



Staff Report

Operations Department

Report To: Committee of the Whole
Meeting Date: August 26, 2019
Report Number: CSPW.19.063
Subject: 2018 Year End Water & Wastewater Capacity Assessment
Prepared by: Allison Kershaw, Manager of Water and Wastewater Services

A. Recommendations

THAT Council receive Staff Report CSPW.19.063 entitled, "2018 Year End Water & Wastewater Capacity Assessment Report" for their information.

B. Overview

The Town's year end Water and Wastewater Capacity Assessment Report is submitted to Grey County to provide status of the connections to the Town's Water Distribution System and Wastewater Collection Systems. The report also provides information on the capacity status of the Water Treatment Plant, the Thornbury & Craigeith 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.

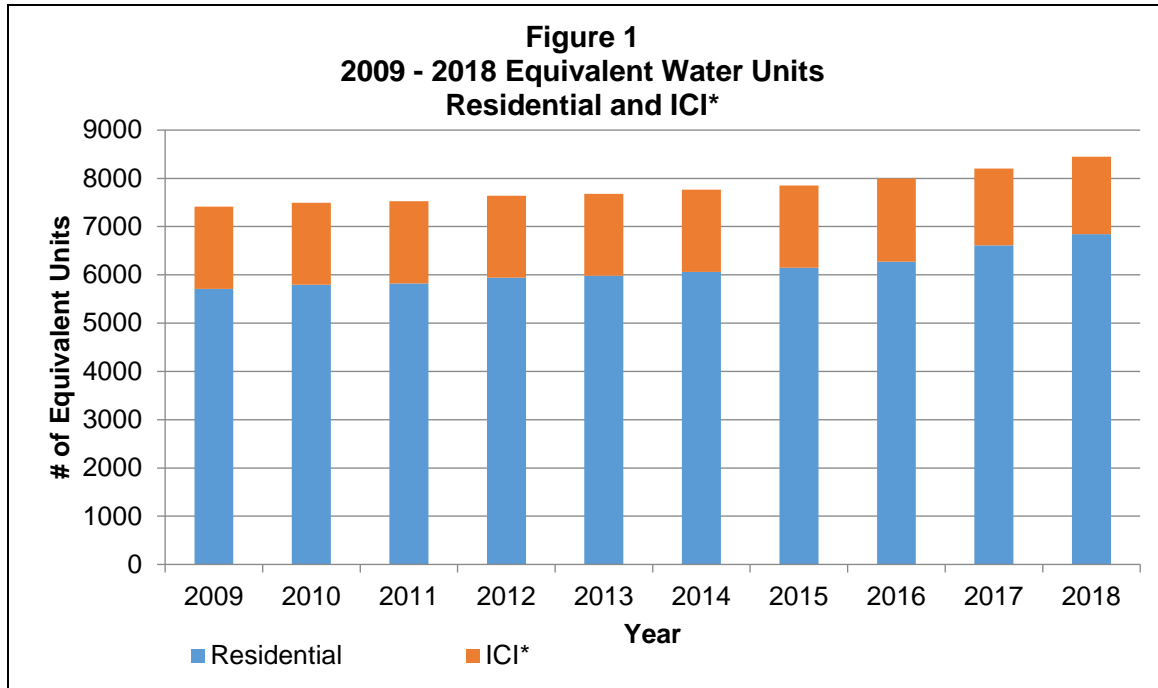
The Year End Reports are prepared by Town Staff.

D. Analysis

An overview of the 2018 Year End Water & Wastewater Capacity Assessment Report (2018 Year End Report) is provided below and the Executive Summary is appended as Attachment #1.

