

# **Wastewater Servicing**

## **Alternative Servicing Strategies Development Technical Memo Alternative 8 – Optimized Valley Lands / Southgate Hanlon Trunk**

Project # TP168050; Client Name: City of Guelph

Prepared for:

**City of Guelph**

1 Carden Street, Guelph, ON N1H 3A1

3/18/2022

## 1.0 Introduction

This technical memo presents Alternative 8 – Optimized Valley Land / Southgate Hanlon Trunk, which stems from the evolution of previously developed Alternatives 5 and 7 based on stakeholder input and represents an optimized version of these previously studied alternatives.

The scope of this report involves the following:

- The preparation and evaluation of Wastewater Servicing Concept Alternative 8, an optimized hybrid solution comprised of the Southend Park and Southgate Hanlon alternatives based on the developed wastewater sewer-shed servicing configurations.
- Identification of the Capital Projects required to implement services for Alternative 8.
- The provision of an evaluation of Alternative 8 in terms of Cost Benefit.

Similar to all alternatives evaluated, Alternative 8 – Optimized Valley Land / Southgate Hanlon Trunk is to be evaluated for the Clair Maltby Secondary Plan (CMSP) lands and include systems that are connected to the City's collection system via potential external receiving branches described in *Wastewater Servicing – Clair Maltby WW-1 Existing Conditions Design Criteria & Level of Service Objectives Report - Issued September 2018 and updated in March 2018 (WW-1 Report)*.

The evaluation of wastewater servicing alternatives is in support of the evolving planning framework driven by the Clair Maltby Secondary Planning Process. Concepts in this technical memo, as with other alternatives, represent the latest community structure provided in July 2018.

The following description, figure, and table related to Alternative 8 are to be inserted into the MESP in the sections indicated.

The following is to be inserted under section **3.2.4 Alternatives**

### **3.2.4.8 Alternative 8: Optimized Valley Lands / Southgate Hanlon**

Combining the advantages of Alternatives 5 and 7 and addressing their constraints, in the Optimized Valley Lands / Southgate Hanlon Trunk alternative, wastewater is conveyed from the CMSP lands through a reconfigured upstream portion of Alternative 7 and the downstream section of Alternative 5.

Sanitary flows from Catchment 1 are pumped along Street A to the proposed 525mm diameter trunk. Sanitary flows from Catchment 2 are pumped west, along Street E, and then north along Gordon Street to the gravity Catchment 3A. Sanitary Catchment 3A drains all the lands owned by the owners of 2021, 2093, 2143, and 2187, while also taking flows from the proposed high-density development corridor along Gordon Street via gravity. Sanitary Catchment 3B flows by gravity to SPS-3, which is relocated west of Gordon Street.

Sanitary Catchments 4 and 5 will be serviced by gravity in the same manner as previously outlined in the Southend Park and Valley Land Trunk and Southgate Hanlon Trunk alternatives.

The route avoids the Valley Lands by cutting through recreational sports fields and connecting to Poppy Road. The optimization of the route improves access for maintenance, where previously not feasible.

This scenario includes a new gravity trunk combining with the updated forcemain and 3 pump stations, ultimately connecting to the new sewer trunk along the easement adjacent to Hanlon. The proposed trunk main follows the same design criteria as the Gordon/Clair Trunk alternative in terms of the cover depth, slope range and the velocity. The Sanitary model has been updated for this optimized solution and even though SPS 3 is removed from its previous location East of Gordon Street, it would still be required as per the revised sanitary collection route/pipe inverts at the east side of Gordon Street.

**Table 3.2.6 Pump and Forcemain Information for the Optimized Valley Lands / Southgate Hanlon Alternative**

<b>Alternative 8 – Optimized Valley Lands / Southgate Hanlon Trunk</b>	
Total length of 200mm sewers	2.7 km
Total length of 300mm sewers	6.2 km
Total length of 375mm sewers	3.0 km
Total length of 450mm sewers	1.1 km
Total length of 600mm sewers	2.7 km
Total length of 750mm sewers	2.8 km

SPS-1 Capacity	24 L/s
SPS-2 Capacity	126 L/s
SPS-3 Capacity	9 L/s
FM-1 Diameter, Length	150 mm, 0.7 km
FM-2 Diameter, Length	300 mm, 2.1 km
FM-3 Diameter, Length	100 mm, 0.3 km

