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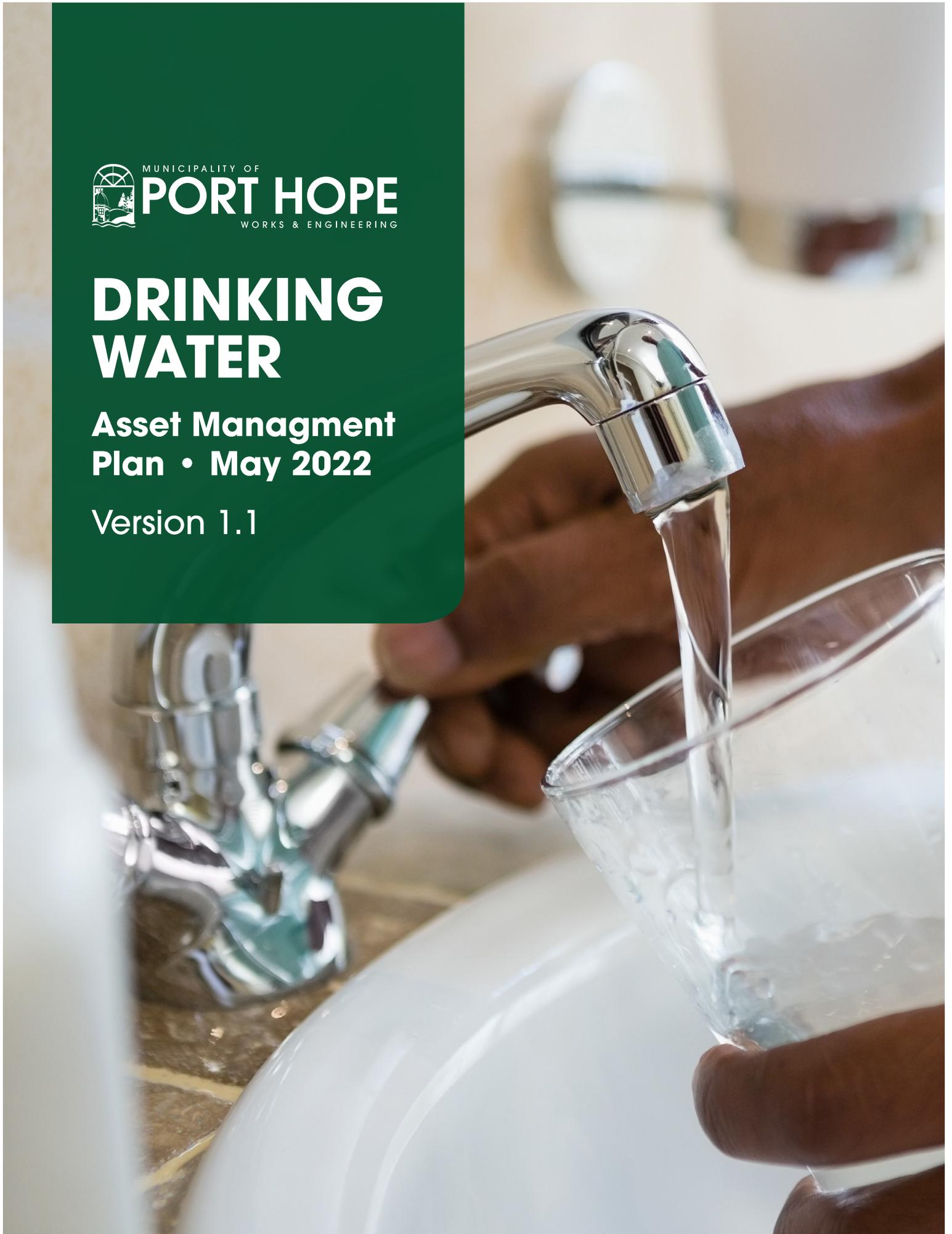
**PORT HOPE**

