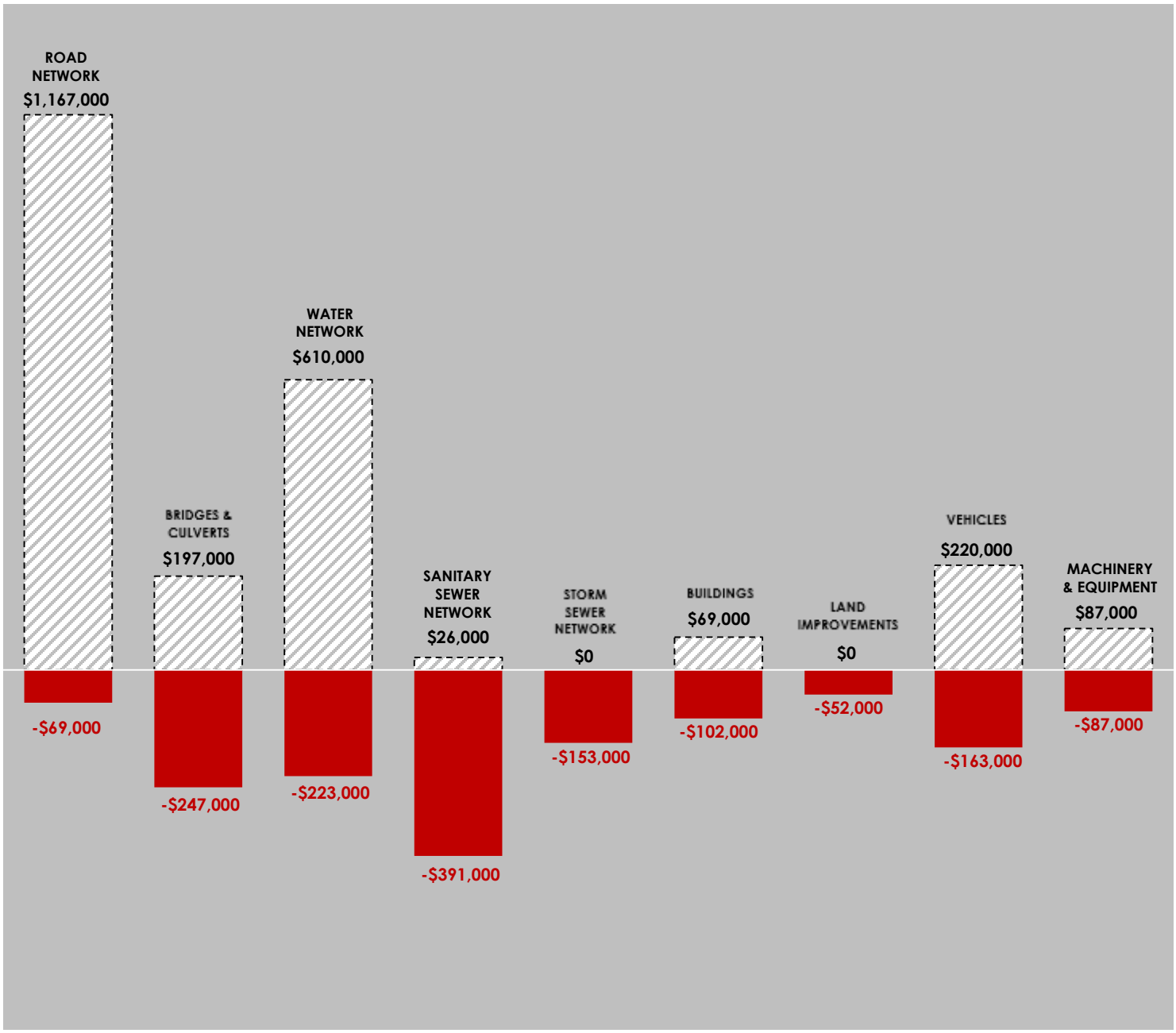
THE ASSET MANAGEMENT PLAN FOR THE TOWNSHIP OF HURON-KINLOSS

2015

THE TOWNSHIP OF HURON-KINLOSS
21 QUEEN ST. RIPLEY, ON N0G 2R0

SUBMITTED MARCH 2016
BY PUBLIC SECTOR DIGEST
148 FULLARTON STREET, SUITE 1410
LONDON, ONTARIO, N6A 5P3

AVERAGE ANNUAL FUNDING REQUIRED **vs.** AVERAGE ANNUAL FUNDING AVAILABLE



Total Annual Deficit: $1,487,000

Annual Funding Available

Annual Funding Deficit

PUBLIC SECTOR DIGEST

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March 2016

The Township of Huron-Kinloss
21 Queen Street
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We are pleased to submit the 2015 Asset Management Plan (AMP) for the Township of Huron-Kinloss. It will serve as a strategic, tactical, and financial document, ensuring the management of the municipal infrastructure follows sound asset management practices and principles, while optimizing available resources and establishing desired levels of service. Given the broad and profound impact of asset management on the community, and the financial & administrative complexity involved in this ongoing process, we recommend that senior decision-makers from across the organization are actively involved in its implementation.

The performance of a community's infrastructure provides the foundation for its economic development, competitiveness, prosperity, reputation, and the overall quality of life for its residents. As such, we are appreciative of your decision to entrust us with the strategic direction of its infrastructure and asset management planning, and are confident that this AMP will serve as a valuable tool.

Sincerely,
The Public Sector Digest Inc.

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PUBLIC SECTOR DIGEST

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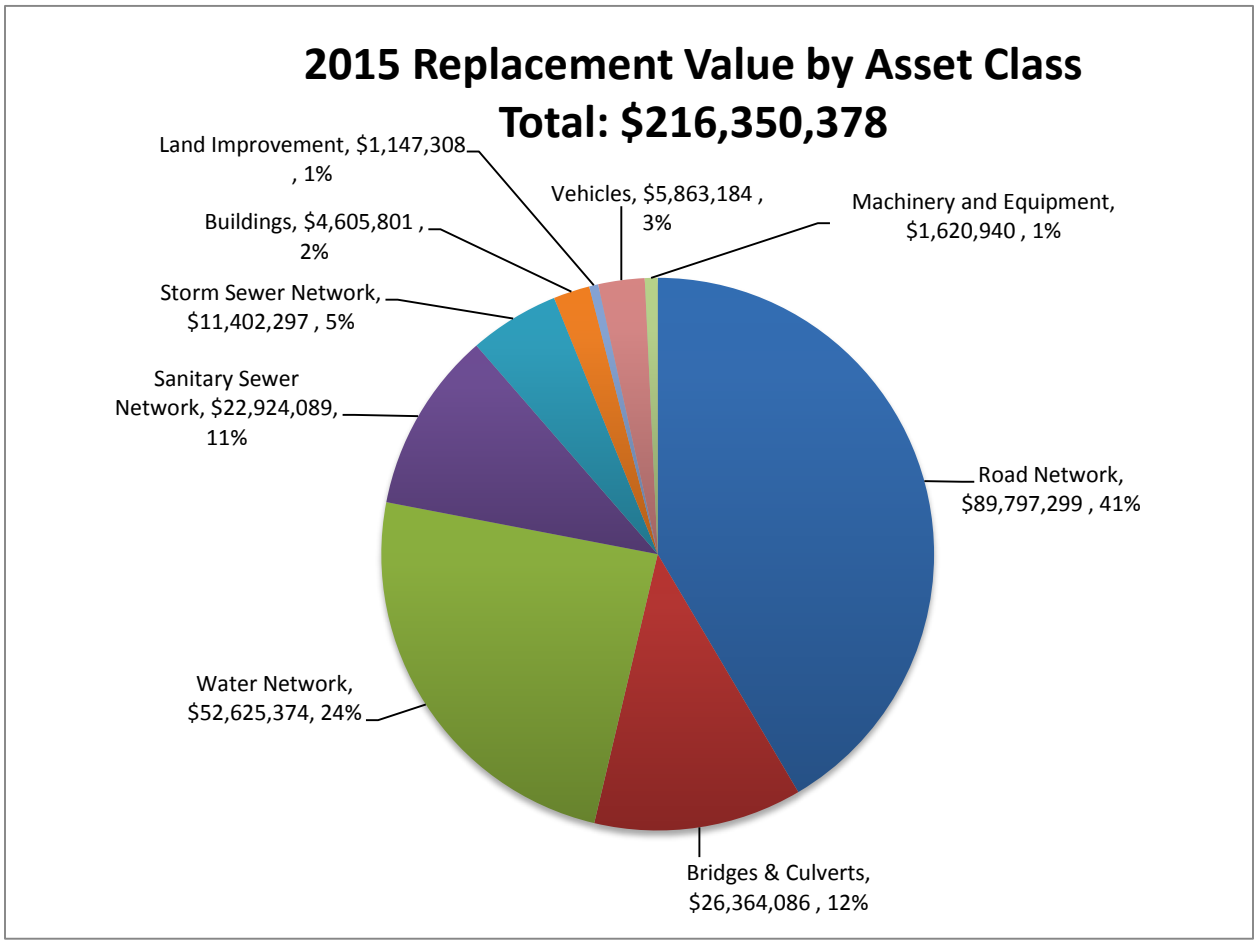
1.0 Executive Summary

The performance of a community's general capital and infrastructure provides the foundation for its economic development, competitiveness, prosperity, reputation, and the overall quality of life for its residents. Reliable and well-maintained general capital and infrastructure assets are essential for the delivery of critical core services for the citizens of a Township.

A technically precise and financially rigorous asset management plan, diligently implemented, will mean that sufficient investments are made to ensure delivery of sustainable general capital and infrastructure services to current and future residents. The plan will also indicate the respective financial obligations required to maintain this delivery at established levels of service.

This Asset Management Plan (AMP) for the Township of Huron-Kinloss meets all requirements as outlined within the provincial *Building Together Guide for Municipal Asset Management Plans.* It will serve as a strategic, tactical, and financial document, ensuring the management of the municipal general capital and infrastructure follow sound asset management practices and principles, while optimizing available resources and establishing desired levels of service. Given the expansive financial and social impact of asset management on both a Township, and its citizens, it is critical that senior decision-makers, including department heads as well as the chief executives, are strategically involved.

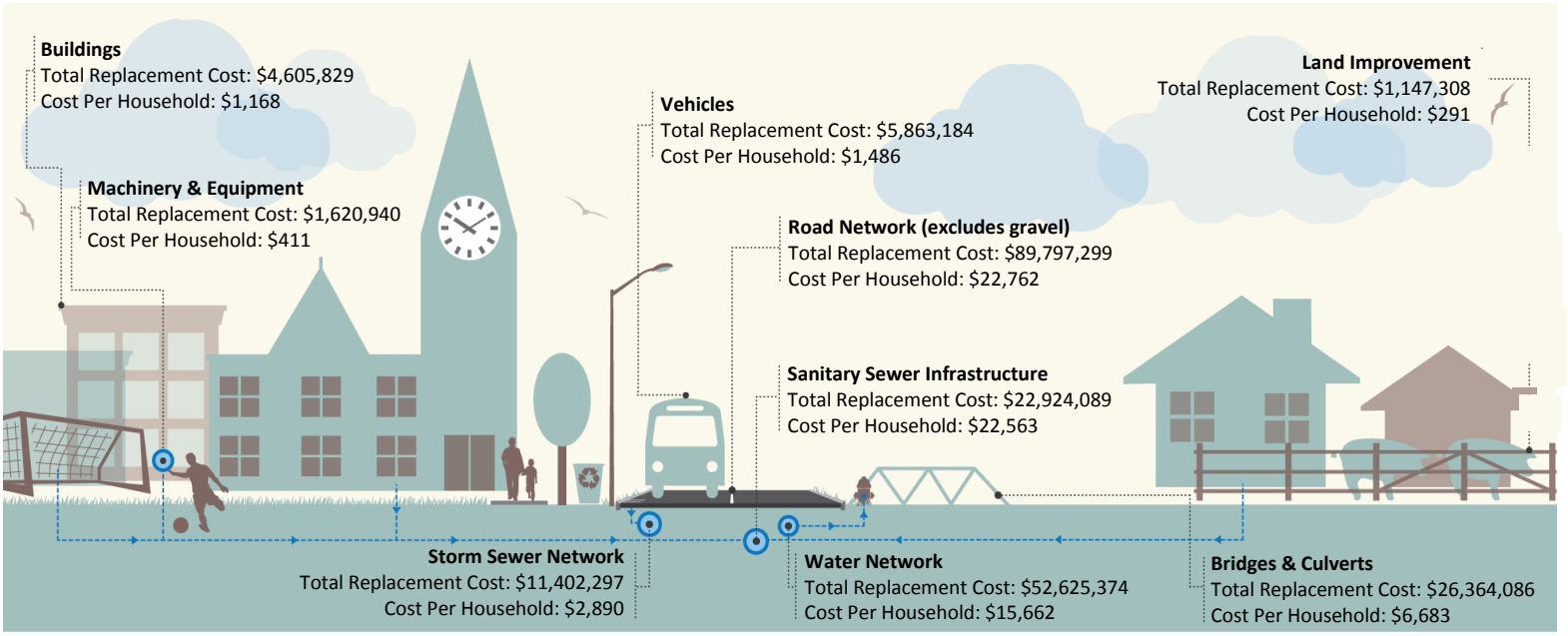


Measured in 2015 dollars[1], the replacement value of the asset classes analyzed totaled approximately **$216 million** for Huron-Kinloss.

While the Township is responsible for the strategic direction, it is the taxpayer in Huron-Kinloss who ultimately bears the financial burden. As such, a 'cost per household' (CPH) analysis was conducted for each of the asset classes to determine the financial obligation of each household in sharing the replacement cost of the Township's assets. Such a measurement can serve as an excellent communication tool for both the administration and the council in communicating the importance of asset management to the citizen. The diagram below illustrates the total CPH, as well as the CPH for individual asset classes.

Infrastructure Replacement Cost Per Household

Total: $73,916 per household



In assessing the Township's state of the infrastructure, we examined, and graded, both the current condition (Condition vs. Performance) of the asset classes as well as the Township's financial capacity to fund the asset's average annual requirement for sustainability (Funding vs. Need). We then generated the Township's infrastructure report card. The Township received a **cumulative GPA of** '**D**', with an **annual infrastructure deficit of $1.5 million**.

The Township's grades on the Conditions vs. Performance dimension were both more varied. It received at least a 'B' in the storm network, a 'C+' in land improvements, sanitary and water networks, a 'C' in vehicles and road network, a 'B' in the storm network and either a 'D' or 'D+' in the balance of its asset categories. A rating of 'D' is indicative of increasingly visible signs of asset deterioration and a possible compromise in function. Such a rating also suggests potentially significant demand on the Township in the short- to medium-term. For example, Huron-Kinloss' machinery and equipment network has a significant number of items in poor to critical condition based on age data. It also has a substantial number of buildings in poor condition based on age data only.

[1] The analysis performed in this document is based on year-end 2014 capital asset data with the exception of the road network. The 2015 addition of decorative streetlights and the conversion to LED lights are significant upgrades which dramatically changes the overall replacement cost of the road network. These 2015 additions are included in this iteration of the AMP to increase the accuracy of the Asset Management Plan.

In order for an AMP to be effectively put into action, it must be integrated with financial planning and long-term budgeting. We have developed scenarios that would enable Huron-Kinloss to achieve full funding within 5 to 20 years for the following: tax funded assets, including road network, bridges & culverts, storm sewer network, buildings, land improvement, vehicles, machinery & equipment and; rate funded assets, including water network, and sanitary sewer network.

The average annual investment requirement for paved roads, bridges/culverts, storm sewers, buildings, land improvement, vehicles, and machinery & equipment is $2,613,000. Annual revenue currently allocated to these assets is $1,740,000 leaving an annual deficit of $873,000. To put it another way, these infrastructure categories are currently funded at 67% of their long-term requirements. Huron-Kinloss has annual tax revenues of $6,457,000 in 2015. Without consideration of any other source of revenue, full funding would require an increase in tax revenue of 13.5% over time. We recommend a 10 year option which involves full funding being achieved over 10 years by:

a) when realized, reallocating the debt cost reductions of $110,000 to the infrastructure deficit as outlined in table 3 of the financial plan.
b) increasing tax revenues by 1.2% each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

The average annual investment requirement for sanitary services and water services is $1,250,000. Annual revenue currently allocated to these assets for capital purposes is $636,000 leaving an annual deficit of $614,000. To put it another way, these infrastructure categories are currently funded at 51% of their long-term requirements. In 2015, Huron-Kinloss has annual sanitary services revenues of $26,000 and annual water revenues of $610,000. Without any adjustments to existing revenues, a move to full funding would require the following increases over time: 121.1% for sanitary services, and 15.3% for water services. We recommend a 15 year option which involves full funding being achieved over 15 years by:

a) increasing rate revenues by 8.1% for sanitary services and 1.0% for water services each year for the next 15 years solely for the purpose of phasing in full funding.
b) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

As illustrated in this plan, the revenue options available to Huron-Kinloss allow the Township to fully fund its infrastructure requirements without further use of debt. However, as explained in sections 7.3.2 and 7.4.2, the recommended condition rating analysis may require otherwise. Reserves can mitigate financial pressure and play a critical role in long-term financial planning. This, coupled with Huron-Kinloss' judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for emergency situations. This will allow the Township of Huron-Kinloss to address high priority general capital and infrastructure investments in the short to medium-term.

2.0 Introduction

This Asset Management Plan meets all provincial requirements as outlined within the Ontario Building Together Guide for Municipal Asset Management Plans. As such, the following key sections and content are included:

1. Executive Summary and Introduction
2. State of the Current Infrastructure
3. Desired Levels of Service
4. Asset Management Strategy
5. Financial Strategy

The following asset classes are addressed:

1. **Road Network:** Paved road, sidewalk, signs and streetlights
2. **Bridges & Culverts**: Bridges and large culverts with a span greater than 3m
3. **Water Network:** Water mains, pump house, hydrants, standpipes, water connection and water wells.
4. **Sanitary Sewer Network:** Sanitary sewer mains, lagoons & pumping station
5. **Storm Sewer Network:** Storm sewer mains
6. **Facilities:** All corporate and community facilities
7. **Land Improvement:** Arena, ball park, cement pad, driveway and parking lot, landscaping, tennis/basketball courts and trails
8. **Equipment:** Electronic equipment, general equipment and furniture and fixtures
9. **Vehicles:** heavy and light fleet

Municipalities are encouraged to cover all asset classes in future iterations of the AMP.

This asset management plan will serve as a strategic, tactical, and financial document ensuring the management of the municipal general capital and infrastructure follow sound asset management practices and principles, while optimizing available resources and establishing desired levels of service.

At a strategic level, within the State of the Current Infrastructure section, it will identify current and future challenges that should be addressed in order to maintain sustainable general capital and infrastructure services on a long-term, life cycle basis.

It will outline a Desired Level of Service (LOS) Framework for each asset category to assist the development and tracking of LOS through performance measures across strategic, financial, tactical, operational, and maintenance activities within the organization.

At a tactical level, within the Asset Management Strategy section, it will develop an implementation process to be applied to the needs-identification and prioritization of renewal, rehabilitation, and maintenance activities, resulting in a 10 year plan that will include growth projections.

At a financial level, within the Financial Strategy section, a strategy will be developed that fully integrates with other sections of this asset management plan, to ensure delivery and optimization of the 10 year infrastructure budget.

Through the development of this plan, all data, analysis, life cycle projections, and budget models will be provided through the Public Sector Digest's CityWide suite of software products. The software and plan will be synchronized, will evolve together, and therefore, will allow for ease of updates, and annual reporting of performance measures and overall results.

This will allow for continuous improvement of the plan and its projections. It is therefore recommended that the plan be revisited and updated on an annual basis, particularly as more detailed information becomes available.

2.1 Importance of Infrastructure

Municipalities throughout Ontario, large and small, own a diverse portfolio of general capital and infrastructure assets that in turn provide a varied number of services to their citizens. The infrastructure, in essence, is a conduit for the various public services the Township provides, e.g., the roads supply a transportation network service; the water infrastructure supplies a clean drinking water service. A community's prosperity, economic development, competitiveness, image, and overall quality of life are inherently and explicitly tied to the performance of its infrastructure.

2.2 Asset Management Plan (AMP) - Relationship to Strategic Plan

The major benefit of strategic planning is the promotion of strategic thought and action. A strategic plan spells out where an organization wants to go, how it's going to get there, and helps decide how and where to allocate resources, ensuring alignment to the strategic priorities and objectives. It will help identify priorities and guide how municipal tax dollars and revenues are spent into the future.

The strategic plan usually includes a vision and mission statement, and key organizational priorities with alignment to objectives and action plans. Given the growing economic and political significance of infrastructure, the asset management plan will become a central component of most municipal strategic plans, influencing corporate priorities, objectives, and actions.

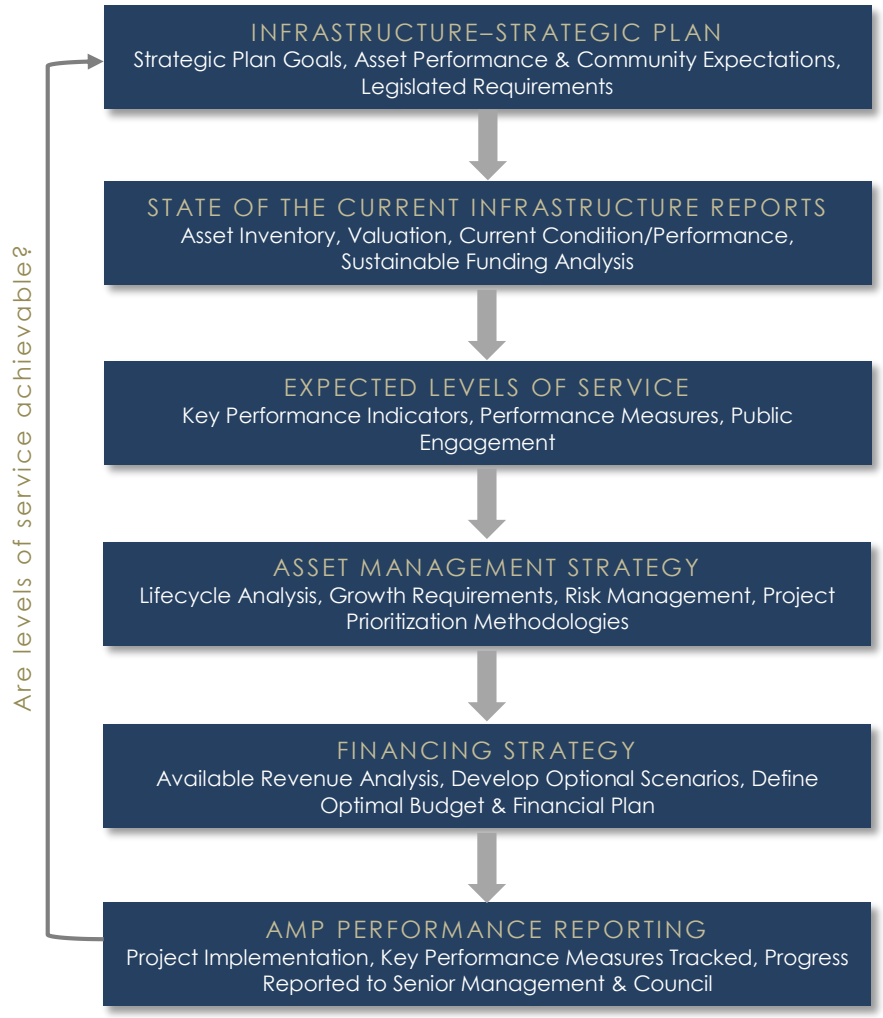
2.3 AMP - Relationship to other Plans

An asset management plan is a key component of the Township's planning process linking with multiple other corporate plans and documents. For example:

- **The Official Plan** – The AMP should utilize and influence the land use policy directions for long-term growth and development as provided through the Official Plan.
- **Long Term Financial Plan** – The AMP should both utilize and conversely influence the financial forecasts within the long-term financial plan.
- **Capital Budget** – The decision framework and infrastructure needs identified in the AMP form the basis on which future capital budgets are prepared.
- **Infrastructure Master Plans** – The AMP will utilize goals and projections from infrastructure master plans and in turn will influence future master plan recommendations.
- **By-Laws, standards, and policies** – The AMP will influence and utilize policies and by-laws related to infrastructure management practices and standards.
- **Regulations** – The AMP must recognize and abide by industry and senior government regulations.
- **Business Plans** – The service levels, policies, processes, and budgets defined in the AMP are incorporated into business plans as activity budgets, management strategies, and performance measures.

2.4 Purpose and Methodology

The following diagram depicts the approach and methodology, including the key components and links between those components that embody this asset management plan:



It can be seen from the above that a Township's general capital and infrastructure planning starts at the corporate level with ties to the strategic plan, alignment to the community's expectations, and compliance with industry and government regulations.

Then, through the State of the Infrastructure analysis, overall asset inventory, valuation, condition and performance are reported. Also, a life cycle analysis of needs for each general capital and infrastructure class is conducted. This analysis yields the sustainable funding level, compared against actual current funding levels, and determines whether there is a funding surplus or deficit for each general capital and infrastructure program. The overall measure of condition and available funding is finally scored for each asset class and presented as a star rating (similar to the hotel star rating) and a letter grade (A-F) within the Infrastructure Report card.

From the lifecycle analysis above, the Township gains an understanding of the level of service provided today for each general capital and infrastructure class and the projected level of service for the future. The next section of the AMP provides a framework for a township to develop a Desired Level of Service (or

target service level) and develop performance measures to track the year-to-year progress towards this established target level of service.
The Asset Management Strategy then provides a detailed analysis for each general capital and infrastructure class. Included in this analysis are best practices and methodologies from within the industry which can guide the overall management of the Township's assets in order to achieve the desired level of service. This section also provides an overview of condition assessment techniques for each asset class; life cycle interventions required, including those interventions that yield the best return on investment; and prioritization techniques, including risk quantification, to determine which priority projects should move forward into the budget first.

The Financing Strategy then fully integrates with the asset management strategy and asset management plan, and provides a financial analysis that optimizes the 10 year infrastructure budget. All revenue sources available are reviewed, such as the tax levy, debt allocations, rates, reserves, grants, gas tax, development charges, etc., and necessary budget allocations are analysed to inform and deliver the general capital and infrastructure programs.

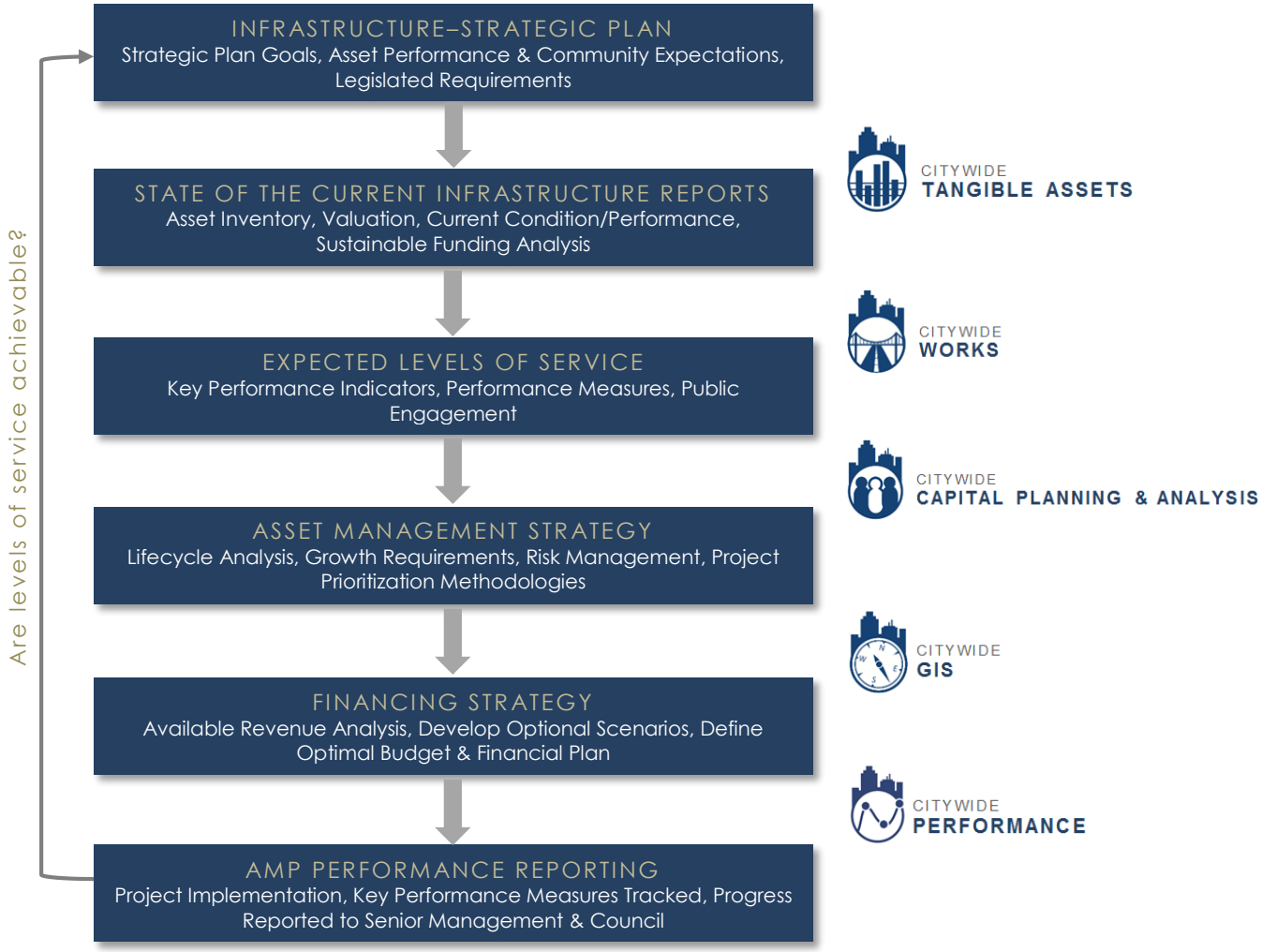
Finally, in subsequent updates to this AMP, actual project implementation will be reviewed and measured through the established performance metrics to quantify whether the desired level of service is achieved or achievable for each general capital and infrastructure class. If shortfalls in performance are observed, these will be discussed and alternate financial models or service level target adjustments will be presented.

2.5 CityWide Software alignment with AMP

The plan will be built and developed hand in hand with a database of municipal general capital and infrastructure information in the CityWide software suite of products. The software will ultimately contain the Township's asset base, valuation information, life cycle activity predictions, costs for activities, sustainability analysis, project prioritization parameters, key performance indicators and targets, 10 year asset management strategy, and the financial plan to deliver the required infrastructure budget.

The software and plan will be synchronized, and will evolve together year-to-year as more detailed information becomes available. This synchronization will allow for ease of updates, modeling and scenario building, and annual reporting of performance measures and results. This will allow for continuous improvement of the plan and its projections. It is therefore recommended that it is revisited and updated on an annual basis.

The following diagram outlines the various CityWide software products and how they align to the various components of the AMP.



3.0 State of the Infrastructure (SOTI)

3.1 Objective and Scope

Objective: To identify the state of the Township's general capital and infrastructure today and the projected state in the future if current funding levels and management practices remain status quo.

The analysis and subsequent communication tools will outline future asset requirements, will start the development of tactical implementation plans, and ultimately assist the organization to provide cost effective sustainable services to the current and future community.

The approach was based on the following key industry state of the infrastructure documents:

- Canadian Infrastructure Report Card
- City of Hamilton's State of the Infrastructure reports
- Other Ontario Municipal State of the Infrastructure reports

The above reports are themselves based on established principles found within key, industry best practices documents such as:

- The National Guide for Sustainable Municipal Infrastructure (Canada)
- The International Infrastructure Management Manual (Australia / New Zealand)
- American Society of Civil Engineering Manuals (U.S.A.)

Scope: Within this State of the Infrastructure report, a high level review will be undertaken for the following asset classes:

1. **Road Network:** Paved road, sidewalk, signs and streetlights
2. **Bridges & Culverts**: Bridges and large culverts with a span greater than 3m
3. **Water Network:** Water mains, pump house, hydrants, standpipes, water connection and water wells.
4. **Sanitary Sewer Network:** Sanitary sewer mains, lagoons & pumping station
5. **Storm Sewer Network:** Storm sewer mains
6. **Facilities:** All corporate and community facilities
7. **Land Improvement:** Arena, ball park, cement pad, driveway and parking lot, landscaping, tennis/basketball courts and trails.
8. **Equipment:** Electronic equipment, general equipment and furniture and fixtures
9. **Vehicles:** heavy and light fleet

3.2 Approach

The asset classes above were reviewed at a very high level due to the nature of data and information available. Subsequent detailed reviews of this analysis are recommended on an annual basis, as more detailed conditions assessment information becomes available for each general capital and infrastructure program.

3.2.1 Base Data

In order to understand the full inventory of general capital and infrastructure assets within Huron-Kinloss, all tangible capital asset data, as collected to meet the PSAB 3150 accounting standard, was loaded into the CityWide Tangible Asset™ software module. This data base now provides a detailed and summarized inventory of assets as used throughout the analysis within this report and the entire Asset Management Plan.

3.2.2 Asset Deterioration Review

Without detailed condition assessment information captured holistically across entire asset networks (e.g. the entire road network), the deterioration review will rely on the "straight line" amortization schedule approach provided from the accounting data. Although this approach is not as accurate for full life cycle

analysis as the use of detailed condition data, it does provide a very good benchmark of future requirements. Essentially, as each asset is analyzed individually uncertainty-based inaccuracies tend to balance one another out across the entire asset category. It provides a very good approach for a high level review.

3.2.3 Identify Sustainable Investment Requirements

A gap analysis was performed to identify sustainable investment requirements for each asset category. Information on current spending levels and budgets was acquired from the organization, future investment requirements were calculated, and the gap between the two was identified.

The above analysis is performed by using investment and financial planning models, and life cycle costing analysis, embedded within the CityWide software suite of applications.

3.2.4 Asset Rating Criteria

Each asset category will be rated on two key dimensions:

- **Condition vs. Performance**: Based on the condition of the asset today and how well it performs its function.
- **Funding vs. Need**: Based on the actual investment requirements to ensure replacement of the asset at the right time, versus current spending levels for each asset group.

3.2.5 Infrastructure Report Card

The dimensions above will be based on a simple 1–5 star rating system, which will be converted into a letter grading system ranging from A-F. An average of the two ratings will be used to calculate the combined rating for each asset class. The outputs for all municipal assets will be consolidated within the CityWide software to produce one overall Infrastructure Report Card showing the current state of the assets.

