ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

Township of Chapple
Asset Management Plan for
Water and Wastewater Systems

SUBMITTED BY

Ontario Clean Water Agency
2085 Hurontario Street, 5th Floor
Mississauga, ON L5A 4G1

Date: June 13, 2022

Rev: 2

AMP Issue and Revision Record					
Rev. No.	Date	Prepared by:	Reviewed by:	Approved by:	Rev. Description
1	June 2, 2022	Nick Larson, OCWA	Jason Younker, OCWA	Nick Larson, OCWA	Draft
2	June 13, 2022	Nick Larson, OCWA	Jason Younker, OCWA	Nick Larson, OCWA	Final

Executive Summary

Water and Wastewater Facility Asset Portfolio

The scope of this Asset Management Plan (AMP) includes all water and wastewater assets. The infrastructure portfolio has an estimated replacement value of approximately $9 million.

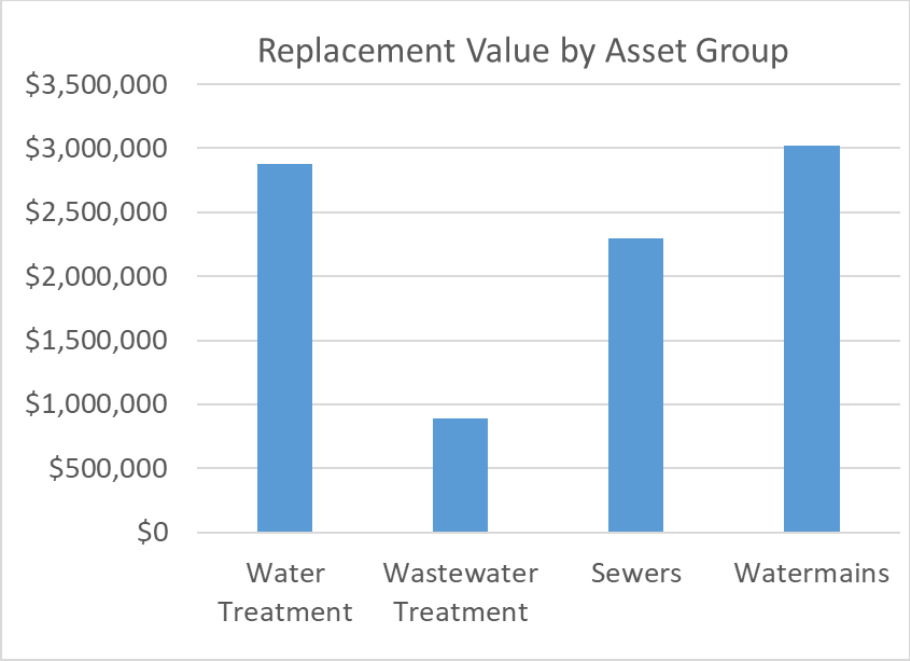

Figure ES1: Asset Portfolio Summary

Note: Actual costing values are subject to market forces at the time of infrastructure construction/improvement activity, the above values are based on historical averages and industry standards.

Current Asset Performance

The current performance of each individual asset record represented in the asset portfolio is established through an analysis of the best available asset information and subject matter expert judgement. Table ES1 summarizes the current performance by replacement value. Figure ES-2 summarizes the performance distribution of the assets in each asset group (i.e. % of each asset group in good/fair/poor performance, weighted by replacement cost).

The total replacement cost of the assets in the poor performance category is approximately $1.7 million, which represents approximately 19% of the total asset portfolio. It should be noted that the spending required to restore these assets to the good performance category is not necessarily equal to the replacement cost, since some assets only require rehabilitation while others require replacement with a more expensive asset.

Table ES1: Current Performance by Replacement Value

System	Good (No Deficiencies)	Fair (Has Deficiencies)	Poor (Requires Treatment/Spending)	Total
Water Treatment	$1,101,000	$238,000	$1,541,000	**$2,880,000**
Wastewater Treatment	$175,000	$515,000	$200,000	**$890,000**
Sewers	$1,440,000	$860,000	$0	**$2,300,000**
Watermains	$2,220,000	$800,000	$0	**$3,020,000**
Total	**$4,936,000**	**$2,413,000**	**$1,741,000**	**$9,090,000**

