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Staff Report

Operations – Water & Wastewater Services

Report To:	**COW - Operations, Planning and Building Services**
Meeting Date:	June 10, 2025
Report Number:	OPS.25.023
Title:	2024 Year End Water and Wastewater Capacity Report
Prepared by:	Allison Kershaw, Manager of Water & Wastewater Services

A. Recommendations

THAT Council receive Staff Report OPS.25.023, entitled "2024 Year End Water and Wastewater Capacity Report" for their information.

B. Overview

The Town's Year End Water and Wastewater Capacity Assessment is submitted to Grey County to provide status of the connections to the Town's Water Distribution System and Wastewater Treatment Plant, the Thornbury & Craigleith Wastewater Treatment Plants and related critical infrastructure.

C. Background

The Town is required to provide an annual Year End Water & Wastewater Capacity Assessment Report to the upper tier government, being the Grey County Planning Department. This report is used as a monitoring tool for the provision of allocation and reservation of water and wastewater capacity for new development. It also provides current information on flows from existing system users.

The Year End Water and Wastewater Capacity Assessment is prepared by Town Staff.

D. Analysis

An overview of the 2024 Year End Water and Wastewater Capacity Assessment is provided below, the Executive Summary is provided in Attachment #1.

Section D1.4 of the Official Plan describes five development-staging categories based on development approval status and corresponding level of commitment of the water or the wastewater system capacity. The process makes commitment of capacity for existing unserviced development. Attachment #2 provides an overview of the development

staging process and requirements for moving through the process both new and existing unserviced development is identified as having “No Capacity”, “Reservation”, or “Allocation” depending on the stage.

Development Categories

The Town’s Year End Reports have historically identified 7 categories of connection status within the Town. See Attachment.

1. Connected - Includes all connected units
2. Can connect – Includes all existing units and vacant lots fronting servicing that are not connected
3. Committed – includes all new units that are identified in an executed development agreement
4. Not Fronting, Not Services – Includes exiting units and vacant lots within a service area that do not front servicing
5. Designated active lands – Includes units in areas with draft plan approval
6. Other land designated – Includes units in areas that are designated but do not have draft plan approval
7. Other lands not designated – includes units in areas that require Official Plan Amendments and have no approval

Allocated = Categories 1 to 4 Reserved = Categories 5

No Capacity = Categories 6 and 7

To determine units available for allocation, built capacity (i.e. servicing capacity of the existing built Town water and wastewater infrastructure) will be used. To determine units available for reservation, planned and approved capacity (e.g. facility design complete, Environmental Compliance Approval obtained) will be used. If no planned or approved capacity is available, the total capacity for reservation and allocation is the built capacity.

Water

From 2023 to 2024 the number of connected water units in the Town increased by 65 units for a total of 10,230 connected units. See Figure 1 below.

