,915,265	\$ 1,915,265
Cemetery Road	Trans Canada Hwy	Plamondon Rd.	0.75	GR	Gravel rural	\$ 847,503	\$ 635,627	\$ 1,915,265	\$ 1,436,449
Chemin des Sno	Gagnon Rd	To End	0.7	GR	Gravel rural	\$ 847,503	\$ 593,252	\$ 1,915,265	\$ 1,340,686
Drouin Road	Trans Canada Hwy	To End	9.1	GR	Gravel rural	\$ 847,503	\$ 7,712,277	\$ 1,915,265	\$ 17,428,912
First Street South	Balmoral Ave.	Parkview Ave.	0.12	GR	Gravel rural	\$ 847,503	\$ 101,700	\$ 1,915,265	\$ 229,832
First Street South	Parkview Ave.	Gagnon Ave.	0.12	GR	Gravel rural	\$ 847,503	\$ 101,700	\$ 1,915,265	\$ 229,832
First Street South	Chabot Crescent	Plamondon Rd.	0.9	GR	Gravel rural	\$ 847,503	\$ 762,753	\$ 1,915,265	\$ 1,723,739
Indian Cemetery Road	Trans Canada Hwy	To End	3.9	GR	Gravel rural	\$ 847,503	\$ 3,305,262	\$ 1,915,265	\$ 7,469,534
Plamondon Road	First St.	Cemetery Rd.	1.6	GR	Gravel rural	\$ 847,503	\$ 1,356,005	\$ 1,915,265	\$ 3,064,424
Plamondon Road West	Indian cemetery Rd	To End	2.7	GR	Gravel rural	\$ 847,503	\$ 2,288,258	\$ 1,915,265	\$ 5,171,216
Ressor Rd North (East/West)	Unknown Rd.	Trans Canada Hwy	1.9	GR	Gravel rural	\$ 847,503	\$ 1,610,256	\$ 1,915,265	\$ 3,639,004
Ressor Rd North/South	End Of Road	End of Road	2.7	GR	Gravel rural	\$ 847,503	\$ 2,288,258	\$ 1,915,265	\$ 5,171,216
Ressor Rd South	Trans Canada Hwy	Unknown Rd.	0.45	GR	Gravel rural	\$ 847,503	\$ 381,376	\$ 1,915,265	\$ 861,869
Ressor Rd South/East	Ressor Rd South	To End	0.3	GR	Gravel rural	\$ 847,503	\$ 254,251	\$ 1,915,265	\$ 574,580
Shallow Lake Road West	Shallow Lake Rd.	Tanguay Rd. W	0.65	GR	Gravel rural	\$ 847,503	\$ 550,877	\$ 1,915,265	\$ 1,244,922
Shallow Lake Road West	Tanguay Rd. W	Faucher Rd.	2.5	GR	Gravel rural	\$ 847,503	\$ 2,118,758	\$ 1,915,265	\$ 4,788,163
Shannon Road	Trans Canada Hwy	To end	14.4	GR	Gravel rural	\$ 847,503	\$ 12,204,043	\$ 1,915,265	\$ 27,579,816

Municipality Of Mattice-Val Cote
Asset Management Plan
Road Management Plan

ROAD	Section Start	Section End	Length (km)	Surface Type	Road Classification	Replacement Cost per KM	Total Replacement Cost	Life Cycle Cost per KM	Life Cycle Cost
Tanguay Road East	Shallow Lake Rd. E	To End	0.9	GR	Gravel rural	\$ 847,503	\$ 762,753	\$ 1,915,265	\$ 1,723,739
Third/North	Melrose Lane	Melrose Ave.	0.06	GR	Gravel rural	\$ 847,503	\$ 50,850	\$ 1,915,265	\$ 114,916
Balmoral Avenue	River St.	First St.	0.15	HCB	Paved rural	\$ 1,459,023	\$ 218,853	\$ 3,731,360	\$ 559,704
Faucher Road North	Shallow Lake Rd.	Trans Canada Hwy	2.1	GR	Gravel rural	\$ 847,503	\$ 1,779,756	\$ 1,915,265	\$ 4,022,057
First Street South	Gagnon Ave.	Chabot Crescent	0.11	GR	Gravel rural	\$ 847,503	\$ 93,225	\$ 1,915,265	\$ 210,679
Gagnon Road	Unknown Rd.	Trans Canada Hwy	4.1	GR	Gravel rural	\$ 847,503	\$ 3,474,762	\$ 1,915,265	\$ 7,852,587
First Street South	Parkview Ave.	Gagnon Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Queen Street	Third St.		0.18	HCB	Paved rural	\$ 1,459,023	\$ 262,624	\$ 3,731,360	\$ 671,645
Balmoral Avenue	First St.	Second St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
First Street South	Balmoral Ave.	Parkview Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Missinaibi Park Rd.	Melrose St.	River St.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Parkview Avenue	River St.	First St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Parkview Avenue	First St.	Second St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Parkview Avenue	Second St.	Third St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Queen Street	River St.	First St.	0.17	HCB	Paved rural	\$ 1,459,023	\$ 248,034	\$ 3,731,360	\$ 634,331
Queen Street	Second St.	Third St.	0.16	HCB	Paved rural	\$ 1,459,023	\$ 233,444	\$ 3,731,360	\$ 597,018
Third/North	Melrose Ave.	River St.	0.09	HCB	Paved rural	\$ 1,459,023	\$ 131,312	\$ 3,731,360	\$ 335,822
Second Street South	Parkview Ave.	Gagnon Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Third South	Queen St.	Balmoral Ave.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
First Street North	Melrose St.	King St.	0.08	HCB	Paved rural	\$ 1,459,023	\$ 116,722	\$ 3,731,360	\$ 298,509
First Street South	Gagnon Ave.	Chabot Crescent	0.175	HCB	Paved rural	\$ 1,459,023	\$ 255,329	\$ 3,731,360	\$ 652,988
Second North	Highway 11	Melrose St.	0.14	HCB	Paved rural	\$ 1,459,023	\$ 204,263	\$ 3,731,360	\$ 522,390
Second North	Melrose St.	River St.	0.1	HCB	Paved rural	\$ 1,459,023	\$ 145,902	\$ 3,731,360	\$ 373,136
Second North	River Shore		0.18	GR	Gravel rural	\$ 847,503	\$ 152,551	\$ 1,915,265	\$ 344,748
78.205							\$ 71,035,067		\$ 164,089,442



cutting through complexity



**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix B Infrastructure Profile Water



Municipality Of Mattice - Val Cote
Asset Management Plan
Potable Water Distribution System -Mains

Hydrant & Valve	Description	Diameter	Length (m)	Date Installed	Years Of Service	Total Life Cycle Cost Over 80 Years	Anticipated Date to Replace	Replacement Cost 2013
WS11	River Street South, Cont. #1	200	20	1979	34	\$20,025.84	2064	\$14,972.20
WS12	River Street South, Cont. #1	200	10	1979	34	\$10,012.92	2064	\$7,486.10
WS13	Second Street South, Cont. #1	200	200	1979	34	\$200,258.40	2064	\$149,722.00
WS14	Second Street South, Cont. #1	200	50	1979	34	\$50,064.60	2069	\$37,430.50
WS24	Balmoral Avenue, Cont. #1	200	305	1979	34	\$305,394.06	2069	\$228,326.05
WS10	North Lane West, Cont. #4	150	230	1985	28	\$209,137.16	2070	\$154,355.30
WS1	Second Street North, Cont. #1	200	50	1987	26	\$50,064.60	2072	\$37,430.50
WS15	Second Street South, Cont. #2	150	60	1982	31	\$54,557.52	2072	\$40,266.60
WS16	Second Street South, Cont. #2	150	150	1982	31	\$136,393.80	2072	\$100,666.50
WS25	Lane between Queen St & Balmoral, Cont. #2	150	280	1982	31	\$254,601.76	2072	\$187,910.80
WS3	Melrose Street, Cont. #1	150	140	1982	31	\$127,300.88	2072	\$93,955.40
WS4	Melrose Street, Cont. #1	150	140	1982	31	\$127,300.88	2072	\$93,955.40
WS26	Lane between Queen St & Balmoral, Cont. #3	150	140	1984	29	\$127,300.88	2074	\$93,955.40
WS27	Lane between Queen St & Balmoral, Cont. #3	150	500	1984	29	\$454,646.00	2074	\$335,555.00
WS2	Third Street North, Cont. #4	150	50	1985	28	\$45,464.60	2075	\$33,555.50
WS5	North Lane East, Cont. #4	100	50	1985	28	\$43,464.60	2075	\$31,555.50
WS6	Creek Crossing & Street A, Cont. #4	150	440	1985	28	\$400,088.48	2075	\$295,288.40
WS7	Street A & B, Cont. #4	150	430	1985	28	\$390,995.56	2075	\$288,577.30
WS9	North Lane West, Cont. #4	100	40	1985	28	\$34,771.68	2075	\$25,244.40
WS17	Third Street South, Cont. #5	150	80	1986	27	\$72,743.36	2076	\$53,688.80
WS18	Chabot Crescent, Cont. #5	150	165	1986	27	\$150,033.18	2076	\$110,733.15
WS19	Gagnon Avenue, Cont. #5	150	100	1986	27	\$90,929.20	2076	\$67,111.00
WS20	Gagnon Avenue, Cont. #5	150	90	1986	27	\$81,836.28	2076	\$60,399.90
WS21	Parkview Avenue, Cont. #5	150	120	1986	27	\$109,115.04	2076	\$80,533.20
WS22	Lane between Balmoral & Parkview Avenue, Cont. #5	150	130	1986	27	\$118,207.96	2076	\$87,244.30
WS23	Lane between Balmoral & Parkview Avenue, Cont. #5	150	240	1986	27	\$218,230.08	2076	\$161,066.40
WS8	Road Allowance,	100	40	1986	27	\$34,771.68	2076	\$25,244.40

Summary of Asset Replacment & Cost by Year		4,250	\$3,917,711.00	\$2,896,230.00
Total Replacement Cost 2064	\$172,180.30			
Total Replacement Cost 2069	\$265,756.55			
Total Replacement Cost 2070	\$154,355.30			
Total Replacement Cost 2072	\$554,185.20			
Total Replacement Cost 2074	\$429,510.40			
Total Replacement Cost 2075	\$674,221.10			
Total Replacement Cost 2076	\$646,021.15			



cutting through complexity



**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix C Infrastructure Profile Wastewater



Municipality Of Mattice - Val Cote
Asset Management Plan
Sanitary Sewer Network - Pipes

Description	Location	Section Start	Section End	Length In Meters	Diameter	Date Installed	Years Of Service	Life Cycle Cost (80 Years)	Date to Replace	Reconstruction Cost 2013
SS_32	Melrose Street	San MH 5	San MH 4	78.8	250	1982	31	\$116,219.39	2062	\$82,904.30
SS_33	Melrose Street	San MH 4	San MH 3	79.7	250	1982	31	\$117,546.77	2062	\$83,851.17
SS_34	Melrose Street	San MH 3	San MH 2	93.5	250	1982	31	\$137,899.91	2062	\$98,369.95
SS_35	Melrose Street	San MH 2	San MH 1	88.1	250	1982	31	\$129,935.64	2062	\$92,688.69
SS_36	North Lane E	San MH 14	San MH 13	80.5	200	1982	31	\$118,726.66	2062	\$84,692.84
SS_37	North Lane E	San MH 13	San MH 12	69.2	200	1982	31	\$102,060.69	2062	\$72,804.28
SS_38	North Lane E	San MH 11	San MH 12	59.2	200	1982	31	\$87,312.03	2062	\$62,283.43
SS_39	North Lane E	San MH 10	San MH 6	45.4	200	1982	31	\$66,958.89	2062	\$47,764.66
SS_40	North Lane W	San MH 9	San MH 8	102.8	250	1982	31	\$151,616.16	2062	\$108,154.34
SS_41	North Lane W	San MH 8	San MH 7	104	250	1982	31	\$153,386.00	2062	\$109,416.84
SS_42	North Lane W	San MH 7	San MH 6	102	250	1982	31	\$150,436.27	2062	\$107,312.67
SS_43	Second Street	San MH 6	San MH 5	58.9	250	1982	31	\$86,869.57	2062	\$61,967.81
SS_44	Third Street	San MH 12	San MH 3	55.7	200	1982	31	\$82,150.00	2062	\$58,601.13
SS_45	Interceptor Sewer	San MH 19	San MH 18	88.7	250	1982	31	\$130,820.56	2062	\$93,319.94
SS_46	Interceptor Sewer	San MH 18	San MH 15	78.3	300	1982	31	\$115,481.96	2062	\$82,378.26
SS_47	Interceptor Sewer	San MH 15	San MH 1	97.6	375	1982	31	\$152,145.26	2062	\$110,003.50
SS_48	Queen Street Extension	San MH 20	San MH 18	27.9	200	1982	31	\$41,148.74	2062	\$29,353.17
SS_49	Queen Street Extension	San MH 21	San MH 20	101.5	200	1982	31	\$149,698.84	2062	\$106,786.63
SS_50	Queen Street Extension	San MH 22	San MH 21	61.4	200	1982	31	\$90,556.74	2062	\$64,598.02
SS_51	Queen Street Extension	San MH 23	San MH 22	94.8	200	1982	31	\$139,817.24	2062	\$99,737.66
SS_52	Queen Street Extension	San MH 24	San MH 23	96.7	200	1982	31	\$142,619.48	2062	\$101,736.62
SS_55	Gagnon Avenue	San MH	San MH 36	95	200	1982	31	\$140,112.21	2062	\$99,948.08
SS_56	Gagnon Avenue	San MH	San MH 35	95	150	1982	31	\$140,112.21	2062	\$99,948.08
SS_1	First Street	San MH 55	San MH 54	61	200	1986	27	\$89,966.79	2066	\$64,177.19
SS_10	Lane between Queen St & Balmoral Ave	San MH 31	San MH 30	101.9	200	1986	27	\$150,288.78	2066	\$107,207.46
SS_11	Lane between Queen St & Balmoral Ave	San MH 30	San MH 29	97.3	200	1986	27	\$143,504.40	2066	\$102,367.87
SS_12	Second Street	San MH 36	San MH 35	16.2	200	1986	27	\$23,892.82	2066	\$17,043.78
SS_13	Second Street	San MH 35	San MH 34	101.2	200	1986	27	\$149,256.38	2066	\$106,471.00
SS_14	Second Street	San MH 34	San MH 33	72.8	200	1986	27	\$107,370.20	2066	\$76,591.79
SS_15	Second Street	San MH 33	San MH 29	120.2	200	1986	27	\$177,278.82	2066	\$126,460.62
SS_16	Lane between Balmoral Ave and Parkview Ave	San MH 39	San MH 38	77	200	1986	27	\$113,564.64	2066	\$81,010.55
SS_17	Lane between Balmoral Ave and Parkview Ave	San MH 38	San MH 37	92.5	200	1986	27	\$136,425.05	2066	\$97,317.86
SS_18	Lane between Balmoral Ave and Parkview Ave	San MH 37	San MH 33	98.5	200	1986	27	\$145,274.24	2066	\$103,630.37
SS_19	Lane between Balmoral Ave and Parkview Ave	San MH 41	San MH 40	72	200	1986	27	\$106,190.31	2066	\$75,750.12
SS_2	Gagnon Avenue	San MH 54	San MH 53	73.3	200	1986	27	\$108,107.63	2066	\$77,117.83
SS_20	Lane between Balmoral Ave and Parkview Ave	San MH 40	San MH 33	67.1	200	1986	27	\$98,963.47	2066	\$70,594.90
SS_21	Highway 11	San MH 45	San MH 44	82.2	250	1986	27	\$121,233.94	2066	\$86,481.39
SS_22	Highway 11	San MH 44	San MH 43	83.3	250	1986	27	\$122,856.29	2066	\$87,638.68
SS_23	Highway 11	San MH 43	San MH 42	96	250	1986	27	\$141,587.08	2066	\$101,000.16
SS_24	Highway 11	San MH 42	San MH 15	8	250	1986	27	\$11,798.92	2066	\$8,416.68
SS_25	Highway 11	San MH 48	San MH 46	115.2	200	1986	27	\$169,904.49	2066	\$121,200.19
SS_26	Highway 11	San MH 47	San MH 46	75.4	200	1986	27	\$111,204.85	2066	\$79,327.21
SS_27	Highway 11	San MH 46	San MH 45	66.6	200	1986	27	\$98,226.04	2066	\$70,068.86
SS_28	Highway 11	San MH 51	San MH 50	60.2	200	1986	27	\$88,786.90	2066	\$63,335.52
SS_29	Highway 11	San MH 50	San MH 49	110.5	200	1986	27	\$162,972.63	2066	\$116,255.39
SS_3	Gagnon Avenue	San MH 53	San MH 35	85.7	200	1986	27	\$126,395.96	2066	\$90,163.68
SS_30	Highway 11	San MH 49	San MH 48	100.3	200	1986	27	\$147,929.00	2066	\$105,524.13
SS_31	Third Street	San MH 52	San MH 27	97.6	200	1986	27	\$143,946.86	2066	\$102,683.50
SS_4	Lane between Queen St & Balmoral Ave	San MH 29	San MH 28	67	250	1986	27	\$98,815.98	2066	\$70,489.70

