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Staff Report

Infrastructure & Public Works

Report To: Committee of the Whole
Meeting Date: May 15, 2017
Report Number: CSPW.17.002
Subject: 2016 Year End Water & Wastewater Capacity Assessment Report
Prepared by: John Caswell, Manager of Water & Wastewater Services

A. Recommendations

THAT Council receive Staff Report CSPW.17.002 entitled, “2016 Year End Water & Wastewater Capacity Assessment Report”;

AND THAT Council approve forwarding the 2016 Year End Water & Wastewater Capacity Assessment Report to the Grey County Planning Department.

B. Overview

The appended annual report is to be submitted to Grey County upon Council’s endorsement in order to comment on the status of 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.

There is sufficient capacity at the Water Treatment Plant and the Wastewater Treatment Plants to continue to allocate and reserve units.

C. Background

Town of The Blue Mountains (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 2016 Year End Water & Wastewater Capacity Assessment Report (2016 Year End Report) is provided below and the Executive Summary is appended as Attachment #1.

Water

From 2015 to 2016 the number of water units in the Town increased by 146 units for a total of 7,999 connected units. See Figure 1 below.

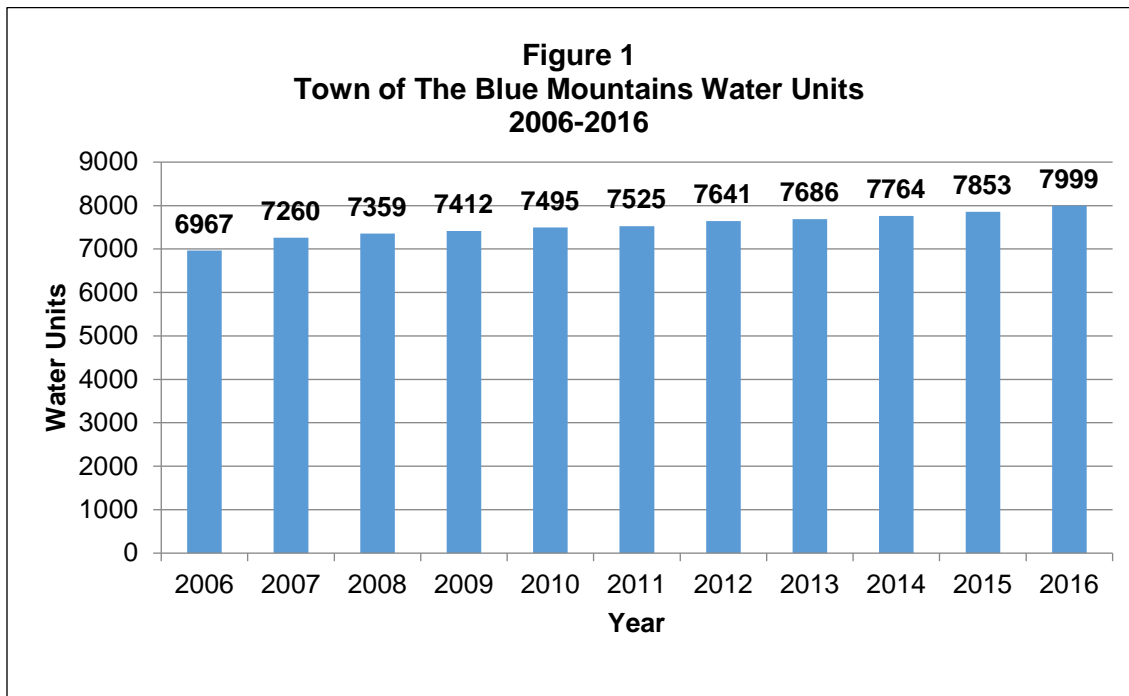
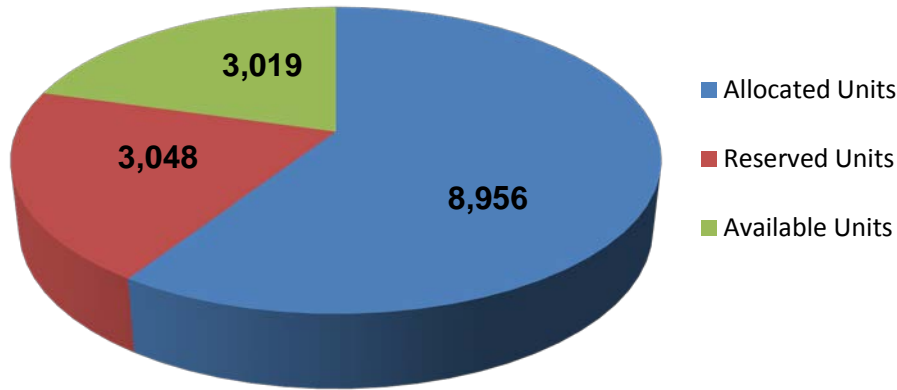