Grading Scale: Condition vs. Performance

What is the condition of the asset today and how well does it perform its function?

Star Rating	Letter Grade	Color Indicator	Description
★★★★★	A		**Excellent**: No noticeable defects
★★★★	B		**Good**: Minor deterioration
★★★	C		**Fair**: Deterioration evident, function is affected
★★	D		**Poor**: Serious deterioration. Function is inadequate
★	F		**Critical**: No longer functional. General or complete failure

Grading Scale: Funding vs. Need

Based on the actual investment requirements to ensure replacement of the asset at the right time, versus current spending levels for each asset group.

Star Rating	Letter Grade	Description
★★★★★	A	**Excellent**: 91 to 100% of need
★★★★	B	**Good**: 76 to 90% of need
★★★	C	**Fair**: 61 to 75% of need
★★	D	**Poor**: 46 – 60% of need
★	F	**Critical**: under 45% of need

3.2.6 General Methodology and Reporting Approach

The report will be based on the seven key questions of asset management as outlined within the National Guide for Sustainable Municipal Infrastructure:

- What do you own and where is it? (inventory)
- What is it worth? (valuation / replacement cost)
- What is its condition / remaining service life? (function & performance)
- What needs to be done? (maintain, rehabilitate, replace)
- When do you need to do it? (useful life analysis)
- How much will it cost? (investment requirements)
- How do you ensure sustainability? (long-term financial plan)

The above questions will be answered for each individual asset category in the following report sections.

3.3 Road Network

B

INFRASTRUCTURE REPORT CARD GRADE

3.3 Road Network

Note: The financial analysis in this section includes paved and tar and chip roads. Gravel roads are excluded from the capital replacement analysis, as by nature, they require perpetual maintenance activities and funding. However, the gravel roads have been included in the Road Network inventory.

3.3.1 What do we own?

As shown in the summary table below, the entire network comprises approximately 663.5 centreline km of road.

Road Network Inventory

Asset Type	Asset Component	Quantity/Units
Road Network	Gravel	412 km
	Paved - Hot Mix Surface	199.20 km
	Paved - Tar/Chip Surface	52.30 km
	Signs	22 units
	Sidewalks	12,699 m
	Streetlights	602 units

The road network data was extracted from the Tangible Capital Asset and G.I.S. modules of the CityWide software suite.

3.3.2 What is it worth?

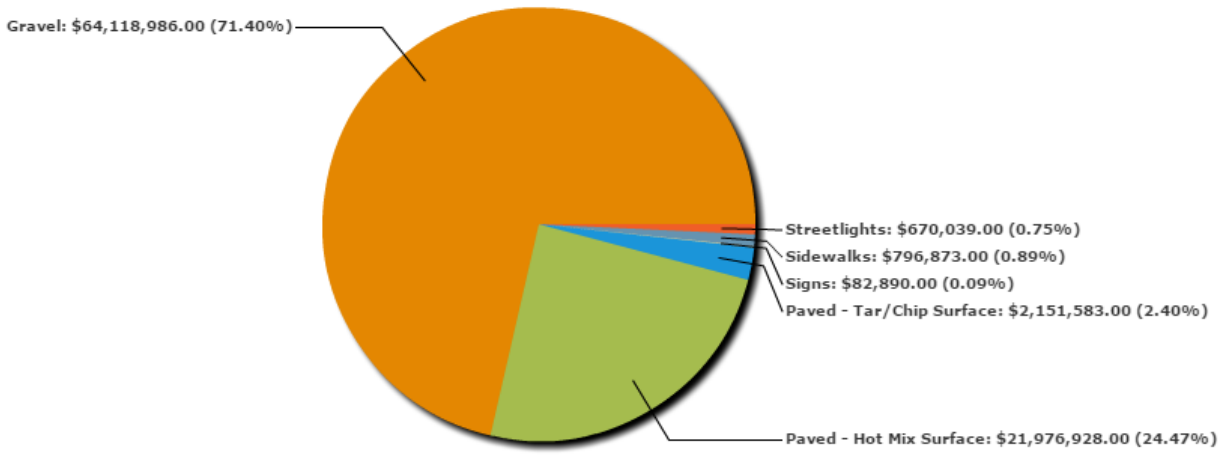
The estimated replacement value of the road network, in 2015 dollars, is approximately $90 million. The cost per household for the road network is $6,509 (excludes gravel) based on 3,945 households.

Road Network Replacement Value

Asset Type	Asset Component	Quantity/Units	2015 Unit Replacement Cost	2015 Overall Replacement Cost
Road Network	Gravel	412 km	NRBCPI Quarterly	64,118,986
	Paved - Hot Mix Surface	199.20 km	NRBCPI Quarterly	21,976,928
	Paved - Tar/Chip Surface	52.30 km	NRBCPI Quarterly	2,151,583
	Signs	22 units	NRBCPI Quarterly	82,890
	Sidewalks	12,166 m	$65.60/m	796,873
	Streetlights	602 units	NRBCPI Quarterly	670,039
				$89,797,299

The pie chart below provides a breakdown of each of the network components to the overall system value.

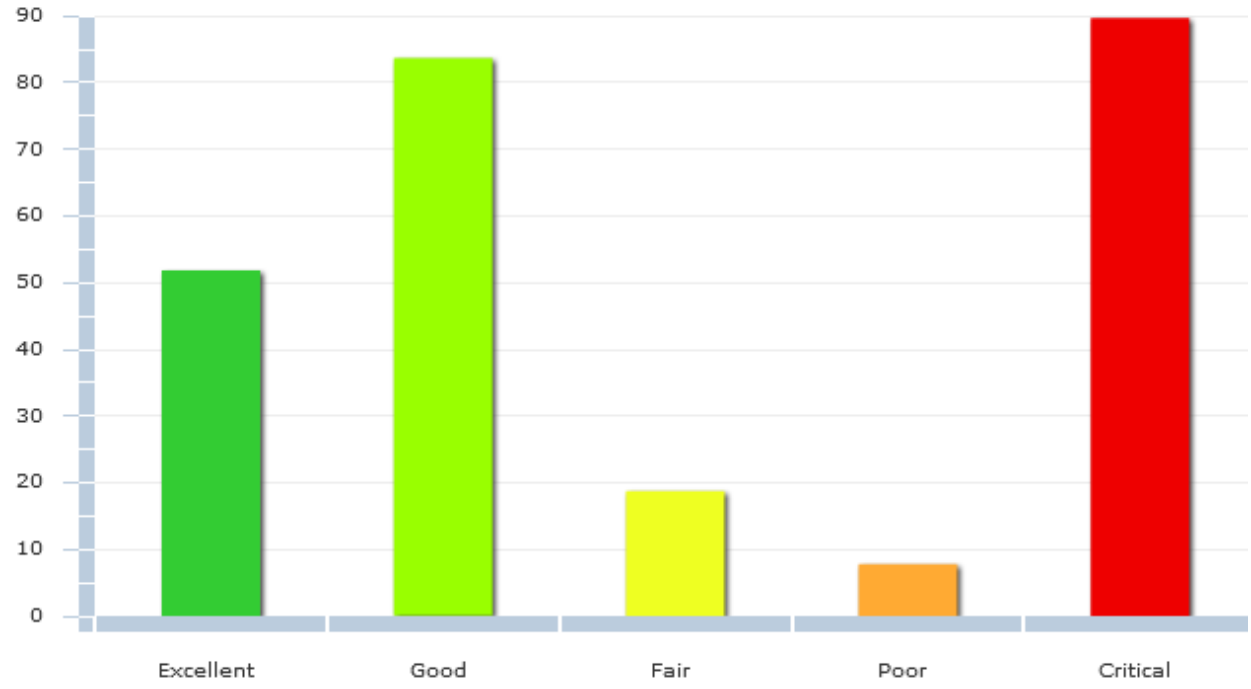
Road Network Components



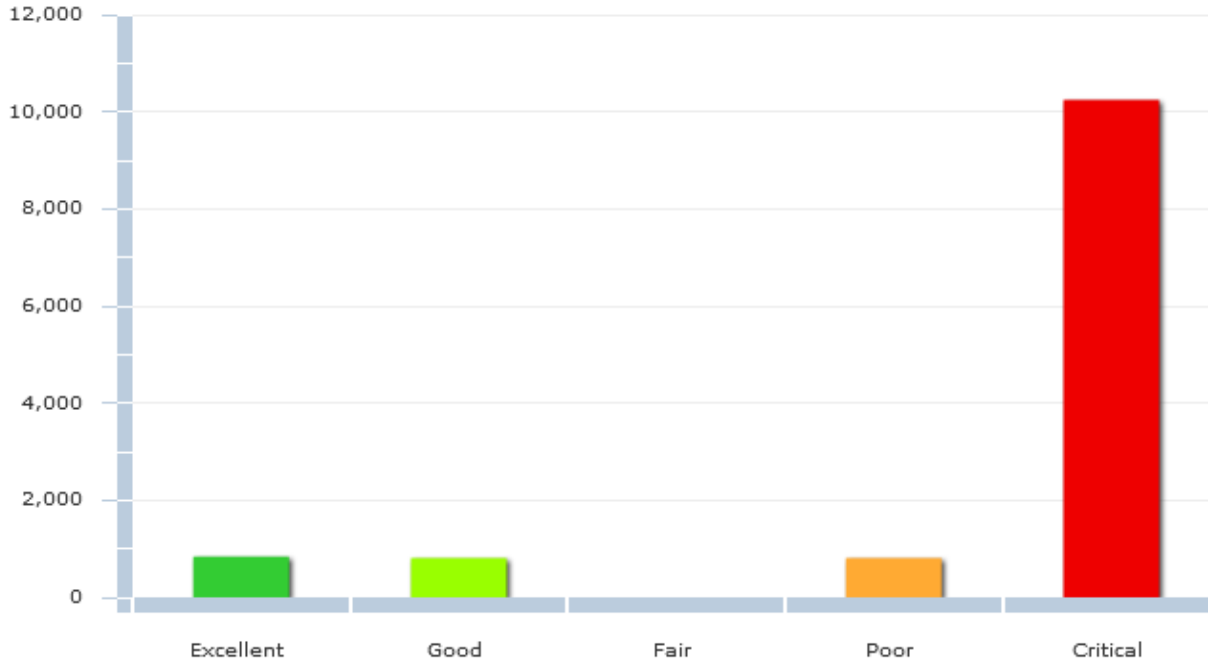
3.3.3 What condition is it in?

Based on age analysis only, the majority, 61%, of the Township's paved road network is in fair to excellent condition, while 87% of the sidewalk is in poor to critical condition. As such, the Township received a Condition vs. Performance rating of 'C'.

Paved Road Network Condition by Length (km) (excluding gravel roads)



Sidewalk Condition in Length (m)



3.3.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle that require specific types of attention and lifecycle activity. These are presented at a high level for the road network below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Life Stage
Minor maintenance	Activities such as inspections, monitoring, sweeping, winter control, etc.	1st Qtr
Major maintenance	Activities such as repairing pot holes, grinding out roadway rutting, and patching sections of road.	2nd Qtr
Rehabilitation	Rehabilitation activities such as asphalt overlays, mill and paves, etc.	3rd Qtr
Replacement	Full road reconstruction	4th Qtr

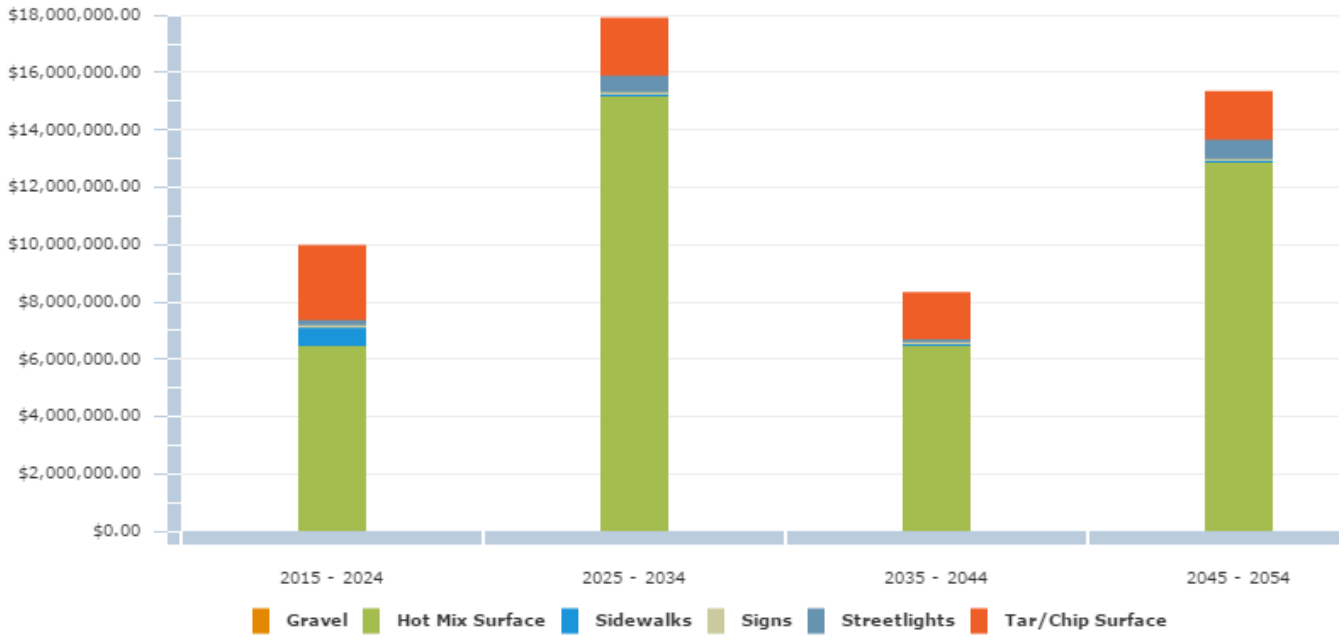
3.3.5 When do we need to do it?

For the purpose of this report, 'useful life' data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets. These needs are calculated and quantified in the system as part of the overall financial requirements.

Asset Useful Life in Years		
Asset Type	Asset Component	Useful Life
Road Network	Gravel	100
	Paved - Hot Mix Surface	20
	Paved - Tar/Chip Surface	8 to 20
	Signs	10
	Sidewalk	40
	Streetlights	15

As additional field condition information for sidewalks, streetlights, and road becomes available, the data can be loaded into the CityWide system to increase the accuracy of current asset age and, therefore, that of future replacement requirements. The following graph shows the projection of road network replacement costs based on age condition assessments.

Road Network Replacement Profile (excludes gravel roads)



3.3.6 How much money do we need?

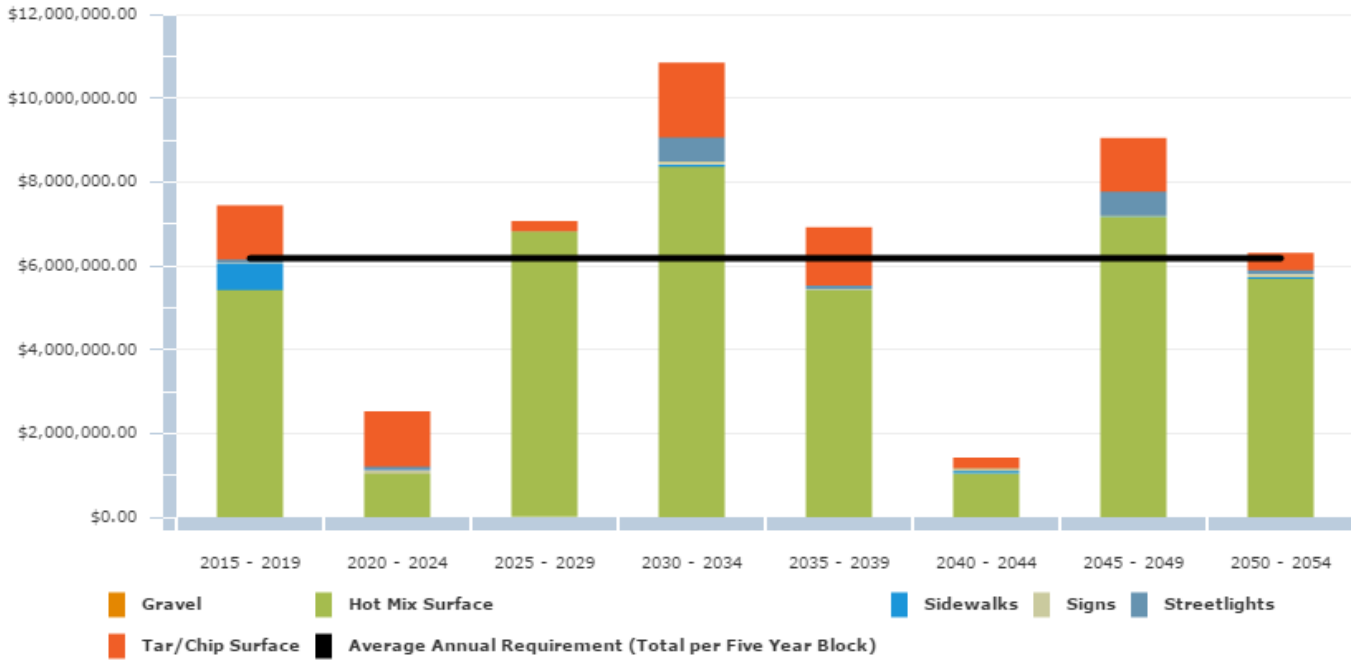
The analysis completed to determine capital revenue requirements was based on the following constraints and assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section.
2. The timing for individual road replacement was defined by the replacement year as described in the "When do you need to do it?" section.
3. All values are presented in 2015 dollars.
4. The analysis was run for a 40 year period to ensure all assets went through at least one iteration of replacement, therefore providing a sustainable projection.

3.3.7 How do we reach sustainability?

Based upon the above parameters, the average annual revenue required to sustain Huron-Kinloss' paved road network is approximately **$1,236,000**. Based on Huron-Kinloss' current annual funding of **$1,167,000,** there is an annual **deficit of $69,000**. Given this deficit, the Township received a Funding vs. Need rating of 'A'. The following graph illustrates the expenditure requirements in five year increments against the sustainable funding threshold line.

Sustainable Funding Requirements (excludes gravel roads)



In conclusion, based primarily on age based condition assessments, the road network is generally in fair condition, however there are still needs to be addressed within the next 5 years totaling approximately $7.4 million. Based on this information, a condition assessment program should be established for the entire road network to gain a better understanding of current condition and performance as outlined further within the "Asset Management Strategy" section of this AMP.

3.3.8 Recommendations

The Township received an overall rating of 'B' for its road network, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A condition assessment program should be established for the entire paved road network and sidewalk to gain a better understanding of current condition and performance as outlined further within the "Asset Management Strategy" section of this AMP.

2. A tailored life cycle activity framework should be also be developed by the Township as outlined further within the "Asset Management Strategy" section of this AMP.

3. As approximately 62% of the Township's road network is gravel roads, a detailed study should be undertaken to assess the overall maintenance costs of gravel roads and whether there is benefit to converting some gravel roads to paved, or surface treated roads, thereby reducing future costs. This is further outlined within the "Asset Management Strategy" section of this AMP.

4. Once the above studies are complete or underway, the data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.

5. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.

6. The Infrastructure Report Card should be updated on an annual basis.

3.4 Bridges & Culverts

F

INFRASTRUCTURE REPORT CARD GRADE

3.4 Bridges & Culverts

3.4.1 What do we own?

As shown in the summary table below, the Township owns 89 bridge components and 48 culverts

Bridges & Culverts Inventory

Asset Type	Asset Component	Quantity/Units
Bridges & Culverts	Bridges (Foundation, Guide Rail and Superstructure & Deck)	89
	Culverts	48

The bridges & culverts data was extracted from the Tangible Capital Asset and G.I.S. modules of the CityWide software suite.

3.4.2 What is it worth?

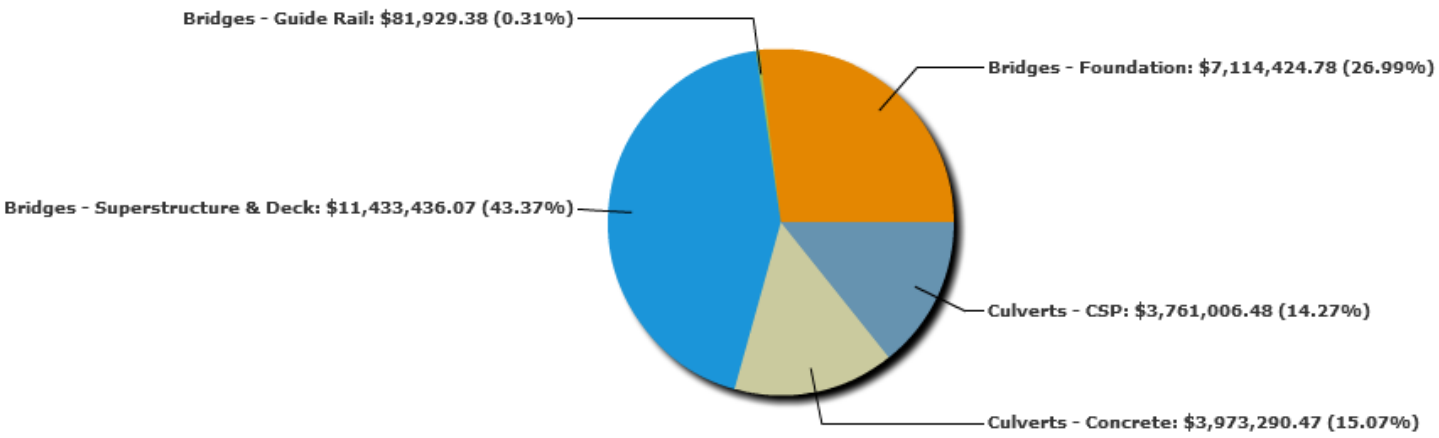
The estimated replacement value of the Township's bridges & culverts, in 2015 dollars, is approximately $26 million. The cost per household for bridges & culverts is $6,683 based on 3,945 households.

Bridges & Culverts Replacement Value

Asset Type	Asset Component	Quantity/Units	2015 Unit Replacement Cost	2015 Replacement Cost
Bridges & Culverts	Bridges - Foundation	43	NRBCPI Quarterly	7,114,425
	Bridges - Guide Rail	3	NRBCPI Quarterly	81,929
	Bridges - Superstructure & Deck	43	NRBCPI Quarterly	11,433,436
	Culverts - Concrete	20	NRBCPI Quarterly	3,973,290
	Culverts - CSP	28	NRBCPI Quarterly	3,761,006
				26,364,087

The pie chart below provides a breakdown of each of the bridges & culverts components to the overall structures value.

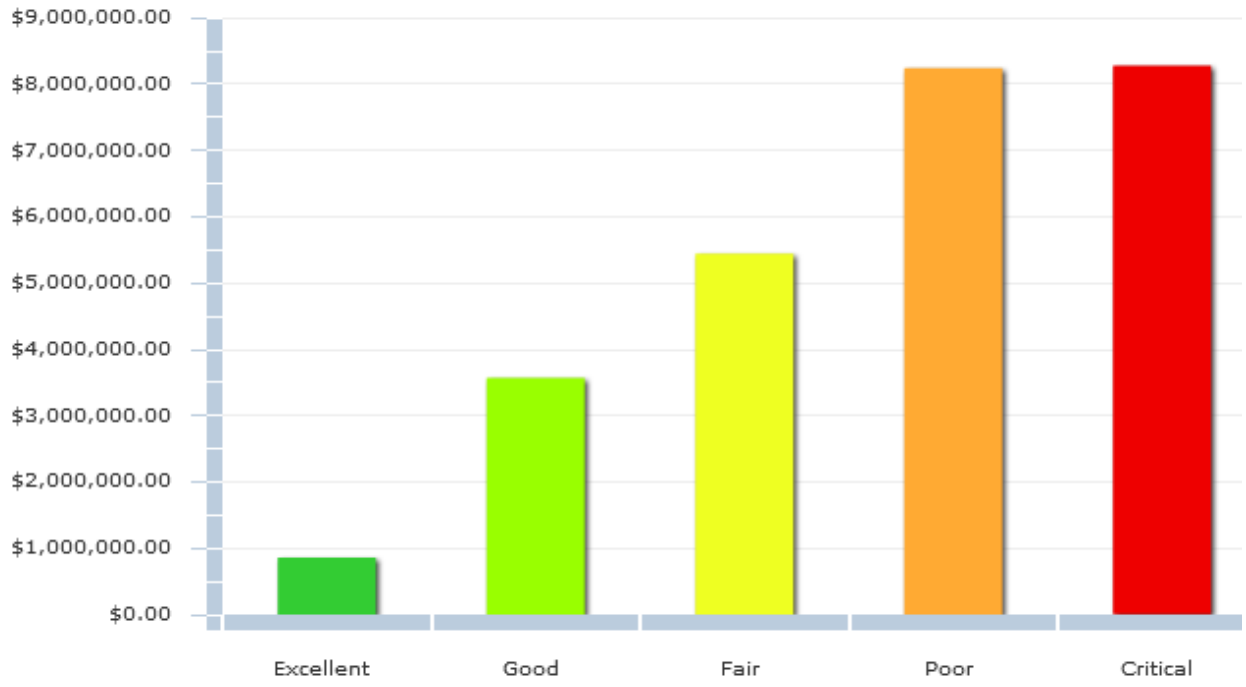
Bridges & Culverts Components



3.4.3 What condition is it in?

According to the age based condition rating, 37% of the bridges and culverts network is in excellent to fair condition while the rest are in poor to critical condition. As such, the Township received a Condition vs. Performance rating of 'D'.

Bridge Structure Condition by Replacement Cost



3.4.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the bridge and culvert structures below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Life Stage
Minor Maintenance	Activities such as inspections, monitoring, sweeping, winter control, etc.	1st Qtr
Major Maintenance	Activities such as repairs to cracked or spalled concrete, damaged expansion joints, bent or damaged railings, etc.	2nd Qtr
Rehabilitation	Rehabilitation events such as structural reinforcement of structural elements, deck replacements, etc.	3rd Qtr
Replacement	Full structure reconstruction	4th Qtr

3.4.5 When do we need to do it?

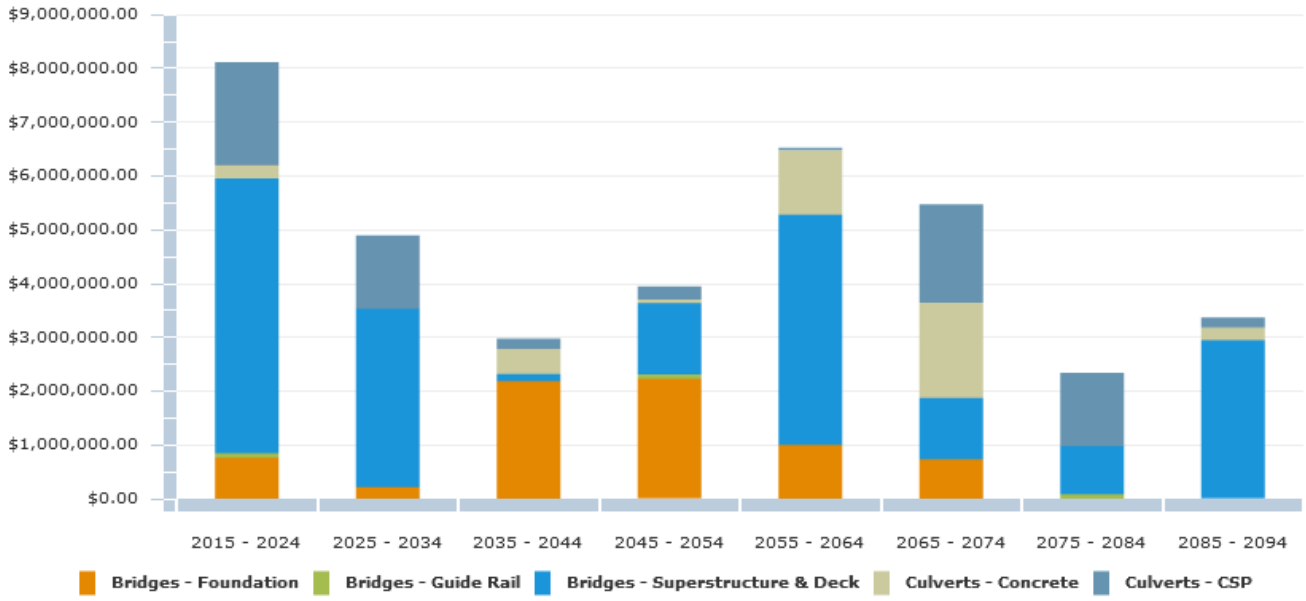
For the purpose of this report, 'useful life' data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years

Asset Type	Asset Component	Useful Life in Years
Bridges & Culverts	Bridges - Foundation	80
	Bridges - Guide Rail	30
	Bridges - Superstructure & Deck	30 to 40
	Culverts - Concrete	80
	Culverts - CSP	50

The following graph shows the current projection of bridges and culverts replacements based on a combination of field condition assessments and age analysis of the assets.

Bridges and Culverts Network Replacement Profile



3.4.6 How much money do we need?

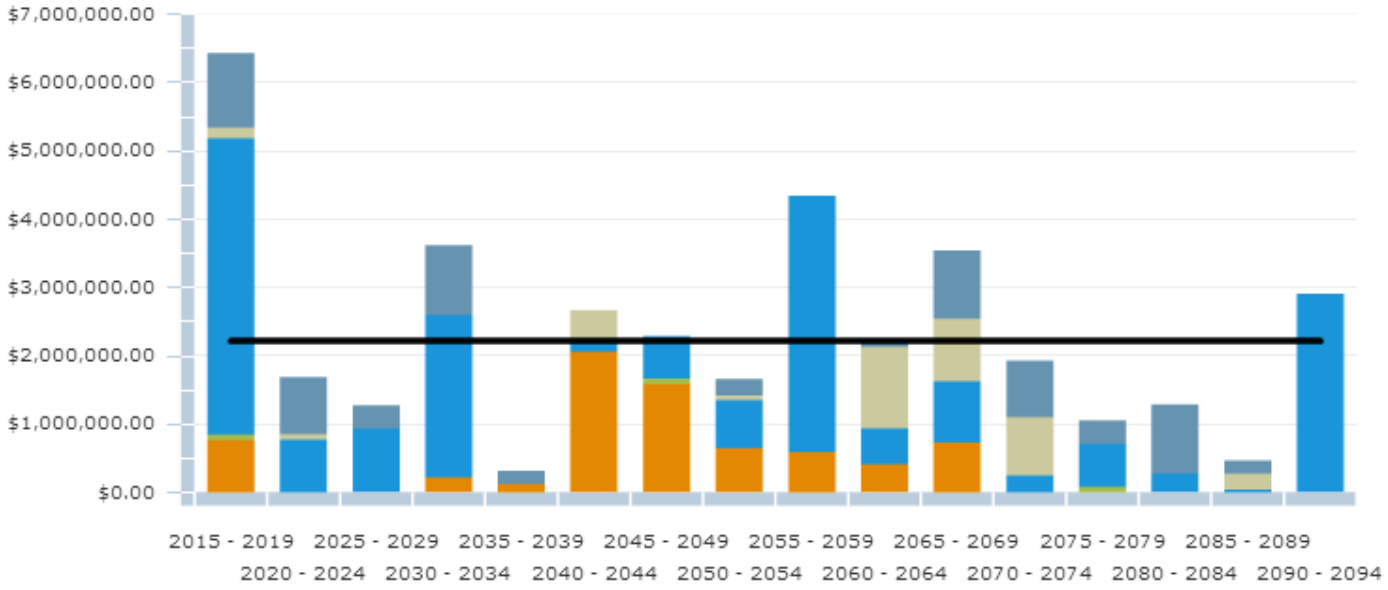
The analysis completed to determine capital revenue requirements was based on the following constraints and assumptions:

1. Replacement costs are based upon the "What is it worth" section above.
2. The timing for individual structure replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2015 dollars.
4. The analysis was run for a 80 year period to ensure all assets cycled through at least one iteration of replacement, therefore providing a sustainable projection.

3.4.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' bridges & culverts is **$444,000**. Based on Huron-Kinloss' current annual funding of **$197,000**, there is an annual **deficit of $247,000**. As such, the Township received a Funding vs. Need rating of 'F'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.

Sustainable Revenue Requirement



In conclusion, based on age based conditions, the majority of bridges and large structures are in poor condition. There are some significant needs to be addressed within the 5 year window of approximately $6.4 million. A condition assessment program should be established for all structures to gain a better understanding of current condition and performance as outlined further within the "Asset Management Strategy" section of this AMP.

3.4.8 Recommendations

The Township received an overall rating of 'F' for its bridges & culverts, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A condition assessment program should be established for all structures to gain a better understanding of current condition and performance as outlined further within the "Asset Management Strategy" section of this AMP.

2. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and added to future AMP reporting.

3. The Infrastructure Report Card should be updated on an annual basis.

3.5 Water Network

C

INFRASTRUCTURE REPORT CARD GRADE

3.5 Water Network

3.5.1 What do we own?

Huron-Kinloss is responsible for the following water network inventory which includes approximately 88.8 km of water mains:

Water Network Inventory

Asset Type	Asset Component	Quantity
Water Network	Water Mains (< 100 mm) - PVC	9,452 m
	Water Mains (100 to 250mm) - PVC	64,971 m
	Water Mains (300 to 450mm) - PVC	2,685 m
	Water Mains (100 to 300mm) - Iron Ductile	5,136 m
	Water Mains (100 to 250mm) - Cast Iron	3,584 m
	Water Mains (<51mm) - Copper	1,718 m
	Water Mains (50 to 150mm) - Other[1]	1,071 m
	Water Mains - Unknown	181 m
	Hydrants	441 units
	Standpipes (includes components)[2]	5 units
	Water Connections (19 mm to 25 mm)	9 units
	Water Pumphouses (includes components)[3]	65 units
	Water Wells (includes components)	14 units

The water network data was extracted from the Tangible Capital Asset and G.I.S. modules of the CityWide software suite.

[2] Inside & outside services electrical, yard pipe and structures and outside services fence.

[3] Inside & outside service electrical, inside services mechanical, inside services genset, inside services monitoring and control, inside services chemical feed pump, generator room, pumphouse & reservoir, 450-600 mm contact watermain and outside services (electrical, fence, yard pipe & structure).

