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STAFF REPORT: ENGINEERING AND PUBLIC WORKS DEPARTMENT



REPORT TO: **Committee of the Whole**
MEETING DATE: **August 18, 2014**
REPORT NO.: **EPW.14.047**
SUBJECT: **2013 Water and Wastewater
Capacity Assessment Year End
Report**

PREPARED BY: **John Caswell, Manager of Water
and Wastewater Services**

A. Recommendations

THAT Council receive Staff Report EPW.14.047 entitled “2013 Water and Wastewater Capacity Assessment Year End Report”;

AND THAT Council approve forwarding the 2013 Water and Wastewater Capacity Assessment Year End Report to the Grey County Planning Department.

B. Background

The Town is required to provide an annual year end water and wastewater capacity assessment report to the upper tier government being 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 and also provides current information on flows from existing development. The annual Water and Wastewater Capacity Assessment Year End Reports are prepared by Town Staff.

WATER SUPPLY

The number of water connections within the Town of The Blue Mountains has increased variably over the past 5 years. Figure 1 provides a historical breakdown of the number of water connections within the municipality from 2003 to 2013. From 2012 to 2013 the number of water connections increased by 45 units for a total of 7,686 connected units.

The Planning and Building Services Department has also identified and corrected some minor errors from previous years. Therefore; the overall number of connected units may change year to year based on numerous factors.