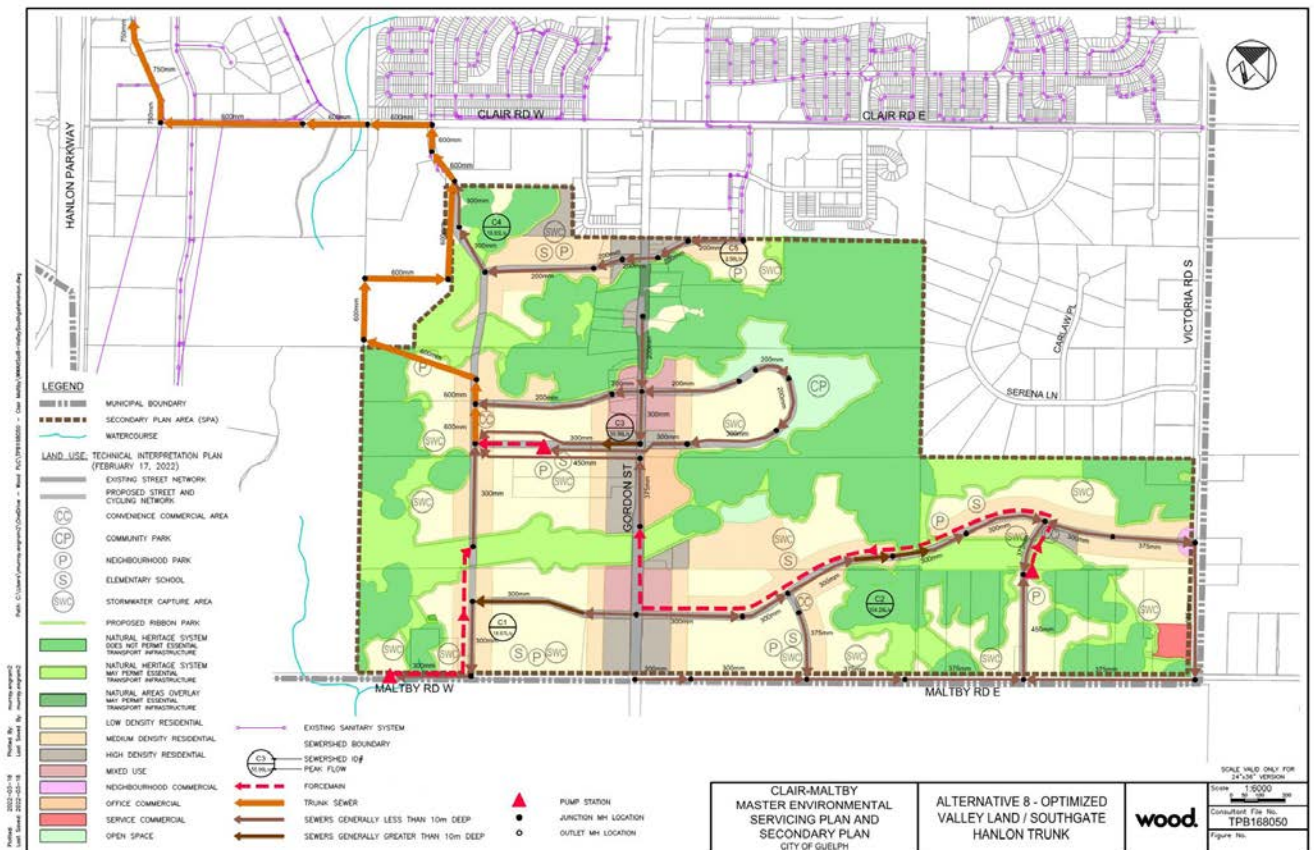


Figure 3.2.11 Alternative Solution 8 Optimized Valley Land / Southgate Hanlon Trunk

The following is to be inserted under section **3.2.5 Economics of Wastewater Servicing Alternatives**

**3.2.5.6. Alternative 8: Optimized Valley Lands / Southgate Hanlon Trunk**

The Optimized Valley Lands / Southgate Hanlon Trunk alternative proposes to optimize the pump station catchment configurations by relocating SPS3 west of Gordon Street and shortening forcemains. This alternative also avoids sensitive Valley Lands by cutting through recreational sports fields and connecting to Poppy Drive. The new sanitary sewer trunk runs along Poppy Drive Parallel to the existing sewer and then along Clair Road West.

The estimated capital cost for implementing this solution is \$35.6 Million as given in **Table 3.2.8**.

**Table 3.2.8- Estimated Cost Alternative 8 Optimized Valley Lands / Southgate Hanlon Trunk**

<b>Gravity Sewers</b>	<b>\$25.50 Million</b>
<b>Sewage Pump Station (SPS) - 1</b>	\$0.8 Million
<b>Sewage Pump Station (SPS) – 2</b>	\$3.2 Million
<b>Sewage Pump Station (SPS) - 3</b>	\$0.4 Million
<b>Forcemain - 1</b>	\$0.5 Million
<b>Forcemain - 2</b>	\$2.6 Million
<b>Forcemain - 3</b>	\$0.2 Million
<b>Property Costs</b>	\$1.6 Million
<b>Total Cost for Optimized Valley Lands / Southgate Hanlon Trunk</b>	<b>\$35.6 Million</b>
<b>Estimated Annual O&amp;M Costs</b>	\$470 K per year