Municipality Of Mattice - Val Cote
 Asset Management Plan
 Sanitary Sewer Network - Pipes

Description	Location	Section Start	Section End	Length In Meters	Diameter	Date Installed	Years Of Service	Life Cycle Cost (80 Years)	Date to Replace	Reconstruction Cost 2013
SS_5	Lane between Queen St & Balmoral Ave	San MH 28	San MH 27	92.6	250	1986	27	\$136,572.54	2066	\$97,423.07
SS_53	Chabot Cresent	San MH 2	San MH 1	128	200	1986	27	\$188,782.77	2066	\$134,666.88
SS_54	Chabot Cresent	San MH 1	San MH 36	92	200	1986	27	\$135,687.62	2066	\$96,791.82
SS_6	Lane between Queen St & Balmoral Ave	San MH 27	San MH 26	61.9	250	1986	27	\$91,294.17	2066	\$65,124.06
SS_7	Lane between Queen St & Balmoral Ave	San MH 26	San MH 25	62.6	250	1986	27	\$92,326.57	2066	\$65,860.52
SS_8	Lane between Queen St & Balmoral Ave	San MH 25	San MH 19	52.1	250	1986	27	\$76,840.49	2066	\$54,813.63
SS_9	Lane between Queen St & Balmoral Ave	San MH 32	San MH 31	114.7	200	1986	27	\$169,167.06	2066	\$120,674.15

Summary of Asset Replacement & Cost by Year	
Total Replacement Cost 2062	\$1,958,622.05
Total Replacement Cost 2066	\$2,843,680.55

4,558

\$6,730,044.95	\$4,802,302.60
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**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix D Infrastructure Profile Buildings and Facilities



MUNICIPALITY OF MATTICE - VAL COTE

BUILDING ASSET SUMMARY

		General Building Information				Remaining Service Life				Facility Condition	Life Cycle Costs				
		Use	Year of Construction	Age (Yrs)	Size (ft²)	Structure	Mechanical	Electrical	Roof	Index (FCI)	Replacement Cost	Immediate	0-5 Years	5-10 Years	Total
1	Municipal Office/Equipment Depot/Fire Hall	General	1978	35	15000	40	11	7	28	0.3%	\$1,649,200.00	\$0.00	\$0.00	\$5,000.00	\$5,000.00
2	Storage Garage - 500 Highway 11	Transportation	1988	25	2400	31	NA	7	6	16.2%	\$154,600.00	\$0.00	\$0.00	\$25,000.00	\$25,000.00
3	Salt Storage - 500 Highway 11	Transportation	1980	33	1260	53	NA	7	11	5.0%	\$90,700.00	\$0.00	\$3,500.00	\$1,000.00	\$4,500.00
4	Storage Shed - 272 3 rd Street	Transportation	1993	20	1800	38	NA	7	13	1.4%	\$107,500.00	\$0.00	\$0.00	\$1,500.00	\$1,500.00
5	Arena - Sports Complex	Recreation	1980	33	31000	53	11	7	35	0.3%	\$3,912,000.00	\$0.00	\$0.00	\$13,000.00	\$13,000.00
6	Arena - Storage Shed	Recreation	1975	38	160	15	NA	NA	11	0.0%	\$10,900.00	\$0.00	\$0.00	\$0.00	\$0.00
7	Comfort Station/Washrooms	Recreation	1988	25	720	31	6	7	6	13.2%	\$83,500.00	\$0.00	\$0.00	\$11,000.00	\$11,000.00
8	Ballfield Shed #1	Recreation	1975	38	140	15	NA	NA	11	0.0%	\$6,500.00	\$0.00	\$0.00	\$0.00	\$0.00
9	Ballfield Shed #2	Recreation	1975	38	112	15	NA	NA	11	0.0%	\$6,500.00	\$0.00	\$0.00	\$0.00	\$0.00
10	Dugout #1	Recreation	2005	8	48	53	NA	NA	28	0.0%	\$2,400.00	\$0.00	\$0.00	\$0.00	\$0.00
11	Dugout #2	Recreation	2005	8	48	53	NA	NA	28	0.0%	\$2,400.00	\$0.00	\$0.00	\$0.00	\$0.00
12	Fire Hall	Fire	1978	35	992	19	9	7	11	6.5%	\$88,300.00	\$0.00	\$0.00	\$5,775.00	\$5,775.00
13	Fire Hall Shed	Fire	1978	35	196	19	11	NA	9	18.9%	\$10,600.00	\$0.00	\$0.00	\$2,000.00	\$2,000.00
14	Mattice Charnel	Social	1975	38	180	15	NA	NA	9	11.1%	\$9,000.00	\$0.00	\$0.00	\$1,000.00	\$1,000.00
15	Val Cote Charnel	Social	2006	7	144	54	NA	NA	23	0.0%	\$7,200.00	\$0.00	\$0.00	\$0.00	\$0.00
16	Water Treatment Plant	Water	2005	8	5684	65	28	15	28	1.8%	\$2,997,989.00	\$5,000.00	\$25,000.00	\$25,000.00	\$55,000.00
17	Water Pumping Station	Water	1982	31	556	36	7	7	11	0.0%	\$133,689.00	\$0.00	\$0.00	\$0.00	\$0.00
18	Sewage Pumping Station	Water	1984	29	266	39	7	7	1	3.5%	\$133,689.00	\$0.00	\$2,200.00	\$2,500.00	\$4,700.00
19	Pumping Station #1 - Melrose Ave.	Water	1983	30	NA	20	8	NA	NA	1.3%	\$175,000.00	\$0.00	\$2,200.00	\$0.00	\$2,200.00
20	Lagoon (Mattice)	Water	1982	31	NA	NA	19	NA	NA	0.0%	\$1,109,600.00	\$0.00	\$0.00	\$0.00	\$0.00
21	Lagoon (Val Cote)	Water	1992	21	NA	NA	29	NA	NA	0.0%	\$175,000.00	\$0.00	\$0.00	\$0.00	\$0.00
											\$10,866,267.00	\$5,000.00	\$32,900.00	\$92,775.00	\$130,675.00

Facility Condition Index (FCI)	
Good	< 5%
Fair	5% - 10 %
Poor	> 10%

NOTES:
Replacement cost of Lagoons based on size and projected historical costs for similar lagoons in the surrounding areas.
Year of Construction dates assumed for Lagoons. Years based on forcemain construction dates.

Replacement cost of Pumping Station #1 is based on projected historical cost.

All other replacement costs based on Loss Control Inspection / Valuations Report by Jardine Lloyd Thompson (2008).

No information was provided with regards to the Water and Sewer capital expenditures.
An assumed capital expenditure of \$5000 per year is assumed for the mechanical systems for the Water Treatment Plant.
No capital expenditures were assumed for mechanical equipment at the Pump Stations or Lagoons.



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**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix E Infrastructure Profile Vehicles



**Municipality Of Mattice
Asset Management Plan
Fleet**

Assessment Year: 2013

Asset ID	Asset Name	Purchase Year	Replacement Cost	Equipment Classification	Age	Estimated Useful Life	Remaining Useful Life	Immediate Replacement	Replace Within Five Years	Replace Within Ten Years
VEH6	JD 410 4x4 Backhoe - 1986	1986	\$150,000	Backhoe and loader	27	12	0	\$150,000		
VEH7	JD 955 4x4 Tractor	1995	\$150,000	Backhoe and loader	18	12	0	\$150,000		
VEH15	Ford Fire Pumper - 1975	1975	\$250,000	Fire equipment (heavy)	38	20	0	\$250,000		
VEH1	Champion Grader - 1999 - Model 740	1999	\$250,000	Grader	14	13	0	\$250,000		
VEH14	International Fleetstar Tanker- 1972	1972	\$125,000	Medium/heavy truck	41	12	0	\$125,000		
VEH2	International Dump S1900 - 1982	1982	\$175,000	Medium/heavy truck	31	12	0	\$175,000		
VEH12	Alpha 2 Ambulance Sleigh - 1997	1997	\$5,000	Off road equipment	16	12	0	\$5,000		
VEH13	Arctic Cat Snowmobile - 1998	1998	\$15,000	Off road equipment	15	12	0	\$15,000		
VEH5	Ford F150 - 1998	1998	\$35,000	Pick-up truck	15	10	0	\$35,000		
VEH10	Olympia Millenium Ice Resurfacer - 2003	2003	\$125,000	Off road equipment	10	12	2		\$125,000	
VEH9	Utility Trailer - 1999	1999	\$5,000	Trailer	14	20	6			\$5,000
VEH16	GMC Fire Pumper Truck - 1974	2001	\$250,000	Fire equipment (heavy)	12	20	8			\$250,000
VEH3	International Snow Plow - 2002	2001	\$175,000	Plow	12	20	8			\$175,000
VEH11	Dodge Van - 1992	2008	\$30,000	Car - normal use	5	9	4		\$30,000	
VEH8	Sterling Garbage Truck - 2008	2007	\$175,000	Medium/heavy truck	6	12	6			\$175,000
VEH4	Ford F150 Red	2008	\$35,000	Pick-up truck	5	10	5		\$35,000	
VEH18	Pontiac G6 - 2006	2010	\$30,000	Car - normal use	3	9	6			\$30,000
VEH17	International 7400 S - Work Star Tanker	2010	\$125,000	Medium/heavy truck	3	12	9			\$125,000
			<u>\$2,105,000</u>				<u>\$1,155,000</u>			
						<u>\$190,000</u>				<u>\$760,000</u>



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**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix F Life Cycle Profiles for Linear Infrastructure



MUNICIPAL ROADS - LIFECYCLE COSTING

URBAN ROADS

PAVED URBAN COLLECTOR (10.0m Lane)

Service Year	5th Year	10th Year	15th Year	20th Year	25th Year	30th Year	35th Year	40th Year	45th Year	50th Year	55th Year	60th Year	TOTAL LIFECYCLE COST
Operational Items	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Rehabilitation	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Reconstruction	
Operation Cost / km	\$15,000	\$15,000	\$356,046	\$15,000	\$15,000	\$1,802,920	\$15,000	\$15,000	\$356,046	\$15,000	\$15,000	\$2,189,923	

Asset Operational Item	Cost / m	Cost / km	Road Structure
Crack Sealing	\$15.00	\$15,000.00	300mm Granular B
Resurfacing	\$356.05	\$356,046.48	150mm Granular A
Rehabilitation	\$1,802.92	\$1,802,919.85	50mm HL8
Reconstruction	\$2,189.92	\$2,189,923.36	40mm HL3

PAVED URBAN ARTERIAL (11.0m Lane)