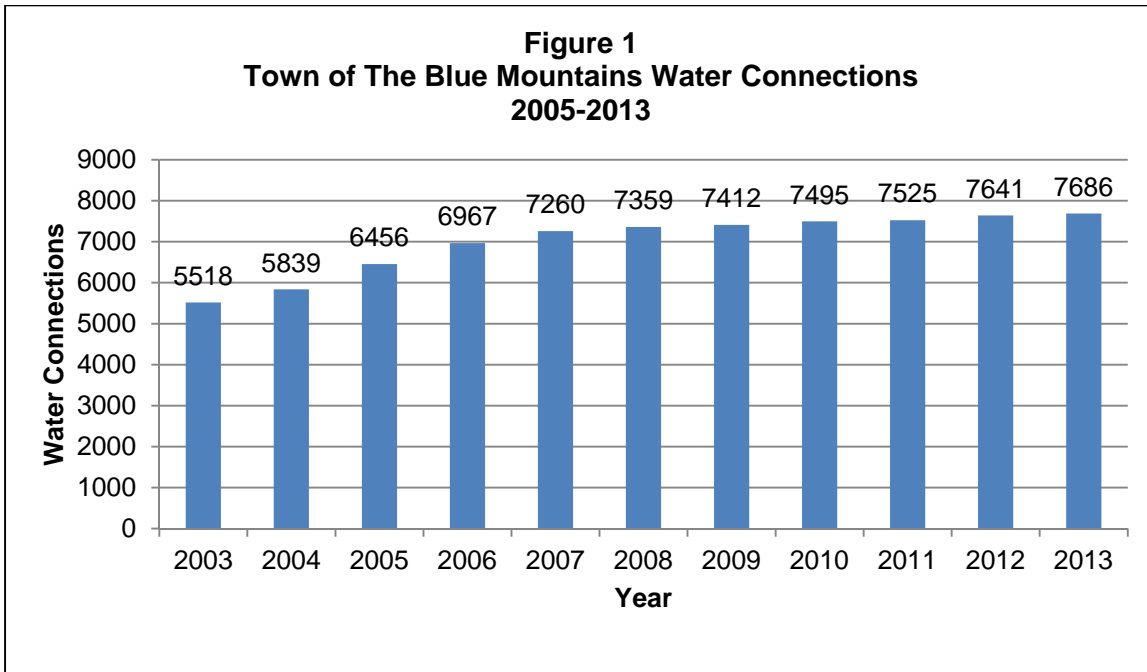
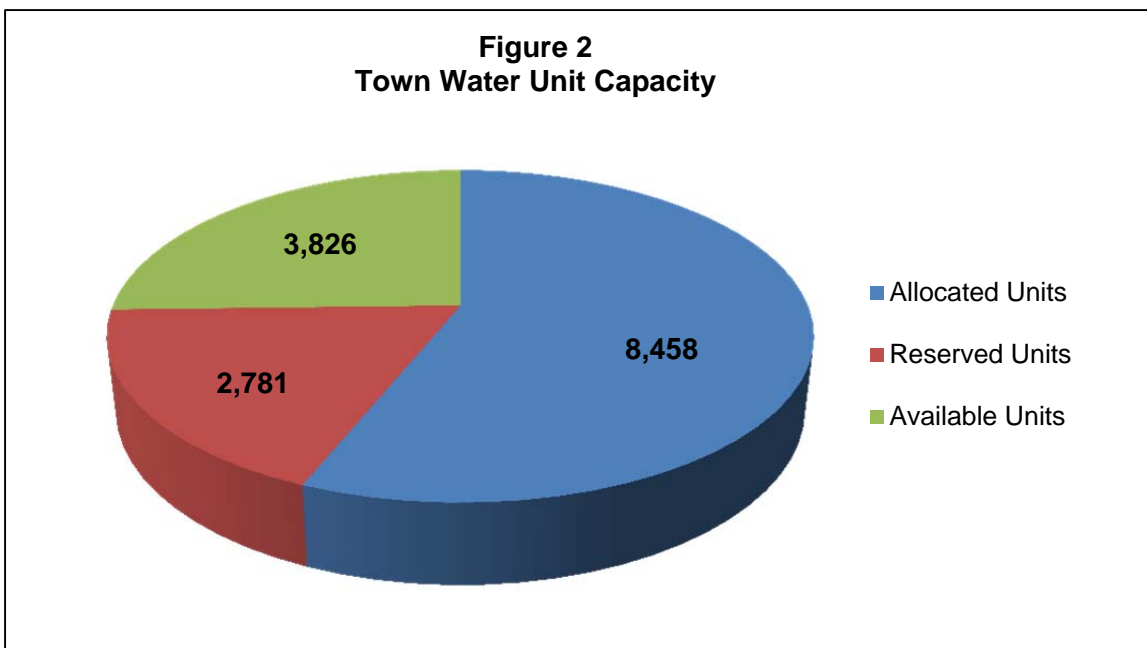
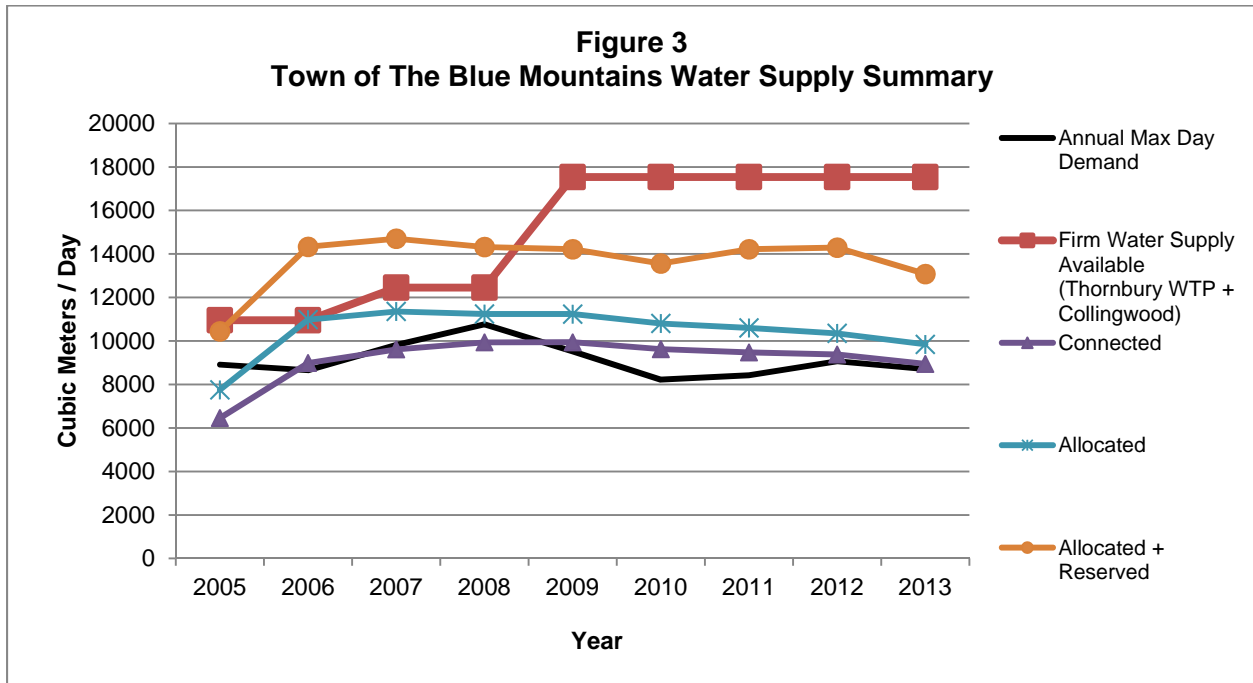


Figure 2 illustrates the 2013 unit capacity for the Town's Water System. Of the total built capacity (15,065 units), 8,458 units are allocated and 2,781 units are reserved. This leaves 3,826 available units.