3.5.2 What is it worth?

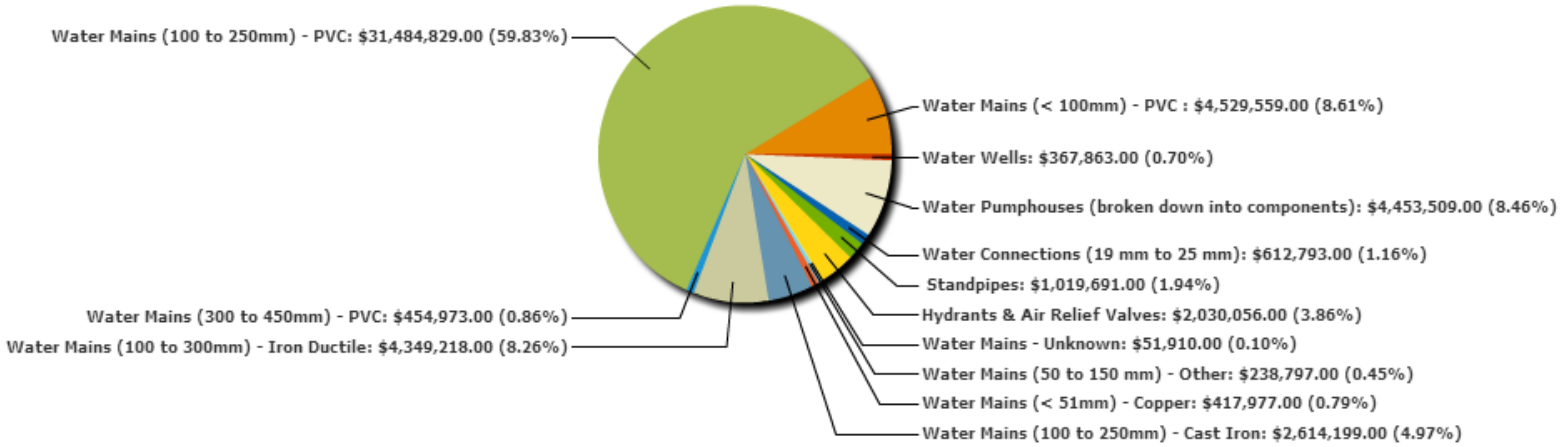
The estimated replacement value of the water network, in 2015 dollars, is approximately $53 million. The cost per household for the water network is $15,662 based on 3,360 households.

Water Network Replacement Value

Asset Type	Asset Component	Quantity	2015 Unit Replacement Cost	2015 Overall Replacement Cost ($)
Water Network	Water Mains (< 100mm) - PVC	9,452 m	NRBCPI	4,529,559
	Water Mains (100 to 250mm) - PVC	64,971 m	NRBCPI	31,484,829
	Water Mains (300 to 450mm) - PVC	2,685 m	NRBCPI	454,973
	Water Mains (100 to 300mm) - Iron Ductile	5,136 m	NRBCPI	4,349,218
	Water Mains (100 to 250mm) - Cast Iron	3,584 m	NRBCPI	2,614,199
	Water Mains (< 51mm) - Copper	1,718 m	NRBCPI	417,977
	Water Mains (50 to 150 mm) - Other[4]	1,071 m	NRBCPI	238,797
	Water Mains - Unknown	181 m	NRBCPI	51,910
	Hydrants	441 units	NRBCPI	2,030,056
	Standpipes (includes components)	5 units	NRBCPI	1,019,691
	Water Connections (19 mm to 25 mm)	9 units	NRBCPI	612,793
	Water Pumphouses (includes components)	65 units	NRBCPI	4,453,509
	Water Wells (includes components)	14 units	NRBCPI	367,863
				$52,625,374

The pie chart below provides a breakdown of each of the network components to the overall system value.

Water Network Components

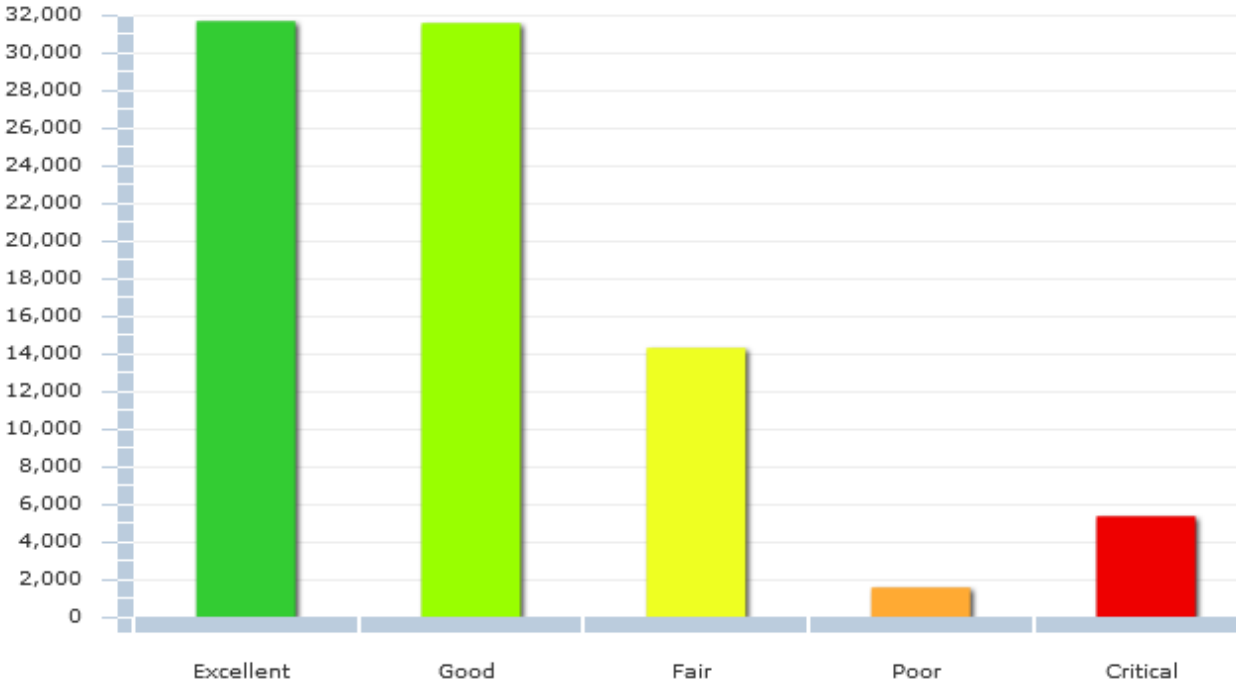


[4] PE and Steel

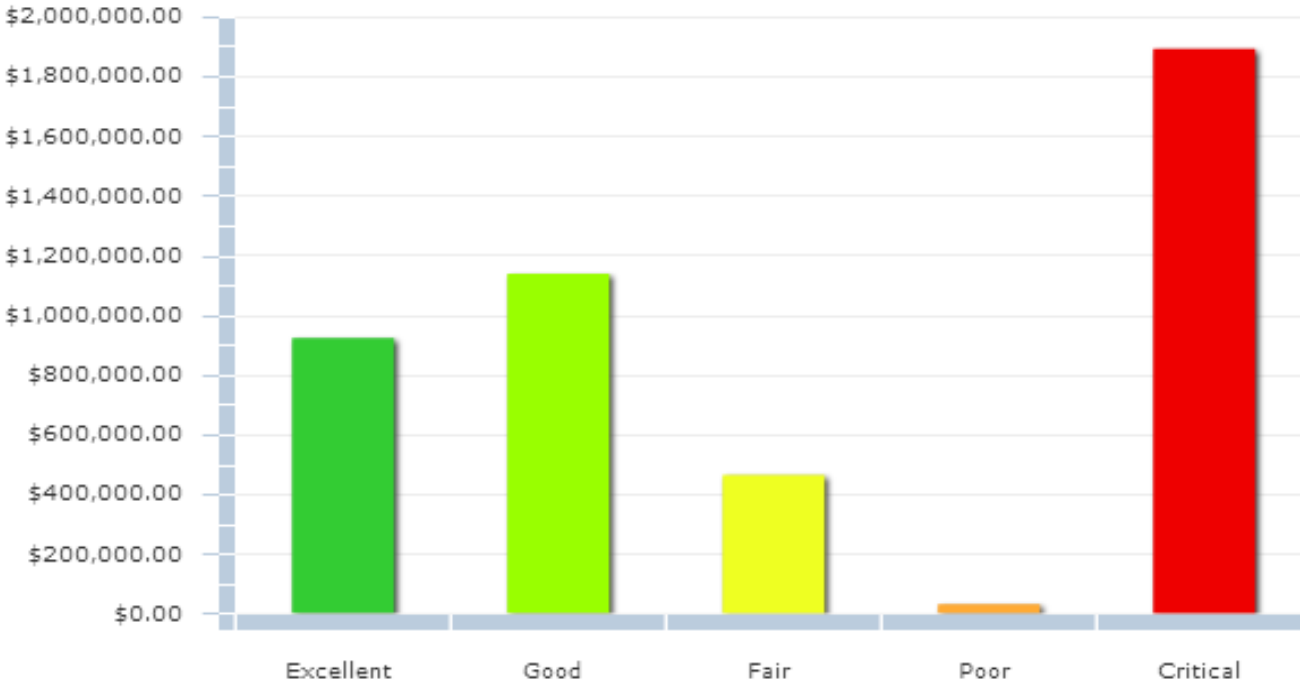
3.5.3 What condition is it in?

According to the age based condition rating, 92% of the Township's water mains and 57% of the Township's water facilities are in fair to excellent condition. Meanwhile 88% of the Township's water wells, connections, standpipes and hydrants are in poor to critical condition. As such, the Township received a Condition vs. Performance rating of 'C+'.

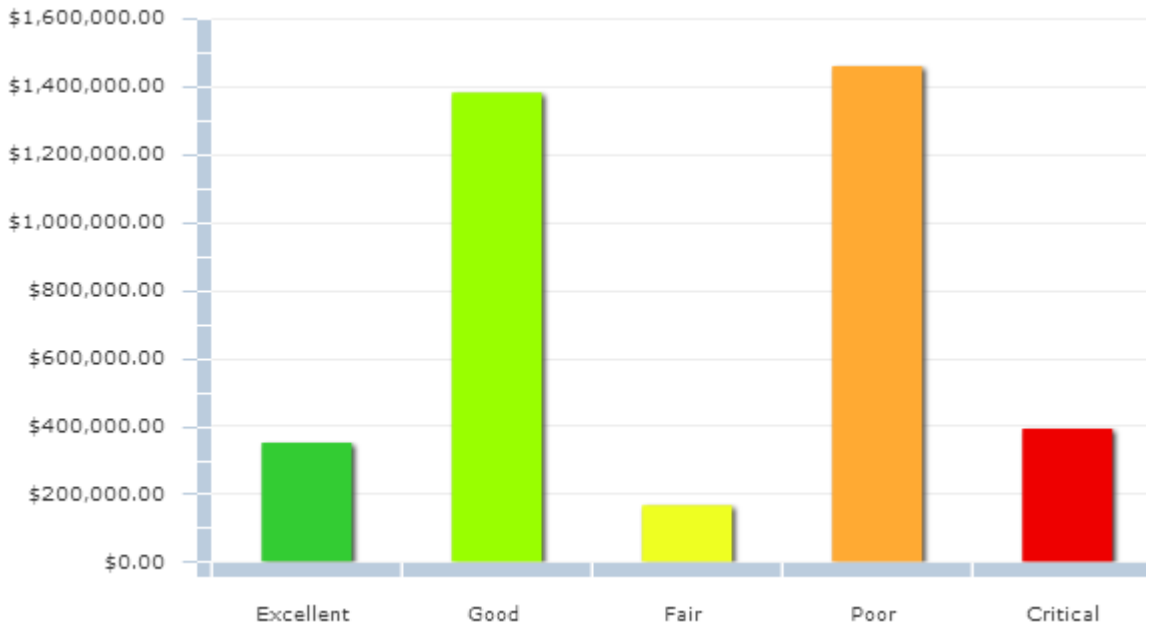
Water Mains Condition by Length (meters)



Water Facilities Condition by Replacement Cost



Wells, Connections, Hydrants & Standpipes Condition by Replacement Cost



3.5.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the water network below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Activities such as inspections, monitoring, cleaning and flushing, hydrant flushing, pressure tests, visual inspections, etc.	1st Qtr
Major Maintenance	Such events as repairing water main breaks, repairing valves, replacing individual small sections of pipe etc.	2nd Qtr
Rehabilitation	Rehabilitation events such as structural lining of pipes and a cathodic protection program to slow the rate of pipe deterioration.	3rd Qtr
Replacement	Pipe replacements	4th Qtr

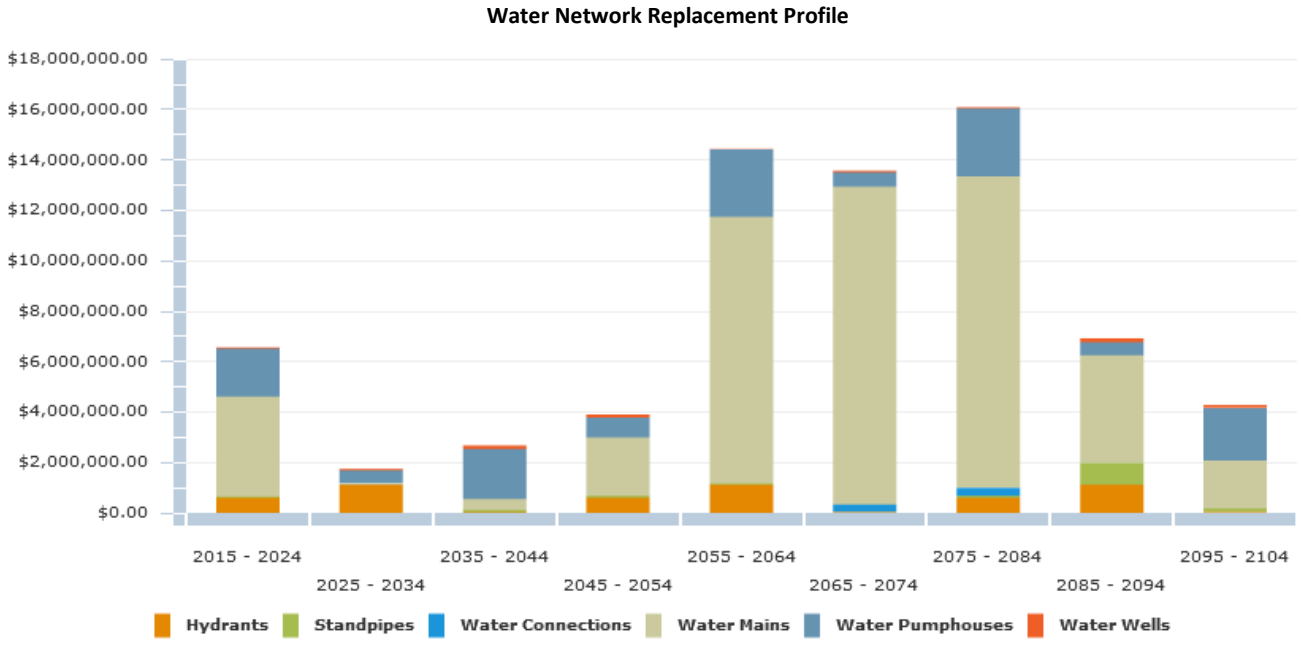
3.5.5 When do we need to do it?

For the purpose of this report "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years

Asset Type	Asset Component	Useful Life in Years
Water Network	Water Mains (< 100mm) - PVC	75
	Water Mains (100 to 250mm) - PVC	75
	Water Mains (300 to 450mm) - PVC	75
	Water Mains (100 to 300mm) - Iron Ductile	75
	Water Mains (100 to 250mm) - Cast Iron	75
	Water Mains (<51mm) - Copper	75
	Water Mains (50 to 150mm)- Others	75
	Water Mains - Unknown	75
	Hydrants	30
	Standpipes (includes components)	20 to 90
	Water Connections (19 mm to 25 mm)	75
	Water Pumphouses (includes components)	20 to 75
	Water Wells (includes components)	20 to 50

The following graph shows the current projection of the water network replacements based on age assessments.



3.5.6 How much money do we need?

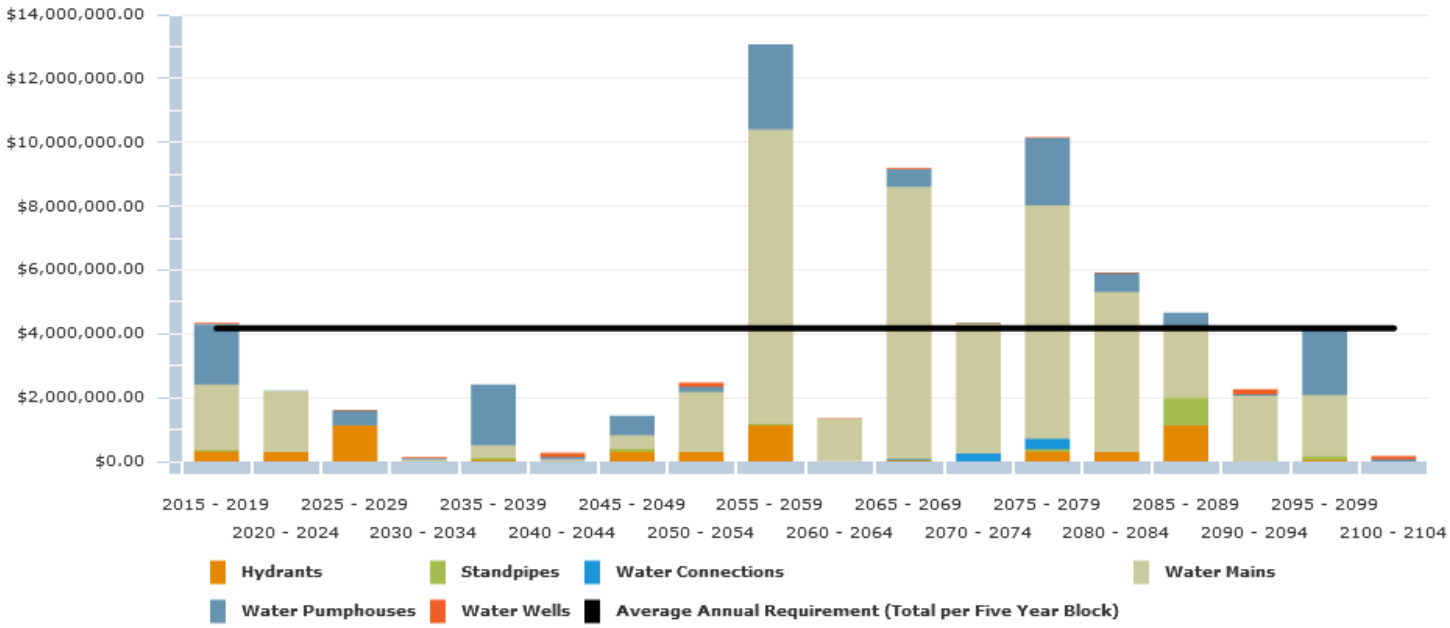
The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for individual water main replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2015 dollars.
4. The analysis was run for a 90 year period to ensure all assets went through at least one iteration of replacement, therefore providing a sustainable projection.

3.5.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' water network is approximately **$833,000**. Based on Huron-Kinloss' current annual funding of **$610,000**, there is a **deficit of $223,000**. As such, the Township received a Funding vs. Need rating of 'C'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.

Sustainable Revenue Requirements



In conclusion, based on age analysis only, Huron-Kinloss' water distribution network is generally in good condition. However, a significant number of facilities assets are in poor condition based on age data only. There are some significant replacement requirements within the 5 year window totaling approximately $4.3 million.

A condition assessment program should be established to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets. Further detail is outlined within the "asset management strategy" section of this AMP.

3.5.8 Recommendations

The Township received an overall rating of 'C' for its water network, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A condition assessment program should be established to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets.

2. Also, a study to define the current condition of the water pump houses and their components (structural, architectural, electrical, mechanical, process, etc.) should be undertaken, as collectively they account for 8.5% of the water infrastructure's value.

3. Once the above studies are complete, a new performance age should be applied to each asset and an updated "current state of the infrastructure" analysis should be generated.

4. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.

3.6 Sanitary Sewer Network

F

INFRASTRUCTURE REPORT CARD GRADE

3.6 Sanitary Sewer Network

3.6.1 What do we own?

The inventory components of the sanitary sewer network are outlined in the table below. The entire Network consists of approximately 26 km of sewer main.

Sanitary Sewer Inventory

Asset Type	Asset Component	Quantity
Sanitary Sewer Network	Sewage Lagoons (Lucknow & Ripley)	2 units
	Sewage Pumping Stations	10 units
	Sanitary Sewers	25,643 m

The Sanitary Sewer Network data was extracted from the Tangible Capital Asset and G.I.S. modules of the CityWide software application.

3.6.2 What is it worth?

The estimated replacement value of the sanitary sewer network, in 2015 dollars, is approximately $23 million. The cost per household for the sanitary network is $22,563 based on 1,016 households.

Sanitary Sewer Replacement Value

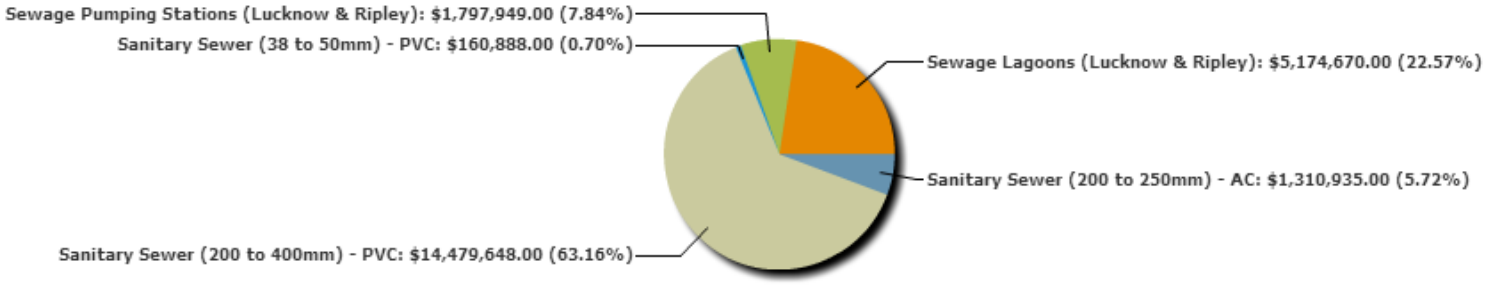
Asset Type	Asset Component	Quantity	2015 Unit Replacement Cost	2015 Overall Replacement Cost ($)
Sanitary Sewer Network	Sewage Lagoons (Lucknow & Ripley)[5]	2 units	NRBCPI	5,174,670
	Sewage Pumping Stations (Lucknow & Ripley)[6]	2 units	NRBCPI	1,797,949
	Sanitary Sewer (38 to 50mm) - PVC	278 m	NRBCPI	160,888
	Sanitary Sewer (200 to 400mm) - PVC	23,394 m	NRBCPI	14,479,648
	Sanitary Sewer (200 to 250mm) - AC	1,744 m	NRBCPI	1,310,935
				$22,924,089

[5] Consists of multiple segments: fence, electrical, mechanical, road, pumping station & valve chamber, yard pipe, control building and infiltration basin.

[6] Consists of multiple segments: submersible pump, outside services, electrical, mechanical and control building.

The pie chart below provides a breakdown of each of the network components to the overall system value.

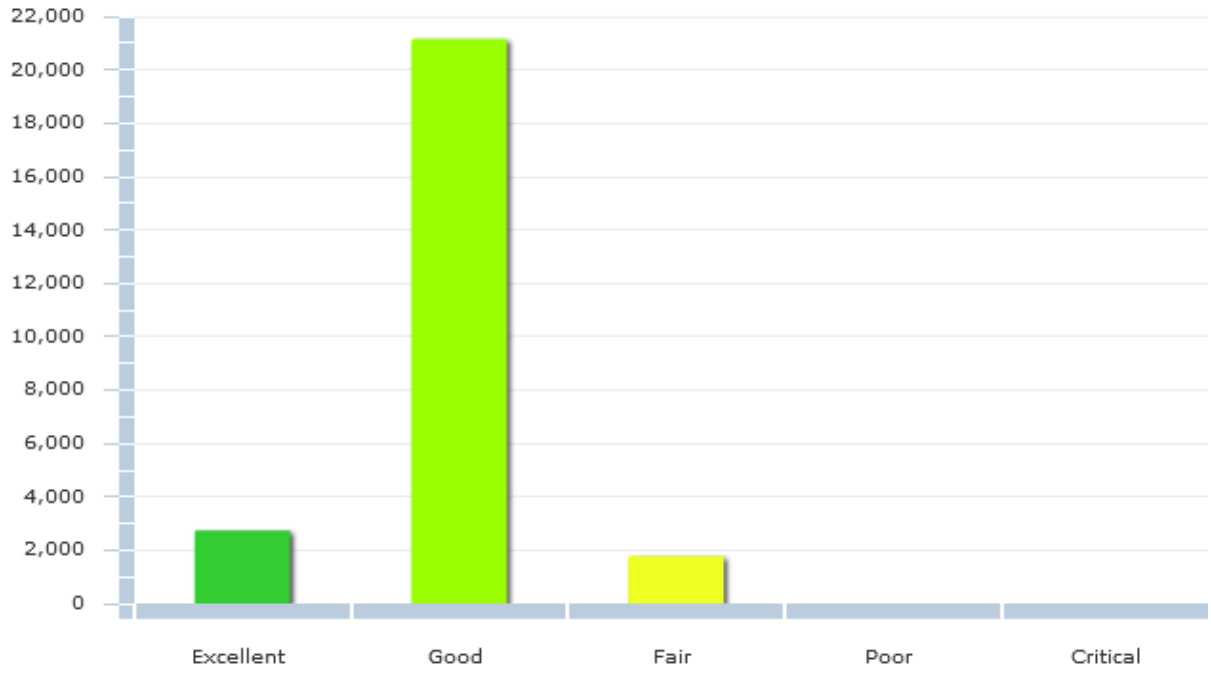
Sanitary Sewer Network Components



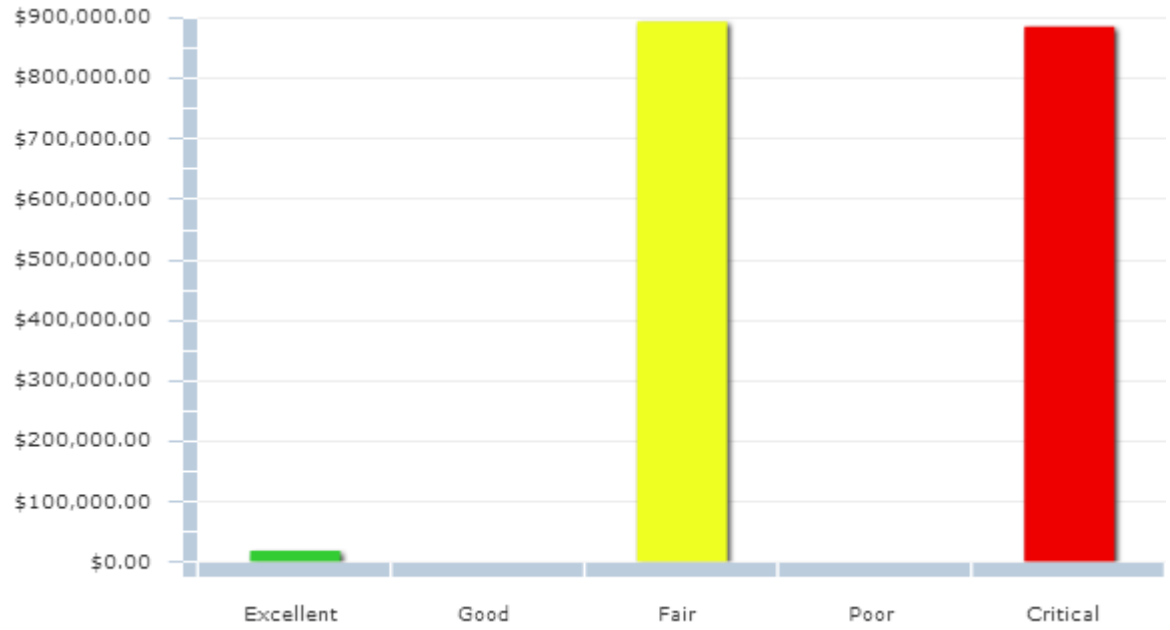
3.6.3 What condition is it in?

According to an age base analysis, while 100% of the Township's sanitary sewer mains are in fair to excellent condition, 49% of its facilities (based on replacement cost) are in poor to critical condition and 100% of the lagoons are in fair to critical condition. As such, the Township received a Condition vs. Performance rating of 'C+'.

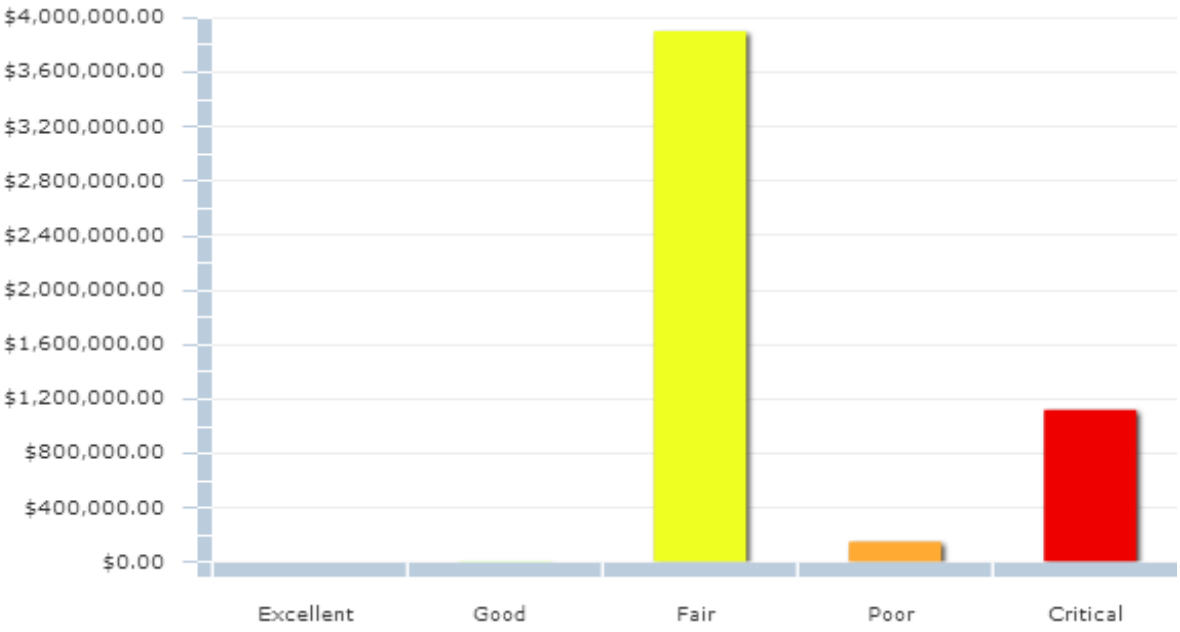
Sanitary Sewer Mains Condition in Length (m)



Wastewater Pumping Station Condition by Replacement Cost



Sewage Lagoon Condition by Replacement Cost



3.6.4 What do we need to do to it?

There are generally four distinct phases in an assets life cycle. These are presented at a high level for the sanitary sewer network below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Life Stage
Minor Maintenance	Activities such as inspections, monitoring, cleaning and flushing, zoom camera and CCTV inspections, etc.	1st Qtr
Major Maintenance	Activities such as repairing manholes and replacing individual small sections of pipe.	2nd Qtr
Rehabilitation	Rehabilitation events such as structural lining of pipes are extremely cost effective and provide an additional 75 plus years of life.	3rd Qtr
Replacement	Pipe replacements	4th Qtr

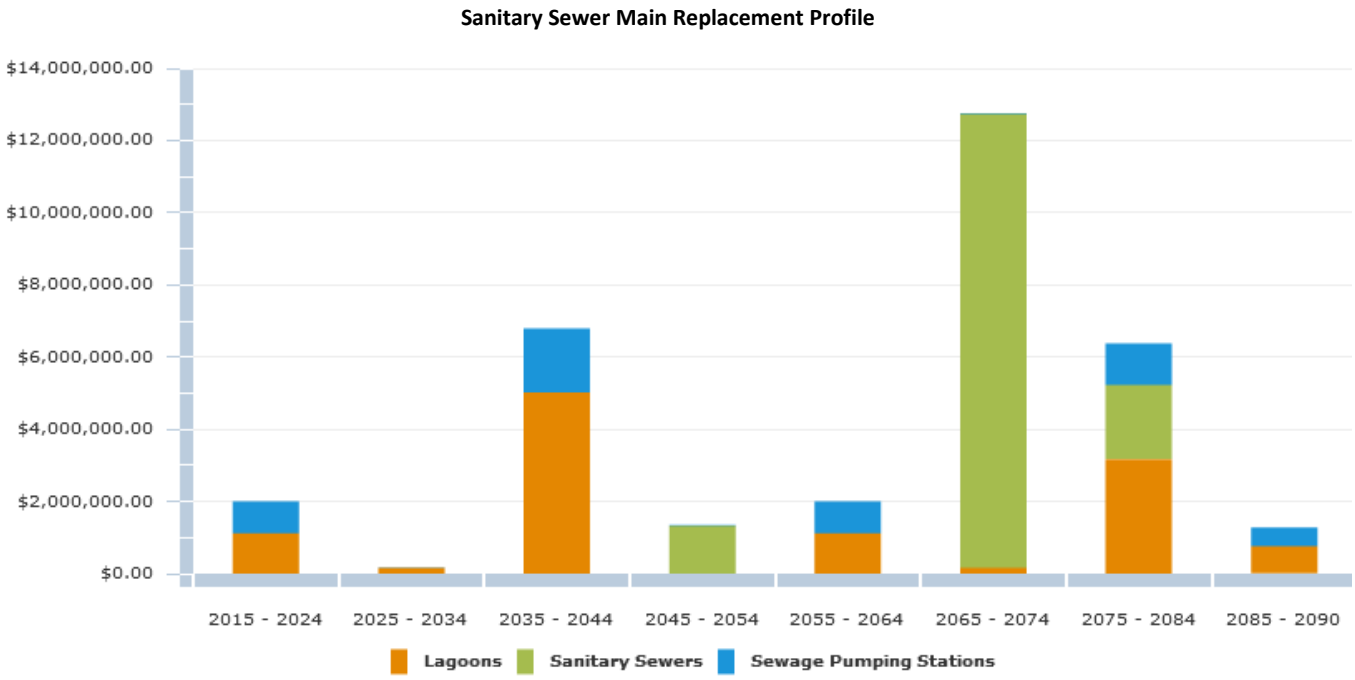
3.6.5 When do we need to do it?