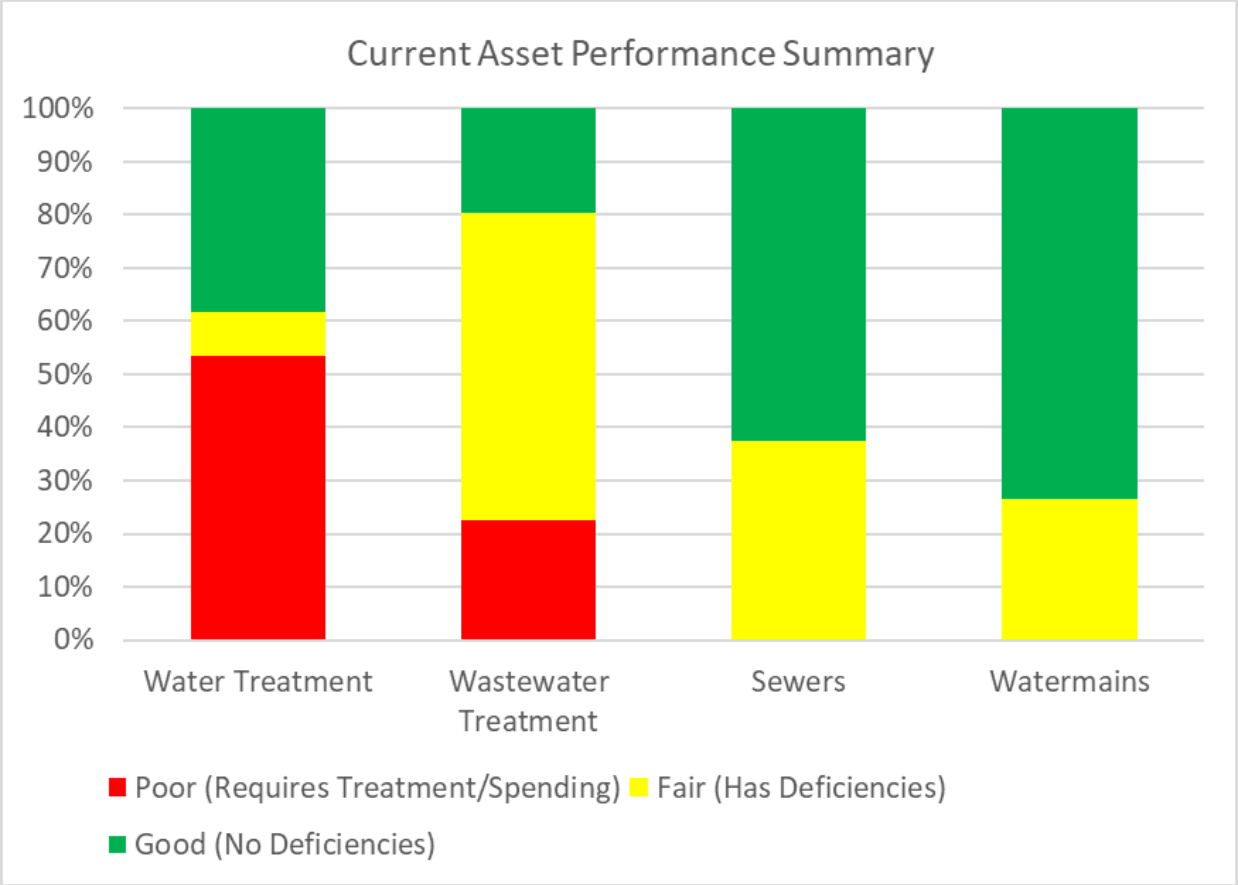

Figure ES2 – Current Performance Summary

Spending Forecast

Figure ES3 summarizes the spending forecast results. An average of approximately $325,000 per year (in 2022 $) is needed over the next 20 years to achieve asset performance expectations for the water and wastewater systems. This annual average spending need includes the estimated $5.5 million for the large project associated with the new well supply.

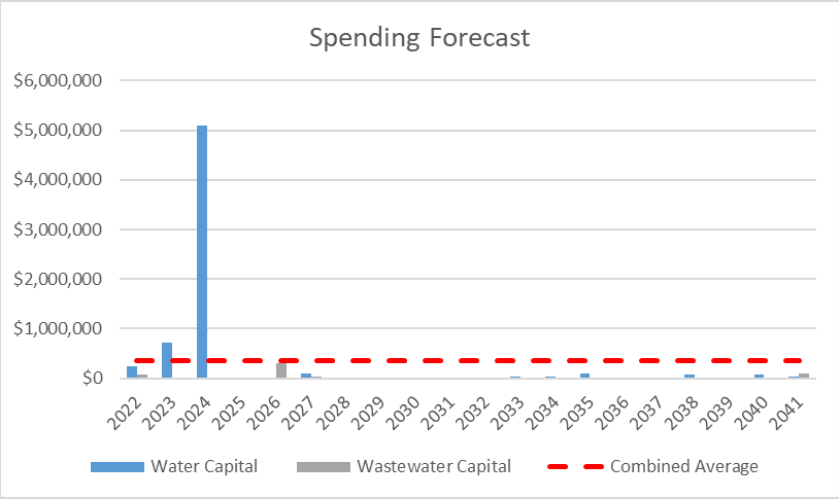

Figure ES: Spending Forecast Summary

Funding Gap

Table ES3 summarizes the funding gap results. The annual funding gap is approximately $20,000 per year over the long term plus $5.5 million for the large project to secure new water supply.

Table ES3: Funding Gap

Long Term (20 year) Average Annual Spending Need	Planned Long Term Average Annual Spending	Average Annual Long Term Funding Gap
$80,000/yr + $5.5 million for new water supply	**$60,000/yr**	**$20,000/yr + $5.5 million for new water supply**

Financial Strategy

A number of financing strategies are available to address the funding gap. The objective of the Township's financing strategy should be to maximize new growth at the lowest real cost impact to taxpayers (i.e. maximize real revenue growth through expanding the customer base and minimizing rate increases). This would prioritize the following options:

1. Provincial/Federal Government Grants
2. Internal Financing using Reserves
3. Debt
4. Rate Increases

Future budgets will present the optimal balance of the available financing options to fund the Township's infrastructure program.

Table of Contents

1 INTRODUCTION

1.1 Overview

This Asset Management Plan (AMP) is structured around the relationship between infrastructure spending and asset performance. It is a living document that supports infrastructure decision-making processes and is updated on a periodic (annual) basis to reflect changing circumstances.

1.2 Defining Asset Performance

Asset performance is defined as "the ability of an asset to fulfill the organization's objectives or requirements".

The performance of an asset directly relates to the level of service it provides:

- An asset is in the good performance category when it is meeting the expectations of the community (i.e. providing an appropriate level of service); and
- An asset is in the poor performance category when it is not meeting expectations (i.e. not providing an appropriate level of service) and requires spending to have it meet expectations.

The community's asset performance expectations balance costs and affordability and are therefore unique to each community based on its infrastructure inventory, financial status and community/corporate priorities.

1.3 Provincial Asset Management Planning Requirements

The Province of Ontario developed Regulation 588/17 under the Infrastructure for Jobs and Prosperity Act (2015). The following points summarize the requirements of O.Reg. 588/17:

- An AM policy is required to articulate specific principles and commitments that will guide decisions around when, why and how the Town spends money on infrastructure assets. The Policy is required by July 1, 2019. The Town successfully adopted their AM Policy in 2019.
- By July 1, 2022 the AMP will be required to establish the spending that is required ***to maintain current*** asset performance expectations for water, wastewater, stormwater, roads and bridges.
- By July 1, 2024 the AMP will be required to establish the spending that is required to ***maintain current*** asset performance expectations for all asset groups.
- By July 1, 2025 the AMP will be required to establish the spending that is required to ***achieve desired*** asset performance expectations and the financial strategy to fund the required spending.

1.4 AMP Development Approach

OCWA's Asset Stewardship Quality Management System (ASQMS), depicted in Figure 1, is the framework for developing this AMP. The ASQMS shows how technical asset lifecycle strategies connect to community priorities to develop optimized spending plans that balance service levels and costs. An AMP is a tactical output of the ASQMS.

The ASQMS aligns with Ontario Regulation 588/17 Asset Management Planning for Municipal Infrastructure and the international standard for infrastructure asset management (ISO 55000).

Figure 1: ASQMS Framework

The development of this AMP leverages the Township's best available asset and financial information, staff input, subject matter expert professional judgement, and AM best practices, to complete the following steps:

1. Develop a complete listing of infrastructure assets to be included in the AMP.
2. Assess current performance (level of service) of the assets based on existing information.
3. Prepare an asset lifecycle management strategy (i.e. spending plan) that achieves the performance expectations of the Township's infrastructure assets.
4. Determine the gap between required spending levels to achieve asset performance objectives versus planned spending.

1.5 Updating the Asset Management Plan

Periodic updates to this AMP are necessary to reflect the latest information and respond to evolving asset performance expectations in the community. This is typically done annually in conjunction with the Township's budget processes, or more frequently if required to support funding applications.

1.6 Asset Management Plan Scope

This AMP includes all water and wastewater assets owned by the Township. Section 2 summarizes the infrastructure portfolio.

1.7 Growth Planning

As seen in Table 1, the population of Chapple was relatively constant from 1996 to 2016. No meaningful growth is expected in the community in the short to medium term.

Table 1: Chapple Population History

YEAR	POPULATION
1996	1,366
2001	1,331
2006	1,305
2011	1,252
2016	1,333

**Population data from Statistics Canada.*

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2 OVERVIEW OF ASSET PORTFOLIO

The infrastructure portfolio has an estimated replacement value of approximately $9 million (Figure 2).