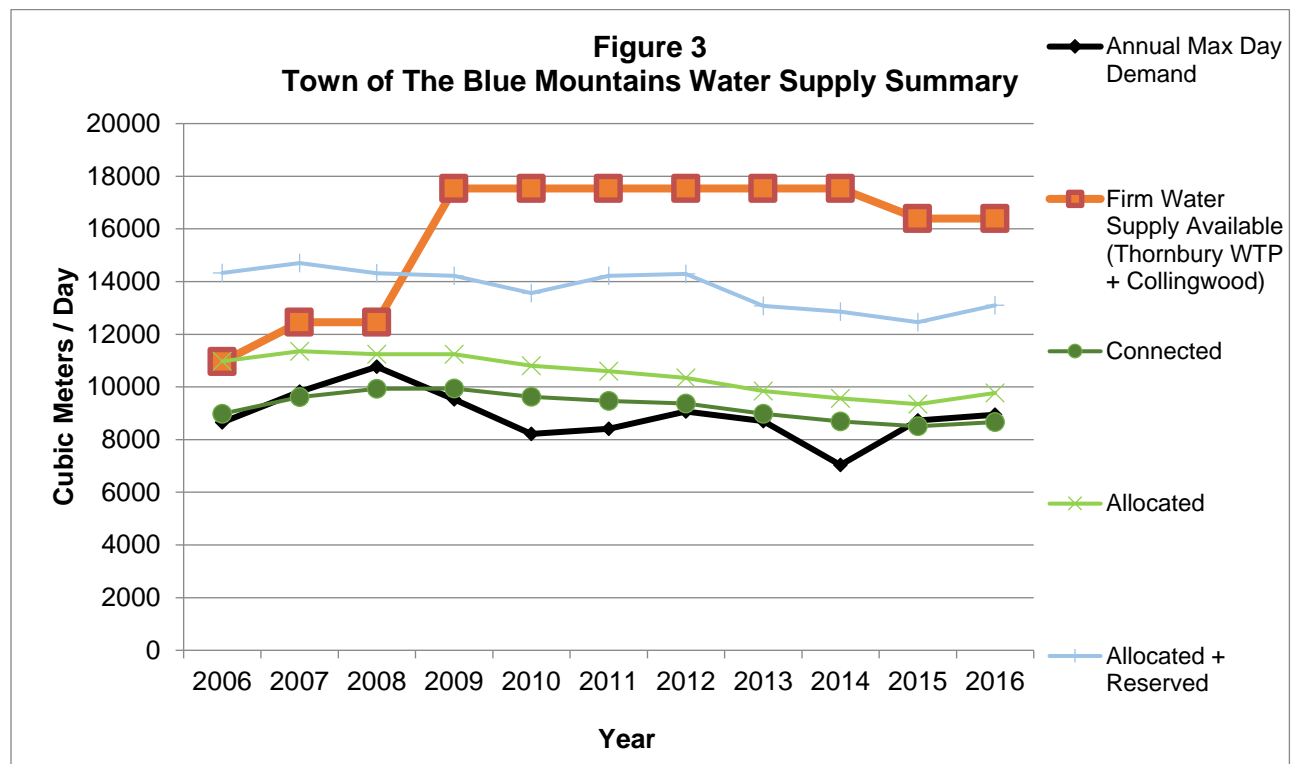
Figure 2 below illustrates the unit capacity for the Town's water system. Of the total system capacity (15,023 units), 8,956 units are allocated and 3,048 units are reserved. This leaves 3,019 available units.