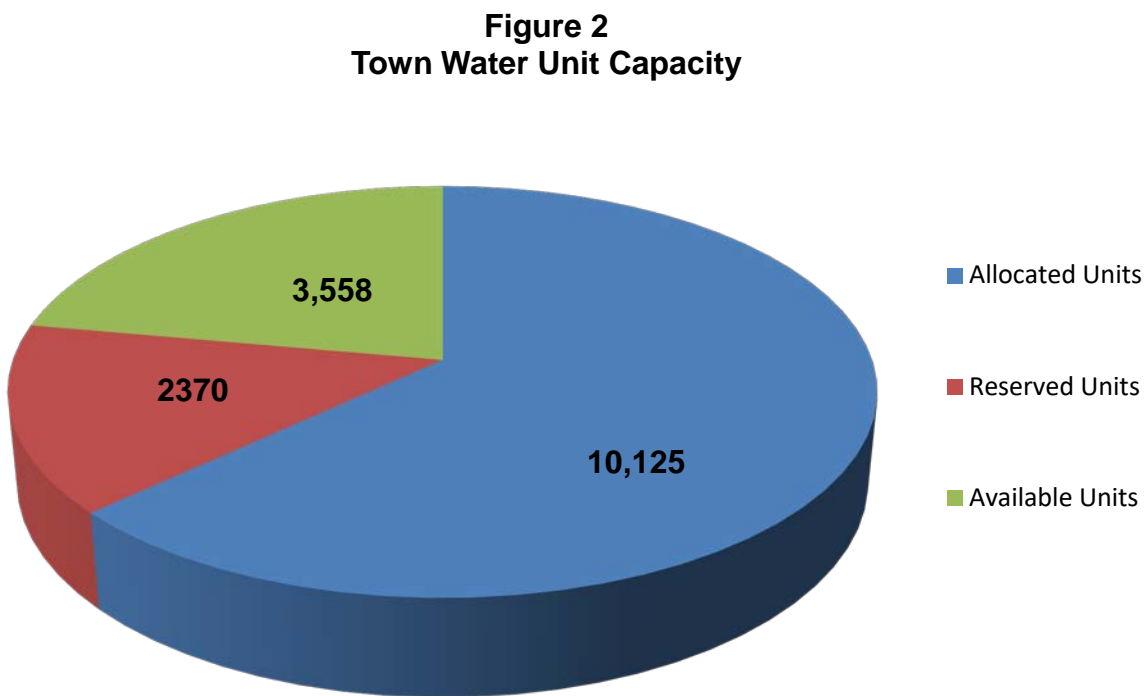
Water

From 2017 to 2018 the number of connected water units in the Town increased by 245 units for a total of 8,448 connected units. See Figure 1 below.



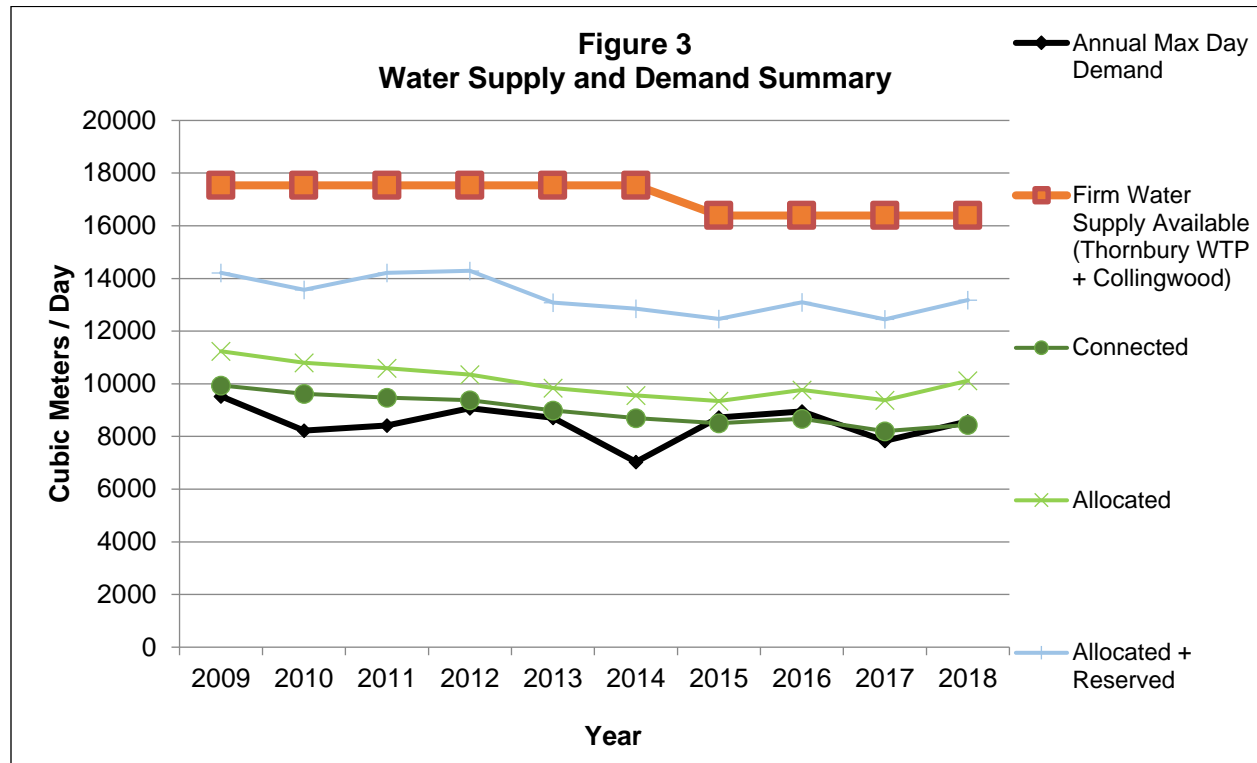
*ICI – Industrial, Commercial and Institutional