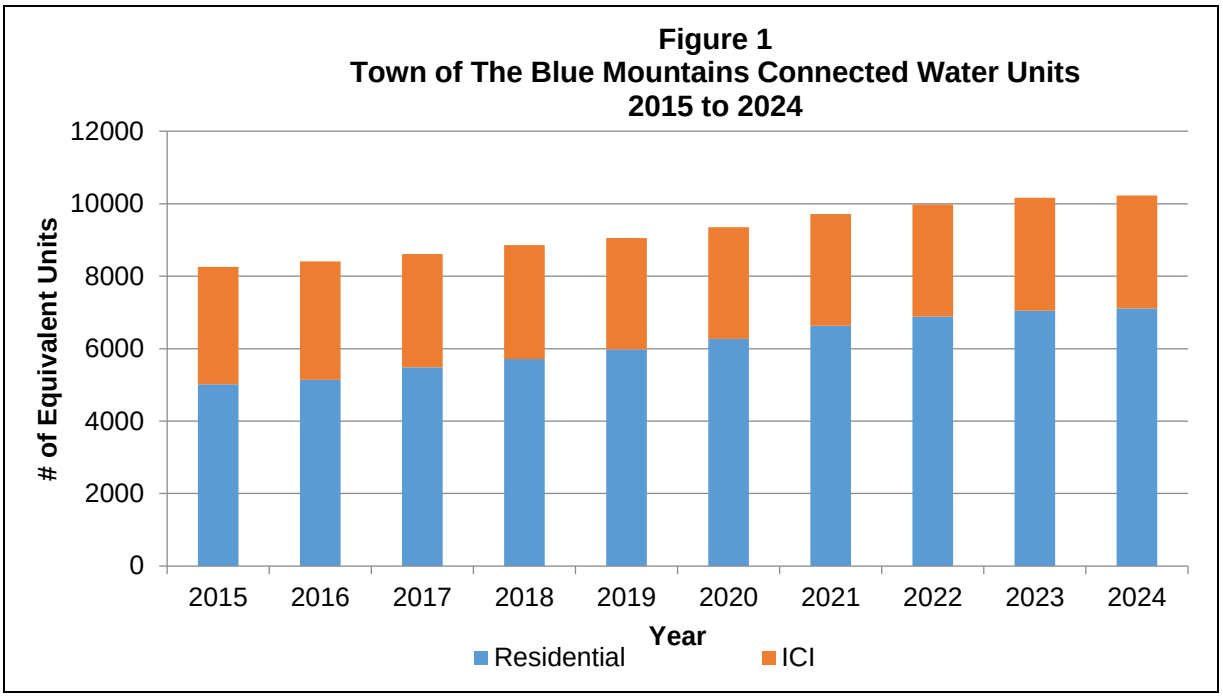
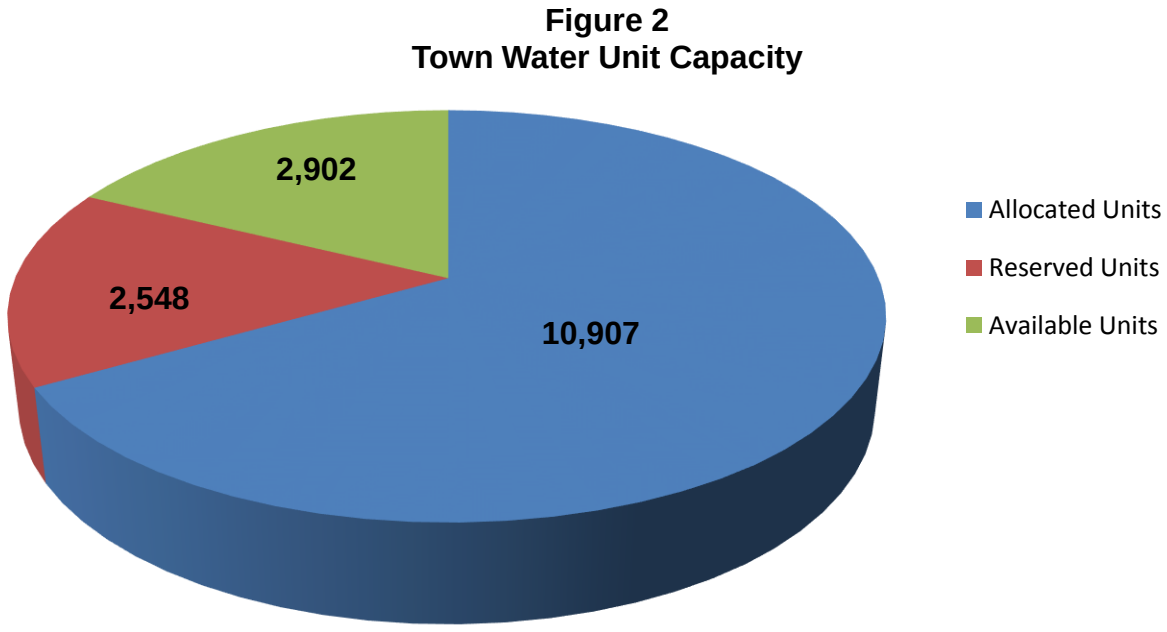


Figure 2 below illustrates the unit capacity of the Tow's water system. Of the total system capacity of 16,357 units, 10,907 units are allocated, and 2,548 units are reserved. This leaves 2,902 available units.



The Town of The Blue Mountains' total firm water capacity available is 16,390m^3/day or

16,357 units based on the five-year rolling Maximum Day Demand (MDD) of 1.002m^3/unit/day. The 16,390m3/day includes 1,250m3/day received from the Town of Collingwood as identified in the Water Supply Agreement.

The evaluation of the water system does include considerations for the additional units for sites B, E and F at the Village.