**Figure 2
Town Water Unit Capacity**



The Blue Mountains total firm water supply capacity available is 16,390 m³/day or 15,023 units based on the five year rolling MDD of 1.091 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.

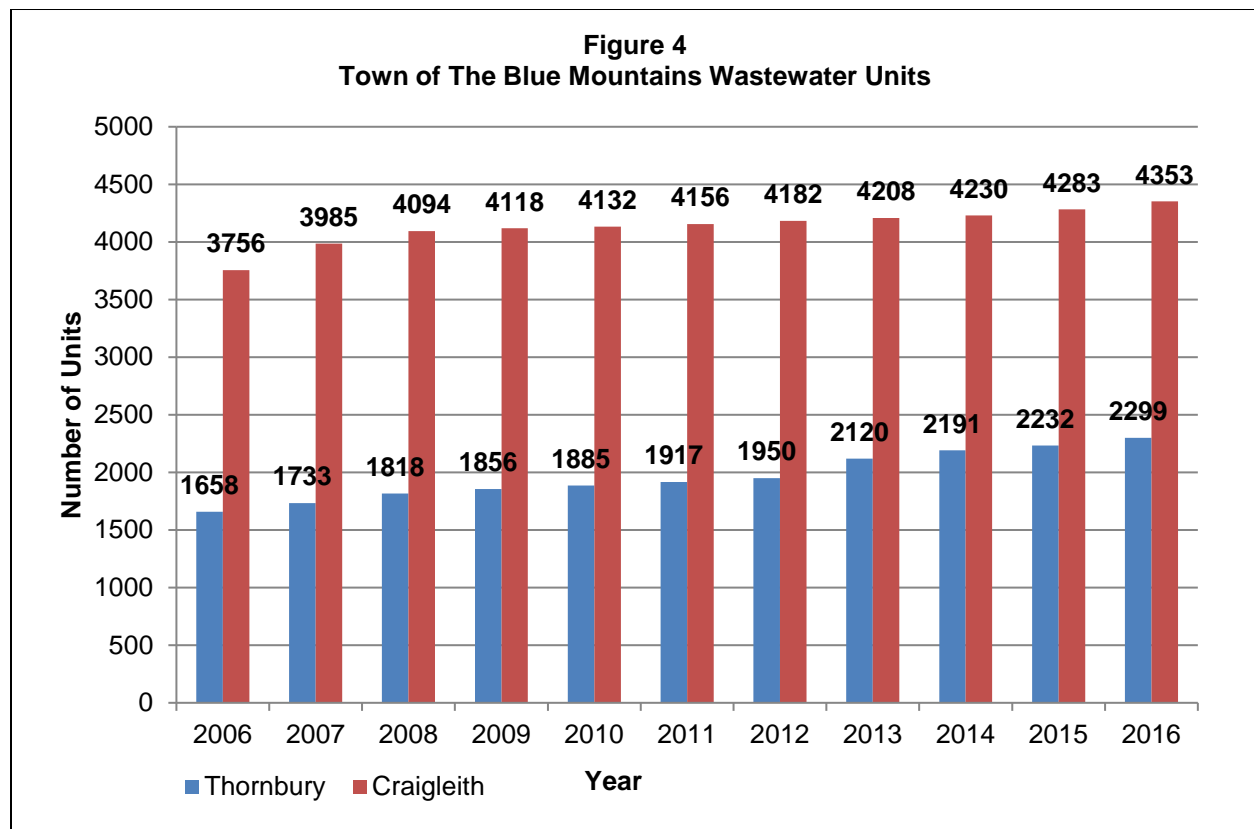


The Blue Mountains Water Treatment Plant (WTP) continues to deliver a high quality of drinking water and adheres to all Provincial Regulations and stringent testing requirements. There were no significant water quality concerns arising from the 2016 reporting period.

Wastewater

Figure 4 provides a historical breakdown of the number of wastewater units from 2005-2016.

From 2015 to 2016 the number of wastewater units in the Thornbury Service Area increased by 67 units for a total of 2,299 connected units while in the Craigleith Service Area, the number of wastewater units increased by 70 units for a total of 4,353 connected units.