Service Year	5th Year	10th Year	15th Year	20th Year	25th Year	30th Year	35th Year	40th Year	45th Year	50th Year	55th Year	60th Year	TOTAL LIFECYCLE COST
Operational Items	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Rehabilitation	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Reconstruction	
Operation Cost / km	\$25,000	\$25,000	\$653,869	\$25,000	\$25,000	\$2,508,572	\$25,000	\$25,000	\$653,869	\$25,000	\$25,000	\$3,046,435	

Asset Operational Item	Cost / m	Cost / km	Road Structure
Crack Sealing	\$25.00	\$25,000.00	450mm Granular B
Resurfacing	\$653.87	\$653,869.24	150mm Granular A
Rehabilitation	\$2,508.57	\$2,508,572.09	2 x 50mm HL8
Reconstruction	\$3,046.43	\$3,046,434.51	40mm HL3

MUNICIPAL ROADS - LIFECYCLE COSTING

RURAL ROADS

GRANULAR RURAL (6.5m Lane)

Service Year	13th Year	25th Year	38th Year	50th Year	63th Year	75th Year	
	Granular Top Up	Resurfacing	Granular Top Up	Rehabilitation	Granular Top Up	Reconstruction	
Operational Items	Ditching	Ditching	Ditching	Ditching	Ditching	Ditching	
	Brushing	Brushing	Brushing	Brushing	Brushing	Brushing	
Operation Cost / km	\$74,000	\$175,289	\$74,000	\$670,473	\$74,000	\$847,503	TOTAL LIFECYCLE COST
							\$1,915,265

Asset Operational Item	Cost / m	Cost / km
100mm Granular Top Up	\$45.00	\$45,000.00
Ditching	\$11.50	\$11,500.00
Brushing	\$17.50	\$17,500.00
Resurfacing	\$175.29	\$175,289.00
Rehabilitation	\$670.47	\$670,473.00
Reconstruction	\$847.50	\$847,503.00

Road Structure

300mm Granular B
150mm Granular A

SURFACE TREATED RURAL MINOR (6.5m Lane)

Service Year	3rd Year	10th Year	13th Year	20th Year	23th Year	30th Year	
	2 nd Application	Resurfacing	2 nd Application	Rehabilitation	2 nd Application	Reconstruction	
Operational Items							
Operation Cost / km	\$52,500	\$470,445	\$52,500	\$753,585	\$52,500	\$996,141	TOTAL LIFECYCLE COST
							\$2,377,670

Asset Operational Item	Cost / m	Cost / km
2 nd Application of Surface	\$52.50	\$52,500.00
Ditching	\$11.50	\$11,500.00
Brushing	\$17.50	\$17,500.00
Resurfacing	\$470.45	\$470,445.25
Rehabilitation	\$753.58	\$753,584.50
Reconstruction	\$996.14	\$996,140.50

Road Structure

300mm Granular B
150mm Granular A
25mm First Surface Treatment
25mm Second Surface Treatment

PAVED RURAL COLLECTOR (7.0m Lane)

Service Year	5th Year	10th Year	15th Year	20th Year	25th Year	30th Year	35th Year	40th Year	45th Year	50th Year	55th Year	60th Year	
	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Rehabilitation	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Reconstruction	
Operational Items		Ditching		Ditching				Ditching		Ditching			
Operation Cost / km	\$25,000	\$36,500	\$415,245	\$36,500	\$25,000	\$1,195,847	\$25,000	\$36,500	\$415,245	\$36,500	\$25,000	\$1,459,023	TOTAL LIFECYCLE COST
													\$3,731,360

Asset Operational Item	Cost / m	Cost / km
Crack Sealing	\$25.00	\$25,000.00
Ditching	\$11.50	\$11,500.00
Resurfacing	\$415.25	\$415,245.00
Rehabilitation	\$1,195.85	\$1,195,847.00
Reconstruction	\$1,459.02	\$1,459,023.00

Road Structure

300mm Granular B
150mm Granular A
50mm HL8
40mm HL3

PAVED RURAL ARTERIAL (7.5m Lane)

Service Year	5th Year	10th Year	15th Year	20th Year	25th Year	30th Year	35th Year	40th Year	45th Year	50th Year	55th Year	60th Year	
	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Rehabilitation	Crack Sealing	Crack Sealing	Resurfacing	Crack Sealing	Crack Sealing	Reconstruction	
Operational Items		Ditching		Ditching				Ditching		Ditching			
Operation Cost / km	\$30,000	\$41,500	\$555,575	\$41,500	\$30,000	\$1,507,090	\$30,000	\$41,500	\$555,575	\$41,500	\$30,000	\$1,933,493	TOTAL LIFECYCLE COST
													\$4,837,733

Asset Operational Item	Cost / m	Cost / km
Crack Sealing	\$30.00	\$30,000.00
Ditching	\$11.50	\$11,500.00
Resurfacing	\$555.58	\$555,575.00
Rehabilitation	\$1,507.09	\$1,507,089.50
Reconstruction	\$1,933.49	\$1,933,493.00

Road Structure

450mm Granular B
150mm Granular A
2 x 50mm HL8
40mm HL3

STORM SEWER LIFECYCLE COSTING

URBAN STORM SEWER

URBAN COLLECTION SEWER (300 - 900mm ø)

Service Year	20th Year	35th Year	50th Year	65th Year	80th Year	
Operational Items	Cleaning/Flushing	Camera Inspections Cleaning/Flushing Structure Inspections	60% Appurtenance Replacement	Camera Inspections Cleaning/Flushing Structure Inspections	Complete Replacement	TOTAL LIFECYCLE COST \$1,226,428
Operation Cost / k	\$35,000	\$56,000	\$135,538	\$56,000	\$943,890	

Asset Operational	Cost / m	Cost / km	Notes
Camera Inspection	\$15.00	\$15,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$35.00	\$35,000.00	
Appurtenance Replac	\$225.90	\$225,896.00	
Complete Replaceme	\$943.89	\$943,890.00	

URBAN TRUNK SEWER (900 - 1500mm ø)

Service Year	20th Year	35th Year	50th Year	65th Year	80th Year	
Operational Items	Cleaning/Flushing	Camera Inspections Structure Inspections Cleaning/Flushing	60% Appurtenance Replacement	Camera Inspections Structure Inspections Cleaning/Flushing	Complete Replacement	TOTAL LIFECYCLE COST \$1,899,221
Operation Cost / k	\$35,000	\$56,000	\$189,536	\$56,000	\$1,562,685	

Asset Operational	Cost / m	Cost / km	Notes
Camera Inspection	\$15.00	\$15,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$35.00	\$35,000.00	
Appurtenance Replac	\$315.89	\$315,894.00	
Complete Replaceme	\$1,562.69	\$1,562,685.00	

URBAN LARGE TRUNK SEWER (1500mm ø - 3.0 x 3.0m Box Culvert)

Service Year	20th Year	35th Year	50th Year	65th Year	80th Year	
Operational Items	Cleaning/Flushing	Camera Inspections Structure Inspections Cleaning/Flushing	60% Appurtenance Replacement	Camera Inspections Structure Inspections Cleaning/Flushing	Complete Replacement	TOTAL LIFECYCLE COST \$4,268,951
Operation Cost / k	\$35,000	\$56,000	\$362,071	\$56,000	\$3,759,880	

Asset Operational	Cost / m	Cost / km	Notes
Camera Inspection	\$15.00	\$15,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$35.00	\$35,000.00	
Appurtenance Replac	\$603.45	\$603,452.00	
Complete Replaceme	\$3,759.88	\$3,759,880.00	

RURAL STORM SEWER

RURAL COLLECTION SEWER (300 - 900mm ø)

Service Year	20th Year	35th Year	50th Year	65th Year	80th Year	
Operational Items	Cleaning/Flushing	Camera Inspections Structure Inspections Cleaning/Flushing	60% Appurtenance Replacement	Camera Inspections Structure Inspections Cleaning/Flushing	Complete Replacement	TOTAL LIFECYCLE COST \$1,204,981
Operation Cost / k	\$35,000	\$56,000	\$154,796	\$56,000	\$903,185	

Asset Operational	Cost / m	Cost / km	Notes
Camera Inspection	\$15.00	\$15,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$35.00	\$35,000.00	
Appurtenance Replac	\$257.99	\$257,994.00	
Complete Replaceme	\$903.19	\$903,185.00	

RURAL TRUNK SEWER (900 - 1500mm ø)

Service Year	20th Year	35th Year	50th Year	65th Year	80th Year	
Operational Items	Cleaning/Flushing	Camera Inspections Structure Inspections Cleaning/Flushing	60% Appurtenance Replacement	Camera Inspections Structure Inspections Cleaning/Flushing	Complete Replacement	TOTAL LIFECYCLE COST \$1,937,611
Operation Cost / k	\$35,000	\$56,000	\$209,131	\$56,000	\$1,581,480	

Asset Operational	Cost / m	Cost / km	Notes
Camera Inspection	\$15.00	\$15,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$35.00	\$35,000.00	
Appurtenance Replac	\$348.55	\$348,552.00	
Complete Replaceme	\$1,581.48	\$1,581,480.00	

SANITARY SEWER LIFECYCLE COSTING

SANITARY SEWER

SANITARY COLLECTION SEWER (150 - 300mm ø)

Service Year	20th Year	40th Year	50th Year	60th Year	80th Year	
Operational Items	Camera Cleaning/Flushing Structure Inspection	Camera Inspections Cleaning/Flushing Structure Inspections	60% Structure Replacement	Camera Inspections Cleaning/Flushing Structure Inspections	Complete Replacement	TOTAL LIFECYCLE COST \$1,474,865
Operation Cost / km	\$86,000	\$86,000	\$164,780	\$86,000	\$1,052,085	

Asset Operational Item	Cost / m	Cost / km	Notes
Camera Inspection	\$25.00	\$25,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$55.00	\$55,000.00	
Structure Replacement	\$274.63	\$274,634.00	
Complete Replacement	\$1,052.09	\$1,052,085.00	

SANITARY COLLECTION SEWER (300-450mm ø)

Service Year	20th Year	40th Year	50th Year	60th Year	80th Year	
Operational Items	Camera Cleaning/Flushing Structure Inspection	Camera Inspections Cleaning/Flushing Structure Inspections	60% Structure Replacement	Camera Inspections Cleaning/Flushing Structure Inspections	Complete Replacement	TOTAL LIFECYCLE COST \$1,558,865
Operation Cost / km	\$86,000	\$86,000	\$173,780	\$86,000	\$1,127,085	

Asset Operational Item	Cost / m	Cost / km	Notes
Camera Inspection	\$25.00	\$25,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$55.00	\$55,000.00	
Structure Replacement	\$289.63	\$289,634.00	
Complete Replacement	\$1,127.09	\$1,127,085.00	

SANITARY TRUNK SEWER (500-750mm ø)

Service Year	20th Year	40th Year	50th Year	60th Year	80th Year	
Operational Items	Camera Cleaning/Flushing Structure Inspection	Camera Inspections Cleaning/Flushing Structure Inspections	60% Structure Replacement	Camera Inspections Cleaning/Flushing Structure Inspections	Complete Replacement	TOTAL LIFECYCLE COST \$2,535,263
Operation Cost / km	\$126,000	\$126,000	\$248,851	\$126,000	\$1,908,412	

Asset Operational Item	Cost / m	Cost / km	Notes
Camera Inspection	\$35.00	\$35,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$85.00	\$85,000.00	
Structure Replacement	\$414.75	\$414,752.00	
Complete Replacement	\$1,908.41	\$1,908,412.00	

Forcemain (200mm ø)

Service Year	20th Year	40th Year	50th Year	60th Year	80th Year	
Operational Items	Camera Cleaning/Flushing Structure Inspection	Camera Inspections Cleaning/Flushing Structure Inspections	60% Structure Replacement	Camera Inspections Cleaning/Flushing Structure Inspections	Complete Replacement	TOTAL LIFECYCLE COST \$258,000
Operation Cost / km	\$86,000	\$86,000	\$0	\$86,000	\$0	

Asset Operational Item	Cost / m	Cost / km	Notes
Camera Inspection	\$25.00	\$25,000.00	
Structure Inspection	\$6.00	\$6,000.00	
Cleaning / Flushing	\$55.00	\$55,000.00	
Structure Replacement	\$0.00	\$0.00	
Complete Replacement	\$0.00	\$0.00	

WATER SUPPLY LIFECYCLE COSTING

URBAN DISTRIBUTION WATERMAINS

URBAN DISTRIBUTION (100mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	TOTAL LIFECYCLE COST
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	
Operation Cost / km	\$55,000	\$128,182	\$55,000	\$631,110	

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$113.18	\$113,182.00	
Complete Main Replacement	\$631.11	\$631,110.00	

URBAN DISTRIBUTION (150mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	TOTAL LIFECYCLE COST
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	
Operation Cost / km	\$55,000	\$128,182	\$55,000	\$671,110	

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$113.18	\$113,182.00	
Complete Main Replacement	\$671.11	\$671,110.00	

URBAN DISTRIBUTION (200mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	TOTAL LIFECYCLE COST
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	
Operation Cost / km	\$55,000	\$142,682	\$55,000	\$748,610	

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$127.68	\$127,682.00	
Complete Main Replacement	\$748.61	\$748,610.00	

URBAN DISTRIBUTION (250mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	TOTAL LIFECYCLE COST
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	
Operation Cost / km	\$55,000	\$147,182	\$55,000	\$817,110	

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$132.18	\$132,182.00	
Complete Main Replacement	\$817.11	\$817,110.00	

URBAN DISTRIBUTION (300mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	TOTAL LIFECYCLE COST
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	
Operation Cost / km	\$55,000	\$157,182	\$55,000	\$953,910	

Asset Operational Item	Cost / m	Cost / km	Notes
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Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$142.18	\$142,182.00	
Complete Main Replacement	\$953.91	\$953,910.00	

URBAN DISTRIBUTION (325mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$55,000	\$161,182	\$55,000	\$977,410	\$1,248,592

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$146.18	\$146,182.00	
Complete Main Replacement	\$977.41	\$977,410.00	