Figure 2 below illustrates the unit capacity of the Town’s water system. Of the total system capacity (16,053 units), 10,125 units are allocated and 2,370 units are reserved. This leaves 3,558 available units.



The Blue Mountains total firm water supply capacity available is 16,390 m³/day or 16,053 units based on the five year rolling Maximum Day Demand (MDD) of 1.021 m³/unit/day. The 16,390 m³/d includes 1,250m³/day received from the Town of Collingwood.

Figure 3 below illustrates that the Town’s water supply is capable of meeting the demands of existing units as well as those that have been allocated and reserved for future connection.

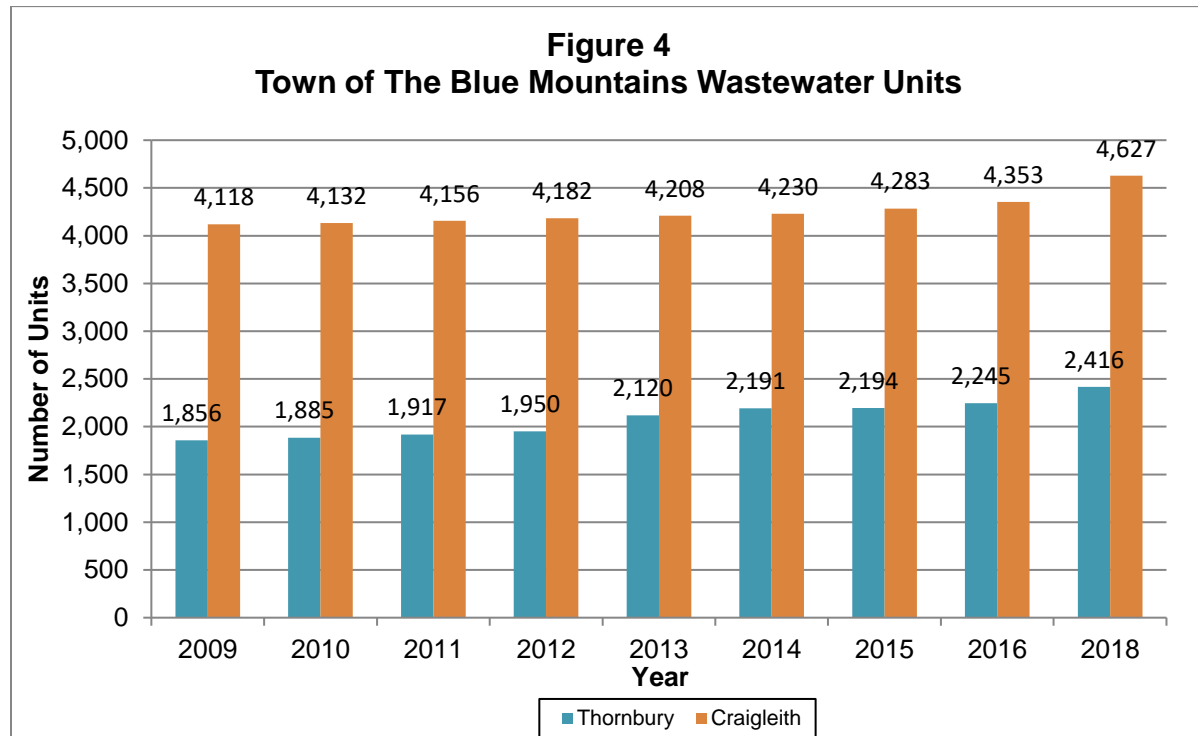


The Blue Mountains Water Treatment Plant (WTP) continues to deliver a high quality of drinking water and adheres to all Provincial Regulations and stringent testing requirements. There were no significant water quality concerns arising from the 2018 reporting period.

