

# **Municipality of Lakeshore - Report to Council**

## **Engineering & Infrastructure Services**

### **Environmental Services**



**To:** Mayor & Members of Council

**From:** Nelson Cavacas, C.E.T., Senior EIS Leader and Advisor to CAO

**Date:** March 22, 2021

**Subject:** Maidstone Water Tower Rehabilitation Cost Update

---

### **Recommendation**

Direct Administration to disconnect the Maidstone Water Tower from the Belle River Water Supply System and that it be demolished in the future subject to budget approval, as described in the report of the Senior EIS Leader and Advisor to the CAO as presented at the April 20, 2021 Council meeting.

### **Background**

On November 5, 2019, Council passed the following resolution 488-11-2019 pertaining to the report presented related to the status and recommendation on the Maidstone Water Tower (MWT):

That the disconnection of the Maidstone Water Tower (MWT) from the Belle River Water Supply System be deferred pending a report regarding the full cost of bringing the water tower back online.

Administration has revisited the rehabilitation costs to bring the water tower back online as well as engaged Stantec Consulting in the analysis and assessment of the MWT with respect to its effectiveness/usefulness within this water system. Administration also reviewed the timing of the new proposed future water tower in the vicinity of the Patillo Road business area (as identified in the Lakeshore Water Master Plan).

The Municipality has made capital investments into the construction of a new water treatment plant in 2009 and a new 5,800m<sup>3</sup> water tower in 2015. The new 5,800m<sup>3</sup> water tower storage on Rourke Line representatively has more than twice the storage that was provided by the previous two water towers (MWT and the previous Belle River Water Tower (decommissioned in 2015)). The existing storage (5,800m<sup>3</sup>) accounts for future growth in water demand projections.

The importance and benefits of the new water treatment plant and tower (on Rourke Line) are further discussed below along with updated rehabilitation costs for the MWT.

## Comments

Administration has revisited and updated the rehabilitation costs outlined below which included collaboration with the neighbouring Union Water municipal service agency to complete rehabilitation cost comparisons with their current project recently tendered as well as two previous tower rehabilitation projects completed since 2015.

## Rehabilitation Costs

A detailed condition assessment of the MWT identified a number of deficiencies consisting of repairs to the damaged valve chamber along with lifecycle upgrade replacements of the existing appurtenances and painting of the exterior and interior.

The table below outlines the various major aspects of rehabilitation work that would be required in order to bring the water tower back on line and includes infrastructure upgrades that would be necessary for the tower to operate effectively once the 400mm dia. trunk watermain is upgraded along CR22 (to the tower site at Wallace Line):

Description of Rehabilitation	Cost
Access Stairs, Landings & Fall Arrest	\$50,000
Painting (Exterior & Interior)	\$800,000
Painting - Lakeshore Logo (match other tower)	\$55,000
Valve Chamber Repairs	\$200,000
SCADA System & Sensors	\$75,000
Installation of Recirculation Pumps	\$120,000
3 Phase Hydro Service Line	\$130,000
Upgrade 400mm dia. Tower Connection	\$100,000
Contingency	\$150,000
Sub-Total	\$1,680,000
Engineering & Contract Admin	\$220,000
<b>Total Cost (excluding HST)</b>	<b>\$1,900,000</b>

Considering the system pressure enhancements attributed to completion of the future 400mm diameter trunk along CR22, Stantec carried out a hydraulic analysis of the water supply system to confirm water storage requirements, water system pressures and associated fire flows to provide further context to the MWT contribution to the water supply system. Attached is Stantec's Technical Memorandum related to the isolation of the MWT.

## **Analysis of Water Storage Requirements**

With the isolation and removal of the MWT from the Belle River Water Supply System (BRWSS), the total available storage is 15,722m<sup>3</sup> being provided by the Lakeshore Water Treatment Plant and Rourke Line Water Tower. This exceeds the Ministry of Environment, Conservation and Parks (MECP) guidelines by approximately 7,477m<sup>3</sup> of storage or 90% of the current water demands and respectively 726 m<sup>3</sup> of storage or 5% for the 20-year future projected demands and service populations. The analysis also concluded the future timing of the new 5,800m<sup>3</sup> water tower should continue to be planned for 2035 and/or beyond.