WORKS & ENGINEERING

# **DRINKING WATER**

**Asset Management  
Plan • May 2022**

**Version 1.1**



# Contents

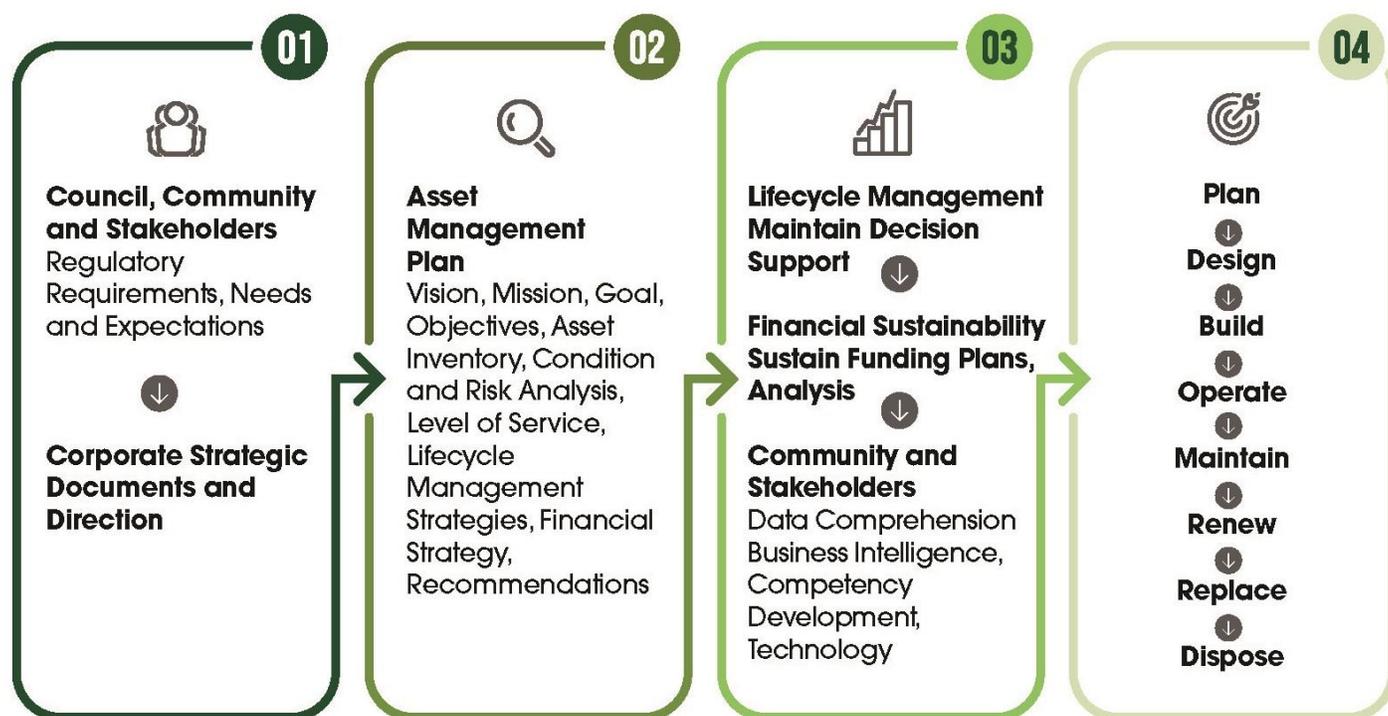
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# Introduction

## Background

Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure requires all municipalities to prepare baseline asset management plans for their core municipal infrastructure assets supporting the delivery of drinking water, wastewater, stormwater and transportation. The Municipality of Port Hope has a developing Asset Management program that is advancing and refining a clear picture of its infrastructure assets and maintaining them responsibly, balancing affordability, risk, and service levels. The Provincial regulation requires the Municipality to shift its reporting slightly to present the cost of maintaining all core assets in their present state, with no changes to the service level, for the next 10 years.

To meet the Provincial requirements, the Municipality of Port Hope has created this first version of its **Drinking Water Asset Management Plan (Drinking Water AMP)**. It reports the current state of the assets, levels of service provided, strategies and activities applied by the Municipality, historical and forecasted financial details, and potential improvement actions. It is a strategic document that provides a snapshot of current conditions and establishes a basis for future asset management planning and decision making.



## Asset Categories and Types

The Drinking Water AMP satisfies the Provincial requirements for water assets that relate to the collection, production, treatment, storage, supply or distribution of water. This includes the water treatment plant, watermains, pumping stations, and reservoirs. These assets support the treatment, distribution, and provision of safe drinking water to residents, businesses and visitors within the Municipality.

### Drinking Water Asset Categories and Types

#### Distribution Water Main



A **water main** is the pipe that delivers clean water to your home from your municipal water utility. The water main connects to your private water service line, which is typically located below ground on your private property

#### Transmission Main



**Transmission mains** are larger pipes (16" in diameter and larger) which are designed to move large quantities of water from the source of supply, and provide water to the smaller distribution mains

## Main Valve



A **main valve** controls the flow of water passage throughout the water distribution system and can be used to isolate areas for maintenance or replacement.

## Sample Station



**sampling stations** give operators unrestricted access to sample sites, provide a dedicated tap for sample retrieval with no outside cross-contamination, and allow for samples to be taken directly from the water main.

## Hydrant



A **hydrant** is a visible fixture placed outside a building, parking area, industrial area, or roadside that is connected to the municipal or a private water service network. They are used for flushing the mainline; creating a scouring action to clean the line. Fire hydrants are designed to instantly provide the water required by fire fighters to extinguish a fire.

## Street Box



A **street box** is a totally enclosed structure, located on the property line below ground containing a service valve meant for controlling or regulating the flow of water to the building located within the property.

## Water Treatment Plant



Port Hope Drinking Water System is classified as Large Municipal Residential System and consists of the **Water Treatment Plant** (WTP) and the Distribution System. The WTP provides ultrafiltration water treatment for the water system. The WTP is located at 35 Marsh St in the Municipality of Port Hope. The Municipality is the Owner and Operator of the Port Hope Drinking Water System that serves the community of Port Hope

## Victoria Street Booster Pumping Station



The **Victoria Street Booster Pumping Station (BPS)**, located at 66 Victoria Street North, is part of the infrastructure necessary to maintain pressure in Zone 2 in the Port Hope distribution system.

Zone 2 encompasses the higher elevation areas west of the Ganaraska River valley.