Wastewater

Figure 4 provides a historical breakdown of the number of wastewater units from 2009 - 2018.

From 2017 to 2018 the number of wastewater units in the Thornbury Service Area increased by 74 units for a total of 2,416 connected units while in the Craigeleith Service Area, the number of wastewater units increased by 169 units for a total of 4,627 connected units.



Thornbury Wastewater Treatment Plant

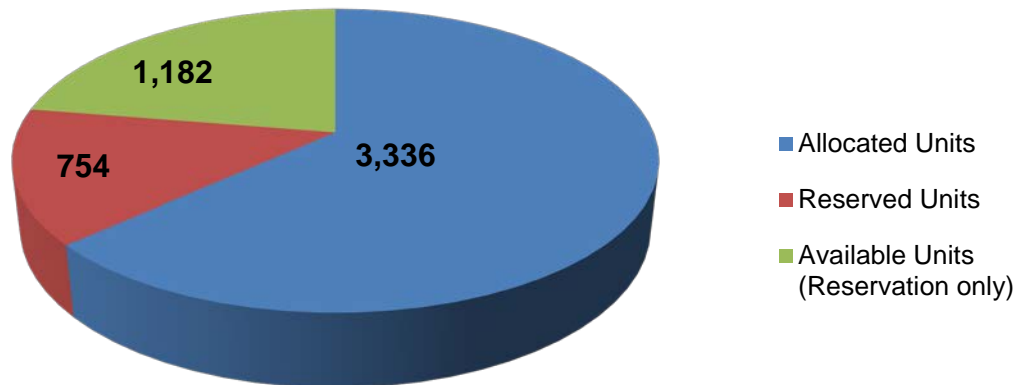
The Thornbury Wastewater Treatment Plant (WWTP) firm built capacity is 3,580 m³/day or 3,541 units based on the historical five year rolling Average Day Flow (ADF) of 1.011m³/unit/day.

In 2017, the Town completed an Addendum to the 2006 Environmental Assessment (EA) for the Thornbury Wastewater Treatment Plant (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 Phase 1A of the Thornbury WWTP upgrades to enable the expansion when inflow reaches 80% of built capacity. The Construction of the Proposed Works portion of the new ECA expires October 1, 2023.

The Phase 4 Environmental Study Report (ESR) from the Comprehensive EA identified that the first phase of the works to expand the facility would provide an additional average day capacity of approximately 3,500 m³/day for a total average day capacity of 7,080 m³/day. A Design Report was prepared which identified that Phase 1 will be split into two (2) sub-phases with Phase 1A having an ADF capacity of 5,330 m³/day. Phase 1B will expand Thornbury WWTP ADF capacity to 7,080 m³/day and a Peak Daily Flow (PDF) capacity of 16,187 m³/day.