For the purpose of this report, "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years

Asset Type	Asset Component	Useful Life in Years
Sanitary Sewer Network	Sewage Lagoons (Lucknow & Ripley)	20-50
	Sewage Pumping Stations (Lucknow & Ripley)	20-50
	Sanitary Sewer (38 to 50mm) - PVC	75
	Sanitary Sewer (200 to 400mm) - PVC	75
	Sanitary Sewer (200 to 250mm) - AC	75

As field condition information becomes available in time for the facilities, the data should be loaded into the CityWide system in order to increasingly have a more accurate picture of current asset performance age and, therefore, future replacement requirements. The following graph shows the current projection of sanitary sewer main replacements based on the age based conditions of the assets.



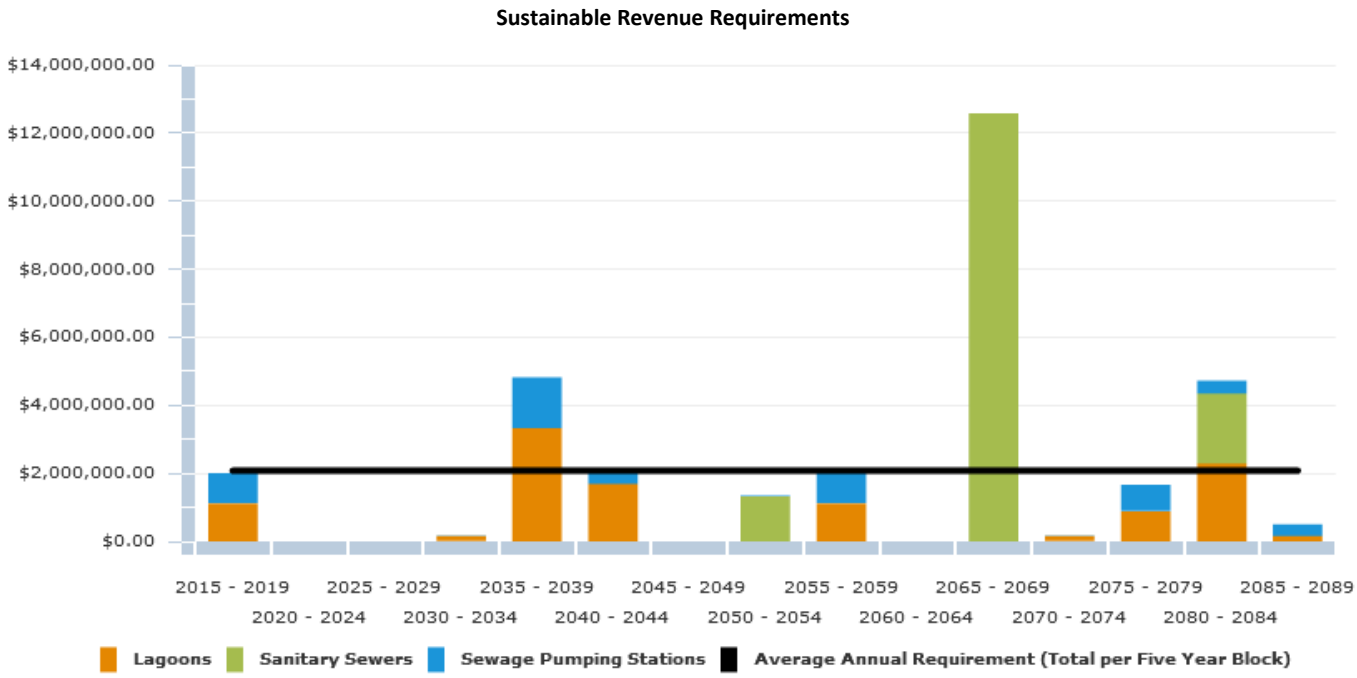
3.6.6 How much money do we need?

The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for individual sewer main replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2015 dollars.
4. The analysis was run for a 75 year period to ensure all assets went through at least one iteration of replacement, therefore providing a sustainable projection.

3.6.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' sanitary sewer network is approximately **$417,000**. Based on Huron-Kinloss' current annual funding of **$26,000**, there is an annual **deficit of $391,000**. As such, the Township received a Funding vs. Need rating of 'F'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.



In conclusion, the sanitary sewer mains, from an age based analysis are generally in fair condition. There is a backlog of needs to be addressed within the next 5 years totaling approximately $2 million. A condition assessment program for the facilities should be established to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets. Further detail is outlined within the "asset management strategy" section of this AMP.

3.6.8 Recommendations

The Township received an overall rating of 'F' for its sanitary sewer network, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A condition assessment program should be established to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets.

2. Also, a detailed study to define the current condition of the sanitary facilities and their components (structural, architectural, electrical, mechanical, process, etc.) should be undertaken, as collectively they account for approximately 7.84% of the sanitary infrastructure's value.

3. Once the above studies are complete or underway, the data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.

4. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.

5. The Infrastructure Report Card should be updated on an annual basis.

3.7 Storm Sewer Network

D

INFRASTRUCTURE REPORT CARD GRADE

3.7 Storm Sewer Network

3.7.1 What do we own?

The inventory components of the Storm Sewer Collection system are outlined in the table below. The entire network consists of approximately 17,000 m of storm sewer mains.

Storm Sewer Network Inventory (Detailed)

Asset Type	Asset Component	Quantity
Storm Sewer Network	Storm Sewers - PVC (100 mm to 675 mm)	4,911 m
	Storm Sewers - AC (250 mm)	30 m
	Storm Sewers - Concrete (100 mm to 900 mm)	10,352 m
	Storm Sewers - CSP (150 mm to 525 mm)	540 m
	Storm Sewers - HDPE (300 mm)	80 m
	Storm Sewers - Other (300 mm to 525 mm)	687 m
	Storm Sewers - Unknown	451 m

The storm sewer network data was extracted from the Tangible Capital Asset and G.I.S. modules of the CityWide software suite.

3.7.2 What is it worth?

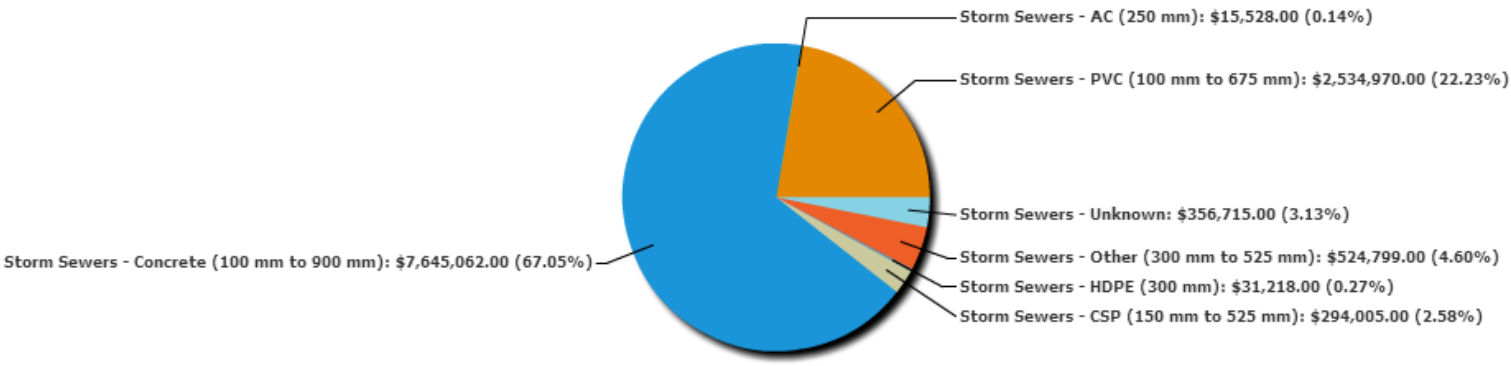
The estimated replacement value of the storm sewer network, in 2015 dollars, is approximately $11 million. The cost per household for the storm sewer network is $2,890 based on 3,945 households.

Storm Replacement Value

Asset Type	Asset Component	Quantity	2015 Unit Replacement Cost	2015 Overall Replacement Cost ($)
Storm Sewer Network	Storm Sewers - PVC (100 mm to 675 mm)	4,911 m	NRBCPI	2,534,970
	Storm Sewers - AC (250 mm)	30 m	NRBCPI	15,528
	Storm Sewers - Concrete (100 mm to 900 mm)	10,352 m	NRBCPI	7,645,062
	Storm Sewers - CSP (150 mm to 525 mm)	540 m	NRBCPI	294,005
	Storm Sewers - HDPE (300 mm)	80 m	NRBCPI	31,218
	Storm Sewers - Other (300 mm to 525 mm)	687 m	NRBCPI	524,799
	Storm Sewers - Unknown mm	451 m	NRBCPI	356,715
				$11,402,297

The pie chart below provides a breakdown of each of the network components to the overall system value.

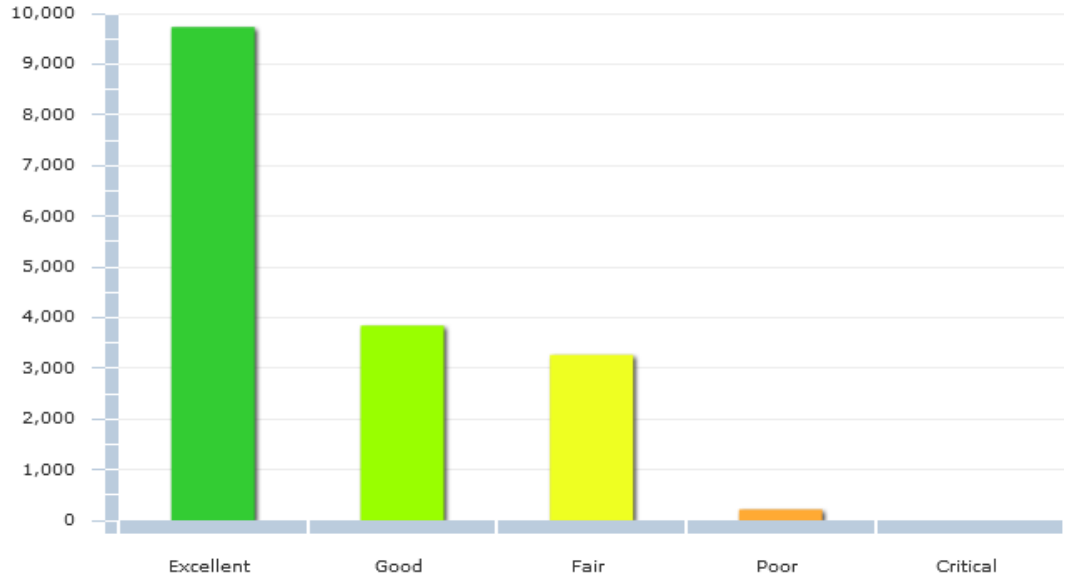
Storm Sewer Network Components



3.7.3 What condition is it in?

99% of the Township's storm sewer mains are in fair to excellent condition based on age analysis. As such, the Township received a Condition vs. Performance rating of 'B'.

Storm Sewer Network Condition by Length (meters)



3.7.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the storm sewer network below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Activities such as inspections, monitoring, cleaning and flushing, zoom camera and CCTV inspections, etc.	1st Qtr
Major Maintenance	Activities such as repairing manholes and replacing individual small sections of pipe.	2nd Qtr
Rehabilitation	Rehabilitation events such as structural lining of pipes are extremely cost effective and provide an additional 75 plus years of life.	3rd Qtr
Replacement	Pipe replacements	4th Qtr

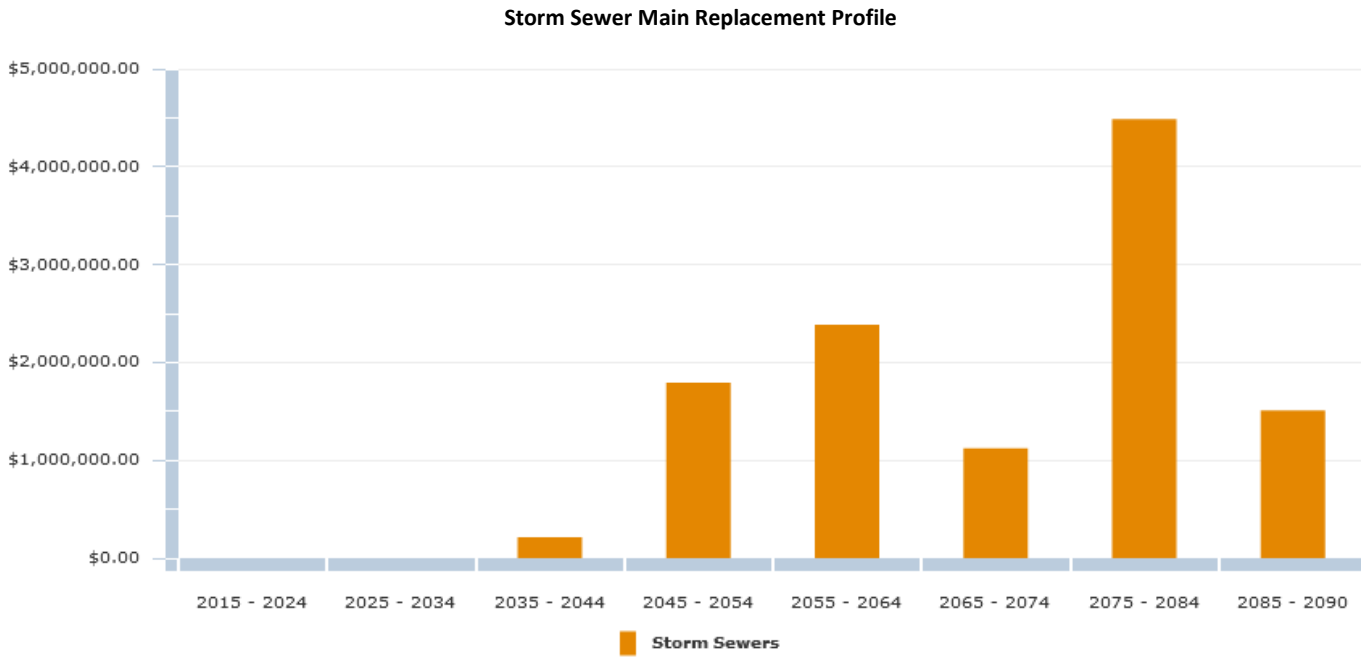
3.7.5 When do we need to do it?

For the purpose of this report "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years

Asset Type	Asset Component	Useful Life in Years
Storm Sewer Network	Storm Sewers - PVC (100 mm to 675 mm)	75
	Storm Sewers - AC (250 mm)	75
	Storm Sewers - Concrete (100 mm to 900 mm)	75
	Storm Sewers - CSP (150 mm to 525 mm)	75
	Storm Sewers - HDPE (300 mm)	75
	Storm Sewers - Other (300 mm to 375 mm)	75
	Storm Sewers - Unknown mm	75

As field condition information becomes available in time, the data should be loaded into the CityWide system in order to increasingly have a more accurate picture of current asset performance age and, therefore, future replacement requirements. The following graph shows the current projection of storm sewer main replacements based on the age of the asset only.



3.7.6 How much money do we need?

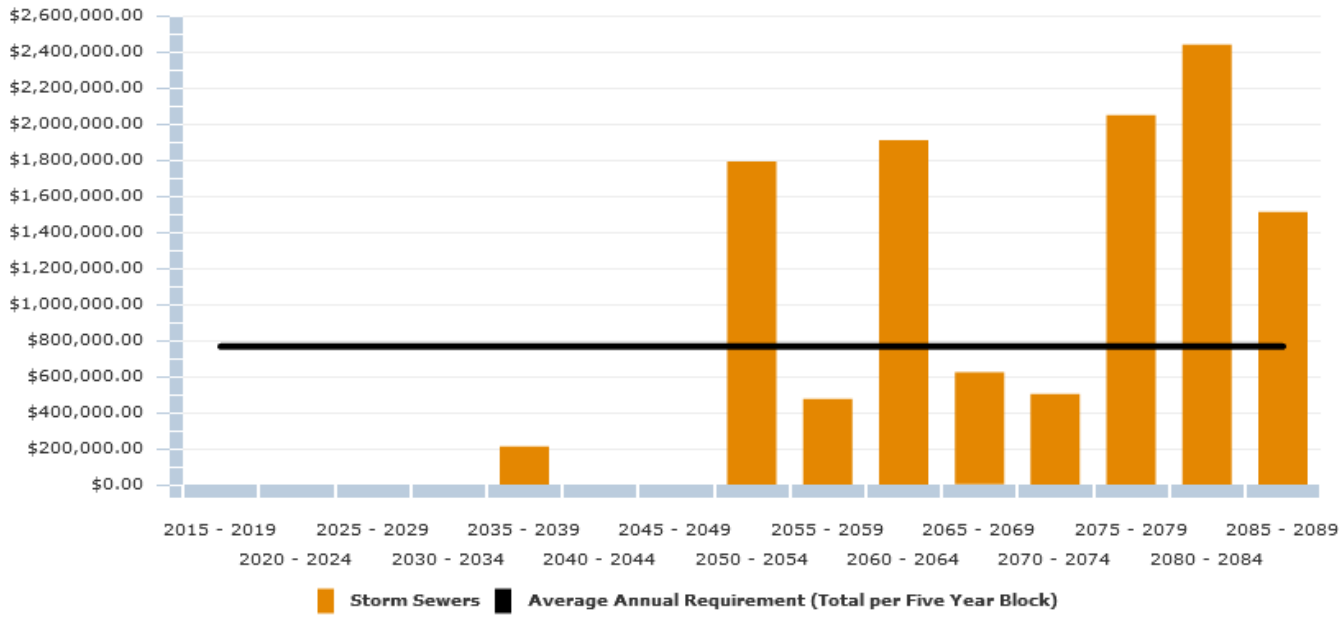
The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for individual storm sewer main replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2015 dollars.
4. The analysis was run for a 75 year period to ensure all assets went through one iteration of replacement, therefore providing a sustainable projection.

3.7.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' storm sewer network is approximately **$153,000**. Based on Huron-Kinloss' current annual funding of **$0**, there is an annual **deficit of $153,000**. As such, the Township received a Funding vs. Need rating of 'F'.

Storm Sewer Main Replacement Profile



In conclusion, Huron-Kinloss' storm sewer collection network, based on age data only, is in very good condition and there are no replacement requirements for a number of decades.

3.7.8 Recommendations

The Township received an overall rating of 'D' for its storm sewer network, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A condition assessment program should be established for the storm sewer network to gain a better understanding of current condition and performance as outlined further within the "Asset Management Strategy" section of this AMP.
2. Once the above study is complete or underway, the condition data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.
3. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
4. The Infrastructure Report Card should be updated on an annual basis.

3.8 Buildings

F

INFRASTRUCTURE REPORT CARD GRADE

3.8 Buildings

3.8.1 What do we own?

The table below outlines the Township's building inventory. The Township of Huron-Kinloss owns a total of 27 buildings.

Buildings Inventory		
Asset Type	Asset Component	Quantity (units)
Buildings	Buildings	27

The buildings data was extracted from the Tangible Capital Asset module of the CityWide software suite.

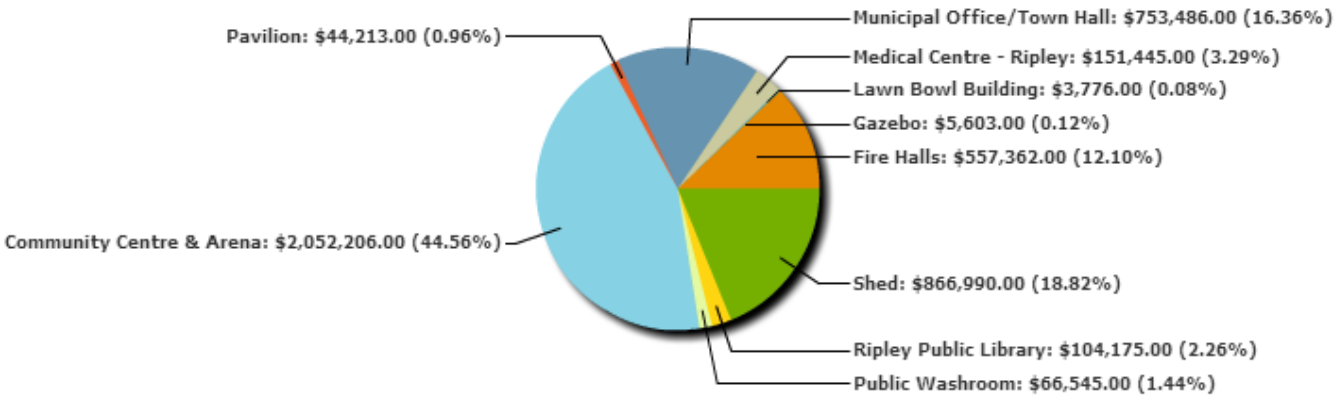
3.8.2 What is it worth?

The estimated replacement value of the Township's buildings, in 2015 dollars, is approximately $4.6 million. The cost per household for Buildings is $1,168 based on 3,945 households.

Building Replacement Value				
Asset Type	Asset Component	Units	2015 Unit Replacement Cost	2015 Replacement Cost ($)
Buildings	Fire Halls	2	CPI Monthly (ON)	557,362
	Gazebo	1	CPI Monthly (ON)	5,603
	Landfill Building	1	CPI Monthly (ON)	Not planned for replacement
	Lawn Bowl Building	2	CPI Monthly (ON)	3,776
	Mausoleum - Ripley	1	CPI Monthly (ON)	Not planned for replacement
	Medical Centre - Ripley	1	CPI Monthly (ON)	151,445
	Municipal Office/Town Hall	2	CPI Monthly (ON)	753,486
	Pavilion	4	CPI Monthly (ON)	44,213
	Community Centre & Arena	2	CPI Monthly (ON)	2,052,206
	Public Washroom	6	CPI Monthly (ON)	66,545
	Ripley Public Library	1	CPI Monthly (ON)	104,175
	Shed	3	CPI Monthly (ON)	866,990
	Whitechurch Hall	1	CPI Monthly (ON)	Not planned for replacement
				$4,605,801

The pie chart below provides a breakdown of each of the building replacement values.

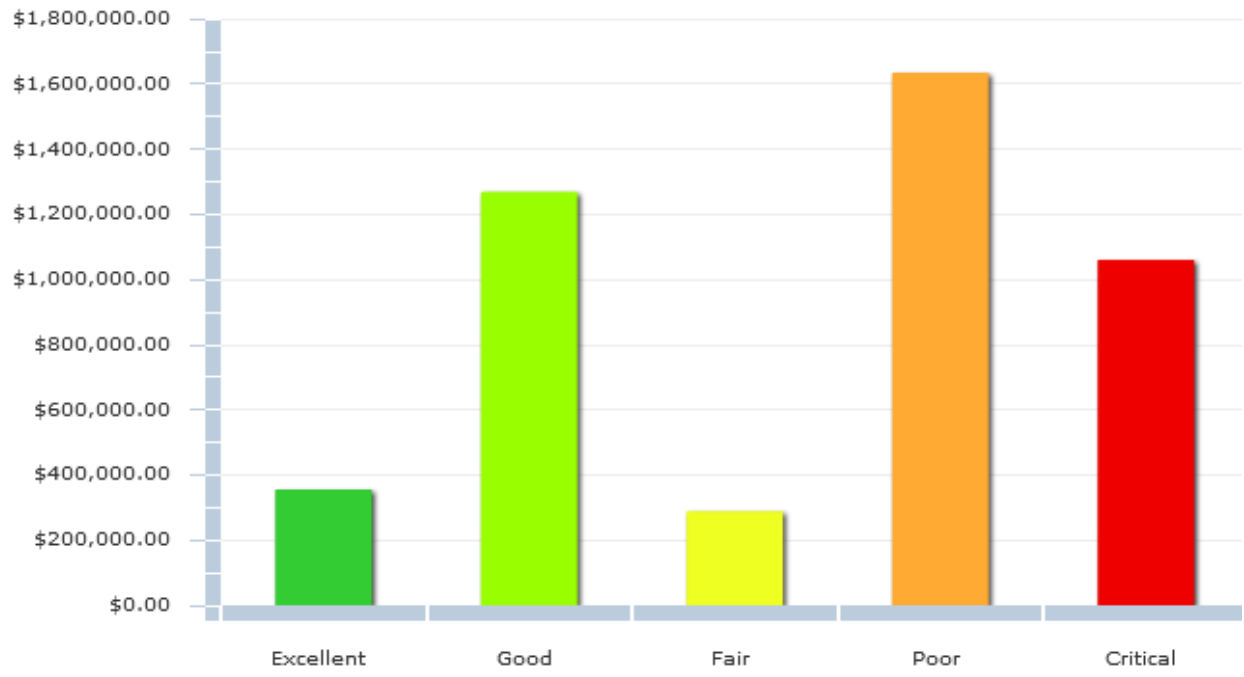
Buildings Replacement Value



3.8.3 What condition is it in?

Based on an age analysis only, 42% of the Township's buildings are in fair to excellent condition while the rest are in poor to critical condition. As such, the Township received a Condition vs. Performance rating of 'D+'.

Building Conditions by Replacement Cost Based on Age Condition Assessment



3.8.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the facilities below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc.	1st Qtr
Major Maintenance	Maintenance and repair activities, generally unplanned, however, anticipated activities that are included in the annual operating budget.	2nd Qtr
Rehabilitation	Major activities such as the upgrade or replacement of smaller individual facility components (e.g. windows)	3rd Qtr
Replacement	Complete replacement of asset components or a facility itself.	4th Qtr

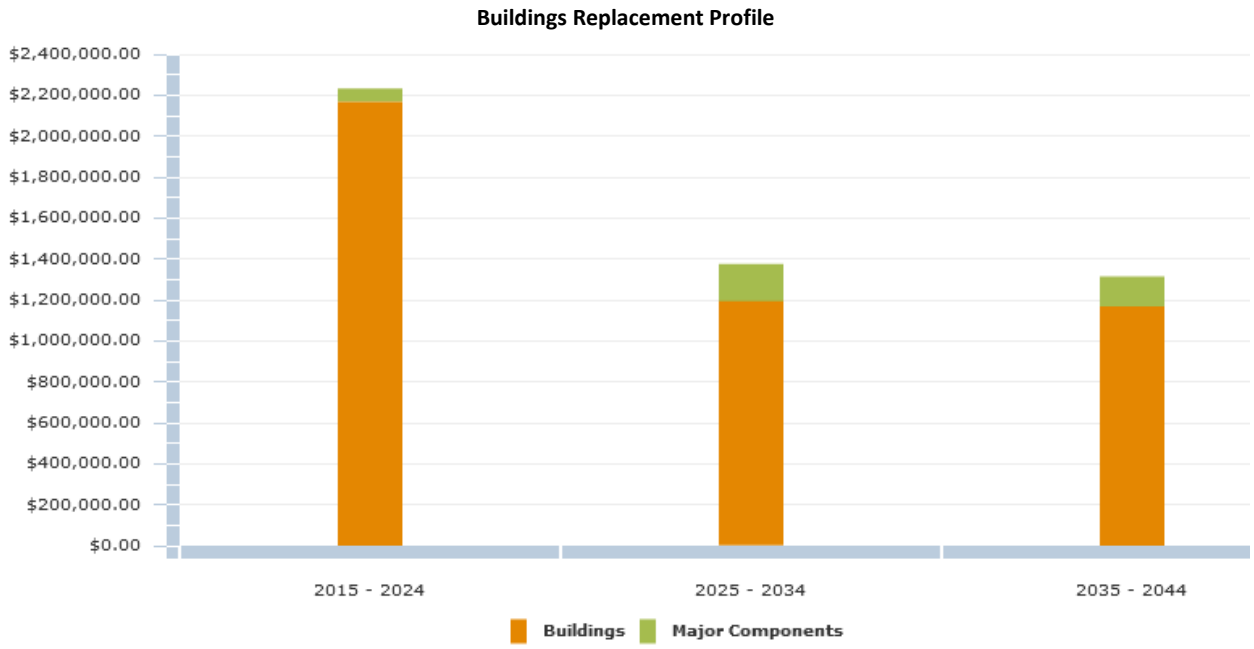
3.8.5 When do we need to do to it?

For the purpose of this report, 'useful life' data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years

Asset Type	Asset Component	Useful Life in Years
Buildings	Fire Halls	30
	Gazebo	30
	Landfill Building	30
	Lawn Bowl Building	20 to 30
	Mausoleum - Ripley	30
	Medical Centre - Ripley	30
	Municipal Office/Town Hall	15 to 30
	Pavilion	20 to 30
	Community Centre & Arena	15 to 30
	Public Washroom	30
	Ripley Public Library	20 to 30
	Shed	30
	Whitechurch Hall	30

The following graph shows the current projection of building replacements based on age of the assets.



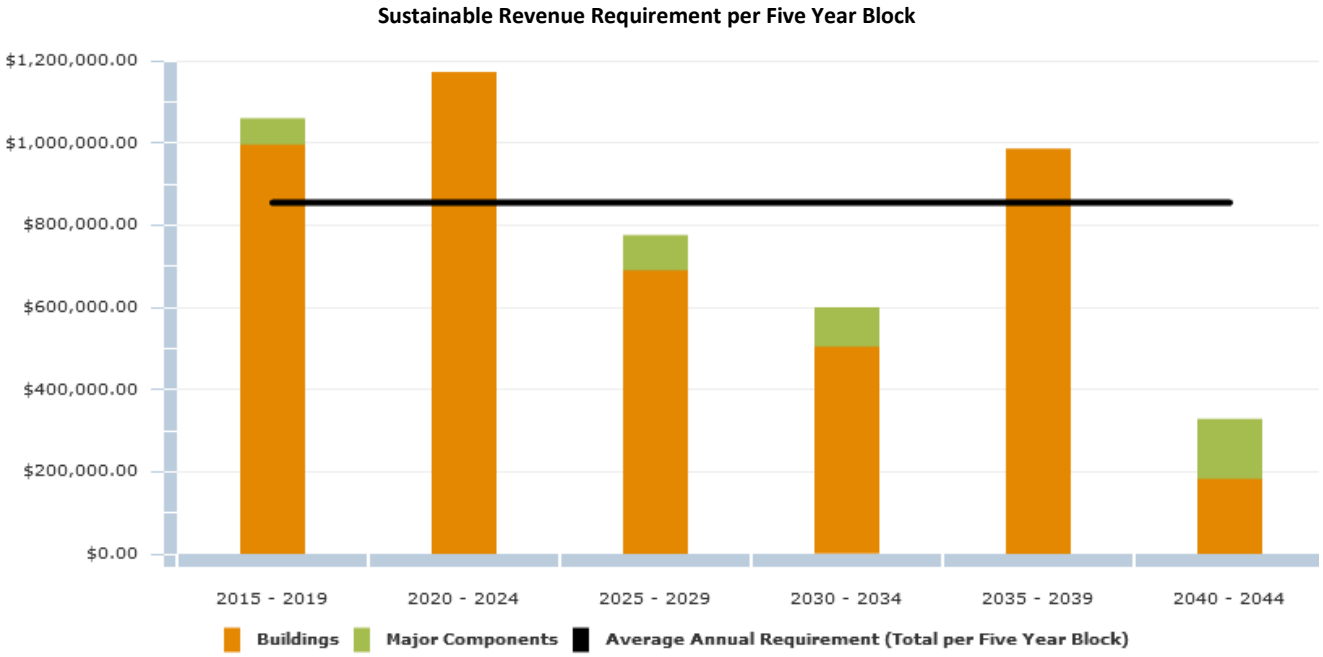
3.8.6 How much money do we need?

The analysis completed to determine capital revenue requirements was based on the following constraints and assumptions:

1. Replacement costs are based upon the "What is it worth" section above.
2. The timing for individual structure replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2015 dollars.
4. The analysis was run for a 30 year period to ensure all assets cycled through at least one iteration of replacement, therefore providing a sustainable projection.

3.8.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' buildings is **$171,000**. Based on Huron-Kinloss' current annual funding available of **$69,000**, there is an annual **deficit of $102,000**. As such, the Township received a Funding vs. Need rating of 'F'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.



In conclusion, the Township's buildings, based on age data only, are primarily in poor or critical condition. There is a significant backlog of needs to be addressed within the next 5 years totaling approximately $1 million.

It should be noted, however, that the useful life for the buildings is projected between 15 and 30 years, while industry standards are usually 50 plus years. Increasing the useful life will reduce the immediate requirements listed above. In addition, a study to better understand field condition should be implemented to optimize the short and long term budgets based on actual need. This is discussed further in the Asset Management Strategy portion of this Asset Management Plan.

3.8.8 Recommendations

The Township received an overall rating of 'F' for its buildings, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A detailed study to define the current condition of the facilities and their components (structural, architectural, electrical, mechanical, site, etc.) should be undertaken, as described further within the "Asset Management Strategy" section of this AMP.
2. The useful life projections used by the municipality should be reviewed for consistency with industry standards
3. Once the above study is complete, a new performance age should be applied to each asset and an updated "current state of the infrastructure" analysis should be generated.
4. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
5. The Infrastructure Report Card should be updated on an annual basis

3.9 Land Improvement

F

INFRASTRUCTURE REPORT CARD GRADE

3.9 Land Improvement

3.9.1 What do we own?

Huron-Kinloss is responsible for the following land improvement inventory:

Land Improvement Inventory

Asset Type	Asset Component	Units
Land Improvement	Arena Land Improvements	4
	Ball Park, Fence and Lights	7
	Cement Pad	2
	Driveway & Parking Lot	3
	Landscaping	11
	Municipal Drain	9
	Planter and Retaining Wall	2
	Sculpture	1
	Tennis/Basketball Court & Soccer Pitch	17
	Trails	19

The land improvement data was extracted from the Tangible Capital Asset module of the CityWide software suite

3.9.2 What is it worth?

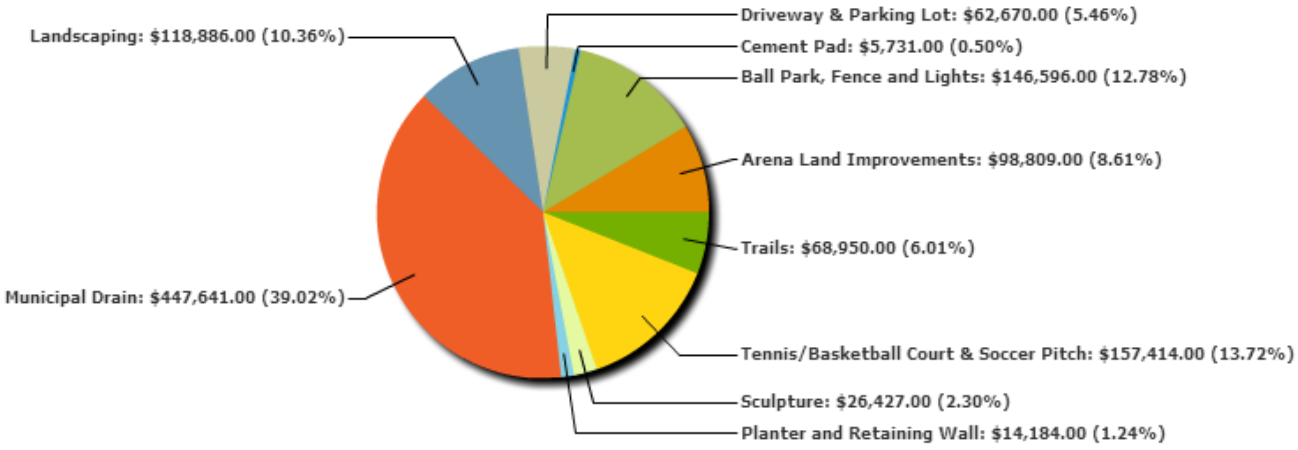
The estimated replacement value of all land improvement, in 2015 dollars, is $1,147,308. The cost per household for the land improvement is $291 based on 3,945 households.