URBAN DISTRIBUTION (375mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$55,000	\$168,182	\$55,000	\$1,022,910	\$1,301,092

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$153.18	\$153,182.00	
Complete Main Replacement	\$1,022.91	\$1,022,910.00	

URBAN DISTRIBUTION (450mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$75,000	\$199,182	\$75,000	\$1,091,910	\$1,441,092

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$35.00	\$35,000.00	
Appurtenance Replacement	\$164.18	\$164,182.00	

Complete Main Replacement	\$1,091.91	\$1,091,910.00
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RURAL DISTRIBUTION WATERMAINS

RURAL DISTRIBUTION (150mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$55,000	\$91,682	\$55,000	\$506,860	\$708,542

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$76.68	\$76,682.00	
Complete Main Replacement	\$506.86	\$506,860.00	

RURAL DISTRIBUTION (200mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$55,000	\$104,432	\$55,000	\$582,940	\$797,372

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$89.43	\$89,432.00	
Complete Main Replacement	\$582.94	\$582,940.00	

RURAL DISTRIBUTION (250mm ø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$55,000	\$108,182	\$55,000	\$650,020	\$868,202

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	

Appurtenance Replacement	\$93.18	\$93,182.00
Complete Main Replacement	\$650.02	\$650,020.00

RURAL DISTRIBUTION (300mmø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$75,000	\$167,937	\$75,000	\$873,085	\$1,191,022

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$35.00	\$35,000.00	
Appurtenance Replacement	\$132.94	\$132,937.00	
Complete Main Replacement	\$873.09	\$873,085.00	

RURAL DISTRIBUTION (325mmø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$55,000	\$144,437	\$55,000	\$900,245	\$1,154,682

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$129.44	\$129,437.00	
Complete Main Replacement	\$900.25	\$900,245.00	

RURAL DISTRIBUTION (375mmø PVC)

Service Year	20th Year	40th Year	60th Year	80th Year	
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	TOTAL LIFECYCLE COST
Operation Cost / km	\$55,000	\$149,437	\$55,000	\$968,575	\$1,228,012

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$2.00	\$2,000.00	Annually
Swabbing/Chlorination	\$15.00	\$15,000.00	
Appurtenance Replacement	\$134.44	\$134,437.00	
Complete Main Replacement	\$968.58	\$968,575.00	

TRANSMISSION WATERMAINS

TRANSMISSION (450mm ø Pressure Pipe)

Service Year	20th Year	40th Year	60th Year	80th Year	TOTAL LIFECYCLE COST
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	
Operation Cost / km	\$145,000	\$308,564	\$145,000	\$1,050,910	

\$1,649,474

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$4.00	\$4,000.00	Annually
Swabbing/Chlorination	\$65.00	\$65,000.00	
Appurtenance Replacement	\$243.56	\$243,564.00	
Complete Main Replacement	\$1,050.91	\$1,050,910.00	

TRANSMISSION (600mm ø Pressure Pipe)

Service Year	20th Year	40th Year	60th Year	80th Year	TOTAL LIFECYCLE COST
Operational Items	Valve Exercise Swabbing / Chlorination	Appurtenance Replacement Swabbing	Valve Exercise Swabbing / Chlorination	Complete Replacement	
Operation Cost / km	\$235,000	\$414,874	\$235,000	\$1,460,685	

\$2,345,559

Asset Operational Item	Cost / m	Cost / km	Notes
Valve Exercise	\$6.00	\$6,000.00	Annually
Swabbing/Chlorination	\$115.00	\$115,000.00	
Appurtenance Replacement	\$299.87	\$299,874.00	
Complete Main Replacement	\$1,460.69	\$1,460,685.00	



cutting through complexity



**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix G Costing Estimates for Life Cycle Activities



ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

User Data Input Cells
End of Sheet Section

ROAD CONSTRUCTION UNIT RATES

Item	\$ / tonne	\$ / m ³	Conv.	Notes
Excavation & Disposal	\$18.92	\$35.00	1.85	Haul length, and unit conversion should be considered
Earth Cut	\$5.41	\$10.00	1.85	Haul length, and unit conversion should be considered
Digouts		\$65.00		Includes replacement granulars
Rock Excavation		\$75.00	2.70	Haul length, and unit conversion should be considered
Imported Earth Fill	\$17.95	\$35.00	1.95	Haul length, and unit conversion should be considered
Engineered Fill	\$25.00	\$50.00	2.10	Haul length, engineering requirements for fill and unit conversion should be considered
Granular C	\$12.00	\$24.00	2.00	Haul Length should be considered
Granular B	\$14.00	\$28.00	2.00	Haul Length should be considered
Granular B Type II	\$16.50	\$36.30	2.20	Haul Length should be considered
Granular A	\$18.50	\$44.40	2.40	Haul Length should be considered
HL3 Asphalt	\$170.00	\$416.50	2.45	Haul Length should be considered
HL4 Asphalt	\$165.00	\$404.25	2.45	Haul Length should be considered
HL8 Asphalt	\$150.00	\$367.50	2.45	Haul Length should be considered

	\$ / m ²	Notes
Single Surface Treatement	\$8.50	Availability, haul length should be considered
Double Surface Treatment	\$17.00	Availability, haul length should be considered
Pulverize	\$2.25	
Mill Wear Surface	\$3.50	
Prep Surface for Asphalt	\$1.25	

	\$ / m	Notes
Curb & Gutter	\$145.00	
Sidewalk	\$125.00	
Brushing	\$17.50	
Ditching	\$11.50	
Crack Sealing	\$15.00	

General Notes
Contract size should always be considered, the rates notes above are an average of many executed project tenders

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

RURAL SECTIONS

RURAL - RECONSTRUCTION

Type/Description	Length (m)	Width (m)	Depth (m)	Area (m ²)	Volume (m ³)	Unit Rate	Cost / lane km	Cost / lane m
Granular - 3.25m lane								
450mm Excavation & Disposal	1,000	4.650	0.45		2092.5	\$35.00	\$73,238	\$73.24
300mm Granular B	1,000	4.350	0.3		1305	\$28.00	\$36,540	\$36.54
150mm Granular A	1,000	3.900	0.15		585	\$44.40	\$25,974	\$25.97
Digouts	150	5.000	1		750	\$65.00	\$48,750	\$48.75
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$10,000	\$10.00
Total (3.25m lane)							\$277,502	\$277.50
Total (6.50m road)							\$555,003	\$555.00
Rural Light SST - 3.25m lane								
475mm Excavation & Disposal	1,000	4.650	0.475		2208.75	\$35.00	\$77,306	\$77.31
300mm Granular B	1,000	4.350	0.3		1305	\$28.00	\$36,540	\$36.54
150mm Granular A	1,000	3.900	0.15		585	\$44.40	\$25,974	\$25.97
Single Surface Treatment	1,000	3.250		3250		\$8.50	\$27,625	\$27.63
Digouts	150	5.000	1		750	\$65.00	\$48,750	\$48.75
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$25,000	\$25.00
Total (3.25m lane)							\$324,195	\$324.20
Total (6.50m road)							\$648,391	\$648.39
Rural Light DST - 3.25m lane								
475mm Excavation & Disposal	1,000	4.650	0.475		2208.75	\$35.00	\$77,306	\$77.31
300mm Granular B	1,000	4.350	0.3	4350	1305	\$28.00	\$36,540	\$36.54
150mm Granular A	1,000	3.900	0.15	3900	585	\$44.40	\$25,974	\$25.97
Double Surface Treatment	1,000	3.250		3250		\$17.00	\$55,250	\$55.25
Digouts	150	5.000	1		750	\$65.00	\$48,750	\$48.75
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$25,000	\$25.00
Total (3.25m lane)							\$351,820	\$351.82

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

Total (6.50m road)							\$703,641	\$703.64
Rural Light Paved - 3.25m lane								
500mm Excavation & Disposal	1,000	4.650	0.455		2115.75	\$35.00	\$74,051	\$74.05
300mm Granular B	1,000	4.350	0.3	4350	1305	\$28.00	\$36,540	\$36.54
150mm Granular A	1,000	3.900	0.15	3900	585	\$44.40	\$25,974	\$25.97
50mm HL8	1,000	3.250	0.05	3250	162.5	\$367.50	\$59,719	\$59.72
Digouts	150	5.000	1		750	\$65.00	\$48,750	\$48.75
Drainage / Culverts							\$45,000	\$45.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$35,000	\$35.00
Total (3.25m lane)							\$383,034	\$383.03
Total (6.50m road)							\$766,068	\$766.07
Rural Medium Paved - 3.5m lane (Collector)								
540mm Excavation & Disposal	1,000	4.900	0.54		2646	\$35.00	\$92,610	\$92.61
300mm Granular B	1,000	4.600	0.3	4600	1380	\$28.00	\$38,640	\$38.64
150mm Granular A	1,000	4.150	0.15	4150	622.5	\$44.40	\$27,639	\$27.64
50mm HL8	1,000	3.500	0.05	3500	175	\$367.50	\$64,313	\$64.31
40mm HL3	1,000	3.500	0.04	3500	140	\$416.50	\$58,310	\$58.31
Digouts	150	6.000	1		900	\$65.00	\$58,500	\$58.50
Drainage / Culverts							\$150,000	\$150.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$45,000	\$45.00
Total (3.50m lane)							\$593,012	\$593.01
Total (7.0m road)							\$1,186,023	\$1,186.02
Rural Heavy Paved - 3.75m lane (Arterial)								
740mm Excavation & Disposal	1,000	5.450	0.74		4033	\$35.00	\$141,155	\$141.16
450mm Granular B	1,000	5.000	0.45	5000	2250	\$28.00	\$63,000	\$63.00
150mm Granular A	1,000	4.400	0.15	4400	660	\$44.40	\$29,304	\$29.30
50mm HL8	1,000	3.750	0.05	3750	187.5	\$367.50	\$68,906	\$68.91
50mm HL8	1,000	3.750	0.05	3750	187.5	\$367.50	\$68,906	\$68.91
40mm HL3	1,000	3.750	0.04	3750	150	\$416.50	\$62,475	\$62.48
Digouts	150	6.000	1		900	\$65.00	\$58,500	\$58.50
Drainage / Culverts							\$225,000	\$225.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$55,000	\$55.00
Total (3.75m lane)							\$830,247	\$830.25
Total (7.5m road)							\$1,660,493	\$1,660.49

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

RURAL - REHABILITATION								
Type/Description	Length (m)	Width (m)	Depth (m)	Area (m ²)	Volume (m ³)	Unit Rate	Cost / lane km	Cost / lane m
Granular - 3.25m lane								
150mm Excavation & Disposal	1,000	4.050	0.15		607.5	\$35.00	\$21,263	\$21.26
150mm Granular A	1,000	3.900	0.15	3900	585	\$44.40	\$25,974	\$25.97
Digouts	50	5.000	1		250	\$65.00	\$16,250	\$16.25
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$10,000	\$10.00
Total (3.25m lane)							\$156,487	\$156.49
Total (6.50m road)							\$312,973	\$312.97
Rural Light SST - 3.25m lane								
75mm Excavation & Disposal	1,000	3.850	0.075		288.75	\$35.00	\$10,106	\$10.11
50mm Granular A	1,000	3.800	0.05	3800	190	\$44.40	\$8,436	\$8.44
Single Surface Treatment	1,000	3.250		3250		\$8.50	\$27,625	\$27.63
Digouts	50	5.000	1		250	\$65.00	\$16,250	\$16.25
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$25,000	\$25.00
Total (3.25m lane)							\$170,417	\$170.42
Total (6.50m road)							\$340,835	\$340.83
Rural Light DST - 3.25m lane								
75mm Excavation & Disposal	1,000	3.850	0.075		288.75	\$35.00	\$10,106	\$10.11
50mm Granular A	1,000	3.800	0.05	3800	190	\$44.40	\$8,436	\$8.44
Double Surface Treatment	1,000	3.250		3250		\$17.00	\$55,250	\$55.25
Digouts	50	5.000	1		250	\$65.00	\$16,250	\$16.25
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$25,000	\$25.00
Total (3.25m lane)							\$198,042	\$198.04
Total (6.50m road)							\$396,085	\$396.08
Rural Light Paved - 3.25m lane								
100mm Excavation & Disposal	1,000	3.850	0.1		385	\$35.00	\$13,475	\$13.48
50mm Granular A	1,000	3.800	0.05	3800	190	\$44.40	\$8,436	\$8.44
50mm HL8	1,000	3.250	0.05	3250	162.5	\$367.50	\$59,719	\$59.72

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

Digouts	50	5.000	1		250	\$65.00	\$16,250	\$16.25
Drainage / Culverts							\$45,000	\$45.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$35,000	\$35.00
Total (3.25m lane)							\$235,880	\$235.88
Total (6.50m road)							\$471,760	\$471.76
Rural Medium Paved - 3.5m lane (Collector)								
140mm Excavation & Disposal	1,000	3.850	0.14		539	\$35.00	\$18,865	\$18.87
50mm Granular A	1,000	3.800	0.05	3800	190	\$44.40	\$8,436	\$8.44
50mm HL8	1,000	3.500	0.05	3500	175	\$367.50	\$64,313	\$64.31
40mm HL3	1,000	3.500	0.04	3500	140	\$416.50	\$58,310	\$58.31
Digouts	50	6.000	1		300	\$65.00	\$19,500	\$19.50
Drainage / Culverts							\$150,000	\$150.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$45,000	\$45.00
Total (3.50m lane)							\$422,424	\$422.42
Total (7.0m road)							\$844,847	\$844.85
Rural Heavy Paved - 3.75m lane (Arterial)								
190mm Excavation & Disposal	1,000	3.850	0.19		731.5	\$35.00	\$25,603	\$25.60
50mm Granular A	1,000	3.800	0.05	3800	190	\$44.40	\$8,436	\$8.44
50mm HL8	1,000	3.750	0.05	3750	187.5	\$367.50	\$68,906	\$68.91
50mm HL8	1,000	3.750	0.04	3750	150	\$367.50	\$55,125	\$55.13
40mm HL3	1,000	3.750	0.04	3750	150	\$416.50	\$62,475	\$62.48
Digouts	50	6.000	1		300	\$65.00	\$19,500	\$19.50
Drainage / Culverts							\$225,000	\$225.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$55,000	\$55.00
Total (3.75m lane)							\$578,045	\$578.04
Total (7.5m road)							\$1,156,090	\$1,156.09

