Prepared By:

Township of Hamilton

Buttersfield Subdivision Long-Term Capital Plan

GMBP File: 107065

FEBRUARY 2024

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Revision History:

Version	Date	Description	Revised by
0	2024-02-09	Draft Long-Term Capital Plan for NSF Certification	See below

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TOWNSHIP OF HAMILTON

BUTTERSFIELD SUBDIVISION LONG-TERM CAPITAL PLAN

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1. INTRODUCTION

GM BluePlan (GMBP) was retained by the Township of Hamilton (the Township) to prepare a Long-Term Capital Plan for the water distribution system serving the Buttersfield Subdivision. This assignment is required as part of a certification process with the National Sanitation Foundation (NSF) by Lakefront Utility Services Inc. (LUSI). LUSI operates the Town of Cobourg municipal water supply system and the Buttersfield Subdivision distribution system.

The Buttersfield Subdivision is a residential neighbourhood located within the geographic Township of Hamilton, but receives drinking water from the Town of Cobourg municipal water supply via a watermain along Ontario Street that crosses under Highway 401. The north side of Highway 401 is the municipal boundary between the Town of Cobourg and Township of Hamilton in the vicinity of Buttersfield Subdivision.

2. SYSTEM DESCRIPTION

The Buttersfield Subdivision generally consists of a network of underground water distribution mains of various diameters and pipe materials, along with isolation valves at most network branches and fire hydrants. Installation of the infrastructure began in the mid 1960's. The total length of distribution watermains is approx. 2,700 metres. There are no facilities such as pumps, storage tanks, treatment facilities, or re-chlorination system associated with the Buttersfield Subdivision.

Appendix A contains a map of the water distribution system for Buttersfield Subdivision indicating watermain locations, diameters, and materials of construction along with locations for isolation valves and fire hydrants. In addition, the map highlights in yellow specific sections of watermain that were rehabilitated in 2022 with cement mortar lining.

Table 1 below provides a general inventory of the infrastructure associated with the Buttersfield Subdivision.

Table 1: Inventory of Water Infrastructure for the Buttersfield Subdivision

Item Description	Materials	Unit	Quantity	Dia. (mm)	Comments
Watermains					
Ontario Street Highway 401 to Olivers Lane	DI	l.m.	600	300	
Catherine Street June Avenue to Olivers Lane	CI	l.m.	350	150	Cement lining rehab. in 2022
Haymur Street June Avenue to Olivers Lane	CI	l.m.	320	150	
June Avenue Ontario Street to Catherine Street	CI	l.m.	110	150	Cement lining rehab. in 2022
June Avenue Catherine Street to Buttersfield Park	CI	l.m.	190	200	Cement lining rehab. in 2022
June Avenue Buttersfield Park to Lenore Avenue	PVC	l.m.	300	200	
Lenore Avenue Catherine Street to Haymur Street	CI	l.m.	110	150	
Lenore Avenue Haymur Street to Olivers Lane	PVC	l.m.	240	200	
Olivers Lane Ontario Street to east end	AC	l.m.	450	150	
Fire Hydrants, including hydrant lead and isolation valve					
	Cast iron	each	14	14	---
Isolation Valves					
	Ductile iron	each	5	300	---
	Ductile iron	each	18	150/200	---
Service Connections, including corporation stop and curb stop					
	copper	each	114	114	---
Water Meters (inside homes)					
	Brass	each	114	114	---

l.m. : Linear Metre

3. LONG-TERM CAPITAL PLAN

3.1 Basic Criteria

The methodology used to develop the long-term capital plan is summarized below.

1. Selected time horizon of 25 years, extending from 2024 to 2049
2. Review background information and prepare preliminary asset inventory
3. Establish estimated service life (ESL) for major assets based on typical industry practice and experience
4. Conduct desktop analysis of likelihood of failure, consequence of failure, and risk
5. Prepare draft long-term capital plan using a spreadsheet-based matrix
6. Refine the draft capital plan if required to achieve a relatively consistent annual spending profile
7. Update capital needs assessment based on Township feedback

3.2 Asset Service Life

The estimated service life (ESL) for each component of the Buttersfield Subdivision is shown below in Table 2. These values are based on typical municipal infrastructure and asset management plans.

Table 2: Asset Estimated Service Life (ESL)

Asset Description	ESL (years)
Watermains – Asbestos Cement (AC)	60
Watermains – Cast Iron (CI)	65
Watermains – Ductile Iron (DI)	80
Watermains – Polyvinyl Chloride (PVC)	80
Fire Hydrants	80
Isolation Valves	65
Service Connections including corporation stop and curb stop	80
Water Meters	30

Further to the above table, it is estimated that cement-mortar relining of metal watermains extends their estimated service life by additional 20 years.