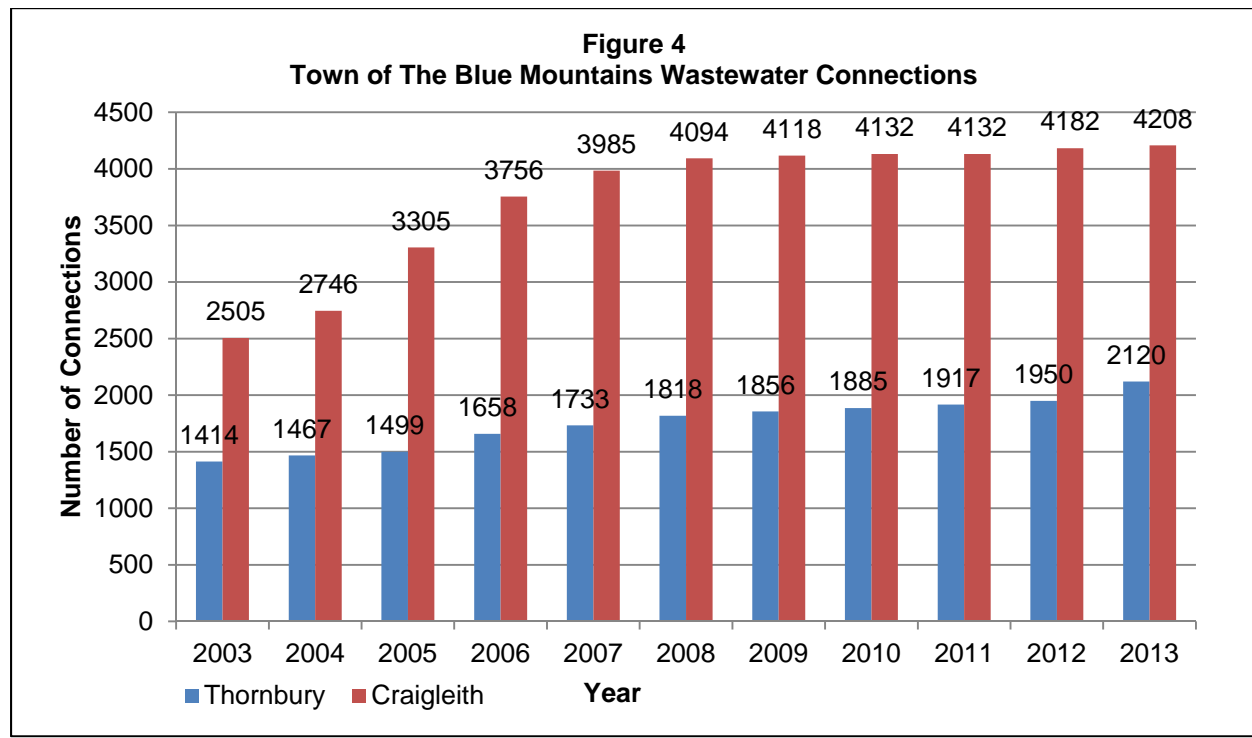
The Town's Water Supply, including the supplemental supply received from the Town of Collingwood, continues to adequately meet the Town's water demands. Figure 3 illustrates that the Town's water supply is capable of meeting the demands of the existing connections as well as those that have been allocated and reserved for future connection.



The Thornbury Water Treatment Plant continues to deliver a high quality of drinking water which adheres to all Provincial Regulations and stringent testing requirements. There were no significant water quality concerns arising from the 2013 reporting period.

WASTEWATER

The number of wastewater connections within the Town of The Blue Mountains has increased steadily over the past 5 years. Figure 4 provides a historical breakdown of the number of wastewater connections within the municipality from 2003 to 2013. From 2012 to 2013 the number of wastewater connections in the Thornbury area increased by 170 units for a total of 2,120 connected units. In the Craigleith area the number of wastewater connections increased by 26 units in 2013 for a total of 4,208 connected units.



Thornbury Wastewater Treatment Plant

The Town has received approval from Grey County and the MOE to be able to utilize 80% of the existing available flow capacity at the Thornbury WWTP prior to proceeding with the expansion of the Plant. The Town has received the C of A for the future Phase 1A expansion of the Thornbury WWTP. When completed, the Phase 1A expansion will increase the average day flow (ADF) capacity of the Plant from the current 3,580 m³/day to 5,330 m³/day. The Town has committed to strictly monitor the status of the Plant through Year End Reports and through future projections. The Town has also committed to start final design of the expansion of the Plant the year after the Plant reaches 80% flow (2,864 m³/day) of its current capacity and proceed to construction immediately thereafter.