Land Improvement Replacement Value

Asset Type	Asset Component	Units	2015 Unit Replacement Cost	2015 Overall Replacement Cost
Land Improvement	Arena Land Improvements	4	CPI Tables	98,809
	Ball Park, Fence and Lights	7	CPI Tables	146,596
	Cement Pad	2	CPI Tables	5,731
	Driveway & Parking Lot	3	CPI Tables	62,670
	Landscaping	11	CPI Tables	118,886
	Municipal Drain	9	CPI Tables	447,641
	Planter and Retaining Wall	2	CPI Tables	14,184
	Sculpture	1	CPI Tables	26,427
	Tennis/Basketball Court & Soccer Pitch	17	CPI Tables	157,414
	Trails	19	CPI Tables	68,950
				$1,147,308

The pie chart below provides a breakdown of each of the network components to the overall system value.

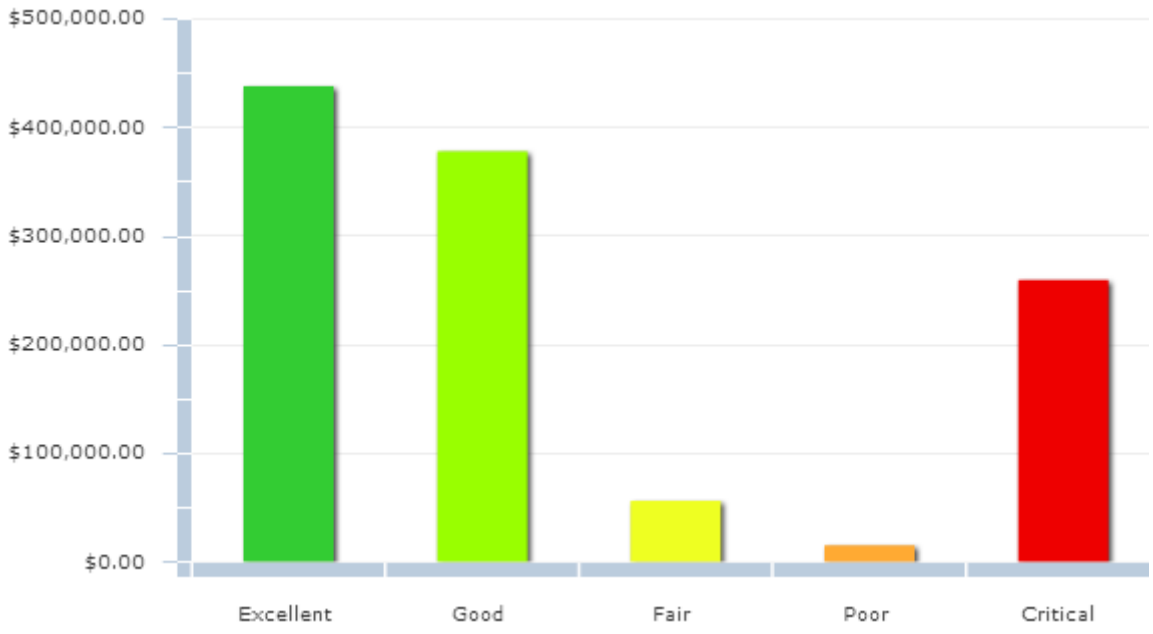
Land Improvements



3.9.3 What condition is it in?

Based on an asset age assessment only, 76% of the Township's land improvement inventory is in fair to excellent condition while the rest are in poor to critical condition. As such, the Township received a Condition vs. Performance rating of 'C+'

Land Improvement Condition by Replacement Cost Based on Age Condition Assessment



As field condition information becomes available in time, the data should be loaded into the CityWide system in order to increasingly have a more accurate picture of current asset age and condition, therefore, future replacement requirements.

3.9.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the land improvement below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc.	1st Qtr
Major Maintenance	Maintenance and repair activities, generally unplanned, however, anticipated activities that are included in the annual operating budget.	2nd Qtr
Rehabilitation	Upgrades or rehabilitation of components to ensure continuation of service.	3rd Qtr
Replacement	Full asset or component renewal or replacement.	4th Qtr

3.9.5 When do we need to do it?

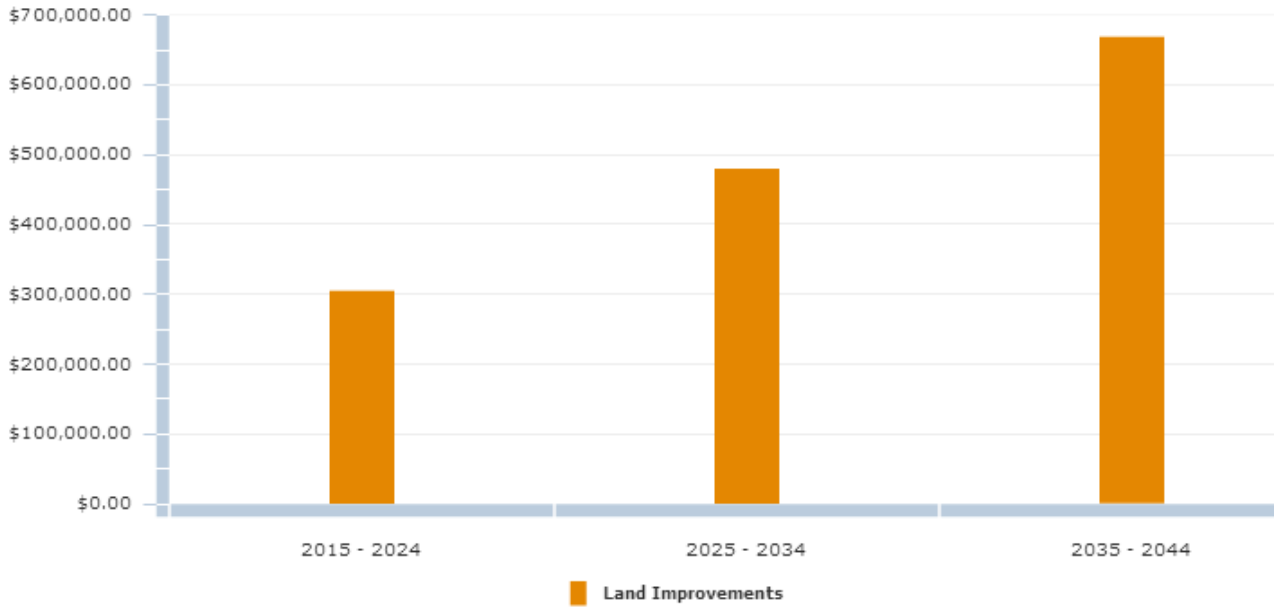
For the purpose of this report "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years

Asset Type	Asset Component	Useful Life in Years
Land Improvement	Arena Land Improvements	30
	Ball Park, Fence and Lights	15 to 30
	Cement Pad	20
	Driveway & Parking Lot	20 to 30
	Landscaping	30
	Municipal Drain	20 to 30
	Planter and Retaining Wall	30
	Sculpture	20
	Tennis/Basketball Court & Soccer Pitch	15 to 30
	Trails	30

The following graph shows the current projection of land improvement inventory replacements based on the age of the assets only.

Land Improvement Replacement Profile



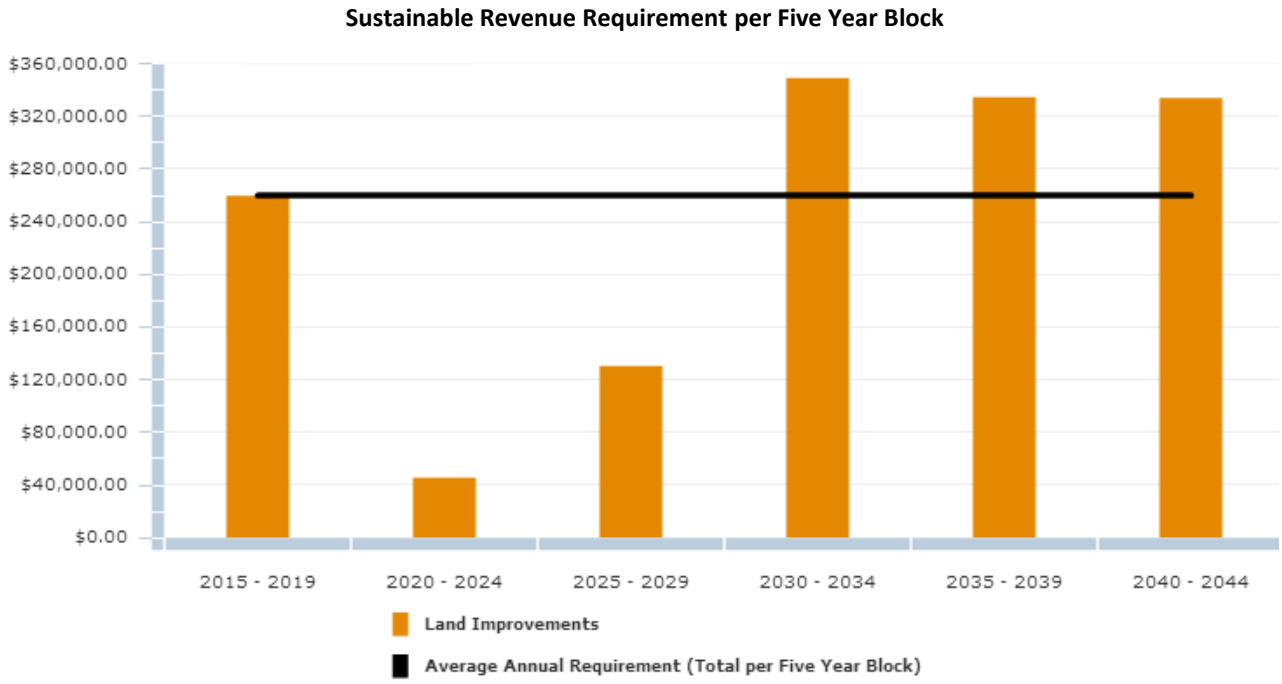
3.9.6 How much money do we need?

The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for individual land improvement replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in 2015 dollars.
4. The analysis was run for a 30 year period to ensure all assets went through at least one iteration of replacement, therefore providing a sustainable projection.

3.9.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' land improvement is approximately **$52,000**. Based on Huron-Kinloss' current annual funding of **$0**, there is a **deficit of $52,000**. Given this deficit, the Township received a Funding vs. Need rating of 'F'. The following graph presents five year blocks of expenditure requirements against the sustainable funding threshold line.



In conclusion, Huron-Kinloss' land improvement inventory based on age data only, is primarily in good condition. There are replacement needs to be addressed within the next 5 years totaling approximately $260 thousand. A condition assessment program should be established to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets.

3.9.8 Recommendations

The Township received an overall rating of 'F' for its land improvement class, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A field condition assessment program should be established for the land improvement components to gain a better understanding of current condition and performance and to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets.

2. Once the above study is complete or underway, the data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.

3. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.

4. The Infrastructure Report Card should be updated on an annual basis

3.10 Vehicles

D

INFRASTRUCTURE REPORT CARD GRADE

3.10 Vehicles

3.10.1 What do we own?

The inventory components of the vehicles category are outlined in the table below.

Vehicles		
Asset Type	Asset Component	Quantity/Units
Vehicles	Fleet - Fire	4
	Fleet - Heavy Machinery	32
	Fleet - Light Vehicles	27
	Fleet - Olympia	2

The vehicle class data was extracted from the Tangible Capital Asset module of the CityWide software suite.

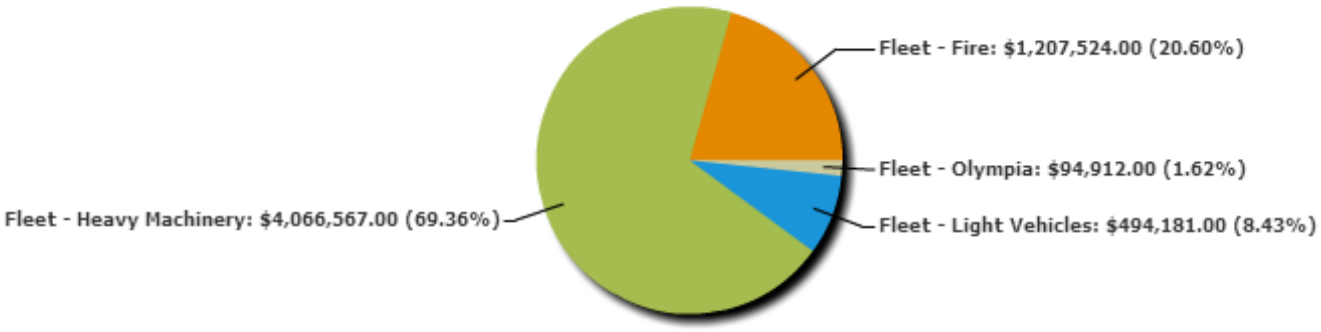
3.10.2 What is it worth?

The estimated replacement value of the vehicles class, in 2015 dollars, is $5.9 million. The cost per household for the vehicle class is $1,486 based on 3,945 households.

Vehicles Replacement Value				
Asset Type	Asset Component	Quantity/ Units	2015 Unit Replacement Cost	2015 Overall Replacement Cost ($)
Vehicles	Fleet - Fire	4	CPI Tables	1,207,524
	Fleet - Heavy Machinery	32	CPI Tables	4,066,567
	Fleet - Light Vehicles	27	CPI Tables	494,181
	Fleet - Olympia	2	CPI Tables	94,912
				$5,863,184

The pie chart below provides a breakdown of each of the network components to the overall system value.

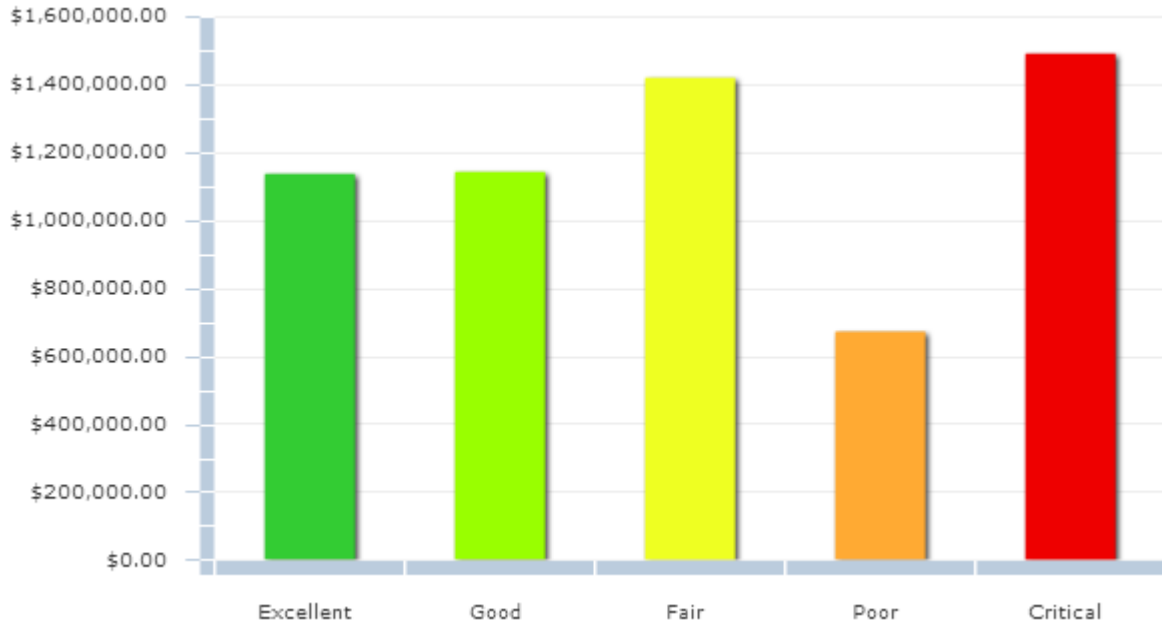
Vehicles Components



3.10.3 What condition is it in?

Based on age analysis only, approximately 63% of the Township's vehicles is in fair to excellent condition, with the remaining 37% are in poor to critical condition. As such, the Township received a Condition vs. Performance rating of 'C'.

Vehicles Condition by Replacement Cost Based on Age Based Assessment



3.10.4 What do we need to do to it?

There are generally four distinct phases in an assets life cycle. These are presented at a high level for the vehicle class below. Further detail is provided in the "Asset Management Strategy" section of this AMP

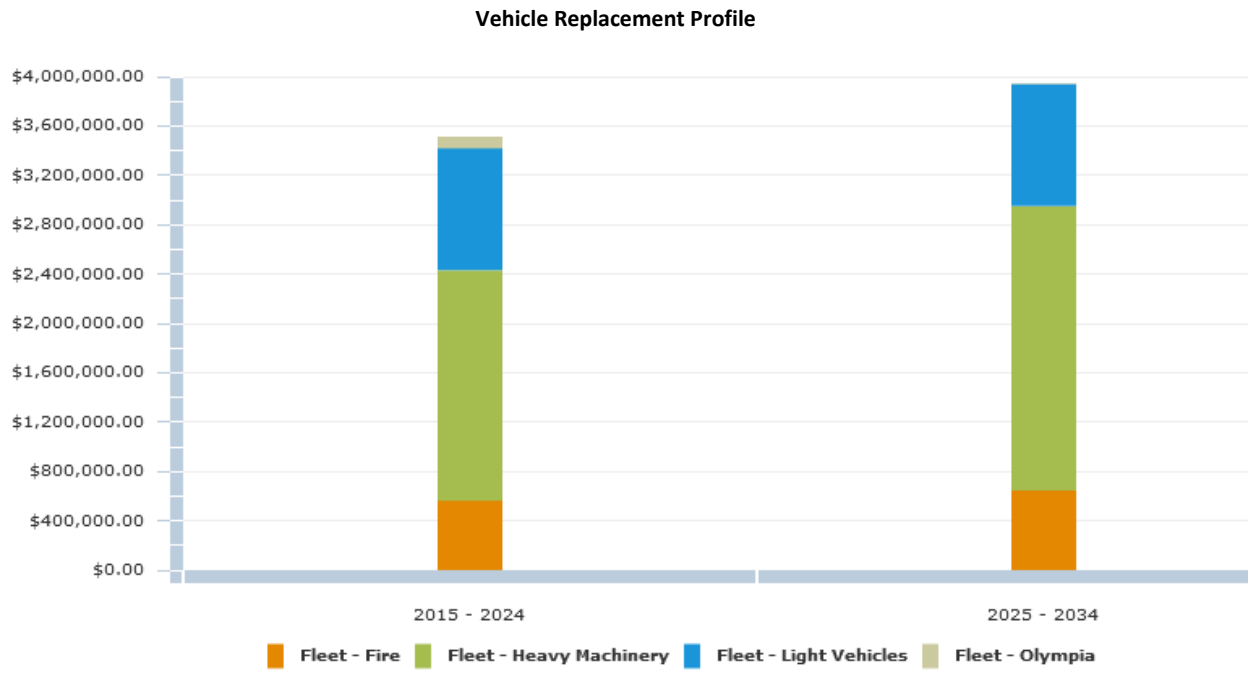
Addressing Asset Needs		
Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc.	1st Qtr
Major Maintenance	Maintenance and repair activities – optimally anticipated activities that are included in the annual operating budget.	2nd Qtr
Rehabilitation	Upgrades or rehabilitation of components to ensure continuation of service	3rd Qtr
Replacement	Full asset or component renewal or replacement	4th Qtr

3.10.5 When do we need to do it?

For the purpose of this report "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years		
Asset Type	Asset Component	Useful Life in Years
Vehicles	Fleet - Fire	15 to 20
	Fleet - Heavy Machinery	8 to 20
	Fleet - Light Vehicles	5
	Fleet - Olympia	15

The following graph shows the current projection vehicle replacements based on the age of the asset only.



3.10.6 How much money do we need?

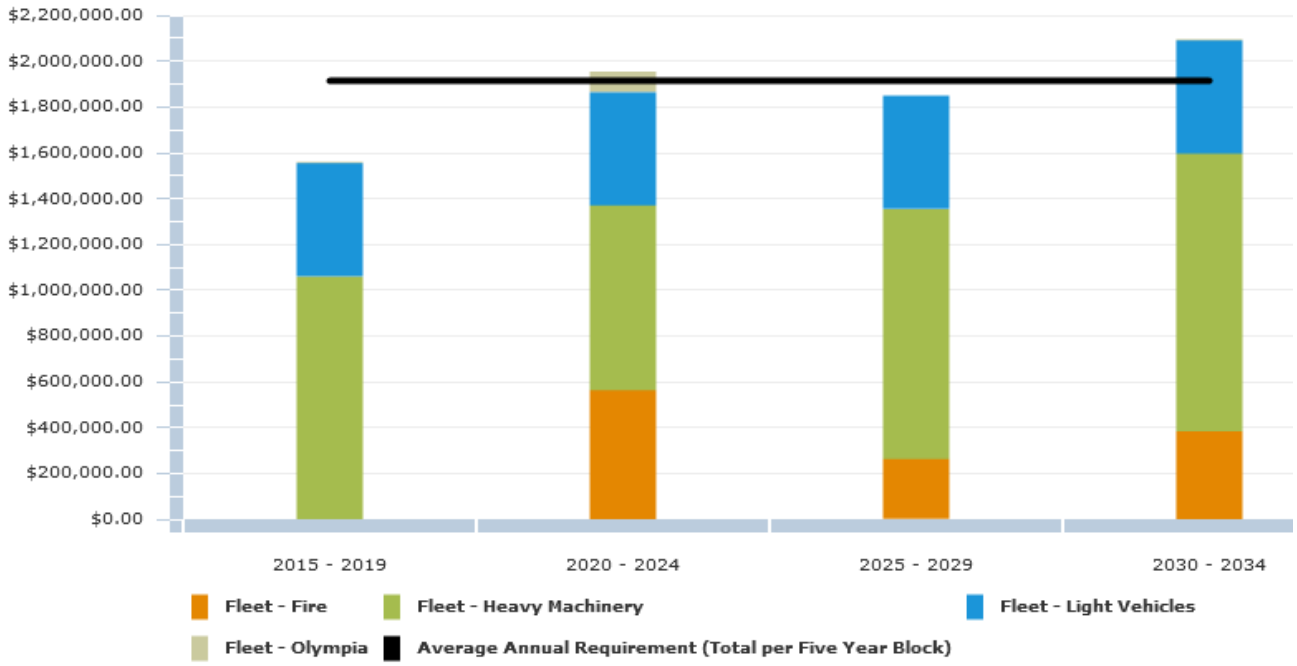
The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for vehicle replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in current (2015) dollars.
4. The analysis was run for a 20 year period to ensure all assets went through one iteration of replacement, therefore providing a sustainable projection.

3.10.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' vehicles class is approximately **$383,000**. Based on Huron-Kinloss' current annual funding of **$220,000** there is an annual **deficit of $163,000**. As such, the Township received a Funding vs. Need rating of 'D'.

Vehicles Replacement Profile per Five Year Block



In conclusion, Huron-Kinloss' vehicles based on age data only have 37% of the vehicles in poor or critical condition and 63% in fair to excellent condition. There are replacement needs to be addressed within the next 5 years totaling approximately $1.6 million. If not already in place a preventative maintenance and life cycle assessment program should be established for these assets to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets. Further detail is outlined within the "asset management strategy" section of this AMP.

3.10.8 Recommendations

The Township received an overall rating of 'D' for its vehicles, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. Once the above studies are complete or underway, the data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.
2. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
3. The Infrastructure Report Card should be updated on an annual basis.

3.11 Machinery and Equipment

D

INFRASTRUCTURE REPORT CARD GRADE

3.11 Machinery and Equipment

3.11.1 What do we own?

The inventory components of the machinery and equipment category are outlined in the table below.

Machinery and Equipment Inventory

Asset Type	Asset Component	Quantity/Units
Machinery and Equipment	Electronic Equipment	80
	General Equipment	100
	Furniture and Fixtures	1,292

The equipment class data was extracted from the Tangible Capital Asset module of the CityWide software suite.

3.11.2 What is it worth?

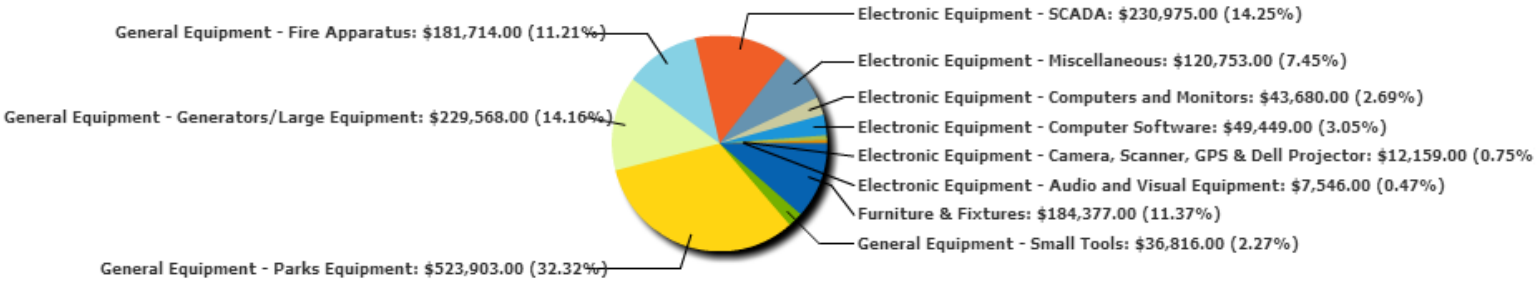
The estimated replacement value of the machinery and equipment class, in 2015 dollars, is $1.6 million. The cost per household for the machinery and equipment class is $411 based on 3,945 households.

Machinery and Equipment Replacement Value

Asset Type	Asset Component	Quantity/ Units	2015 Unit Replacement Cost	2015 Overall Replacement Cost
Machinery and Equipment	Electronic Equipment - Audio and Visual Equipment	3	CPI Monthly (ON)	7,546
	Electronic Equipment - Camera, Scanner, GPS & Dell Projector	10	CPI Monthly (ON)	12,159
	Electronic Equipment - Computer Software	7	CPI Monthly (ON)	49,449
	Electronic Equipment - Computers and Monitors	27	CPI Monthly (ON)	43,680
	Electronic Equipment - Miscellaneous	17	CPI Monthly (ON)	120,753
	Electronic Equipment - SCADA	16	CPI Monthly (ON)	230,975
	General Equipment - Fire Apparatus	16	CPI Monthly (ON)	181,714
	General Equipment - Generators/Large Equipment	7	CPI Monthly (ON)	229,568
	General Equipment - Parks Equipment	71	CPI Monthly (ON)	523,903
	General Equipment - Small Tools	6	CPI Monthly (ON)	36,816
	Furniture & Fixtures	1,292	CPI Monthly (ON)	184,377
				$1,620,940

The pie chart below provides a breakdown of each of the network components to the overall system value.

Machinery and Equipment Components



3.11.3 What condition is it in?

Based on age analysis only, nearly 55% of the Township's machinery and equipment is in poor to critical condition, with the remaining in fair to excellent condition. As such, the Township received a Condition vs. Performance rating of 'D'.

Machinery & Equipment Condition by Replacement Cost Based on Age Base Assessment

3.11.4 What do we need to do to it?

There are generally four distinct phases in an asset's life cycle. These are presented at a high level for the machinery and equipment class below. Further detail is provided in the "Asset Management Strategy" section of this AMP.

Addressing Asset Needs

Phase	Lifecycle Activity	Asset Age
Minor Maintenance	Planned activities such as inspections, monitoring, etc	1st Qtr
Major Maintenance	Maintenance and repair activities – optimally anticipated activities that are included in the annual operating budget.	2nd Qtr
Rehabilitation	Upgrades or rehabilitation of components to ensure continuation of service	3rd Qtr
Replacement	Full asset or component renewal or replacement	4th Qtr

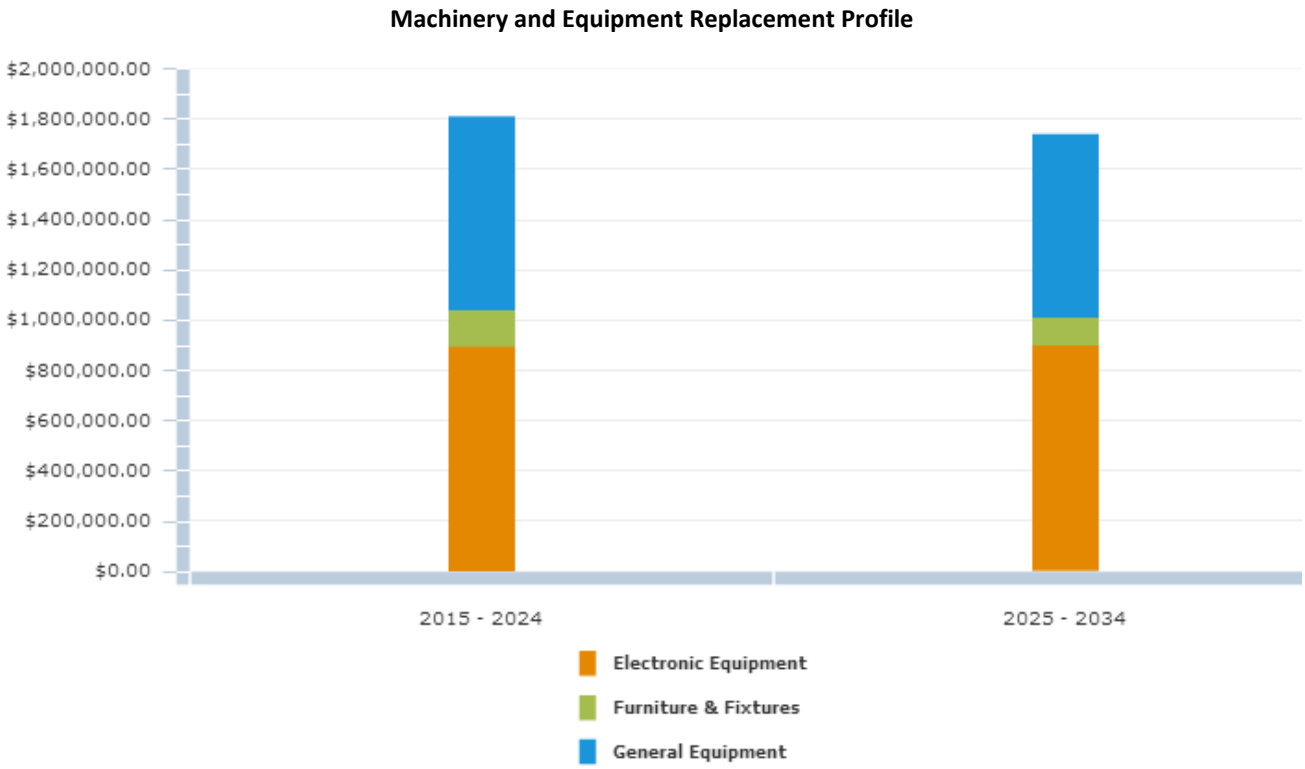
3.11.5 When do we need to do it?

For the purpose of this report, "useful life" data for each asset class was obtained from the accounting data within the CityWide software database. This proposed useful life is used to determine replacement needs of individual assets, which are calculated in the system as part of the overall financial requirements.

Asset Useful Life in Years

Asset Type	Asset Component	Useful Life in Years
Machinery and Equipment	Electronic Equipment - Audio and Visual Equipment	5
	Electronic Equipment - Camera, Scanner, GPS & Dell Projector	5
	Electronic Equipment - Computer Software	5
	Electronic Equipment - Computers and Monitors	5
	Electronic Equipment - Miscellaneous	5 to 10
	Electronic Equipment - SCADA	5
	General Equipment - Fire Apparatus	10
	General Equipment - Generators/Large Equipment	20
	General Equipment - Parks Equipment	5 to 15
	General Equipment - Small Tools	5
	Furniture & Fixtures	10 to 15

The following graph shows the current projection of machinery and equipment replacements based on the age of the asset only.