Thornbury Wastewater Treatment Plant

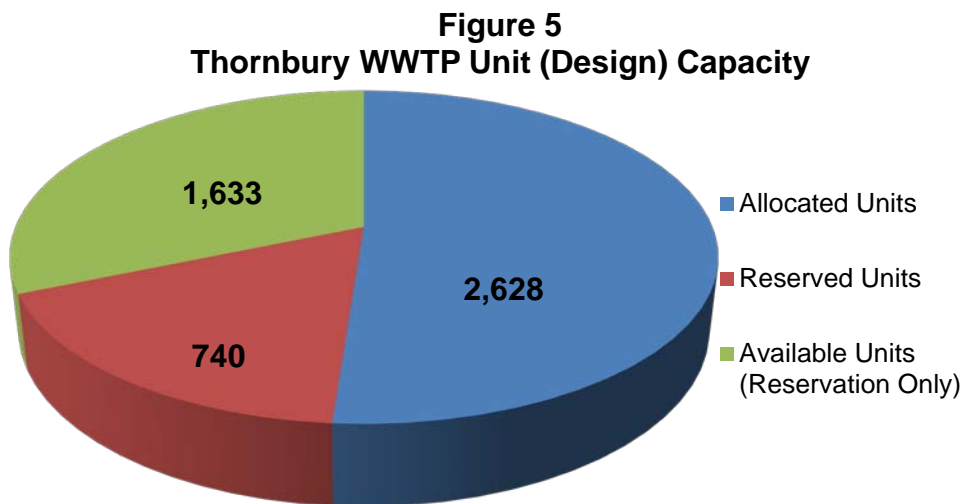
The Thornbury Wastewater Treatment Plant (WWTP) firm built capacity is 3,580 m³/day or 3,569 units based on the historical five year rolling average day flow (ADF) of 1.003 m³/unit/day.

In 2010, the Town acquired an ECA for the construction of Phase 1A of the Thornbury WWTP upgrades to enable the expansion when the ADF reaches 80% of built capacity. The ECA expired in 2015. Prior to expiry, the Town resubmitted an ECA application for the MOECC's review and consideration to extend the ECA. The application has been approved by the MOECC with an expiry date of December 2017. The Town is currently undertaking an amendment to the 2002 Comprehensive EA which would grant a five year extension to the ECA.

The Phase 4 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. Further to that report Stantec

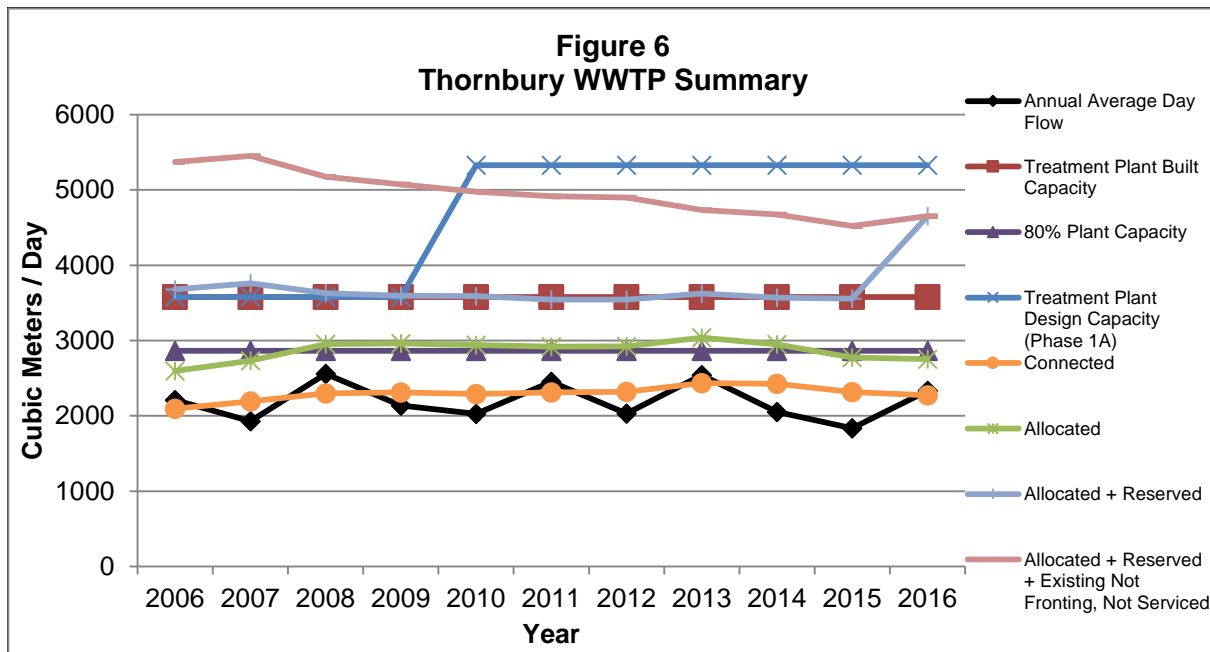
Consulting Ltd. prepared a 90% Design Report which identified that Phase 1 will be split into two (2) sub-phases with Phase 1A having an ADF capacity of 5,330 m³/day. Phase 1B will expand Thornbury WWTP ADF capacity to 7,080 m³/day and a PDF capacity of 16,187 m³/day.