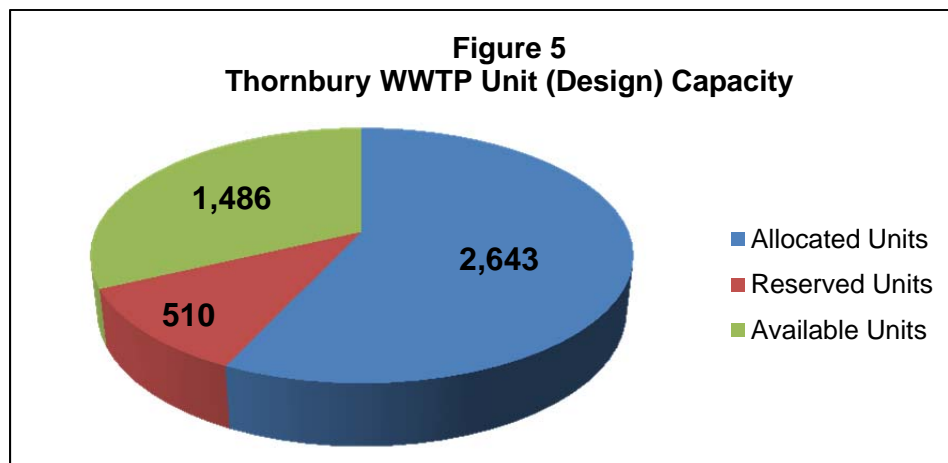
As mentioned above, the ADF capacity of the Thornbury WWTP is 3,580 m³/day. Using the historical five year rolling ADF average per unit flow rate (1.149 m³/unit/day) to determine the total number of connections that can be serviced results in an existing plant capacity of 3,116 units

The ADF capacity of the Thornbury WWTP will increase to 5,330 m³/day once Phase 1A is completed. The Phase 1A Design Capacity is used to determine the available capacity of the Thornbury Wastewater Treatment Plant once the expansion occurs. Using the historical five year ADF average per unit flow rate (1.149 m³/unit/day) to determine the total number of connections that can be serviced results in a design capacity of 4,639 units.

According to 2013 calculations, the existing flows of 2,436 m³/day (based on a 5 year rolling ADF) to the Plant are utilizing 68% of the available capacity; therefore the Town does not need to take immediate measures to initiate the final design as the plant is not expected to reach 80% capacity until 2020. Each year, through the Year End Servicing Report, the Town will continue to identify all the connections which utilize available plant capacity.

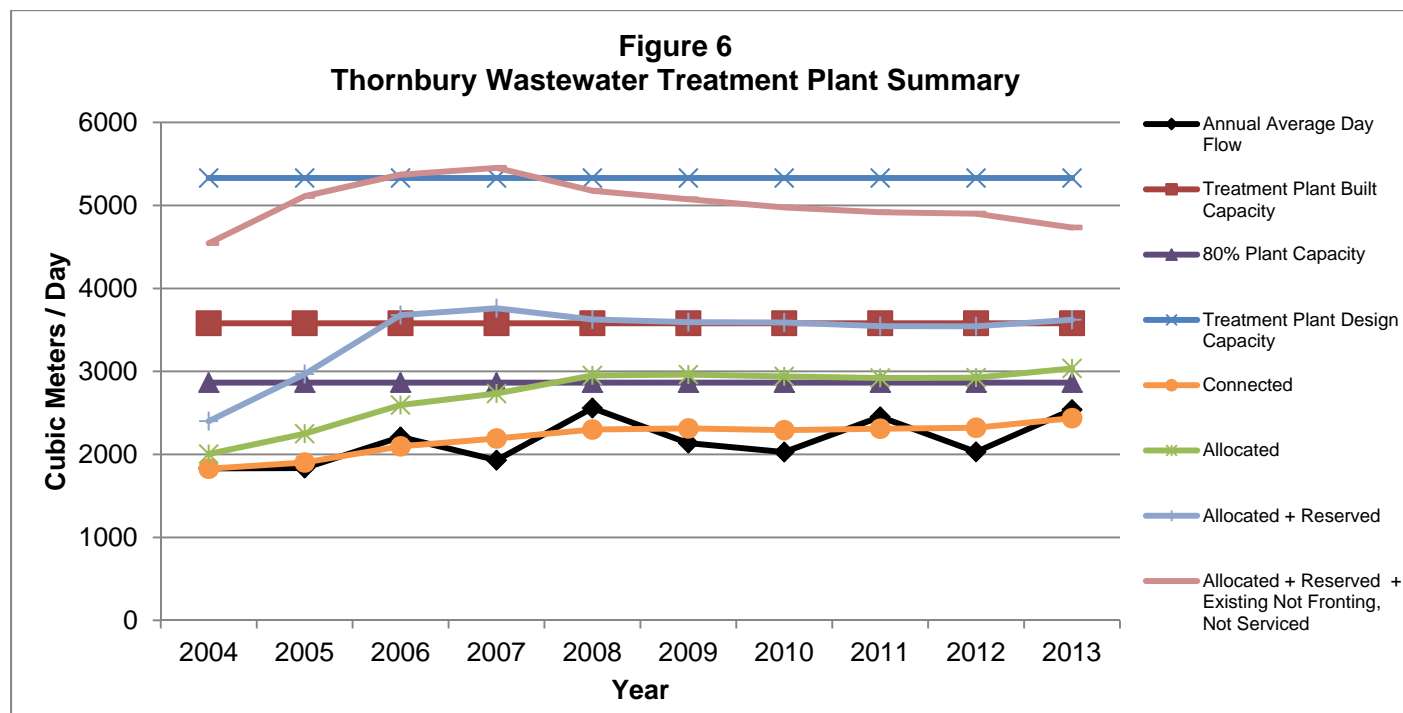
Currently there are 2,643 units (2,436 m³/day) allocated to the Thornbury WWTP and 510 units (586 m³/day) reserved for the Thornbury WWTP. As the Town is able to reserve units based on the design expansion, the Thornbury WWTP has a total available reservation of 1,486 units (1,707 m³/day).

