



# Staff Report

## Infrastructure and Public Works

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**Report To:** Committee of the Whole  
**Meeting Date:** January 14, 2019  
**Report Number:** CSPW.19.004  
**Subject:** 2017 Year End Water & Wastewater Capacity Assessment  
**Prepared by:** Allison Kershaw, Manager of Water and Wastewater Services

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### A. Recommendations

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THAT Council receive Staff Report CSPW.19.004 entitled, "2017 Year End Water & Wastewater Capacity Assessment Report" for their information;

### B. Overview

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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

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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

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An overview of the 2017 Year End Water & Wastewater Capacity Assessment Report (2017 Year End Report) is provided below and the Executive Summary is appended as Attachment #1.

#### Water

From 2016 to 2017 the number of water units in the Town increased by 204 units for a total of 8,203 connected units. See Figure 1 below.

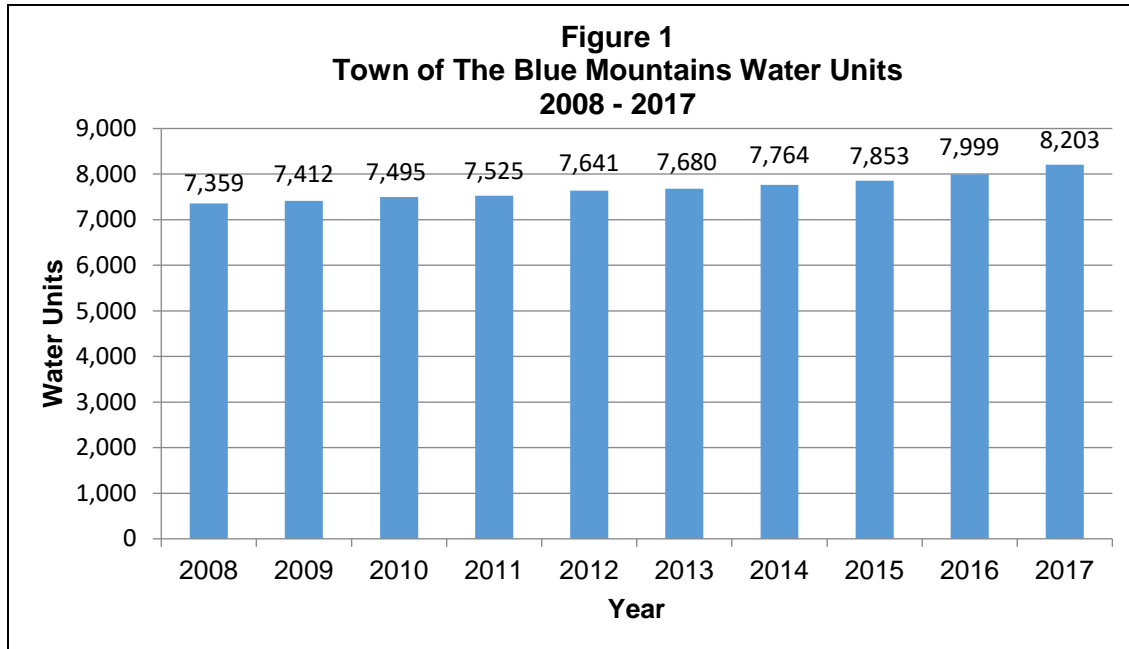
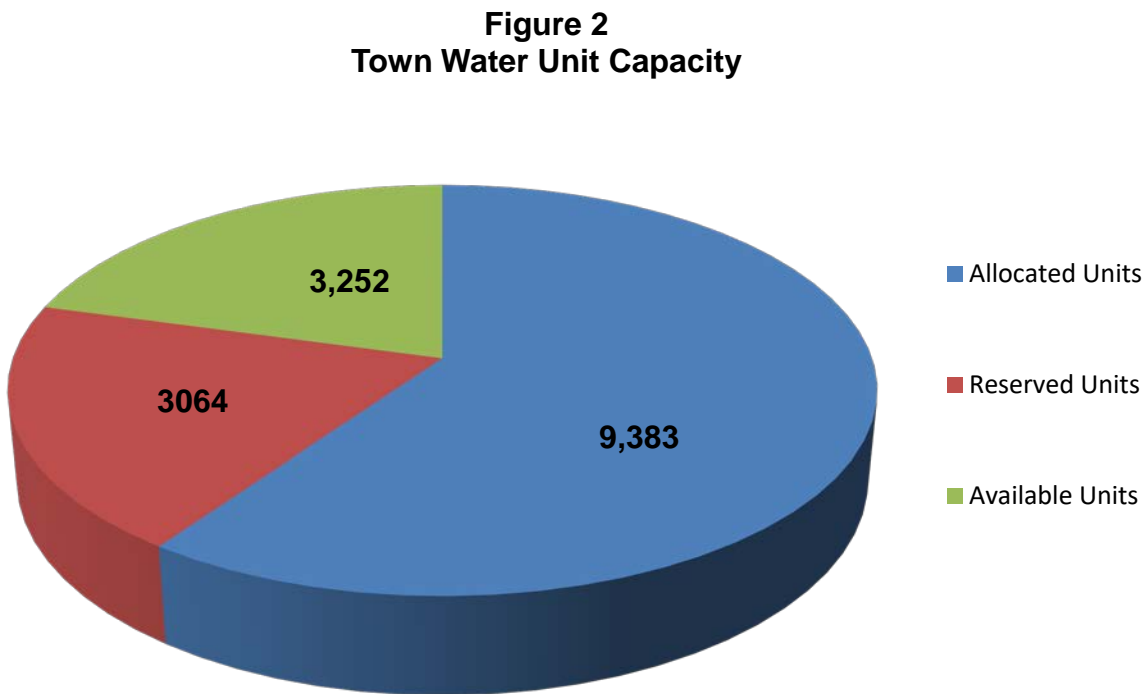
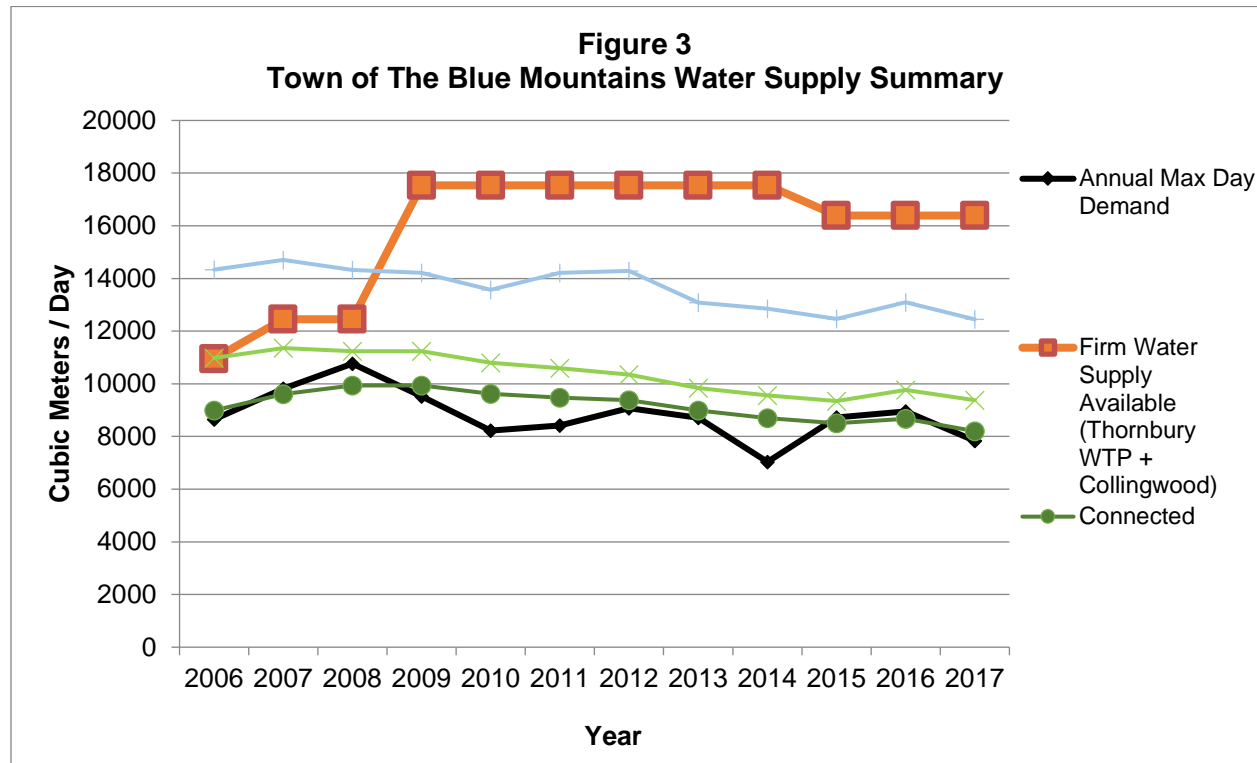