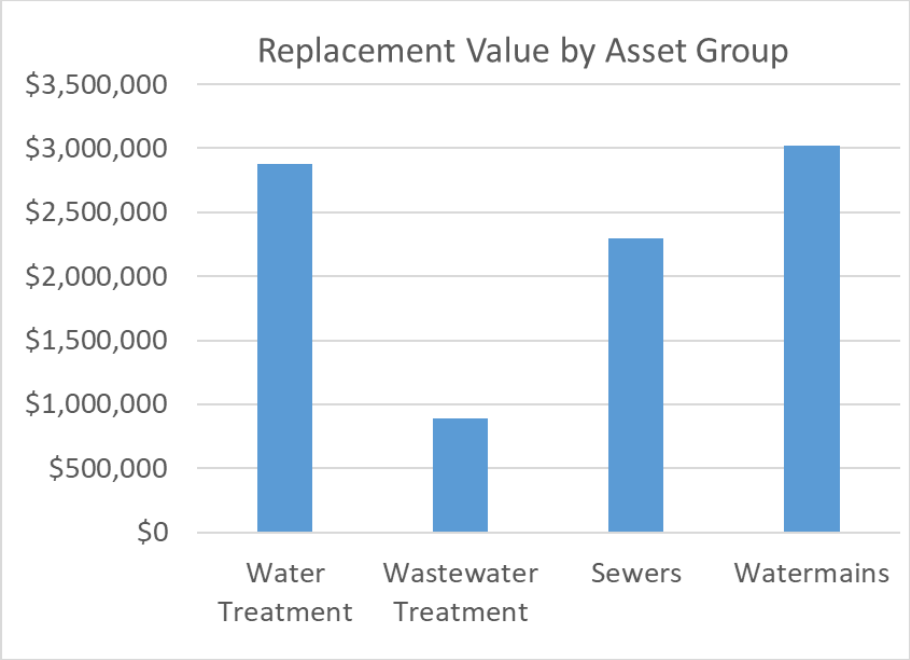


Figure 2: Chapple's Water and Wastewater Infrastructure Portfolio

Note: Actual costing values are subject to market forces at the time of infrastructure construction/improvement activity, the above values are based on historical averages and industry standards.

3 ASSET PERFORMANCE ASSESSMENT

As described in Section 1, the new landscape of AM that aligns with ISO 55000 defines asset performance as the ability for an asset to fulfill its objectives or requirements. This means that the performance of an asset is directly proportional to the level of service it provides. Levels of service are also at the core of O.Reg. 588/17, which requires municipalities to understand the cost to achieve higher or lower levels of service.

3.1 Measuring Asset Performance

The Township's asset inventory contains performance information for all infrastructure assets. This includes information related to both asset condition and asset function. The performance information is from a variety of sources, ranging from sophisticated technologies to investigate the assets to visual observations from qualified professionals.

Asset performance data combines with the professional judgment of subject matter experts to establish the current performance of each asset as defined in Table 2 below.

Table 2: Asset Performance Rating Descriptions

PERFORMANCE CATEGORY	DESCRIPTION	STATE OF ASSET
Good	Asset performance meets or exceeds its objectives/requirements.	No Deficiencies
Fair	Asset performance is nearing the point where it will not meet its objectives/requirements.	Has Deficiencies
Poor	Asset performance is not meeting its objectives/requirements.	Requires Treatment (Spending)

3.2 Current Asset Performance

Figure 3 provides the current performance distribution of each asset group. The proportion of assets in the poor performance category (i.e. are not meeting objectives/requirements) is greatest in the water treatment and water distribution asset groups.

The total replacement cost of the assets in the poor performance category is approximately $1.7 million, which represents approximately 19% of the total asset portfolio (Table 3). It should be noted that the spending required to restore these assets to the good performance category is not equal to the replacement costs, since some assets only require rehabilitation while others can require replacement with a more expensive asset.

The performance category of each asset updates continually to reflect new asset data and changing asset performance objectives or requirements.