The Town has a challenging water system in regard to leakage. Within the Town's water system, there are 14 different pressure zones. The system is long and narrow and runs along the shoreline. The shale provides an excellent opportunity for the water that has leaked out of the system to get the bay, without surfacing. Many of the lots serviced by the water system are estate type lots, meaning they are much larger than city lots, and few users between each pipe. Water tends to leak between joints and fittings. When there are few users between each pipe length or connection, the percent of water loss increased, because the amount of water being accounted for by users is less, however still experiencing the same volume of water loss. For the relative length of the system, 150kms, there are few users, in comparison to other municipalities.

Infrastructure Leakage Index

The Infrastructure Leakage Index (ILI) is a performance index of a system's water loss. ILI was developed by the International Water Association. The ILI is the ratio of current annual real losses to unavoidable annual real losses. It is derived from the structural and operational characteristics of the distribution system and is considered by the water industry as a better indicator of a system's condition. The ILI calculation considers the length of the service connections, the operating pressures, the length of the system and the number of users on the system.

There are four technical performance categories utilized for the ILI values by the International Water Association Water Loss Task Force.

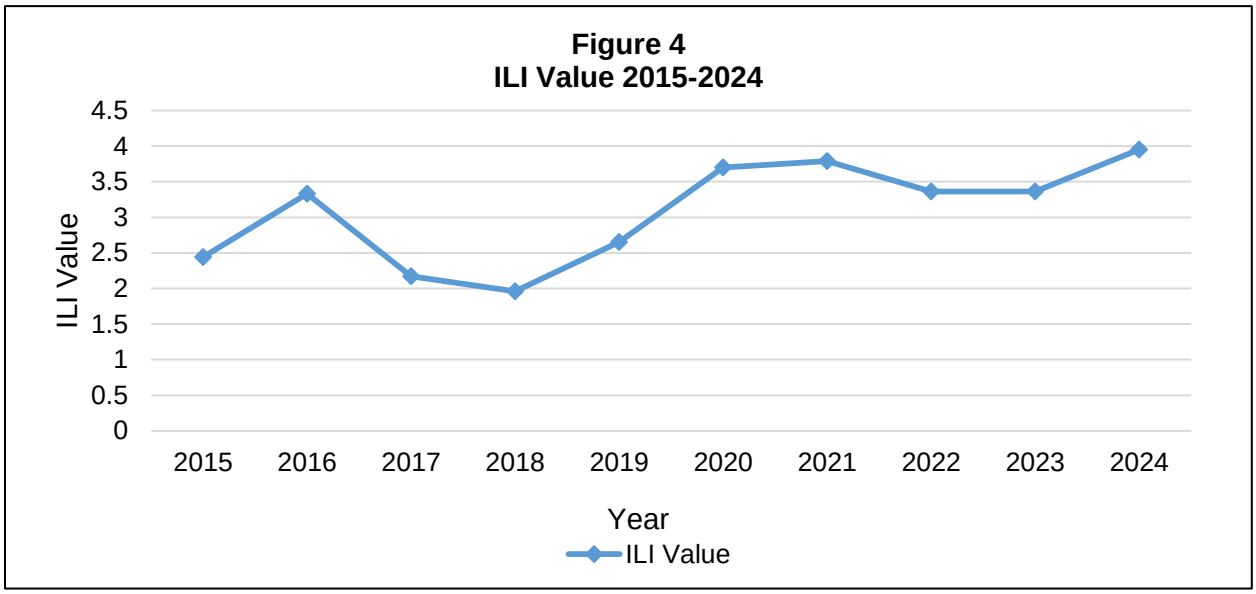
ILI 1 to 2 Excellent Further loss reduction may be uneconomical unless there are shortages

ILI 2 to 4 Good Potential for marked improvements, consider pressure management, better active leakage control practices and improved network maintenance

ILI 4 to 8 Poor Poor leakage record, tolerable only if water is plentiful and cheap. Analyze level and nature of leakage and intensify leakage reduction efforts.

ILI >8 Very Bad Very inefficient user of resources; leakage reduction programs imperative and high priority

Figure 4 below illustrates the ILI for the Town from 2015 to 2024



The Town falls within the "Good" range for managing non-revenue water and real losses. However, this category also identifies room for improvement and continual monitoring to further reduce the losses. Staff continue to source leaks and repair as soon as possible.

Table 1 summarizes the water produced, consume and lost.