Figure 5 illustrates the 2013 unit capacity for the Thornbury WWTP. Of the total design capacity (4,639 units), 2,643 units are allocated and 510 units are reserved. This leaves 1,486 available units.



There are currently 2,120 units connected to the Thornbury WWTP. The 80% built average day flow capacity of the Thornbury WWTP can only handle the physical connection of an additional 373 units before the expansion will be required, based on the 2013 5 year rolling average day flow of 1.149 m³/unit/day.

Figure 6 illustrates that the Thornbury WWTP is reaching capacity based on the number of allocated and reserved units. However, the annual average day flow remains below the 80% plant capacity threshold. Wastewater allocations and reservations in the Thornbury area are being closely monitored.



Craigleith Wastewater Treatment Plant

Figure 7 illustrates the 2013 unit capacity for the Craigleith WWTP. Of the total built capacity (12,341 units), 4,527 units are allocated and 3,111 units are reserved. This leaves 4,704 available units.

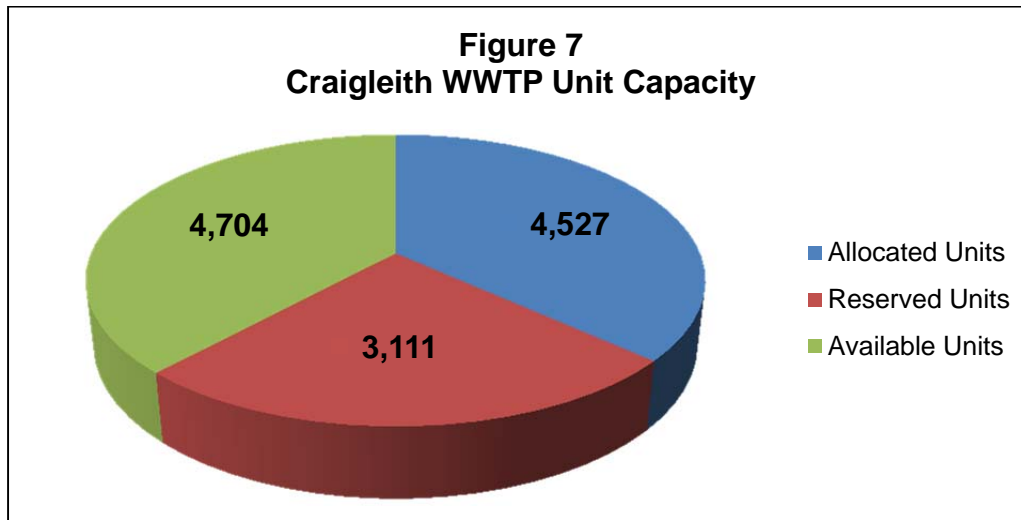
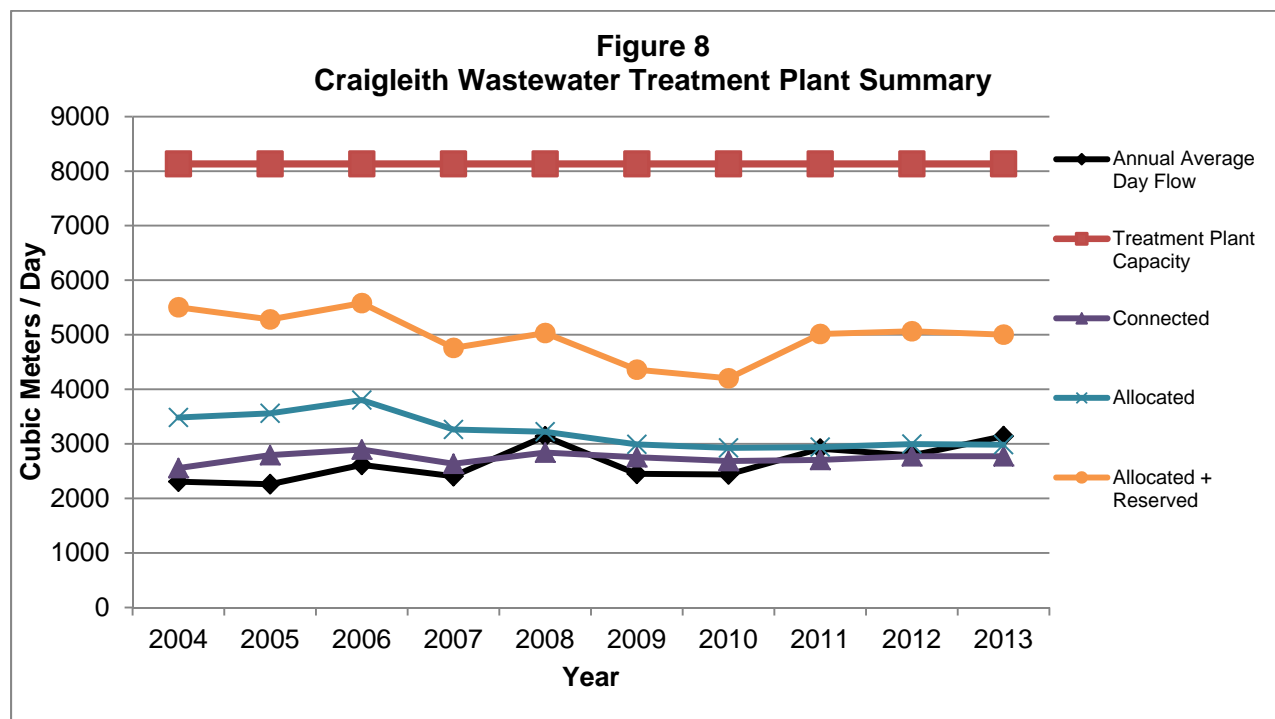