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

RURAL - RESURFACING								
Type/Description	Length (m)	Width (m)	Depth (m)	Area (m²)	Volume (m³)	Unit Rate	Cost / lane km	Cost / lane m
Granular - 3.25m lane								
150mm Granular A	1,000	3.325	0.15	3325	498.75	\$44.40	\$22,145	\$22.14
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$7,500	\$7.50
Total (3.25m lane)							\$87,645	\$87.64
Total (6.50m road)							\$175,289	\$175.29
Rural Light SST - 3.25m lane								
Pulverize Existing	1,000	3.250		3250		\$2.25	\$7,313	\$7.31
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
Single Surface Treatment	1,000	3.250		3250		\$8.50	\$27,625	\$27.63
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$15,000	\$15.00
Total (3.25m lane)							\$137,000	\$137.00
Total (6.50m road)							\$274,000	\$274.00
Rural Light DST - 3.25m lane								
Pulverize Existing	1,000	3.250		3250		\$2.25	\$7,313	\$7.31
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
Double Surface Treatment	1,000	3.250		3250		\$17.00	\$55,250	\$55.25
Drainage / Culverts							\$25,000	\$25.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$15,000	\$15.00
Total (3.25m lane)							\$164,625	\$164.63
Total (6.50m road)							\$329,250	\$329.25
Rural Light Paved - 3.25m lane								
Pulverize Existing	1,000	3.250		3250		\$2.25	\$7,313	\$7.31
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
50mm HL8	1,000	3.250	0.05	3250	162.5	\$367.50	\$59,719	\$59.72
Drainage / Culverts							\$35,000	\$35.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$15,000	\$15.00
Total (3.25m lane)							\$179,094	\$179.09

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

Total (6.50m road)							\$358,188	\$358.19
Rural Medium Paved - 3.5m lane (Collector)								
Mill Wear Surface	1,000	3.500		3500		\$3.50	\$12,250	\$12.25
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
40mm HL3	1,000	3.500	0.04	3500	140	\$416.50	\$58,310	\$58.31
Drainage / Culverts							\$50,000	\$50.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$25,000	\$25.00
Total (3.50m lane)							\$207,623	\$207.62
Total (7.0m road)							\$415,245	\$415.25
Rural Heavy Paved - 3.75m lane (Arterial)								
Mill Wear Surface	1,000	3.750		3750		\$3.50	\$13,125	\$13.13
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
50mm HL8	1,000	3.750	0.04	3750	150	\$367.50	\$55,125	\$55.13
40mm HL3	1,000	3.750	0.04	3750	150	\$416.50	\$62,475	\$62.48
Drainage / Culverts							\$50,000	\$50.00
Brushing	2,000					\$17.50	\$35,000	\$35.00
Ditching	2,000					\$11.50	\$23,000	\$23.00
Contingency for Minor Contract Items							\$35,000	\$35.00
Total (3.75m lane)							\$277,788	\$277.79
Total (7.5m road)							\$555,575	\$555.58

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

URBAN SECTIONS

URBAN - RECONSTRUCTION								
Type/Description	Length (m)	Width (m)	Depth (m)	Area (m2)	Volume (m3)	Unit Rate	Cost / lane km	Cost / lane m
Urban Light Paved - 3.25m lane								
500mmExcavation & Disposal	1,000	4.650	0.5		2325	\$35.00	\$81,375	\$81.38
300mm Granular B	1,000	4.350	0.3	4350	1305	\$28.00	\$36,540	\$36.54
150mm Granular A	1,000	3.900	0.15	3900	585	\$44.40	\$25,974	\$25.97
50mm HL8	1,000	3.250	0.05	3250	162.5	\$367.50	\$59,719	\$59.72
Curb & Gutter	2,000					\$145.00	\$290,000	\$290.00
Sidewalk (one side)	1,000					\$125.00	\$125,000	\$125.00
Contingency for Minor Contract Items							\$45,000	\$45.00
Total (3.25m lane)							\$663,608	\$663.61
Total (6.50m road)							\$1,327,216	\$1,327.22
Urban Medium Paved - 3.50m lane (Collector)								
540mm Excavation & Disposal	1,000	4.900	0.54		2646	\$35.00	\$92,610	\$92.61
300mm Granular B	1,000	4.600	0.3	4600	1380	\$28.00	\$38,640	\$38.64
150mm Granular A	1,000	4.150	0.15	4150	622.5	\$44.40	\$27,639	\$27.64
50mm HL8	1,000	3.500	0.05	3500	175	\$367.50	\$64,313	\$64.31
40mm HL3	1,000	3.500	0.04	3500	140	\$416.50	\$58,310	\$58.31
Curb & Gutter	2,000					\$145.00	\$290,000	\$290.00
Sidewalk (one side)	1,000					\$125.00	\$125,000	\$125.00
Contingency for Minor Contract Items							\$70,000	\$70.00
Total (3.50m lane)							\$766,512	\$766.51
Total (7.0m road)							\$1,533,023	\$1,533.02
Total (10.0m road)							\$2,189,923	\$2,189.92
Urban Heavy Paved - 3.75m lane (Arterial)								
740mm Excavation & Disposal	1,000	5.200	0.74		3848	\$35.00	\$134,680	\$134.68
450mm Granular B	1,000	4.750	0.45	4750	2137.5	\$28.00	\$59,850	\$59.85
150mm Granular A	1,000	4.150	0.15	4150	622.5	\$44.40	\$27,639	\$27.64
50mm HL8	1,000	3.750	0.05	3750	187.5	\$367.50	\$68,906	\$68.91
50mm HL8	1,000	3.750	0.04	3750	150	\$367.50	\$55,125	\$55.13
40mm HL3	1,000	3.750	0.04	3750	150	\$416.50	\$62,475	\$62.48
Curb & Gutter	2,000					\$145.00	\$290,000	\$290.00
Sidewalk (both sides)	2,000					\$125.00	\$250,000	\$250.00
Contingency for Minor Contract Items							\$90,000	\$90.00
Total (3.75m lane)							\$1,038,675	\$1,038.68
Total (7.5m road)							\$2,077,351	\$2,077.35

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

Total (11.0m road)	\$3,046,435	\$3,046.43
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URBAN - REHABILITATION								
Type/Description	Length (m)	Width (m)	Depth (m)	Area (m2)	Volume (m3)	Unit Rate	Cost / lane km	Cost / lane m
<i>Urban Light Paved - 3.25m lane</i>								
155mm Excavation & Disposal	1,000	3.850	0.155		596.75	\$35.00	\$20,886	\$20.89
50mm Granular A	1,000	3.800	0.05	3800	190	\$44.40	\$8,436	\$8.44
50mm HL8	1,000	3.250	0.05	3250	162.5	\$367.50	\$59,719	\$59.72
Curb & Gutter	2,000					\$145.00	\$290,000	\$290.00
Sidewalk (one side)	1,000					\$125.00	\$125,000	\$125.00
Contingency for Minor Contract Items							\$50,000	\$50.00
Total (3.25m lane)							\$554,041	\$554.04
Total (6.50m road)							\$1,108,082	\$1,108.08
<i>Urban Medium Paved - 3.50m lane (Collector)</i>								
240mm Excavation & Disposal	1,000	4.100	0.24		984	\$35.00	\$34,440	\$34.44
50mm Granular A	1,000	4.050	0.05	4050	202.5	\$44.40	\$8,991	\$8.99
50mm HL8	1,000	3.500	0.05	3500	175	\$367.50	\$64,313	\$64.31
40mm HL3	1,000	3.500	0.04	3500	140	\$416.50	\$58,310	\$58.31
Curb & Gutter	2,000					\$145.00	\$290,000	\$290.00
Sidewalk (one side)	1,000					\$125.00	\$125,000	\$125.00
Contingency for Minor Contract Items							\$50,000	\$50.00
Total (3.50m lane)							\$631,054	\$631.05
Total (7.0m road)							\$1,262,107	\$1,262.11
Total (10.0m road)							\$1,802,920	\$1,802.92
<i>Urban Heavt Paved - 3.75m lane (Arterial)</i>								
290mm Excavation & Disposal	1,000	4.350	0.29	4350	1261.5	\$35.00	\$44,153	\$44.15
50mm Granular A	1,000	4.300	0.05	4300	215	\$44.40	\$9,546	\$9.55
50mm HL8	1,000	3.750	0.05	3750	187.5	\$367.50	\$68,906	\$68.91
50mm HL8	1,000	3.750	0.04	3750	150	\$367.50	\$55,125	\$55.13
40mm HL3	1,000	3.750	0.04	3750	150	\$416.50	\$62,475	\$62.48
Curb & Gutter	2,000					\$145.00	\$290,000	\$290.00
Sidewalk (both sides)	2,000					\$125.00	\$250,000	\$250.00
Contingency for Minor Contract Items							\$75,000	\$75.00
Total (3.75m lane)							\$855,205	\$855.20
Total (7.5m road)							\$1,710,410	\$1,710.41
Total (11.0m road)							\$2,508,572	\$2,508.57

ROAD CONSTRUCTION COSTING

ROAD RECONSTRUCTION, REHABILITATION & RESURFACING COSTING

URBAN - RESURFACING

Type/Description	Length (m)	Width (m)	Depth (m)	Area (m ²)	Volume (m ³)	Unit Rate	Cost / lane km	Cost / lane m
Urban Light Paved - 3.25m lane								
Pulverize Existing	1,000	3.250		3250		\$2.25	\$7,313	\$7.31
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
50mm HL8	1,000	3.250	0.05	3250	162.5	\$367.50	\$59,719	\$59.72
Contingency for Minor Contract Items							\$50,000	\$50.00
Total (3.25m lane)							\$121,094	\$121.09
Total (6.50m road)							\$242,188	\$242
Urban Medium Paved - 3.50m lane (Collector)								
Mill Wear Surface	1,000	3.500		3500		\$3.50	\$12,250	\$12.25
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
40mm HL3	1,000	3.500	0.04	3500	140	\$416.50	\$58,310	\$58.31
Contingency for Minor Contract Items							\$50,000	\$50.00
Total (3.50m lane)							\$124,623	\$124.62
Total (7.0m road)							\$249,245	\$249
Total (10.0m road)							\$356,046	\$356.05
Urban Heavy Paved - 3.75m lane (Arterial)								
Mill Wear Surface	1,000	3.750		3750		\$3.50	\$13,125	\$13.13
Mill Wear Surface (Binder)	1,000	3.750		3750		\$3.50	\$13,125	\$13.13
Prepare Surface	1,000	3.250		3250		\$1.25	\$4,063	\$4.06
50mm HL8	1,000	3.750	0.04	3750	150	\$367.50	\$55,125	\$55.13
40mm HL3	1,000	3.750	0.04	3750	150	\$416.50	\$62,475	\$62.48
Contingency for Minor Contract Items							\$75,000	\$75.00
Total (3.75m lane)							\$222,913	\$222.91
Total (7.5m road)							\$445,825	\$445.83
Total (11.0m road)							\$653,869	\$654

STORM SEWER COSTING

STORM SEWER SERVICING - CONSTRUCTION UNIT RATES

ITEMS	\$ / m	each	Notes
Concrete Pipe/Culverts			
300mm Concrete Pipe	\$175.00		
600mm Concrete Pipe	\$365.00		
900mm Concrete Pipe	\$555.00		
1200mm Concrete Pipe	\$765.00		
1500mm Concrete Pipe	\$1,150.00		
1.8 x 1.8m Box Culvert	\$2,200.00		
3.0 x 3.0m Box Culvert	\$4,500.00		
Storm Sewer Appurtenances			
1200mm Manhole		\$3,500.00	
1500mm Manhole		\$4,100.00	
1800mm Manhole		\$4,500.00	
2100mm Manhole		\$6,300.00	
2400mm Manhole		\$7,500.00	
Small Custom Struture		\$25,000.00	
Large Custom Structure		\$38,000.00	
Single Catch Basin		\$2,500.00	
Double Catch Basin		\$3,500.00	
Ditch Inlet Catch Basin		\$3,500.00	
Ditch Inlet Catch Basin Manhole		\$7,500.00	
Storm Services			
100mm Residential	\$135.00		
150mm Residential	\$195.00		
150mm Commercial	\$235.00		
200mm Commercial/Industrial	\$275.00		
300mm Industrial	\$375.00		

URBAN SECTIONS

URBAN - COLLECTION SYSTEMS

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
Residential Storm Water Collection					
300mm Concrete Storm Sewer	300		\$175.00	\$52,500	\$52.50
600mm Concrete Storm Sewer	400		\$365.00	\$146,000	\$146.00
900mm Concrete Storm Sewer	300		\$555.00	\$166,500	\$166.50
1200mm Manholes		6	\$3,500.00	\$21,000	\$21.00
1500mm Manholes		2	\$4,100.00	\$8,200	\$8.20
1800mm Manholes		3	\$4,500.00	\$13,500	\$13.50
Single Catch Basin		10	\$2,500.00	\$25,000	\$25.00
Double Catch Basin		6	\$3,500.00	\$21,000	\$21.00
Residential Services	1,000	100	\$135.00	\$135,000	\$135.00
Commercial Services	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	20	2	\$375.00	\$7,500	\$7.50
Road Reinstatement	1,000		\$317.99	\$317,990	\$317.99
Contingency for Minor Contract Items				\$25,000	\$25.00
Total Cost				\$943,890	\$943.89
Total Structures Only (+ 40% Contingency & Road Reinstatement)				\$225,896	\$226