Currently, there are 2,744 units (2,752 m³/day) allocated to the Thornbury WWTP and 937 units (940 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 1,633 units (1,638 m³/day). Figure 5 below illustrates the 2016 unit (design) capacity for the Thornbury WWTP.



The Thornbury WWTP's 5 year rolling ADF is 2,159 m³/day which means that the flows are utilizing 60% 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 2026 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.



The Town Landfill was expanded in 2015 and the ECA requires the collection and disposal of leachate from the new lined cell. This leachate is currently trucked to the Craigleith Main WWPS for treatment at the Craigleith WTP.

Staff have initiated an EA to manage leachate at the Landfill. One option is to install infrastructure and piping to convey leachate from the Landfill Site to the Thornbury WWTP.

Based on actual leachate inflow, Staff estimate that leachate from the Landfill Site will account for 26 Equivalent Units per year beginning in 2018. Therefore, 26 equivalent units have been reserved for the Landfill leachate.

Craigleith Wastewater Treatment Plant

The Craigleith Wastewater Treatment Plant (WWTP) firm built capacity is 8,133 m³/day or 11,455 units based on the historical five year rolling ADF of 0.710 m³/unit/day.

Figure 7 below illustrates the 2016 built unit capacity for the Craigleith WWTP. Of the total built capacity (11,455 units), 4,927 units are allocated and 3,063 units are reserved. This leaves 3,465 available units.