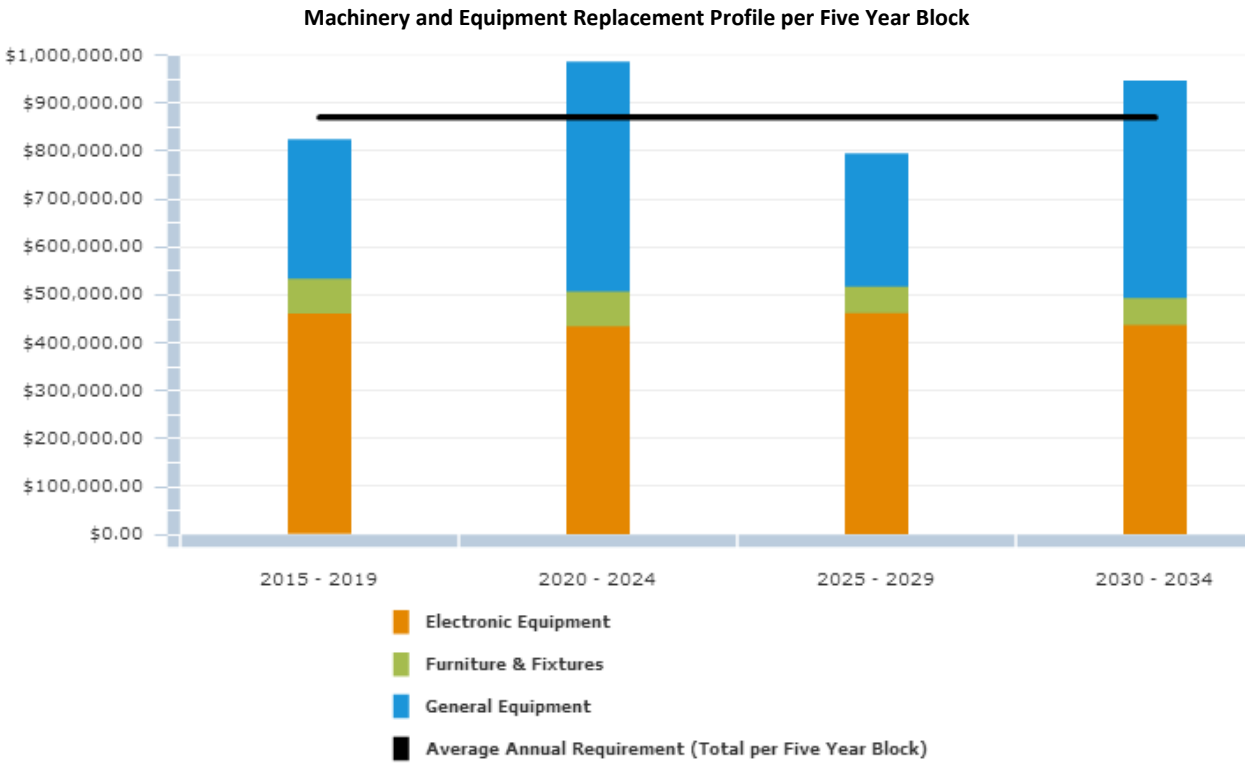
3.11.6 How much money do we need?

The analysis completed to determine capital revenue requirements was based on the following assumptions:

1. Replacement costs are based upon the unit costs identified within the "What is it worth" section above.
2. The timing for individual machinery and equipment replacement was defined by the replacement year as described in the "When do you need to do it?" section above.
3. All values are presented in current (2015) dollars.
4. The analysis was run for a 20 year period to ensure all assets went through one iteration of replacement, therefore providing a sustainable projection.

3.11.7 How do we reach sustainability?

Based upon the above assumptions, the average annual revenue required to sustain Huron-Kinloss' equipment class is approximately **$174,000**. Based on Huron-Kinloss' current annual funding of **$87,000**, there is an annual **deficit of $87,000**. As such, the Township received a Funding vs. Need rating of 'D'.



In conclusion, Huron-Kinloss' machinery and equipment, based on age data only, is primarily in poor condition. There are replacement needs to be addressed within the next 5 years totaling approximately $824,000. If not already in place a preventative maintenance and life cycle assessment program should be established for these assets to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets.

3.11.8 Recommendations

The Township received an overall rating of 'D' for its machinery and equipment class, calculated from the Condition vs. Performance and the Funding vs. Need ratings. Accordingly, we recommend the following:

1. A preventative maintenance and life cycle assessment program should be established for the equipment class to gain a better understanding of current condition and performance and to aid in prioritizing overall needs for rehabilitation and replacement and to assist with optimizing the long and short term budgets.
2. Once the above studies are complete or underway, the data should be loaded into the CityWide software and an updated "current state of the infrastructure" analysis should be generated.
3. An appropriate % of asset replacement value should be used for operations and maintenance activities on an annual basis. This should be determined through a detailed analysis of O & M activities and be added to future AMP reporting.
4. The Infrastructure Report Card should be updated on an annual basis.

4.0 Infrastructure Report Card

CUMULATIVE GPA

D

Infrastructure Report Card

The Township of Huron-Kinloss

1. Each asset category was rated on two key, equally weighted (50/50) dimensions: Condition vs. Performance, and Funding vs. Need.
2. See the "What condition is it in?" section for details on the grade of each asset category on the Condition vs. Performance dimension.
3. See the "How do we reach sustainability?" section for details on the grade of each asset category on the Funding vs. Need dimension.
4. The 'Overall Rating' below is the average of the two ratings.

Asset Category	Condition vs. Performance	Funding vs. Need	Overall Grade	Comments
Road Network	**C**	**A**	**B**	The majority, 61% of the Township's paved road network is in fair to excellent condition. 87% of the sidewalks is in poor to critical condition. The average annual revenue required to sustain Huron-Kinloss' road network is approximately **$1,236,000**. Based on Huron-Kinloss' current annual funding of **$1,167,000**, there is an annual **deficit of $69,000**.
Bridges & Culverts	**D**	**F**	**F**	63% of the Township's bridges & culverts are generally in poor to critical condition. The average annual revenue required to sustain Huron-Kinloss' bridges & culverts is **$444,000**. Based on Huron-Kinloss' current annual funding of **$197,000**, there is an annual **deficit of $247,000**.
Water Network	**C+**	**C**	**C**	Nearly 92% of the Township's water mains and 57% of facilities (based on replacement cost) are in fair to excellent condition, while the rest of the assets in this network are in poor to critical condition. The average annual revenue required to sustain Huron-Kinloss' water network is approximately **$833,000**. Based on Huron-Kinloss' current annual funding of **$610,000**, there is a **deficit of $223,000**.
Sanitary Sewer Network	**C+**	**F**	**F**	100% of the Township's sanitary sewer mains and 51% of its sewer facilities are in fair to excellent condition. Meanwhile, 100% of the lagoons are in fair to critical condition. The average annual revenue required to sustain Huron-Kinloss' sanitary sewer network is approximately **$417,000**. Based on Huron-Kinloss' current annual funding of **$26,000**, there is an annual **deficit of $391,000**.
Storm Sewer Network	**B**	**F**	**D**	99% of the Township's storm sewer mains are in fair to excellent condition. The average annual revenue required to sustain Huron-Kinloss' storm sewer network is approximately **$153,000**. Based on Huron-Kinloss' current annual funding of **$0**, there is an annual **deficit of $153,000**.

Asset Category	Condition vs. Performance	Funding vs. Need	Overall Grade	Comments
Buildings	**D+**	**F**	**F**	Nearly 42% of the Township's buildings are in fair to excellent condition. The average annual revenue required to sustain Huron-Kinloss' buildings is **$171,000**. Based on Huron-Kinloss' current annual funding of **$69,000**, there is an annual **deficit of $102,000**.
Land Improvement	**C+**	**F**	**F**	76% of the Township's land improvements is in fair to excellent condition. The average annual revenue required to sustain Huron-Kinloss' land improvement is approximately **$52,000**. Based on Huron-Kinloss' current annual funding of **$0**, there is a **deficit of $52,000.**
Vehicles	**C**	**D**	**D**	Nearly 63% of the Township's vehicles is in fair to excellent condition, with the remaining in poor to critical condition. The average annual revenue required to sustain Huron-Kinloss' vehicle class is approximately **$383,000**. Based on Huron-Kinloss' current annual funding of **$220,000** there is an annual **deficit of $163,000.**
Machinery and Equipment	**D**	**D**	**D**	While 45% of the Township's machinery and equipment is in fair to excellent condition, nearly 55% are in poor to critical condition. The average annual revenue required to sustain Huron-Kinloss' equipment class is approximately **$174,000**. Based on Huron-Kinloss' current annual funding of **$87,000**, there is an annual **deficit of $87,000**.

5.0 Desired Levels of Service

Desired levels of service are high level indicators, comprising many factors, as listed below that establish defined quality thresholds at which municipal services should be supplied to the community. They support the organization's strategic goals and are based on customer expectations, statutory requirements, standards, and the financial capacity of a Township to deliver those levels of service.

Levels of Service are used:

- to inform customers of the proposed type and level of service to be offered;
- to identify the costs and benefits of the services offered;
- to assess suitability, affordability and equity of the services offered;
- as a measure of the effectiveness of the asset management plan
- as a focus for the AM strategies developed to deliver the required level of service

In order for a Township to establish a desired level of service, it will be important to review the key factors involved in the delivery of that service, and the interactions between those factors. In addition, it will be important to establish some key performance metrics and track them over an annual cycle to gain a better understanding of the current level of service supplied.

Within this first Asset Management Plan, key factors affecting level of service will be outlined below and some key performance indicators for each asset type will be outlined for further review. This will provide a framework and starting point from which the Township can determine future desired levels of service for each general capital and infrastructure class.

5.1 Key factors that influence a level of service:

- Strategic and Corporate Goals
- Legislative Requirements
- Expected Asset Performance
- Community Expectations
- Availability of Finances

5.1.1 Strategic and Corporate Goals

Infrastructure levels of service can be influenced by strategic and corporate goals. Strategic plans spell out where an organization wants to go, how it's going to get there, and helps decide how and where to allocate resources, ensuring alignment to the strategic priorities and objectives . It will help identify priorities and guide how municipal tax dollars and revenues are spent into the future. The level of importance that a community's vision is dependent upon infrastructure, will ultimately affect the levels of service provided or those levels that it ultimately aspires to deliver.

5.1.2 Legislative Requirements

Infrastructure levels of service are directly influenced by many legislative and regulatory requirements. For instance, the Safe Drinking Water Act, the Minimum Maintenance Standards for municipal highways, building codes, and the Accessibility for Ontarians with Disabilities Act are all legislative requirements that prevent levels of service from declining below a certain standard.

5.1.3 Expected Asset Performance

A level of service will be affected by current asset condition, and performance and limitations in regards to safety, capacity, and the ability to meet regulatory and environmental requirements. In addition, the design life of the asset, the maintenance items required, the rehabilitation or replacement schedule of the asset, and the total costs, are all critical factors that will affect the level of service that can be provided.

5.1.4 Community Expectations

Levels of services are directly related to the expectations that the general public has from the infrastructure. For example, the public will have a qualitative opinion on what an acceptable road looks like, and a quantitative one on how long it should take to travel between two locations. Infrastructure costs

are projected to increase dramatically in the future, therefore it is essential that the public is not only consulted, but also be educated, and ultimately make choices with respect to the service levels that they wish to pay for.

5.1.5 Availability of Finances

Availability of finances will ultimately control all aspects of a desired level of service. Ideally, these funds must be sufficient to achieve corporate goals, meet legislative requirements, address an asset's life cycle needs, and meet community expectations. Levels of service will be dictated by availability of funds or elected officials' ability to increase funds, or the community's willingness to pay.

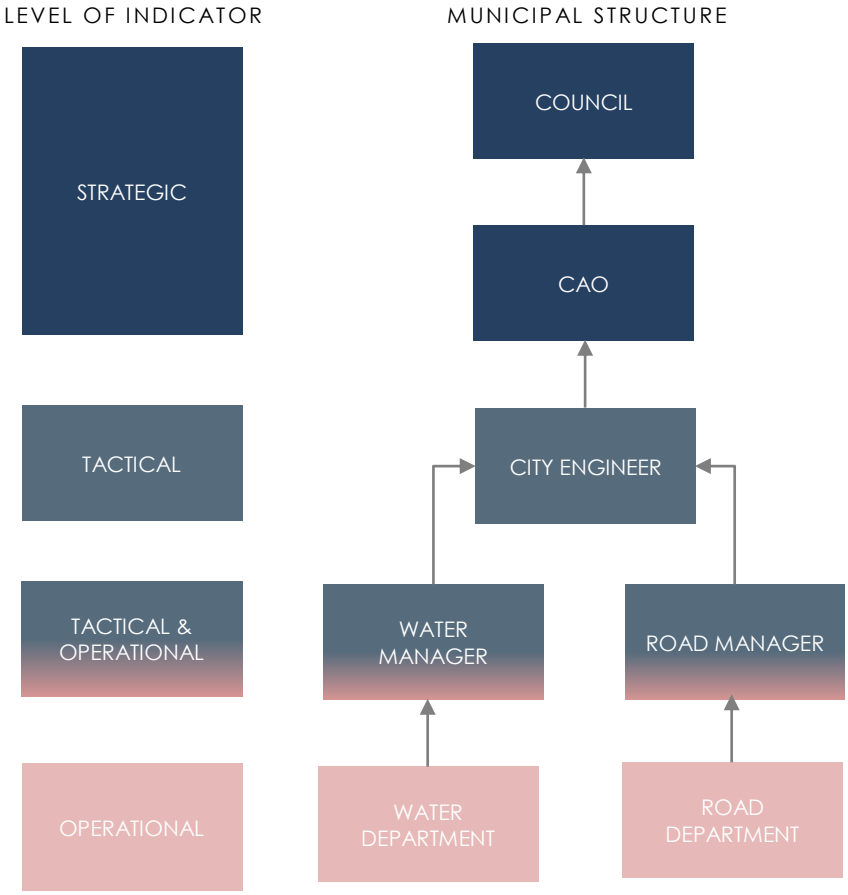
5.2 Key Performance Indicators

Performance measures or key performance indicators (KPIs) that track levels of service should be specific, measurable, achievable, relevant, and timebound (SMART). Many good performance measures can be established and tracked through the CityWide suite of software products. In this way, through automation, results can be reviewed on an annual basis and adjustments can be made to the overall asset management plan, including the desired level of service targets.

In establishing measures, a good rule of thumb to remember is that maintenance activities ensure the performance of an asset and prevent premature aging, whereas rehab activities extend the life of an asset. Replacement activities, by definition, renew the life of an asset. In addition, these activities are constrained by resource availability (in particular, finances) and strategic plan objectives. Therefore, performance measures should not just be established for operating and maintenance activities, but also for the strategic, financial, and tactical levels of the asset management program. This will assist all levels of program delivery to review their performance as part of the overall level of service provided.

This is a very similar approach to the "balanced score card" methodology, in which financial and non-financial measures are established and reviewed to determine whether current performance meets expectations. The "balanced score card", by design, links day to day operations activities to tactical and strategic priorities in order to achieve an overall goal, or in this case, a desired level of service.

The structure of accountability and level of indicator with this type of process is represented in the following table, modified from the InfraGuide's best practice document, "Developing Indicators and Benchmarks" published in April 2003.



As a note, a caution should be raised over developing too many performance indicators that may result in data overload and lack of clarity. It is better to develop a select few that focus in on the targets of the asset management plan.

Outlined below for each infrastructure class is a suggested service description, suggested service scope, and suggested performance indicators. These should be reviewed and updated in each iteration of the AMP.

5.3 Transportation Services

5.3.1 Service Description

The Township's transportation network comprises approximately 663.5 centreline km of road, of which approximately 412 km are gravel and 251.5 km are paved roads. The transport network also includes 89 bridge components, 48 culverts, 12,166 m of sidewalk, and street lights.

Together, the above infrastructure enables the Township to deliver transportation and pedestrian facility services and give people a range of options for moving about in a safe and efficient manner.

5.3.2 Scope of Services

- **Movement** – providing for the movement of people and goods.
- **Access** – providing access to residential, commercial, and industrial properties and other community amenities.
- **Recreation** –providing for recreational use, such as walking, cycling, or special events such as parades.

5.3.3 Performance Indicators (reported annually)

Performance Indicators (reported annually)	
Strategic Indicators	■ percentage of total reinvestment compared to asset replacement value ■ completion of strategic plan objectives (related to transportation)
Financial Indicators	■ annual revenues compared to annual expenditures ■ annual replacement value depreciation compared to annual expenditures ■ total cost of borrowing compared to total cost of service ■ revenue required to maintain annual network growth
Tactical Indicators	■ percentage of road network rehabilitated / reconstructed ■ value of bridge / large culvert structures rehabilitated or reconstructed ■ overall road condition index as a percentage of desired condition index ■ overall bridge condition index as a percentage of desired condition index ■ annual adjustment in condition indexes ■ annual percentage of network growth ■ percent of paved road lane km where the condition is rated poor or critical ■ number of bridge / large culvert structures where the condition is rated poor or critical ■ percentage of road network replacement value spent on operations and maintenance ■ percentage of bridge / large culvert structures replacement value spent on operations and maintenance
Operational Indicators	■ percentage of road network inspected within last 5 years ■ percentage of bridge / large culvert structures inspected within last two years ■ operating costs for paved roads per lane km ■ operating costs for gravel roads per lane km ■ operating costs for bridge / large culvert structures per square meter ■ number of customer requests received annually ■ percentage of customer requests responded to within 24 hours

5.4 Water / Sanitary / Storm Networks

5.4.1 Service Description

The Township's water distribution network comprises 88.5 km of water main and facilities. The waste water network comprises 25.6 km of sanitary sewer main and facilities. The storm water network comprises 16.6 km of storm main.

Together, the above infrastructure enables the Township to deliver a potable water distribution service, and a waste water and storm water collection service to the residents of the Township.

5.4.2 Scope of services

- The provision of clean safe drinking water through a distribution network of water mains and pumps.
- The removal of waste water through a collection network of sanitary sewer mains.
- The removal of storm water through a collection network of storm sewer mains, and catch basins

5.4.3 Performance Indicators (reported annually)

Performance Indicators (reported annually)	
Strategic Indicators	■ Percentage of total reinvestment compared to asset replacement value ■ Completion of strategic plan objectives (related water / sanitary / storm)
Financial Indicators	■ Annual revenues compared to annual expenditures ■ Annual replacement value depreciation compared to annual expenditures ■ Total cost of borrowing compared to total cost of service ■ Revenue required to maintain annual network growth ■ Lost revenue from system outages
Tactical Indicators	■ Percentage of water / sanitary / storm network rehabilitated / reconstructed ■ Overall water / sanitary / storm network condition index as a percentage of desired condition index ■ Annual adjustment in condition indexes ■ Annual percentage of growth in water / sanitary / storm network ■ Percentage of mains where the condition is rated poor or critical for each network ■ Percentage of water / sanitary / storm network replacement value spent on operations and maintenance
Operational Indicators	■ Percentage of water / sanitary / storm network inspected ■ Operating costs for the collection of wastewater per kilometre of main. ■ Number of wastewater main backups per 100 kilometres of main ■ Operating costs for storm water management (collection, treatment, and disposal) per kilometre of drainage system. ■ Operating costs for the distribution/ transmission of drinking water per kilometre of water distribution pipe. ■ Number of days when a boil water advisory issued by the medical officer of health, applicable to a municipal water supply, was in effect. ■ Number of water main breaks per 100 kilometres of water distribution pipe in a year. ■ Number of customer requests received annually per water / sanitary / storm networks ■ Percentage of customer requests responded to within 24 hours per water / sanitary / storm network

5.5 Buildings

5.5.1 Service Description

Huron-Kinloss' buildings enable the Township to perform administrative functions and also provide public safety, social, cultural, and recreational amenities for the community at large.

5.5.2 Scope of services

- Administrative (offices and work yards)
- Social (community centers and halls)
- Recreational (arenas and recreation centers)

5.5.3 Performance Indicators (reported annually)

Performance Indicators (reported annually)	
Strategic Indicators	■ Percentage of total reinvestment compared to asset replacement value ■ Completion of strategic plan objectives (related to facilities)
Financial Indicators	■ Annual revenues compared to annual expenditures ■ Annual replacement value depreciation compared to annual expenditures ■ Repair and maintenance cost per square meter ■ Energy, utility and water cost per square meter
Tactical Indicators	■ Percentage of component value replaced ■ Overall facility condition index as a percentage of desired condition index ■ Annual adjustment in condition indexes ■ Annual percentage of new facilities (square meter) ■ Percent of facilities rated poor or critical ■ Percentage of facilities replacement value spent on operations and maintenance
Operational Indicators	■ Percentage of facilities inspected within the last 5 years ■ Number/type of service requests ■ Percentage of customer requests responded to within 24 hours

5.6 Parks and Open Spaces

5.6.1 Service Description

The City's parks and open space land holdings and related infrastructure provide recreation and conservation of natural resources, and ultimately contribute to the City's natural form, character and scenic value.

5.6.2 Scope of services

- Parks
- Trails
- Beaches and Docks
- Natural Open Spaces

5.6.3 Performance Indicators (reported annually)

Performance Indicators (reported annually)	
Strategic Indicators	■ Percentage of total reinvestment compared to asset replacement value ■ Completion of strategic plan objectives (related to parks & land)
Financial Indicators	■ Annual revenues compared to annual expenditures ■ Annual replacement value depreciation compared to annual expenditures ■ Cost per capita for supplying parks / trails, etc. ■ Maintenance cost per square meter
Tactical Indicators	■ Overall park condition index as a percentage of desired condition index ■ Annual adjustment in condition indexes ■ Annual percentage of new parkland ■ Percent of park land and infrastructure rated poor or critical ■ Percentage of replacement value spent on operations and maintenance ■ Parkland per capita
Operational Indicators	■ Percentage of park and infrastructure inspected within the last 5 years ■ Number/type of service requests ■ Percentage of customer requests responded to within 24 hours

5.7 Vehicles

5.7.1 Service Description

The Township's diverse fleet of vehicles provides support to multiple departments as part of their delivery of various public programs and services to the citizens.

5.7.2 Performance Indicators (reported annually)

Performance Indicators (reported annually)	
Strategic Indicators	■ Percentage of total reinvestment compared to asset replacement value ■ Completion of strategic plan objectives (related to fleet)
Financial Indicators	■ Annual revenues compared to annual expenditures ■ Annual replacement value depreciation compared to annual expenditures ■ Operating and maintenance cost per fleet category ■ Fuel costs per fleet category
Tactical Indicators	■ Percentage of all vehicles replaced ■ Average age of fleet vehicles ■ Percent of vehicles rated poor or critical ■ Percentage of fleet replacement value spent on operations and maintenance
Operational Indicators	■ Average downtime per fleet category ■ Average utilization per fleet category and/or each vehicle ■ Ratio of preventative maintenance repairs vs reactive repairs ■ Percent of vehicles that received preventative maintenance ■ Number/type of service requests ■ Percentage of customer requests responded to within 24 hours

6.0 Asset Management Strategy

6.1 Objective

To outline and establish a set of planned actions, based on best practice, that will enable the assets to provide a desired and sustainable level of service, while managing risk, at the lowest life cycle cost.

The Asset Management Strategy will develop an implementation process that can be applied to the needs identification and prioritization of renewal, rehabilitation, and maintenance activities. This will assist in the production of a 10 year plan, including growth projections, to ensure the best overall health and performance of the municipality's general capital and infrastructure.

This section includes an overview of condition assessment techniques for each asset class; the life cycle interventions required, including interventions with the best ROI; and prioritization techniques, including risk, to determine which priority projects should move forward into the budget first.

6.2 Non-Infrastructure Solutions and Requirements

The municipality should explore, as requested through the provincial requirements, which non-infrastructure solutions should be incorporated into the budgets for the road, water, sewer (sanitary and storm), and bridges & culverts programs. Non-Infrastructure solutions are such items as studies, policies, condition assessments, consultation exercises, etc., that could potentially extend the life of assets or lower total asset program costs in the future.

Typical solutions for a municipality include linking the asset management plan to the strategic plan, growth and demand management studies, infrastructure master plans, better integrated infrastructure and land use planning, public consultation on levels of service, and condition assessment programs. As part of future asset management plans, a review of these requirements should take place, and a portion of the capital budget should be dedicated for these items in each programs budget.

It is recommended, under this category of solutions, that the municipality implement holistic condition assessment programs for their road, water, sanitary, and storm sewer networks. This will lead to higher understanding of general capital and infrastructure needs, enhanced budget prioritization methodologies, and a clearer path of what is required to achieve sustainable general capital and infrastructure programs.

6.3 Condition Assessment Programs

The foundation of good asset management practice is based on having comprehensive and reliable information on the current condition of the infrastructure. Municipalities need to have a clear understanding regarding performance and condition of their assets, as all management decisions regarding future expenditures and field activities should be based on this knowledge. An incomplete understanding about an asset may lead to its premature failure or premature replacement.

Some benefits of holistic condition assessment programs within the overall asset management process are listed below:

- Understanding of overall network condition leads to better management practices
- Allows for the establishment of rehabilitation programs
- Prevents future failures and provides liability protection
- Potential reduction in operation / maintenance costs
- Accurate current asset valuation
- Allows for the establishment of risk assessment programs
- Establishes proactive repair schedules and preventive maintenance programs
- Avoids unnecessary expenditures

- Extends asset service life therefore improving level of service
- Improves financial transparency and accountability
- Enables accurate asset reporting which, in turn, enables better decision making

Condition assessment can involve different forms of analysis such as subjective opinion, mathematical models, or variations thereof, and can be completed through a very detailed or very cursory approach.

When establishing the condition assessment of an entire asset class, the cursory approach (metrics such as good, fair, poor, critical) is used. This will be a less expensive approach when applied to thousands of assets, yet will still provide up to date information, and will allow for detailed assessment or follow up inspections on those assets captured as poor or critical condition later.

The following section outlines condition assessment programs available for road, bridge, sewer, and water networks that would be useful for the municipality.

6.3.1 Pavement Network Inspections

Typical industry pavement inspections are performed by consulting firms using specialised assessment vehicles equipped with various electronic sensors and data capture equipment. The vehicles will drive the entire road network and typically collect two different types of inspection data – surface distress data and roughness data.

Surface distress data involves the collection of multiple industry standard surface distresses, which are captured either electronically, using sensing detection equipment mounted on the van, or visually, by the van's inspection crew. Examples of surface distresses are:

- **For asphalt surfaces**
  alligator cracking; distortion; excessive crown; flushing; longitudinal cracking; map cracking; patching; edge cracking; potholes; ravelling; rippling; transverse cracking; wheel track rutting

- **For concrete surfaces**
  coarse aggregate loss; corner 'C' and 'D' cracking; distortion; joint faulting; joint sealant loss; joint spalling; linear cracking; patching; polishing; potholes; ravelling; scaling; transverse cracking

Roughness data capture involves the measurement of the roughness of the road, measured by lasers that are mounted on the inspection van's bumper, calibrated to an international roughness index.

Most firms will deliver this data to the client in a database format complete with engineering algorithms and weighting factors to produce an overall condition index for each segment of roadway. This type of scoring database is ideal for upload into the CityWide software database, in order to tag each road with a present condition and then further life cycle analysis to determine what activity should be completed on which road, in what timeframe, and to calculate the cost for the work will be completed within the CityWide system.

The above process is an excellent way to capture road condition as the inspection trucks will provide detailed surface and roughness data for each road segment, and often include video or street imagery. A very rough industry estimate of cost would be about $100 per centreline km of road.

Another option for a cursory level of condition assessment is for municipal road crews to perform simple windshield surveys as part of their regular patrol. Many municipalities have created data collection inspection forms to assist this process and to standardize what presence of defects would constitute a good, fair, poor, or critical score. Lacking any other data for the complete road network, this can still be seen as a good method and will assist greatly with the overall management of the road network. The CityWide Works software has a road patrol component built in that could capture this type of inspection data during road patrols in the field, enabling later analysis of rehabilitation and replacement needs for budget development.

It is recommended that the municipality establish a pavement condition assessment program and that a portion of capital funding is dedicated to this.

6.3.2 Bridges & Culverts (greater than 3m) Inspections

Ontario municipalities are mandated by the Ministry of Transportation to inspect all structures that have a span of 3 metres or more, according to the OSIM (Ontario Structure Inspection Manual).

Structure inspections must be performed by, or under the guidance of, a structural engineer, must be performed on a biennial basis (once every two years), and include such information as structure type, number of spans, span lengths, other key attribute data, detailed photo images, and structure element by element inspection, rating and recommendations for repair, rehabilitation, and replacement.

The best approach to develop a 10 year needs list for the municipality's structure portfolio would be to have the structural engineer who performs the inspections to develop a maintenance requirements report, and rehabilitation and replacement requirements report as part of the overall assignment. In addition to refining the overall needs requirements, the structural engineer should identify those structures that will require more detailed investigations and non-destructive testing techniques. Examples of these investigations are:

- Detailed deck condition survey
- Non-destructive delamination survey of asphalt covered decks
- Substructure condition survey
- Detailed coating condition survey
- Underwater investigation
- Fatigue investigation
- Structure evaluation

Through the OSIM recommendations and additional detailed investigations, a 10 year needs list will be developed for the municipality's bridges.

The 10 year needs list developed could then be further prioritized using risk management techniques to better allocate resources. Also, the results of the OSIM inspection for each structure, whether BCI (bridge condition index) or general condition (good, fair, poor, critical) should be entered into the CityWide software to update results and analysis for the development of the budget.

6.3.3 Sewer Network Inspections (Sanitary & Storm)

The most popular and practical type of sanitary and storm sewer assessment is the use of Closed Circuit Television Video (CCTV). The process involves a small robotic crawler vehicle with a CCTV camera attached that is lowered down a maintenance hole into the sewer main to be inspected. The vehicle and camera then travels the length of the pipe providing a live video feed to a truck on the road above where a technician / inspector records defects and information regarding the pipe. A wide range of construction or deterioration problems can be captured including open/displaced joints, presence of roots, infiltration & inflow, cracking, fracturing, exfiltration, collapse, deformation of pipe and more. Therefore, sewer CCTV inspection is a very good tool for locating and evaluating structural defects and general condition of underground pipes.

Even though CCTV is an excellent option for inspection of sewers it is a fairly costly process and does take significant time to inspect a large volume of pipes.

Another option in the industry today is the use of Zoom Camera equipment. This is very similar to traditional CCTV, however, a crawler vehicle is not used but in its place, a camera is lowered down a maintenance hole attached to a pole like a piece of equipment. The camera is then rotated towards each connecting pipe and the operator above progressively zooms in to record all defects and information about each pipe. The downside to this technique is the further down the pipe the image is zoomed, the less clarity is available to accurately record defects and measurement. The upside is the process is far quicker and significantly less expensive and an assessment of the manhole can be provided as well. Also, it is important to note that 80% of pipe deficiencies generally occur within 20 meters of each manhole. The following is a list of advantages of utilizing Zoom Camera technology:

- A time and cost efficient way of examining sewer systems;
- Problem areas can be quickly targeted;
- Can be complemented by a conventional camera (CCTV), if required afterwards;
- In a normal environment, 20 to 30 manholes can be inspected in a single day, covering more than 1,500 meters of pipe;
- Contrary to the conventional camera approach, cleaning and upstream flow control is not required prior to inspection;
- Normally detects 80% of pipe deficiencies, as most deficiencies generally occur within 20 meters of manholes.

The following table is based on general industry costs for traditional CCTV inspection and Zoom Camera inspection; however, costs should be verified through local contractors. It is for illustrative purposes only but supplies a general idea of the cost to inspect Huron-Kinloss' entire sanitary and storm networks.

Sanitary and Sewer Inspection Cost Estimates

Sewer Network	Assessment Activity	Cost	Metres of Main / # of Manholes	**Total**
Sanitary	Full CCTV	$10 (per m)	25,600m	**$256,000**
	Zoom	$300 (per mh)	320 manholes*	**$96,000**
Storm	Full CCTV	$10 (per m)	16,600m	**$166,000**
	Zoom	$300 (per mh)	208 manholes*	**$62,400**

* *Sanitary and Storm manhole numbers estimated based on one man hole per 80 metres*

It can be seen from the above table that there is a significant cost savings achieved through the use of Zoom Camera technology. A good industry trend and best practice is to inspect the entire network using Zoom Camera technology and follow up on the poor and critical rated pipes with more detail using a full CCTV inspection. In this way, inspection expenditures are kept to a minimum, however, an accurate assessment on whether to rehabilitate or replace pipes will be provided for those with the greatest need.

It is recommended that the municipality establish a sewer condition assessment program and that a portion of capital funding is dedicated to this.

In addition to receiving a video and defect report of each pipe's CCTV or Zoom camera inspection, many companies can now provide a database of the inspection results, complete with scoring matrixes that provide an overall general condition score for each pipe segment that has been assessed. Typically pipes are scored from 1 – 5, with 1 being a relatively new pipe and 5 being a pipe at the end of its design life. This type of scoring database is ideal for upload into the CityWide software database, in order to tag each pipe with a present condition and then further life cycle analysis to determine what activity should be done to which pipe, in what timeframe, and to calculate the cost for the work will be completed by the CityWide system.

6.3.4 Water network inspections

Unlike sewer mains, it is very difficult to inspect water mains from the inside due to the high pressure flow of water constantly underway within the water network. Physical inspections require a disruption of service to residents, can be an expensive exercise, and are time consuming to set up. It is recommended practice that physical inspection of water mains typically only occurs for high risk, large transmission mains within the system, and only when there is a requirement. There are a number of high tech inspection techniques in the industry for large diameter pipes but these should be researched first for applicability as they are quite expensive. Examples are:

- Remote eddy field current (RFEC)
- Ultrasonic and acoustic techniques
- Impact echo (IE)
- Georadar

For the majority of pipes within the distribution network, gathering key information in regards to the main and its environment can supply the best method to determine a general condition. Key data that could be used, along with weighting factors, to determine an overall condition score are listed below.

- Age
- Material Type
- Breaks
- Hydrant Flow Inspections
- Soil Condition

Understanding the age of the pipe will determine useful life remaining, however, water mains fail for many other reasons than just age. The pipe material is important to know as different pipe types have different design lives and different deterioration profiles. Keeping a water main break history is one of the best analysis tools to predict future pipe failures and to assist with programming rehabilitation and replacement schedules. Also, most municipalities perform hydrant flow tests for fire flow prevention purposes. The readings from these tests can also help determine condition of the associated water main. If a hydrant has a relatively poor flow condition it could be indicative of a high degree of encrustation within the attached water main, which could then be flagged as a candidate for cleaning or possibly lining. Finally, soil condition is important to understand as certain soil types can be very aggressive at causing deterioration on certain pipe types.

It is recommended that the municipality develop a rating system for the mains within the distribution network based on the availability of key data, and that funds are budgeted for this development.

Also, it is recommended that the municipality utilize the CityWide Works application to track water main break work orders and hydrant flow inspection readings as a starting point to develop a future scoring database for each water main.

6.3.5 Facility inspections

The most popular and practical type of facility assessment involves qualified groups of trained industry professionals (engineers or architects) performing an analysis of the condition of a group of facilities, and their components, that may vary in terms of age, design, construction methods, and materials. This analysis can be done by walk-through inspection, mathematical modeling, or a combination of both. But the most accurate way of determining the condition requires a walk-through to collect baseline data.

The following 5 asset classifications are typically inspected:

- **Site Components –** property around the facility and includes the outdoor components such as utilities, signs, stairways, walkways, parking lots, fencing, courtyards and landscaping.
- **Structural Components –** physical components such as the foundations, walls, doors, windows, roofs.
- **Electrical Components –** all components that use or conduct electricity such as wiring, lighting, electric heaters, and fire alarm systems
- **Mechanical Components –** components that convey and utilize all non-electrical utilities within a facility such as gas pipes, furnaces, boilers, plumbing, ventilation, and fire extinguishing systems
- **Vertical movement –** components used for moving people between floors of buildings such as elevators, escalators and stair lifts.