Trunk Storm Water Collection

900mm Concrete Storm Sewer	300		\$555.00	\$166,500	\$166.50
1200mm Concrete Storm Sewer	400		\$765.00	\$306,000	\$306.00
1500mm Concrete Storm Sewer	300		\$1,150.00	\$345,000	\$345.00
1800mm Manholes		6	\$4,500.00	\$27,000	\$27.00
2100mm Manholes		2	\$6,300.00	\$12,600	\$12.60
2400mm Manholes		3	\$7,500.00	\$22,500	\$22.50
Single Catch Basin		10	\$2,500.00	\$25,000	\$25.00
Double Catch Basin		6	\$3,500.00	\$21,000	\$21.00
Residential Services	600	60	\$135.00	\$81,000	\$81.00
Commercial Services	60	6	\$235.00	\$14,100	\$14.10
Industrial Services	60	6	\$375.00	\$22,500	\$22.50
Road Reinstatement	1,000		\$444.49	\$444,485	\$444.49
Contingency for Minor Contract Items				\$75,000	\$75.00
Total Cost				\$1,562,685	\$1,562.69
Total Structures Only (+ 40% Contingency & Road Reinstatement)				\$315,894	\$316

Large Trunk Storm Water Collection

1500mm Concrete Storm Sewer	300		\$1,150.00	\$345,000	\$345.00
1.8m x 1.8m Box Culvert	400		\$2,200.00	\$880,000	\$880.00
3.0m x 3.0m Box Culvert	300		\$4,500.00	\$1,350,000	\$1,350.00
2400mm Manholes		3	\$7,500.00	\$22,500	\$22.50
Sm. Custom Structure for Box Culvert		4	\$25,000.00	\$100,000	\$100.00
Lg. Custom Structure for Box Culvert		3	\$38,000.00	\$114,000	\$114.00
Single Catch Basin		10	\$2,500.00	\$25,000	\$25.00
Double Catch Basin		6	\$3,500.00	\$21,000	\$21.00
Residential Services	400	40	\$135.00	\$54,000	\$54.00
Commercial Services	100	10	\$235.00	\$23,500	\$23.50
Industrial Services	60	6	\$375.00	\$22,500	\$22.50
Road Reinstatement	1,000		\$657.38	\$657,380	\$657.38
Contingency for Minor Contract Items				\$145,000	\$145.00
			Total Cost	\$3,759,880	\$3,759.88
Total Structures Only (+ 40% Contingency & Road Reinstatement)				\$603,452	\$603

RURAL SECTIONS

RURAL - COLLECTION SYSTEMS

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
Residential Storm Water Collection					
300mm Concrete Storm Sewer	300		\$175.00	\$52,500	\$52.50
600mm Concrete Storm Sewer	400		\$365.00	\$146,000	\$146.00
900mm Concrete Storm Sewer	300		\$555.00	\$166,500	\$166.50
1200mm Manholes		5	\$3,500.00	\$17,500	\$17.50
1500mm Manholes		2	\$4,100.00	\$8,200	\$8.20
1800mm Manholes		3	\$4,500.00	\$13,500	\$13.50
Single Catch Basin		3	\$2,500.00	\$7,500	\$7.50
Ditch Inlet Catch Basin		7	\$3,500.00	\$24,500	\$24.50
Road Reinstatement	1,000		\$444.49	\$444,485	\$444.49
Contingency for Minor Contract Items				\$22,500	\$22.50
			Total Cost	\$903,185	\$903.19
Total Structures Only (+ 40% Contingency & Road Reinstatement)				\$257,994	\$258

Trunk Storm Water Collection

900mm Concrete Storm Sewer	300		\$555.00	\$166,500	\$166.50
1200mm Concrete Storm Sewer	400		\$765.00	\$306,000	\$306.00
1500mm Concrete Storm Sewer	300		\$1,150.00	\$345,000	\$345.00
1800mm Manholes		5	\$4,500.00	\$22,500	\$22.50
2100mm Manholes		2	\$6,300.00	\$12,600	\$12.60
2400mm Manholes		3	\$7,500.00	\$22,500	\$22.50
Ditch Inlet Catch Basin		4	\$3,500.00	\$14,000	\$14.00
Road Reinstatement	1,000		\$657.38	\$657,380	\$657.38
Contingency for Minor Contract Items				\$35,000	\$35.00
			Total Cost	\$1,581,480	\$1,581.48
Total Structures Only (+ 40% Contingency & Road Reinstatement)				\$348,552	\$349

SANITARY SEWER COSTING

SANITARY SEWER SERVICING - CONSTRUCTION UNIT RATES

ITEMS	\$ / m	each	Notes
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PVC Sanitary Sewer

150mm PVC Pipe	\$215.00
225mm PVC Pipe	\$250.00
300mm PVC Pipe	\$285.00
375mm PVC Pipe	\$310.00
450mm PVC Pipe	\$335.00
500mm PVC Pipe	\$368.33
525mm PVC Pipe	\$385.00

Concrete Sanitary Sewer

600mm Concrete Pipe	\$385.00
750mm Concrete Pipe	\$735.00
825mm Concrete Pipe	\$900.00
975mm Concrete Pipe	\$1,200.00

Sanitary Sewer Appurtenances

1200mm Manhole	\$3,500.00
1500mm Manhole	\$4,100.00
1800mm Manhole	\$5,500.00

Sanitary Services

100mm Residential	\$155.00
150mm Residential	\$215.00
150mm Commercial	\$255.00
200mm Commercial/Industrial	\$295.00
300mm Industrial	\$395.00

Valves

150mm Valves	\$2,500.00
200mm Valves	\$3,250.00
250mm Valves	\$4,000.00
300mm Valves	\$5,000.00
375mm Vavles	\$6,500.00
450mm Valves	\$8,000.00
600mm Valves	\$9,500.00

ForceMains

38mm HDPE	\$75.00
50mm HDPE	\$115.00
60mm HDPE	\$135.00
75mm HDPE	\$150.00
100mm HDPE	\$165.00
150mm HDPE	\$205.00
200mm HDPE	\$245.00
300mm HDPE	\$325.00

URBAN & RURAL SECTIONS SANITARY COLLECTION SYSTEMS

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
Sanitary Collection Sewer (150mm - 300mm ø)					
150mm PVC Pipe	500		\$215.00	\$107,500	\$107.50
300mm PVC Pipe	500		\$285.00	\$142,500	\$142.50
1200mm Manholes		10	\$3,500.00	\$35,000	\$35.00
Residential Services	1,000	100	\$155.00	\$155,000	\$155.00
Commercial Services	20	2	\$255.00	\$5,100	\$5.10
Industrial Services to Property	20	2	\$395.00	\$7,900	\$7.90
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00
Total cost per km				\$1,052,085	\$1,052.09
Total Structures Only (+ 40% Contingency & Road Reinstatement)				\$274,634	\$275

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
Sanitary Collection Sewer (300mm - 450mm ø)					
300mm PVC Pipe	500		\$285.00	\$142,500	\$142.50
450mm PVC Pipe	500		\$335.00	\$167,500	\$167.50
1200mm Manholes		10	\$5,000.00	\$50,000	\$50.00
Residential Services	1,000	100	\$155.00	\$155,000	\$155.00
Commercial Services	20	2	\$255.00	\$5,100	\$5.10
Industrial Services to Property	20	2	\$395.00	\$7,900	\$7.90
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00
Total cost per km				\$1,127,085	\$1,127.09
Total Structures Only (+ 40% Contingency & Road Reinstatement)				\$289,634	\$290

Sanitary Collection Sewer (500mm - 750mm ø)

500mm PVC	600		\$368.33	\$220,998	\$221.00
750mm Concrete Pipe	400		\$735.00	\$294,000	\$294.00
1200mm Manholes		3	\$3,500.00	\$10,500	\$10.50
1500mm Manholes		4	\$4,100.00	\$16,400	\$16.40
1800mm Manholes		3	\$5,500.00	\$16,500	\$16.50
Residential Services	600	60	\$155.00	\$93,000	\$93.00
Commercial Services	60	6	\$255.00	\$15,300	\$15.30
Industrial Services	60	6	\$395.00	\$23,700	\$23.70
Road Reinstatement	1,000		\$873.38	\$873,380	\$873.38
Contingency for Minor Contract Items				\$55,000	\$55.00
			Total cost per km	\$1,908,412	\$1,908.41
			Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$414,752	\$415

Forcemains (38mm ø)

38mm HDPE	1,000		\$75.00	\$75,000	\$75.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00
			Total cost per km	\$674,085	\$674.09
			Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240

Forcemains (50mm ø)

50mm HDPE	1,000		\$115.00	\$115,000	\$115.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00
			Total cost per km	\$714,085	\$714.09
			Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240

Forcemains (60mm ø)

60mm HDPE	1,000		\$135.00	\$135,000	\$135.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00
			Total cost per km	\$734,085	\$734.09
			Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240

Forcemains (75mm ø)

75mm HDPE	1,000		\$150.00	\$150,000	\$150.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00
			Total cost per km	\$749,085	\$749.09
			Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240

Forcemains (100mm ø)

100mm HDPE	1,000		\$165.00	\$165,000	\$165.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00
			Total cost per km	\$764,085	\$764.09

Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240
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Forcemains (150mm ø)

100mm HDPE	1,000		\$205.00	\$205,000	\$205.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00

Total cost per km	\$804,085	\$804.09
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Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240
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Forcemains (200mm ø)

200mm HDPE	1,000		\$245.00	\$245,000	\$245.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00

Total cost per km	\$844,085	\$844.09
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Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240
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Forcemains (300mm ø)

300mm HDPE	1,000		\$325.00	\$325,000	\$325.00
Road Reinstatement	1,000		\$574.09	\$574,085	\$574.09
Contingency for Minor Contract Items				\$25,000	\$25.00

Total cost per km	\$924,085	\$924.09
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Total Structures Only (+ 40% Contingency & Road Reinstatement)	\$239,634	\$240
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*Reduce residential services cost by 60%; commercial services by 20% and industrial services by 80% for rural sections.

WATER SUPPLY COSTING

WATER SUPPLY SERVICING - CONSTRUCTION UNIT RATES

ITEMS	\$ / m	each	Notes
Watermain Pipe			
100mm PVC Watermain	\$135.00		
150mm PVC Watermain	\$175.00		Includes minor fittings, granulars
200mm PVC Watermain	\$238.00		Includes minor fittings, granulars
250mm PVC Watermain	\$302.00		Includes minor fittings, granulars
300mm PVC Watermain	\$365.00		Includes minor fittings, granulars
325mm PVC Watermain	\$383.00		Includes minor fittings, granulars
375mm PVC Watermain	\$420.00		Includes minor fittings, granulars
450mm PVC Watermain	\$475.00		Includes minor fittings, granulars
450mm Pressure Pipe Watermain	\$555.00		Includes minor fittings, granulars
600mm Pressure Pipe Watermain	\$765.00		Includes minor fittings, granulars
Watermain Appurtenances			
150mm - 450mm Connection to Existing	\$8,000.00		
600mm - 1200mm Connection to Existing	\$18,000.00		
150mm Hydrants	\$4,500.00		
150mm Valves	\$2,500.00		
200mm Hydrants	\$5,500.00		
200mm Valves	\$3,250.00		
250mm Hydrants	\$6,000.00		
250mm Valves	\$4,000.00		
300mm Hydrants	\$6,500.00		
300mm Valves	\$5,000.00		
325mm Vavles	\$5,500.00		
375mm Vavles	\$6,500.00		
450mm Valve Chamber	\$21,000.00		
450mm Valves	\$8,000.00		
600mm Valve Chamber	\$28,000.00		
600mm Valves	\$9,500.00		
450mm Connection to distribution	\$20,000.00		
600mm Connection to distribution	\$30,000.00		
Watermain Services			
19mm Residential	\$165.00		Includes valve box at property line
25mm Residential	\$195.00		Includes valve box at property line
32mm Commercial	\$235.00		Includes valve box at property line
40mm Commercial/Industrial	\$275.00		Includes valve box at property line
100mm Industrial	\$375.00		Includes valve box at property line

General Notes

Contract size should always be considered, the rates notes above are an average of many executed project tenders

URBAN SECTIONS

URBAN - DISTRIBUTION MAINS

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
100mm PVC					
100mm Watermain	1,000		\$135.00	\$135,000	\$135.00
Hydrants		10	\$4,500.00	\$45,000	\$45.00
Valves		6	\$2,500.00	\$15,000	\$15.00
Residential Services to Property Line	1,000	100	\$165.00	\$165,000	\$165.00
Commercial Services to Property Line	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	20	2	\$375.00	\$7,500	\$7.50
Connection to Existing System`		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$15,000	\$15.00
Total Cost				\$631,110	\$631.11
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$113,182	\$113.18

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
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150mm PVC

150mm Watermain	1,000		\$175.00	\$175,000	\$175.00
Hydrants		10	\$4,500.00	\$45,000	\$45.00
Valves		6	\$2,500.00	\$15,000	\$15.00
Residential Services to Property Line	1,000	100	\$165.00	\$165,000	\$165.00
Commercial Services to Property Line	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	20	2	\$375.00	\$7,500	\$7.50
Connection to Existing System`		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$15,000	\$15.00

Total Cost**\$671,110****\$671.11****Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)****\$113,182****\$113.18**

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
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200mm PVC

200mm Watermain	1,000		\$238.00	\$238,000	\$238.00
Hydrants		10	\$5,500.00	\$55,000	\$55.00
Valves		6	\$3,250.00	\$19,500	\$19.50
Residential Services to Property Line	1,000	100	\$165.00	\$165,000	\$165.00
Commercial Services to Property Line	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	20	2	\$375.00	\$7,500	\$7.50
Connection to Existing System		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$15,000	\$15.00

Total Cost**\$748,610****\$748.61****Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)****\$127,682****\$127.68**

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
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250mm PVC