## **Analysis of Water Distribution Requirements**

To evaluate the impact of isolating the MWT from the water distribution system, the updated hydraulic computer model developed was used to predict system behavior and system capabilities. The model predicted that without the MWT in-service, adequate system pressures and fire flows of satisfying MECP guidelines will continue to be maintained throughout the distribution system of BRWSS.

Attached is a plan labelled as Figure 6 from the 2018 Master Plan that shows the proposed water distribution system upgrades including the 400mm trunk main and the general location of future proposed new water tower near Patillo Road. The first segment of the 400mm main from Puce Road to Wallace Line is estimated at \$1,250,000.

## **Conclusion**

To summarize the above information, the following table provides a summary comparison of water system impacts and benefits between bringing the MWT back in-service compared to completion of the first segment of the 400mm trunk main up to Wallace Line as follows:

Description	Maidstone Tower	400mm Trunk to Wallace
Construction Cost	<ul style="list-style-type: none"><li>\$1,900,000</li><li>Tower rehabilitation project would be 100% funded from water rates</li></ul>	<ul style="list-style-type: none"><li>\$1,250,000</li><li>This project is partially funded (approx. 40%) from growth and included in the DC study.</li></ul>
Water Storage Requirements	<ul style="list-style-type: none"><li>Reinstates the 1,500m<sup>3</sup> which exceeds MECP guidelines</li><li>Reduces operating effectiveness of the existing Rourke Line 5,800m<sup>3</sup> tower</li></ul>	<ul style="list-style-type: none"><li>Exceeds MECP guidelines for current demand and 20 year projections</li><li>Leverages use of existing surplus capacity of existing LWTP and Rourke Line 5,800m<sup>3</sup> tower</li></ul>

Water Distribution Requirements	<ul style="list-style-type: none"> <li>• Satisfies MECP guidelines of 40 psi benchmark pressure throughout the urban and rural areas of the water system</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfies MECP guidelines of 40 psi benchmark pressure throughout the urban and rural areas of the water system</li> </ul>
Fire Flows to westerly limit of Amy Croft area	<ul style="list-style-type: none"> <li>• Capable of providing an Urban fire flow of 53 L/s (700 IGPM)</li> </ul>	<ul style="list-style-type: none"> <li>• Capable of providing an Urban fire flow of 61 L/s (800 IGPM)</li> </ul>

The analysis and review concluded that the Belle River water supply system can continue to operate at a satisfactory level of service without the MWT in-service while satisfying MECP guidelines for current demands and future 20 year growth projections.

The MWT effectiveness was further determined through the hydraulic analysis to be dependent upon completion of 400mm main up to Wallace Line. Lastly the investment towards completion of the 400mm main along CR22 is strategic to achieve the Lakeshore future urban fire flow targets in the westerly limit of the Amy Croft area.

Based on the foregoing, it is being recommended that the MWT be disconnected from the Belle River Water Supply System and future demolition be considered in 3 to 5 years.

### **Others Consulted**

Stantec Consulting, Union Water Supply System and Hydro One

### **Financial Impacts**

The capital cost to demolish the MWT was revisited and estimated by Stantec Consulting to be in the range of \$400,000. This work would be subject to Council approval in future budgets, however, there is no urgency and could be considered in three to five years.

It is recommended that the construction of the 400mm diameter water main be prioritized for completion and be included for Council's consideration in upcoming budgets (engineering design and construction). From a financial funding benefit, the 400mm diameter watermain project is approximately 40% funded from development charges (DC) for its proportionate share attributed to growth that was identified in the updated DC study approved last year. Conversely the water tower rehabilitation project would be 100% funded from water user rates.

**Attachment(s):** Stantec Technical Memorandum – Maidstone Water Tower Isolation  
Figure 6 – 2018 Master Plan Watermain Upgrades Plan

## Report Approval Details

Document Title:	Maidstone Water Tower Rehabilitation Cost Update.docx
Attachments:	- Stantec Tech Memo - maidstone_water_tower_isolation_R2.pdf - Figure 6 – 2018 Master Plan Watermain Upgrades Plan.pdf
Final Approval Date:	Apr 15, 2021

This report and all of its attachments were approved and signed as outlined below:

Krystal Kalbol

Rosanna Pellerito

Kristen Newman

Truper McBride