The data collection on the above components typically includes: type and category of component; estimated age; current condition; estimated repair, rehabilitation or replacement date; and estimated cost for the repair, rehabilitation or replacement.

Once collected this type of information can be uploaded into the CityWide software database in order for short and long term repair, rehabilitation and replacement reports to be generated to assist with programming the short and long term maintenance and capital budgets.

In addition, reports can be generated for each facility that accumulate all current repair, rehabilitation and replacement requirements and generate a facility condition index (FCI) for the overall facility. This allows senior management to assess the overall state of the housing portfolio and determine which facilities have the greatest overall needs.

The FCI of a facility is represented as a percentage and is calculated by taking the total renewal costs of components in a given year and dividing that figure by the total replacement value of the facility itself. A high FCI value reflects a high renewal requirement and therefore a poor condition facility.

A facility with an FCI of less than 5% is in good condition, between 5% and 10% is in fair condition, between 10% and 30% poor condition, and over 30% is considered critical condition.

$$\text{F. C. I. (Facility Condition Index)} = \frac{\text{Renewal Requirement in a Given Year}}{\text{Replacement Value of an Asset}}$$

Good < 5%, Fair 5 – 10%, Poor 10% - 30%, Critical > 30%

6.3.6 Parks and Open Spaces

There is currently no industry standard in place for the process or protocols in regards to the inspection of parks and their associated infrastructure. However, through the emergence of asset management as a discipline within North America, many municipalities are inspecting their parks with a similar approach to that of a facility condition inspection. The approach works well because the inspection is completed on a component by component basis. A facility has an external shell with many internal components that have unique life cycle requirements (i.e. foundation, windows, HVAC unit, etc.) and a park has an external boundary containing many internal components with unique life cycle requirements also (i.e. fences, pathways, bleachers, sport fields, etc.).
The park inspection will involve qualified groups of trained industry professionals (engineers or landscape architects) performing an analysis of the condition of a group of parks and their components. The most accurate way of determining the condition requires a walk-through to collect baseline data.

The following key asset classifications are typically inspected:

- **Physical Site Components –** physical components on the site of the park such as: fences, utilities, stairways, walkways, parking lots, irrigation systems, monuments, fountains.
- **Recreation Components –** physical components such as: playgrounds, bleachers, back stops, splash pads, and benches.
- **Land Site Components** – land components on the site of the park such as: landscaping, sports fields, trails, natural areas, and associated drainage systems.
- **Minor Park Facilities –** small facilities within the park site such as: sun shelters, washrooms, concession stands, change rooms, storage sheds.

The data collection on the above components typically includes: type and category of component; estimated life cycle; estimated age; current condition; estimated repair, rehabilitation or replacement date; and estimated cost for the repair, rehabilitation or replacement.

Once collected this type of information can be uploaded into the CityWide software database in order for short and long term repair, rehabilitation and replacement reports to be generated to assist with programming the short and long term maintenance and capital budgets.

In addition, reports can be generated for each park that accumulate all current repair, rehabilitation and replacement requirements and generate a park condition index (PCI) for the overall park. This allows senior management to assess the overall state of the park portfolio and determine which parks have the greatest overall needs.

The PCI of a park is represented as a percentage and is calculated by taking the total renewal costs of components in a given year and dividing that figure by the total replacement value of the park itself. A high PCI value reflects a high renewal requirement and therefore a poor condition park.

A park with an PCI of less than 5% is in good condition, between 5% and 10% is in fair condition, between 10% and 30% poor condition, and over 30% is considered critical condition.

$$\text{P. C. I. (Park Condition Index)} = \frac{\text{Renewal Requirement in a Given Year}}{\text{Replacement Value of an Asset}}$$

Good < 5%, Fair 5 – 10%, Poor 10% - 30%, Critical > 30%

6.3.7 Fleet (Vehicles) Inspections and Maintenance

The typical approach to optimizing the maintenance expenditures of a corporate fleet of vehicles is through routine vehicle inspections, routine vehicle servicing, and an established routine preventative maintenance program.

Most, if not all, makes and models of vehicles are supplied with maintenance manuals that define the appropriate schedules and routines for typical maintenance and servicing and also more detailed restoration or rehabilitation protocols.

The primary goal of good vehicle maintenance is to avoid or mitigate the consequence of failure of equipment or parts. An established preventative maintenance program serves to ensure this, as it will consist of scheduled inspections and follow up repairs of vehicles and equipment in order to decrease breakdowns and excessive downtimes.

A good preventative maintenance program will include partial or complete overhauls of equipment at specific periods, including oil changes, lubrications, fluid changes and so on. In addition, workers can record equipment or part deterioration so they can schedule to replace or repair worn parts before they fail. The ideal preventative maintenance program would move further and further away from reactive repairs and instead towards the prevention of all equipment failure before it occurs.

Once a good preventative maintenance program is defined and scheduled for various categories and types of vehicles, it becomes essential to have good software tools to track the scheduling and performance of the overall program. There are municipal maintenance software programs, such as CityWide, that are ideal for this purpose as they are designed to enable public works departments to prioritize, schedule and track projects including preventative maintenance schedules. In addition these software applications typically calculate resources utilized, inventory consumed, as well as direct and indirect labour, and will provide full management reporting.

It is recommended that a preventative maintenance routine is defined and established for all fleet vehicles and that a software application such as Citywide is utilized for the overall management of the program.

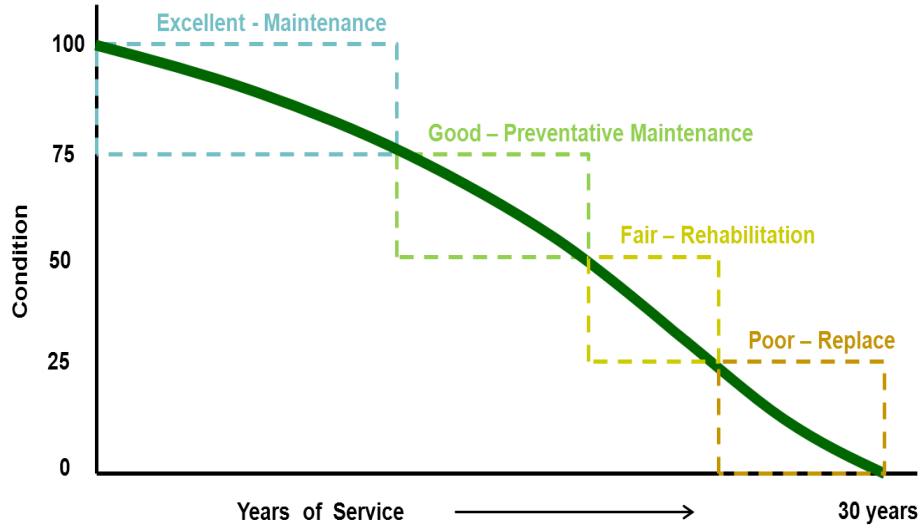
6.4 AM Strategy – Life Cycle Analysis Framework

An industry review was conducted to determine which life cycle activities can be applied at the appropriate time in an asset's life, to provide the greatest additional life at the lowest cost. In the asset management industry, this is simply put as doing the right thing to the right asset at the right time. If these techniques are applied across entire asset networks or portfolios (e.g., the entire road network), the municipality could gain the best overall asset condition while expending the lowest total cost for those programs.

6.4.1 Paved Roads

The following analysis has been conducted at a fairly high level, using industry standard activities and costs for paved roads. With future updates of this Asset Management Strategy, the municipality may wish to run the same analysis with a detailed review of municipality activities used for roads and the associated local costs for those work activities. All of this information can be input into the CityWide software suite in order to perform updated financial analysis as more detailed information becomes available.

The following diagram depicts a general deterioration profile of a road with a 30 year life.



As shown above, during the road's life cycle there are various windows available for work activity that will maintain or extend the life of the asset. These windows are: maintenance; preventative maintenance; rehabilitation; and replacement or reconstruction.

The windows or thresholds for when certain work activities should be applied to also coincide approximately with the condition state of the asset as shown below:

Asset Condition and Related Work Activity: Paved Roads

Condition	Condition Range	Work Activity
Excellent Condition (Maintenance only phase)	100-76	■ maintenance only
Good Condition (Preventative maintenance phase)	75 - 51	■ crack sealing ■ emulsions
Fair Condition (Rehabilitation phase)	50 -26	■ resurface - mill & pave ■ resurface - asphalt overlay ■ single & double surface treatment (for rural roads)
Poor Condition (Reconstruction phase)	25 - 1	■ reconstruct - pulverize and pave ■ reconstruct - full surface and base reconstruction
Critical Condition (Reconstruction phase)	0	■ critical includes assets beyond their useful lives which make up the backlog. they require the same interventions as the "poor" category above.

With future updates of this Asset Management Strategy the municipality may wish to review the above condition ranges and thresholds for when certain types of work activity occur, and adjust to better suit the municipality's work program. Also note: when adjusting these thresholds, it actually adjusts the level of service provided and ultimately changes the amount of money required. These threshold and condition ranges can be easily updated with the CityWide software suite and an updated financial analysis can be calculated. These adjustments will be an important component of future Asset Management Plans, as the Province requires each municipality to present various management options within the financing plan.

The table below outlines the costs for various road activities, the added life obtained for each, the condition range at which they should be applied, and the cost of 1 year added life for each (cost of activity / added life) in order to present an apples to apples comparison.

Road Lifecycle Activity Options

Treatment	Average Unit Cost (per sq. m)	Added Life (Years)	Condition Range	Cost Of Activity/Added Life
Urban Reconstruction	$205	30	25 - 0	$6.83
Urban Resurfacing	$84	15	50 - 26	$5.60
Rural Reconstruction	$135	30	25 - 0	$4.50
Rural Resurfacing	$40	15	50 - 26	$2.67
Double Surface Treatment	$25	10	50 - 26	$2.50
Routing & Crack Sealing (P.M)	$2	3	75 - 51	$0.67

As can be seen in the table above, preventative maintenance activities such as routing and crack sealing have the lowest associated cost (per sq. m) in order to obtain one year of added life. Of course, preventative maintenance activities can only be applied to a road at a relatively early point in the life cycle. It is recommended that the municipality engage in an active preventative maintenance program for all paved roads and that a portion of the maintenance budget is allocated to this.

Also, rehabilitation activities, such as urban and rural resurfacing or double surface treatments (tar and chip) for rural roads have a lower cost to obtain each year of added life than full reconstruction activities. It is recommended, if not in place already, that the municipality engages in an active rehabilitation program for urban and rural paved roads and that a portion of the capital budget is dedicated to this.

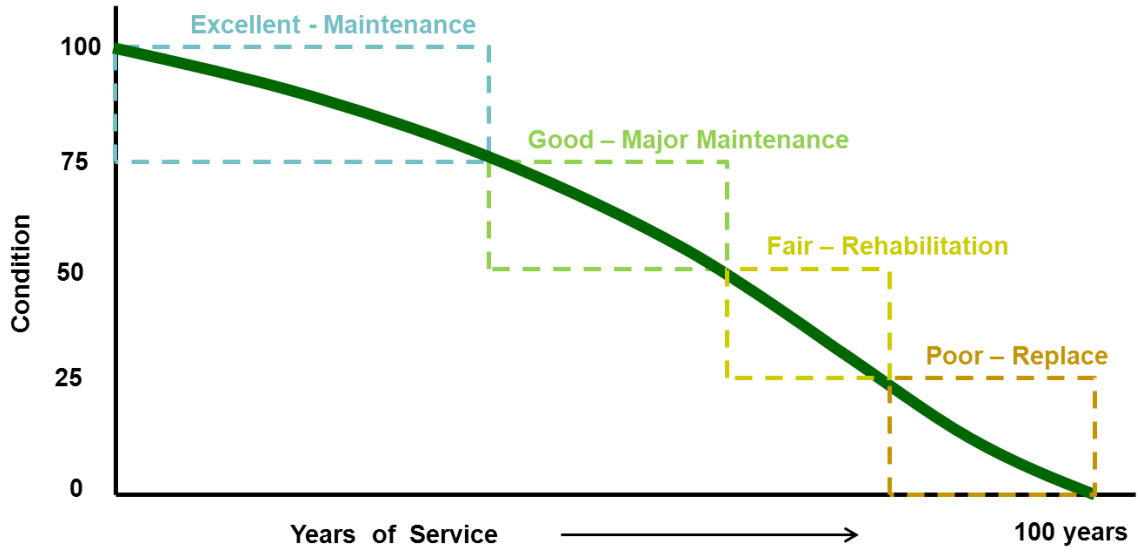
Of course, in order to implement the above programs it will be important to also establish a general condition score for each road segment, established through standard condition assessment protocols as previously described.

It is important to note that a "worst first" budget approach, whereby no life cycle activities other than reconstruction at the end of a roads life are applied, will result in the most costly method of managing a road network overall.

6.4.3 Sanitary and Storm Sewers

The following analysis has been conducted at a fairly high level, using industry standard activities and costs for sanitary and storm sewer rehabilitation and replacement. With future updates of this asset management strategy, the municipality may wish to run the same analysis with a detailed review of municipality activities used for sewer mains and the associated local costs for those work activities. All of this information can be input into the CityWide software suite in order to perform updated financial analysis as more detailed information becomes available.

The following diagram depicts a general deterioration profile of a sewer main with a 100 year life.



As shown above, during the sewer main's life cycle there are various windows available for work activity that will maintain or extend the life of the asset. These windows are: maintenance; major maintenance; rehabilitation; and replacement or reconstruction.
The windows or thresholds for when certain work activities should be applied also coincide approximately with the condition state of the asset as shown below:

Asset Condition and Related Work Activity: **Sewer Main**		
Condition	Condition Range	Work Activity
Excellent Condition (Maintenance only phase)	100-76	■ maintenance only (cleaning & flushing etc.)
Good Condition (Preventative maintenance phase)	75 - 51	■ manhole repairs ■ small pipe section repairs
Fair Condition (Rehabilitation phase)	50 -26	■ structural relining
Poor Condition (Reconstruction phase)	25 - 1	■ pipe replacement
Critical Condition (Reconstruction phase)	0	■ critical includes assets beyond their useful lives which make up the backlog. They require the same interventions as the "poor" category above.

With future updates of this Asset Management Strategy the municipality may wish to review the above condition ranges and thresholds for when certain types of work activity occur, and adjust to better suit the municipality's work program. Also note: when adjusting these thresholds, it actually adjusts the level of service provided and ultimately changes the amount of money required. These threshold and condition ranges can be easily updated with the CityWide software suite and an updated financial analysis can be calculated. These adjustments will be an important component of future Asset Management Plans, as the province requires each municipality to present various management options within the financing plan.

The table below outlines the costs, by pipe diameter, for various sewer main rehabilitation (lining) and replacement activities. The columns display the added life obtained for each activity, the condition range at which they should be applied, and the cost of 1 year added life for each (cost of activity / added life) in order to present an apples to apples comparison.

Sewer Main Lifecycle Activity Options				
Category	Cost (per m)	Added Life	Condition Range	1 year Added Life Cost (Cost / Added Life)
Structural Rehab (m)				
0 - 325mm	$174.69	75	50 - 75	$2.33
325 - 625mm	$283.92	75	50 - 75	$3.79
625 - 925mm	$1,857.11	75	50 - 75	$24.76
> 925mm	$1,771.34	75	50 - 75	$23.62
Replacement (m)				
0 - 325mm	$475.00	100	76 - 100	$4.75
325 - 625mm	$725.00	100	76 - 100	$7.25
625 - 925mm	$900.00	100	76 - 100	$9.00
> 925mm	$1,475.00	100	76 - 100	$14.75

As can be seen in the above table, structural rehabilitation or lining of sewer mains is an extremely cost effective industry activity and solution for pipes with a diameter less than 625mm. The unit cost of lining is approximately one third of replacement and the cost to obtain one year of added life is half the cost.

For sewer mains with diameters greater than 625mm specialized liners are required and therefore the costs are no longer effective. It should be noted, however, that the industry is continually expanding its

technology in this area and therefore future costs should be further reviewed for change and possible price reductions.

It is recommended, if not in place already, that the municipality engage in an active structural lining program for sanitary and storm sewer mains and that a portion of the capital budget be dedicated to this.

In order to implement the above, it will be important to also establish a condition assessment program to establish a condition score for each sewer main within the sanitary and storm collection networks, and therefore identify which pipes are good candidates for structural lining.

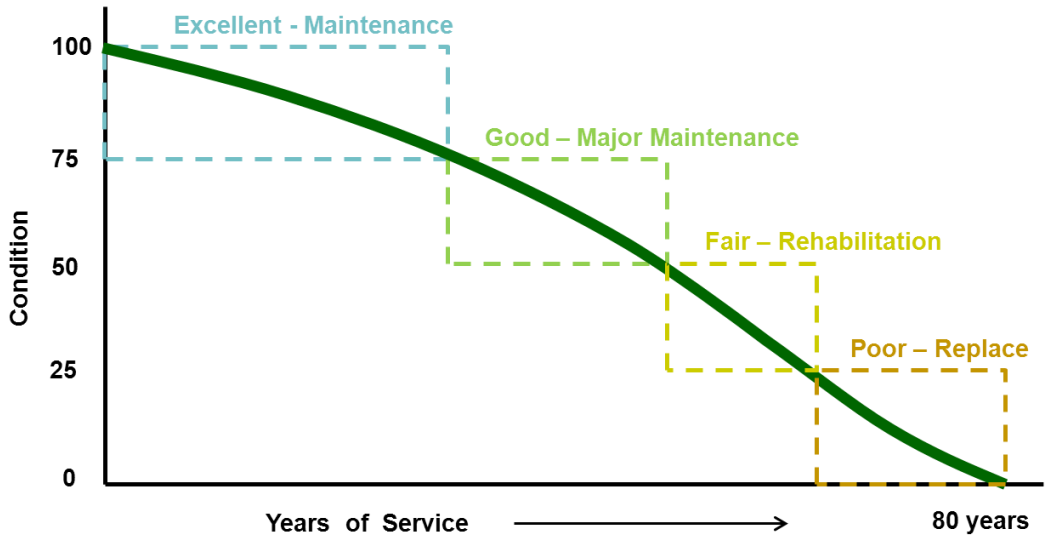
6.4.4 Bridges & Culverts (greater than 3m span)

The best approach to develop a 10 year needs list for the municipality's bridge structure portfolio would be to have the structural engineer who performs the inspections to develop a maintenance requirements report, a rehabilitation and replacement requirements report and identify additional detailed inspections as required. This approach is described in more detail within the "Bridges & Culverts (greater than 3m) Inspections" section above.

6.4.5 Water Network

As with roads and sewers above, the following analysis has been conducted at a fairly high level, using industry standard activities and costs for water main rehabilitation and replacement.

The following diagram depicts a general deterioration profile of a water main with an 80 year life.



As shown above, during the water main's life cycle there are various windows available for work activity that will maintain or extend the life of the asset. These windows are: maintenance; major maintenance; rehabilitation; and replacement or reconstruction.

The windows or thresholds for when certain work activities should be applied also coincide approximately with the condition state of the asset as shown below:

Asset Condition and Related Work Activity: Water Main

Condition	Condition Range	Work Activity
Excellent Condition (Maintenance only phase)	100-76	■ maintenance only (cleaning & flushing etc.)
Good Condition (Preventative maintenance phase)	75 - 51	■ water main break repairs ■ small pipe section repairs
Fair Condition (Rehabilitation phase)	50 -26	■ structural water main relining
Poor Condition (Reconstruction phase)	25 - 1	■ pipe replacement
Critical Condition (Reconstruction phase)	0	■ critical includes assets beyond their useful lives which make up the backlog. They require the same interventions as the "poor" category above.

Water main Lifecycle Activity Option				
Category	Cost	Added Life	Condition Range	Cost of Activity / Added Life
Structural Rehab (m)				
0.000 - 0.150m	$209.70	50	50 - 75	$4.19
0.150 - 0.300m	$315.00	50	50 - 75	$6.30
0.300 - 0.400m	$630.00	50	50 - 75	$12.60
0.400 - 0.700m	$1,500.00	50	50 - 75	$30.00
0.700 m - & +	$2,000.00	50	50 - 75	$40.00
Replacement (m)				
0.000 - 0.150m	$233.00	80	76 - 100	$2.91
0.150 - 0.300m	$350.00	80	76 - 100	$4.38
0.300 - 0.400m	$700.00	80	76 - 100	$8.75
0.400 - 0.700m	$1,500.00	80	76 - 100	$18.75
0.700 m - & +	$2,000.00	80	76 - 100	$25.00

Water rehab technologies still require some digging (known as low dig technologies, due to lack of access) and are actually more expensive on a life cycle basis. However, if the road above the water main is in good condition, lining avoids the cost of road reconstruction still resulting in a cost effective solution.

It should be noted, that the industry is continually expanding its technology in this area and therefore future costs should be further reviewed for change and possible price reductions.

At this time, it is recommended that the municipality only utilize water main structural lining when the road above requires rehab or no work.

6.4.6 Buildings and Facilities

The best approach to develop a 10 year needs list for the municipality's facility portfolio would be to have the engineers or architects who perform the facility inspections to also develop a complete portfolio maintenance requirements report and rehabilitation and replacement requirements report, and also identify additional detailed inspections and follow up studies as required. This may be performed as a separate assignment once all individual facility audits / inspections are complete. Of course, if the inspection data is housed or uploaded into the CityWide software, then these reports can be produced automatically from the system.

The above reports could be considered the beginning of a 10 year maintenance and capital plan, however, within the facilities industry there are other key factors that should be considered to determine over all priorities and future expenditures. Some examples would be functional / legislative requirements, energy conservation programs and upgrades, customer complaints and health and safety concerns, and also customer expectations balanced with willingness to pay initiatives.

Legislative requirements:

Acts to consider as part of the 10 year plan would be:

Accessibility for Ontarians with Disabilities Act By January 2012, all public sector in Ontario were required to comply with the customer service standard under the Accessibility for Ontarians with Disabilities Act, 2005 (AODA). This means that each organization will have to establish policies, practices and procedures on providing goods and services to people with disabilities.

The Building Code Act (BCA) and the Ontario Building Code (OBC) govern the construction, demolition, and renovation of buildings by setting certain minimum performance and safety standards.

The initial 10 year requirements listings produced from the facility audits / inspections should be reviewed to ensure capital replacements and upgrades are compliant with industry standards and legislation and project prioritizations and estimates should be adjusted accordingly.

Energy Conservation

There are significant savings to be achieved within a facility portfolio through the implementation of energy conservation programs and the associated industry incentives available upon the market. Some examples would be:

Mechanical & Structural components

- Improve mechanical systems by replacing old inefficient systems (e.g HVAC, boilers) with new high efficiency systems; investigate if incentives for these improvements are available from utilities, federal government, etc.
- Investigate the tightness and insulation of the building envelope in all properties and develop programs for improvement
- Reduce solar gain through windows with awnings or landscaping.
- Replace/upgrade all toilets with high efficiency toilets

Electrical components

- Install occupancy sensors
- Implement energy efficiency lighting using compact fluorescent light bulbs and install timers where appropriate to control outside lights
- Install fully programmable thermostats within all housing units

Energy conservation should be studied in detail for the entire facilities portfolio and upgrade and replacement programs should be implemented through the capital program as part of the 10 year plan.

Customer expectation and affordability or willingness to pay

As discussed within the "Desired Levels of Service" section of this AMP, levels of service are directly related to the expectations of the customer and also their ability to pay for a level of service.

Community facilities, such as recreation centres, in-door pools, arenas, etc. are infrastructure service areas where customer surveys can be conducted to gain a better sense of what customer expectations are and to assist in the establishment of a standard level of provision or service. Information could be collected on: safety; security; esthetics; environment; comfort; affordability; cleanliness; functional use of space; etc. This would require a much more detailed review, however, the establishment of a level of service based on customer needs and expectations, while still balancing affordability, would directly affect the prioritization of programs and projects brought forward into the 10 year facility budget.

It is recommended that the municipality develop a life cycle framework for the facility portfolio based on a detailed review of the above factors and that the results are brought forward into future iterations of this AMP.

6.4.7 Parks and Open Spaces

The best approach to develop a 10 year needs list for the municipality's park and open space portfolio would be to have the engineers or landscape architects who perform the park inspections to also develop a complete portfolio maintenance requirements report and rehabilitation and replacement requirements report, and also identify additional detailed inspections and follow up studies as required. This may be performed as a separate assignment once all individual park audits / inspections are complete. Of course, if the inspection data is housed or uploaded into the CityWide software, then these reports can be produced automatically from the system.

It is important to note that the land site components within a park, trails and sports fields for instance, do not typically require full replacement, but instead a properly defined perpetual maintenance program that provides a defined level of service balanced to the overall use of those facilities. This could be provided as a separate assignment from a professionally trained landscape architect.

6.4.8 Fleet (Vehicles)

Life Cycle Requirements
The best approach to develop a 10 year needs list for the municipality's vehicles would first be through a defined preventative maintenance program as described in the "Fleet inspections and maintenance section", and secondly through an optimized life cycle vehicle replacement schedule. As previously described, the preventative maintenance program would serve to determine budget requirements for operating and minor capital expenditures for part renewal and major refurbishments and rehabilitations. An optimized vehicle replacement program will ensure a vehicle is replaced at the correct point in time in order to minimize overall cost of ownership, minimize costly repairs and downtime, while maximizing potential re-sale value. There is significant benchmarking information available within the Fleet industry in regards to vehicle life cycles which can be used to assist in this process. Once appropriate replacement schedules are established the short and long term budgets can be funded accordingly.

Fleet Utilization
One of the most critical factors in managing a fleet of vehicles and the associated costs is utilization. Over utilized vehicles may be used for additional shifts or operated in demanding environments while other vehicles are significantly under-utilized. To ensure preventative maintenance programs and vehicle replacement schedules are optimized, vehicle utilization must be managed and tracked.

A good performance indicator to assist with managing fleet utilization is tracking engine hours of actual vehicle usage, whether it's being driven or not, as kilometers driven is not always a meaningful way to assess whether a vehicle is being utilized fully. Better management of utilization can lower costs by reducing preventative maintenance for some vehicles, selling certain vehicles, encouraging vehicle pooling, outsourcing the use of certain vehicle types, and encouraging the use of employee vehicles.

Green Fleets
Due to the significant increase of fuel costs, many fleet management groups are increasingly looking towards the greening of their fleets to lower future operating and maintenance costs. The city of London, UK, defines a green fleet "as one that does its best to minimize fuel consumption and exhaust emissions. It also seeks to minimize the amount of traffic it generates by utilizing vehicles efficiently and by using alternatives wherever possible". This area would require an individually tailored study for any municipality to project what type of savings could be achieved over the long term.

The above reports could be considered the beginning of a 10 year maintenance and capital plan; however, further work would be required to assimilate functional improvements and requirements into the long term plan.

6.5 Growth and Demand

Typically a municipality will have specific plans associated with population growth. It is essential that the asset management strategy should address not only the existing infrastructure, as above, but must include the impact of projected growth on defined project schedules and funding requirements. Projects would include the funding of the construction of new infrastructure, and/or the expansion of existing infrastructure to meet new demands. The municipality should enter these projects into the CityWide software in order to be included within the short and long term budgets as required.

6.6 Project Prioritization

The above techniques and processes when established for the road, water, sewer networks and bridges will supply a significant listing of potential projects. Typically the infrastructure needs will exceed available resources and therefore project prioritization parameters must be developed to ensure the right projects come forward into the short and long range budgets. An important method of project prioritization is to rank each project, or each piece of infrastructure, on the basis of how much risk it represents to the organization.

6.6.1 Risk Matrix and Scoring Methodology

Risk within the infrastructure industry is often defined as the probability (likelihood) of failure multiplied by the consequence of that failure.

RISK = LIKELIHOOD OF FAILURE **x** CONSEQUENCE OF FAILURE

The likelihood of failure relates to the current condition state of each asset, whether they are in excellent, good, fair, poor or critical condition, as this is a good indicator regarding their future risk of failure. The consequence of failure relates to the magnitude, or overall effect, that an asset's failure will cause. For instance, a small diameter water main break in a sub division may cause a few customers to have no water service for a few hours, whereby a large trunk water main break outside a hospital could have disastrous effects and would be a front page news item. The following table represents the scoring matrix for risk:

Infrastructure

Consequence of Failure	1	2	3	4	5
High					
5	65 Assets 775.499 km, m $2,720,218.16	114 Assets 93.114606514 km, m $7,785,490.74	27 Assets 174.064540372 km, m $3,557,451.78	8 Assets 7.34 units, km $1,665,476.89	141 Assets 58.736838808 km $8,091,606.29
4	37 Assets 4,271 m $1,546,442.92	61 Assets 12,244 units, m $5,345,453.69	4 Assets 93 units, m $1,947,645.58	1 Asset 144 units $1,055,429.73	1 Asset 1 units $410,315.91
3	73 Assets 11,553.771 units, m, km $5,118,446.69	86 Assets 11,151.64 units, km, m $8,366,629.18	57 Assets 3,735.04 units, km, m $5,861,634.51	14 Assets 51 units, m $4,002,889.18	59 Assets 225.601563151 units, km, m $4,561,110.76
2	264 Assets 26,119 units, m, km $14,843,080.49	292 Assets 26,685 units, m $17,273,481.00	76 Assets 6,055 units, m $9,532,417.54	21 Assets 277 units, m $3,038,805.67	58 Assets 5,271 units, m $7,949,189.66
1	100 Assets 3,900.06 units, m, km $1,881,379.73	98 Assets 7,446 units, m $5,539,216.92	127 Assets 12,458 units, m $10,924,204.71	42 Assets 2,650 units, m $1,421,113.65	118 Assets 9,713 units, m $5,403,795.88
Low					High

Probability of Failure

All of the Township's assets analyzed within this asset management plan have been given both a likelihood of failure score and a consequence of failure score within the CityWide software. The following risk scores have been developed at a high level for each asset class within the CityWide software system. It is recommended that the Township undertake a detailed study to develop a more tailored suite of risk scores, particularly in regards to the consequence of failure, and that this be updated within the CityWide software with future updates to this Asset Management Plan.

The current scores that will determine budget prioritization currently within the system are as follows:

All assets:
The Likelihood of Failure score is based on the condition of the assets:

Likelihood of Failure: **All Assets**	
Asset condition	Likelihood of failure
Excellent condition	Score of 1
Good condition	Score of 2
Fair condition	Score of 3
Poor condition	Score of 4
Critical condition	Score of 5

Bridges (based on valuation):
The consequence of failure score for this initial AMP is based upon the replacement value of the structure. The higher the value, probably the larger the structure and therefore probably the higher the consequential risk of failure:

Consequence of Failure: **Bridges**	
Replacement Value	Consequence of failure
Up to $100k	Score of 1
$101 to $150k	Score of 2
$151 to $300k	Score of 3
$301 to $850k	Score of 4
$851k and over	Score of 5

Roads (based on classification):
The consequence of failure score for this initial AMP is based upon the road classification as this will reflect traffic volumes and number of people affected.

Consequence of Failure: **Roads**	
Road Classification	Consequence of failure
Gravel	Score of 1
Tar & Chip	Score of 3
Asphalt	Score of 5

Sanitary Sewer (based on diameter):
The consequence of failure score for this initial AMP is based upon pipe diameter as this will reflect potential upstream service area affected.

Consequence of Failure: **Sanitary Sewer**	
Pipe Diameter	Consequence of failure
Less than 150mm	Score of 1
151-200mm	Score of 2
201-300mm	Score of 3
301-400mm	Score of 4
401mm and over	Score of 5

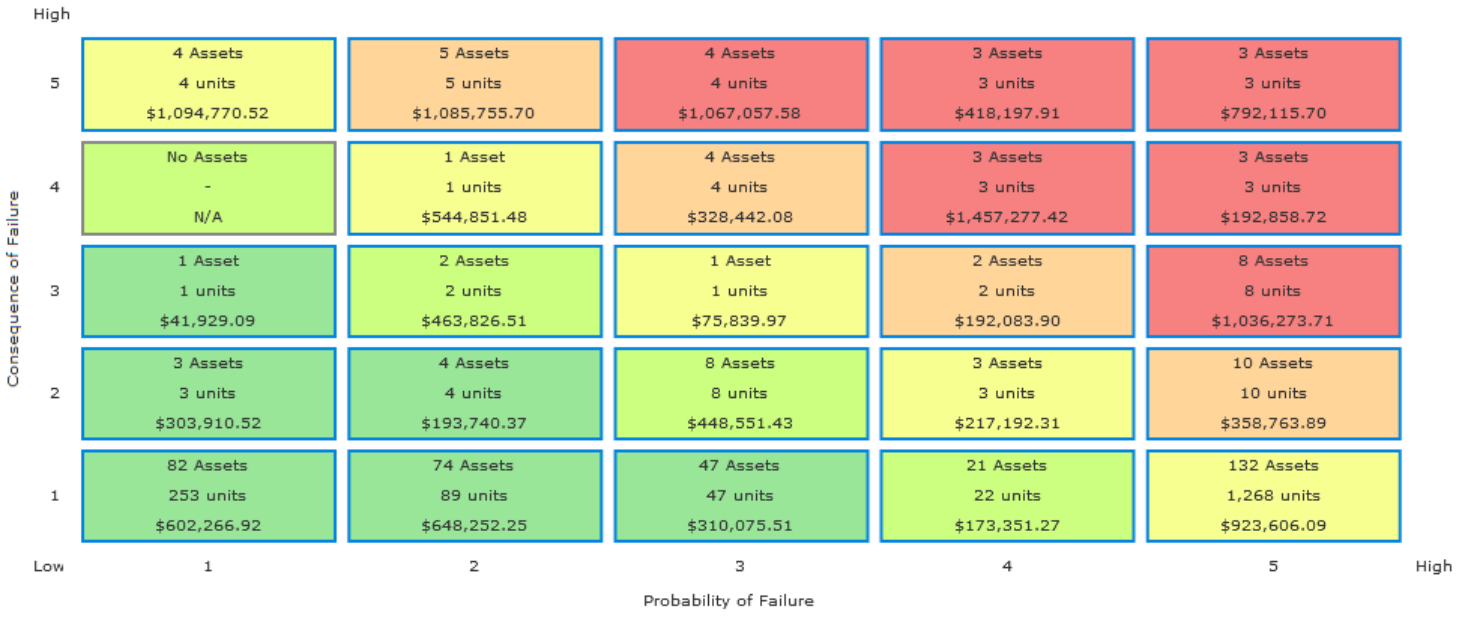
Water (based on diameter):
The consequence of failure score for this initial AMP is based upon pipe diameter as this will reflect potential service area affected.