3.3 Long-Term Capital Plan

The capital plan was developed using a spreadsheet which calculates proposed years for construction for each project based on several factors as noted above. The default capital plan may show high capital spending proposed for some years and no capital expenditures in other years. The process used to develop the capital plan then refines the default capital plan from the spreadsheet if required to result in a more consistent annual spending profile. The intent is to reduce periods with a high concentration of capital spending as well as reduce periods with little or no capital spending. Unit rates applied to calculate estimated total project costs are summarized below in Table 3.

Table 3: Unit Rates

Item Description	$ 2024
300mm diameter C900 PVC Watermain, including 25mm copper service connections, full surface restoration	$ 1,500/m
200mm diameter C900 PVC Watermain, including 25mm copper service connections, full surface restoration	$ 1,100/m
150mm diameter C900 PVC Watermain, including 25mm copper service connections, full surface restoration	$ 1,000/m
Fire Hydrants, including lead, isolation valve, full surface restoration	$ 12,000 each
300mm Buried isolation gate valve, full surface restoration	$ 10,000 each
150mm or 200mm Buried isolation gate valve, full surface restoration	$ 6,000 each

Total recommended expenditures over the next 25 years (2025 to 2049 inclusive) are $3,369,000 for all projects. The 25-year recommended capital plan is summarized below in Table 4 and illustrated in the bar chart in Figure 1.

Table 4: Recommended Capital Plan

	Project Name	Suggested Project Year	Total Project Cost ($2024)	Comments
1.	Olivers Lane Ontario Street to east end	2032	$450,000	Full Watermain Replacement including Service Connections to Property Line
2.	Haymur Street June Avenue to Olivers Lane	2034	$320,000	Full Watermain Replacement including Service Connections to Property Line
3.	Fire Hydrants	2036	$168,000	Incl. hydrant lead and isolation valve
4.	Ontario Street Highway 401 to Olivers Lane	2038	$900,000	Full Watermain Replacement including Service Connections to Property Line
5.	Isolation Gate Valves 300mm	2038	$50,000	Mainline isolation valves on Ontario Street
6.	Isolation Gate Valves 150mm and 200mm	2040	$108,000	Mainline isolation valves on all other streets
7.	June Avenue Ontario Street to Catherine Street	2042	$110,000	Full Watermain Replacement including Service Connections to Property Line
8.	June Avenue Catherine St. to Buttersfield Park	2042	$209,000	Full Watermain Replacement including Service Connections to Property Line
9.	Catherine Street June Avenue to Olivers Lane	2044	$350,000	Full Watermain Replacement including Service Connections to Property Line
10.	Lenore Avenue Catherine Street to Haymur Street	2045	$110,000	Full Watermain Replacement including Service Connections to Property Line
11.	Lenore Avenue Haymur Street to Olivers Lane	2047	$264,000	Full Watermain Replacement including Service Connections to Property Line
12.	June Avenue Buttersfield Park to Lenore Avenue	2048	$330,000	Full Watermain Replacement including Service Connections to Property Line
	TOTALS (excl. HST)		**$3,369,000**	**Includes all of the above projects**