Figure 2 below illustrates the unit capacity of the Town’s water system. Of the total system capacity (15,699 units), 9,383 units are allocated and 3,064 units are reserved. This leaves 3,252 available units.



The Blue Mountains total firm water supply capacity available is 16,390 m<sup>3</sup>/day or 15,699 units based on the five year rolling Maximum Day Demand (MDD) of 1.044 m<sup>3</sup>/unit/day. The 16,390 m<sup>3</sup>/d includes 1,250m<sup>3</sup>/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.

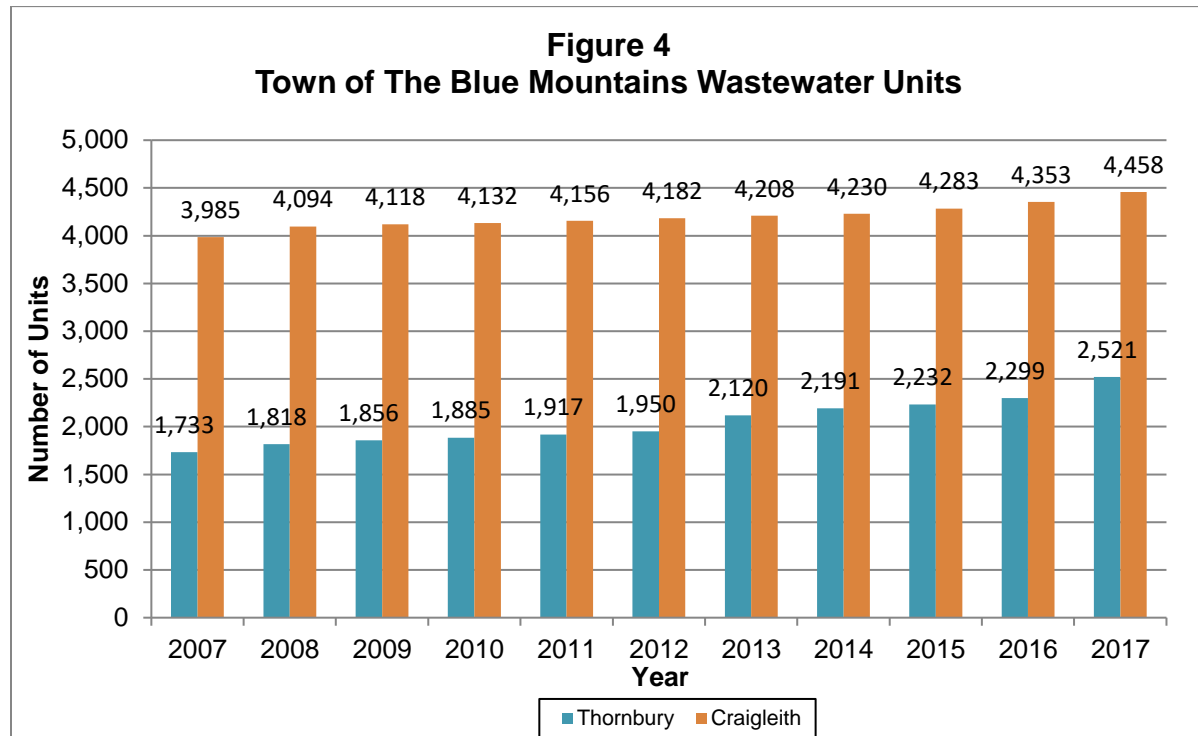


The Blue Mountains Water Treatment Plant (WTP) continues to deliver a high quality of drinking water and adheres to all Provincial Regulations and stringent testing requirements. There were no significant water quality concerns arising from the 2017 reporting period.

### Wastewater

Figure 4 provides a historical breakdown of the number of wastewater units from 2007-2017.