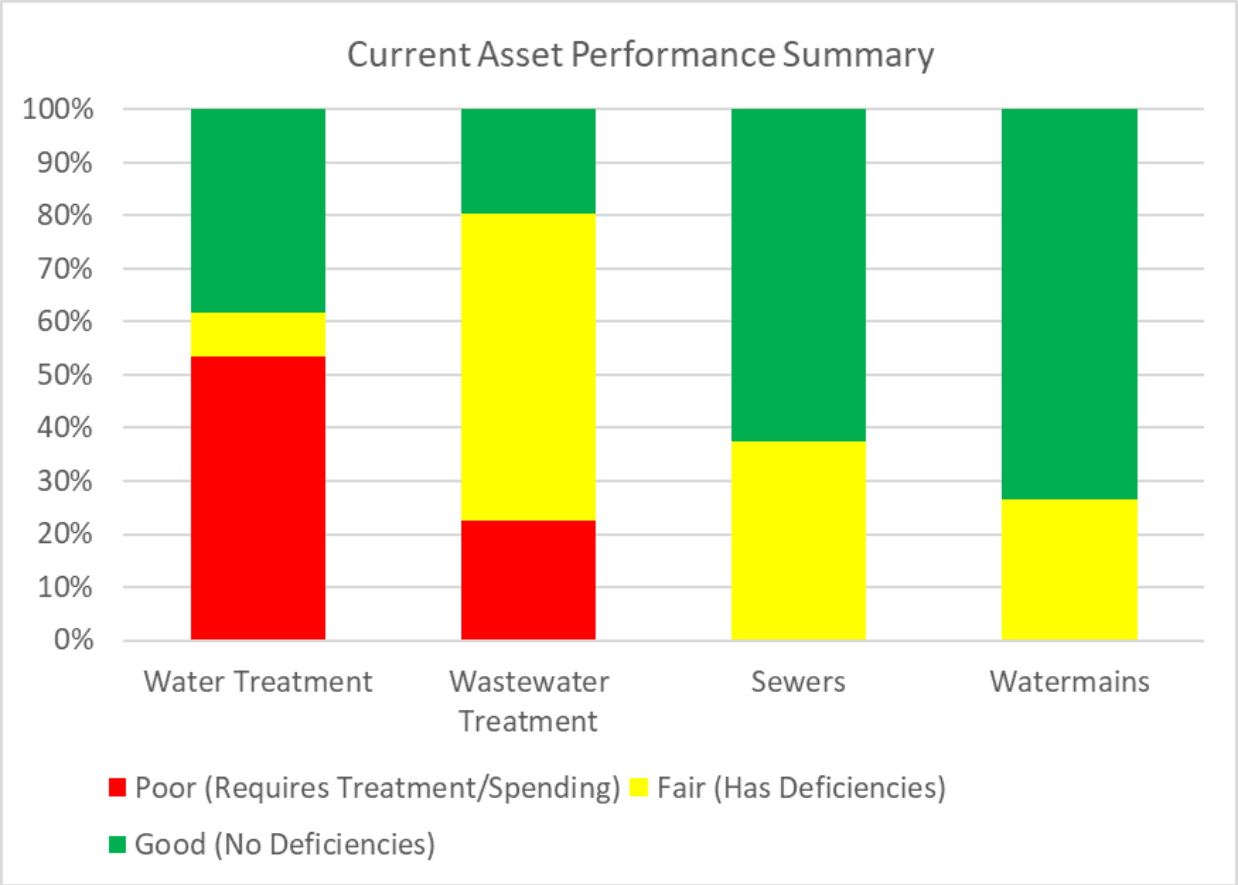


Figure 3: Current Performance Distribution

Table 3: Current Performance by Replacement Value

System	Good (No Deficiencies)	Fair (Has Deficiencies)	Poor (Requires Treatment/Spending)	Total
Water Treatment	$1,101,000	$238,000	$1,541,000	**$2,880,000**
Wastewater Treatment	$175,000	$515,000	$200,000	**$890,000**
Sewers	$1,440,000	$860,000	$0	**$2,300,000**
Watermains	$2,220,000	$800,000	$0	**$3,020,000**
Total	**$4,936,000**	**$2,413,000**	**$1,741,000**	**$9,090,000**

4 ASSET LIFECYCLE MANAGEMENT

4.1 Asset Lifecycle Activities Overview

Table 4 provides an overview of typical asset lifecycle activities that are applied to public infrastructure. The spending forecasts in this section represent a combination of major maintenance, rehabilitation, replacement and new asset lifecycle activities.

Table 4: Typical Asset Lifecycle Activities

LIFECYCLE ACTIVITY	DESCRIPTION
Operational	Operational activities, routine preventative maintenance, studies on asset performance
(Major) Maintenance	Repairs and component replacement to maintain asset performance, typically costing between 5-10% of asset replacement value.
Rehabilitation	Project to extend asset service life, typically costing between 15% - 40% of asset replacement value.
Replacement	A project resulting in a replacement of an asset with one asset that meets top industry and community expectations.
New Asset	Construction or purchase of new assets that results in net growth of the asset inventory and an enhancement in service levels provided to the community.

4.2 Spending Forecast

4.2.1 Approach

The analysis approach involves connecting real planned projects against specific assets where feasible and iteratively adjusting annual spending levels until the forecasted performance distribution will be relatively stable (i.e. the proportion of the asset network in the poor performance category is consistent).

For example, Figure 4 shows a scenario where there is not sufficient spending, resulting in the proportion of assets in the poor performance category increasing from 5% in 2021 to 90% in 2040, and a declining trend in the Network Average performance index.

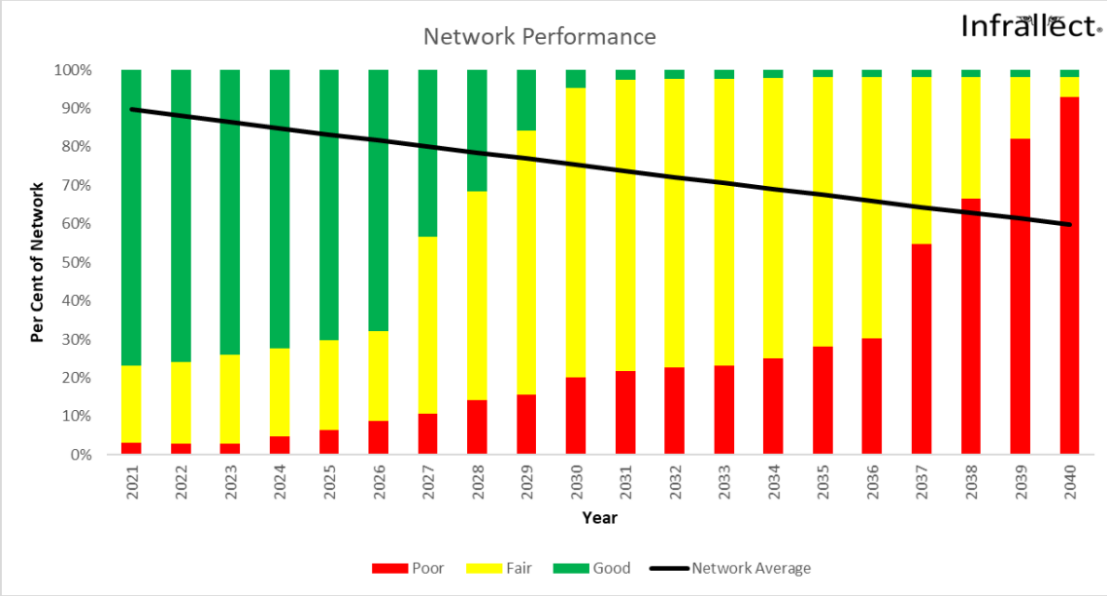


Figure 4: Sample Performance Forecast

4.2.2 Results

Figures 5 to Figure 8 provide the performance and spending forecasts for each asset group. Figure 9 provides the summary of spending needs.

Figure 5: Water Treatment Performance Forecast

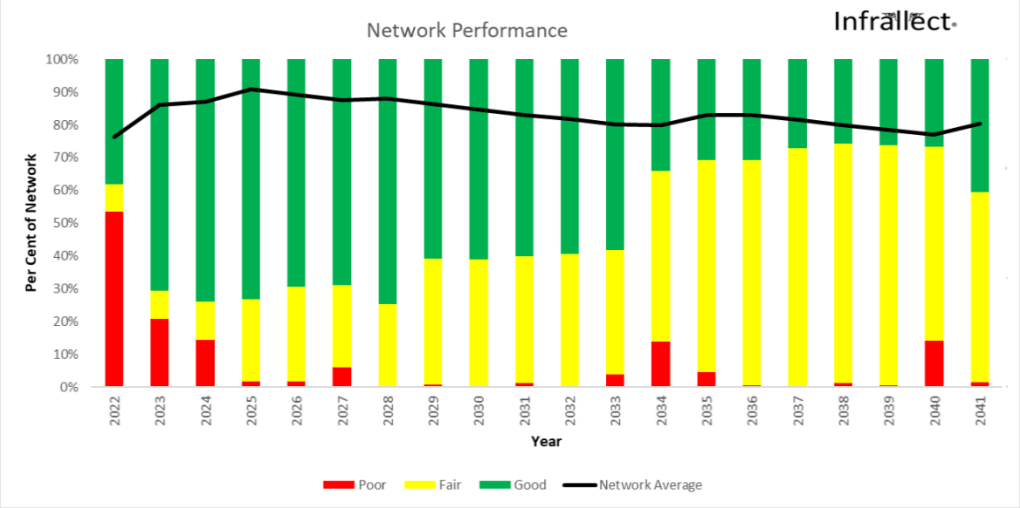
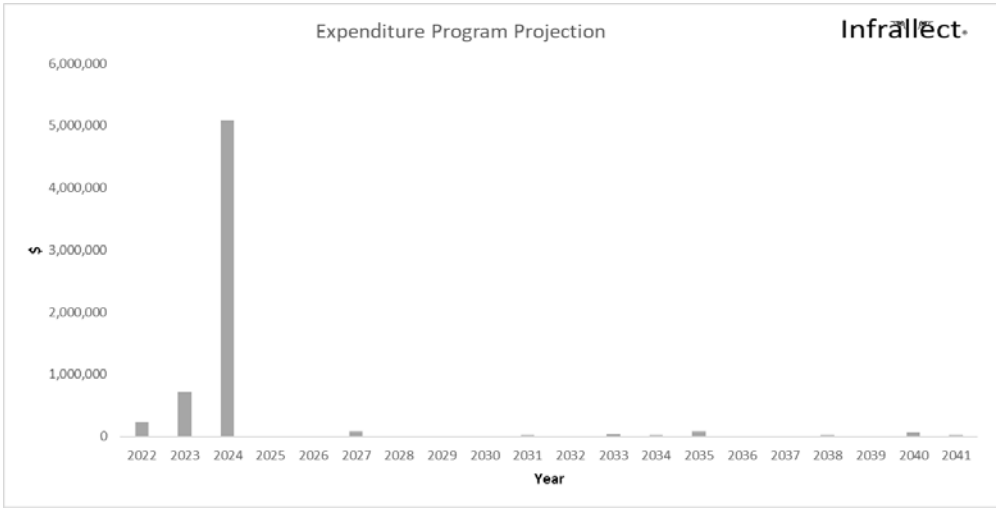
Desired Performance Forecast	
Spending Plan to Achieve Desired Performance Forecast	 • $47,000 per year long-term average **excluding** the $5.5 million in 2022 to 2024 for the new well field project. • Large project in 2022 to 2024 required to ensure long term water supply to the community.