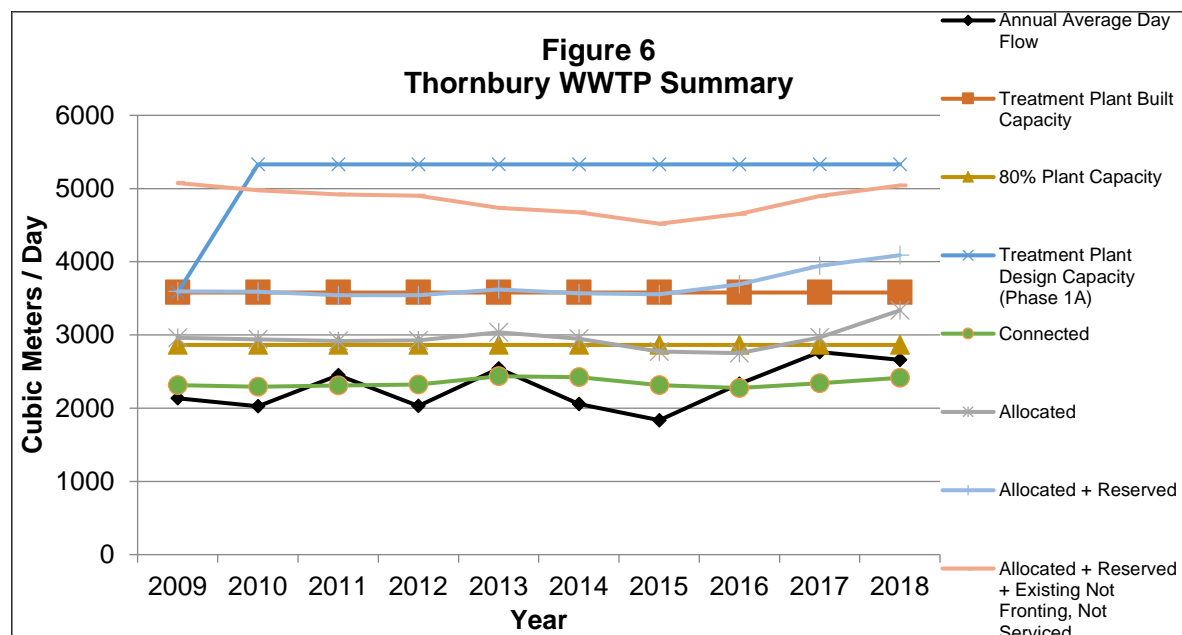
Currently, there are 3,336 units (3,373 m³/day) allocated to the Thornbury WWTP and 754 units (762 m³/day) reserved. As the Town is able to reserve units based on the Phase 1A design expansion of 5,330 m³/day the Thornbury WWTP has a remaining total reservation of 1,182 units (1,195 m³/day). Figure 5 below illustrates the 2018 unit (design) capacity for the Thornbury WWTP.

**Figure 5
Thornbury WWTP Unit (Design) Capacity**



The Thornbury WWTP’s 5 year rolling ADF is 2,296 m³/day which means that the flows are utilizing 64% of the Thornbury WWTP built capacity. Based on this information the Town does not need to take immediate measures to initiate final design. Based on the current flow data, it is estimated that the Phase 1A expansion could potentially wait until 2029, however, the PDF exceeded the design PDF twice during 2018, and the with the current condition of the equipment at the treatment plant, it is recommended that the Town initiate the final design for the Phase 1A upgrade within the next 5 years. The Town will continue with measures to identify measures to reduce inflow and infiltration of storm and groundwater into the wastewater collection system.

Figure 6 below illustrates that the Thornbury WWTP has capacity based on the number of allocated and reserved units. The annual 5 year rolling ADF remains 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 8,133 m³/day or 11,280 units based on the historical five year rolling ADF of 0.721 m³/unit/day.

Figure 7 below illustrates the 2018 built unit capacity for the Craigleith WWTP. Of the total built capacity (11,280 units), 5,441 units are allocated and 3,456 units are reserved. This leaves 2,384 available units.