From 2016 to 2017 the number of wastewater units in the Thornbury Service Area increased by 222 units for a total of 2,521 connected units while in the Craighleith Service Area, the number of wastewater units increased by 105 units for a total of 4,458 connected units.



### Thornbury Wastewater Treatment Plant

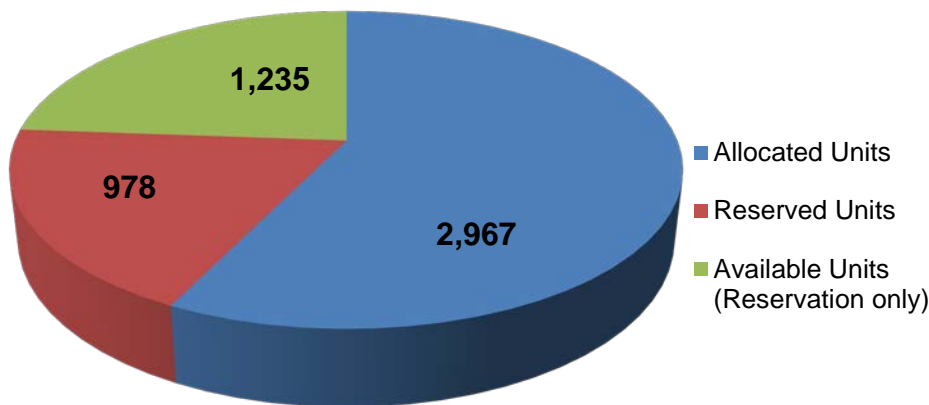
The Thornbury Wastewater Treatment Plant (WWTP) firm built capacity is 3,580 m<sup>3</sup>/day or 3,479 units based on the historical five year rolling Average Day Flow (ADF) of 1.029m<sup>3</sup>/unit/day.

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 m<sup>3</sup>/day for a total average day capacity of 7,080 m<sup>3</sup>/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 m<sup>3</sup>/day. Phase 1B will expand Thornbury WWTP ADF capacity to 7,080 m<sup>3</sup>/day and a Peak Daily Flow (PDF) capacity of 16,187 m<sup>3</sup>/day.

