

## Memo

From: Ryan DeVries  
rdevries@bmross.net

**To:** Brett Pollock, CBO  
Township of Ashfield-Colborne-Wawanosh

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**Re:** New Treatment Design and Pressure Zones

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**File #:** 23075

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**Date:** April 10, 2023

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### Background

An ongoing Class Environmental Assessment (Class EA) process is looking at additional water supplies to support new developments planned in and around the Century Heights Drinking Water System. As part of that Class EA process, WaterCAD modelling has been completed which looked at pressures and flows within the existing system, as well as theoretical future pressures and flows of an expanded system to service new adjacent developments.

The new well will need to be designed with a higher discharge pressure than the existing wells are currently sized for, as some of the proposed development area is at a higher elevation than the existing system. There are a few ways to accomplish this:

1. Design the new well and treatment building for a higher pressure and operate the two systems independently (i.e. two different pressure zones).
2. Upgrade the existing well pumps and treatment building to closely match the higher pressure that the new well and treatment building will be designed for.

Note that reference to the existing well and treatment building refers to existing Well 1 and Well 2 located off of Dunlop Drive and south of Galt Place. Reference to the new well and treatment building refers to Well 3 and a proposed new treatment building to be located off of Maitland Avenue and east of Fern Drive.

The remainder of this memo offers different considerations to assist the Township in making a decision on how to incorporate the new well and treatment building into the existing system.

### Pressure Considerations

Well 1 and Well 2 were designed to operate between 276 and 400 kPa. Due to being at a lower elevation, lower Salford requires a pressure reducing valve to reduce pressures between the well supply and the bottom of the hill. Aside from lower Salford, the remainder of the existing Century Heights Drinking Water System exhibits normal operating pressures of between 228 and 427 kPa. The Ministry of the Environment, Conservation and Parks (MECP) recommends

a normal operating pressure range target of between 350 and 480 kPa and minimum pressures of at least 275 kPa. There are many locations within the existing drinking water system that regularly exhibit less than 350 kPa of pressure and under certain conditions exhibit pressures less than 275 kPa.

Based on elevations within the new Salford Heights and Salford Estates developments, the new well and treatment building should be designed for a discharge pressure of at least 100 kPa higher than what the existing system is designed for (i.e. normal operating discharge range of 375 to 500 kPa).

If the existing well and treatment building were upgraded to match this discharge design range of the new well and treatment building, then all locations within the existing Century Heights Drinking Water System would have normal operating pressures of at least 325 kPa.

If the existing well and treatment building is not upgraded, then the two systems would need to be divided. A logical dividing boundary would be Westmount Line. The existing system to the west of Westmount Line would continue to operate under current conditions. The existing system to the east of Westmount Line would be incorporated within the new well and treatment system and would experience an increase in pressures. The two systems would be connected by valves (normally closed) which could be opened during emergencies (i.e. if problems with any of the well supplies or well pumps occurred). Figure 1 is a depiction of how the dual pressure zone system might look.

### **Cost Considerations**

It is anticipated that most of the costs of the new well and treatment building will be recovered through development charges and/or connection fees. Upgrades to the existing well and treatment building is a benefit only to the existing users and thus would need to be funded through existing reserves and water fees.

Upgrading the existing well and treatment building to achieve higher discharge pressures is likely to include:

- Replacing both well pumps and their variable frequency drives.
- Replacing the pump harmonic filters.
- Replacing the generator and automatic transfer switch.
- Replacing the contactors, overloads, and soft-starters along with control revisions.
- Upsizing the electrical service to the treatment building, including new underground ductbanks, conduits and cables.

The above work is anticipated to cost at least \$250,000 + HST.

If the Township decides to proceed with two different pressure zones at this time, the upgrades to the existing well and treatment site noted above could be completed at a future date.