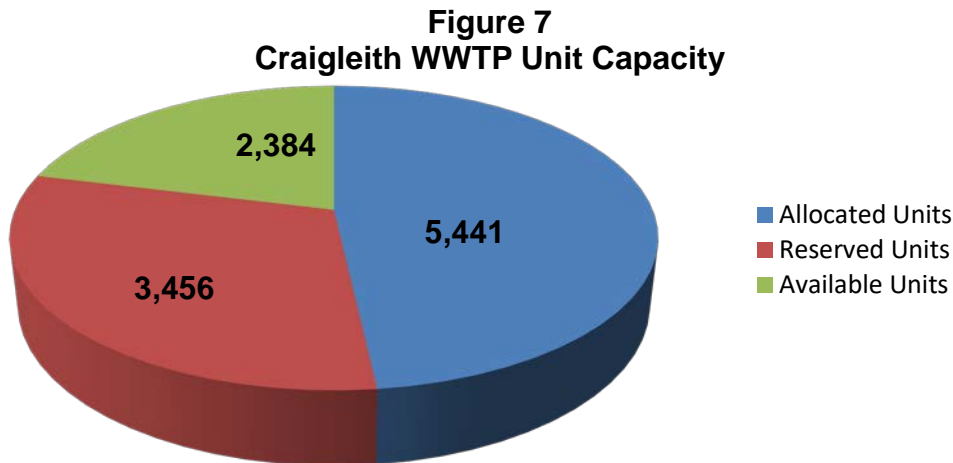
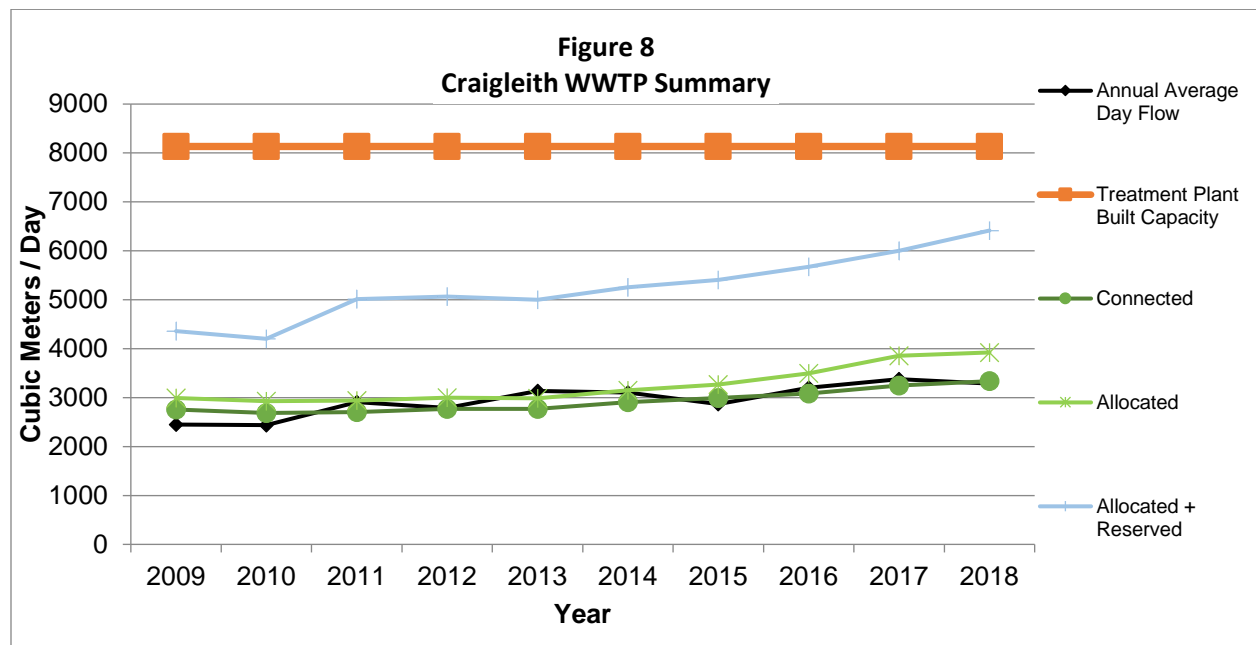


Figure 8 below illustrates that the Craigleith WWTP has available capacity and is able to treat waste being received from the existing wastewater units in the Craigleith collection area as well as from allocated and reserved future units. The Town currently has enough capacity to service an additional 2,384 units with wastewater in the Craigleith collection area.



The 2018 Year End Water & Wastewater Capacity Assessment Report Executive Summary is provided as Attachment #1 to provide an overview of the Report. The document in its entirety is available upon request.

E. The Blue Mountains Strategic Plan

Goal #5: Ensure Our Infrastructure is Sustainable

F. Environmental Impacts

The 2018 Year End Report provides the baseline data required for reporting and forecasting. It is integral to the development of water and wastewater services within the Town. The 2018 Year End Report is instrumental in environmental compliance reporting and for monitoring the Municipality's impact on the ecology of Georgian Bay.

G. Financial Impact

The 2018 Year End Report does not have a direct financial impact however it forecasts the need for future capital expansions in both water and wastewater.