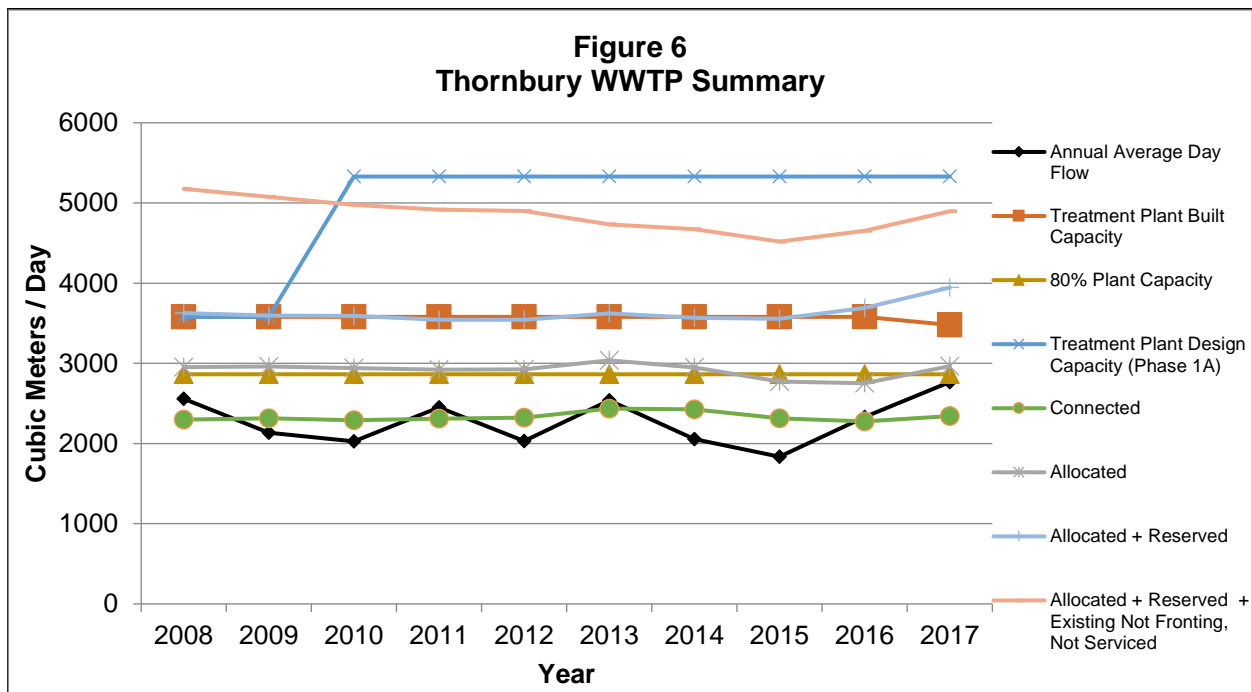
Currently, there are 2,967 units (3,063 m<sup>3</sup>/day) allocated to the Thornbury WWTP and 978 units (1006 m<sup>3</sup>/day) reserved. As the Town is able to reserve units based on the Phase 1A design expansion of 5,330 m<sup>3</sup>/day the Thornbury WWTP has a remaining total reservation of 612 units (630 m<sup>3</sup>/day). Figure 5 below illustrates the 2017 unit (design) capacity for the Thornbury WWTP.

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



The Thornbury WWTP’s 5 year rolling ADF is 2,306 m<sup>3</sup>/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. Continued measures to reduce inflow and infiltration of storm and groundwater into the wastewater collection system will further delay the Thornbury WWTP expansion. Staff estimate that it will be 10 years or 2027 before the Phase 1A expansion will be required.

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 m<sup>3</sup>/day or 11,172 units based on the historical five year rolling ADF of 0.728 m<sup>3</sup>/unit/day.

Figure 7 below illustrates the 2017 built unit capacity for the Craigleith WWTP. Of the total built capacity (11,172 units), 5,298 units are allocated and 2,944 units are reserved. This leaves 2,930 available units.