Figure 6: Watermains Performance Forecast

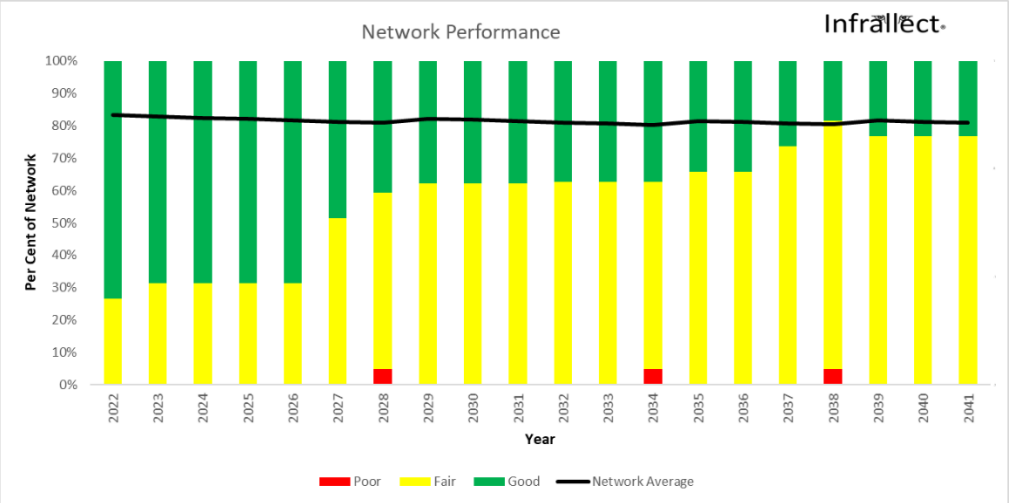
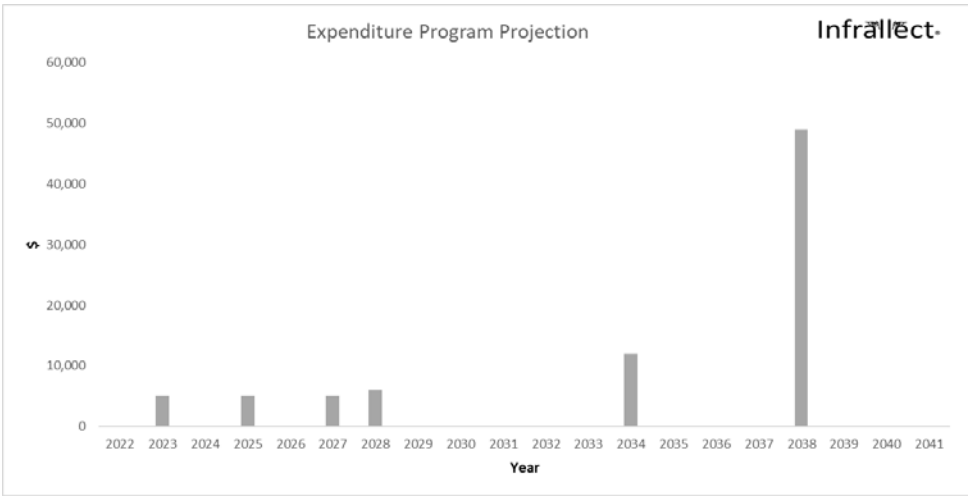
Desired Performance Forecast	
Spending Plan to Achieve Desired Performance Forecast	 • $4,000 per year long-term average.