Figure 8 below, illustrates that the Craigleith Wastewater Treatment Plant has more than enough capacity to treat the waste being received from the existing wastewater connections in the Craigleith area as well as from allocated and reserved future connections. The Town currently has enough capacity to service an additional 4,704 units with wastewater in the Craigleith.



The 2013 Water and Wastewater Capacity Assessment Year End Report Executive Summary is provided as Attachment 1 to provide a summary of the report. The entire document is available upon request. The 2013 Water and Wastewater Capacity Assessment Year End Report has been prepared in conjunction with the Town's Building and Planning Department.

Staff recommend that the 2013 Water and Wastewater Capacity Assessment Year End Report be sent to the Grey County Planning Department

C. The Blue Mountains' Strategic Plan

The 2013 Water and Wastewater Capacity Assessment Year End Report furthers the Town's Strategic Goal #2, "Addressing the Town's municipal infrastructure needs".

D. Environmental Impacts

The 2013 Water and Wastewater Capacity Assessment Year End Report provides the baseline data required for reporting and forecasting and is integral to development of the water and wastewater services for the Town. It is instrumental in environmental compliance reporting and in reducing the municipality's impact on the ecology of Georgian Bay.

E. Financial Impact

None directly, however; the 2013 Water and Wastewater Capacity Assessment Year End Report forecasts the need for capital expansions in both water and wastewater.

F. In Consultation With

Shawn Postma, Planner II

G. Attached

Attachment 1 2013 Water and Wastewater Capacity Assessment Year End Report Executive Summary.

Respectfully submitted,

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The Blue Mountains

Water and Wastewater Capacity Assessment

2013 Year End Report



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Executive Summary

This report provides an assessment of water and wastewater treatment systems capacity within the Town of The Blue Mountains (Town) for 2013. Current Town water supply and wastewater treatment infrastructure includes:

- Thornbury Wastewater Treatment Plant
- Craigleith Wastewater Treatment Plant
- Thornbury Water Treatment Plant
- Supplemental water supply from the Town of Collingwood

In addition, this report provides a review of the capacity of water storage reservoirs, WBS, WWPS and forcemains, and identifies current or proposed system upgrades or expansion projects.