250mm Watermain	1,000		\$302.00	\$302,000	\$302.00
Hydrants		10	\$5,500.00	\$55,000	\$55.00
Valves		6	\$4,000.00	\$24,000	\$24.00
Residential Services to Property Line	1,000	100	\$165.00	\$165,000	\$165.00
Commercial Services to Property Line	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	20	2	\$375.00	\$7,500	\$7.50
Connection to Existing System		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$15,000	\$15.00

Total Cost**\$817,110****\$817.11****Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)****\$132,182****\$132.18****300mm PVC**

300mm Watermain	1,000		\$365.00	\$365,000	\$365.00
Hydrants		10	\$5,500.00	\$55,000	\$55.00
Valves		6	\$5,000.00	\$30,000	\$30.00
Residential Services to Property Line	400	40	\$165.00	\$66,000	\$66.00
Commercial Services to Property Line	400	40	\$235.00	\$94,000	\$94.00
Industrial Services to Property Line	200	20	\$375.00	\$75,000	\$75.00
Connection to Existing System`		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$25,000	\$25.00

Total Cost**\$953,910****\$953.91****Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)****\$142,182****\$142.18**

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
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325mm PVC

325mm Watermain	1,000		\$383.00	\$383,000	\$383.00
Hydrants		10	\$5,500.00	\$55,000	\$55.00
Valves		6	\$5,500.00	\$33,000	\$33.00
Residential Services to Property Line	400	40	\$165.00	\$66,000	\$66.00
Commercial Services to Property Line	400	40	\$235.00	\$94,000	\$94.00
Industrial Services to Property Line	200	20	\$375.00	\$75,000	\$75.00
Connection to Existing System		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$27,500	\$27.50

Total Cost**\$977,410****\$977.41****Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)****\$146,182****\$146.18**

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
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375mm PVC

375mm Watermain	1,000		\$420.00	\$420,000	\$420.00
Hydrants		10	\$5,500.00	\$55,000	\$55.00
Valves		6	\$6,500.00	\$39,000	\$39.00
Residential Services to Property Line	400	40	\$165.00	\$66,000	\$66.00
Commercial Services to Property Line	400	40	\$235.00	\$94,000	\$94.00
Industrial Services to Property Line	200	20	\$375.00	\$75,000	\$75.00
Connection to Existing System		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$30,000	\$30.00
			Total Cost	\$1,022,910	\$1,022.91
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$153,182	\$153.18

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
450mm PVC					
450mm Watermain	1,000		\$475.00	\$475,000	\$475.00
Hydrants		10	\$5,500.00	\$55,000	\$55.00
Valves		6	\$8,000.00	\$48,000	\$48.00
Residential Services to Property Line	400	40	\$165.00	\$66,000	\$66.00
Commercial Services to Property Line	400	40	\$235.00	\$94,000	\$94.00
Industrial Services to Property Line	200	20	\$375.00	\$75,000	\$75.00
Connection to Existing System		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$35,000	\$35.00
			Total Cost	\$1,091,910	\$1,091.91
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$164,182	\$164.18

URBAN - TRANSMISSION MAINS

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
450mm Concrete Pressure Pipe					
450mm Watermain	1,000		\$555.00	\$555,000	\$555.00
Hydrants		4	\$5,500.00	\$22,000	\$22.00
Valve Chamber		4	\$21,000.00	\$84,000	\$84.00
Valves		4	\$8,000.00	\$32,000	\$32.00
Connection to Existing System`		1	\$8,000.00	\$8,000	\$8.00
Connections to Distribution System		4	\$20,000.00	\$80,000	\$80.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$38,000	\$38.00
			Total Cost	\$1,054,910	\$1,054.91
Appurtenances Replacement Only (+40% Contingency & Road Reinstatement)				\$247,564	\$247.56

600mm Concrete Pressure Pipe					
600 Watermain	1,000		\$765.00	\$765,000	\$765.00
Valve Chambers		4	\$28,000.00	\$112,000	\$112.00
Valves		4	\$9,500.00	\$38,000	\$38.00
Connection to Existing System		1	\$18,000.00	\$18,000	\$18.00
Connections to Distribution System		4	\$30,000.00	\$120,000	\$120.00
Road Reinstatement	1,000		\$379.69	\$379,685	\$379.69
Contingency for Minor Contract Items				\$50,000	\$50.00
			Total Cost	\$1,482,685	\$1,482.69
Appurtenances Replacement Only (+40% Contingency & Road Reinstatement)				\$321,874	\$321.87

RURAL SECTIONS

RURAL - DISTRIBUTION MAINS

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
150mm PVC					
150mm Watermain	1,000		\$175.00	\$175,000	\$175.00
Hydrants		4	\$4,500.00	\$18,000	\$18.00
Valves		5	\$2,500.00	\$12,500	\$12.50
Residential Services to Property Line	150	15	\$165.00	\$24,750	\$24.75
Commercial Services to Property Line	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	40	4	\$375.00	\$15,000	\$15.00
Connection to Existing System		2	\$8,000.00	\$16,000	\$16.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$10,000	\$10.00
			Total Cost	\$511,860	\$511.86
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$81,682	\$81.68

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
200mm PVC					
200mm Watermain	1,000		\$238.00	\$238,000	\$238.00
Hydrants		4	\$5,500.00	\$22,000	\$22.00
Valves		5	\$3,250.00	\$16,250	\$16.25
Residential Services to Property Line	150	15	\$165.00	\$24,750	\$24.75
Commercial Services to Property Line	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	40	4	\$375.00	\$15,000	\$15.00
Connection to Existing System		2	\$8,000.00	\$16,000	\$16.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$10,000	\$10.00
Total Cost				\$582,610	\$582.61
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$89,432	\$89.43

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
250mm PVC					
250mm Watermain	1,000		\$302.00	\$302,000	\$302.00
Hydrants		4	\$5,500.00	\$22,000	\$22.00
Valves		5	\$4,000.00	\$20,000	\$20.00
Residential Services to Property Line	150	15	\$165.00	\$24,750	\$24.75
Commercial Services to Property Line	20	2	\$235.00	\$4,700	\$4.70
Industrial Services to Property Line	40	4	\$375.00	\$15,000	\$15.00
Connection to Existing System		2	\$8,000.00	\$16,000	\$16.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$10,000	\$10.00
Total Cost				\$650,360	\$650.36
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$93,182	\$93.18

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
300mm PVC					
300mm Watermain	1,000		\$365.00	\$365,000	\$365.00
Hydrants		4	\$5,500.00	\$22,000	\$22.00
Valves		5	\$5,000.00	\$25,000	\$25.00
Residential Services to Property Line	100	10	\$165.00	\$16,500	\$16.50
Commercial Services to Property Line	40	4	\$235.00	\$9,400	\$9.40
Industrial Services to Property Line	60	6	\$375.00	\$22,500	\$22.50
Connection to Existing System		1	\$8,000.00	\$8,000	\$8.00
Road Reinstatement	1,000		\$379.69	\$379,685	\$379.69
Contingency for Minor Contract Items				\$25,000	\$25.00
Total Cost				\$873,085	\$873.09
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$132,937	\$132.94

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
325mm PVC					
325mm Watermain	1,000		\$383.00	\$383,000	\$383.00
Hydrants		4	\$5,500.00	\$22,000	\$22.00
Valves		5	\$5,500.00	\$27,500	\$27.50
Residential Services to Property Line	100	15	\$165.00	\$16,500	\$16.50
Commercial Services to Property Line	40	2	\$235.00	\$9,400	\$9.40
Industrial Services to Property Line	60	4	\$375.00	\$22,500	\$22.50
Connection to Existing System		2	\$8,000.00	\$16,000	\$16.00
Road Reinstatement	1,000		\$379.69	\$379,685	\$379.69
Contingency for Minor Contract Items				\$10,000	\$10.00
Total Cost				\$886,585	\$886.59
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$129,437	\$129.44

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
375mm PVC					
375mm Watermain	1,000		\$420.00	\$420,000	\$420.00
Hydrants		4	\$5,500.00	\$22,000	\$22.00
Valves		5	\$6,500.00	\$32,500	\$32.50
Residential Services to Property Line	100	15	\$165.00	\$16,500	\$16.50
Commercial Services to Property Line	40	2	\$235.00	\$9,400	\$9.40
Industrial Services to Property Line	60	4	\$375.00	\$22,500	\$22.50
Connection to Existing System		2	\$8,000.00	\$16,000	\$16.00

Road Reinstatement	1,000		\$379.69	\$379,685	\$379.69
Contingency for Minor Contract Items				\$10,000	\$10.00
			Total Cost	\$928,585	\$928.59
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$134,437	\$134.44

RURAL - TRANSMISSION MAINS

Type/Description	Length (m)	Each	Unit Rate	Cost / km	Cost / m
450mm Concrete Pressure Pipe					
450mm Watermain	1,000		\$555.00	\$555,000	\$555.00
Hydrants		2	\$5,500.00	\$11,000	\$11.00
Valve Chamber		2	\$21,000.00	\$42,000	\$42.00
Valves		2	\$8,000.00	\$16,000	\$16.00
Connection to Existing System		1	\$8,000.00	\$8,000	\$8.00
Connections to Distribution System		4	\$20,000.00	\$80,000	\$80.00
Road Reinstatement	1,000		\$235.91	\$235,910	\$235.91
Contingency for Minor Contract Items				\$45,000	\$45.00
			Total Cost	\$992,910	\$992.91
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$134,182	\$134.18

600mm Concrete Pressure Pipe					
600 Watermain	1,000		\$765.00	\$765,000	\$765.00
Valve Chambers		2	\$28,000.00	\$56,000	\$56.00
Valves		2	\$9,500.00	\$19,000	\$19.00
Connection to Existing System		1	\$18,000.00	\$18,000	\$18.00
Connections to Distribution System		4	\$30,000.00	\$120,000	\$120.00
Road Reinstatement	1,000		\$379.69	\$379,685	\$379.69
Contingency for Minor Contract Items				\$65,000	\$65.00
			Total Cost	\$1,422,685	\$1,422.69
Appurtenances Replacement Only (+40% Contingency & 20% Road Reinstatement)				\$176,937	\$176.94



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**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix H Infrastructure Priority Classifications



CORPORATION OF THE TOWNSHIP OF MATTICE-VAL COTE

Asset Management Plan

Infrastructure Requirements by Priority Category

Infrastructure Component	Asset Description	Length in km	From	To	Category	Ten Year Investment Requirement	
						Priority 1	Priority 2
	Queen Street East	0.05	Highway 11	Queen St. E	Priority 1	\$ 63,105	\$ -
	Chabot Crescent	0.15	East Section	West Section	Priority 1	\$ 37,387	\$ -
	Gagnon Avenue	0.16	Second St.	Third St.	Priority 1	\$ 28,046	\$ -
	Melrose Avenue	0.16	Second St.	Third St.	Priority 1	\$ 39,879	\$ -
	Melrose Avenue	0.18	Third St.	Creek St.	Priority 1	\$ 44,864	\$ -
	Second Street South	0.10	Highway 11	Queen St.	Priority 1	\$ 24,925	\$ -
	Third South	0.14	Parkview Ave.	Gagnon Ave.	Priority 1	\$ 34,894	\$ -
	Third/North	0.05	Highway 11	Mellrose Lane	Priority 1	\$ 12,462	\$ -
	Balmoral Avenue	0.13	Third St.	Creek St.	Priority 1	\$ 32,402	\$ -
	Queen Street	0.16	First St.	Second St.	Priority 1	\$ 39,879	\$ -
	Second Street South	0.14	Balmoral Ave.	Parkview Ave.	Priority 1	\$ 34,894	\$ -
	Gagnon Avenue	0.16	First St.	Second St.	Priority 1	\$ 28,046	\$ -
	First Street South	0.12	Queen St.	Balmoral Ave.	Priority 1	\$ 21,035	\$ -
	Defosses Road	0.20	Trans Canada Hwy	Brisson Rd	Priority 1	\$ 65,850	\$ -
	Plamondon Road East	2.40	Cemetery Rd	To End	Priority 1	\$ 790,200	\$ -
	Provencal Road	0.90	Trans Canada Hwy	To End	Priority 1	\$ 296,325	\$ -
	Shallow Lake Road	2.00	Trans Canada Hwy	Shallow Lake Rd. Side Road	Priority 1	\$ 658,500	\$ -
	Shallow Lake Side Road	0.75	Shallow Lake Rd. Side Road	Shallow Lake Rd. E	Priority 1	\$ 246,938	\$ -
	Shallow Lake Road East	0.45	Shallow Lake Rd.	To end	Priority 1	\$ 148,163	\$ -
	Shallow Lake Road East	0.35	Shallow Lake Rd. E	Tanguay Rd. E	Priority 1	\$ 115,238	\$ -
	Shallow Lake Road East	1.40	Tanguay Rd. E	To End	Priority 1	\$ 460,950	\$ -
	Comeau Rd	0.20	Trans Canada Hwy	To End	Priority 1	\$ 65,850	\$ -
	Avenue Mgr. Proulx	0.18	River St.	First St.	Priority 1	\$ 44,864	\$ -
	Avenue Mgr. Proulx	0.16	First St.	Second St.	Priority 1	\$ 39,879	\$ -
	Avenue Mgr. Proulx	0.16	Second St.	Third St.	Priority 1	\$ 39,879	\$ -
	Avenue Mgr. Proulx	0.14	Third St.	Mellrose St.	Priority 1	\$ 34,894	\$ -
	Balmoral Avenue	0.16	Second St.	Third St.	Priority 1	\$ 39,879	\$ -
	Chabot Crescent	0.09	North Section	South Section	Priority 1	\$ 22,432	\$ -
	First Street South	0.14	Queen St.	Balmoral Ave.	Priority 1	\$ 34,894	\$ -
	Queen Street East	0.12	Queen St. E		Priority 1	\$ 29,909	\$ -
	River Street So. (M16)	0.40	Queen St.	Parkview Ave.	Priority 1	\$ 99,698	\$ -
	Second Street South	0.14	Queen St.	Balmoral Ave.	Priority 1	\$ 34,894	\$ -
	Third South	0.14	Balmoral Ave.	Parkview Ave.	Priority 2	\$ -	\$ 34,894
	Barker Road	10.90	Trans Canada Hwy	Unknown Rd.	Priority 2	\$ -	\$ 1,910,650
	Maxime Brisson Road (Concession Rd 6/ Concession Rd. 7)	1.30	Trans Canada Hwy	End of Road	Priority 2	\$ -	\$ 227,876
	Brisson Road	1.00	Comeau Rd	To End	Priority 2	\$ -	\$ 175,289
	Cemetery Road	0.75	Trans Canada Hwy	Plamondon Rd.	Priority 2	\$ -	\$ 131,467
	Chemin des Sno	0.70	Gagnon Rd	To End	Priority 2	\$ -	\$ 122,702
	Drouin Road	9.10	Trans Canada Hwy	To End	Priority 2	\$ -	\$ 1,595,130
	First Street South	0.12	Balmoral Ave.	Parkview Ave.	Priority 2	\$ -	\$ 21,035
	First Street South	0.12	Parkview Ave.	Gagnon Ave.	Priority 2	\$ -	\$ 21,035
	First Street South	0.90	Chabot Crescent	Plamondon Rd.	Priority 2	\$ -	\$ 157,760
	Indian Cemetery Road	3.90	Trans Canada Hwy	To End	Priority 2	\$ -	\$ 683,627
	Plamondon Road	1.60	First St.	Cemetery Rd.	Priority 2	\$ -	\$ 280,462
	Plamondon Road West	2.70	Indian cemetery Rd	To End	Priority 2	\$ -	\$ 473,280
	Ressor Rd North (East/West)	1.90	Unknown Rd.	Trans Canada Hwy	Priority 2	\$ -	\$ 333,049
	Ressor Rd North/South	2.70	End Of Road	End of Road	Priority 2	\$ -	\$ 473,280
	Ressor Rd South	0.45	Trans Canada Hwy	Unknown Rd.	Priority 2	\$ -	\$ 78,880
	Ressor Rd South/East	0.30	Ressor Rd South	To End	Priority 2	\$ -	\$ 52,587
	Shallow Lake Road West	0.65	Shallow Lake Rd.	Tanguay Rd. W	Priority 2	\$ -	\$ 113,938
	Shallow Lake Road West	2.50	Tanguay Rd. W	Faucher Rd.	Priority 2	\$ -	\$ 438,223
	Shannon Road	14.40	Trans Canada Hwy	To end	Priority 2	\$ -	\$ 2,524,162
	Tanguay Road East	0.90	Shallow Lake Rd. E	To End	Priority 2	\$ -	\$ 157,760
	Third/North	0.06	Melrose Lane	Mellrose Ave.	Priority 2	\$ -	\$ 10,517
	Balmoral Avenue	0.15	River St.	First St.	Priority 2	\$ -	\$ 37,387
	Faucher Road North	2.10	Shallow Lake Rd.	Trans Canada Hwy	Priority 2	\$ -	\$ 368,107
	First Street South	0.11	Gagnon Ave.	Chabot Crescent	Priority 2	\$ -	\$ 19,282
	Gagnon Road	4.10	Unknown Rd.	Trans Canada Hwy	Priority 2	\$ -	\$ 718,685
	First Street South	0.14	Parkview Ave.	Gagnon Ave.	Priority 3	\$ -	\$ -
	Queen Street	0.18	Third St.		Priority 3	\$ -	\$ -
	Balmoral Avenue	0.16	First St.	Second St.	Priority 3	\$ -	\$ -
	First Street South	0.14	Balmoral Ave.	Parkview Ave.	Priority 3	\$ -	\$ -