Figure 7: Wastewater Treatment and Pumping Performance Forecast

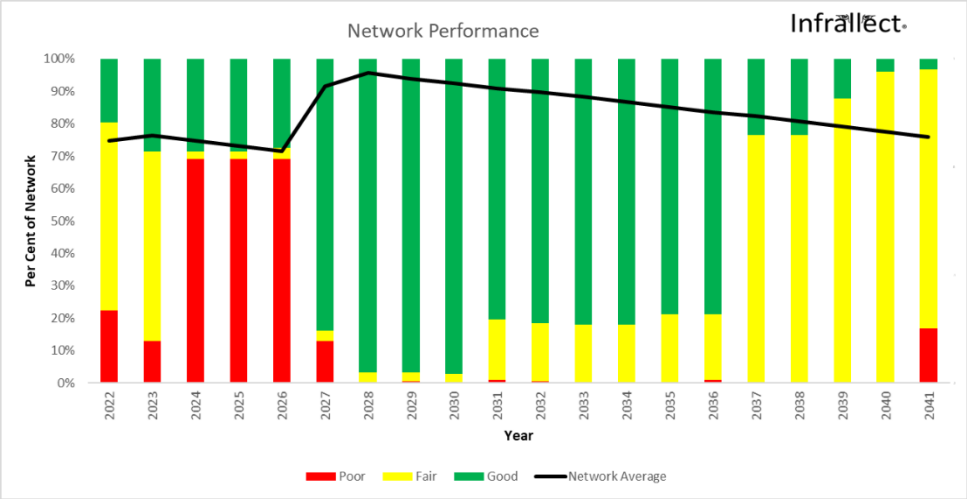
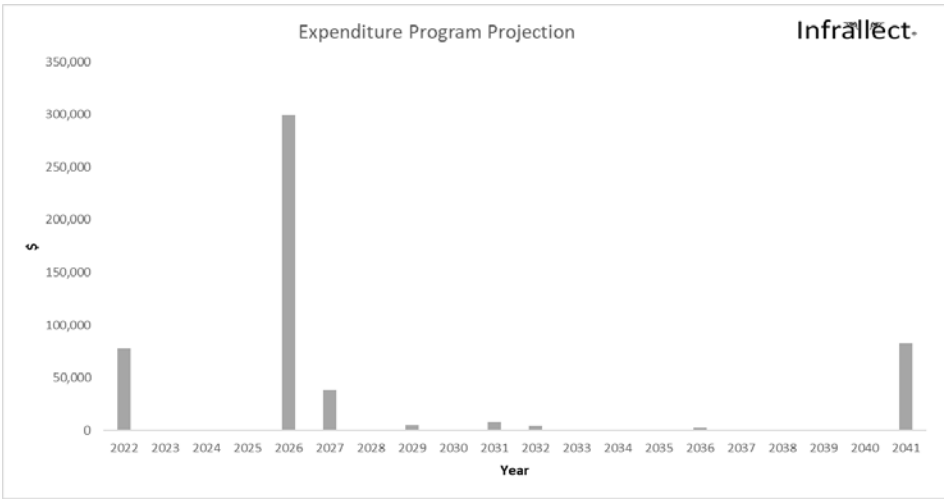
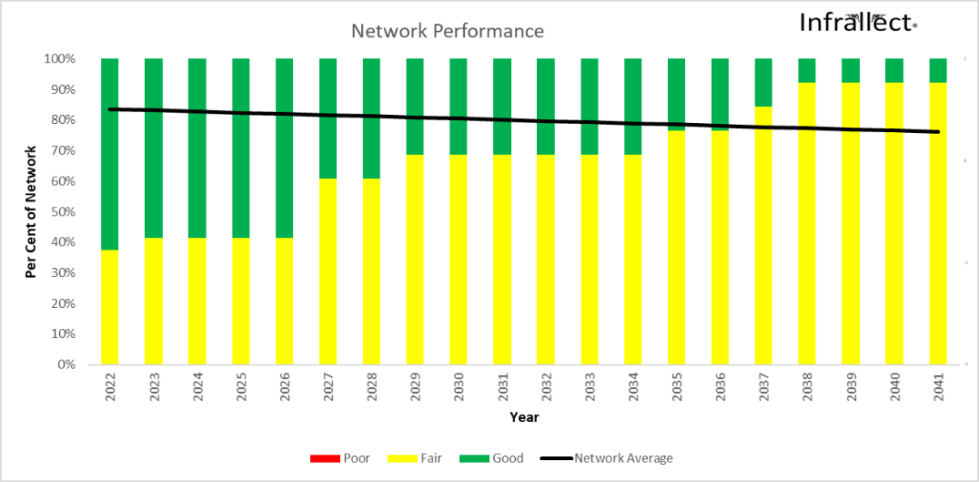
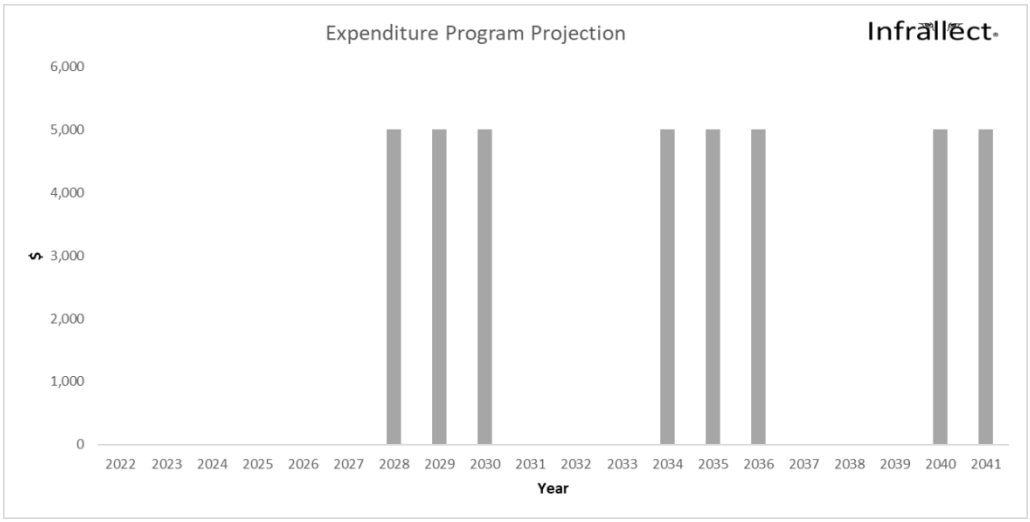
Desired Performance Forecast	
Spending Plan to Achieve Desired Performance Forecast	 • $26,000 per year long-term average. • Large expenditure in 2026 for lagoon dredging.

Figure 8: Sewers Performance Forecast

Desired Performance Forecast	
Spending Plan to Achieve Desired Performance Forecast	 • $2,000 per year long-term average.

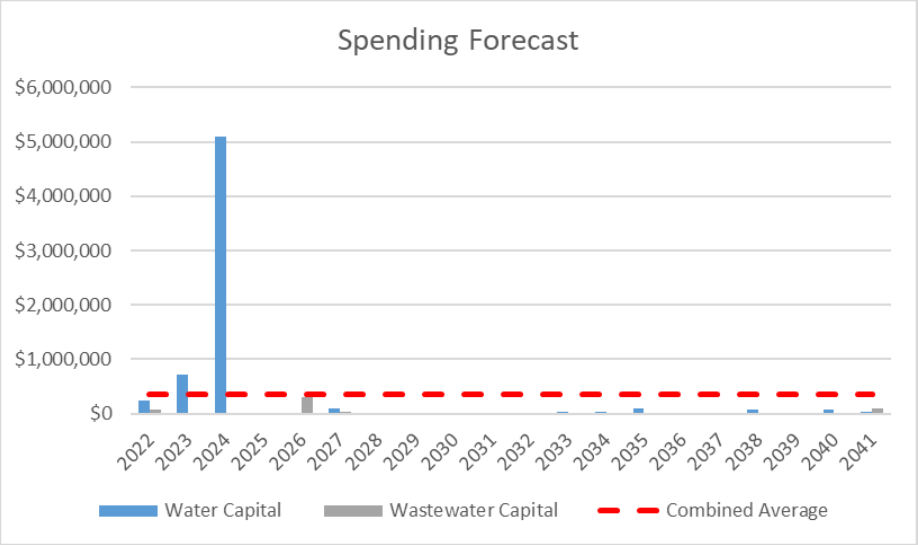


Figure 9: Spending Forecast Summary

Figure 9 summarizes the spending forecast results. An average of approximately $325,000 per year (in 2022 $) is needed over the next 20 years to achieve asset performance expectations for the water and wastewater systems. This annual average spending need includes the estimated $5.5 million for the large project associated with the new well supply. The average annual spending need is approximately $80,000 per year for the water and wastewater systems when the $5.5 million for the new water supply is isolated from the analysis.