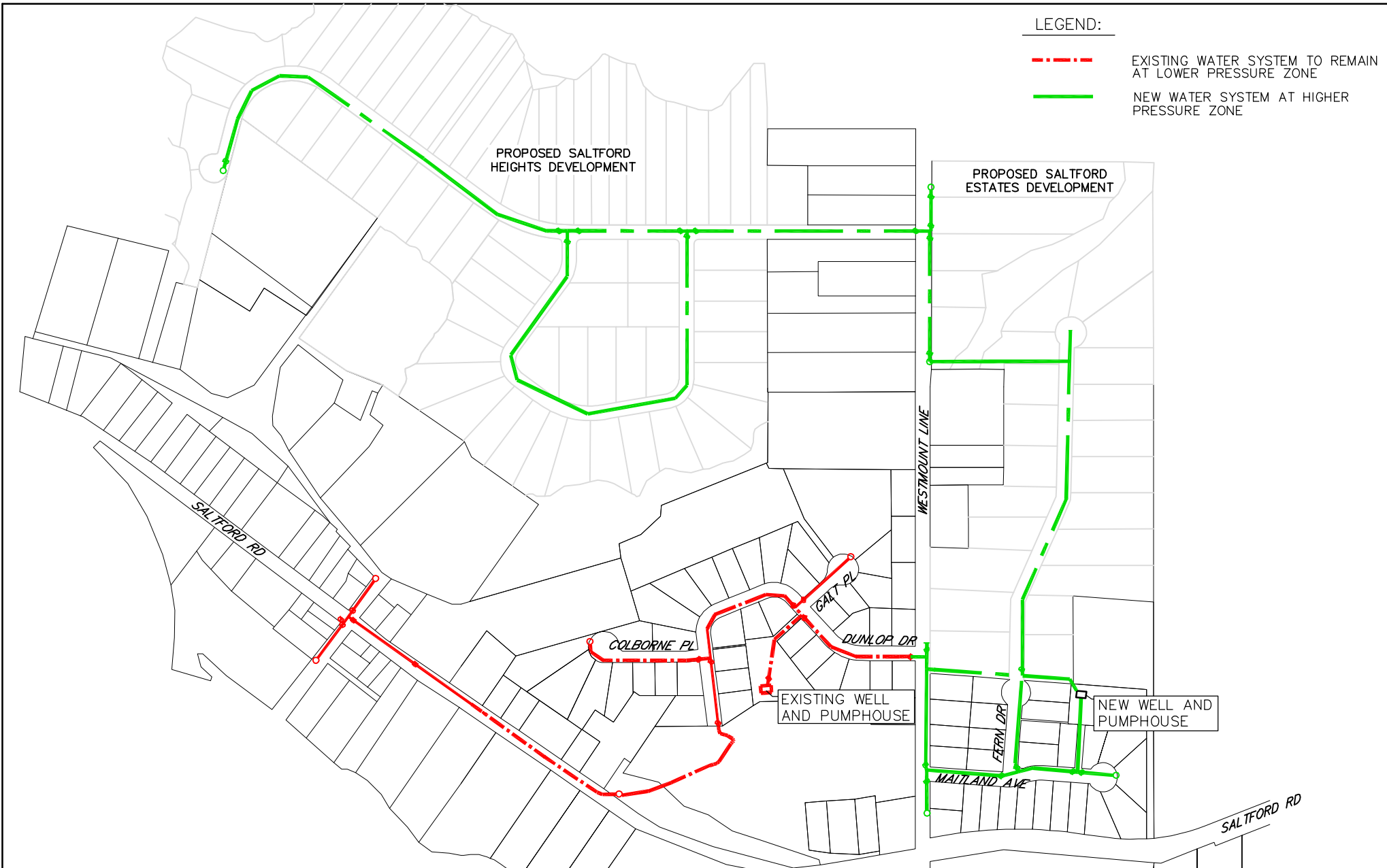
**Next Steps**

We have initiated the detailed design process for the new well and treatment building to support new developments planned in and around the existing Century Heights Drinking Water System. As part of that process, future pressures and flows across the expanded drinking water system are being considered. To continue with the design, we require direction from the Township on whether there is interest in upgrading the existing well and treatment building to match the new pressures being designed for the new well and treatment building, or if the preference is to operate the two systems independently (i.e. two different pressure zones) at this time.

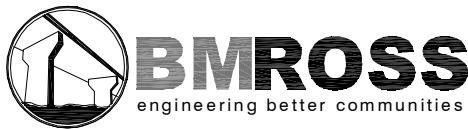
B. M. ROSS AND ASSOCIATES LIMITED

Per   
Ryan DeVries, P. Eng.

RPD:hv



No.	DATE	REVISION
1.	Apr. 10, 2023	Issued for Memo



**Township of  
 Ashfield-Colborne-Wawanosh**  
 Century Heights Distribution System Expansion  
 Potential New Pressure Zones

DATE Apr. 10, 2023	PROJECT No. 23075
SCALE N.T.S.	FIGURE No. 1