## Jocelyn Street Booster Station & Reservoir



The **Jocelyn Street Booster Station and Reservoir (BPS)** is located at 45 Jocelyn Street, Port Hope. is a key component of the Port Hope DWS by providing pressure and storage in Pressure Zone 2. The reservoir provides an in-ground reservoir with a rated capacity of 2,270 m<sup>3</sup>

## Fox Road Elevated Tower



The **Fox Road elevated Tower** provides off-site storage tank that can hold up to 3,000 m<sup>3</sup> of water.

## Dorset Street Standpipe



The **Dorset Street Standpipe** provides off-site storage facility in Zone 1 includes a standpipe with a rated capacity of 1,080 m<sup>3</sup>.

## Water Meter



When water comes into your home or building, it enters through a water lateral and then goes through the **water meter**.

The water that enters the building is measured. The water that passes through the water meter spins a built-in device. Each full spin of the device measures a specific amount of water; that amount is instantly shown on the display on top of the water meter in cubic meters. These meter reading may be ready manually from the exterior of the home or in more recent years Automatic

Meter Reading solutions let staff automatically collect consumption, diagnostic and status data from your water meter and then transfer that data to a central database for billing and analysis.

## State of Local Infrastructure

### Inventory and Valuation

The assets covered in the Drinking Water AMP have a replacement value of approximately **\$190 million**. This includes an inventory of over 96 kilometres of watermains, 1 water treatment plant, 1 elevated storage tank, 1 standpipe, 1 booster pumping station, and 1 pumping station combined with a storage reservoir.

	Watermains	Water Facilities
<b>Inventory</b>	96 kilometers 76 Cathodic Protection Anode stations 581 Hydrants 1,116 Valves 4856 Water meters	1 water treatment plant 1 booster pumping station 1 elevated storage tanks 1 standpipe 1 reservoir/pumping station
<b>Replacement Costs</b>	<b>\$141,875,493</b>	<b>\$48,270,250</b>

Replacement costs for watermains are based on benchmark costs for watermain projects, as identified in Table 3-3 of the 2020 Water and Wastewater Rate Study. Costs were adjusted to 2022 using Non-Residential Building Construction Price Index (NRBCPI).

The water facilities were developed using the 2016 AMP values and adjusted for inflation. Dorset Street Standpipe is the exception, as updated costs are available based on recent ICIP grant application. Replacement values for all facilities will be reviewed and updated as the condition assessments are completed over time. In correlation to the other asset classes the Drinking Water AMP replacement costs can be related to the table below.