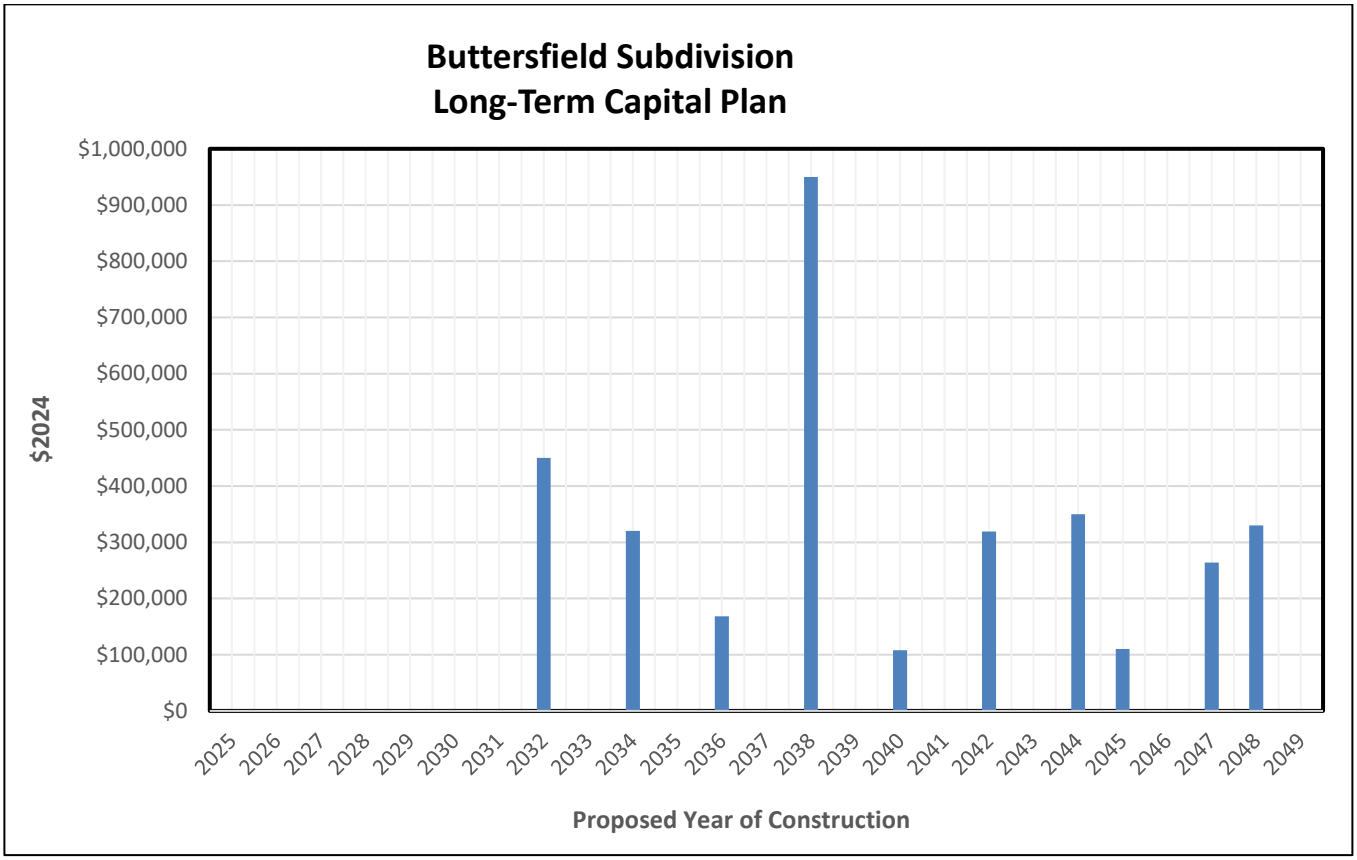

Figure 1. Recommended Capital Plan

Notes :

1. The above budget estimates are expressed in $2024 dollars.
2. Project costs are Class D level budget estimates (+/- 25%).
3. The Suggested Project Year is general and some projects could be implemented slightly earlier or later based on actual operating conditions and available Township budget. The Suggested Year is not intended to define a precise date when equipment must be replaced to avoid failure.
4. Budget estimates for watermain replacement projects include planning, engineering, and construction, including full surface restoration within the disturbed areas.

APPENDIX A

BUTTERSFIELD SUBDIVISION DISTRIBUTION SYSTEM MAP

BUTTERSFIELD SUBDIVISION

N

TOWNSHIP OF HAMILTON

NOTES

1. PARCEL FABRIC AND WATERMAIN LOCATIONS ARE APPROXIMATE.
2. GANARASKA REGION CONSERVATION AUTHORITY REGULATION LIMIT FROM OPEN DATA RECEIVED FROM GMBP GIS GROUP ON 2023-08-14.
3. WATERMAIN FROM COBOURG CROSSES UNDER HIGHWAY 401 AND IS 300mm.

LEGEND

- GANARASKA REGION CONSERVATION AUTHORITY (GRCA) REGULATION LIMIT
- 150mm WM — 150mm WATERMAIN
- 200mm WM — 200mm WATERMAIN
- 300mm WM — 300mm WATERMAIN
- CEMENT RELINING IN 2022
- VALVE
- HYDRANT
- AC — ASBESTOS CEMENT
- CI — CAST IRON
- DI — DUCTILE IRON
- PVC — POLYVINYL CHLORIDE

50 20 0 50 100 150

1:4000 (m)

WATER DISTRIBUTION SYSTEM MAP

Figure No. 1

BluePlan ENGINEERING

107065
SEPTEMBER 2023
Scale: 1:4000 | NAD 1983 UTM Zone 17N

AERIAL IMAGERY:

FILE:W:\Guelph\107-2007\107065\Drawings\107065 Buttersfield Drawings\107065-BASE-00.dwg LAYOUT:FIG1
LAST SAVED BY:Blambier, 1/16/2024 9:10:36 AM PLOTTED BY:Bradley Lambier - GM BluePlan 1/16/2024 9:29:51 AM