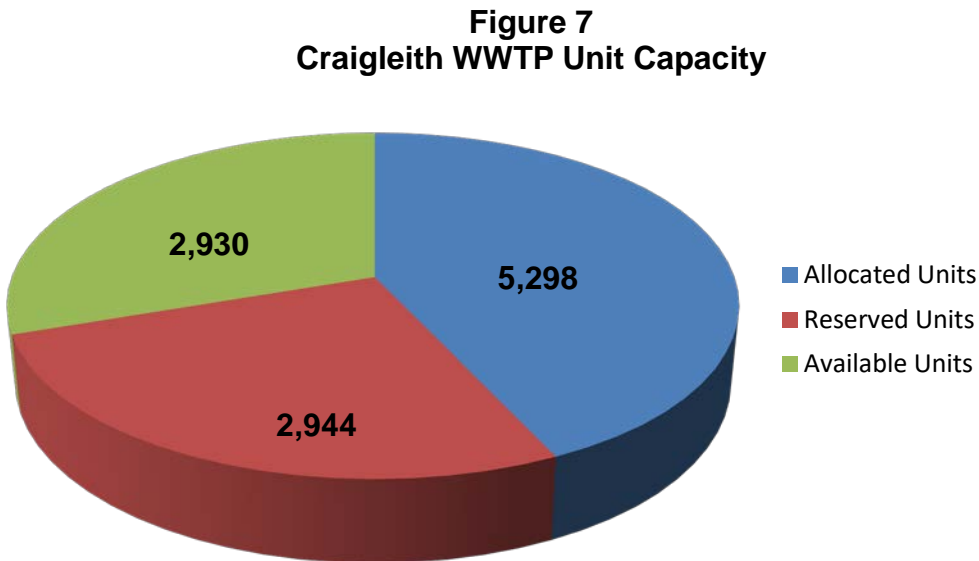
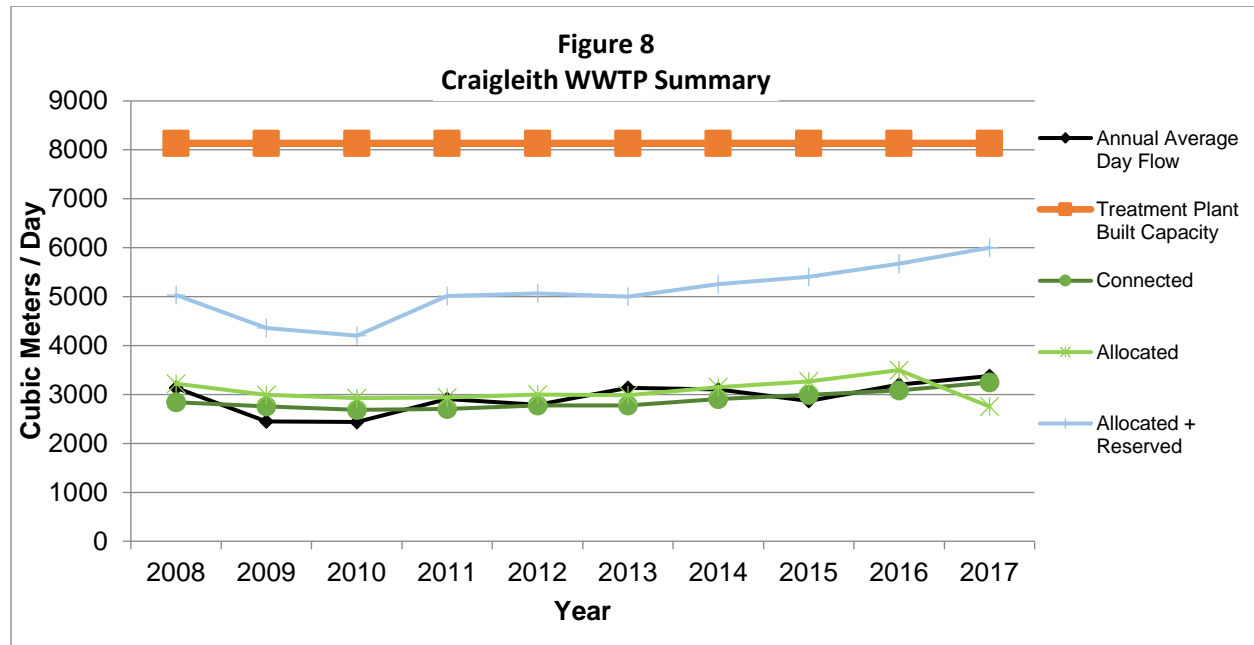


Figure 8 below illustrates that the Craigleith WWTP has available capacity and is able to treat waste being received from the existing wastewater units in the Craigleith collection area as well as from allocated and reserved future units. The Town currently has enough capacity to service an additional 2,930 units with wastewater in the Craigleith collection area.