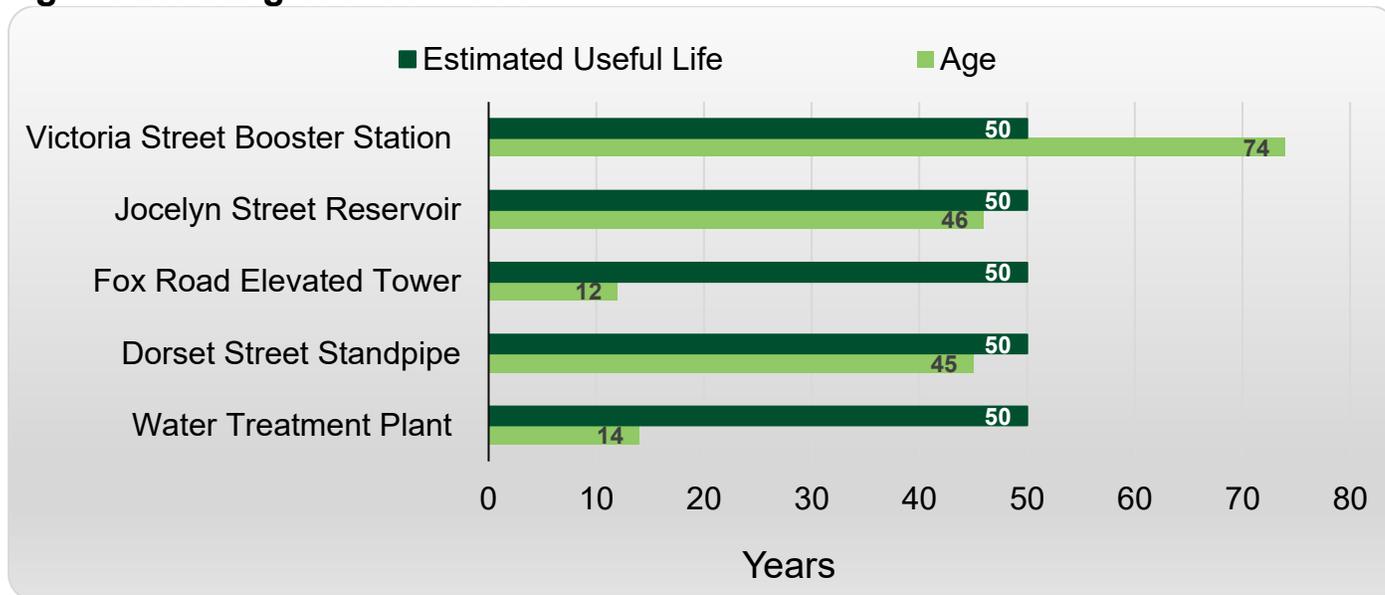


Asset Class	Quantity	Unit	Historical Cost	Replacement Value	Historical (3 year) average of actual annual replacement	Required Annual Lifecycle Cost	Average annual Lifecycle Cost as % of Replacement Cost
<b>Bridges &amp; Culverts</b>	20	each	\$7.23 million	\$55.68 million	0	\$1.13 million	2%
<b>Water Facilities</b>	5	each	\$24.40 million	\$48.27 million	\$0.41 million	\$1.61 million	3%
<b>Wastewater Facilities</b>	6	each	\$40.22 million	\$65.14 million	\$0.13 million	\$1.87 million	3%
<b>Other Facilities</b>	35	each	\$29.62 million	\$58.98 million	TBD in next AMP update	TBD in next AMP update	TBD in next AMP update
<b>Water Linear</b>	96	km	\$30.56 million	\$139.16 million	\$1.79 million	\$1.86 million	2%
<b>Wastewater Linear</b>	83	km	\$17.86 million	\$123.60 million	\$1.36 million	\$2.36 million	2%
<b>Transportation Services</b>	690	km	\$49.27 million	\$321.73 million	\$1.14 million	\$8.04 million	2%
<b>Storm Sewer Linear</b>	66	km	\$17.53 million	\$92.32 million	\$0.34 million	\$1.89 million	2.7% for SWMP & 2.0% for linear
<b>Equipment</b>	140	each	\$2.59 million	\$3.19 million	TBD in next AMP update	TBD in next AMP update	TBD in next AMP update
<b>Land Improvements</b>	208	each	\$9.21 million	\$14.90 million	TBD in next AMP update	TBD in next AMP update	TBD in next AMP update
<b>Technology</b>	29	each	\$2.52 million	\$2.93 million	TBD in next AMP update	TBD in next AMP update	TBD in next AMP update
<b>Vehicles</b>	158	each	\$11.68 million	\$14.26 million	TBD in next AMP update	TBD in next AMP update	TBD in next AMP update
<b>Totals</b>			<b>\$242.68 million</b>	<b>\$940.17 million</b>	<b>\$5.18 million</b>	<b>\$18.74 million</b>	

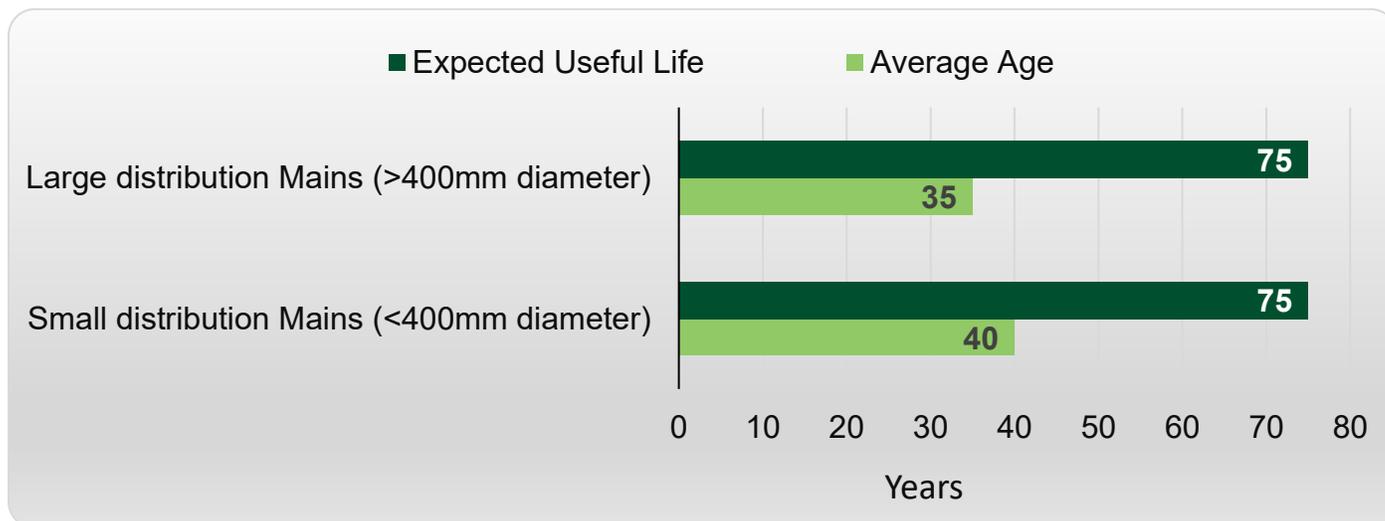
## Age and Condition

The age of an asset gives a sense of how close it is to the end of its service life and what renewal interventions may be appropriate. The average age of the Municipality’s water mains and water facilities are shown in the figures below, however since construction, various assets within the facilities have been renewed, replaced, or otherwise maintained to ensure reliable operation. Where construction dates were unavailable in our inventories and GIS mapping, construction dates have been assumed to correspond with other proximate buried linear infrastructure.

### Age of Drinking Water Facilities



### Average Age of Watermain



## Condition Collection

The Municipality assesses the condition of its drinking water assets on a regular basis using a variety of techniques, as summarized in the table below.