There are expansion projects planned for the Thornbury Wastewater Treatment Plant once a certain capacity is reached. The Craigleith Wastewater Treatment Plant is operating with spare capacity at this time. The Thornbury Wastewater Treatment Plant has a small amount of capacity left based on flows to the plant.

The following pages summarize the status of the Town's Water Supply, Thornbury Wastewater Treatment Plant and the Craigleith Wastewater Treatment Plant:

Water Supply (Thornbury Water Treatment Plant & Collingwood Supply)

1. Average Day and Maximum Day Water Demands

The 2013 average daily demand is 3,941 m³/day. The 5 year rolling average daily demand is 0.572 m³/unit/day.

The 2013 maximum daily demand is 8,704 m³/day. The 5 year rolling maximum daily demand is 1.164 m³/unit/day.

2. Total Water Supply

The maximum built capacity available from the Thornbury WTP is 13,536 m³/day. The supplemental supply from the Town of Collingwood is 4,000 m³/day. The total supply available is 17,536 m³/day (15,065 units).

3. Total Water Connections

A total demand of 8,947 m³/day (7,686 units) is currently connected to the water system, based on a 5 year rolling average maximum daily demand. These connected units are using 51% of the water supply, leaving 49% of the water supply available for future connections.

4. Total Water Allocations

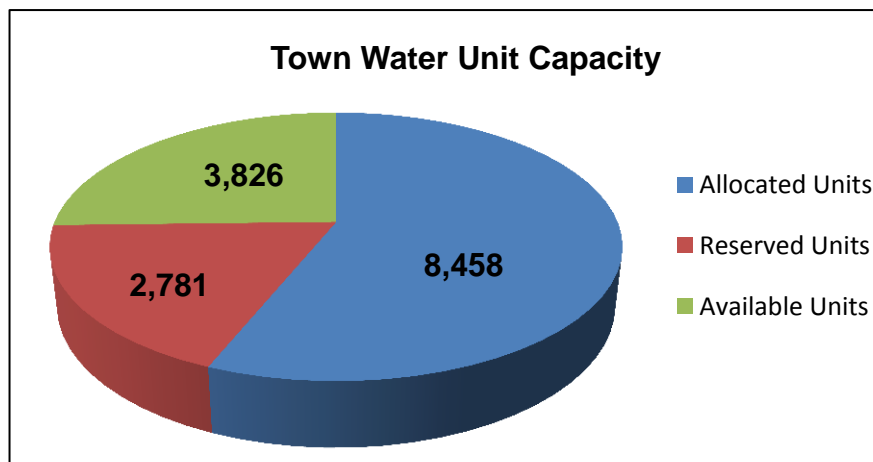
A total demand of 9,845 m³/day (8,458 units) is currently connected or allocated to the water system, based on a 5 year rolling average maximum daily demand.

5. Available Water Supply

Of the total water supply, 56% has been allocated to those units that can connect (units that front the service but are not connected) or have been committed (approved and existing development), leaving 44% (6,607 units) of the water supply available for future allocation.

6. Total Water Reservations

A total flow of 3,237 m³/day (2,781 units) is currently reserved. 18% of the water supply is reserved to those units that are existing but not fronting and not serviced and those lands designated that currently have draft plan approval under the Planning Act. Of the 15,065 total units of water supply available, there are currently 11,239 units allocated or reserved. Therefore, the current available capacity of the Town's water supply is or 4,453 m³/day (3,826 units).



Thornbury Wastewater Treatment Plant

1. Average Day Flow and Peak Day Flow

The 2013 average day flow is 2,540 m³/day. The 5 year rolling average day flow is 1.149 m³/unit/day.

The 2013 peak day flow is 7,448 m³/day. The 5 year rolling peak day flow is 3.707 m³/unit/day.

2. Total Wastewater Plant Capacity (Built and Design)

The Thornbury WWTP has a built average day flow capacity of 3,580 m³/day (3,116 units).

A total of 3,116 units can be serviced by the Thornbury WWTP as it is currently built.

The Thornbury WWTP has an expansion design average day flow capacity of 5,330 m³/day (4,639 units).

A total of 4,639 units can be serviced by the Thornbury WWTP after the designed expansion is complete.

3. Total Wastewater Connections

A total flow of 2,436 m³/day (2,120 units) is currently connected to the Thornbury WWTP, based on a 5 year rolling average daily flow. These connected units are using 68% of the plant's built capacity, leaving 32% of the capacity available for future connections.

4. Total Wastewater Allocations

A total flow of 3,037 m³/day (2,643 units) is currently connected or allocated to the Thornbury WWTP, based on a 5 year rolling average daily flow.

5. Available Wastewater Capacity

Of the total Thornbury WWTP plant's built capacity, 85% has been allocated, leaving 15% (473 units) available for future allocation.