The 2017 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 2017 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 2017 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 2017 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 Postma, Senior Policy Planner

Aaron Roninen, GIS/Planning Technician

Ruth Prince, Director of Finance & IT Services/Treasurer





## Executive Summary

This report provides an assessment of water and wastewater treatment systems capacity within the Town for 2017. 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.”<sup>1</sup>

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



## Thornbury Wastewater Treatment Plant

### 1. Total Thornbury WWTP Capacity

The total firm ADF built capacity available at the Thornbury WWTP is 3,580 m<sup>3</sup>/day or 3,479 units based on the 5 year rolling ADF of 1.029 m<sup>3</sup>/unit/day.

### 2. Available Wastewater Capacity Based on Planning Projections

A total flow of 3,053 m<sup>3</sup>/day (2,967 units) is currently connected or allocated to the Thornbury WWTP based on a 5 year rolling ADF. There are currently 2,967 units allocated and 978 reserved. Therefore, using planning projections the current available uncommitted reserve capacity based on built capacity is -466 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 1,604 units (978 reserved + 626 can connect) which are not physically connected to the Thornbury WWTP.

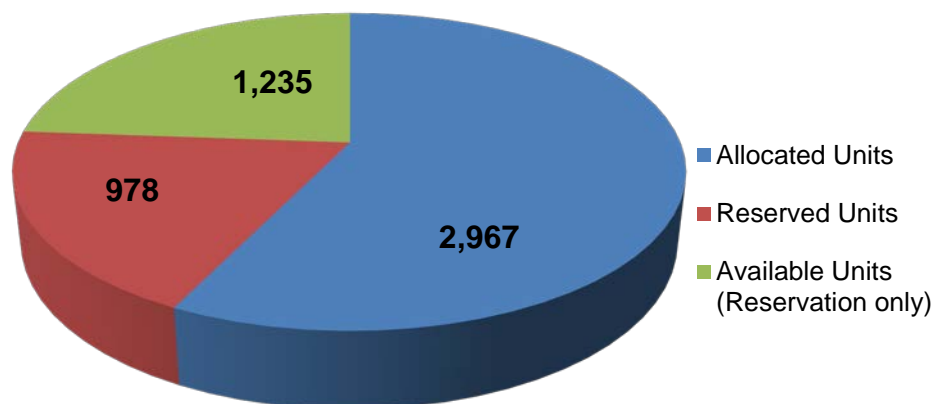
Upon completion of construction of all proposed works, the ADF Design Capacity available will be 5,330 m<sup>3</sup>/d or 5,180 units based on an ECA received in 2018. Therefore, the current available uncommitted reserve capacity based on design capacity is 1,235 units.

The PDF flow at the Thornbury WWTP in 2017 was 7,617 m<sup>3</sup>/day. The design PDF for the Thornbury WWTP is 7,196 m<sup>3</sup>/d. The PDF typically occurs during a period of snow melt or a significant wet weather event. The peak day occurred on May 1, 2017. The Town of Thornbury had experienced a significant rain event the previous day.

### 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.

**Thornbury WWTP Unit (Design) Capacity**



## Craigleith Wastewater Treatment Plant

### 1. Total Craigleith WWTP Capacity

The total firm ADF built capacity available at the Craigleith WWTP is 8,133 m<sup>3</sup>/day or 11,172 units based on the five year rolling ADF of 0.728 m<sup>3</sup>/unit/day.

### 2. Available Wastewater Capacity

A total flow of 3,856 m<sup>3</sup>/day (5,298 units) is currently connected or allocated to the Craigleith WWTP, based on a five year rolling ADF. There are currently 5,298 units allocated and 2,944 units reserved. Therefore, the current uncommitted reserve capacity on built capacity is 2,930 units.

The PDF flow at the Craigleith WWTP in 2017 was 8,956 m<sup>3</sup>/day. The design PDF for the Craigleith WWTP is 19,640 m<sup>3</sup>/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 2017 five year rolling ADF of 3,137 m<sup>3</sup>/day, the Craigleith WWTP is operating at 38% of the built capacity.

**Craigleith WWTP Unit Capacity**