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Water Produced (TBM) (ML)	1452.9	1618.2	1541.0	1585.3	1793.4	1899.8	2033.7	2004.1	2161.7	1991.8
Imported Water (ML)	222.9	190.0	171.0	212.7	185.0	198.4	198.7	199.6	194.8	195.8
Exported Water (ML)	54.8	24.0	25.9	31.5	32.9	35.5	42.9	40.3	50.5	44.0
Total Water Available (ML)	1621.0	1784.2	1686.2	1766.5	1945.5	2062.7	2189.4	2163.5	2306.0	2144.0
Billed Authorized Consumption (ML)	1054.3	1124.3	1057.0	1164.6	1335.6	1281.7	1258.2	1292.0	1289.2	1308.4
Unbilled Authorized Consumption (ML)	208.3	202.1	288.5	202.6	194.9	218.7	331.4	323.7	459.0	198.4
Apparent Losses* (ML)	101.1	101.5	102.2	102.4	102.9	103.2	103.4	103.4	103.8	103.4
Real Losses** (ML)	257.3	356.3	238.4	296.9	312.1	562.4	599.8	547.8	557.8	533.3
Real Water Loss (%)	15.9%	20.0%	14.1%	16.8%	16.0%	27.2%	27.3%	25.3%	24.1%	24.8%
Total Water Loss (%)	22.1%	25.7%	20.2%	22.6%	21.3%	32.2%	32.1%	30.1%	28.6%	29.7%

* Apparent Losses includes unauthorized consumption, customer metering inaccuracies and systematic data handling errors.

** Real Losses includes the total volume of water that cannot be accounted for.

The total percentage of water loss for 2024 was 29.70%. This was slightly higher than 2023. The Town is currently undertaking a leak detection program to identify and repair leaks to reduce the water loss. In addition, the Town has started a program to install flow meters on the watermains entering large developments on private lands. A mass balance with the individual residential meters will assist in identifying leaks on private lands.

In 2024, Staff repaired 2 watermain breaks and 13 service connection leaks. Both watermain breaks were in the Tyrolean Village area, and in both cases, the saddles had failed.

Staff continue to search for leaks, and evidence of water theft. Water theft has been found in new developments, with Construction Companies illegally operating curbstops, utilizing unmetered connections for water during construction, leaving curbstops running during winter months to prevent freezing and establishing stations to facilitate water theft.

In the fall of 2024, the Town partnered with Xylene to perform an inline leak inspection with the Smartball platform. The tool listens for leaks and air pockets using acoustic technology from inside the watermain. The Smartball inspected the trunk main from the Thornbury Reservoir on Grey Street to Arrowhead Road. The Smartball identified four (4) leaks and three (3) acoustic anomalies. Through some additional field work, one of the anomalies was determined to be a service leak. The leaks will be addressed in 2025.

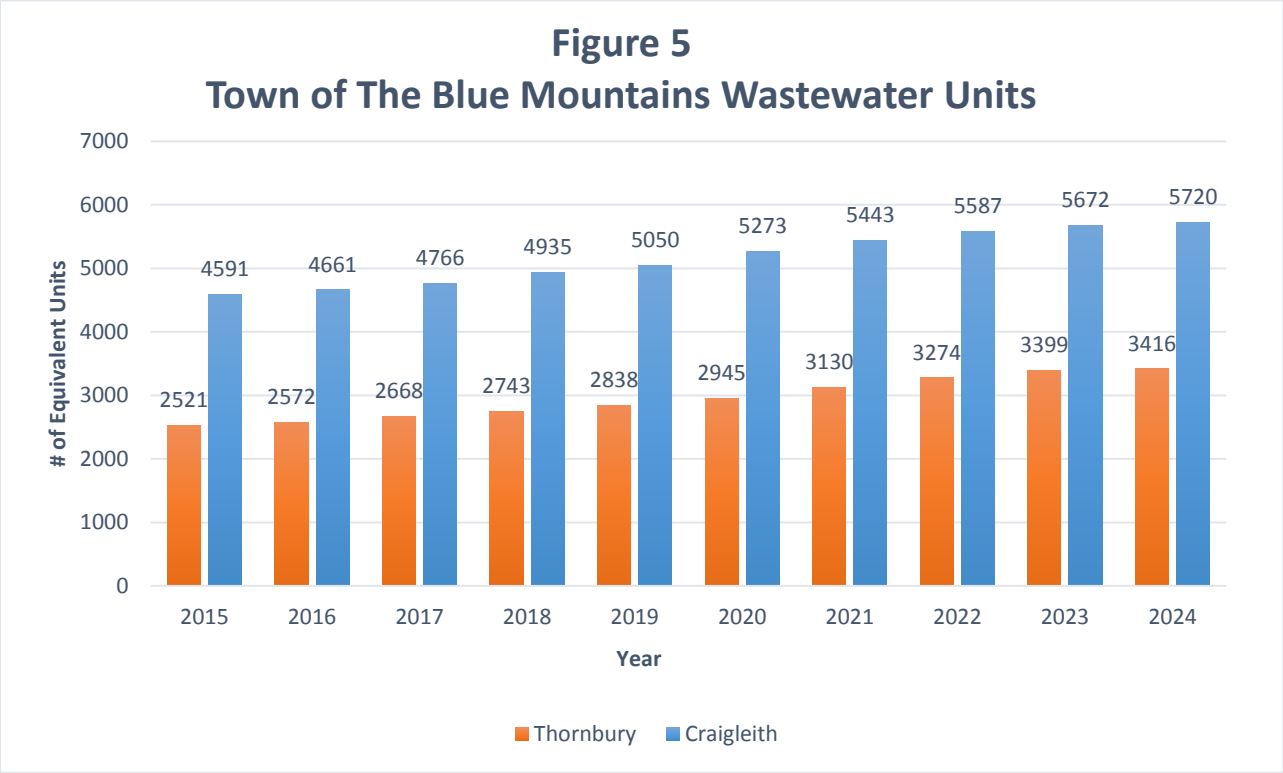
The 2025 Approved Budget includes an additional staff member, focusing on leak detection in the water distribution system and Inflow and infiltration of the sanitary collection system.