4.3 Planned Capital Spending

The Township recently completed a Water and Wastewater Financial Plan (OCWA; 2021). The Financial Plan includes approximately $600,000 in capital spending over a 10-year period, or approximately $60,000 per year. The spending levels identified in the Financial Plan are the best source of information in the Township to understand long-term planned spending levels.

4.4 Funding Gap Summary

Table 5 summarizes the funding gap results. The annual funding gap is approximately $20,000 per year over the long term plus $5.5 million for the large project to secure new water supply.

Table 5 - Funding Gap

Long Term (20 year) Average Annual Spending Need	Planned Long Term Average Annual Spending	Average Annual Long Term Funding Gap
$80,000/yr + $5.5 million for new water supply	**$60,000/yr**	**$20,000/yr + $5.5 million for new water supply**

The annual funding gap is approximately $20,000 per year over the long term.

4.5 Risk Management

The approach to managing risk in this AMP is to consider the overall criticality of each asset related to the role it plays in providing services to the community. This is completed by considering the required performance of each asset based on its location, function, size, etc. This understanding is used to judge when an asset is not meeting its objectives or requirements based on the available technical performance indicators and expert subject matter judgement. More critical assets have higher performance expectations, while less critical assets have lower performance expectations.

4.6 Managing Climate Change

The expected impacts of climate change have been considered and included throughout the analysis used to inform this AMP. This includes consideration of climate change when establishing the current performance category of an asset, forecasting the deterioration rate of an asset, or establishing the lifecycle activities completed on an asset.

The most prominent climate factors affecting the Township's water and wastewater infrastructure are severe wet weather events, prolonged periods of cold weather, and prolonged periods of heat or drought:

- *Climate Factor 1 - Severe Wet Weather Events*

  Severe wet weather events put added strain on the wastewater collection and treatment systems. This strain can lead to additional overflows or a reduction in treatment effectiveness. At this point, this climate factor is not causing any specific performance deficiencies. The Township should continue to monitor the impacts of severe wet weather events on the wastewater collection and treatment system. The

- *Climate Factor 2 – Periods of Prolonged Cold*

  This climate factor can lead to lagoons being ice-covered for longer periods. Most lagoons cannot be discharged when they are ice-covered. At this point, this climate factor is not causing any specific performance deficiencies. The Township should continue to monitor the impacts of periods of prolonged cold on the lagoons.

- *Climate Factor 3 – Periods of Prolonged Heat or Drought*

  This climate factor can lead to more days of high peak water demand and reductions in the quantity and/or quality of source water. At this point, this climate factor is not causing any specific performance deficiencies. The Township should continue to monitor the impacts of periods of prolonged heat or drought on the water supply and storage system.

5 FINANCING STRATEGY

5.1 Financial Overview

The recently completed Financial Plan identified approximately $600,000 (in 2021 $) in capital spending over a 10-year period for the combined water and wastewater systems, or approximately $60,000 per year. The Financial Plan determined that the Township was reliant on external government grants to fund this capital program.

As identified in Section 4.4, the long-term funding shortfall is approximately $20,000 per year plus $5.5 million in spending needs that are currently unfunded to establish a new water supply source. The following section outlines a number of financing strategies available to the Township to address the funding gap.

5.2 Financing Strategy

The Township uses a pay-as-you-go capital financing strategy for routine spending to maintain and repair the water and wastewater systems. Reserve funds are used to finance large projects. The Township does not have any debt, but borrowing is available as a financing strategy. This is typical in smaller municipalities where accessing capital markets to minimize the cost of financing infrastructure is not common and building reserve funds is preferred over incurring debt.

A number of financing strategies are available to address the funding gap. The objective of the Township's financing strategy should be to maximize new growth at the lowest real cost impact to taxpayers (i.e. maximize real revenue growth by expanding the customer base and minimizing rate increases). This would prioritize the following options:

1. Provincial/Federal Government Specific Grants
2. Internal Financing using Reserves
3. Debt
4. Rate Increases

Future budgets will present the optimal balance of the available financing options to fund the Township's infrastructure program.

5.3 External Grant to Fund the New Water Supply Project

The Township cannot afford the large project required to ensure a suitable new water supply for the water system using internal financing options. An external grant from the Provincial or Federal government is likely the only option to secure the funds for this project.

6 DISCUSSION AND NEXT STEPS

This AMP represents the tactical output of a corporate management system. The corporate management system is a series of interconnected processes that work together to realize value from assets. This AMP uses the best available asset and financial information. The AMP is a living document that requires periodic updates to reflect new information and changing community priorities.

6.1 Monitoring Asset Performance

Moving forward, regulations require the Township to provide an annual update on the progress of the AMP. The practical steps to complete these activities are as follows:

1. Each year, update the asset inventory with the best available asset data. This ensures that assets are added/removed as appropriate and any new technical performance indicator data is used to adjust the current performance category of assets.
2. Each year, update current asset performance based on the best available information.
3. Each year, update the spending analysis to understand what assets money was spent on and to connect planned spending to assets or asset networks.

These three steps will allow for an update of the forecast performance versus spending analysis. Over time, the Township will be able to see connections between the changing performance and annual spending levels. This will increase the confidence of the Township's AMPs each year.

6.2 Roadmap for Enhancing Asset Management Processes

The following points provide a roadmap to enhance asset management planning processes in the Township:

1. Continue to maintain the inventory of all assets owned. Asset inventories should be comprehensive of all assets in an asset network.
2. Continue to strengthen the connection between actual or planned spending and specific assets (or asset networks). This will provide greater line of sight from the current or planned spending and the resulting performance improvement in an asset or asset network.
3. Continue to strengthen the quality of asset-centric performance indicator data that is available to measure the current performance of assets and asset networks. A priority data collection activity for the Township is to complete camera inspections of the gravity wastewater collection system.
4. Engage the community to understand their current perspective on the performance of assets and asset networks. This understanding calibrates the current performance of the asset networks and prioritizes the allocation of funding to improve the performance of asset networks relative to community expectations.