Consequence of Failure: **Water**	
Pipe Diameter	Consequence of Failure
Less than 100mm	Score of 1
101 – 150mm	Score of 2
151 – 200mm	Score of 3
201 – 300mm	Score of 4
301 and over	Score of 5

Storm Sewer (based on diameter):
The consequence of failure score for this initial AMP is based upon pipe diameter as this will reflect potential upstream service area affected.

Consequence of Failure: **Storm Sewer**	
Replacement Value	Consequence of failure
Less than 200mm	Score of 1
201 – 300mm	Score of 2
301 – 600mm	Score of 3
601 – 800mm	Score of 4
801mm and over	Score of 5

General Capital



Buildings: (based on valuation):
The consequence of failure score for this initial AMP is based upon the replacement value of the facility component. The higher the value, probably the larger and more important the component to the overall function of the facility and therefore probably the higher the consequential risk of failure:

Consequence of Failure: **Facilities**	
Replacement Value	Consequence of failure
Up to $50k	Score of 1
$51k to $150k	Score of 2
$151k to $350k	Score of 3
$351k to $1 million	Score of 4
Over $1 million	Score of 5

Equipment: (based on valuation):
The consequence of failure score for this initial AMP is based upon the replacement value of the asset or component. The higher the value, probably the larger and more important the component and therefore probably the higher the consequential risk of failure:

Consequence of Failure: **Equipment**	
Replacement Value	Consequence of failure
Up to $30k	Score of 1
$31k to $70k	Score of 2
$71k to $150k	Score of 3
$151k to $500 k	Score of 4
Over $500 k	Score of 5

Vehicles: (based on valuation):
The consequence of failure score for this initial AMP is based upon the replacement value of the asset or component. The higher the value, probably the larger and more important the component and therefore probably the higher the consequential risk of failure:

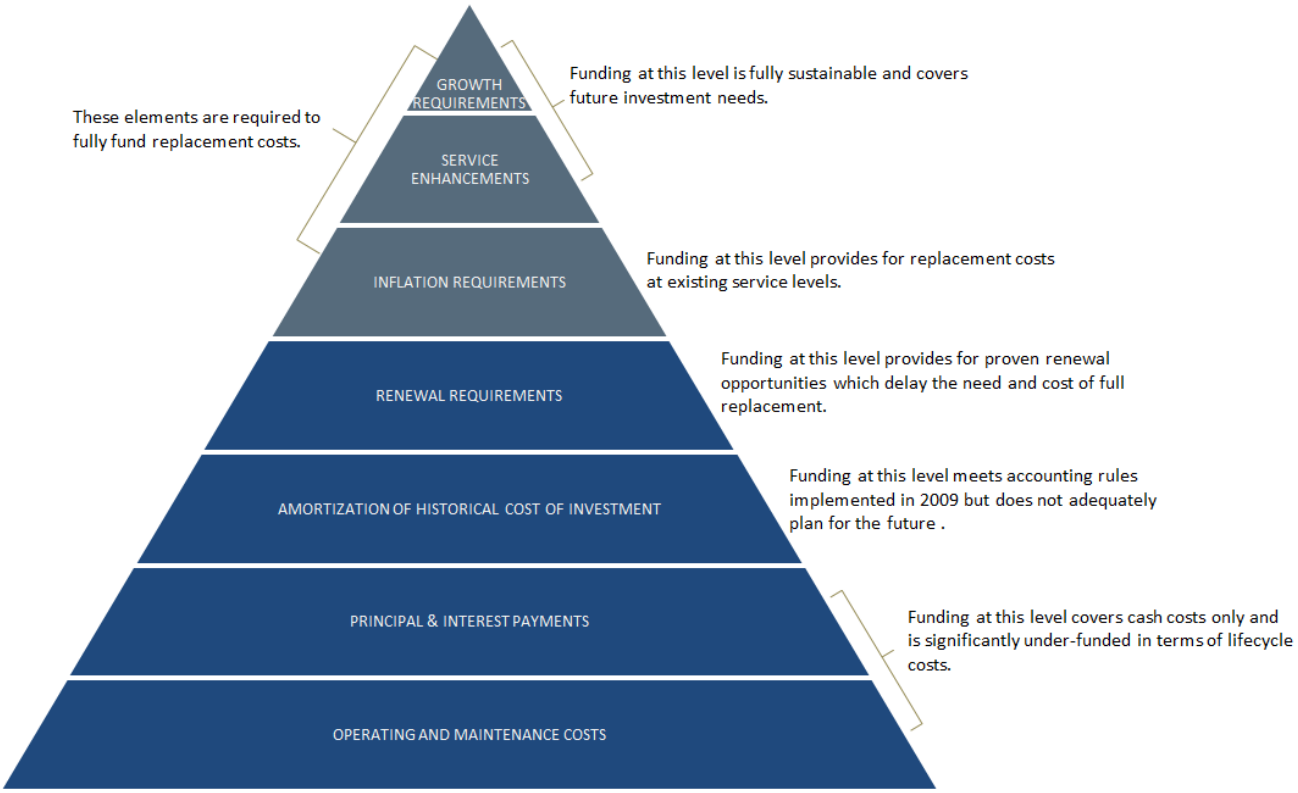
Consequence of Failure: **Vehicles**	
Replacement Value	Consequence of failure
Up to $15k	Score of 1
$16k to $30k	Score of 2
$31k to $50k	Score of 3
$51k to $100k	Score of 4
Over $100k	Score of 5

7.0 Financial Strategy

7.1 General overview of financial plan requirements

In order for an AMP to be effectively put into action, it must be integrated with financial planning and long-term budgeting. The development of a comprehensive financial plan will allow Huron-Kinloss to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service and projected growth requirements.

The following pyramid depicts the various cost elements and resulting funding levels that should be incorporated into AMP's that are based on best practices.



This report develops such a financial plan by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following components:

a) the financial requirements (as documented in the SOTI section of this report) for:
- existing assets
- existing service levels
- requirements of contemplated changes in service levels (none identified for this plan)
- requirements of anticipated growth (none identified for this plan)

b) use of traditional sources of municipal funds:
- tax levies
- user fees
- reserves
- debt
- development charges

c) use of non-traditional sources of municipal funds:
- reallocated budgets
- partnerships
- procurement methods

d) use of senior government funds:
- gas tax
- grants (not included in this plan due to Provincial requirements for firm commitments)

If the financial plan component of an AMP results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Township's approach to the following:

a) in order to reduce financial requirements, consideration has been given to revising service levels downward
b) all asset management and financial strategies have been considered. For example:
- if a zero debt policy is in place, is it warranted? If not, the use of debt should be considered.
- do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

This AMP includes recommendations that avoid long-term funding deficits.

7.2 Financial information relating to Huron-Kinloss' AMP

7.2.1 Funding objective

We have developed scenarios that would enable Huron-Kinloss to achieve full funding within 5 to 10 years for the following assets:

a) Tax funded assets – Road network; Bridges & Culverts; Storm Sewer Network; Buildings; Equipment; Land Improvement; Vehicles
b) Rate funded assets – Water Network; Sanitary Sewer Network

Note: For the purposes of this AMP, we have excluded the category of gravel roads since gravel roads are a perpetual maintenance asset and end of life replacement calculations do not normally apply. If gravel roads are maintained properly they, in essence, could last forever.

For each scenario developed we have included strategies, where applicable, regarding the use of tax revenues, user fees and reserves and debt.

7.3 Tax funded assets

7.3.1 Current funding position

Tables 1 and 2 outline, by asset category, the Township of Huron-Kinloss' average annual asset investment requirements, current funding positions and funding increases required to achieve full funding on assets funded by taxes.

Table 1. Summary of Infrastructure Requirements & Current Funding Available						
Asset Category	Average Annual Investment Required	2015 Annual Funding Available				Annual Deficit
		Taxes	Gas Tax	Other	Total	
Road Network	1,236,000	1,022,000	0	145,000	1,167,000	69,000
Bridges & Culverts	444,000	0	197,000	0	197,000	247,000
Storm Sewers	153,000	0	0	0	0	153,000
Buildings	171,000	69,000	0	0	69,000	102,000
Machinery & Equipment	174,000	87,000	0	0	87,000	87,000
Land Improvements	52,000	0	0	0	0	52,000
Vehicles	383,000	220,000	0	0	220,000	163,000
Total	**2,613,000**	**1,398,000**	**197,000**	**145,000**	**1,740,000**	**873,000**

7.3.2 Recommendations for full funding

The average annual investment requirement for the above categories is $2,613,000. Annual revenue currently allocated to these assets is $1,740,000 leaving an annual deficit of $873,000. To put it another way, these infrastructure categories are currently funded at 67% of their long-term requirements.
Huron-Kinloss has annual tax revenues of $6,457,000 in 2015. As illustrated in table 2, without consideration of any other source of revenue, full funding would require an increase in tax revenue of 13.5% over time.

Table 2. Overview of Revenue Requirements for Full Funding	
Asset Category	Tax Increase Required for Full Funding
Paved Roads	1.1%
Bridges & Culverts	3.8%
Storm Sewers	2.4%
Buildings	1.6%
Machinery & Equipment	1.3%
Land Improvements	0.8%
Vehicles	2.5%
Total	**13.5%**

As illustrated in table 9, Huron-Kinloss' debt payments for these asset categories will not be decreasing by $110,000 from 2015 to 2019 (5 years) and by $110,000 from 2018 to 2024 (10 years). Our recommendations include capturing those decreases in cost and allocating them to the infrastructure deficit outlined above.

Table 3 outlines this concept and presents a number of options:

Table 3. Effect of Reallocating Decreases in Debt Costs

	Without Reallocation of Decreasing Debt Costs		With Reallocation of Decreasing Debt Costs	
	5 Years	10 Years	5 Years	10 Years
Infrastructure Deficit as Outlined in Table 1	873,000	873,000	873,000	873,000
Change in Debt Costs	N/A	N/A	-110,000	-110,000
Resulting Infrastructure Deficit	**873,000**	**873,000**	**763,000**	**763,000**
Resulting Tax Increase Required:				
Total Over Time	**13.5%**	**13.5%**	**11.8%**	**11.8%**
Annually	2.7%	1.4%	2.4%	1.2%

Considering all of the above information, we recommend the 10 year option in table 3 that includes the reallocations. This involves full funding being achieved over 10 years by:

a) when realized, reallocating the debt cost reductions of $110,000 to the infrastructure deficit as outlined above.
b) increasing tax revenues by 1.2% each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this funding cannot be incorporated into the AMP unless there are firm commitments in place. We have included OCIF formula based funding, if applicable, since this funding is a multi-year commitment.
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled (to 2050), the recommendations do require prioritizing capital projects to fit the resulting annual funding available. As of 2015, age based data shows a pent up investment demand of $6,614,000 for the road network, $5,782,000 for bridges and culverts, $0 for storm sewers, $357,000 for buildings, $242,000 for land improvements, $479,000 for machinery & equipment and $1,261,000 for vehicles. Prioritizing future projects will require the age based data to be replaced by condition based data. Although our recommendations include no further use of debt, the results of the condition based analysis may require otherwise.

7.4 Rate funded assets

7.4.1 Current funding position

Tables 4 and 5 outline, by asset category, the Township of Huron-Kinloss' average annual asset investment requirements, current funding positions and funding increases required to achieve full funding on assets funded by rates.

Table 4. Summary of Infrastructure Requirements & Current Funding Available						
Asset Category	Average Annual Investment Required	2015 Annual Funding Available				Annual Deficit
		Rates	Less: Allocated to Operations	Other	Total Funding Available	
Sanitary Sewer Network	417,000	323,000	-297,000	0	26,000	391,000
Water Network	833,000	1,460,000	-850,000	0	610,000	223,000
Total	**1,250,000**	**1,783,000**	**-1,147,000**	**0**	**636,000**	**614,000**

The average annual investment requirement for sanitary services and water services is $1,251,000. Annual revenue currently allocated to these assets for capital purposes is $636,000 leaving an annual deficit of $615,000. To put it another way, these infrastructure categories are currently funded at 51% of their long-term requirements.

In 2015, Huron-Kinloss has annual sanitary services revenues of $323,000 and annual water revenues of $1,460,000. As illustrated in table 5, without any adjustments to existing revenues, a move to full funding would require the following increases over time.

Table 5. Rate Increases Required for Full Funding	
Asset Category	Rate Increase Required for Full Funding
Sanitary Sewer Network	121.1%
Water Network	15.3%

Through table 6, we have expanded the above scenarios to outline four options. Due to the significant increases required, we have provided phase-in options of up to 20 years.

Table 6. Revenue Options for Full Funding								
	Sanitary Sewer Network				Water Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Annual rate increase required	24.2%	12.1%	8.1%	6.1%	3.1%	1.5%	1.0%	0.8%

Considering all of the above information, we recommend the15 year option in table 6. This involves full funding being achieved over 15 years by:

a) increasing rate revenues by 8.1% for sanitary services and 1.0% for water services each year for the next 15 years solely for the purpose of phasing in full funding of the asset categories covered in this section of the AMP.

b) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, **periodic** senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula based funding, if applicable, since this funding is a multi-year commitment.
2. We realize that raising revenues by the above amounts per year for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves full funding on an annual basis in 15 years and provides financial sustainability over the period modeled (to 2050), the recommendations do require prioritizing capital projects to fit the resulting annual funding available. As of 2015, age based data shows a pent up investment demand of $2,003,000 for sanitary services and $2,456,000 for water services. Prioritizing future projects will require the age based data to be replaced by condition based data. Although our recommendations include no further use of debt, the results of the condition based analysis may require otherwise.

7.5 Use of debt

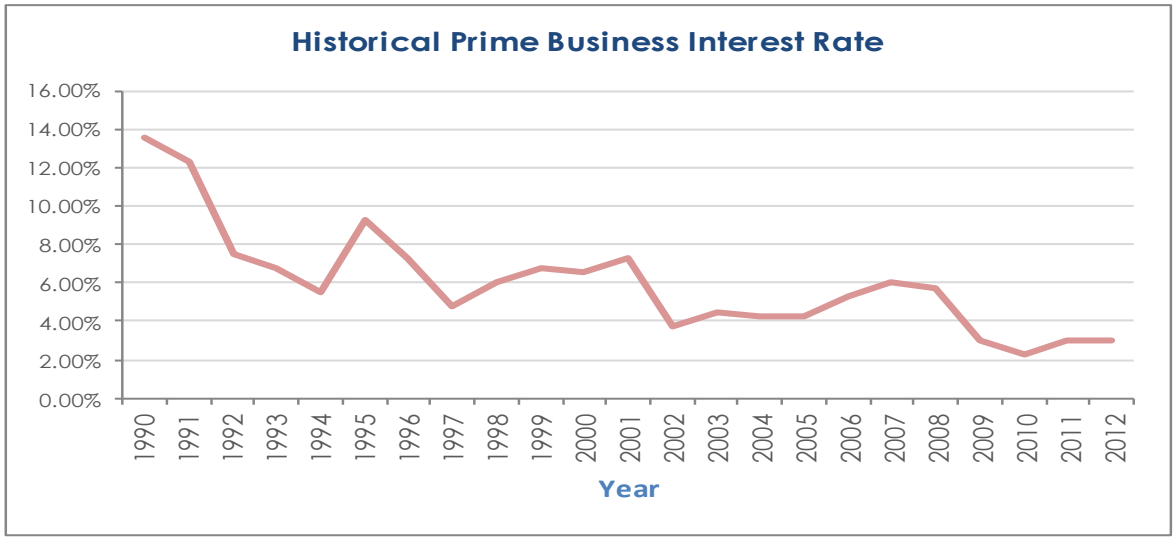
For reference purposes, table 7 outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 3.0%[7] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not take into account the time value of money or the effect of inflation on delayed projects.

Table 7. Total Interest Paid as a % of Project Costs

Interest Rate	Number Of Years Financed					
	5	10	15	20	25	30
7.0%	22%	42%	65%	89%	115%	142%
6.5%	20%	39%	60%	82%	105%	130%
6.0%	19%	36%	54%	74%	96%	118%
5.5%	17%	33%	49%	67%	86%	106%
5.0%	15%	30%	45%	60%	77%	95%
4.5%	14%	26%	40%	54%	69%	84%
4.0%	12%	23%	35%	47%	60%	73%
3.5%	11%	20%	30%	41%	52%	63%
3.0%	9%	17%	26%	34%	44%	53%
2.5%	8%	14%	21%	28%	36%	43%
2.0%	6%	11%	17%	22%	28%	34%
1.5%	5%	8%	12%	16%	21%	25%
1.0%	3%	6%	8%	11%	14%	16%
0.5%	2%	3%	4%	5%	7%	8%
0.0%	0%	0%	0%	0%	0%	0%

It should be noted that current interest rates are near all-time lows. Sustainable funding models that include debt need to incorporate the risk of rising interest rates. The following graph shows where historical lending rates have been:

[7] Current municipal Infrastructure Ontario rates for 15 year money is 3.2%.



As illustrated in table 7, a change in 15 year rates from 3% to 6% would change the premium from 26% to 54%. Such a change would have a significant impact on a financial plan.

Tables 8 and 9 outline how the Township of Huron-Kinloss has historically used debt for investing in the asset categories as listed. There is currently $306,000 of total outstanding debt for the assets covered by this AMP. In terms of overall debt capacity, the Township of Huron-Kinloss currently has $306,000 of total outstanding debt and $110,000 of total annual principal and interest payment commitments. These principal and interest payments are well within its provincially prescribed annual maximum of $2,850,000.

Table 8. Overview of Use of Debt

Asset Category	Current Debt Outstanding[8]	Use Of Debt In Last Five Years				
		2011	2012	2013	2014	2015
Road network	306,000	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0
Storm Sewer Network	0	0	0	0	0	0
Buildings	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0
Total Tax Funded	306,000	0	0	0	0	0
Sanitary Sewer Network	0	0	0	0	0	0
Water Network	0	0	0	0	0	0
Total Rate Funded	0	0	0	0	0	0
Total AMP Debt	306,000	0	0	0	0	0
Non AMP Debt	0	0	0	0	0	0
Overall Total	**306,000**	**0**	**0**	**0**	**0**	**0**

[8] Opening 2015

Table 9. Overview of Debt Costs

Asset Category	Principal & Interest Payments In Next Five Years					
	2014	2015	2016	2017	2018	2019
Paved Roads	110,000	110,000	110,000	110,000	0	0
Bridges & Culverts	0	0	0	0	0	0
Storm Sewers	0	0	0	0	0	0
Buildings	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0
Total Tax Funded	110,000	110,000	110,000	110,000	0	0
	0	0	0	0	0	0
Sanitary Services	0	0	0	0	0	0
Water Services	0	0	0	0	0	0
Total Rate Funded	0	0	0	0	0	0
Overall Total	110,000	110,000	110,000	110,000	0	0

As illustrated in this plan, the revenue options available to Huron-Kinloss allow the Township to fully fund its long-term infrastructure requirements without further use of debt. However, as explained in sections 7.3.2 and 7.4.2, the recommended condition rating analysis may require otherwise.

7.6 Use of reserves

7.6.1 Available reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

- the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
- financing one-time or short-term investments
- accumulating the funding for significant future infrastructure investments
- managing the use of debt
- normalizing infrastructure funding requirements

By infrastructure category, table 10 outlines the details of the reserves currently available to the Township of Huron-Kinloss.

Table 10. Summary of Reserves Available

Asset Category	Balance at December 31, 2014
Road Network	0
Bridges & Culverts	649,000
Storm Sewers Network	0
Buildings	5,000
Machinery & Equipment	271,000
Land Improvements	316,000
Vehicles	0
Total Tax Funded	**1,241,000**
Water Services	4,143,000
Sanitary Services	209,000
Total Rate Funded	**4,352,000**

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Township should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should take into account when determining their capital reserve requirements include:

- breadth of services provided
- age and condition of infrastructure
- use and level of debt
- economic conditions and outlook
- internal reserve and debt policies.

The reserves in table 10 are available for use by applicable asset categories during the phase-in period to full funding. This, coupled with the Township of Huron-Kinloss' judicious use of debt in the past, allows the scenario to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short to medium-term.

7.6.2 Recommendation

As the Township of Huron-Kinloss updates its AMP, we recommend that future planning should include determining what its long-term reserve balance requirements are and a plan to achieve such balances in the long-term.

8.0 Appendix A: Report Card Calculations

Key Calculations

1. "Weighted, unadjusted star rating":

(% of assets in given condition) x (potential star rating)

2. "Adjusted star rating"

(weighted, unadjusted star rating) x (% of total replacement value)

3. "Overall Rating"

$$\frac{\textit{(Condition vs. Performance star rating)} + \textit{(Funding vs. Need star rating)}}{2}$$

Grade Cuttoffs

1. Conditions vs Performance

Letter Grade	Star Rating
F	0
D	2
D+	2.5
C	2.9
C+	3.5
B	3.9
B+	4.5
A	4.9
A	5

2. Funding vs Need

Funding %	Star rating	Grade
0.0%	0	F
25.0%	1	F
46.0%	1.9	D
61.0%	2.9	C
76.0%	3.9	B
91.0%	4.9	A
100.0%	5	A

Road Network Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value		$89,797,299		Segment replacement value	$88,247,497	Segment value as a % of total category replacement value	98.3%
Segment	**Condition**	**Letter grade**	**Star rating**	**Quantity (km) in given condition**	**% of Assets in given condition**	**Weighted, unadjusted star rating**	**Segment adjusted star rating**
Paved Road	Excellent	A	5	52	21%	1.03	2.9
	Good	B	4	84	33%	1.33	
	Fair	C	3	19	7%	0.22	
	Poor	D	2	8	3%	0.06	
	Critical	F	1	90	36%	0.36	
			Totals	**251**	**100%**	**3.00**	

Total category replacement value		$89,797,299		Segment replacement value	$796,873	Segment value as a % of total category replacement value	0.9%
Segment	**Condition**	**Letter grade**	**Star rating**	**Quantity (m) in given condition**	**% of Assets in given condition**	**Weighted, unadjusted star rating**	**Segment adjusted star rating**
Sidewalk	Excellent	A	5	841	7%	0.3	0.0
	Good	B	4	805	6%	0.3	
	Fair	C	3	0	0%	0.0	
	Poor	D	2	807	6%	0.1	
	Critical	F	1	10,246	81%	0.8	
			Totals	**12,699**	**100%**	**1.5**	

Total category replacement value		$89,797,299		Segment replacement value	$752,929	Segment value as a % of total category replacement value	0.8%
Segment	**Condition**	**Letter grade**	**Star rating**	**Replacement cost in given condition**	**% of Assets in given condition**	**Weighted, unadjusted star rating**	**Segment adjusted star rating**
Signs and Streetlights	Excellent	A	5	489,568	65%	3.3	0.0
	Good	B	4	64,991	9%	0.3	
	Fair	C	3	98,390	13%	0.4	
	Poor	D	2	12,321	2%	0.0	
	Critical	F	1	87,659	12%	0.1	
			Totals	**752,929**	**100%**	**4.1**	

Category star rating	Category letter grade
3.0	C

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$1,236,000	$1,167,000	94.4%	$69,000			4.9	A

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.0	4.9	3.9	B

Bridges & Culverts Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	**$26,364,086**	Segment replacement value	**$26,364,086**	Segment value as a % of total category replacement value	**100.0%**

Segment	Condition	Letter grade	Star rating	Replacement Cost in Given Condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Bridges & Culverts	Excellent	A	5	$855,143	3%	0.16	**2.3**
	Good	B	4	$3,564,149	14%	0.54	
	Fair	C	3	$5,437,475	21%	0.62	
	Poor	D	2	$8,236,776	31%	0.62	
	Critical	F	1	$8,270,543	31%	0.31	
			Totals	**$26,364,086**	**100%**	**2.26**	

Category star rating	Category letter grade
2.3	**D**

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$444,000	$197,000	44.4%	$247,000			**1.0**	**F**

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
2.3	1.0	**1.6**	**F**

Water Network Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	$52,625,374	Segment replacement value	$44,417,824	Segment value as a % of total category replacement value	84.4%

Segment	Condition	Letter grade	Star rating	Quantity (m) in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Water Mains	Excellent	A	5	31,653	38%	1.88	3.4
	Good	B	4	31,543	37%	1.50	
	Fair	C	3	14,295	17%	0.51	
	Poor	D	2	1,541	2%	0.04	
	Critical	F	1	5,342	6%	0.06	
			Totals	**84,374**	**100%**	**3.98**	

Total category replacement value	$52,625,374	Segment replacement value	$4,453,509	Segment value as a % of total category replacement value	8.5%

Segment	Condition	Letter grade	Star rating	Replacement cost in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Water Facilities	Excellent	A	5	$923,349	21%	1.04	0.2
	Good	B	4	$1,139,098	26%	1.02	
	Fair	C	3	$465,318	10%	0.31	
	Poor	D	2	$32,250	1%	0.01	
	Critical	F	1	$1,893,494	43%	0.43	
			Totals	**$4,453,509**	**100%**	**2.81**	

Total category replacement value	$52,625,374	Segment replacement value	$3,754,041	Segment value as a % of total category replacement value	7.1%

Segment	Condition	Letter grade	Star rating	Units in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Hydrants, Standpipes, Water Connections, Water Wells	Excellent	A	5	7	3%	0.1	0.1
	Good	B	4	16	6%	0.3	
	Fair	C	3	6	2%	0.1	
	Poor	D	2	179	72%	1.4	
	Critical	F	1	41	16%	0.2	
			Totals	**249**	**100%**	**2.1**	

Category star rating	Category letter grade
3.7	C+

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$833,000	$610,000	73.2%	$223,000			2.9	C

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.7	2.9	3.3	C

Sanitary Sewer Network Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	$22,924,089	Segment replacement value	$15,951,470	Segment value as a % of total category replacement value	69.6%

Segment	Condition	Letter grade	Star rating	Quantity (m) in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Sewer Mains	Excellent	A	5	2,723	11%	0.53	2.8
	Good	B	4	21,156	83%	3.30	
	Fair	C	3	1,764	7%	0.21	
	Poor	D	2	0	0%	0.00	
	Critical	F	1	0	0%	0.00	
			Totals	**25,643**	**100%**	**4.04**	

Total category replacement value	$22,924,089	Segment replacement value	$1,797,949	Segment value as a % of total category replacement value	7.8%

Segment	Condition	Letter grade	Star rating	Replacement cost in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Pumping Stations	Excellent	A	5	$19,122	1%	0.05	0.2
	Good	B	4	$893,644	50%	1.99	
	Fair	C	3	$0	0%	0.00	
	Poor	D	2	$0	0%	0.00	
	Critical	F	1	$885,182	49%	0.49	
			Totals	**$1,797,948**	**100%**	**2.53**	

Total category replacement value	$22,924,089	Segment replacement value	$5,174,670	Segment value as a % of total category replacement value	22.6%

Segment	Condition	Letter grade	Star rating	Replacement Cost in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Sewage Lagoons	Excellent	A	5	$0	0%	0.0	0.6
	Good	B	4	$4,659	0%	0.0	
	Fair	C	3	$3,899,349	75%	2.3	
	Poor	D	2	$152,791	3%	0.1	
	Critical	F	1	$1,117,870	22%	0.2	
			Totals	**$5,174,670**	**100%**	**2.5**	

Category star rating	Category letter grade
3.6	C+

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$417,000	$26,000	6.2%	$391,000			0.0	F

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.6	0.0	1.8	F

Storm Network Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	$11,402,297	Segment replacement value	$11,402,297	Segment value as a % of total category replacement value	100.0%

Segment	Condition	Letter grade	Star rating	Quantity (m) in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Storm Mains	Excellent	A	5	9,727	57%	2.85	4.4
	Good	B	4	3,842	23%	0.90	
	Fair	C	3	3,267	19%	0.57	
	Poor	D	2	215	1%	0.03	
	Critical	F	1	0	0%	0.00	
			Totals	**17,051**	**100%**	**4.35**	

Category star rating	Category letter grade
4.4	**B**

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$153,000	$0	0.0%	$153,000			**0.0**	**F**

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
4.4	0.0	**2.2**	**D**

Machinery & Equipment Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	$1,620,940	Segment replacement value	$1,620,940	Segment value as a % of total category replacement value	100.0%

Segment	Condition	Letter grade	Star rating	Replacement cost ($) of assets in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Machinery and Equipment	Excellent	A	5	$113,242	7%	0.35	2.3
	Good	B	4	$148,015	9%	0.37	
	Fair	C	3	$463,653	29%	0.86	
	Poor	D	2	$265,009	16%	0.33	
	Critical	F	1	$631,021	39%	0.39	
			Totals	**$1,620,940**	**100%**	**2.29**	

Category star rating	Category letter grade
2.3	**D**

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$174,000	$87,000	50.0%	$87,000			**1.9**	**D**

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
2.3	1.9	**2.1**	**D**

Vehicles Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	$5,863,184	Segment replacement value	$5,863,184	Segment value as a % of total category replacement value	100.0%

Segment	Condition	Letter grade	Star rating	Replacement cost ($) of assets in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Vehicles	Excellent	A	5	$1,136,700	19%	0.97	3.0
	Good	B	4	$1,142,415	19%	0.78	
	Fair	C	3	$1,420,628	24%	0.73	
	Poor	D	2	$672,496	11%	0.23	
	Critical	F	1	$1,490,946	25%	0.25	
			Totals	**$5,863,185**	**100%**	**2.96**	

Category star rating	Category letter grade
3.0	C

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$383,000	$220,000	57.4%	$163,000			1.9	D

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.0	1.9	2.4	D

Buildings Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	$4,605,801	Segment replacement value	$4,605,801	Segment value as a % of total category replacement value	100.0%

Segment	Condition	Letter grade	Star rating	Replacement cost ($) of assets in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Buildings	Excellent	A	5	$355,239	8%	0.39	2.6
	Good	B	4	$1,268,053	28%	1.10	
	Fair	C	3	$289,016	6%	0.19	
	Poor	D	2	$1,634,244	35%	0.71	
	Critical	F	1	$1,059,277	23%	0.23	
			Totals	**$4,605,829**	**100%**	**2.61**	

Category star rating	Category letter grade
2.6	D+

2. Funding vs. Need

Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$171,000	$69,000	40.4%	$102,000			1.0	F

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
2.6	1.0	1.8	F

Land Improvement Township of Huron-Kinloss

1. Condition vs. Performance

Total category replacement value	$1,147,308	Segment replacement value	$1,147,308	Segment value as a % of total category replacement value	100.0%

Segment	Condition	Letter grade	Star rating	Replacement cost ($) of assets in given condition	% of Assets in given condition	Weighted, unadjusted star rating	Segment adjusted star rating
Land Improvement	Excellent	A	5	$437,696	38%	1.91	3.6
	Good	B	4	$377,943	33%	1.32	
	Fair	C	3	$56,670	5%	0.15	
	Poor	D	2	$15,490	1%	0.03	
	Critical	F	1	$259,510	23%	0.23	
			Totals	**$1,147,309**	**100%**	**3.63**	

Category star rating	Category letter grade
3.6	**C+**

2. Funding vs. Need

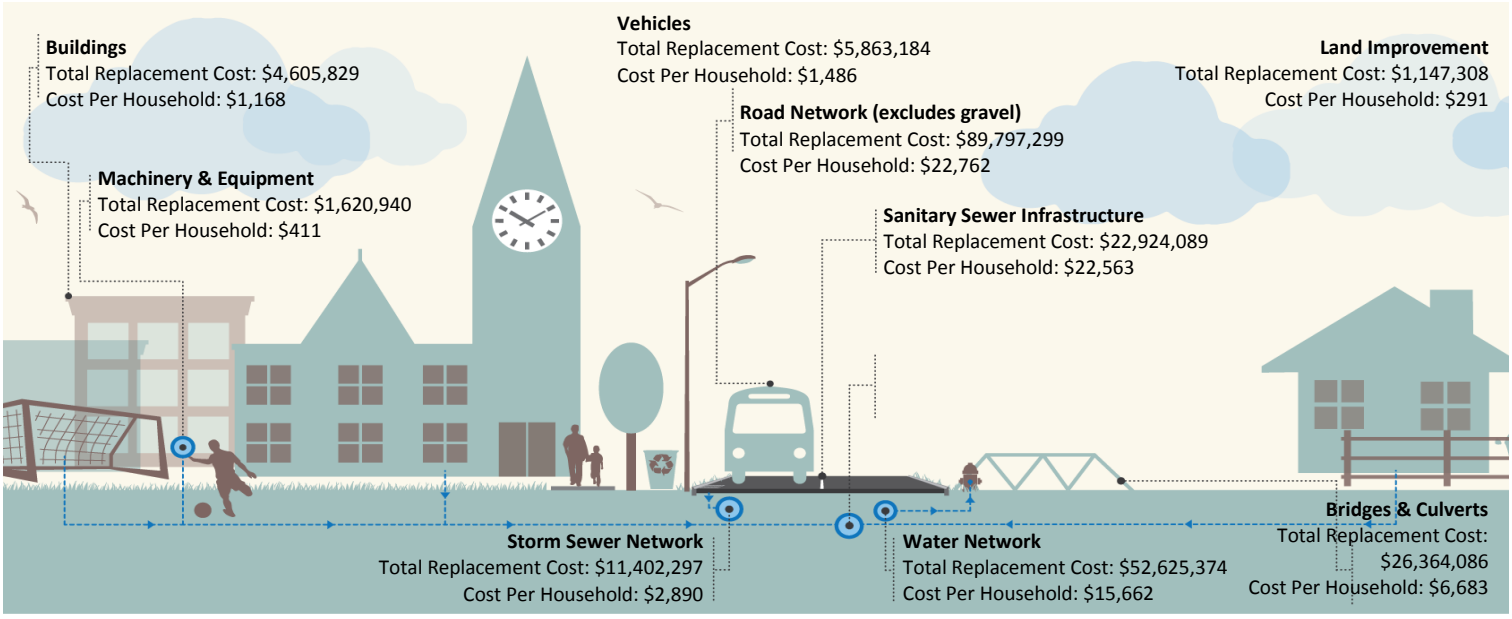
Average annual investment required	2015 funding available	Funding percentage	Deficit			Category star rating	Category letter grade
$52,000	$0	0.0%	$52,000			**0.0**	**F**

3. Overall Rating

Condition vs Performance star rating	Funding vs. Need star rating	Average star rating	Overall letter grade
3.6	0.0	**1.8**	**F**

Infrastructure Replacement Cost Per Household

Total: $73,916 per household



Daily Investment Required Per Household for Infrastructure Sustainability