Year	**Watermain Break Repairs**	**Service Leak Repairs**
2015	5	14
2016	4	9
2017	3	3
2018	7	6
2019	7	6
2020	6	11
2021	3	31

2022	3	21
2023	3	12
2024	2	13

Wastewater

Figure 5 provides a historical breakdown of the number of wastewater connected units from 2015 to 2024



From 2023 to 2024, the number of wastewater units in the Thornbury Service Area increased by 17 units for a total of 3,416 connected units. In the Craigleith Service Area, the number of connected units increased by 48 units for a total of 5,720 connected units.

Thornbury Wastewater Treatment Plant

The Thornbury Wastewater Treatment Plant's (WWTP) firm-built capacity is 3,580m^3/day or 4,355 units based on the historical five-year rolling Average Daily Flow (ADF) or 0.822m^3/unit/day.

In 2017, the Town completed an Addendum to the 2006 Environmental Assessment (EA)

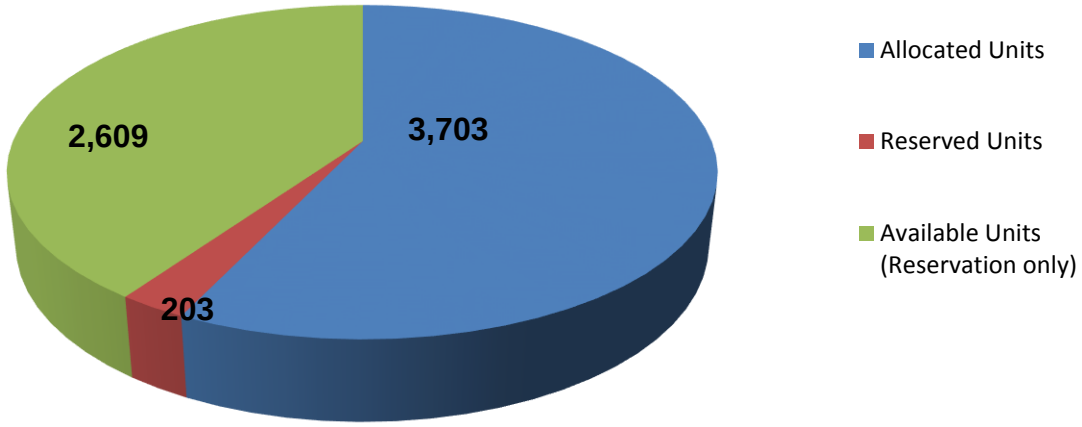
for the Thornbury WWTP. This Addendum looked at what had changed between 2006, when the initial EA was completed, and 2017. Upon completion of the EA, the Town applied for and acquired an Environmental Compliance Approval (ECA) for the construction of the Phase 1A expansion of the treatment plant. Phase 1A expansion will increase the firm-built capacity from 3,580m^3/day to 5,330m^3/day.