Appendix A – Performance Indicator Tracking

OCWA Performance Indicator Tracking

System	Indicator	2018	2019	2020	2021
Water Treatment and Distribution	Boil Water Advisory	0	0	0	1
	Watermain Breaks	0	0	0	0
Wastewater Treatment, Pumping and Collection	Effluent Non-Compliance	Not Available	1	0	1
	Bypass event	Not Available	0	0	0
	Community Complaint	Not Available	0	0	0

O. Reg. 588/17 Mandatory Metrics

<table>
<tr><th>Asset Group</th><th>Metric</th><th>Result</th><th>Comment</th></tr>
<tr><td>Water</td><td>User groups or areas that are connected to the municipal water system</td><td>Most properties within the settlement of Barwick are connected to the municipal water system.</td><td></td></tr>
<tr><td>Water</td><td>User groups or areas that have fire flow</td><td>All properties connected to the municipal water system have some fire flow coverage.</td><td></td></tr>
<tr><td>Water</td><td>Percentage of properties connected to the municipal water system</td><td>16%</td><td>360 Total Parcels, 59 active accounts</td></tr>
<tr><td>Water</td><td>Percentage of properties where fire flow is available</td><td>16%</td><td>Assume all properties connected to municipal system have fire flow.</td></tr>
<tr><td>Water</td><td>Description of boil water advisories and service interruptions</td><td><table><tr><th>Incident Date</th><th>Parameter</th><th>Result</th><th>Unit of Measure</th><th>Corrective Action</th><th>Corrective Action Date</th></tr><tr><td>Sept 24 2021</td><td>Low pressure readings for extended period of time and chlorine analyzer functioning intermittently due to no pressure.</td><td></td><td></td><td>Boil water advisory issued. Water brought in to refill clearwell. Samples required by MOH - 2 clear to remove BWA & then follow up samples in following weeks to ensure public safety</td><td>October 6 2021</td></tr></table></td><td></td></tr>
<tr><td>Water</td><td>Number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system</td><td>767 connection*days, 59 active accounts</td><td></td></tr>
<tr><td>Water</td><td>Number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system</td><td>0 watermain breaks, 59 active accounts</td><td>Assume Oreg metric is missing "disrupted", i.e. text should read "Number of disrupted connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.</td></tr>
<tr><td>Water</td><td>Average Age of Water Treatment Assets</td><td>22 Years</td><td></td></tr>
<tr><td>Water</td><td>Average Age of Water Distribution Assets</td><td>22 Years</td><td></td></tr>
</table>

O. Reg. 588/17 Mandatory Metrics

Asset Group	Metric	Result	Comment
Wastewater	User groups or areas that are connected to the municipal wastewater system	Most properties within the settlement of Barwick are connected to the municipal wastewater system.	
Wastewater	Percentage of properties connected to the municipal wastewater system	16%	360 Total Parcels, 59 active accounts
Wastewater	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place (to prevent backups into homes by allowing overflow during storm events)	N/A - no combined sewers	
Wastewater	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	N/A - no combined sewers	
Wastewater	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Infiltration inflow into sanitary sewers in both groundwater and stormwater which are not intended to be in sanitary system. Infiltration can enter through a variety of sources (cracks in pipes, weeping tile connections, cross connection, catch basins, etc.).	
Wastewater	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid sewage overflow into streets or backup into homes	Sanitary sewer systems are designed with appropriate overflows to reduce likelihood of sewer backup events. Overflows are typically found in the collection system or at pumping stations.	
Wastewater	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent can be defined as water pollution, such as the outflow from a sewage treatment facility. The effluent from the treatment facilities have documented compliance limits, objectives, and actual performance. The effluent criteria include effluent flow rates, and parameters for suspended solids, Biochemical Oxygen Demand (BOD), phosphorous, ammonia, and E. coli.	
Wastewater	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	0 backups, 59 active accounts	
Wastewater	Annual number of events where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system.	N/A - no combined sewers	
Wastewater	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	1 violation, 59 active accounts	
Wastewater	Average Age of Wastewater Treatment and Pumping Assets	29 Years	
Wastewater	Average Age of Wastewater Collection Assets	34 Years	

Appendix B – Short Term Capital (Major Maintenance) Plan

Township of Chapple Water and Wastewater Facilities

6-Year Recommended Capital/Major Maintenance Projects

The Ontario Clean Water Agency has identified the following capital projects/major maintenance for your review and approval for the year of 2022. Future years will be re-evaluated in October and added to as required.

Water/Wastewater Treatment/Collection/Distribution	Scope of Work Recommended Capital	Cost Estimate						Rationale for Project
		2022	2023	2024	2025	2026	2027	
Water Treatment	Lime System Upgrades (Estimates based on submission)	$ 50,000						**ICIP COVID - 100K Funded, 50K Funded by Township.
Water Treatment	Raw Water Feasibility Study (Estimates based on submission)	$ -						**Municipal Modernization Fund - 150K Funded.
Water Treatment	WTP Upgrades (Estimates based on submission)	$ 70,389						**ICIP II - Green Stream - 260,700$ Applied for WTP Upgrades. Upgrades include Fire pump upgrades, Relining of filters, distribution pump upgrades, and electrical assement of MCC panel
Water Treatment	Healy Ruff Switch upgrades from Mercury	$ 6,324						Old mercury switches are obsolete, requires an upgrade
Water Treatment	Digital Scales CO2	$ 4,500						Replace old scales with digital scales to better track C02 usage. Potentially reduce cost over time.
Water Treatment	Filter Media Replacement	$ 5,500					$ 5,500	Filter media replacement in both filter trains.
Water Treatment	MCC Panel Upgrade		$ 200,000					Electrical assesment to be completed, cost of upgrade will vary depending on findings.
Water Treatment	CO2 feed system upgrade engineering		$ 20,000					Hire an engineer to redesign the C02 feed system.
Water Treatment	CO2 feed system upgrade			$ 80,000				Price will vary depending on engineered design. Will gather better costing after the engineering is completed. Will most likely be able to apply for funding.
Water Treatment	Chemical Dosing pumps			$ 4,000				Replacement chemical dosing pumps
Water Treatment	New production well(s)	$ 100,000	$ 400,000	$ 5,000,000				Supply from existing well fields is not sustainable over the long term. Preliminary workplan to address this issue as follows: - $100k in 2022/2023 for Water Master Plan (Servicing Strategy) to complete necessary studies and satisfy Municipal Class EA requirements to allow Township to proceed with Design. - $500k in 2023/2024 for Consulting Engineering contract for design, contract administration and inspection services. - $5 million in 2024 for New well, pumphouse, and 3 km of watermains to connect new well field to WTP.
Water Distribution	Hydrant Rehabilitation		$ 5,000		$ 5,000		$ 5,000	Approximately $2,500 per hydrant rehab, allowance for 2 every second year
Wastewater Treatment/Collection	Lift Station Control Panel Upgrades	$ 65,000						Upgrade Panel (40+ years old) and two new pumps, floats, conduit etc...essential a lift station rebuild (will drill down this cost)
Wastewater Treatment/Collection	SCADA communitcation for each Lift Station	$ 2,500						Misc Expenses - OCWA to cover costs of roughly 10K for hardware/software
Wastewater Treatment/Collection	Lift Station Housing & chemcial feed	$ 10,180						Shed like structure to house chemcial feed to control phosphorus loadings in lagoon.
Wastewater Treatment/Collection	Lagoon Rehabilitation - Vegetation Control						$ 15,000	Removal of cattails at the lagoon, reoccuring cost every 5-7 years depending on growth.
Wastewater Treatment/Collection	Lagoon Dredging					$ 300,000		OCWA is working at finding new cost effective ways of dredging. Cost may vary in years to come.
		$ 314,393	**$ 625,000**	**$ 5,084,000**	**$ 5,000**	**$ 300,000**	**$ 25,500**	