Asset Category	Condition Data collection techniques	Frequency
<b>Watermains</b>	<ul style="list-style-type: none"> <li>• Leak detection program</li> <li>• Break data</li> <li>• Valve Turning Program</li> <li>• Hydrant Flushing Program</li> </ul>	Varies depending on the condition assessment program type
<b>Water Facilities</b>	Various condition assessment programs: <ul style="list-style-type: none"> <li>• Vibration Program</li> <li>• Lubrication Program</li> <li>• Piping Inspection Program</li> <li>• Electrical Low Voltage Condition</li> <li>• Electrical Transformer Oil Condition</li> <li>• Electrical Infrared Thermography Program</li> <li>• Structural Inspection Program</li> </ul>	<ul style="list-style-type: none"> <li>• Vibrations Program quarterly with exception of the Jocelyn St Reservoir pumps</li> <li>• All other programs as per manufacturers recommendations</li> <li>• Structural inspection every 5 years during condition assessments</li> </ul>

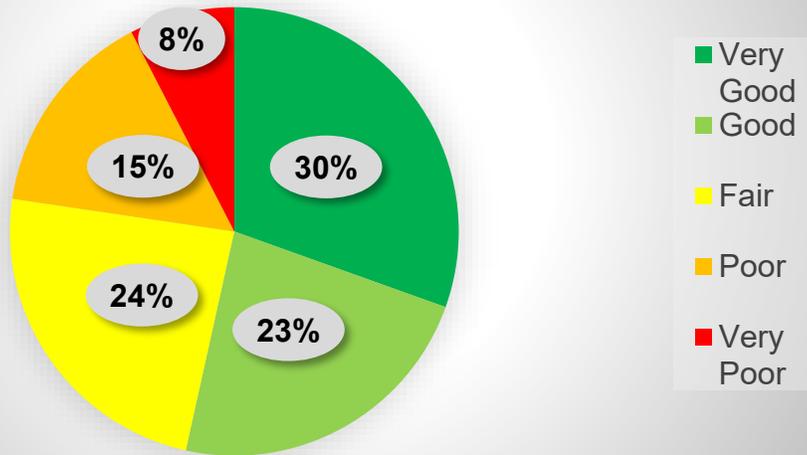
Based on condition data, supplemented by subject matter expert knowledge and professional judgment, the condition of assets is rated on a scale from “Very Good” to “Very Poor” as shown in the table below. The update to the AMP in 2025 will summarize condition as weighted inclusive of break history for watermain and inspection reports records more facilities. Condition data for Meters is currently being consolidated and will be included in the next update.

## Water Condition Indices

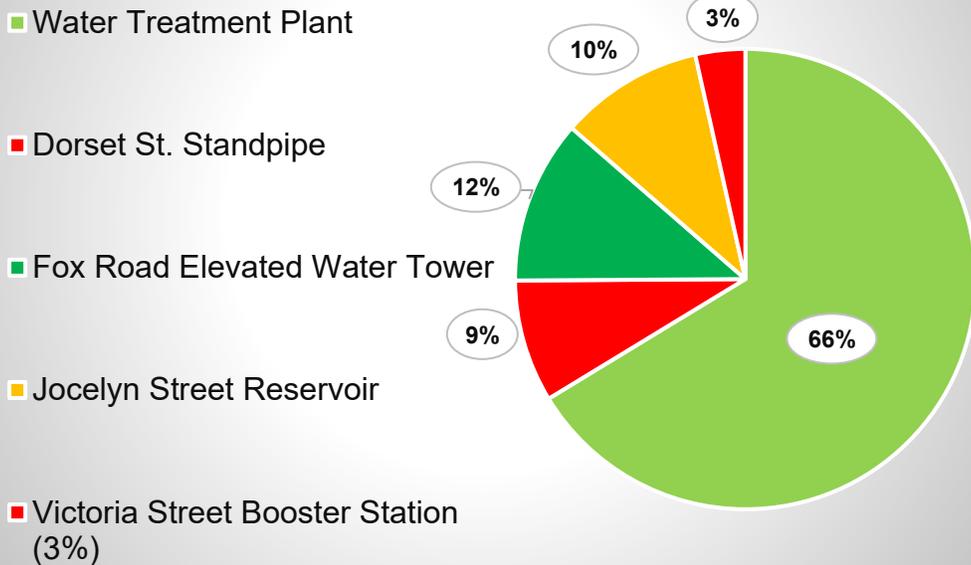
Rating	Rating Description	Remaining Useful Life	Condition Index Watermains (probability of failure)	Condition Index Water Facilities
<b>Very Good</b>	<b>Very Good – Fit for Future</b> Well maintained, good condition, new or recently rehabilitated	80 to 100%	>4 to ≤5	5
<b>Good</b>	<b>Good – Adequate for Now</b> Acceptable, generally in mid stage of expected service life	60 to 79%	>3 to ≤4	4
<b>Fair</b>	<b>Fair – Requires Attention</b> Signs of deterioration, requires attention, some elements exhibit deficiencies	40 to 59%	>2 to ≤3	3
<b>Poor</b>	<b>Poor – Increasing potential of affecting service</b> Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20 to 39%	>1 to ≤2	2
<b>Very Poor</b>	<b>Very Poor – Unfit for Sustained Service</b> Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable.	0 to 19%	1	1

The overall condition of drinking water assets is Good and a breakdown for the various asset types is shown in the figures below.

## Watermain Condition by Percentage of Overall Length



## Water Facility Condition by Percentage of total Replacement Cost



## Levels of Service

The State of the Infrastructure section of the asset management plan provides an overview of the capital assets that support provision of the Municipality's services. The information presented in that section includes asset quantities, replacement cost valuation, age, and condition.