In 2022, the engineering for the Phase 1A expansion was completed. The construction for the expansion commenced in Q2 2023, with the anticipated completion of Q3 2025. Through the engineering of the expansion, it was noted that a new larger effluent outfall was required to realize the additional capacity. The construction of the new effluent outfall is to commence in Q2 2025.

Currently, there are 3,703 units (3,044m^3/day) allocated to the Thornbury WWTP system and 203 units (178m^3/day) reserved. As the Town is able to reserve units based on the Phase 1A expansion design of 5,330m^3/day, Thornbury WWTP has a remaining 2,609 units available for reservations.

Figure 6 below illustrates the capacity of the Thornbury WWTP system, based on the Phase 1A plant expansion.

Figure 6
Thornbury WWTP Unit (Design) Capacity



Thornbury WWTP's five-year rolling Average Daily Flow (ADF) is 2,638m^3/day, which means the current flows are utilizing 74% of the Thornbury WWTP built capacity. A five-year average flow is utilized to smooth out the noise of random outliers and emphasize long-term trends.
The influent flows to the treatment plant have remained constant over the last few years.

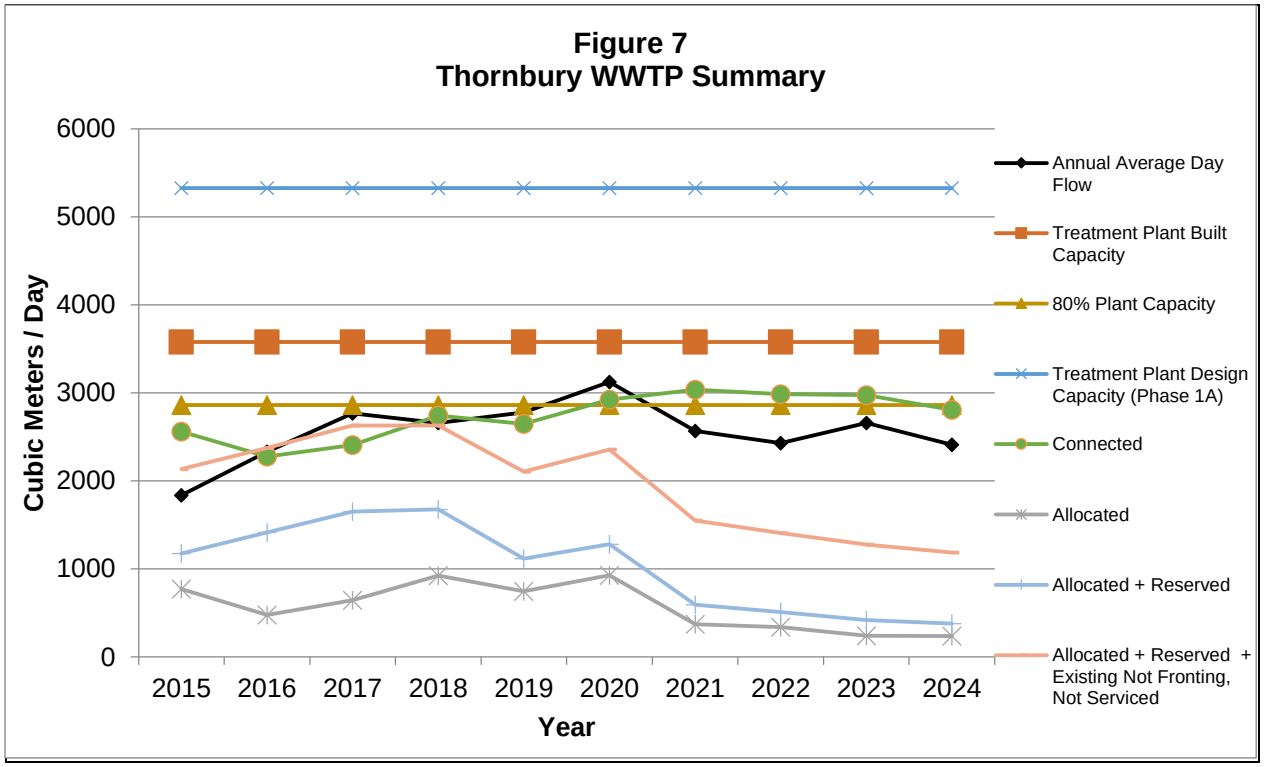
Of the 3,703 units that could connect to the Thornbury WWTP, only 3,406 units are currently connected.