H. In Consultation With

Shawn Everitt, CAO

Shawn Postma, Senior Policy Planner

Aaron Roninen, GIS/Planning Technician

Ruth Prince, Director of Finance & IT Services/Treasurer

I. Public Engagement

The topic of this Staff Report has not been subject to a Public Meeting and/or a Public Information Centre as neither a Public Meeting nor a Public Information Centre are required. Comments regarding this report should be submitted to Allison Kershaw, managerwww@thebluemountains.ca

J. Attached

1. Attachment 1 - 2018 Water & Wastewater Capacity Assessment Executive Summary

Respectfully submitted,

Allison Kershaw
Manager of Water and Wastewater Services

For more information, please contact:
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managerwww@thebluemountains.ca
519-599-3131 extension 226

Executive Summary

This report provides an assessment of water and wastewater treatment systems capacity within the Town for 2018. Current Town water supply and wastewater treatment infrastructure includes:

- The Blue Mountains Water Treatment Plant & Distribution System
- Supplemental water supply from the Town of Collingwood
- Thornbury Wastewater Treatment Plant & Collection System
- Craigeith Wastewater Treatment Plant & Collection System

According to Ministry of the Environment Conservation and Parks (MECP) Guideline D-5-1 entitled “Calculating and Reporting Uncommitted Reserve Capacity at Sewage and WTPs”, “The number of lots in approved plans of subdivisions, developments committed by virtue of approved zoning, new official plans or site-specific official plan amendments, should not exceed the design capacity of the sewage and/or water system. In order to ensure that capacity is not exceeded it is necessary to determine what uncommitted reserve capacity is available. This procedure provides a means for determining uncommitted reserve capacity.”¹

¹ MECP guideline D-5-1 entitled, “Calculating and Reporting Uncommitted Reserve Capacity at Sewage and WTPs”, updated March 1995.

Water Supply

1. Total Blue Mountains WTP Capacity

The firm capacity available from the Blue Mountains WTP is 15,140 m³/day. The Town receives 1,250 m³/day supplemental supply from the Town of Collingwood.

Therefore, the total firm water capacity available is 16,390 m³/day or 16,053 units based on the 5-year rolling MDD of 1.021 m³/unit/day.

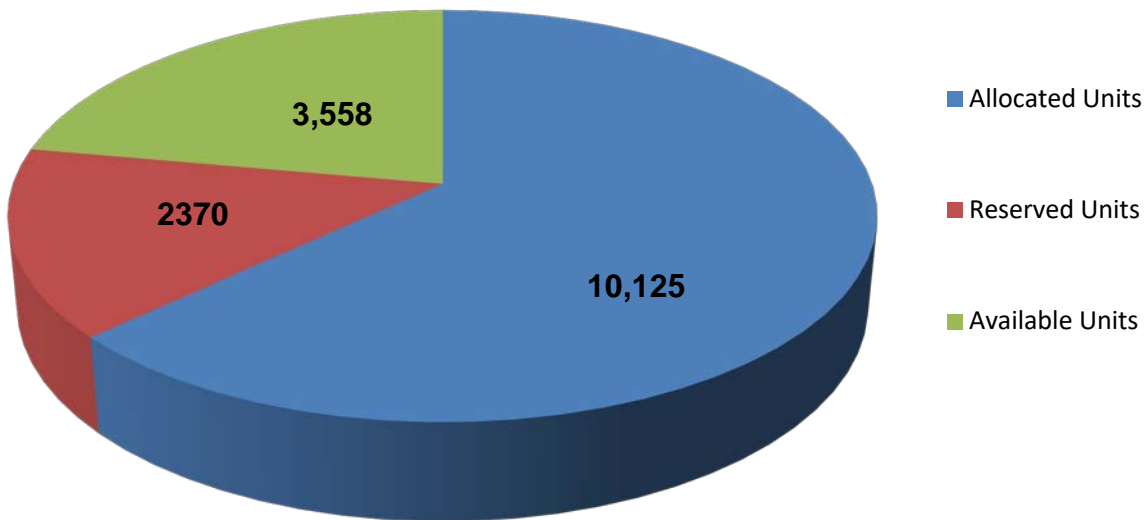
2. Available Water Capacity

A total demand of 10,337 m³/day (10,125 units) is currently connected or allocated to the water system based on a 5-year rolling average maximum daily demand of 1.021 m³/unit/day.

A total flow of 3,155 m³/day (3,091 units) is currently reserved at 1.021 m³/unit/day.