Physical condition of the assets is not sufficient to comprehensively capture the levels of service provided by the Municipality. To cover aspects of services not directly linked to asset condition, a broader levels of service framework has been developed. The levels of service framework presented in this section of the asset management plan contains the following elements:

- Service attributes which identify relevant aspects or characteristics of a service.
- Level of service statements which describe service attributes from a non-technical point of view.
- Performance measures which enable quantitative measurement to support the level-of-service statements.

For each performance measure, the current performance is reported. The Municipality will track and report on the current performance on an annual basis. In the future, targets for each performance measure will be chosen that balance regulatory requirements, the needs/expectations of service users, and various external trends and pressures, with the cost of delivering the service.

Two sets of tables are provided in each of the following subsections. The first table identifies relevant service attributes and defines the community levels of service for each of those attributes. The service attributes are intended to capture all major aspects that are of interest to the users of a service. The community levels of service include qualitative information such as images of assets providing different levels of service and maps, as well as statements describing what the Municipality intends to deliver, generally described from the user's perspective. The second table describes the performance measure(s) connected to each of the service attributes and identifies the current performance for each performance measure.

The Drinking Water AMP establishes preliminary level of service measures and the current level of service being provided. The measures align with both Municipal goals and Provincial requirements and recognize that drinking water assets should:

- Provide reliable water services for community use and fire fighting
- Maintain consistent and high-quality water supply
- Ensure water is safe for domestic purposes and for consumption
- Provide and use potable water in a sustainable manner.

A future version of the Drinking Water AMP will go a step further and include Council's target service levels for each measure.

## Community Qualitative Descriptions

Service Attribute	Community Levels of Service	Qualitative Description
<b>Scope</b>	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system.*(1)	The water system provides potable water within the Municipality for residential and business consumption, as well as for recreational uses and maintenance operations. All properties within the Municipality's urban boundary have water servicing available. The scope of the Municipality's water system is illustrated by the map in Appendix 1.
<b>Scope</b>	Description, which may include maps, of the user groups or areas of the municipality that have fire flow.*	The water system provides water flows within the Municipality for fire protection. All properties within the urban boundary, have fire flow available. The Welcome community hydrants in the rural area are for main flushing only. The scope of the Municipality's water system is illustrated by the map in Appendix 1.
<b>Reliability</b>	Description of boil water advisories and service interruptions*	The water system is managed with the goal of providing a safe and reliable water supply, minimizing service interruptions and occurrences of adverse water quality events (measured by occurrences of boil water advisories).

\* Required by Ontario Regulation 588/17.

(1) See Appendix 1 for a map of the areas of the municipality that are connected to the municipal Drinking Water System.

## Technical Metrics

Service Attribute	Performance Measure	2020 2021 Performance
Scope	Percentage of properties connected to the municipal water system. *	Of the total properties in the municipality 66% are connected to municipal drinking water. 100% of urban properties have access to municipal drinking water
Scope	Percentage of properties where fire flow is available. *	99% of urban properties and 56% of total properties.
Scope	Percentage of fire hydrants with fire flow greater than 500 gallons per minute	94.9%
Reliability	The 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. *	0 events affecting 0 properties
Reliability	The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system. *	0 connection days / 4856 connections
Reliability	Percentage of water mains beyond expected useful life (percentage by network length).	23%
Reliability	Percentage of water facilities beyond expected useful life. (Percentage by network value)	3.5%
Reliability	Number (or length) of water mains that have had breaks and have yet to be replaced.	15.71km or 16.42%
Reliability	Number of pressure complaints received during reporting period, as a result of municipal infrastructure during the previous reporting period.	No pressure complaints have been received
Reliability	Percentage of water meters beyond expected useful life of 18 years	19.5%
Safety	Incidents of non-compliance per reporting year	0
Sustainability	Residential Water consumption (litres per customer per day)	5,086,000 liters average per day and approx. 1,047 liters per customer

\* Required by Ontario Regulation 588/17.

# Asset Management Strategy

## Practices, Procedures and Tools

- The Municipality has well-established overall principles, framework, and decision-making approaches for asset management, and these are presented in the 2016 Asset Management Plan. They provide a holistic approach to asset management as demonstrated by the capital investment prioritization process that drives the decision-making towards meeting the desired levels of service at the lowest lifecycle cost.



## Future Demand and Service Enhancement

Port Hope's population is expected to increase to 20,850 people by 2029, an increase of 17.31% over the next 7 years. The Municipality's Official Plan provides the vision for the future growth of the Municipality including areas identified for intensification. Further Projections for the urban area are referenced in Northumberland County's Municipal Comprehensive Review – Long-Term Growth Forecast and Urban Land Needs Analysis which projects growth for the urban area up to 2051. The Official Plan is supported by the Development Charges Study and the Water Rate Study to ensure that drinking water services will be available to support future growth.

In addition to the growth and enhancement objectives of the Municipality's master plans, asset management planning also needs to consider the Climate Action Plan goals for both resiliencies to changing climate and reduction of greenhouse gas emissions. Existing assets must be maintained, and new assets brought into service to meet these various growth and service enhancement objectives.