The Thornbury WWTP receives a significant volume of extraneous flows. The extra flows

are pushing the treatment plant facility to upgrades sooner than should be needed. Staff have been conducting an evaluation of the sanitary system throughout the entire municipality. This assessment includes closed caption videoing and assessment of the sanitary mains and maintenance hole inspections. This work identifies areas where the sewers are failing or requiring repair.

In 2023, the Wastewater Master Plan Environmental Assessment (MPEA) commenced. The MPEA is reviewing and building on past studies plus incorporating current growth projections to determine the wastewater collection network to build out of the Official Plan. This study builds upon the Needs Assessment completed in 2019. The works also includes 12 months of flow data, including a flow analysis of the flows from Short Term Accommodations (STAs) to ensure we are using the best available information when determining the impact from STAs. The MPEA in anticipated to be completed late in 2024.

Figure 7 below illustrates that Thornbury WWTP has capacity based on the number of allocated and reserved units. The annual five-year rolling ADF remains slightly below the 80% WWTP capacity threshold. Wastewater allocations and reservations in the Thornbury Collection System are monitored closely.



Craigleith Wastewater Treatment Plant

The Craigleith Wastewater Treatment Plant (WWTP) firm-built capacity is 8,133m^3/day or 13,118 units based on 0.620m^3/unit/day.

Figure 8 below illustrates the 2023 built capacity for Craigleith WWTP. Of the total built capacity of (13,118 units), 6,015 units are allocated, and 2,571 units are reserved. This leaves 4,532 available units.

The evaluation for the Craigleith Wastewater System includes considerations for the additional units at sites B, E and F at the Village at Blue Mountain Resorts.

Figure 8
Craigleith WWTP Unit Capacity

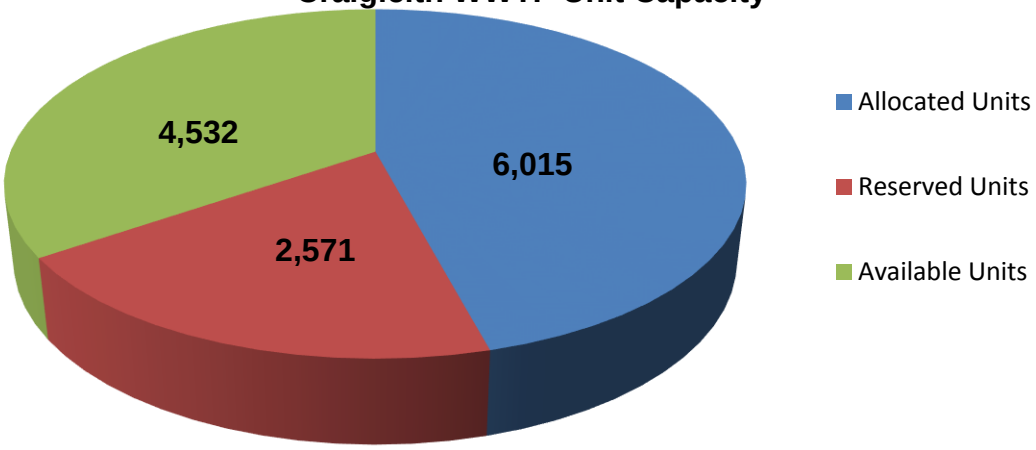
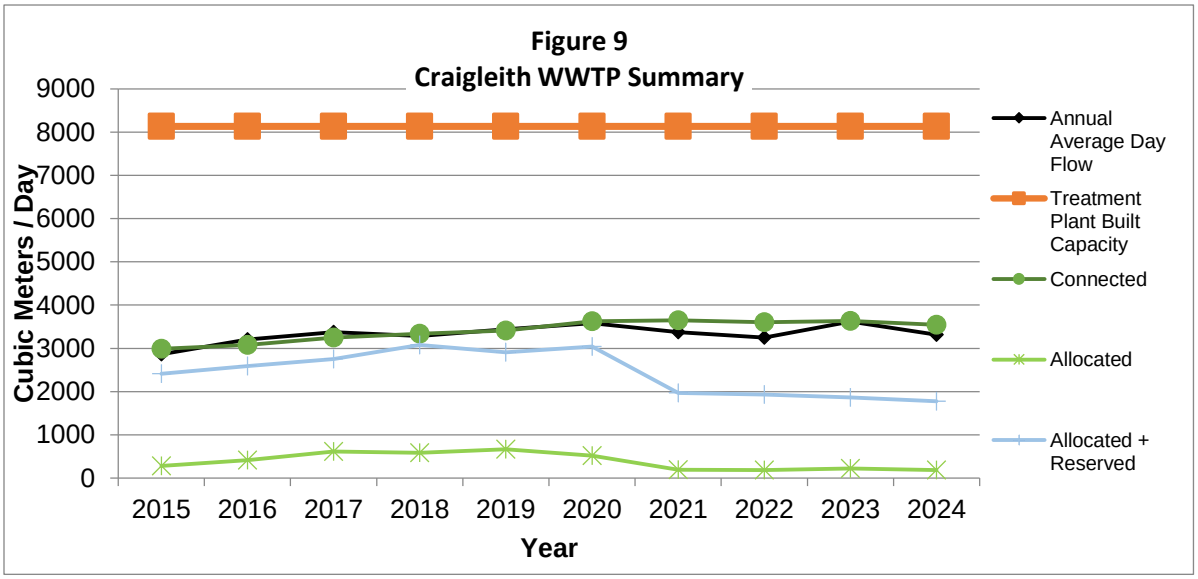