**Figure 7
Craigleith WWTP Unit Capacity**

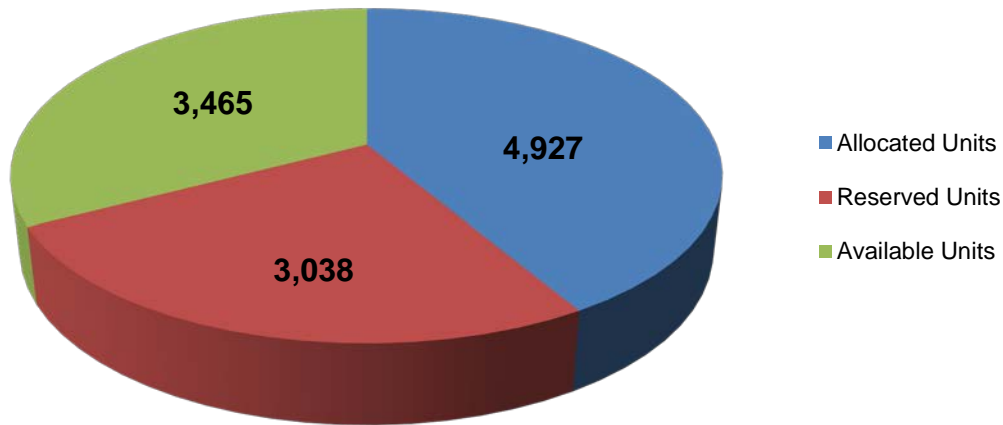
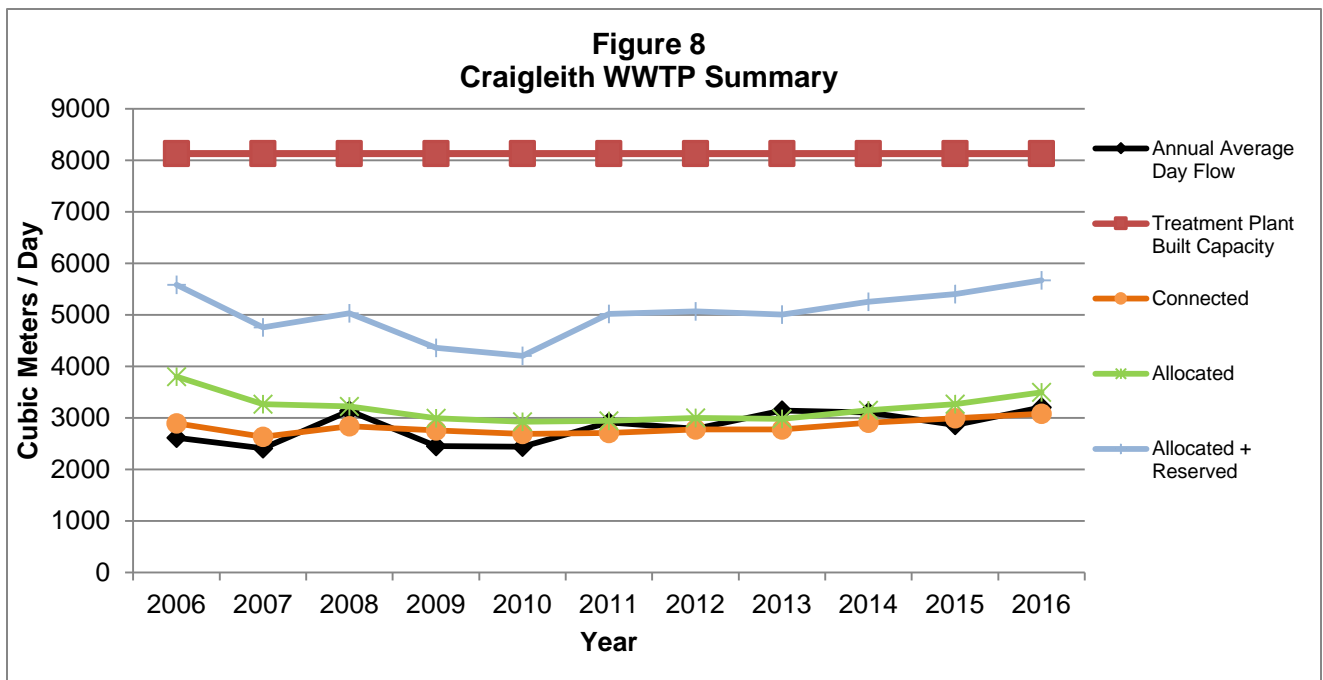


Figure 8 below illustrates that the Craigleith WWTP has available capacity and is able to treat waste being received from the existing wastewater units in the Craigleith collection area as well as from allocated and reserved future units. The Town currently has enough capacity to service an additional 3,465 units with wastewater in the Craigleith collection area.

**Figure 8
Craigleith WWTP Summary**



The 2016 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.

Staff recommend that Council approve forwarding the 2016 Year End Water & Wastewater Capacity Assessment Report to the Grey County Planning Department.

E. The Blue Mountains Strategic Plan

Goal #5: Ensure our Infrastructure is Sustainable

F. Environmental Impacts

The 2016 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 2015 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 2016 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

I. Attached

1. 2016 Water & Wastewater Capacity Assessment Executive Summary, issued May 15, 2017

Respectfully submitted,

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Director of Infrastructure and Public Works

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The Blue Mountains
Water and Wastewater Capacity Assessment
2016 Year End Report



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Issue Date: May 15, 2017

Executive Summary

This report provides an assessment of water and wastewater treatment systems capacity within the Town for 2016. 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
- Craigleith Wastewater Treatment Plant & Collection System

According to MOECC 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 MOECC 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 15,023 units based on the 5 year rolling MDD of 1.091 m³/unit/day.