Of the 16,053 total units of water supply available, there are currently 12,495 units allocated and reserved. Therefore, the current available capacity of the Town's water supply is 3,558 units.

Town Water Unit Capacity



Thornbury Wastewater Treatment Plant

1. Total Thornbury WWTP Capacity

The total firm ADF built capacity available at the Thornbury WWTP is 3,580 m³/day or 3,541 units based on the 5 year rolling ADF of 1.011 m³/unit/day.

2. Available Wastewater Capacity Based on Planning Projections

A total flow of 3,356 m³/day (3,336 units) is currently connected or allocated to the Thornbury WWTP based on a 5 year rolling ADF. There are currently 3,336 units allocated and 754 reserved. Therefore, using planning projections the current available uncommitted reserve capacity based on built capacity is -549 units. However, as shown below not all units are physically connected.

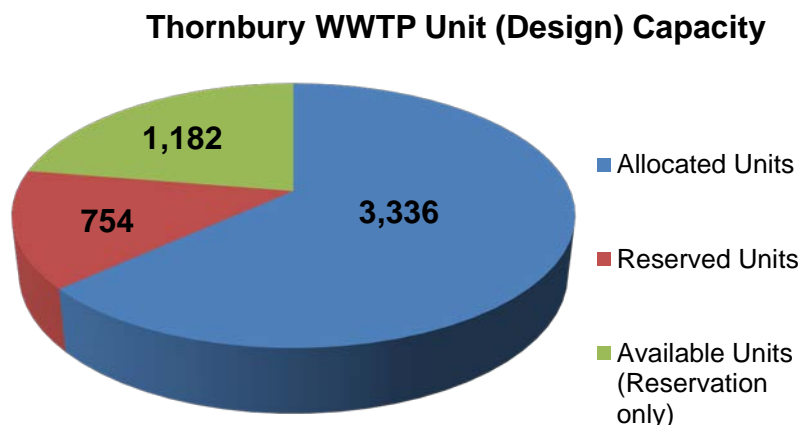
The Thornbury WWTP appears to be at capacity based on allocated and reserved units. However, there are actually 1,678 units (754 reserved + 924 can connect) which are not physically connected to the Thornbury WWTP.

Upon completion of construction of all proposed Phase 1A works, for which the Town has approval to construct, the ADF Design Capacity available will be 5,330 m³/d or 5,272 units based on an ECA received in 2018. Therefore, the current available uncommitted reserve capacity based on design capacity is 1,182 units.

The PDF flow at the Thornbury WWTP in 2018 was 7,656 m³/day. The design PDF for the Thornbury WWTP is 7,196 m³/d. The PDF typically occurs during a period of snow melt or a significant wet weather event. The peak day occurred on February 20, 2018, this was the Tuesday after the Family Day weekend. The Town of Thornbury had experienced a winter thaw and a significant rain event that day and the previous day. This flow exceeded the capacity of the mechanical plant capacity, and was redirected to the lagoon system.

3. Thornbury WWTP Estimated Expansion Timeline

The Town is required to expand the Thornbury WWTP when the ADF reaches 80% of the built capacity. The Thornbury WWTP is operating at 64% of the built capacity.



Craigleith Wastewater Treatment Plant

1. Total Craigleith WWTP Capacity

The total firm ADF built capacity available at the Craigleith WWTP is 8,133 m³/day or 11,280 units based on the five year rolling ADF of 0.721 m³/unit/day.

2. Available Wastewater Capacity

A total flow of 3,923 m³/day (5,441 units) is currently connected or allocated to the Craigleith WWTP, based on a five year rolling ADF. There are currently 5,441 units allocated and 3,456 units reserved. Therefore, the current uncommitted reserve capacity on built capacity is 2,384 units.

The PDF flow at the Craigleith WWTP in 2018 was 10,491 m³/day. The design PDF for the Craigleith WWTP is 19,640 m³/d. The PDF typically occurs during a period of snow melt or a significant wet weather event.

3. Craigleith WWTP Estimated Expansion Timeline

Based on the 2018 five year rolling ADF of 3,166 m³/day, the Craigleith WWTP is operating at 39% of the built capacity and as such, there is no immediate need to expand the Craigleith WWTP.

Craigleith WWTP Unit Capacity