Figure 9 below illustrates that Craigleith WWTP has available capacity and is able to treat the wastewater being received from the existing wastewater units in the Craigleith collection area as well as from the allocated and reserved future units. The Town currently has enough capacity to service an additional 4,532 units with wastewater in the Craigleith collection area.

Figure 9
Craigleith WWTP Summary



The 2024 Year End Water and Wastewater Capacity Assessment Report Executive Summary is included as Attachment #1 to provide an overview of the Report. The document in its entirety is available upon request.

E. Strategic Priorities

1. Communication and Engagement

We will enhance communications and engagement between Town Staff, Town residents and stakeholders

2. Organizational Excellence

We will continually seek out ways to improve the internal organization of Town Staff and the management of Town assets.

3. Community

We will protect and enhance the community feel and the character of the Town, while ensuring the responsible use of resources and restoration of nature.

4. Quality of Life

We will foster a high quality of life for full-time and part-time residents of all ages and stages, while welcoming visitors.

F. Environmental Impacts

The 2024 Year End Water and Wastewater Capacity Assessment provides the baseline data required for reporting and forecasting. It is integral to the development of water and wastewater services within the Town. The 2024 Year end Water and Wastewater Capacity Assessment is instrumental in environmental compliance reporting and for monitoring the Municipality's impact on the ecology of Georgian Bay.

G. Financial Impacts

The 2024 Year End Water and Wastewater Capacity Assessment does not have a direct financial impact; however, it forecasts the need for future capacity expansions in both the water and wastewater systems.

H. In Consultation With

Adam Smith – Acting CAO

Shawn Postma – Manager of Planning

Tim Murawsky – Acting Director of Planning and Development Services

Aaron Roininen – GIS Specialist

Brian Worsley – Manager of Development Engineering

Meg Boyd – Water and Wastewater Compliance Coordinator

Michael Switzer – Deputy Treasurer/Manger of Budgets & Accounting

I. Public Engagement

The topic of this Staff Report has not been the subject of a Public Meeting and/or a Public Information Centre as neither a Public Meeting nor a Public Information Centre are required. However, any comments regarding this report should be submitted to Allison Kershaw, Manager of Water & Wastewater Services managerwww@thebluemountains.ca .

J. Attached

1. Attachment 1 – Executive Summary – 2024 Water $ Wastewater Capacity Assessment
2. Attachment 2 – Development Staging Process

Respectfully submitted,

Allison Kershaw,
Manager of Water & Wastewater Services

Alan Pacheco
Director of Operations

For more information, please contact:
Allison Kershaw, Manager of Water & Wastewater Services
managerwww@thebluemountains.ca
519-599-3131 extension 226

Report Approval Details

Document Title:	OPS.25.023 2024 Year End Water and Wastewater Capacity Report.docx
Attachments:	- Attachment 1 Executive Summary.pdf - Attachment 2 Development Staging Process.pdf
Final Approval Date:	May 20, 2025

This report and all of its attachments were approved and signed as outlined below:

Allison Kershaw - May 20, 2025 - 10:16 AM

Alan Pacheco - May 20, 2025 - 1:07 PM