## Lifecycle Management and Risk

Lifecycle management activities refer to the set of planned activities and actions undertaken to maintain the current levels of service and achieve good economic life of the assets. The activities undertaken range from operations and maintenance activities, including planned and reactive maintenance, renewal activities (such as condition assessments and rehabilitations), disposal activities and non-infrastructure solutions (such as policies and processes that reduce costs, mitigate risks or maintain/enhance service delivery).

In developing the Drinking Water AMP, a preliminary estimate of future costs was generated based on the Municipality's budgeted 10-year capital forecast which, at this time, provides the best available information for generating this estimate. It was developed through a collaborative effort of Watson & Associates Economists Ltd. combined with staff input that aligns with the Municipality's current decision-making and asset capital expenditure processes. The lifecycle activities that will be required over the 10-year period are based on the asset management strategies that are currently captured in the Annual Capital and Operating Budget process. For drinking water assets, this includes operational and maintenance strategies, asset management decision making, lifecycle cost and value optimisation, options analysis, ageing assets strategy, non-infrastructure solutions, capital investment planning, condition assessment programs, as well as consideration of water service impacts and impacts to other services.

The Municipality applies a risk-based approach to prioritizing asset renewals. The risk assessment frameworks and methods vary across the different types of assets but are generally based on the importance of each asset in terms of service delivery/ continuity, and the number of users who could be impacted.

## Water Mains

Category	Frequency
Inspection and Condition Assessment	Beyond using estimated useful life to determine the approximate condition, staff also gauge the material type, utilize leak detection technology, and analyze watermain break data.
Major Lifecycle Activities - Operating	<p><b>Flushing</b> – Each year, Municipal staff flush fire hydrants as part of a standard maintenance program. This important upkeep ensures that adequate water flow for fire fighters, residents, and businesses. It also helps maintain the Municipality’s water quality by clearing iron and mineral deposits from the water mains.</p> <p><b>Cathodic Protection</b> – the Municipality purchases and installs anodes as needed. Furthermore, the Municipality is planning to undertake two major installations throughout the water system in the next ten years, to preserve the life of ductile iron and cast iron watermains that aren’t part of the 10-year capital replacement plan. These major installations were included in the Municipality’s 2020 Water and Wastewater Rate Study.</p> <p><b>Valve turning</b> – This is a preventive maintenance program funded from the operating budget. Valve turning ensures that valves are operating properly so that when watermain breaks occur, an individual section can be isolated effectively. If valves are not operating properly, there may be a need to isolate larger areas and disrupt more customers. The program is typically completed throughout the summer, following the completion of the flushing program around May/June. The Municipality’s goal is to turn every valve approximately every 3-4 years. The number of valves turned in any given year is influenced by the number of capital projects that are underway.</p> <p><b>Flow testing (fire hydrants)</b> – In 2020 the Municipality started a small-scale program (through contractor) to perform flow testing of fire hydrants that haven’t been tested recently. The program will address targeted areas and will help ensure that any changes to flows are documented. The condition of watermains in an area and the completion of watermain upgrades/replacements can have an impact on hydrant flow rates. Hydrants will be flow tested after the completion of linear capital projects.</p> <p><b>Water shut-off street box inspection program</b> – municipal staff locate the shut-off/curb box on the property line, operate it a few times to make sure it is in good working condition, and document any that need work or replacement. This ensures that in the event of an emergency the water can be shut off if needed.</p>
Major Lifecycle Activities - Capital	Watermain replacements are completed as needed and, where possible, are aligned with other asset replacements through a coordinated reconstruction program. Replacement of watermains typically include replacement of valves, hydrants, and water services to the property line. For long-term capital planning purposes and budgeting, watermains are assumed to have a useful life of 75 years.

Category	Frequency
Identification of Short-term Priorities	The Municipality developed a 10-year forecast of lifecycle activities as part of the 2020 Water & Wastewater Rate Study. The forecast contained in the Water & Wastewater Rate Study is the basis for developing annual capital budgets and is supplemented with priorities that are identified through ongoing operations.
Growth-related Lifecycle Needs	Future population and employment growth in the Municipality is expected to result in incremental service demands that may impact the current level of service. The growth-related capital investments related to water mains include watermain replacements and oversizing projects and installation of pressure reducing valves. These growth-related needs are summarized in the Municipality's development charges background study which is updated every five years.
	Various condition assessment programs: <ul style="list-style-type: none"> <li>• Vibration Program</li> <li>• Lubrication Program</li> <li>• Piping Inspection Program</li> <li>• Electrical Low Voltage Condition</li> <li>• Electrical Transformer Oil Condition</li> <li>• Electrical Infrared Thermography Program</li> </ul>