CORPORATION OF THE TOWNSHIP OF MATTICE-VAL COTE

Asset Management Plan

Infrastructure Requirements by Priority Category

Infrastructure Component	Asset Description	Length in km	From	To	Category	Ten Year Investment Requirement	
						Priority 1	Priority 2
	Missinaibi Park Rd.	0.14	Melrose St.	River St.	Priority 3	\$ -	\$ -
	Parkview Avenue	0.16	River St.	First St.	Priority 3	\$ -	\$ -
	Parkview Avenue	0.16	First St.	Second St.	Priority 3	\$ -	\$ -
	Parkview Avenue	0.16	Second St.	Third St.	Priority 3	\$ -	\$ -
	Queen Street	0.17	River St.	First St.	Priority 3	\$ -	\$ -
	Queen Street	0.16	Second St.	Third St.	Priority 3	\$ -	\$ -
	Third/North	0.09	Melrose Ave.	River St.	Priority 3	\$ -	\$ -
	Second Street South	0.14	Parkview Ave.	Gagnon Ave.	Priority 3	\$ -	\$ -
	Third South	0.14	Queen St.	Balmoral Ave.	Priority 3	\$ -	\$ -
	First Street North	0.08	Melrose St.	King St.	Priority 3	\$ -	\$ -
	First Street South	0.18	Gagnon Ave.	Chabot Crescent	Priority 3	\$ -	\$ -
	Second North	0.14	Highway 11	Melrose St.	Priority 3	\$ -	\$ -
	Second North	0.10	Melrose St.	River St.	Priority 3	\$ -	\$ -
	Second North	0.18	River Shore		Priority 3	\$ -	\$ -
Water	All watermains are classified as Priority 3						
Stormsewer	All stormsewer mains are classified as Priority 3						
Facilities	Municipal Office/Equipment Depot/Fire Hall				Priority 2	\$ -	\$ 5,000
	Storage Garage - 500 Highway 11				Priority 2	\$ -	\$ 25,000
	Salt Storage - 500 Highway 11				Priority 2	\$ 3,500	\$ 1,000
	Storage Shed - 272 3rd Street				Priority 2	\$ -	\$ 1,500
	Arena - Sports Complex				Priority 2	\$ -	\$ 13,000
	Arena - Storage Shed				Priority 3	\$ -	\$ -
	Comfort Station/Washrooms				Priority 2	\$ -	\$ 11,000
	Ballfield Shed #1				Priority 3	\$ -	\$ -
	Ballfield Shed #2				Priority 3	\$ -	\$ -
	Dugout #1				Priority 3	\$ -	\$ -
	Dugout #2				Priority 3	\$ -	\$ -
	Fire Hall				Priority 2	\$ -	\$ 5,775
	Fire Hall Shed				Priority 2	\$ -	\$ 2,000
	Mattice Charnel				Priority 2	\$ -	\$ 1,000
	Val Cote Charnel				Priority 3	\$ -	\$ -
	Water Treatment Plant				Priority 1	\$ 30,000	\$ 25,000
	Water Pumping Station				Priority 3	\$ -	\$ -
	Sewage Pumping Station				Priority 2	\$ 2,200	\$ 2,500
	Pumping Station #1 - Melrose Ave.				Priority 2	\$ 2,200	\$ -
	Lagoon (Mattice)				Priority 3	\$ -	\$ -
	Lagoon (Val Cote)				Priority 3	\$ -	\$ -
Fleet	JD 410 4x4 Backhoe - 1986				Priority 1	\$ 150,000	
	JD 955 4x4 Tractor				Priority 1	\$ 150,000	
	Ford Fire Pumper - 1975				Priority 1	\$ 250,000	
	Champion Grader - 1999 - Model 740				Priority 1	\$ 250,000	
	International Fleetstar Tanker- 1972				Priority 1	\$ 125,000	
	International Dump S1900 - 1982				Priority 1	\$ 175,000	
	Alpha 2 Ambulance Sleigh - 1997				Priority 1	\$ 5,000	
	Arctic Cat Snowmobile - 1998				Priority 1	\$ 15,000	
	Ford F150 - 1998				Priority 1	\$ 35,000	
	Olympia Millenium Ice Resurfer - 2003				Priority 1	\$ 125,000	
	Utility Trailer - 1999				Priority 2	\$ -	\$ 5,000
	GMC Fire Pumper Truck - 1974				Priority 2	\$ -	\$ 250,000
	International Snow Plow - 2002				Priority 2	\$ -	\$ 175,000
	Dodge Van - 1992				Priority 1	\$ 30,000	\$ -
	Sterling Garbage Truck - 2008				Priority 2	\$ -	\$ 175,000
	Ford F150 Red				Priority 1	\$ 35,000	\$ -
	Pontiac G6 - 2006				Priority 3	\$ -	\$ -
	International 7400 S - Work Star Tanker				Priority 2	\$ -	\$ 30,000
	Woodgreen Trailer				Priority 2	\$ -	\$ 125,000
Total						\$ 5,093,955.51	\$ 12,013,838.19



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**Asset Management Planning
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Appendix L Suggested Capital Financing Policy



PURPOSE

The goal of the Municipality's capital financing policy shall be to set out the guiding principles for the financing of future capital expenditures in a manner that considers the infrastructure investment requirements of the Municipality as well as affordability issues for taxpayers.

GLOSSARY

Capital Levy – The amount of money raised through taxation that is transferred to the capital fund or reserves to be used to help pay for the cost of capital projects.

Debt – Any obligation for the payment of money. The Municipality considers debt to consist of debentures, cash loans from financial institutions, capital leases, debenture financing approved through bylaw for which no debt has yet been issued, debenture financing approved through the capital budget for which no bylaw has yet been established, outstanding financial commitments, loan guarantees and any debt issue by, or on behalf of the Municipality, including mortgages, debentures or demand loans.

Long-term Debt – Any Debt for which the repayment of any portion of the principal is due beyond one year.

Municipal Levy – The amount of money raised through taxation by the Municipality for the purposes of funding operating costs as well as the Capital Levy.

POLICY STATEMENTS

1. The Municipality shall increase the Municipal Levy by a minimum of 2% per year for each of the next five years (2014 to 2018 inclusive), with the 2% increase being added to the Capital Levy.
2. The increase in the Capital Levy shall only be used for the following purposes:
 - a. To fund capital expenditures;
 - b. To increase reserve balances in order to finance future capital expenditures; or
 - c. To finance the annual costs associated with Long-term Debt issued in connection with capital projects.
3. Subsequent to the five year phase-in period for increases to the Municipal Levy, the Municipality shall increase the Capital Levy by at least the Consumer Price Index, as published by Statistics Canada.



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**Asset Management Planning
for the Township of Mattice-Val Cote**

Appendix M Suggested Borrowing Policy



PURPOSE

The goal of the Municipality's debt policy shall be to set out the guiding principles for the approval, issuance and administration of any Municipality debt, which shall adhere to all statutory requirements.

GLOSSARY

Debt – Any obligation for the payment of money. The Municipality considers debt to consist of debentures, cash loans from financial institutions, capital leases, debenture financing approved through bylaw for which no debt has yet been issued, debenture financing approved through the capital budget for which no bylaw has yet been established, outstanding financial commitments, loan guarantees and any debt issue by, or on behalf of the Municipality, including mortgages, debentures or demand loans.

Debt and Financial Obligation Limit – The maximum amount of annual debt servicing costs that a municipality can undertake or guarantee without seeking the approval of the Ontario Municipal Board. The Debt and Financial Obligation Limit is calculated pursuant to *Ontario Regulation 403/02 – Debt and Financial Obligation Limits*.

Lease Financial Agreements – A financial agreement, in accordance with *Ontario Regulation 653/05 – Debt Related Financial Instruments and Financial Agreements*, that a municipality may enter into for the purpose of obtaining long-term financing of a capital undertaking of the municipality.

Long-term Debt – Any Debt for which the repayment of any portion of the principal is due beyond one year.

Material Impact – Under *Ontario Regulation 653/05 – Debt Related Financial Instruments and Financial Agreements*, a Lease Financing Agreement has a material impact on a municipality if the costs or risks associated with the agreement significantly affect the municipality's Debt and Financial Obligation Limit, or would reasonably be expected to have a significant effect on that limit.

POLICY STATEMENTS

1. The Municipality shall only enter into Long-term Debt, including Lease Financing Agreements, where the following conditions are met:
 - a. The Long-term Debt will be managed in a manner consistent with other long-term planning, financial and management objectives.
 - b. Consideration will be given to the impact on future taxpayers.
 - c. Long-term Debt will be managed in a manner to limit financial risk exposure.
 - d. The timing, type and term of Long-term Debt will be determined with a view of minimizing long-term cost to the extent possible.

- e. The term of Long-term Debt will not exceed the useful life of the particular asset.
 - f. The issuance of Long-term Debt will not result in the Municipality exceeding its Debt and Financial Obligation Limit.
 - g. A category of Lease Financing Agreements may be relied upon for non-material or operational leases where the agreements will not, in the opinion of the Treasurer as delegated by Council through this policy, result in a Material Impact for the Municipality.
- 2. All Debt shall be issued in Canadian dollars.
 - 3. It shall be the general practice to issue Debt where the interest rates will be fixed over its term. The Municipality may issue Debt in which the interest rate will vary where, in the opinion of the Treasurer, it is in the Municipality's best interest to allow the rate to float provided such Debt, in addition to any other Debt, does not exceed fifteen percent (15%) of the total outstanding Debt of the Municipality in accordance with *Ontario Regulation 276/02 – Bank Loans*.
 - 4. Upon the repayment of Long-term Debt, the amounts previously committed to annual debt servicing shall not be removed from the Municipality's budget but rather will be reallocated towards:
 - a. Debt servicing costs for new Debt issued by the Municipality; and/or
 - b. Contributions to reserves for capital purposes.
 - 5. The awarding of any contract under this Policy, unless otherwise authorized by Council, shall follow the requirements as set out in the Municipality's procurement policy.
 - 6. Council, in conjunction with staff, shall review the Municipality's outstanding Debt in conjunction with the annual budget process.

RELEVANT LEGISLATION

- Municipal Act, 2001
- Ontario Regulation 247/01 – Variable Interest Rate Debentures and Foreign Currency Borrowing
- Ontario Regulation 276/02 – Bank Loans
- Ontario Regulation 278/02 – Construction Financing
- Ontario Regulation 403/02 – Debt and Financial Obligation Limits
- Ontario Regulation 653/05 – Debt Related Financial Instruments and Financial Agreements



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