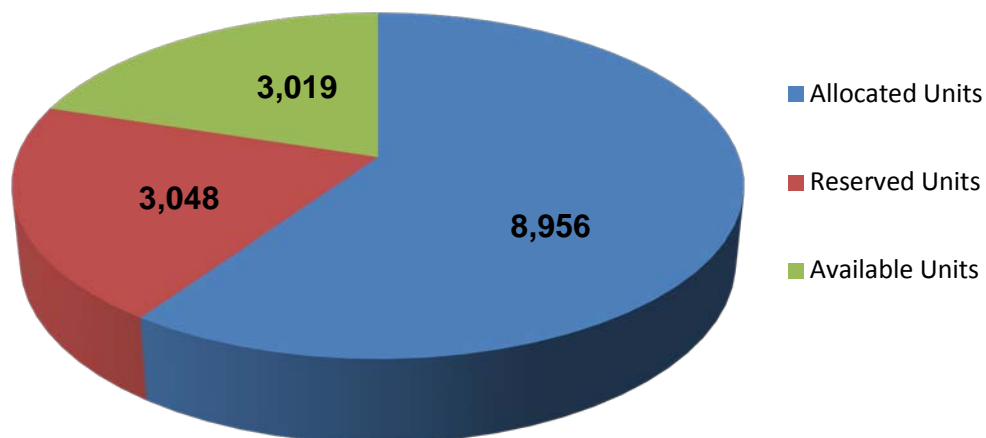
2. Available Water Capacity

A total demand of 9,771 m³/day (8,956 units) is currently connected or allocated to the water system based on a 5 year rolling average maximum daily demand of 1.091 m³/unit/day.

A total flow of 3,325 m³/day (3,048 units) is currently reserved at 1.091 m³/unit/day.

Of the 15,023 total units of water supply available, there are currently 12,004 units allocated and reserved. Therefore, the current available capacity of the Town's water supply is 3,019 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 3,569 units based on the 5 year rolling ADF of 1.003 m³/unit/day.

2. Available Wastewater Capacity Based on Planning Projections

A total flow of 2,752 m³/day (2,744 units) is currently connected or allocated to the Thornbury WWTP based on a 5 year rolling ADF. There are currently 2,744 units allocated and 937 reserved. Therefore, using planning projections the current available uncommitted reserve capacity based on built capacity is -112 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. There are actually 1,412 units (937 reserved + 475 can connect) which are not physically connected to the Thornbury WWTP.

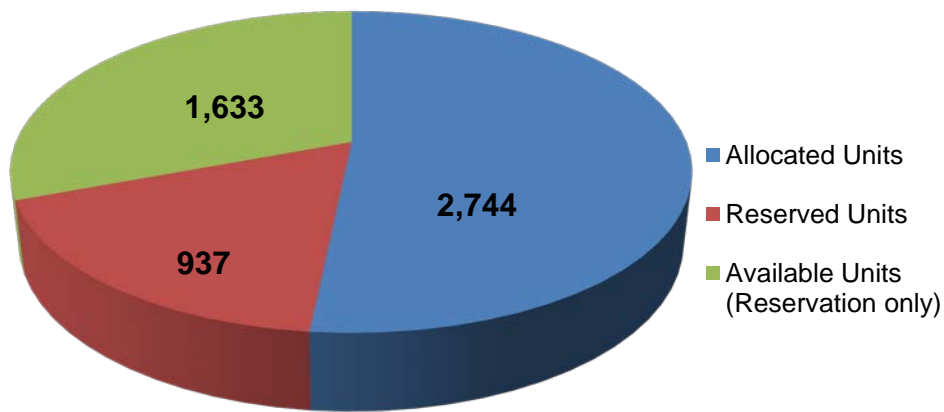
The ADF Design Capacity available is 5,330 m³/d or 5,314 units based on an ECA received in 2016. Therefore, the current available uncommitted reserve capacity based on design capacity is 1,633 units.

The PDF flow at the Thornbury WWTP in 2016 was 10,580 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.

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 60% 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 m³/day or 11,455 units based on the 5 year rolling ADF of 0.710 m³/unit/day.

2. Available Wastewater Capacity

A total flow of 3,498 m³/day (4,927 units) is currently connected or allocated to the Craigleith WWTP, based on a 5 year rolling ADF. There are currently 4,927 units allocated and 3,063 units reserved. Therefore, the current uncommitted reserve capacity on built capacity is 3,465 units.

The PDF flow at the Craigleith WWTP in 2016 was 12,428 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 2016 five year rolling ADF of 3,019 m³/day, the Craigleith WWTP is operating at 37% of the built capacity.