## Water Facilities

Lifecycle Activities	Frequency
Inspections and Condition Assessment	Condition assessments are completed to review the condition of the various assets and systems at each facility and identify current and longer-term needs based on asset lifecycles. Recently completed assessments include: <ul style="list-style-type: none"> <li>• Dorset Street Standpipe Condition Assessment (August 2019)</li> <li>• Victoria Street Booster Pumping Station Condition Assessment (January 2018)</li> <li>• Port Hope Water Treatment Plant Condition Assessment (2021)</li> <li>• Jocelyn St. Reservoir Condition Assessment (2021)</li> </ul>
Major Lifecycle Activities - Operating	Preventative maintenance activities for equipment are scheduled and completed routinely along with other lifecycle replacement needs. The annual drinking water system reports provide a summary of the lifecycle activities completed during the reporting period.
Major Lifecycle Activities - Capital	Lifecycle replacements and rehabilitations of facility components are completed as needed. For long-term capital planning purposes and budgeting, the water treatment plant has been broken down into major components (e.g., envelope, structure, mechanical, electrical, and membrane modules) and the components are assigned useful lives ranging from 8 years for membrane modules to 50 years

	for structural elements. <sup>1</sup> For long-term capital planning purposes and budgeting for other water facilities, the facilities are assigned a useful life of 50 years. The Municipality will further refine the lifecycle cost estimates in future years by breaking down the other facilities into component parts and capturing replacement costs and useful lives at the component level.
Identification of Short-term Priorities	<p>The Municipality maintains a 10-year capital plan for water facilities that was developed and is updated with input from the following sources:</p> <ul style="list-style-type: none"> <li>• Input from Municipal staff with respect to projects that are required to address operational-level items or provide continuity of ongoing maintenance programs</li> <li>• Condition assessment reports</li> </ul> <p>Long-term asset planning for facilities that may require major lifecycle rehabilitation within a 10-year planning period.</p>
Growth-related Lifecycle Needs	Future population and employment growth in the Municipality is expected to result in incremental service demands that may impact the current level of service. The growth-related capital investments related to water facilities include pumping upgrades and are summarized in the Municipality's development charges background study which is updated every five years.

## Water Meters

Lifecycle Activities	Frequency
Inspections and Condition Assessment	The Municipality does not perform routine inspections nor condition assessments of water meters. A concept is being developed for water use that will speak to an inspection program.
Major Lifecycle Activities - Operating	There are no preventative maintenance activities related to water meters.
Major Lifecycle Activities - Capital	Lifecycle replacements of water meters are completed as needed. For long-term capital planning purposes and budgeting, water meters are assumed to have a useful life of 18 years.
Identification of Short-term Priorities	The Municipality replaces water meters as needed and maintains an inventory of all water meters. While a comprehensive meter replacement program is currently not in place, the Municipality is seeking to coordinate replacement of water meters with watermain replacement projects. This creates efficiencies because water main replacement projects often require a temporary water supply to be provided to the service connections, which is a good opportunity to also replace the water meter.

<sup>1</sup> The Municipality also maintains a more detailed inventory of the equipment that is inside of the water treatment plant. This more detailed equipment inventory is maintained in the CMMS (Computerized Maintenance Management System) however, replacement costs are currently not tracked at this level. In future years, once replacement costs are assigned to individual equipment items, the CMMS inventory can be used to perform the lifecycle costing analysis at a more detailed level.

Growth-related Lifecycle Needs	Future population and employment growth in the Municipality is expected to result in incremental demands for water meters as new customers connect to the system. The Municipality supplies and installs new water meters as requested and recovers the associated costs through user fees imposed under the Fees and Charges By-law. Furthermore, the Municipality has implemented a remote radio meter reading system to create operational efficiencies as the Municipality grows. The planned investment into the remote radio meter reading system is included in the Municipality's development charges background study which is updated every five years.
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The Municipality continues to invest in maintaining infrastructure and has been increasing its capital investments to align with long-range forecasts available in the 2016 AMP, Development Charges Study and Water & Wastewater Rate Study. The Municipality's existing funding model incurs an annual shortfall to maintain critical infrastructure in a state of good repair. There are annual contributions to the Asset Management Reserve to increase the current funding model. Changes will again impact the financing strategy when the new service levels are defined in the next version of the asset management plans, which are due in 2025.

### Annual Reinvestment required based on Lifecycle Management Strategy costs

Asset Category	Quantity	Unit of Measure	Replacement Cost	Average Annual Lifecycle Cost (Capital)	Average Annual Lifecycle Cost as % of Replacement Cost	2016 Canadian Infrastructure Report Card Reinvestment Rate Low Target	2016 Canadian Infrastructure Report Card Reinvestment Rate High Target	Annual Reinvestment Rate based on Useful Life Analysis
Water Linear	96	km	\$139,164,095	\$1,855,521	1.3%	1.0%	1.5%	
Water Facilities	5	each	\$48,270,250	\$1,606,961	3.3%	1.7%	2.5%	3.3%
Water Meters	4,691	each	\$2,711,398	\$135,570	5.0%			

## Improvement and Monitoring Plan

Based on the snapshot of current conditions and existing plans presented in the Drinking Water AMP, areas of potential improvement include:

- Asset information and data quality
- Condition data tracking and asset valuation
- Lifecycle renewal needs forecasting
- Climate change resiliency
- Equity and inclusion

The Drinking Water AMP will be reviewed and updated on a regular basis and over time these improvements will be reflected in future versions of the plan.



## More Information

For more information about asset management, or to learn more about the Municipality's Asset Management Program, please visit [porthope.ca](http://porthope.ca).

# Appendix 1 Drinking Water Asset Management Plan Facilities and main including break data



**Legend**

- Water Facility
- Hydrant
- Mains with Break Counts
- Properties

**PressureZone**

- 1
- 2

**Watermain**

- <400mm
- >400mm