6. Total Wastewater Reservations

A total flow of 586 m³/day (510 units) is currently reserved for the Thornbury WWTP.

As the Town is able to reserve units based on the design expansion, the Thornbury WWTP has a total available reservation of 1,707 m³/day (1,486 units).

7. Future Projections

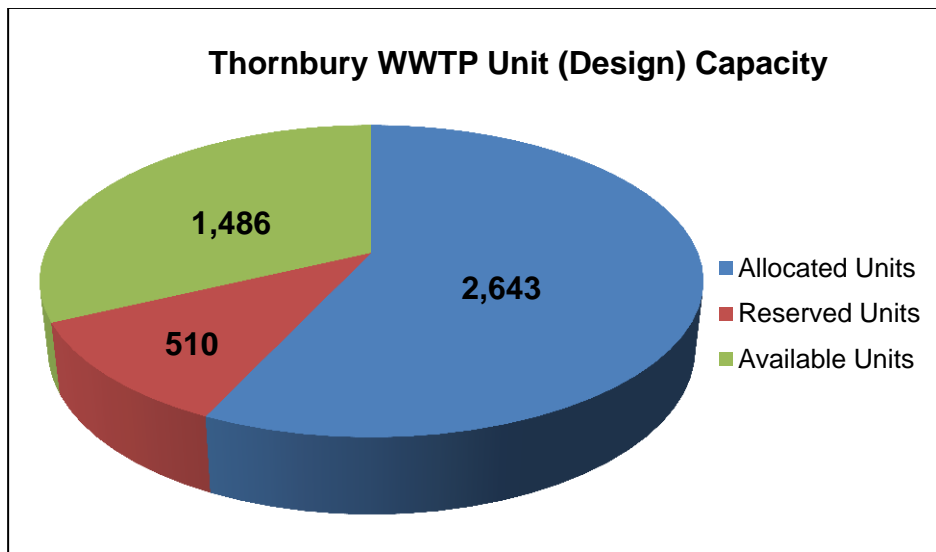
The Town has committed to provide annual updates on the future projections of the Thornbury WWTP.

Estimates contained in the 2013 Year End report include:

1. Connected units are estimated at 38 new connections per year (based on a 5 year average)
2. Allocated units are estimated to increase based on projected local servicing projects plus an estimated 38 units that will be registered and/or given Plant capacity per year

It is noted that market conditions, the five year rolling average and other economic factors will influence the actual connections and actual allocations per year. The five year rolling average has dropped over the past five years, further deferring the estimated year of plant expansion. In this regard, all year end reports will review year end data and update the estimated future projections.

Based on 2013 estimates, the Plant is operating at 68% flow capacity and the Plant will reach 80% flow capacity in 2022 after 373 units are physically connected to the plant. As indicated, the Town has committed to commencing construction of the expansion of the Plant the year after the Plant reaches 80% flow of its built capacity (2,864 m³/day or 2,493 units). The Town has an agreement with Grey County and the MOE for the Town to utilize existing available capacity at the Thornbury WWTP through a modified method of calculating capacity status. As part of the agreement, the Town has prepared the preliminary design and has received a C of A for the future Phase 1A expansion of the Plant.



Craigeith Wastewater Treatment Plant

1. Average Day Flow and Peak Day Flow

The 2013 average day flow is 3,139 m³/day. The 5 year rolling average day flow is 0.659 m³/unit/day.

2. Total Wastewater Plant Capacity

The Craigeith WWTP has an average day flow capacity of 8,133 m³/day (12,341 units). A total of 12,341 units can be serviced by the Craigeith WWTP.

3. Total Wastewater Connections

A total flow of 2,773 m³/day (4,208 units) is currently connected to the Craigeith WWTP, based on a 5 year rolling average daily flow. These connected units are using 34% of the plant's capacity, leaving 66% of the capacity available for future connections.

4. Total Wastewater Allocations

A total flow of 2,983 m³/day (4,527 units) is currently connected or allocated to the Craigeith WWTP, based on a 5 year rolling average daily flow.

5. Available Wastewater Capacity

Of the total Craigeith WWTP capacity, 37% has been allocated to units that can connect (units that front the service but are not connected) or have been committed (approved and existing development). This leaves 63% of the Craigeith WWTP capacity available for future allocation.

6. Total Wastewater Reservations

A total flow of 2,050 m³/day (3,111 units) is reserved for the Craigeith WWTP.

The units in this category include units that are existing but not fronting and not serviced and those lands designated for approval with current draft plan approval under the Planning Act.

Of the 12,341 total units of plant capacity available, there are currently 7,638 allocated or reserved. Therefore, the current available capacity of the Craigeith Plant is 3,100 m³/day (4,704 units).

